

Solution Showcase

Rack-scale Converged Infrastructure with Hedvig and HPE

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Abstract: As businesses become increasingly digitally dependent, data centers designed with more traditional architectures struggle to keep pace. While the scale of data is an ever-present challenge, recently it is velocity—the pace of that scale—that generates the most consternation. Emerging software-defined storage (SDS) technology aids with greater flexibility in hardware selection and more efficient alignment to the application, but deployment speed can still be an issue. One innovator in SDS, Hedvig, has partnered with HPE to deliver its SDS technology as part of a rack-scale converged infrastructure solution. Combined, Hedvig and HPE offer the hardware flexibility of SDS with the next-level simplicity and expedited deployment of converged infrastructure.

Overview

In recent years, nearly every industry has transformed digitally, leveraging data to better engage their customers, become more efficient, and access new markets. In a recent ESG research study of 2017 IT spending intentions, we asked respondents what they believed would be important in justifying IT investment to their organization's business management teams in 2017. Two of the top three most-cited considerations were the desire to increase employee productivity and improve customer satisfaction.¹ Data and the ability to effectively leverage data have become critical to business success. IT infrastructure is the key enabler to leveraging data and determines employee productivity and customer satisfaction. In other words, effectively leveraging information technology is necessary to staying competitive.

As firms seek to keep pace in an increasingly digital marketplace, however, simply scaling hardware is not the answer. And the scale of storage infrastructure in particular is an issue. According to an ESG research study of storage decision makers, hardware costs were the most commonly identified storage challenge.² Simply put, scaling traditional storage architectures is too costly. Businesses need a better way.

Software-defined storage (SDS) is one of the technologies that offers another option and helps transform data centers. Public cloud providers have developed and deployed in-house SDS architectures for greater flexibility in deploying hardware resources for some time now. Recently, mid-to-large sized enterprise IT organizations are expressing interest in SDS as well. According to ESG's research, over 75% of participants identified their organization as currently leveraging SDS, actively evaluating SDS, or conceptually interested in the technology. An emerging storage innovator, Hedvig, has partnered with HPE to deliver a rack-scale converged infrastructure to ease and expedite the deployment of SDS.

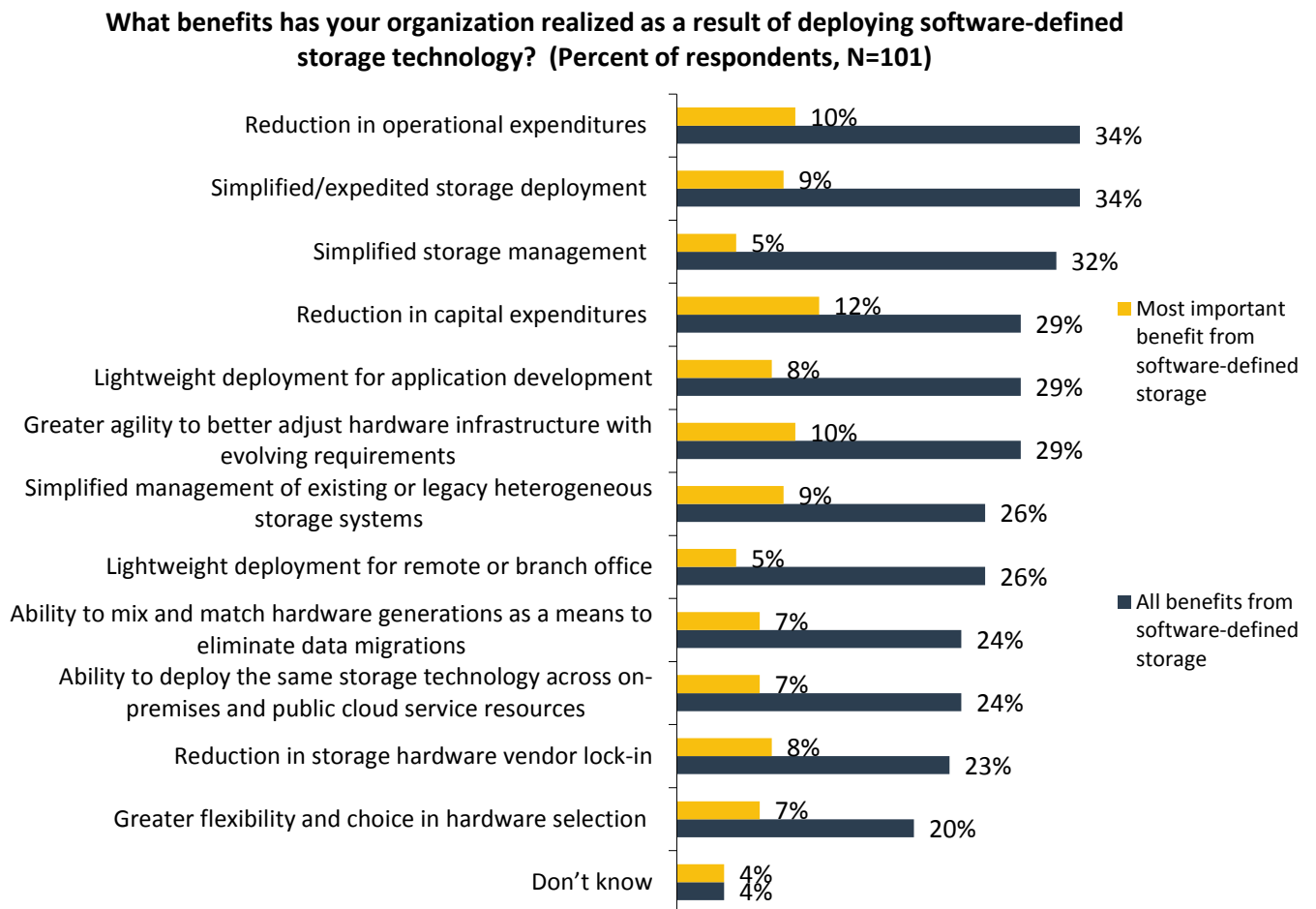
¹ Source: ESG Research Report, [2017 IT Spending Intentions Survey](#), March 2017.

² Source: ESG Research Report, [Software-defined Storage \(SDS\) Market Trends](#), February 2017. All ESG research references and charts in this solution showcase have been taken from this research report unless otherwise noted.

Agile Infrastructure with Software-defined Storage

ESG conducted a research study of over 300 storage decision makers to better understand the state of enterprise storage infrastructure and the potential of SDS technology. Participants were asked to identify their top storage-related challenges and the most common answer was hardware costs (34%). This was followed by data protection (31%), migrating data (27%), and the rapid growth rate of data (25%). In other words, data is growing quickly, and it is difficult and expensive to store, protect, and migrate. While this is a familiar narrative to IT, there is a new element. It's not that data is merely growing; it's that the velocity of growth crossed a threshold where traditional monolithic storage infrastructure cannot keep pace. Adding each new frame of storage increases the management and protection burden, demanding a significant cost penalty to migrate the data across generations. These pains were manageable three or five years ago, but those days have past. A new generation of IT infrastructure is required—one that dramatically improves infrastructure efficiency, speeds up access to new technologies, delivers hardware flexibly, and eliminates the pain of data migrations. This new infrastructure must also scale significantly larger with the same administrative, power, cooling, and space requirements.

Figure 1. Realized Benefits of Software-defined Storage (SDS) Technology



Source: Enterprise Strategy Group, 2017

One important element in this new generation of IT infrastructure is SDS. In ESG's research, three of the top four most commonly identified drivers for SDS were: reduce operational expenditures (34%), reduce capital expenditures (34%), and greater agility to adjust the hardware as needs change (33%). When these drivers are compared to the realized benefits that current users of SDS solutions received after deploying SDS-based technology (see Figure 1), the responses echo this theme of cost reduction while also highlighting the ability of SDS to expedite deployment and ease management. In other

words, SDS not only reduces the cost of infrastructure, but can also help speed up access to IT resources. Businesses are more dependent upon IT infrastructure and delays in deployment slow down business initiatives, which in turn delays revenue-generating projects. SDS reduces costs, while simultaneously keeping pace with changing business demands. The abstraction provided by SDS offers faster access to new hardware. Converged or hyperconverged infrastructures take this even further by expediting the deployment of SDS. While both models provide benefits, there are key differences.

Converged versus Hyperconverged Infrastructure

Both converged and hyperconverged infrastructures deliver tremendous benefits to manageability and speed of deployment. While SDS technology is essential to achieving the scalability of hyperconverged, historically it has not been necessary for converged infrastructure. This is changing as some rack-scale converged infrastructures leverage SDS technology to achieve greater efficiency in their designs. It is important to understand the differences between the two:

- **Converged infrastructure:** These deployments deliver an integrated computing platform that combines standalone x86 compute, storage, network, and virtualization technologies, from a single vendor or multiple vendors, into a single rack. Individual components may be software-defined and the result is targeted at bare metal, virtualized, or containerized workloads. Converged solutions provide a turnkey configuration and deployment experience (i.e., fully configured, racked, cabled, and tested). Components scale independently, resource pooling is typically at the server layer, and the solution may include a unified management interface.
- **Hyperconverged infrastructure:** A fully software-defined infrastructure approach that seamlessly combines compute, storage, networking, and virtualization technologies in a single solution running on industry-standard x86 systems. Unlike converged, growing hyperconverged capacity often requires scaling compute, storage, and network in lockstep. As such, hyperconverged solutions are ideal for more predictable environments and designed for virtualized and/or containerized workloads. Resource pooling is available across all components and a unified management interface enables control of the system as a whole.

Both converged and hyperconverged can use a distributed architecture (key value, file system, or object store). Clustering multiple systems within and between sites forms a shared resource pool and enables high availability, workload mobility, and efficient scaling of performance and capacity. Both provide similar benefits, but converged infrastructure is perceived as more scalable. Indeed, previous ESG research revealed that 38% of IT decision makers believe that better scalability is a reason their organization would deploy converged infrastructure technology over a hyperconverged alternative.³

Hedvig: Delivering Rack-scale Converged Infrastructure with HPE

A core tenet of Hedvig's design is delivering a single, unified storage platform to an evolving application environment. Hedvig's SDS technology supports a broad variety of hardware and can integrate new hardware technologies as they become available while enabling older hardware to be decommissioned without impacting the application. Hedvig designed its architecture to be massively scalable and support multiple protocols, providing a solution that eliminates the need for multiple, disparate storage solutions and the associated forklift upgrades they require over time. Now, Hedvig is working with HPE to create a pre-integrated, pre-tested storage infrastructure running on Apollo 4200 or 4500 servers. The Hedvig Distributed Storage Platform provides the SDS foundation needed for a rack-scale converged infrastructure. Customers can buy a bundled solution directly from HPE or any of HPE's partner ecosystem. The Hedvig-HPE bundled, rack-scale solution delivers a variety of transformational benefits, including:

- **Workload consolidation with multi-protocol:** Designed for performance and scale, Hedvig's block protocol support (iSCSI) serves transactional workloads, while the support for unstructured data protocols, such as File (NFS) and Object (Swift and S3), enable a wider breadth of workload consolidation on the same architecture. When

³ Source: ESG Research Report, [The Cloud Computing Spectrum: From Private to Hybrid](#), March 2016.

combined with HPE x86 server hardware, Hedvig can not only support a broad variety of workloads, but can also fine tune the hardware to best meet the demands of each.

- **Hybrid cloud architecture:** The infrastructure flexibility delivered by Hedvig's technology is not limited to on-premises hardware, but also can extend to the public cloud. Hedvig's software can be deployed on-premises with HPE servers or in a compute instance running in public clouds. The result being a single hybrid cloud storage system. Administrators can logically manage multiple locations as a single storage system, greatly simplifying manageability and reducing operational expenses for hybrid cloud infrastructure. The Hedvig-HPE joint solution supports any public cloud, with demonstrated support for AWS, Azure, and Google Cloud Platform.
- **Massive and flexible scale:** Delivering a transformational IT infrastructure requires one that isn't replaced every few years (requiring a massive migration), but rather one that evolves constantly with new hardware. As an SDS-based architecture, Hedvig can deliver consistent and predictable data access as workloads and business expand. IT organizations can start with as few as three HPE server nodes and scale to 1,000 or more. As new generations of Apollo and other HPE servers are made available, the solution incorporates the scale and hardware innovation that comes with each. And because Hedvig's technology is designed for public cloud, it also scales down, including a pricing structure to allow businesses to take advantage of scaling down, temporarily or permanently.

These benefits can be transformational regardless of the deployment model. The bottom line is that while some organizations choose the do-it-yourself approach to SDS, others require a simplified and expedited deployment of converged infrastructure. For these solutions, Hedvig has partnered with HPE, leveraging HPE's robust hardware portfolio as the foundation. The result is a simple to manage, simple to deploy, incredibly efficient rack-scale infrastructure solution, with the flexibility to evolve as demands change, leveraging multiple on-premises and off-premises technology options.

The Bigger Truth

Focusing on the complexities introduced by the rapid growth of data makes it difficult to leverage how valuable this data has become to the business. Simply adding capacities is not enough; you need an infrastructure that affords a competitive edge. Infrastructure needs the ability to scale performance, capacity, and workload support. Achieving this scale without destroying the budget requires a storage infrastructure solution that can leverage the right hardware elements quickly when demands change. This is at the heart of what Hedvig's SDS-based technology provides. While some organizations desire, and even demand, the ability to actively select the hardware components to architect a solution, others do not have the time or resources to effectively implement the resulting solution. This is where Hedvig's partnership with HPE comes into play. The resulting rack-scale converged solution can deliver the flexibility of SDS, with a preconfigured and validated deployment experience. The end result is a next-generation and potentially transformational infrastructure in a consumable package. For IT organizations looking to transform without unnecessary design and configuration complexity, Hedvig and HPE are offering a strong opportunity to do just that.

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