Brochure

Software-Defined Storage

Flexible data storage for today and tomorrow

Get Started

Hewlett Packard
Enterprise

The power of software-defined storage (SDS) lies in separating hardware and data services from management to optimize costs for midsize businesses, remote sites, and cloud service providers. Learn the meaning of SDS and how this new technology can help you build a flexible architecture that offers opportunities for simplified management across your data center.

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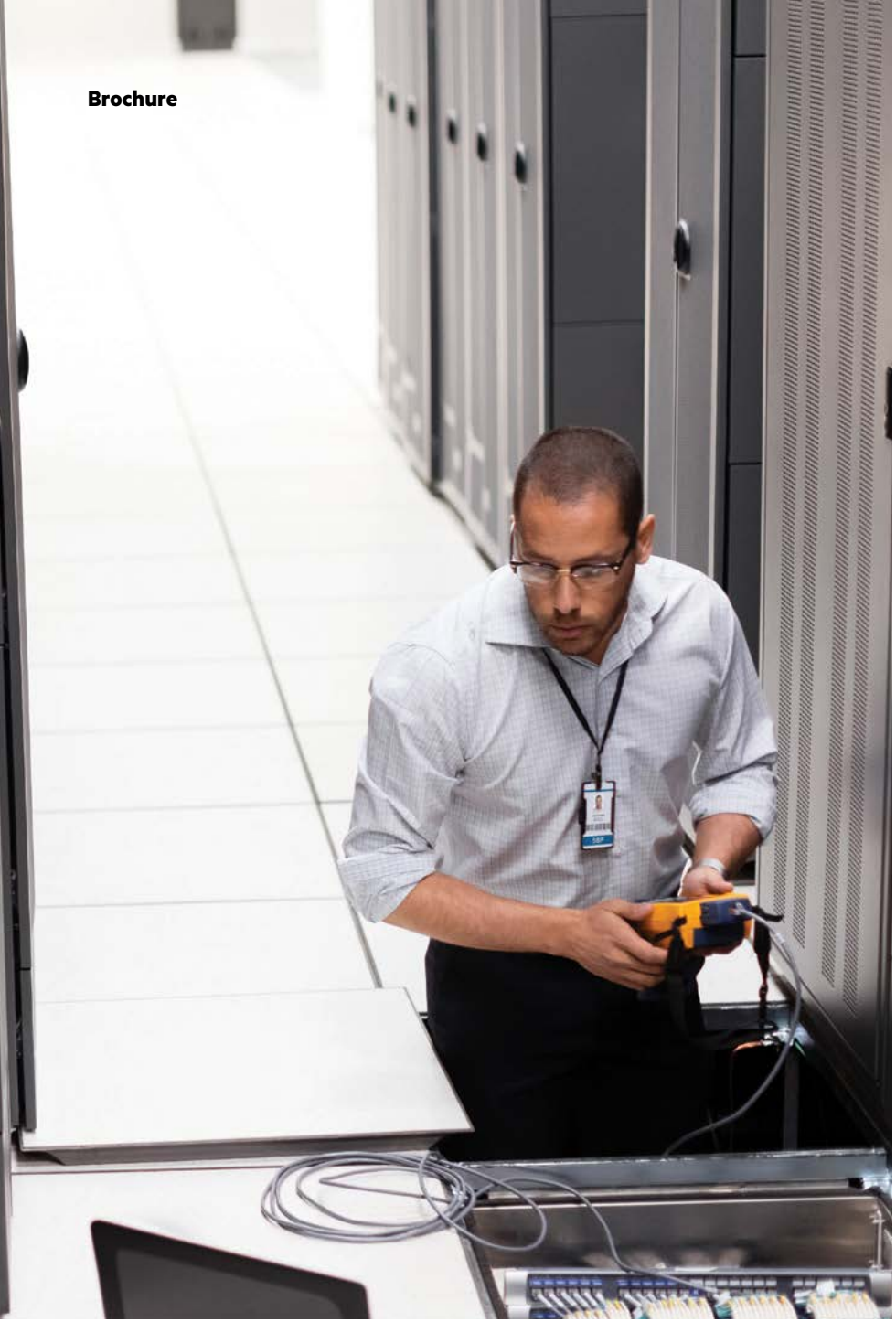


The software-defined movement

The needs of IT managers in midsize businesses, enterprises, and cloud service organizations are undergoing tectonic shifts. Driven to tighter deadlines with smaller budgets, managers continue to seek new solutions that will help them scale their virtualized infrastructures. In addition, they need to integrate new technology into existing mixed-vendor IT environments without jeopardizing their data or impacting performance.

These goals are, in turn, driven by increasing pressures to deliver business outcomes that support growth without complexity, respond to unpredictable business demands, and provide affordable investment protection.

Software-defined data centers are the solution

Many IT leaders are turning to software-defined data centers (SDDC) as a solution to combat these challenges. That's a good move, as long as they take it to the next step by adopting newer technology that can keep pace with changing business requirements.

Legacy storage architectures designed 20 years ago have too much overhead and cannot realistically deal with the complex demands of today's fast-paced virtual environments.

The world is moving to a New Style of Business, one that demands more agile IT environments, virtualized data centers and modern hybrid cloud infrastructures. Software-defined storage (SDS) plays a key role in this initiative. More and more, customers are searching for a comprehensive, converged approach that allows them to construct their highly available, fault-tolerant data centers using simple, scalable building blocks. Hewlett Packard Enterprise has taken a lead role in this movement, delivering SDS solutions that are open, fully featured, and easy to manage.

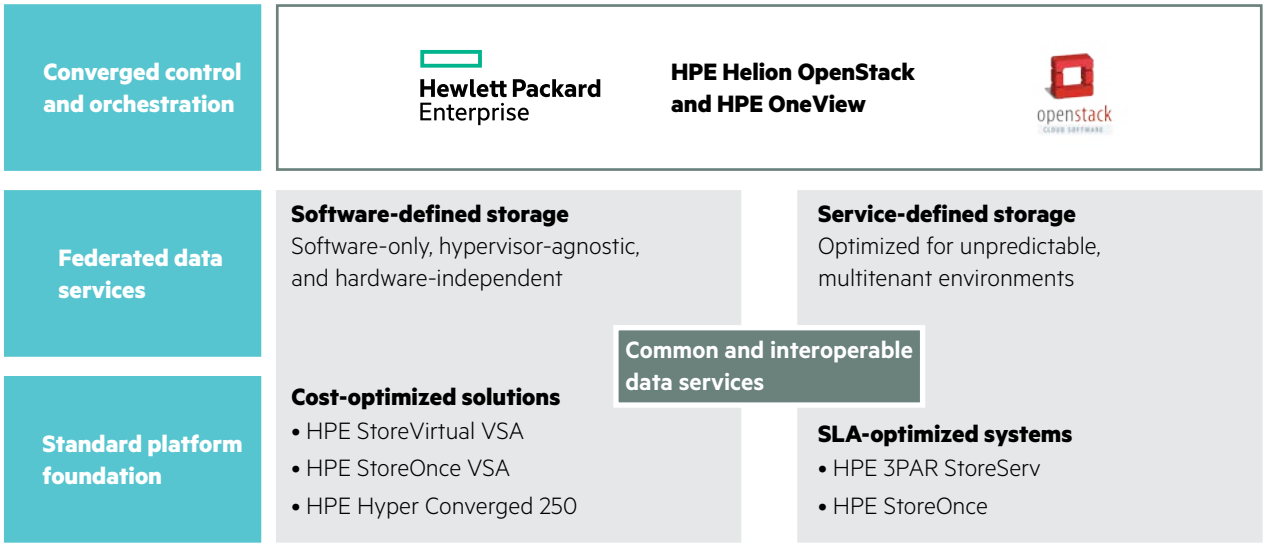


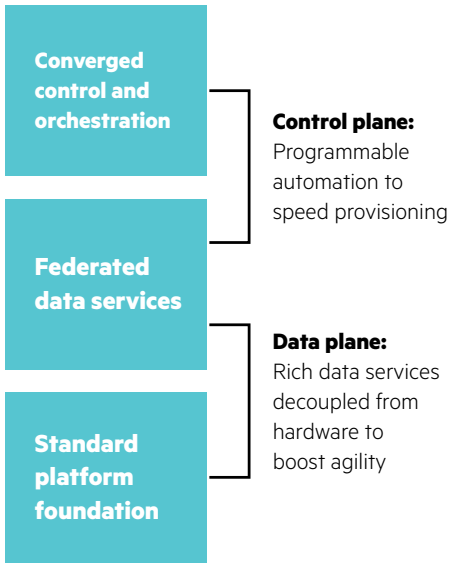
Figure 1: HPE Converged Storage for the SDDC

Building a software-defined data center

The SDDC maximizes ROI by providing the flexibility of choice. Managers can now design their infrastructures around the hardware, data services, and orchestration tools they need to optimize costs and meet service levels.

IT departments today are under continuous pressure to deliver greater value at higher velocity with fewer resources. Organizations can't acquire or deploy additional storage fast enough. Legacy hardware-defined storage alone can't meet these demands or ensure desired business outcomes. Even the most engineering-intensive hardware vendors can't design, develop, test, and produce new storage hardware fast enough to meet business demands for new and different capabilities. This is because the storage needs of organizations today are simply too varied to address with storage hardware alone.

Because SDS decouples data services from hardware, software-based solutions are not tied to the same lengthy cycles, allowing organizations to immediately take advantage of new technologies as they become available.



Converged modern architecture
SDDC functions are built on standard x86-based platforms. Software adds federated data services such as thin provisioning and replication. Control plane monitors and orchestrates all of the components.

Best-in-class SDS solutions deliver a full spectrum of storage services on a variety of server hardware platforms, and provide tools to manage servers, storage, and networking using a common interface.

Open hardware

In the SDDC, standards-based hardware creates a scalable foundation that brings together data and compute resources.

In an SDS solution, the underlying hardware is based on open technology. An open infrastructure provides a great deal of agility. That's because storage software is no longer tied to hardware that is dedicated exclusively to storage applications. Instead, a flexible hardware foundation is ready to support diverse applications, operating systems, and hypervisors.

Market leaders like Hewlett Packard Enterprise and Intel continue to innovate on this open platform to bring greater efficiencies to the enterprise. IT managers can tap into the power of Intel-based servers and faster, higher capacity disks to cost-optimize virtual infrastructures with HPE shared storage and backup applications.

Rich data services

Data centers have always provided a range of enterprise-class features and services through physical devices. The differentiating benefit of SDS comes from rich data services based in software, which is layered on top of the open hardware foundation to deliver the advanced storage functionality required in enterprise environments.

Control

Open, API-based management and orchestration tools enable control of storage from a single interface. The technologies that enable SDS are held together by a common management interface. For true portability and flexibility, this interface should provide access to open API-based management and orchestration tools, such as the OpenStack® management framework.

What is software-defined storage?

In the past, legacy systems delivered storage through dedicated hardware devices. SDS breaks that dependency, delivering data services through software and abstracting it from the underlying infrastructure.

Software layered on server infrastructure

SDS solutions are software applications layered on server infrastructures to deliver advanced data services, such as snapshots, thin provisioning, and multisite disaster recovery. With SDS, organizations can:

- Take advantage of virtually any x86-based hardware, allowing the reuse of older equipment or the efficient optimization of newly acquired technologies
- Provide shared storage and common services across multiple hypervisors—maximizing capital investment and flexibility
- Deliver simple management for the entire portfolio with application-aware orchestration and open application programming interfaces (APIs)

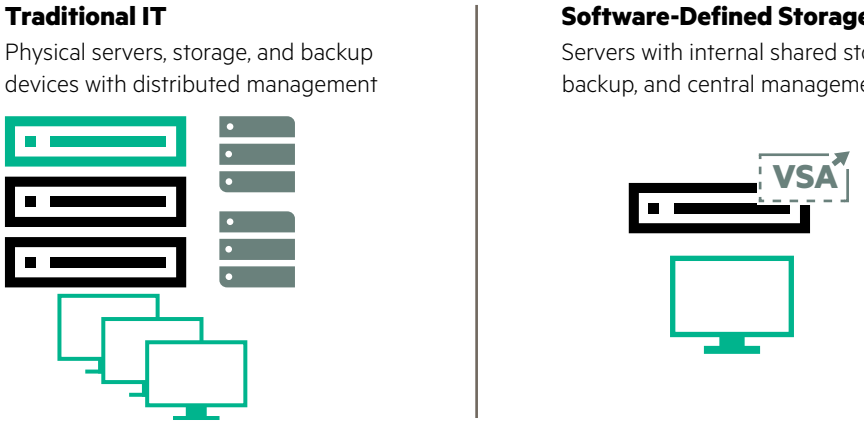


Figure 2: SDS locates storage inside the server, driving efficiency to support the New Style of Business

SDS abstracts the data services and management function, removing any dependency on the underlying hardware.

Open, hardware-independent features like these make SDS solutions among the most efficient and cost-effective on the market. In fact, efficiency and effectiveness are cornerstones of StoreVirtual technology, helping businesses capitalize on the cost, scalability, and management advantages of industry-standard hardware and the repurposing of decommissioned devices.

What are the benefits of setting up storage this way?

SDS gives organizations the freedom to consolidate applications and data services on virtualized commodity hardware without being tied to a specific supplier. But perhaps more importantly, it opens up new possibilities for simplified management and orchestration across the data center.

Management and orchestration for the SDDC

System management software makes it easy to manage, provision, and monitor a data center. Addressing a broad range of infrastructure lifecycle management challenges, HPE OneView unifies and simplifies server and storage resource management with one tool, one process, and one user experience. Intuitive features and simple consumer-style dashboards automate orchestration of SDS in VMware® and Microsoft® environments to:

- Optimize resources, due to comprehensive integration with both VMware vCenter and Microsoft System Center
- Manage VMs and execute storage commands all from a single console
- Install, configure, provision, and monitor SDS in minutes, right from within VMware vCenter and Microsoft System Center

This software-defined approach shifts the focus from “how devices run” to “how people work” to eliminate complexity and streamline IT services.

"Software-based storage will slowly but surely become a dominant part of every data center, either as a component of a software-defined data center or simply as a means to store data more efficiently and cost-effectively."

– Ashish Nadkarni,
IDC Research Director

Elements of a well-executed SDS solution

As SDS has become one of the more visible trends in IT, vendors have scrambled to take a position and bring solutions to market. However, not everything that is marketed as SDS actually delivers on the core values of a software-based architecture. To build and maintain a truly heterogeneous configuration, IT should look for scalability and vendor agnosticism as key features. The most adaptive SDS solutions:

- **Are hardware-agnostic**—SDS can run on virtually any x86-based hardware and any form of storage to maximize capital investment.
- **Are hypervisor-agnostic**—SDS technologies provide long-term investment protection with common management and data services across multiple hypervisors at one time.
- **Seamlessly scale out**—SDS solutions provide nondisruptive response to constantly changing demands.

With the advancement of modern technologies, fast-paced organizations require tools that run the gamut—some demanding the highest levels of service and performance for business agility. Others require lower levels of service but must meet aggressive cost targets. An SDS portfolio engineered around common architectures provides flexibility, simplicity, and savings.

Where SDS works best

SDS puts the needs of the business first, making these solutions ideal for server virtualization for midsize businesses, enterprise remote sites, and virtual desktop infrastructures (VDI).

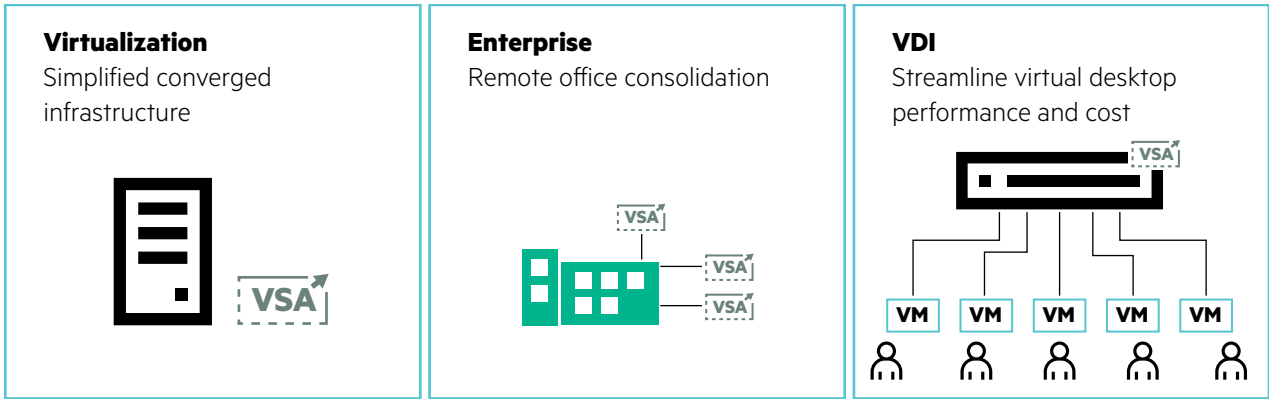


Figure 3: Where does SDS fit?

The virtualized data center

Organizations of all sizes experience rapid and extensive data growth. Transitioning to a virtualized environment to handle data growth is a smart move, but it may leave a complicated IT environment that zaps efficiency and challenges the IT staff. SDS helps deliver a scalable robust architecture that accommodates growth, efficiency, and budget demands in data centers that need to accommodate fluctuating workloads.

Fault-tolerant, shared storage for your entire environment

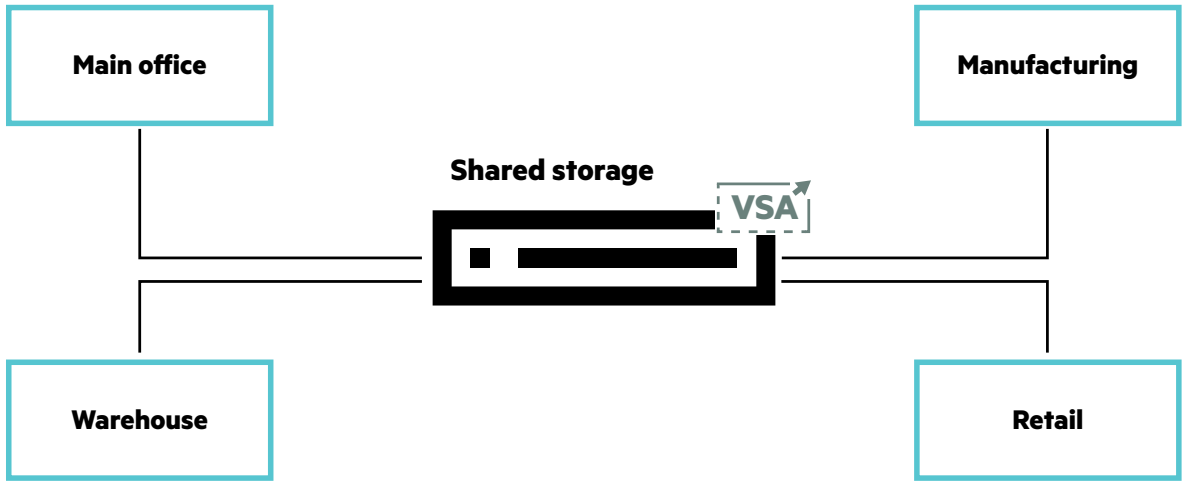


Figure 4: SDS for remote sites

Enterprise remote sites

Just like the main office, branch offices and remote locations must handle increasing requirements for data protection and high availability. Ideally, smaller sites should meet demands while keeping management simple and costs in line. SDS helps extend data storage and protection to remote sites efficiently and cost-effectively.

Virtual desktop infrastructure

Virtual desktop infrastructure (VDI) deployments can be plagued with performance issues and unpredictable workloads not to mention high operational and capital costs. Hewlett Packard Enterprise technology provides a simple, software-defined choice for VDI that can save money and improve user experience. Users get the advantages of enterprise class, fault-tolerant shared storage in a flexible, scalable solution with room to grow.

Converging storage and compute

Businesses need solutions that help them enter new markets, get closer to customers, and make employees more productive, while supporting growth and the delivery of new services. The software-enabled decoupling of storage intelligence from specific hardware and the widespread adoption of flash-based media are major enablers of an evolution that's moving storage and compute closer together without the cost and complexity of traditional environments.

The technology advances driving SDS:

- **Increased server power**—Supports both virtual applications and virtual storage appliances co-resident on the same system
- **The rising adoption of solid state drives (SSDs)**—Enables SDS to perform as well as or better than conventional hard disk drive storage
- **The widespread adoption of virtualization**—Applies virtualization concepts to decrease storage footprint and increase cost efficiencies

There's never been a better time for SDS

There has never been a better time to get into SDS—even for smaller sites that lack the budget to invest in new storage technologies.

Not long ago, single CPU servers could efficiently handle the management of only one virtual machine, often at quite a penalty of performance when compared to that same server running the same operating system natively. As virtualization technology has matured over the past 10 years, SDS solutions have become a more viable alternative.

Hewlett Packard Enterprise and Intel join forces to create robust SDS solutions

Today's powerful Intel® Xeon® servers now have multiple processors and provide robust platforms that can easily support the performance needs of both virtual applications and virtual storage appliances co-resident on the same server.

Together, HPE and Intel deliver infrastructure solutions that enable automated control of data center applications and resources through open architectures, systems, solutions, and infrastructure monitoring to deliver on the promise of a highly virtualized, software-defined, and cloud-enabled data center. The transition to modern architecture can now be achieved through the use of software-defined technologies on advanced server platforms. With HPE StoreVirtual VSA software and Xeon-based servers, HPE and Intel have created robust, performance-driven solutions to meet the budget and business demands of our customers, today and tomorrow.

Hewlett Packard Enterprise | intel inside XEON

Built on Intel processor-based servers and backed by HPE global support for all hardware and software, HPE ProLiant and HPE StoreVirtual VSA technologies yield compute density and efficiency that are ideal for scale-out workload applications, including private cloud, virtual desktop infrastructure, and research and development.

HPE hyper-converged systems

A hyper-converged system is a pre-configured virtualized server platform that combines servers, storage, networking, and management software in a single appliance. Hyper-convergence comes into play when time-to-value matters and you need a scalable solution where everything just works together—high performance compute, virtualization, and software-defined storage technologies.

HPE Hyper Converged 250 provides the benefits of a virtualized data center in a compact, cost-effective appliance that can reduce your data center footprint for substantial power and cooling savings.
HPE hyper-converged appliances are easy to install, maintain, and grow, and are engineered to deliver:

- **Fast deployment**—All-inclusive appliances are preconfigured with everything you need in a virtualized data center. Go from power-on to provisioning in less than 15 minutes.
- **Linear scalability**—For businesses facing unpredictable growth, the open, modular architecture lets you move quickly into new markets and support business expansion.
- **Straightforward management**—IT generalists can manage the entire virtual infrastructure both onsite and across multiple sites from VMware vCenter or Microsoft System Center with no specialized virtualization expertise.

80%

Lower capital investment

50%

Smaller physical footprint

60%

Less energy costs

HPE StoreVirtual VSA

To eliminate the cost of dedicated storage hardware, HPE StoreVirtual VSA software taps unused compute and storage capacity within a server to provide resilient shared storage for virtual servers running VMware vSphere, Microsoft Hyper-V, or Linux® KVM. Customers can reduce the cost of deploying resilient shared storage by up to 80 percent and physical footprint by 50 percent compared to deploying dedicated storage hardware.[1]

The agility and flexibility of virtualized data services provide the functionality needed to allow applications to directly automate provisioning as workloads change over time. The convergence of HPE SDS solutions and Intel-based servers provides a great value to any type or size of business by focusing on cost optimization and maximum flexibility within the data center. By using StoreVirtual VSA, standard x86 servers, and the latest Intel Xeon-based processors, customers can achieve a four-fold storage performance increase for virtual desktops and almost a two-fold increase for online transaction processing workloads as compared to previous-generation Intel server processor technology without additional latencies.[2]

HPE StoreOnce VSA

HPE StoreOnce VSA is a virtual backup and deduplication appliance, excellent for backing up a smaller site or moving data from remote sites to a centralized data center. StoreOnce VSA provides advanced data services offering backup and recovery, backup application integration for performance and control, and federated deduplication. This hardware-agnostic SDS solution can be deployed as a virtual machine on industry-standard server infrastructure. StoreOnce VSA:

- Reduces capital expense by up to 80 percent compared to dedicated backup appliances
- Is the industry's most scalable deduplication virtual appliance
- Takes up 75 percent less rackspace and consumes 75 percent less power

[1] Based on HP (now Hewlett Packard Enterprise) internal comparative analysis of publicly available data from major competitors, January 2015.

[2] HP (now Hewlett Packard Enterprise) internal comparison of a combined solution of HPE StoreVirtual VSA and x86 servers with previous- and next-generation Intel Xeon processors each tested by the Load DynamiX workload modeling, January 2015.

What does this mean for you?

As an IT manager, you are responsible for building the most cost-optimized and flexible IT infrastructure possible to take advantage of dynamic business challenges at a moment's notice. The agility and simplicity of the Hewlett Packard Enterprise software portfolio and the power of Intel's new processors enable you to meet your internal customers' needs—and positively impact your company's bottom line. Don't get locked into proprietary technology that dictates your orchestration and storage options. Software-defined storage solutions can help you transform your data center to a simple, scalable, open infrastructure.

Now's the time. Make the move to solutions that drive the New Style of Business with HPE Software-Defined Storage.

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