PeerPaper Report

Best Practices: All-Flash Storage for Your Intelligent Data Platform

Based on Real User Experiences with HPE Nimble Storage

ABSTRACT

Calling today's all-flash arrays "storage" is really a bit of a misnomer. Storage connotes passivity and serving as a static repository. Today's all-flash storage for business-critical workloads is an essential element of your intelligent data strategy. It enables you to use data to drive growth, profitable operations and strategic decision making. All-flash storage fulfills these objectives with focused management and the application of best practices. This paper discusses the best practices that help get all-flash storage arrays to work optimally. It features insights based on real user experiences with HPE Nimble Storage as published on IT Central Station.

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INTRODUCTION

Storage is more than just storage. Today's all-flash storage arrays serve as a key element of the intelligent data platform—a construct that brings together hardware, software and data to yield transformative business insights and data-driven operations. Advanced all-flash storage enables you leverage data for strategic advantage. All-flash storage supports this goal through focused management and the application of best practices. This paper discusses the best practices that help get all-flash storage arrays to work optimally. It features insights based on real user experiences with HPE Nimble Storage as published on IT Central Station.

Overview: Storage As the Basis of an Intelligent Data Platform

IT organizations have embraced all-flash storage and are now moving toward finding the most innovative and business-oriented uses of the technology. Originally, speed was the main attraction of flash. Now, as solutions have grown more sophisticated, storage managers and business stakeholders are putting flash to work in advanced data management workloads. Properly managed storage makes data available quickly and reliably. As part of an intelligent data platform, all-flash storage supports applications, virtual machines, databases—any IT element that enables a business to take maximum advantage of data.

All-Flash Storage Use Cases

IT Central Station members are using all-flash storage arrays in a broad range of use cases, most of them in support of business-critical applications. For example, a law firm's Technical Architect primarily uses HPE Nimble Storage as a central Storage Area Network (SAN) for all of his firm's production and test data. He explained, "It's fairly fundamental to our business. As a law firm, we have vast amounts of data that have to be incredibly secure. It underpins the delivery of all of our services."

A Senior Network Administrator at a small university uses the solution to host all of their databases for all of their servers. He shared, "It hosts the servers themselves and our GFS retention jobs. It hosts everything that is critical for our business."

Virtualization workloads were a prominent use case for a Vice President Tech Operations at a real estate/law firm with more than 500 employees. He said, "Our Nimble unit serves our corporate storage infrastructure, all running VMware on top of it. It's primarily VDI [Virtual Desktop Infrastructure] file storage and the virtual environment itself." Similarly, a Director of IT at a mid-sized construction company said, "We use Nimble to virtualize all of our applications. For the hypervisor we use VMware. We use Nimble for the storage platform for the hypervisor." Figure 1 captures this diversity of use cases.
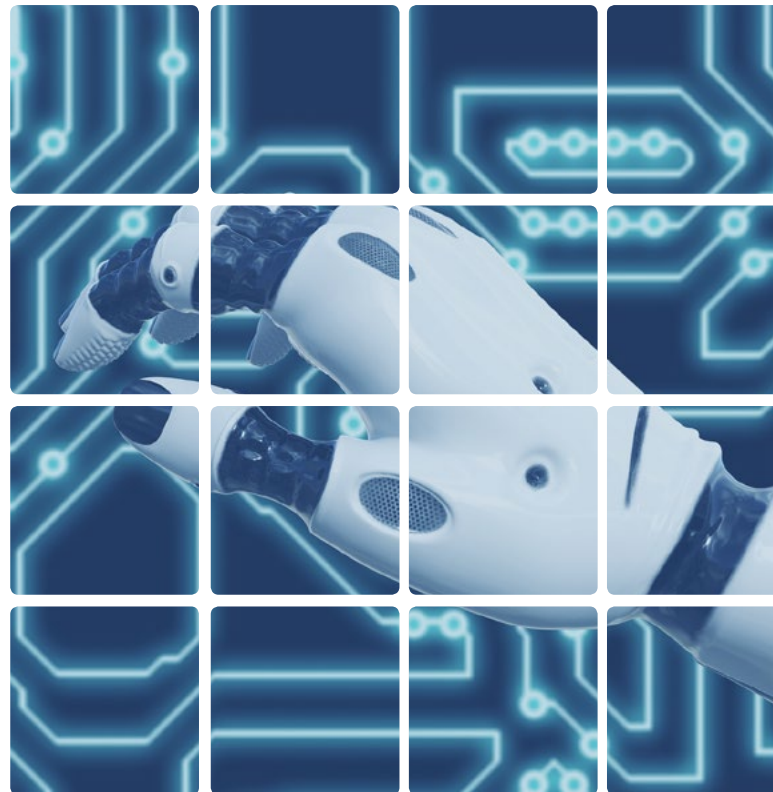
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It's fairly fundamental to our business. As a law firm, we have vast amounts of data that have to be incredibly secure. It underpins the delivery of all of our services.

Other use cases for HPE Nimble Storage described on IT Central Station include:

- "On our website, there are many different business-critical things running." - Infrastructure Engineer at a tech vendor with over 200 employees

- "We use Nimble for business-critical applications such as accounting, our in-house EPS platforms." - Head of Infrastructure and Operations at a wholesaler/distributor with more than 1,000 employees

- "The primary use case is production storage. We run ERP applications, as an example, of our business-critical applications." - IT Manager at a small tech vendor

- "Our primary use of this solution is to host business-critical applications in the cloud for customers."- Operations Manager at a small tech services company

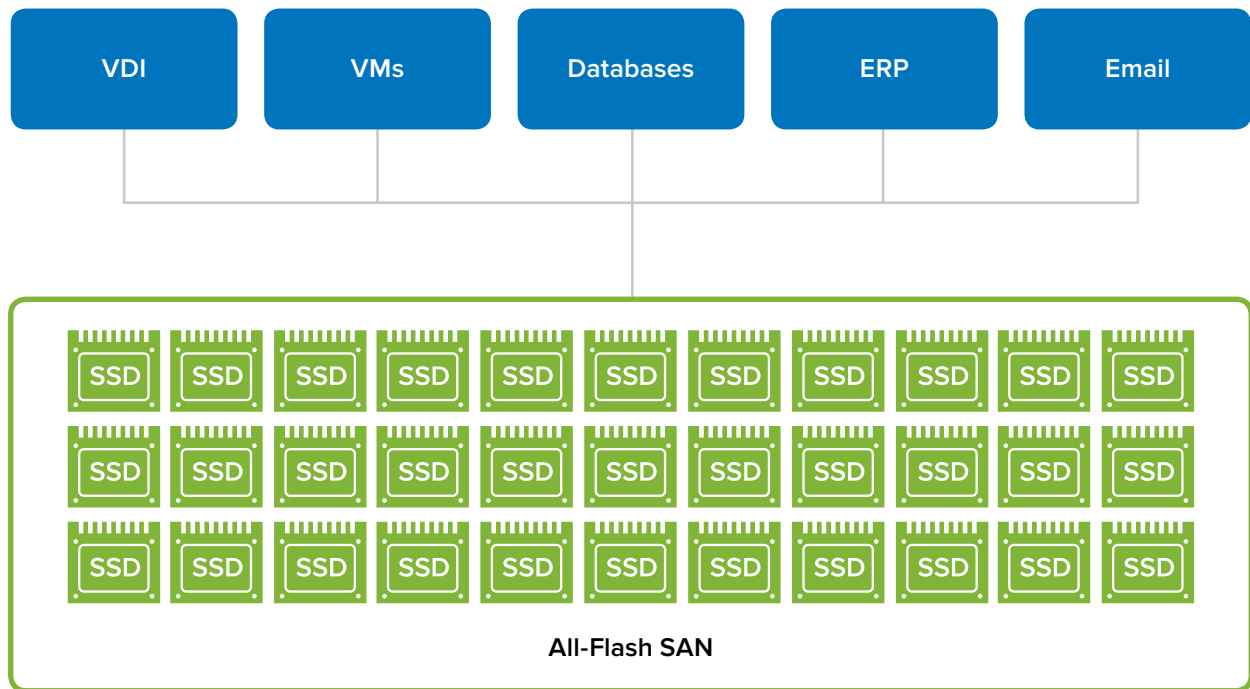| VDI | VMs | Databases | ERP | Email |

All-Flash SAN

Figure 1 - All-Flash Arrays can form a Storage Area Network (SAN) that supports multiple business critical applications

Best Practices for All-Flash Storage as Part of an Intelligent Data Platform

Users of HPE Nimble Storage are gleaning best practices for all-flash storage used in an intelligent data platform. These include striving for high performance and maximum uptime yet adhering to simplicity as a guiding principle. It means positioning storage for growth. At the same time, users recommend positioning storage capacity efficiency. Users are also finding Artificial Intelligence (AI) capabilities in storage management to be quite useful in building the kind of intelligent platform their businesses need.

Seek and Leverage Simplicity

Selecting a storage solution that's simple to set up and manage is a best practice in all flash storage management. HPE Nimble Storage received a number of plaudits on IT Central Station in this regard. For example, a President of a tech services company noted, "They do a good job of helping people do storage in a very simple way."

In terms of implementation, a Sr. VP at a financial services firm explained, "The setup was very, very simple. When we got our AF5000, no kidding, we had it up in production within two hours. If we were to take the similar setup, with the EMC VMAX, it took us over three months. Big difference."

A Consulting Engineer at an energy/utilities company with over 5,000 employees echoed this sentiment, commenting, "The setup was approximately an hour-long process, almost like a one-button process. It was just so easy. Compared to most things that I have ever installed, it was

simple and amazingly easy." He then shared, "I have added expansion shelves on several of them. It is simple to do. You plug it in, you attach two cables, then you press one button, like 'Add', and that is all you have to do, which is wonderful."

Management and support should also be simple, according to users of HPE Nimble Storage. To this point, the Director Of IT at the construction company offered, "From a supportability standpoint, it's a lot simpler. The Nimble people seem to detect when things have problems before we report that there's an issue." A Product Manager at a small tech services company said, "It's a fairly simple-to-manage platform. We had a situation in the past where we had more storage platforms than we had storage engineers. We've managed to cut that down, which is good."

Leverage AI for Management and Predictive Problem Solving

The data center, including its storage components, has grown sufficiently complex that human monitoring alone is seldom able to stay on top of all issues—or predict impending problems that could affect system performance and availability. HPE Nimble Storage users commented on the abilities of HPE InfoSight, which is paired with HPE Nimble Storage to provide AI-based analytics of data center operations. For instance, according to the Director of IT at the construction company, "InfoSight provides real-time reporting." He added, "It gives you information about your different volumes, how the arrays are being used, I/O, performance in general."

For the Senior Systems Engineer, the value of HPE InfoSight was its ability to get servers back up faster. He said, "We have instant recovery. We are able to access that fast storage within seconds, which is very helpful. It enabled us to get service back up in a minute and a half." The Solutions Engineer at the small tech company noted, "Infosight has been very valuable with determining upgrade requirements, bottlenecks, etc. The latest update to the site now allows Per-VM monitoring within the Virtual Infrastructure now too."

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[Setup] was just so easy. Compared to most things that I have ever installed, it was simple and amazingly easy.

HPE InfoSight can provide predictive analytics, a variant of AI that looks at past data to make predictions about future events. Comments on HPE InfoSight's predictive capabilities included:

- "It lets us see what we might have to prepare for in the future." - IT Assistant at a construction company with over 50 employees

- "We use InfoSight predictive analytics. It helps us from a performance perspective by identifying potential bottlenecks." - IT Manager at a tech vendor with over 200 employees

- "InfoSight automatically predicted or resolved problems in your environment. It has given us insights with respect to our VM using more resources than we thought." - IT Manager at a consultancy with more than 500 employees

- "We are able to see where the most IOPS are located, etc. Therefore, we are able to prevent and predict where things are going well or badly." - Sr Manager, Computing at a manufacturing company with more than 10,000 employees

Best Practices: All-Flash Storage for Your Intelligent Data Platform

Strive for the Highest Performance

Performance still counts, even as users seek more sophisticated storage functionality. An Infrastructure Engineer at a tech vendor noted, "We migrated from a hybrid cloud to an all-flash. We have seen our average latency go from four milliseconds to point four. Therefore, we are getting 10 times better performance down to the end user on everything. We have seen an increase in our IOPS by ten times." He also pointed out that "performance per dollar, when we looked at it, was the highest that we could get for what we needed." The Sr. VP at the financial services firm saw 20-to-one performance compared to their traditional legacy stack, the EMC VMAX 10K.

A Solutions Engineer at a small tech company shared, "These arrays perform very well and have allowed us to move many physical servers to virtual and run them from the Nimble arrays without any performance impact and there is

actual performance improvement." His use case involves a document management system. For the Director of IT at the construction company, it was all about application performance and database performance. As he put it, "If you're running Exchange environments, SQL environments, if you're doing that type of stuff, then Nimble is a good match for that type of workload."

Aim for Maximum Uptime

Another best practice is to select all-flash storage with demonstrable uptime. It makes sense, given the critical nature of the applications being supported. This was what a Solution Architect at a small tech services company found with HPE Nimble Storage. He said, "The stability of the solution is fantastic. The uptime is great." The university Senior Network Administrator added, "We have never had any critical failures with it. It is always up. Every time a single component is broken, it has been repaired within 24 hours."
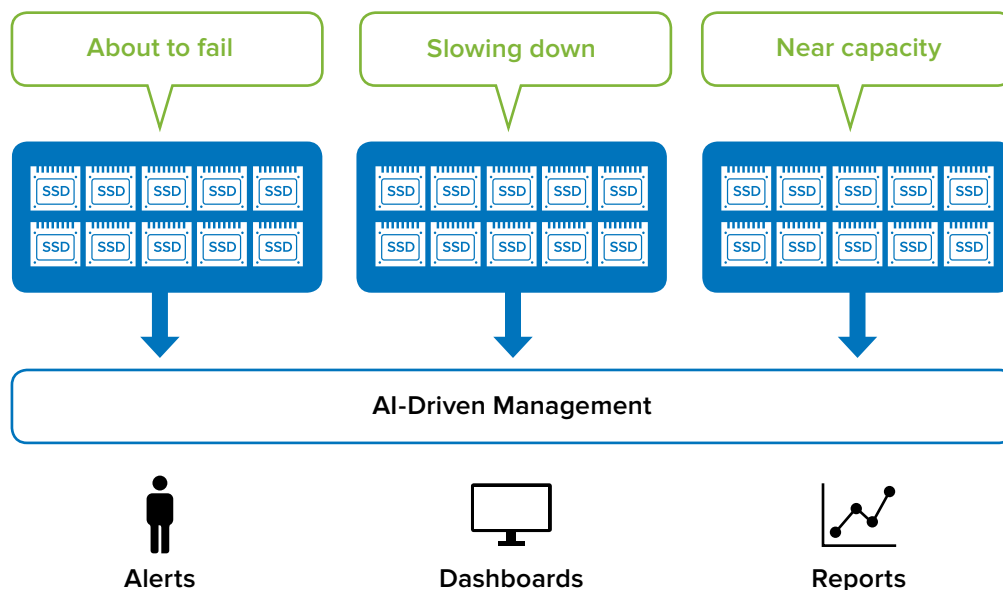

Figure 2 - AI-driven management can monitor events in storage and predict problems before they occur

IT Central Station members shared that they experienced nearly perfect uptime with HPE Nimble Storage:

- "Uptime has been a [100 percent](#) in our environment." - Infrastructure Engineer at a tech vendor with over 200 employees

- "The solution's uptime is fantastic. It's [100 percent](#)." Head of Infrastructure and Operations at a wholesaler/distributor with more than 1,000 employees

- "It has been rock solid, [100 percent on time](#), and we have never had any issues with it." - Senior Systems Engineer

Position Storage for Growth

Storage never stands still. As companies grow, so do their storage needs. Thus, as a practice, it's wise to anticipate storage growth. As the university Senior Network Administrator put it, "I don't think we are even utilizing 50 percent of the all-flash. We intentionally bought that [anticipating growth](#)." Deduplication aids in achieving this goal, as the Infrastructure Engineer at the tech vendor revealed. He said, "The [deduplication](#) of all-flash enables you to grow without having to actually grow the storage. That piece of the all-flash enables you to really grow, not having to keep growing in the racks."

An IT Manager at a small tech vendor praised HPE Nimble Storage because it [positions his organization for growth](#). He also noted, "Our last solution did not." The President at the small tech services company put it like this: "If you are somebody who is trying to [grow a virtualization implementation](#) of some sort, and you just need storage which keeps growing, that is where it should go."

Seek Storage Capacity Efficiency

Storing data at the highest level of efficiency is an established best practice for storage managers. The goal is to store as much data as possible in the least amount of space—without negatively affecting performance. HPE Nimble Storage users on IT Central Station underscored the importance of the practice when it came to selecting an all-flash array. The Solution Architect said, "The solution's [storage capacity efficiency](#) is as good as anyone else's that I have seen." A Director of Hosting Operations at a tech vendor further commented, "The storage [capacity efficiency](#) is very good."

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> ## It has been rock solid, 100 percent on time, and we have never had any issues with it.

Other remarks on this topic included:

- "The storage capacity efficiency is [phenomenal](#). It is off the charts in comparison to the compression ratios that we got before. We are able to save a lot more to the device." - Senior Network Administrator at a university

- "A reliable solution that [improves efficiency](#) and reduces the burden on our database team." - Service Manager at a logistics company with more than 1,000 employees

- "The solution's storage [capacity efficiency](#) is good. The new solution is doing deduplication now, as well as compression." - IT Manager at a tech vendor with over 200 employees

- "The solution's storage [capacity efficiency](#) is good." - Head of IT at a tech vendor

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- "Nimble's storage capacity efficiency is very effective." - Head of Infrastructure and Operations at a wholesaler/distributor with more than 1,000 employees

- "Storage capacity efficiency is very fitting for our company and our usage." - IT Manager at a consultancy with more than 500 employees

Architect for Improved Throughput

Data throughput plays a role in the way the overall intelligent data platform functions. If throughput is slow, the platform's overall performance degrades. HPE Nimble Storage users like the Solutions Engineer at the small tech company therefore made suggestions like, "When selecting a vendor make sure to validate with the vendor that the throughput is enough."

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The solution has improved our throughput, because when we move large data it is just that much faster.

The Solution Architect felt "the solution has increased our throughput." Other users shared that HPE Nimble Storage stabilized or improved throughput, resulting in less downtime for applications and keeping applications responsive. Ultimately, it's about moving data to end users. To this point, an Infrastructure Engineer at a mid-sized tech vendor said, "The solution has improved our throughput, because when we move large data it is just that much faster."

HPE Nimble Storage adaptability in throughput comes from its design. As the Director of IT at the construction company explained, "If we need higher capacity or throughput, we can just

replace controllers, we don't have to replace or forklift-upgrade the whole chassis." Alternatively, the university Senior Network Administrator commented, "It has improved the throughput because of how the device interconnects with our network. It has 10 gig connections to the network and also multiple 8 gig connections through our Brocade switches back to the server farm. From just the sheer number of connections that it makes onto the network and devices, the throughput is staggering."

Put Storage to Work in Server Back Up

The intelligent data platform is indispensable for businesses that rely on it. Thus, rigorous backup is a best practice with all-flash storage. Though use of all-flash for backup is not a new practice, the nuances of how a particular solution handles the workload are important. Efficient use of storage in backups helps achieve the goals of the best practice. As the university Senior Network Administrator explained, "On some of our backup jobs, we are getting a dedupe rate of 11 to 13 times. Nimble is taking up a minuscule amount of actual raw storage for backups, etc." This user also shared that HPE Nimble Storage replaced on-premises bare metal servers, which they were backing up with tape.

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We can restore from backups more quickly with the Nimble system than anything else.

The Senior Systems Engineer praised Nimble in the backup role by saying, "We can restore from backups more quickly with the Nimble system than anything else." He added, "Move your stuff. Send backups to it. Send it over across the

wire to a DR. Everything just works, and that is what we want." Integrations are relevant in this context, too, as the Solutions Engineer at the small tech company revealed. He was pleased that HPE Nimble Storage offered Veeam Backup integration. He added, "Veeam is the defacto standard for backing up of virtual environments." Similarly, the Consulting Engineer at the energy/ utilities company said that HPE Nimble Storage is "a destination for some Commvault backups and replications."

An IT Infrastructure Manager at an insurance company with more than 10,000 employees spoke to the use of AI in backups by saying, "InfoSight has allowed us to centralize our management, understanding how it correlates to the array. It has identified a network issue in the network configuration of ESXi hosts. It enables us to get servers back up faster by 25 percent.

CONCLUSION

IT Central Station members are putting advanced flash storage to work in building intelligent data platforms. Each of their organizations has its own unique path to this goal. However, as they share their best practices and recommendations for HPE Nimble Storage, common themes emerge. Simplicity in deployment and management is an essential quality to seek. High performance and maximum uptime are required for an effective storage solution in this sophisticated corporate context. Being able to grow is also necessary, as are high rates of throughput and capacity efficiency. AI-driven management, with predictive capabilities, help it all function more reliably. It is possible to build an intelligent data platform on a foundation of all-flash storage. These best practices facilitate the realization of the vision.

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