

White Paper

Lenovo: Designing the Portfolio of the Future on Software-defined Storage (SDS)

Meeting the ever-evolving demands of modern business with SDS-based innovations.

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Introduction

While the state of business today has already been dramatically altered thanks to the rise of information technology, the transformation is by no means complete. Innovation in IT continues, and may be more rampant than ever. The enterprise storage industry serves as a perfect example. As businesses increase the rate at which data is generated, managing and protecting the resulting rise in storage capacities represents a substantial challenge. Two separate ESG research studies have identified the ongoing challenges of data growth. In one study polling IT executives on overall IT spending intentions, managing data growth was the third most commonly identified overall IT priority.¹ In a separate investigation of storage leaders, the rapid rate of data growth was tied with data protection as the most commonly identified primary storage challenge, with six of the remaining top ten challenges; hardware costs, data protection, staff costs, running out of physical space, power and cooling costs, and device management, all classifiable as potential symptoms of data growth.²



Regardless of which set of IT leaders is interviewed, the challenges of data growth are significant and costly. For an incremental layer of complexity, IT organizations are deploying a wealth of new workloads, such as those driven by the Internet of Things or Big Data initiatives, increasing the amount of data being created and accessed. In response, enterprise storage vendors have unleashed a myriad of new innovations to help address the challenges of data storage. An industry that was once dominated by two flavors of storage, SAN and NAS, has seen a rise in new technologies, such as all-flash storage, object storage, and software-defined storage (SDS). The result is a diverse landscape with established solutions competing with a variety of emerging technologies.

As more established vendors find themselves locked into supporting storage platforms architected years, or even a decade, prior, they are simultaneously limited in their ability to focus on the most recent storage technology innovations. In contrast, smaller startup firms are able to focus on the most recent technology, but often are limited in terms of their scale and support capabilities. For technology vendors, these conflicting positions represent an ongoing struggle—how to stay relevant with the latest technology, while proving the support and scale enterprise customers demand.

Attempting to break free of this paradigm, Lenovo, a leader in IT technology, is taking a different approach by embracing SDS technology at the center of its portfolio. The abstraction layer that SDS technologies offers allows Lenovo the ability to select best-of-breed storage offerings and quickly deploy integrated and validated solutions on Lenovo's hardware. This strategy offers Lenovo the potential to more quickly adopt and integrate storage innovations as new technologies emerge. The result is a portfolio poised to be able to better address the needs of the modern business by quickly delivering powerful and cost-effective storage solutions.

Excitement for Software-defined Storage

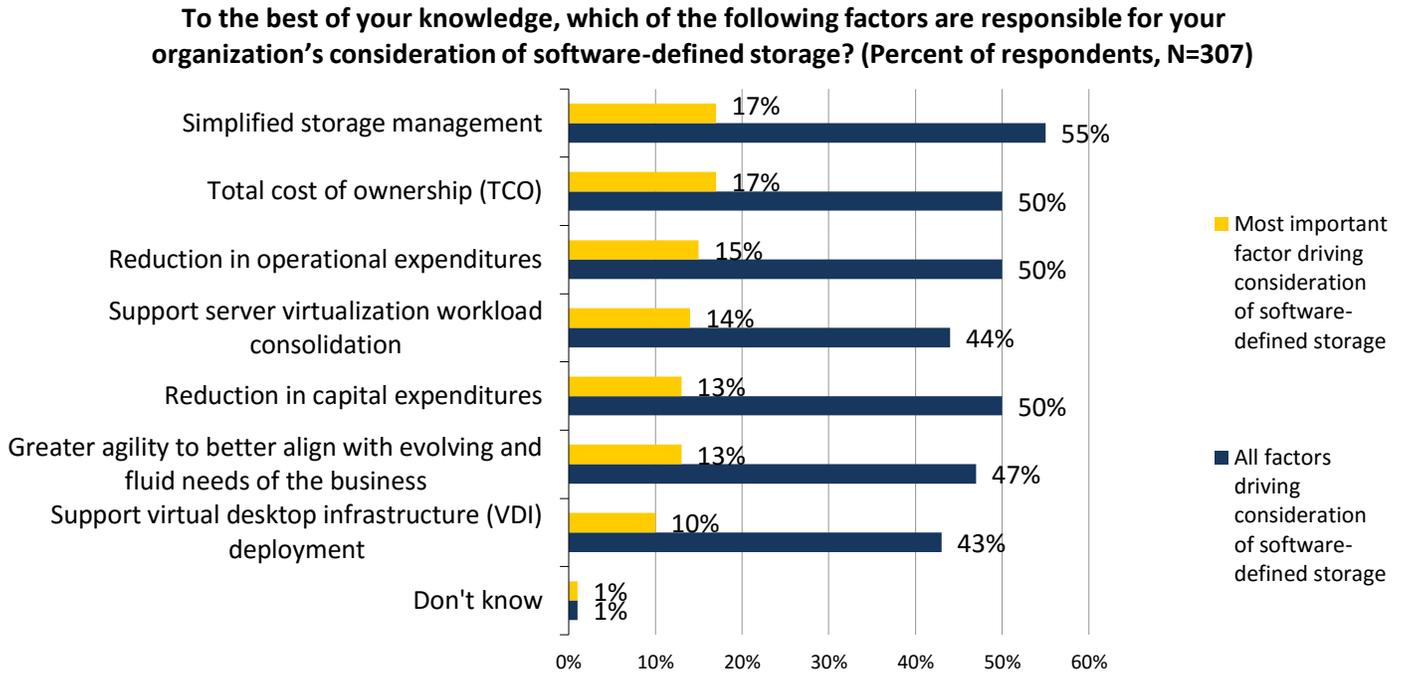
As part of ESG's research survey into storage industry trends, respondents were asked about their organizations' plans for SDS, which ESG defined as the abstraction of storage features and functionality from physical arrays to a centralized software layer. The interest in SDS technology among study participants was dramatic. A combined 60% of respondent organizations reported being committed to SDS as a long-term strategy, with one in five respondent organizations having actually begun their implementations (see Figure 1).

¹ Source: ESG Research Report, [2016 IT Spending Intentions Survey](#), February 2016.

² Source: ESG Research Report, [2015 Data Storage Market Trends](#), October 2015.

When study participants were asked to identify the drivers for their consideration of SDS technology, more than half (55%) of current and potential users identified simplified storage management as a factor in the decision to consider SDS (see Figure 1). There is, however, also a clear economic element to SDS as evidenced by the fact that nearly half of current and potential users cited TCO (17%), reduced operational expenditures (15%), or reduced capital expenditures (13%) as the most important factor driving SDS consideration.³

Figure 1. Factors Responsible for Organizations’ Consideration of Software-defined Storage



Source: Enterprise Strategy Group, 2016

The ability of SDS technology to deliver the cost benefits identified in Figure 1 stems from its ability to abstract the software from the underlying hardware. SDS technology allows the intelligence, management, and application access to remain persistent while the hardware layer evolves and changes. As a result, IT organizations are able to more easily integrate new hardware, becoming more agile in storage deployments, which offers a number of benefits including:

- **Access to new technology sooner:** SDS solutions often enable the ability to leverage server hardware, rather than proprietary storage hardware. Server offerings tend to update their hardware on a much faster cadence than traditional storage array offerings, sometimes as quickly as every nine months, versus what can be every three to four years for a traditional storage array. Leveraging software-defined architectures allows access to faster processing and memory technology components sooner, which reduces costs. The net result allows for hardware components in an SDS solution to ultimately become exchangeable, or in some cases disposable, making it easier to integrate new technology to increase performance for less cost.
- **Faster deployments:** Separating the hardware and software purchasing decisions can allow storage software purchases to be delayed until the capacity is actually required. When the capacity is needed, the software can be deployed on waiting hardware infrastructure, speeding up new deployments from weeks to hours or even minutes.

³ Source: ESG Research Report, [2015 Data Storage Market Trends](#), October 2015.

- **The elimination of hardware migrations:** Abstracting the software from the hardware enables the elimination of costly data migrations when transitioning to new hardware, since new hardware can often be incorporated directly in the solution as a single pool. This capability is crucial for massive capacity environments, such as scale-out object or file storage.
- **Reduced software management costs:** Traditional storage offerings tie storage software licenses to hardware versions. Upgrading the hardware can require all new software licenses to be purchased and managed; SDS solutions often eliminate this requirement.

Despite the advantages of SDS solutions, some organizations remain hesitant, because of their concerns over the added layer of complexity generated when procuring storage software and hardware separately. With traditional storage systems, the software and hardware are developed and validated together. When procured separately, there is a potential for unforeseen issues to occur as IT organizations integrate the two separate elements together. As part of its SDS strategy, Lenovo is delivering the benefits of SDS while eliminating this integration challenge by providing turnkey, tested, and factory-integrated appliances.

Lenovo: Seeking to Revolutionize Storage Economics with SDS

In a similar fashion to the way in which SDS architectures offer IT organizations greater agility in hardware choice, SDS offers storage vendors similar flexibility in portfolio design. For storage providers that offer integrated storage solutions, which deliver hardware and software together as a single package, there is a cost or lock-in associated with that design. By designing the hardware and software together, vendors often inhibit their ability to pivot and integrate new hardware options when they arise. Examples of this include the way in which traditional storage vendors encountered some transition pains in response to the rise of all-flash arrays. Additionally, new storage software innovations continue to emerge. Overinvestment in one model can limit the ability to offer another as part of the portfolio.

By building a strategy around SDS, however, Lenovo believes it can avoid this lock-in. With no incumbent storage portfolio to protect, Lenovo's strategy seeks to streamline the delivery of storage solutions and pass the internal cost savings on to the customer, further reducing the capital costs of storage. The efficiency in the Lenovo strategy stems from two key aspects:

- **The ability to select, integrate, and offer best-of-breed SDS solutions:** For at least the near term, Lenovo is working with SDS partners to deliver the storage intelligence for their solutions. This model allows Lenovo to select best-of-breed storage providers without spending the extra cost necessary to reinvent the storage intelligence and management layer. Lenovo is able to focus its attention on driving an aggressive hardware roadmap. If new vendors emerge with compelling solutions, Lenovo's model allows it the ability to quickly add those technologies into its portfolio.
- **Integrated and validated solutions that pass the benefits of SDS on to the customer:** IT organizations not yet ready to take on the responsibility of integrating separately procured storage software and hardware can rely on Lenovo's validation efforts. Additionally, Lenovo provides a single point of contact for service and support, removing the complexity of dealing with two separate support organizations, one for the hardware and one for the software.

These elements are key components of Lenovo's core storage strategy that centers on the following three major tenets:

- **TCO@Scale:** Reducing the total cost of ownership of IT or storage infrastructure is ineffective if it does not maintain the savings as capacities scale. A low cost solution that can't scale will not be low cost for long. By embracing SDS, Lenovo's storage portfolio is designed to minimize TCO as capacities scale over time.
- **TRUST, Implement with Confidence:** When storage administrators were asked to identify the most important criteria when selecting a storage vendor or solution, the most popular response was service and support. For all the value SDS solutions provide, having a trusted partner and single voice for service and support is paramount.
- **Simplicity, Management without Complexity:** As data capacities and workload demands increase, increasing simplicity and reducing the number of administrators required to manage the storage infrastructure directly translates into operational cost savings. In ESG's IT Spending Intentions research, staffing was found to consume the largest share of IT budgets, at 28%, ten percentage points more than the second highest contributor, IT hardware.⁴

As part of this storage strategy, Lenovo already has two solutions available. These include the Lenovo Storage DX8200N solution powered by Nexenta's NexentaStor and the Lenovo Storage DX8200C, powered by Cloudian. While these two products offer significant coverage to address a variety of storage needs for a variety of workloads, the model that Lenovo has put into place enables new technologies to be adopted and integrated easily as new innovations emerge and demands arise.

Lenovo has many perceived benefits with its SDS-based strategy. While it is still too early to tout its long-term effectiveness, much of the success of the strategy will result in Lenovo's ability to select the right partners and effectively differentiate the solutions from competitive offers. In truth, the jury is still out on where a model heavily dependent on SDS and partnerships can compete versus the integrated product development approach of designing the software with the hardware. However, one trend that is in favor of Lenovo's strategy is that the rate of IT innovation seems to only be increasing. A strategy that offers the flexibility to leverage and deliver the best-of-breed innovations rather than locking users into a specific architecture has a strong potential of delivering success. Lenovo's decision to retain the flexibility to select emerging technologies and integrate those innovations into its portfolio offers Lenovo a chance to stay in lock step with the rate of innovation rather than risk being left behind.

The Bigger Truth

The enterprise storage technology landscape is very different today than it was just a few short years ago. The rise of the public cloud, solid-state (flash) storage, hyperconverged, and software-defined storage have all radically changed the technology marketplace from the traditional storage systems of the past. The current state of storage products is most certainly not its final state. New innovations are always just over the horizon. A perfect example is that many in the industry are already talking about the potential of persistent memory technologies. By embracing SDS, Lenovo is able to maintain a position where it can target new innovations as they emerge, while simultaneously delivering on its three strategic pillars of reducing TCO at scale, increasing resiliency, and enabling simplicity. The increased rate of storage innovation is great news for IT organizations seeking new technologies to help reduce the cost and complexity of managing ever-increasing capacity levels. For storage providers, however, the constant evolution can be a burden, never allowing them to be sure which technology warrants heavy investment. In this era of rampant innovation, Lenovo's approach offers interesting potential to ensure that the company stays at the forefront of the storage technology evolution.

⁴ Source: ESG Research Report, [2016 IT Spending Intentions Survey](#), February 2016.

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