

## Solution Brief

# NetApp Storage Solution for VMware Horizon 6

Simple, secure access for virtual desktops and data

### Key Features

- Provide better end-user experience: optimized with high performance and continuous access to apps and data for desktop virtualization and large-scale file sharing
- Slash costs using storage efficiency technologies to significantly reduce the capacity requirement (typically 5:1) for desktop and user data
- Provision thousands of desktops in minutes: rapid hardware- assisted cloning enables fast provisioning for persistent and nonpersistent desktops
- Simplify end-user data protection and compliance: enterprise backup and recovery capability for desktop and user data with a single integrated solution

### End-User Computing: Evolution of Desktops, Mobility, and Collaboration

The consumerization of IT and the increasing trend toward a more mobile workforce represent an organizational and market shift. According to Forrester Research, 89 of the top 100 U.S. companies now offer telecommuting, and 58% of companies consider themselves to be virtual workplaces, supporting a bring-your-own-device (BYOD) policy. End users now demand instant file and data access and file sharing (with anyone) from familiar, easy-to-use devices that they can control, including traditional desktop systems and mobile devices such as phones and tablets. Software as a service offerings and the introduction of virtual desktop and mobile computing offer greater flexibility and empowerment to users, even enabling them to dictate which technologies IT should support instead of the other way around. However, this shift in end-user computing brings a unique set of challenges to IT organizations and to enterprises in general.

### Challenges

#### Removing roadblocks to end-user mobility and productivity

End users want to free themselves from the limitations of physical PCs and operating systems and static management processes. They need continuous access to their desktops and applications from anywhere, at any time, on the device of their choice. They also want their virtual desktop and mobile computing performance to be as good as or better than what they're used to getting on a physical PC. Deploying end-user computing solutions, however, can create a new set of challenges that organizations must address such as:

- Storage acquisition costs
- User experience and SLAs
- Providing continuous access
- Security and control of user data
- Managing devices, OSs, patches, and so on

#### Managing complexity and security

Consider that 97% of employees in the United States now carry at least two computing devices, and 50% of them carry at least three. Users in today's workplace also tend to share data and files in a manner that's as convenient as possible, often avoiding IT in the process. This creates a risky situation whereby sensitive data can be accessed without user permission. IT organizations, in contrast, want to minimize the complexity introduced by BYOD initiatives and the accompanying plethora of managed devices.

They also need a streamlined way to maintain security and control of physical and virtual devices and data—that means no data leakage anywhere—and still provide the performance and availability to optimize the end-user experience.

### Balancing capabilities and costs

Businesses are looking for a balanced, economical approach that addresses the needs of end users and IT departments: one that helps users become more mobile and productive without compromising security and compliance. Businesses are eager to embrace new technologies, but a successful end-user computing initiative doesn't involve just the endpoint devices. For example, the manner in which end users collaborate and share files generates large amounts of data. This additional growth pulls both cost and infrastructure management into the equation. Storage plays a particularly significant role in virtual desktop infrastructures and represents one of the largest expense categories. It's important that the storage platform be capable of delivering the performance, uptime, and agility to meet business, IT, and end-user requirements while remaining efficient and cost-effective. This requires a new type of IT infrastructure to make it work.

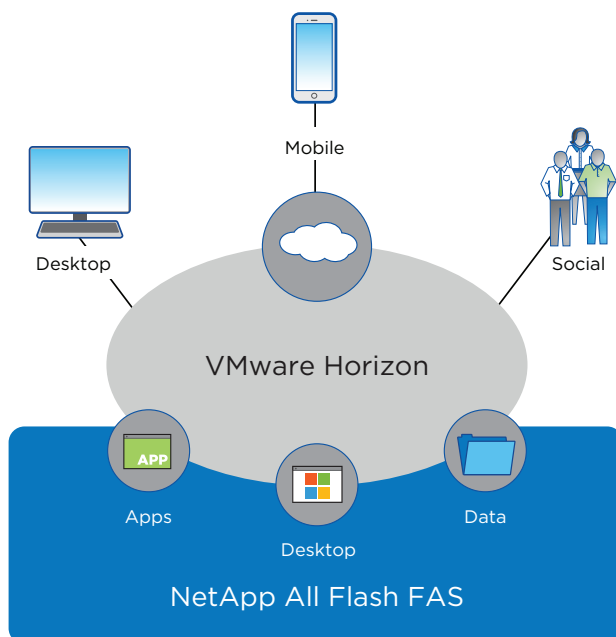


Figure 1) NetApp solution for VMware Horizon.

### Solution

The NetApp® solution for VMware® Horizon® (with View™) addresses enterprise requirements with high performance and low latency as well as reliability and superior data management. It delivers a powerful combination that's critical for organizations that need to accelerate workloads without compromising on

the way they deploy, manage, and protect data across their environment. Powered by NetApp Data ONTAP®, all-flash FAS is the leader in advanced data management for high-speed workloads. It's especially valuable for VDI power users who require consistent low-latency performance. All-flash FAS configurations can be deployed as a node in a cluster with hybrid FAS systems, giving you the flexibility to transparently adjust where an application lives—all flash or hybrid flash—based on changing business needs. The tight integration of leading NetApp storage technologies and VMware Horizon (with View) also enhances resource utilization and simplifies operational management, delivering desktops and data at low cost and greatest value, helping businesses increase their ROI.

### Delivering a Better User Experience

#### Flash-enabled high performance

Virtual desktop infrastructures are highly dynamic environments where I/O activity can increase significantly and sometimes unexpectedly. Boot storms, login storms, and antivirus scans are examples of high read activity that can severely affect virtual desktop performance. NetApp addresses performance issues with all-flash FAS or hybrid FAS arrays that address high-IOPS VDI workloads that require low latency.

#### Nondisruptive access

The NetApp clustered Data ONTAP operating system provides the scalability, flexibility, and efficiency for storage that Horizon View and Horizon Workspace provide for desktops and mobile devices. It supports a scale-out storage architecture based on virtual storage systems (storage virtual machines, formerly known as Vservers) that can be expanded and moved on demand to deliver dynamic quality of service (QoS). You can perform maintenance, technology refreshes, software upgrades, and load balancing by moving data volumes for a desktop pool to other storage nodes in the cluster without disrupting applications, users, or their devices. Clustered Data ONTAP also addresses fast desktop and mobile data growth with massive scalability, supporting more than 50PB of storage, with consistent management and near-linear performance. By eliminating planned downtime and scaling without disruption, you can make sure that your end users always have access to their desktops and files.

#### User-based recovery

NetApp enables users to recover and restore their desktop data and files on their own without opening a help desk ticket and involving the storage administrator. The user data is usually kept in separate shares, but you can make them accessible to users with the right permissions. This streamlined process provides a much simpler and faster way of recovering data.

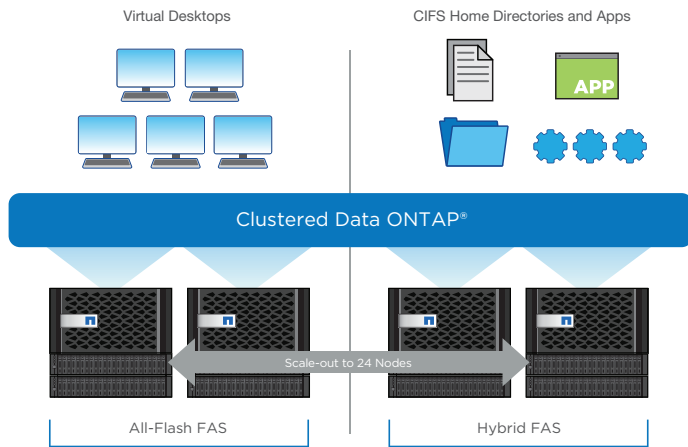


Figure 2) Non-disruptive operations keep users connected and data available.

## Simplifying Life for IT

### Deep management integration

Management is a critical and complex component of virtualized end-user computing environments. Without the right tools to manage end-user data effectively, your Horizon administrators are forced to coordinate with storage administrators and ultimately spend more time than ever on storage-related activities. This hinders your ability to respond to rapidly changing business requirements and reduces overall efficiencies.

NetApp technologies are deeply integrated with VMware end-user computing technologies, enabling your IT department to regain control of enterprise file and desktop data. Advanced NetApp storage capabilities can be executed from VMware interfaces to manage, refresh, and recompose Horizon View desktops and ease administration for mobility, cloud, and the consumerization of IT with BYOD. Integrated storage management capabilities include discovery, health monitoring, capacity management, provisioning, cloning, backup, restore, disaster recovery, and more. Your VMware administrators can access, execute, and automate these capabilities within existing storage policies, enhancing both desktop and storage efficiencies.

### Rapid desktop provisioning

NetApp integrates rapid cloning (FlexClone®) technology with Horizon View using the View Composer API for Array Integration (VCAI) to facilitate fast, mass desktop provisioning. VCAI enables VM cloning processes to be offloaded from View hosts to storage systems that support vStorage APIs for Array Integration (VAAI) such as NetApp arrays. Desktops can then be provisioned

almost instantly, using almost zero storage space and without consuming physical server resources. Using NetApp cloning, your View administrator can rapidly clone desktops, golden images, and custom VM guests from the View Manager interface, accelerating deployment and time to market. NetApp FAS arrays have achieved VCAI Certification from VMware.

### Enterprise-class reliability

Built on years of Data ONTAP deployment experience and FAS engineering refinement, all-flash FAS meets even the most demanding availability requirements. These systems are designed to deliver 99.999% or greater availability through a comprehensive approach to system resiliency.

NetApp Integrated Data Protection delivers long-distance disaster recovery (NetApp SnapMirror® technology) and disk-to-disk backup (NetApp SnapVault® software). To eliminate downtime and allow IT upgrades at any time, all-flash FAS supports non-disruptively adding or replacing storage components. Scaling, software and firmware updates, and load balancing can happen without planned downtime.

### Improving ROI for Business

#### Storage efficiency and integrated data protection

Storage typically represents 30% to 50% or more of infrastructure expense for hosted virtual desktops. NetApp has long focused on providing the most advanced storage capabilities for virtual desktops, on the smallest storage footprint, delivering VMware end-user computing at the lowest cost and greatest value. NetApp storage efficiencies include built-in deduplication, thin provisioning, space-efficient Snapshot® backups, and zero-cost virtual machine cloning, which together can reduce storage requirements by 50% or more in VMware end-user computing environments.

### Unified storage platform

The NetApp solution for VMware end-user computing features the NetApp Unified Storage Architecture and Data ONTAP. Both technologies span across all NetApp storage systems for simplified management and smooth scalability that supports thousands of desktops per system. Our single, unified storage platform supports all SAN (FC, FCoE, iSCSI) and NAS (NFS, CIFS) protocols, simultaneously enabling you to accommodate desktop and user data with one storage system. A single pool of multiprotocol storage lets you flexibly support any desktop or mobile computing workload and helps you absorb changes to end-user computing requirements without expensive forklift upgrades.

## Simplified architecture

Complexity equals cost. By removing complexity, NetApp removes cost and improves ROI for business. NetApp does this with an agile data infrastructure that makes it easier for IT to manage and deliver better service to end users. We provide unified storage, integrated data protection, and embedded storage management that integrates with VMware Horizon Suite. This eliminates the need for separate storage hardware and management systems across your next-generation architecture.

## FlexPod Reference Architecture for Horizon View and Horizon DaaS

FlexPod® provides a proven converged infrastructure for deploying virtual desktops with Horizon View or desktops as a service with VMware Horizon DaaS®. With FlexPod, customers can take a building-block approach when implementing end-user computing solutions, knowing they are getting consistent cost and predictable performance at scale.

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## About NetApp

Leading organizations worldwide count on NetApp for software, systems and services to manage and store their data. Customers value our teamwork, expertise and passion for helping them succeed now and into the future.

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