

## Solution Showcase

# Lenovo ThinkSystem DS6200: Accessible All-flash Storage

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### Abstract:

As businesses become more digitally dependent, they require increasing amounts of data to grow. This increases the pressure on IT as budgets often fail to keep pace with demands. This in turn forces firms to redirect resources from other projects, inhibiting the very business growth that IT was intended to enable. New innovations offer solutions, but can come with high price tags that limit their accessibility to only the largest firms with the largest budgets. Lenovo, a leader in IT, understands that smaller businesses deal with the same data challenges without the luxury of hefty budgets. As a result, Lenovo provides transformative all-flash storage to those organizations without the budgets of the Fortune 500.

### Overview

Data is everywhere. It has altered how we communicate, how we gather information, and, probably most importantly, how we conduct business. As more firms become digitally dependent, data accessibility becomes a key determinant of business success. The pressure being placed on IT organizations is increasing at a rapid pace. As demands increase, organizations' response is often to add more systems and scale the hardware to meet the demand. While this process can work to a point, given the rate at which demands are increasing, simply scaling hardware is a losing battle.

Keeping pace in this data-centric world requires leveraging the latest innovations, such as all-flash storage. When it was first introduced, flash technology came at a premium. At first glance, it can still appear that flash is a premium system, something designed for large enterprises with high performance needs. This, however, is not the case. The benefits of flash are so transformative they extend well beyond performance and can reduce the overall cost of infrastructure by delivering the necessary performance more efficiently and at less cost. Accessing these benefits, however, has historically required high upfront capital costs, as all flash systems can have substantial price tags. In response, some IT leaders, such as Lenovo, are innovating to leverage the latest in flash component cost declines to eliminate the barriers to accessing flash technology. The latest example is the Lenovo ThinkSystem DS6200 AFA.

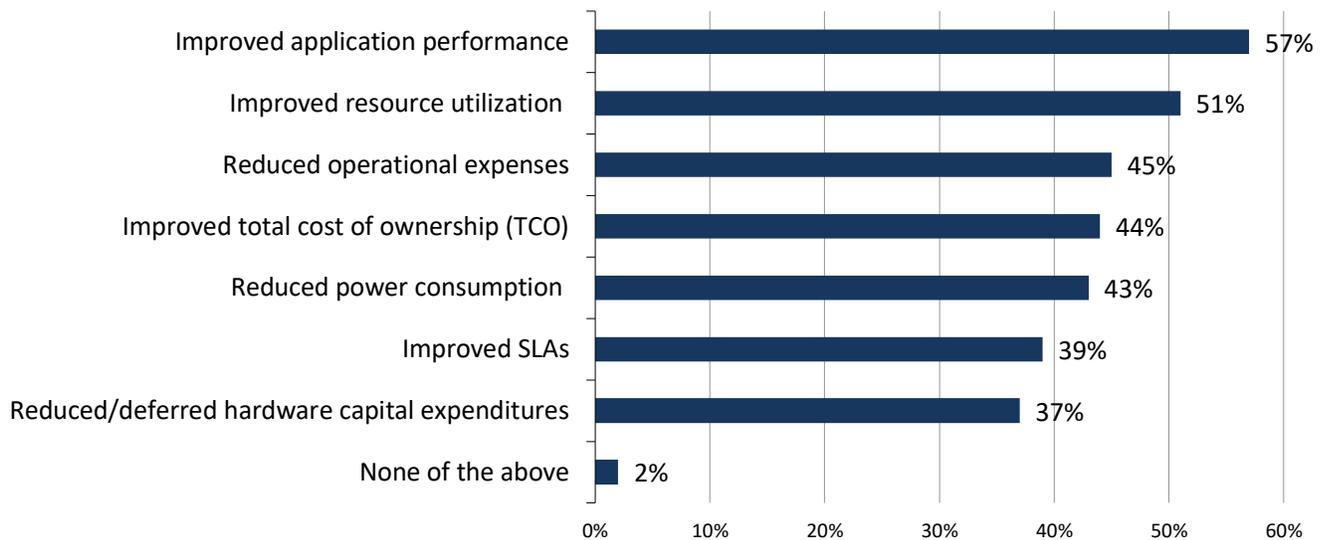
## The Rise of a Flash-enabled World

To better understand the impact of flash storage, ESG surveyed 373 IT decision makers responsible for their organizations' data storage infrastructures in 2015. As part of this study, 49% of participants indicated that their organizations were already leveraging solid-state, or flash, technology, with an additional 20% expecting to deploy it in the next 12 months.<sup>1</sup>

When participants were then asked to identify the benefits that their organizations realized after deploying solid-state (Figure 1), the most popular response provided, not surprisingly, was improved performance. The remainder of the top four most common responses, however, all reveal a more extensive set of benefits, which likely result from improving the efficiency of the data path within the IT ecosystem. These include improved resource utilization, reduced operational expenses, and reduced total cost of ownership. In other words, after deploying flash storage, organizations are enjoying a more efficient IT ecosystem, which reduces the cost of operations and eases the burden on a likely overworked IT staff.

**FIGURE 1. Benefits Realized as a Result of Deploying Solid-state Storage**

**Which of the following benefits has your organization realized as the result of deploying solid-state storage technology? (Percent of respondents, N=181, multiple responses accepted)**



Source: Enterprise Strategy Group, 2017

With 44% of storage leaders indicating that their organizations realized improved TCO after deploying flash storage, a strong case could be made that the cost of flash storage was already well within reason. As an added bonus for IT organizations, the cost of flash storage components has also experienced a substantial decrease over recent years. One IT leader, Lenovo, is leveraging those component savings to deliver the benefits of flash to a broader range of IT organizations and workloads.

## The Lenovo ThinkSystem DS6200 AFA

Lenovo, a global leader in IT technology, recently announced an all-flash offering in its ThinkSystem DS series storage offerings. Lenovo is an end-to-end data center technology provider. Its ThinkSystem portfolio covers server, networking, and storage technologies, all validated and delivered with a single point of service and support.

<sup>1</sup> Source: ESG Research Report, [2015 Data Storage Market Trends](#), October 2015. All ESG research references and charts in this solution showcase have been taken from this report.

The ThinkSystem DS6200 AFA is one of the latest offerings to be part of Lenovo's DS Series portfolio. The ThinkSystem DS portfolio offers a variety of SAN storage options targeting entry-level deployments, as well as larger and high performing implementations. At a high level, the goal of Lenovo's architecture is to drive down the effective cost of storage capabilities. The technology architecture features an upgradable design, allowing the infrastructure to be modernized when demands change without requiring a full rip and replacement of the system. Offerings in the portfolio feature multi-protocol support and integration of Lenovo XClarity Administrator infrastructure management platform. With XClarity, admins define and control hardware infrastructure from a variety of interfaces, including its web-based graphical user interface, an XClarity mobile app, and external IT applications that leverage Lenovo's representational state transfer (REST) application programming interfaces (APIs) or Lenovo's XClarity Integrator software plugins. The resulting common management architecture can significantly reduce the cost of training when adding new systems.

The ThinkSystem DS6200 AFA is an all-flash offering targeted at higher performing or transaction workloads. The system's accessible price point, however, makes the benefits of all-flash accessible to lower tier workloads as well. In addition to delivering the benefits of the ThinkSystem storage portfolio, the ThinkSystem DS6200 AFA provides several key benefits, including:

- **Transformational performance** The ESG lab validation team was able to verify that the DS6200 AFA provides up to 399,273 IOPS and 6.287 GB/sec of throughput along with sub-millisecond I/O response times that are up to 20 times faster than a traditional hard drive. At this level, the ThinkSystem DS6200 AFA can serve some of the more demanding database and transactional workloads, while staying within the budget of many smaller-sized firms or departments.
- **Resiliency for business-critical workloads:** Regardless of a firm's size, there is an ever-present need for data resiliency and availability. Lenovo claims the ThinkSystem DS6200 AFA delivers five 9s availability. This level of resiliency is predicated upon a number of ThinkSystem DS6200 features designed to ensure that data remains available. In addition to the active-active controller architecture and asynchronous replication, the ThinkSystem DS6200 features a rapid rebuild capability where the logical data volume is spread across multiple RAID sets. During rebuild operations, only a fraction of disk operations are impacted. As a result, volumes can become fault-tolerant more quickly. ESG's engineers were able to verify Lenovo's fault tolerance during a recent validation exercise, where the ThinkSystem DS6200 maintained 350K IOPs during a triple error injection of SSD, power supply, and controller faults.
- **A single enterprise owner of service and support:** The storage technology, however, is only one element of the data center ecosystem. Supporting the data requirements of applications requires a server, networking, and storage technology working in concert. Lenovo's ThinkSystem portfolio extends beyond storage to deliver a complete ecosystem that features a single source of design, validation, service, and support. Regardless of the architecture, a single trusted partner can deliver an added level of resiliency thanks to increased validation, faster diagnosis, and faster recovery if an issue does occur. As data center demands change and evolve, a single partner that can deliver an end-to-end solution, like Lenovo, ultimately increases the availability of the entire ecosystem.

### ThinkSystem DS6200 AFA

- 0.2ms at 38K IOPS
- 300K IOPS @ 1ms latency
- Designed for 99.999% Availability
- Battery-free Cache Protection
- Rapid RAID Rebuild
- Rebalancing
- Large LUNs
- Thin Provisioning
- Snapshots
- Synchronous Caching
- Asynchronous Replication (optional)

The performance potential of all-flash storage creates a natural affinity with the highest performing and most demanding workloads. However, the cost-effective design of the ThinkSystem DS6200 AFA broadens its applicability. When combined with the simplicity that Lenovo has architected in its environment, the ThinkSystem DS6200 can be an option for smaller organizations, as well as branch office or departmental deployments. In other words, the ThinkSystem DS6200 AFA dramatically opens up the benefits of flash to a wider variety of workloads, all of which can benefit from the improved performance and other capabilities that flash offers.

## The Bigger Truth

For decades, the spinning disk has been something of an anomaly as the lone mechanical component in the data path. Spinning disk still has its place in the data center, but as flash storage prices continue to decrease, that place is becoming smaller and smaller. ESG's research into the impacts of flash storage reveal a key message: when it comes to the benefits of flash, performance is just one of many. This makes sense—when you remove the spinning mechanical bottleneck from a system, the entire environment becomes more efficient, better utilized, and more resilient. This means that not only do applications perform better, but also the infrastructure can meet the demands of the workload in a more efficient and cost-effective manner. While ESG's research study reveals that 44% of storage decision makers indicated that they realized TCO savings from flash storage, there has historically been a price hurdle at the initial deployment to access those benefits. Lenovo is one of the leaders eliminating this barrier to flash adoption. The ThinkSystem DS6200 AFA is making flash storage accessible to the workloads or organizations where the math might have previously not worked out. At these levels of price for performance, the excuses for not deploying flash storage are fading fast.

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