



Storage in a Citrix Virtual Desktop Environment

Bull StoreWay Solution

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Architect of an Open World™

Storage impacts in a Citrix Virtual Desktop Infrastructure

For companies who have profited from the enormous benefits of server consolidation through virtualization, the natural next step to extend the paradigm is to face the desktop challenges. In a Virtual Desktop Infrastructure, enterprise desktop computers are virtualized, moved to the data center, then presented over the LAN or WAN to the end users. Desktop data are moved from their usual local hard disk drive to shared storage within the data center.

As a result, having to manage storage for 100's or 1000's of desktops within a SAN / NAS involves new constraints such as storage provisioning, potential I/O performance peaks during boot and logon storms, or anti-virus updates, desktop storage availability and recovery.

In return, it also provides new opportunities including easier backup of centrally managed user data, and security and compliance to corporate rules. Moreover, user data is increasing rapidly and storage techniques need to be applied to control cost.

BULL KEY DIFFERENTIATORS

- Bull proposes and delivers a complete solution, from consulting to architecture, design, delivery, support and maintenance,
- Differentiating services include expertise, storage performance enhancements, Advisory Services, Proof-Of-Concept, labs, and state-of-the-art StoreWay Solutions Centers,
- Bull has built preferred partnerships with Citrix (15+ years), NetApp, VMware and Microsoft,
- Bull has proven capabilities to install and manage projects involving more than 1000 desktops.

SLA under pressure?

- **Performance concerns for the users** which can be due to boot and logon 'storms', anti-virus operations or simply the user experience: I/O bottlenecks can quickly impact 100s or 1000s of desktops!
- **Legal Compliance:** security and user data must conform to legal and/or corporate rules.

The Bull solution delivers an improved end-user experience, by eliminating boot and logon storms. It increases desktop performance and provides enough space for efficient backup of user data, and thus enables easy and self end-user recovery of data.

Unacceptable risks?

- **Data Protection and Business Continuity concerns:** desktops are centrally managed on SAN/NAS and failures can rapidly impact 100s or 1000s of desktops!

- **Implementation and management skills:** a VDI environment is a convergence of server, desktop, storage, networking technologies, and it can rapidly introduce complexity.

The Bull solution simplifies user, desktop and application management by bringing 1000's of desktops online in minutes, provisioning storage as quickly as virtual desktops, securing access, instant backup, and recovery. It guarantees the availability of desktops, even in the event of a disaster.

TCO too high?

- **ROI (Return On Investment) uncertainty:** traditional shared storage is expensive.
- **Storage growth and associated costs:** user data are increasing quickly.

The Bull solution enables optimal storage usage. It guarantees 50% less storage, at least a 70% storage utilization and establishes zero-capacity desktop provisioning.

Bull & NetApp jointly respond to VDI storage issues

Bull, integrator of complex and heterogeneous storage environments, has chosen NetApp storage solutions to build an agile, scalable & unified architecture addressing the storage challenges of a Virtual Desktop Infrastructure.



One of the critical barriers to VDI adoption is the increased cost of using shared storage to obtain a highly available enterprise-quality infrastructure. Virtual desktop deployment creates a high level of data redundancy, especially for the virtual machine OS data. Using traditional storage, this means you need storage equal to the sum of the storage required for each virtual machine.

For example, if each virtual machine is 20 GB in size and there are supposed to be 1000 virtual machines in the solution, it would require at least 20 TB of usable data on the shared storage. Thin provisioning, data deduplication, and FlexClone® are critical components of the NetApp solution and offer multiple levels of storage efficiency across the virtual desktop OS data, installed applications, and user data. This helps customers save on average 50 to 90 percent of the cost associated with shared storage (based on existing customer deployments and NetApp solutions lab validation). NetApp is the only storage vendor that offers block-level data deduplication for live virtual machines, without any negative tradeoffs.

Thin provisioning

Thin provisioning is a way of logically presenting more storage to hosts than is physically available. With thin provisioning, the storage administrator is able to utilize a pool of physical disks (known as an aggregate) and create logical volumes for different applications to use, without pre-allocating space to those volumes. The space gets allocated only when the host needs it.

Deduplication

In a Citrix XenDesktop environment, deduplication provides significant space savings, given that each virtual machine has an identical copy of the OS, applications, and patches. The savings are also achieved for the user data hosted in CIFS home directories.

Performance

With Citrix XenDesktop using a shared storage infrastructure,

significant performance issues could arise during critical operations such as Boot and Login storms, Virus scan and/or definition update storms. The solution would essentially require a large number of additional spindles to meet the performance requirements, increasing overall solution cost. To solve this problem, the NetApp solution provides transparent storage cache sharing (TSCS), a core component of Data ONTAP extended with Flash Cache (or PAM). These solution components require far less disk and cache, serve read data from cache freeing up disk I/O to perform writes and provide better throughput and system utilization, faster response times and a better overall end user experience.

Data protection

The availability of thousands of virtual desktops is dependent on the availability of the shared storage on

which the virtual desktops are hosted.

Thus, it is very important to use the proper RAID technology and to protect the virtual desktop images and/or user data. RAID-DP®, NetApp SnapMirror®, and NetApp Snapshot copies are critical components of the NetApp solution that help address storage availability.

Consulting services for storage sizing

Dimensioning Storage for the deployment of Citrix XenDesktop solutions on NetApp requires that essential solution requirements are gathered in order to carry out performance-based and capacity-based storage sizing, to generate recommendations on the physical and logical storage configuration. This key step in a VDI project is defined and executed using the expertise and experience of Bull Consulting Services.

Bull StoreWay, integrator of storage solutions



An integrator with a unique skill-base

As an expert integrator of storage solutions, Bull StoreWay is constantly extending its unique body of skills, tools and partnerships to help customers design and deploy their storage strategies in line with their specific business needs and budget. The Bull StoreWay value proposal is based on three key benefits: preserving information assets by controlling risk, reducing costs through infrastructure optimization, and improving competitiveness through improved data management.

A comprehensive range of services

As well as its extensive product portfolio, Bull StoreWay offers a complete range of services, from consultancy through to system design, integration and maintenance. From the factory pre-integration of storage solution right through

to project management, installation and support services, Bull StoreWay provides tailored assistance to ensure rapid, well-managed implementation.

StoreWay Solution Center

Bull StoreWay has forged strong partnerships with the storage industry's major players, including EMC, NetApp, Brocade, CommVault, Symantec, NEC, Sun/StorageTek and Overland. This close relationship was the driving force behind the creation of the StoreWay Solution Center, an international center dedicated to data protection and virtualization technologies.

Located in Grenoble, France, the center embodies Bull StoreWay's high level of expertise and know-how in storage infrastructures, and offers IT professionals the opportunity to exchange ideas and test new technologies, providing an ideal environment for defining and building optimized storage solutions.

TRY A DEMO AT THE STOREWAY SOLUTION CENTER (at Grenoble in France or remotely)

In a Citrix XenDesktop environment, the availability and performance of the storage infrastructure are critical because thousands of users will be affected by storage outages or performance issues. Thus the storage architecture must provide the required levels of availability and performance for business-critical applications. NetApp has all the software and hardware solutions that address these storage issues, specific to large, scalable Citrix XenDesktop environments.

The different topics covered by Bull include:

- Review of VDI Storage challenges in a VMware / Citrix infrastructure,
- Definition of a VDI architecture reference, with a focus on the storage impacts,
- Integration of NetApp storage and VMware infrastructure in a global architecture with robustness and ease of administration,
- Value of data deduplication and thin provisioning, in addition to cloning technologies in VMware and Citrix environments,
- Demonstrations of efficient and rapid provisioning of 100+ desktops, optimized desktops backup and performance enhancement.



- For more information and reservations, contact your sales representative or email storeway_contact@marketing.bull.net

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