

VMware View™ on NetApp Storage

SOLUTION BRIEF

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VMware View and NetApp Deliver Flexible, Cost Effective, Secure Virtual Desktops

This brief provides an overview of a virtual desktop solution featuring VMware View™ 4 and NetApp storage. With the display protocol (PCoIP) advances in VMware View 4, and storage efficiencies from NetApp (achieving a per seat storage cost as low as \$40), enterprises can now deploy cost effective virtual desktop environments (over LAN or WAN) that meet the needs of a wide range of end users.

In today's rapidly changing world, the ability to deliver the right information to the right people at the right time creates the opportunity to close the next deal, bring the next product to market faster, or deliver the information needed to save a life. But with so many different needs and platforms—task workers to power users, desktops to mobile devices—CIOs today are faced with the daunting task of building a strategy that satisfies the diversity of user needs, while at the same time meeting corporate objectives for cost, security, and compliance.

In the past, enterprise IT organizations were forced to choose between either the delivery of robust computing services, or the reduction of cost/service levels. Now, with the introduction of hosted virtual desktop solutions, IT organizations are able to improve productivity, reduce operational costs, and increase security all at the same time.

At the forefront of the virtual desktop revolution is a combination of offerings from VMware and NetApp. This paper discusses VMware View 4—the latest release of VMware's market-leading virtual desktop solution—as well as virtual desktop storage options from NetApp.

VMware View

Purpose built for delivering desktops as a managed service, VMware View provides the best end-user experience and transforms IT by simplifying and automating desktop management. Centrally maintaining desktops, applications, and data reduces costs and improves security—while at the same time increases availability and flexibility for end users. Unlike other desktop virtualization products, VMware View is a tightly integrated end-to-end solution built on an industry leading virtualization platform that allows customers to extend powerful business continuity and disaster recovery features to their desktops, plus standardize on a common platform from the desktop through the datacenter to the cloud.

A VMware View solution provides a wide range of benefits:

- **Simplify and automate desktop management.**
VMware View lets you manage desktops centrally in the datacenter and provision them instantly to new users, departments, or offices. It also enables the creation of instant clones from a standard image, dynamic pools, or groups of desktops.
- **Optimize end-user experience.**
VMware View PCoIP display protocol provides a superior end-user experience over any network. Adaptive technology ensures an optimized virtual desktop delivery on both the LAN and the WAN. It also enables a user to address the broadest list of use cases and deployment options with a single protocol. Access to personalized virtual desktops complete with applications and end-user data and settings are available anywhere and anytime with VMware View.
- **Lower costs.**
VMware View reduces overall costs of desktop computing by up to 50 percent by centralizing management, administration, and resources and removing IT infrastructure from remote offices.
- **Enhance security.**
Since all data is maintained within the corporate firewall, VMware View minimizes risk and data loss. Built-in SSL encryption provides secure tunneling to virtual desktops from unmanaged devices or untrusted networks.

- Increase business agility and user flexibility.**
 VMware View accommodates changing business needs such as adding new desktop users or groups of users while being able to provide a consistent experience to every user from any network point.
- Built in business continuity and disaster recovery.**
 VMware View is built on industry-leading VMware vSphere™—allowing you to easily extend features such as VMware High Availability and VMware Fault Tolerance to your desktops without the need to purchase expensive clustering solutions. It also provides a method to automate desktop back-up and recovery as a business process in the datacenter
- Standardize on a common platform.**
 VMware View includes VMware vSphere™ and brings all the benefits and enterprise features of the datacenter to the desktop. Extend features such as VMware VMotion™, VMware High Availability (HA), VMware Distributed Resources Scheduler (DRS), and VMware Fault Tolerance to your desktops providing a built in disaster recovery and business continuity solution. Optimized specifically for desktop workloads, VMware vSphere is able to handle the high loads associated with desktop operations such as boot up and suspend operations. Standardize your virtualization platform and use a single solution to manage both servers and desktops from the datacenter through to the cloud.

VMware View Architecture

VMware View provides unified access to virtual desktops and applications running in a central secure datacenter and is accessible from a wide variety of devices. VMware View Composer streamlines image management while reducing storage needs through the use of VMware Linked Clone technology.

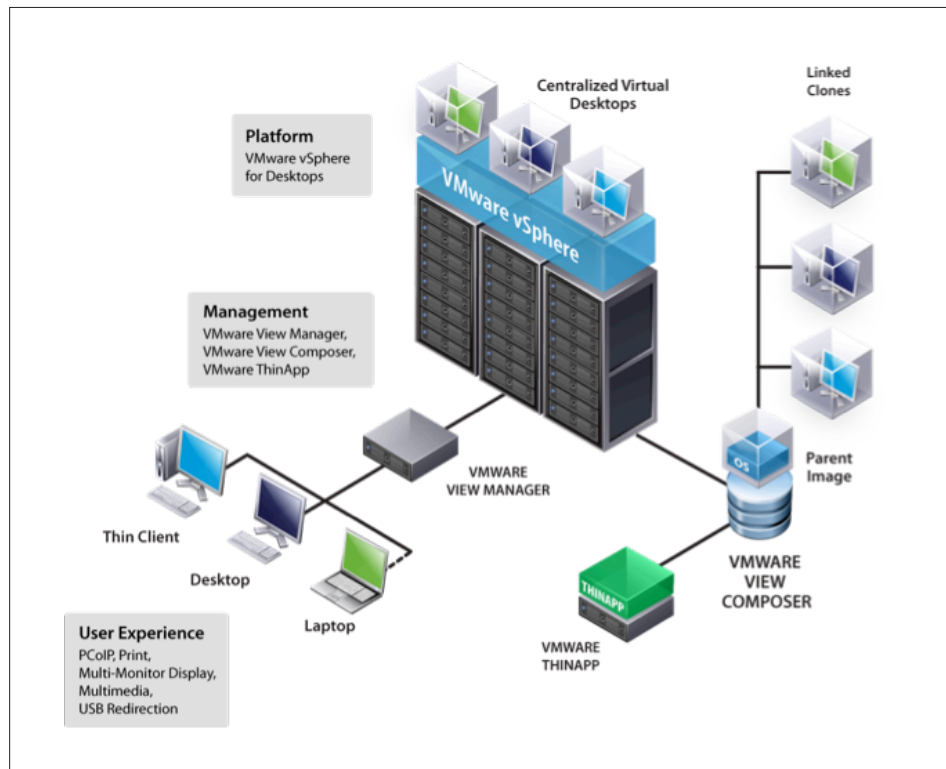


Figure 2. VMware View 4

Virtual Desktops—Real Cost Savings

Justifying the deployment or migration to virtual desktops starts by identifying a solution that not only saves money today, but also continues to save money and add operational flexibility for the lifecycle of the desktop.

Cost reductions can be attributed to various aspects of a virtual desktop deployment including support, as well as device costs. **Per IDC, organizations deploying VMware View saved on average over \$610 per supported end user per year compared with organizations using unmanaged PCs. Savings came from lower device and IT staff support costs—over \$480—and improved productivity (reduced downtime)—over \$130.** (see figure 3)

For the desktop group, savings can begin by migrating from desktops or laptops to thin clients—reducing both administrative costs (fewer hardware failures) and power costs (as thin clients use approximately 1/10th the power of desktops). Of course, the lifecycle of a PC can be extended by repurposing it as a “thin client” to provide access to a centralized desktop. The savings continue as 100s or 1,000s of virtual desktops can now be created, deployed, patched, and managed in far less time than it took to manage physical desktops. Using either VMware Linked Clones or NetApp FlexClones2, from within VMware View Manager, new desktops can be deployed in minutes instead of days. Beyond initial deployments, VMware View and VMware ThinApp simplifies the management of thousands of OS and application patching activities into a completely automated function.

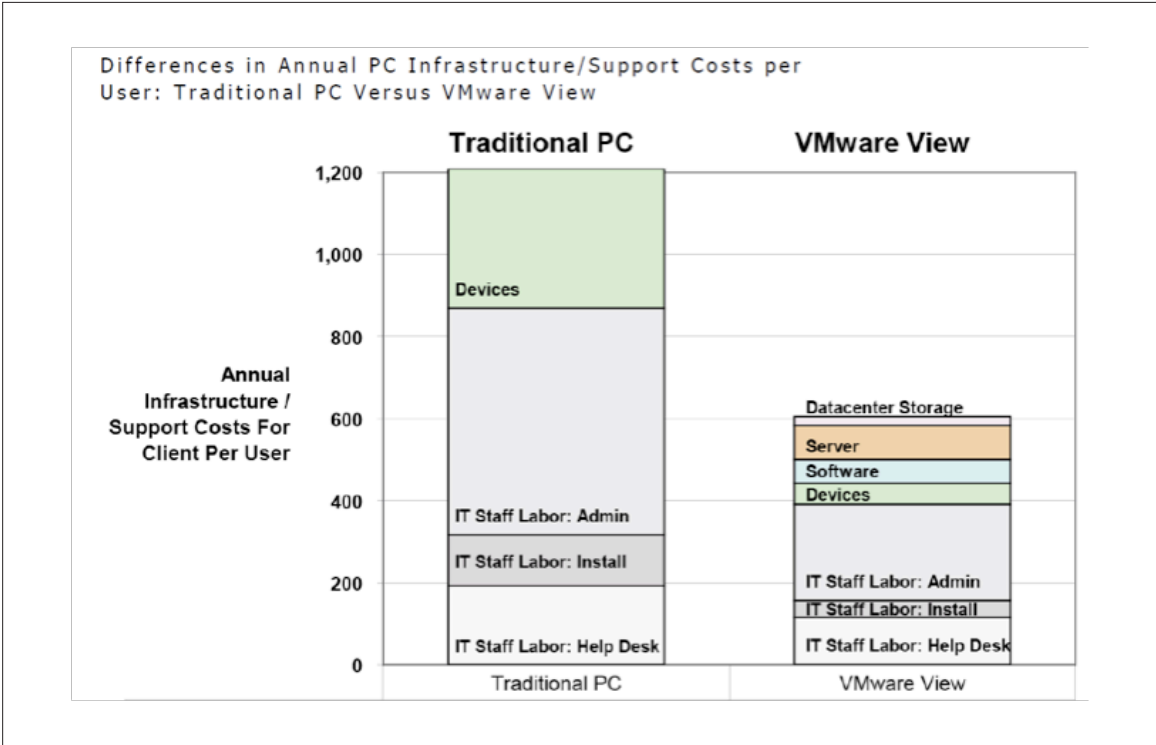


Figure 3. IDC White Paper sponsored by VMware, Quantifying the Business Value of VMware View, Doc #21970, September 2009

1 IDC White Paper sponsored by VMware, Quantifying the Business Value of VMware View, Doc # 21970, September 2009
 2 TR-3770 -VMware View and NetApp VDI Reference Architecture - <http://media.netapp.com/documents/tr-3770.pdf>

NetApp Storage

For the Data Management or Storage group, virtual desktops introduce a new requirement for datacenter storage. To ensure optimal performance at the lowest cost, storage must be managed efficiently. NetApp helps solve this problem through highly efficient de-duplication, cloning, data protection, and replication technologies that not only guarantee³ reduced costs, but also simplify desktop data management throughout the lifecycle of the information. The cascading effect of NetApp storage efficiency across all tiers of data management means that storage costs drop as more virtual desktop users are added to the system. In fact, with NetApp, storage costs can be as low as \$40 per virtual desktop.⁴

The Completely Virtualized Datacenter

Companies around the world are realizing the cost, productivity, and strategic benefits of datacenter virtualization. VMware vSphere delivers the framework and infrastructure to deliver a highly-automated and completely virtualized computing environment that is able to handle even the most robust computing needs. VMware View 4 and VMware ThinApp continue to expand the capabilities of VMware vSphere by tightly integrating desktop services and application virtualization with an enhanced desktop user experience. VMware vSphere brings new levels of high availability and redundancy to desktops that never before existed through VMware VMotion and VMware Fault Tolerance.

What began with the consolidation of datacenter resources is now expanding to include Desktop Virtualization, Business Continuity, Disaster Recovery, and a unified management model—allowing IT to drive new bottom-line efficiencies across every aspect of the business.

In the past, desktops were considered an isolated portion of the IT organization, often with lower priorities for availability. By consolidating managed desktop services via virtualization, IT organizations are bringing desktop management into the realm of top-tier applications. VMware and NetApp combine to deliver a unified operational model to manage desktops and desktop data from creation and backup, to archival, and compliance. Integrating NetApp Rapid Cloning Utility (RCU) into VMware View Manager, desktops are managed from a single management framework. NetApp SnapManager for Virtual Infrastructure (SMVI) integrates with VMware vCenter to automate and simplify desktop backups in seconds. NetApp SnapMirror seamlessly integrates into VMware Site Recovery Manager (SRM) to automate Disaster Recovery and Failback.

With just a few clicks—all from centralized VMware management operations—virtual desktops can now be created, deployed, backed up, and recovered in ways that were never before possible with physical desktops. This translates into cost savings and operational flexibility that often provides an ROI in terms of months instead of years.

The New User Experience

For a virtual desktop deployment to be considered successful, the end users must have a positive experience as they interact with their desktop environments. Applications must be responsive, the interface must be familiar, and users must be able to access their desktop environment from a variety of locations, on a variety of devices. Desktop virtualization with VMware View 4 and NetApp enables this type of user experience.

³ NetApp 50% Storage Guarantee - <http://www.netapp.com/us/solutions/infrastructure/virtualization/guarantee.html>

⁴ For a typical VDI deployment of between 1,000 and 5,000 desktops, NetApp storage costs will range from about \$40-\$80 per desktop. Costs are inclusive of NetApp storage controllers, NetApp Performance Acceleration Module (PAM), NetApp software licensing for primary storage, and NetApp Premium Support in best practice configurations (TR-3770). NetApp FAS 2000, 3x00 and 6000 Series controllers, running ONTAP 7.3.2 software are all supported.

VMware View 4 and NetApp combine to deliver an outstanding desktop experience by combining highly optimized virtual desktop delivery technology with low-latency data access. To enhance the end-user experience, VMware View 4 introduces the PCoIP display protocol. Unlike legacy application delivery solutions, VMware View with PCoIP is optimized to deliver the best desktop experience. The PCoIP display protocol is purpose-built for efficiently delivering virtual desktop environments over the network—providing an optimal experience even over high latency and low bandwidth network connections. Delivered via secure connections, PCoIP can be enabled as a hardware or software-based solution for multiple types end-points, from PCs, laptops, netbooks, to optimized desktop devices called “zero” clients.

As the size of the virtual desktop deployment grows, the number of end-users and amount of storage I/O greatly increases. If a storage environment not properly architected, poor user-experience may occur during boot-storms, login-in storms or anti-virus updates. NetApp Intelligent Caching technology and the Performance Acceleration Module (PAM II) accelerates response time by 10x during these high demand occurrences. Using high-performance SSD flash, NetApp PAM-II is able to mitigate I/O bottlenecks and eliminate poor end-user experience.

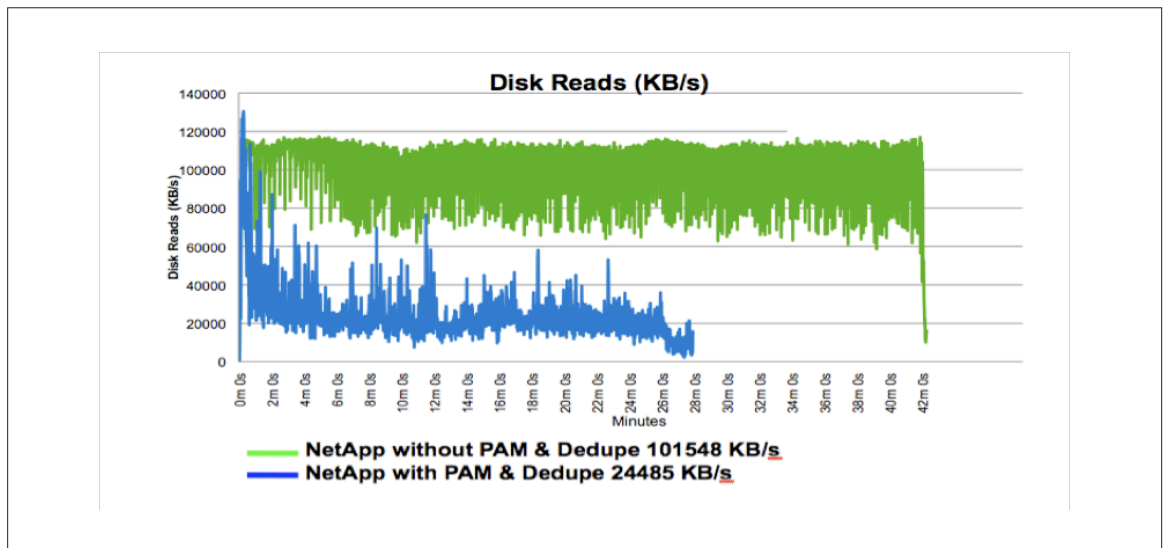


Figure 5. NetApp PAM & Intelligent Caching—Improved User Experience (4096 seat VDI Boot Storm—VMware View + NetApp FAS3100)

Delivering the Best Virtual Desktop Experience

Cost, user experience, and storage optimization were issues that in the past might have been challenges in a virtual desktop deployment. But with the highly efficient PCoIP display protocol in VMware View 4, and innovative, cost effective storage solutions from NetApp, these problems are now eliminated. VMware View 4 with vSphere integration and NetApp, can be combined to deliver an industry-leading desktop solution that will allow IT to deliver managed desktop solutions to any user, on nearly any device.

Additional References

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