

# The Business Value of VMware vSAN Storage for Hyperconverged Infrastructure



**Carol Sliwa**  
Research Director,  
Infrastructure Systems,  
Platforms and Technologies Group, IDC



**Matthew Marden**  
Research Vice President,  
Business Value Strategy Practice, IDC



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## BUSINESS VALUE HIGHLIGHTS

Click any link and look for the ► symbol on the corresponding page. Use the Return to Highlights button to return this page.

**365%**  
three-year ROI

**6 month**  
payback on investment

**28%**  
less storage costs  
hardware/resources

**42%**  
more efficient storage  
infrastructure teams

**30%**  
less annualized operation cost

**77%**  
faster new storage  
deployment

**96%**  
less unplanned downtime

**\$6.67 million**  
higher annual revenue  
per organization

## Executive Summary

Hyperconverged infrastructure (HCI) systems have become a popular alternative to traditional three-tier IT architectures with discrete compute, storage, and networking resources. Consolidated HCI can reduce the complexity of provisioning, operating, and managing infrastructure; minimize the need for enterprise storage specialists; and increase savings on industry-standard hardware. Most HCI software offers the flexibility to run on premises and in public cloud environments, making it suitable for enterprises using a hybrid cloud approach to data storage infrastructure. IDC surveys show that enterprises now deploy HCI systems for a broad spectrum of use cases, from mission-critical workloads in core data centers to remote office/branch office (ROBO) applications at edge sites.

IDC conducted in-depth interviews with organizations currently using software-defined VMware vSAN storage for hyperconverged infrastructure to understand the impact on storage costs, operations, and performance. Interviewed vSAN customers consistently described benefits such as reduced storage costs and staff time requirements and improved business outcomes as a result of establishing a simpler, more unified storage environment.

Based on these interviews, IDC calculated that study participants will realize value worth an annual average of **\$183,400 per 100 terabytes (TBs) (\$6.37 million per organization)** by:

- Optimizing storage costs as they reduce storage hardware and resource requirements through better, more efficient capacity use
- Reducing the burden on IT storage infrastructure and security teams as they establish more unified storage environments that are simpler to manage and can automate repeated patching and updates
- Ensuring greater storage agility to benefit development teams and other business stakeholders that rely on ready access to storage capacity
- Minimizing the impact of unplanned outages as they reduce the frequency and duration of business interruptions and poor performance
- Achieving better business results as they shift staff focus to customer-oriented activities and deliver new services and products faster to market

## Situation Overview

Organizations seeking to modernize their infrastructure with a hardware-consolidated approach have increased their use of consolidated hyperconverged infrastructure. HCI systems that combine storage, compute, and network virtualization technologies can ease IT infrastructure deployment and management, facilitate the consolidation of enterprise storage workloads and the datacenter footprint, and lower the costs of standard server hardware. Spending on hyperconverged systems increased at a compound annual growth rate (CAGR) of 10.3% from 2018 through 2023, while shipped storage capacity grew to 25.9 exabytes at a 39.4% CAGR. IDC expects the maturing HCI systems market to grow at a five-year CAGR of 6.6% through 2028, with spending on HCI appliance and rack-scale units increasing by a CAGR of 7.4% and HCI software on certified server hardware growing by a CAGR of 3.9%.

Hyperconverged storage systems can provide significant advantages, especially to organizations with IT staffing challenges. Consolidated HCI tends to be easier to deploy, operate, and manage than legacy storage arrays that may require special skill sets — enabling IT departments to reduce the provisioning time and personnel resources necessary to maintain their infrastructure. HCI systems can also be useful in remote and branch offices with limited staff. Organizations pursuing digital transformation initiatives that can span on-premises and public cloud environments find that software-driven HCI systems offer them greater flexibility and agility to respond to business demands in less time than in

the past. Enterprise developers building new cloud-native, container-based applications often prefer less complex storage infrastructure, and IDC survey data shows that many organizations run containerized production workloads on HCI.

Consolidated HCI deployments typically span core, edge, and cloud environments. IDC surveys show that many organizations have migrated one or more workloads from traditional SAN or NAS to consolidated HCI systems and run mission- and business-critical workloads on HCI systems in core datacenters. Consolidated HCI deployments are also rising at edge locations for use cases ranging from ROBO applications to analytics, AI, and Internet of Things workloads. Having compute and storage resources close to the data generation source eliminates the need to migrate large amounts of data to a core datacenter. HCI systems are also ideal for hybrid cloud approaches that most enterprises now take for data storage infrastructure. Most users connect their consolidated HCI clusters to the public cloud and can manage them through cloud-based consoles. IDC research shows that the top workloads running on HCI systems include content, email, collaboration, and business applications; structured and unstructured databases; business intelligence and analytics; and AI and machine learning.

# VMware vSAN Storage Virtualization Overview

A pioneering vendor of virtualization technology, VMware introduced software-defined Virtual SAN (later shortened to vSAN) storage in 2014 to pool hard disk drives and solid state drives (SSDs) within industry-standard servers. VMware built Virtual SAN into the vSphere kernel to create a high-performance, scalable data store that could provide a common operating model for compute and storage; reduce the complexity of provisioning and management in virtual environments; and lower the total cost of ownership. Policy-based management gives administrators the ability to set service levels based on application requirements. Integrating VMware vSphere and vSAN lets customers use data services and features such as replication, clones, snapshots, vSphere High Availability, Distributed Resource Scheduler, and vMotion. Deployment options for VMware vSAN include pre-validated ReadyNodes and appliances from various partners and server manufacturers and component-based hardware on VMware's compatibility list. Customers can start with a small vSAN configuration and expand it by adding nodes to a cluster or disks to a node.

During the last decade, VMware has made performance improvements and added various capabilities to enhance vSAN since its initial 5.5 release, which used the same number as

the latest vSphere version. In 2022, VMware implemented a major architectural change with the release of vSAN 8, introducing an Express Storage Architecture (ESA) option to exploit the latest high-performance compute, storage, and networking hardware. The company developed vSAN's Original Storage Architecture (OSA) when SAS/SATA spinning disks and flash drives were the norm, servers generally shipped with single-digit CPU cores, and network bandwidth topped out at 1 Gbps or 10 Gbps. VMware built the new ESA to take advantage of nonvolatile memory express–based PCIe SSDs that could increase throughput and lower latency; servers with at least 16 CPU cores per node; and networking gear starting at 10 Gbps.

One of the main distinctions between OSA and ESA is the number of storage tiers. OSA has a dedicated flash caching tier and a separate capacity tier with one to seven storage drives, with the host offering a maximum of five disk groups. The newer ESA is a single-tier architecture that eliminates the concept of disk groups and provides a pool of storage devices to increase capacity and performance. Underlying technological distinctions between ESA and OSA include a log-structured file system and log-structured object manager built on a new high-performance block engine and a key-value store. VMware restructured the data path to enable ESA-based vSAN to process more data simultaneously than OSA-based systems for modern workloads demanding high throughput.

In 2023, vSAN 8 Update 2 launched a new vSAN Max option (which the company renamed as vSAN storage clusters) to enable the independent scaling of disaggregated compute and storage resources in vSphere clusters in contrast to the traditional approach of expanding aggregated HCI resources in tandem at a fixed ratio. VMware added “HCI Mesh” capabilities in 2020 to enable compute clusters to mount a vSAN cluster's data store and facilitate cross-cluster capacity sharing between vSAN HCI clusters. The new vSAN storage clusters allow for complete disaggregation and provide resources to one or more compute-only vSphere clusters for greater flexibility and scalability. The ESA-based vSAN storage cluster distributed system enables organizations to start at four nodes and 80 TB per vSphere cluster and grow capacity to more than 8.5 PB in a 24-host configuration while preserving HCI benefits such as centralized, streamlined management through vCenter Server, incremental scaling, and the ability to use commodity hardware. VMware will continue to support traditional aggregated vSAN HCI and cross-cluster capacity sharing between vSAN HCI clusters in addition to providing a new disaggregated vSAN Max cluster alternative to address enterprise customers' diverse needs.

# The Business Value of VMware vSAN Storage Virtualization

## Study Demographics

IDC conducted in-depth interviews with eight organizations using VMware vSAN storage for hyperconverged infrastructure to gauge the impact on storage costs, operations, and business outcomes. The interviews facilitated an in-depth understanding of the quantitative and qualitative impacts of using VMware vSAN.

The VMware vSAN customers that participated in this study represent a diverse range of firmographics. Employee numbers range from 1,870 to 180,000, with an average of 32,796 employees and a median of 9,250, showcasing diverse business profiles. These organizations have an annual revenue of \$8.38 billion on average, with a median of \$7.19 billion. The study included participants from the United States (5), Australia, Canada, and the United Kingdom, spanning industry verticals such as retail (2), telecommunications (2), financial services, healthcare, manufacturing, and media. **Table 1** provides additional information.

**TABLE 1**  
**Demographics of Interviewed Organizations**

	Average	Median
Number of employees	32,796	9,250
Number of IT staff	799	625
Number of business applications	471	188
Annual revenue	\$8.38B	\$7.19B
Countries	United States (5), Australia, Canada, United Kingdom	
Industries	Retail (2), telecommunications (2), financial services, healthcare, manufacturing, media	

n = 8; Source: IDC Business Value In-Depth Interviews, September 2024

## Choice and Use of VMware vSAN Storage Virtualization Solutions

Organizations chose VMware vSAN to deliver storage that better meets the needs of their digital-based businesses. They considered VMware vSAN to be a modern, flexible solution that addresses their business needs by providing efficient and scalable storage — reducing their reliance on physical hardware and enabling a shift from traditional storage systems. They believed enhanced virtualization capabilities enabled them to leverage existing hardware more effectively, minimizing additional investment requirements. They also noted VMware vSAN's fit with their hybrid cloud strategies, accommodating varying levels of cloud adoption across different business areas.

### Study participants provided details of their organization's specific decision considerations:

#### **Part of infrastructure optimization to drive digital transformation:**

*"For our digital transformation journey, we needed to really optimize our infrastructure, so that's why we moved away from classic storage to the more network-based storage and a more efficient and scalable storage."*

#### **Leveraging virtualization capabilities to reduce hardware requirements:**

*"The driving force for selecting VMware vSAN was that we didn't want to keep investing in hardware and servers. We're in retail and not an IT business. We try to take advantage of VMware vSAN to optimize the hardware we had in place and to minimize buying hardware."*

#### **Storage solution for hybrid cloud:**

*"We're on a cloud journey ... so we needed a storage solution such as VMware vSAN that would help us support a hybrid cloud environment."*

#### **Simplifying and consolidating storage:**

*"We transitioned our entire VMware infrastructure to vSAN about two years ago to simplify and consolidate our storage ... We priced vSAN against traditional monolithic SANs and just decided that this was a better decision."*

As **Table 2** (next page) shows, the interviewed organizations reported that they support an average of 936 instances or nodes with VMware vSAN, with a median of 19, which demonstrates the range of deployment scales. They have an average of 3,476 usable terabytes of storage, with a median of 1,850 TB, supporting an average of 11,194 virtual machines (VMs) and a median of 4,000 VMs. VMware vSAN supports 79% of their revenue on average, with several organizations reporting up to 100%. They split their vSAN environments, with 78% on premises and 22% in the cloud, and have 54% structured data and 46% unstructured data. The organizations also reported that an average of 82% of their deployments use VMware vSAN OSA and 18% use VMware vSAN ESA, as they seek to optimize their storage environments by balancing cost, performance, and capabilities.



**TABLE 2**  
**Interviewed Organizations' Use of VMware vSAN**

	Average	Median
Number of VMware vSAN instances/nodes	936	19
Number of usable TBs	3,476	1,850
Number of VMs	11,194	4,000
Number of business applications	373	100
Percent of revenue supported	79%	100%

n = 8; Source: IDC Business Value In-Depth Interviews, September 2024

## Business Value and Quantified Benefits of VMware vSAN Storage Virtualization Solutions

Interviewed organizations using VMware vSAN reported significant cost, operational, and business benefits. They lowered their total cost of storage operations and increased staff efficiency by reducing support needs and enabling a single team to manage multiple storage assets. This integration has optimized costs and staff, eliminating the need for separate storage and VMware teams. These organizations also described how VMware vSAN provided greater agility in meeting application-specific needs, facilitating adaption to changing hardware and application requirements. Additionally, they tied improved storage performance, agility, and reliability with VMware vSAN to better business outcomes, including faster time to market.

### The interviewed VMware customers provided specific examples of what they achieved by using vSAN:

**Lowered overall cost of operations and enabled staff:**

*“VMware vSAN offers a lower total cost of ownership, not just in terms of money. It reduces support needs by allowing a single team to manage multiple storage assets rather than having separate teams... Additionally, the single console and management layer lowers license costs and makes previously unavailable storage usable.”*

**Improved costs, performance, and business outcomes:**

*“VMware vSAN has significantly impacted storage costs, upgrade costs, performance, agility, reliability, and business outcomes, including faster time to market. It also supports various workloads and application requirements effectively thanks to OSA and ESA.”*

**Optimized costs and staff:**

*“When storage is integrated into a broader ecosystem like VMware vSAN, costs decrease significantly. This efficiency comes from not needing separate storage and VMware teams, as they’re all part of one team.”*

**Provided significantly more agility to meet application-specific needs:**

*“We’re now much more agile with applications running on VMware vSAN, making it easy to adapt to changing hardware and application needs.”*

**Based on interviews with current VMware customers, IDC calculated that they will realize benefits worth an annual average of \$183,400 per 100 TBs (\$6.37 million per organization) in the following value areas (see [Figure 1](#), next page):**

• **Risk mitigation — user productivity benefits:**

Study participants established more reliable, available storage environments to run key business applications and services. IDC calculated that higher user productivity from minimizing unplanned outages affecting storage was worth an annual average of \$62,000 per 100 TBs (\$2.16 million per organization).

• **IT staff productivity benefits:**

Study participants freed up IT storage infrastructure and security teams’ time on daily tasks so they could focus on business activities and innovation and enable development efforts through flexible access to storage capacity. IDC valued these staff efficiencies and productivity gains at an annual average of \$49,200 per 100 TBs (\$1.71 million per organization).

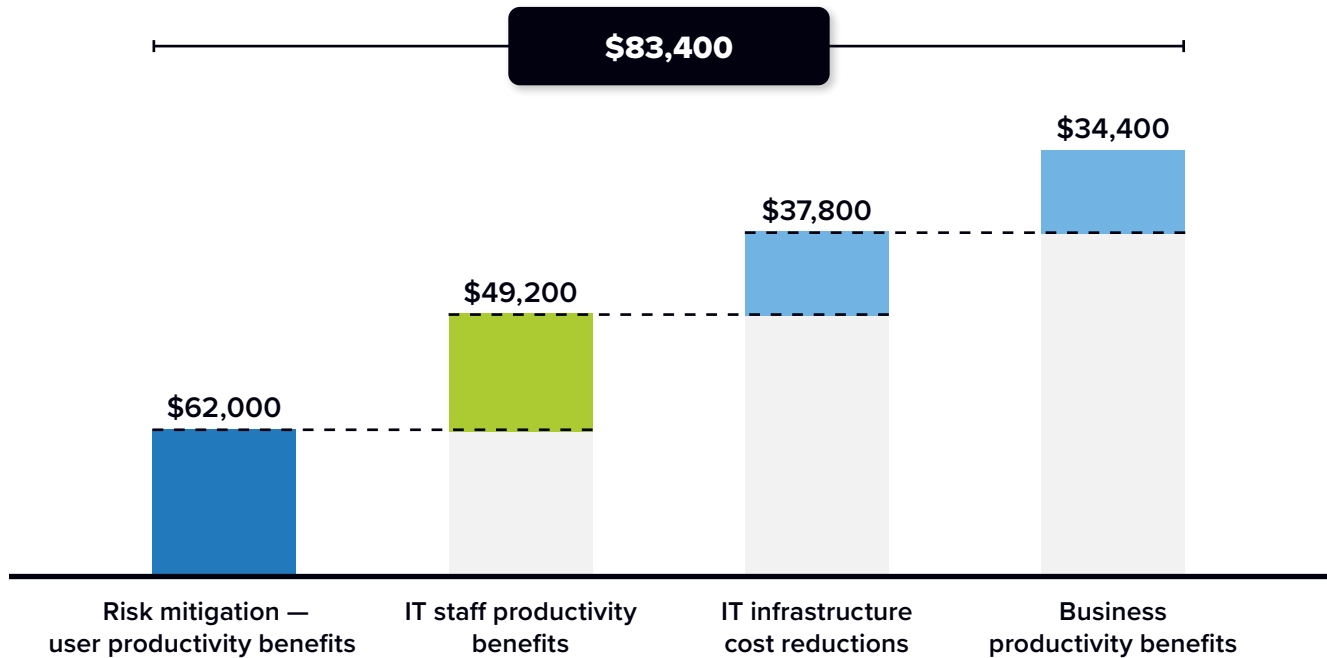
• **IT infrastructure cost reductions:**

Study participants require less storage hardware and capacity to run equivalent workloads, which will reduce their annualized spend on storage by an average of \$37,800 per 100 TBs per year (\$1.31 million per organization).

• **Business productivity benefits:**

IDC projected that enhanced access to data and faster time to delivery for customers to improve business results will result in an average net revenue gain of \$34,400 per 100 TBs per year (\$1.20 million per organization).

**FIGURE 1**  
**Average Annual Benefits per 100 TBs**  
 (\$)

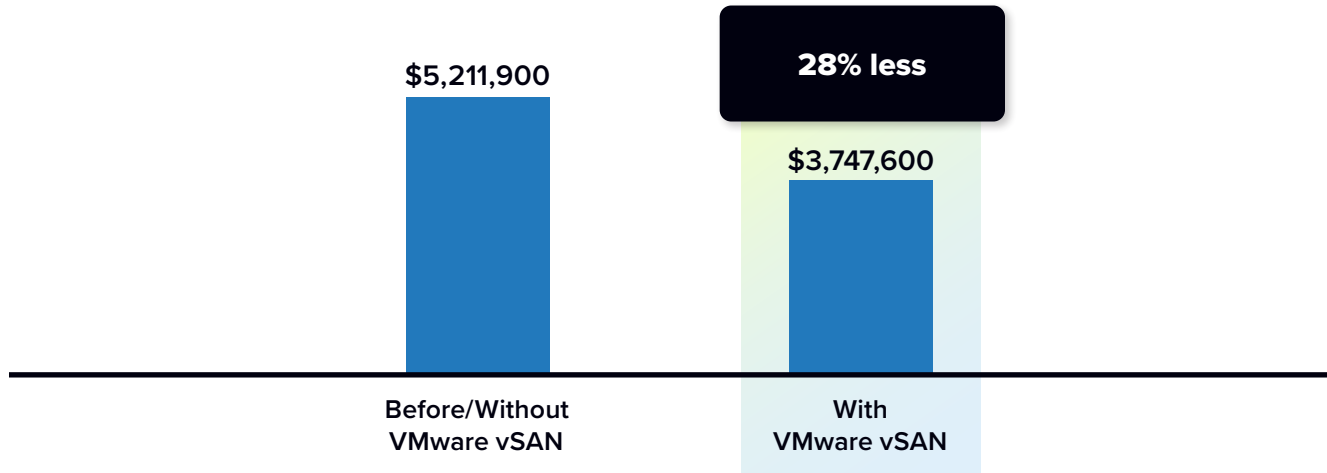


n = 8; Source: IDC Business Value In-Depth Interviews, September 2024  
 For an accessible version of the data in this figure, see [Figure 1 Supplemental Data](#) in Appendix 3.

## Storage Cost Optimization

VMware vSAN offers significant storage-related cost savings for organizations by increasing their virtualization levels, which reduces physical storage hardware and resource requirements. Enhanced virtualization helps organizations allocate storage resources more efficiently to meet demand without over-provisioning. As a result, organizations save 28% on average on storage costs, translating to nearly \$1.5 million in annual savings per organization. They achieve this cost efficiency by reducing hardware investments and optimizing resource utilization (see **Figure 2**, next page).

► **FIGURE 2**  
**Average Annual Storage Infrastructure Costs**  
 (\$)



n = 8; Source: IDC Business Value In-Depth Interviews, September 2024

## IT Storage Team Efficiencies

VMware vSAN enables staff efficiencies in managing and supporting storage environments by providing simplified environments, integration, and automation. Storage infrastructure teams benefit from streamlined processes that simplify storage asset management. Simplification enables IT storage teams to respond more quickly to change requests, new systems, and challenges, reducing hardware procurement cycles and the time to deploy and set up storage environments.

Specific responsibilities such as storage tuning, provisioning, and performance management are also more efficient with VMware vSAN. The ability to support storage remotely with automation capabilities reduces the required management time. These efficiencies enable IT teams to focus on optimization and use new technologies such as AI, improving their overall output and value to the organization. As one organization noted, the less time their teams spend on routine tasks, the more time they have to work on projects that enhance business outcomes.

### The interviewed VMware customers provided the following examples of staff efficiencies they gained by using vSAN:

**Significant operational efficiencies lowered the overall cost of operations:**

*“VMware vSAN offers 40% cost savings across procurement, management, performance, and personnel. Additional savings come from reduced administrative work and unified team management.”*

**Simplification increased IT efficiency:**

“VMware vSAN has simplified our IT storage team’s response to change requests, new systems, and challenges. Previously, hardware procurement and setup took a long time, but now it’s done in days. This increases our efficiency by 35%–40%.”

**Remote and automated support generated time savings:**

“VMware vSAN has cut our storage management time from 40 to 20 hours per week. Tasks like monitoring, performance tuning, capacity planning, updates, and troubleshooting can now be done remotely, reducing on-premises presence and manual work by 50%.”

Table 3 shows the efficiencies storage infrastructure teams achieved with VMware vSAN, with study participants reporting average efficiencies of 42%.

► **TABLE 3**  
IT Storage Infrastructure Team Efficiencies

Average per Organization	Before/Without VMware vSAN	With VMware vSAN	Difference	Improvement
Equivalent FTEs required for the same workloads	8.0	<b>4.7</b>	3.3	42%
Value of equivalent FTE time required (\$ per organization per year)	\$803,700	<b>\$470,000</b>	\$333,700	42%

n = 8; Source: IDC Business Value In-Depth Interviews, September 2024

Interviewed VMware customers provided insight into the drivers of these overall efficiencies, citing the value of virtualization and automation in reducing the time staff needed for activities such as storage tuning (54% less time), storage provisioning (53% less time), storage performance management (52% less time), and overall storage management (43% less time) (see Figure 3, next page).

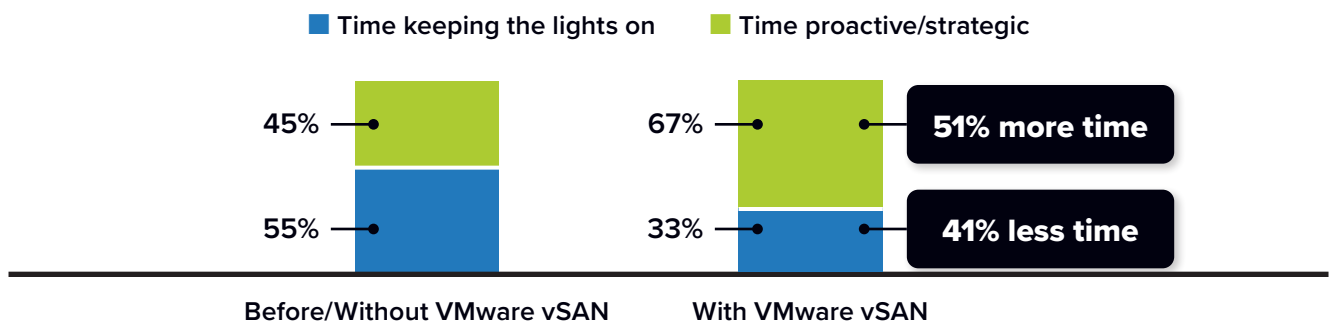
**FIGURE 3**  
**Storage Efficiencies by Responsibility**  
 (Percent efficiency with VMware vSAN)



n = 8; Source: IDC Business Value In-Depth Interviews, September 2024

For the interviewed VMware customers, these staff efficiencies not only translated to time savings but also enabled their IT talent to focus on innovative or higher-value initiatives rather than the day-to-day activities of running and maintaining storage. One interviewed customer commented: “Efficiencies for our storage team from using VMware vSAN mean more time working on projects. The less time we spend on business as usual, the more time we have available to optimize work, focus on AI, and improve performance.” **Figure 4** depicts how VMware vSAN usage shifted these teams’ focus, freeing up resources to spend 51% more time on innovative or value-added activities while requiring 41% less time.

**FIGURE 4**  
**Impact on What IT Storage Teams Spend Their Time On**  
 (Percent of time)



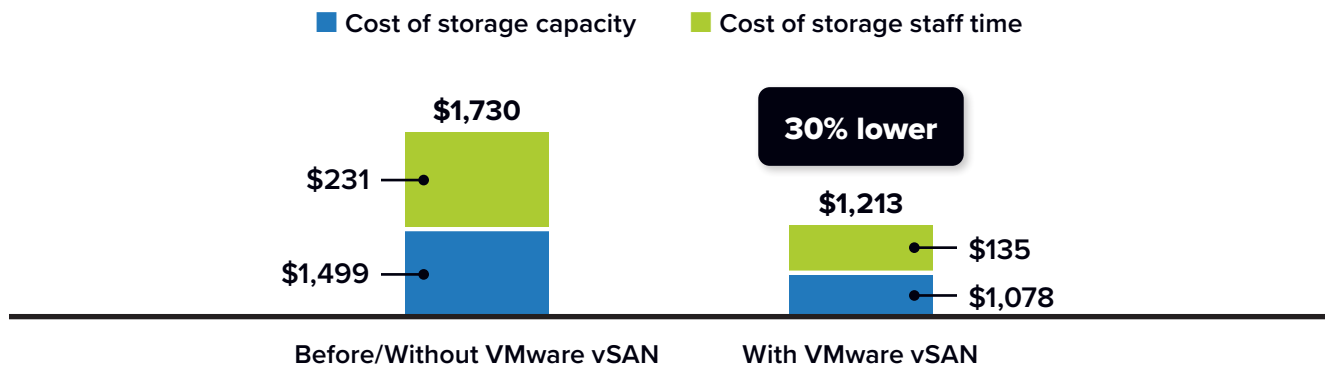
n = 8; Source: IDC Business Value In-Depth Interviews, September 2024

For an accessible version of the data in this figure, see [Figure 4 Supplemental Data](#) in Appendix 3.

## Storage Operational Cost Benefits

IDC calculates that VMware vSAN reduces study participants' overall storage operational costs by an average of 30% through storage cost savings and staff efficiencies. By minimizing the need for physical storage hardware and streamlining storage management tasks, organizations can reduce costs significantly. **Figure 5** shows that these cost and staff time efficiencies lower the cost of deploying and running a terabyte of storage by an average of \$517 per year, which equates to annual savings of \$1.80 million across study participants' VMware vSAN environments.

► **FIGURE 5**  
**Three-Year Cost of Operations per Storage TB**  
 (\$)



n = 8; Source: IDC Business Value In-Depth Interviews, September 2024  
 For an accessible version of the data in this figure, see [Figure 5 Supplemental Data](#) in Appendix 3.

## Storage Agility and Development Benefits

VMware vSAN has significantly enhanced organizations' storage agility and performance by leveraging automation and APIs, enabling the rapid deployment of new storage resources; reducing setup time substantially, including from months to days for at least one interviewed customer; and easing the burden on staff responsible for deployment. Increased automation accelerates provisioning, enabling organizations to respond swiftly to changing needs. Meanwhile, efficient tools make it easier to manage changes, eliminating hardware-related challenges and allowing organizations to focus more on critical storage issues — leading to better performance and reliability.

## Interviewed VMware customers gave specific examples of how they became more agile with vSAN:

### Automation and APIs for greater agility:

“VMware vSAN significantly enhances agility in provisioning, reducing setup time from three months to days through automation and APIs. This increased automation allows for quicker deployment.”

### Ability to be proactive and agile:

“With VMware vSAN, we’re more agile and proactive. Efficient tools make changes easy, eliminating hardware, CPU, and memory challenges. While managing many VMs requires attention, we can now focus on critical storage issues without constraints.”

### Markedly faster deployment of new storage:

“Previously, new storage took about 20 days to deploy, including a two-day mini-project and a final review. With VMware vSAN, this has been reduced to a three-day activity, covering validation, testing, and requirements. Storage upgrades, which used to take three days, now take just four hours.”

- ▶ The impact of VMware vSAN on agility is marked both in terms of metrics such as the required time to deploy new storage — which study participants reported decreased by an average of 77%, from 5.3 hours to 1.2 hours — and enhanced development capabilities. With VMware vSAN, developers face less friction in obtaining the storage capacity they need to move through the development life cycle, as seamless access is important for testing and deployment. As a result, they improve the delivery of new and updated software functionality. IDC calculated average productivity gains of 31% for development teams working on VMware vSAN–based infrastructure (see **Table 4**).

**TABLE 4**  
Development Team Productivity Gains

Average per Organization	Before/Without VMware vSAN	With VMware vSAN	Difference	Improvement
Equivalent productivity in FTEs per organization	47.10	<b>61.70</b>	14.50	31%
Value of productivity, \$ per organization	\$4.71M	<b>\$6.17M</b>	\$1.45M	31%

n = 8; Source: IDC Business Value In-Depth Interviews, September 2024



## Storage Reliability and Performance Benefits

VMware vSAN’s distributed architecture also provides greater resiliency and security, with most interviewed organizations reporting no or minimal impactful outages. This enhances the overall performance and reliability of their storage environments and facilitates business continuity.

### Interviewed VMware customers using vSAN provided specifics about improvements in storage reliability and availability:

**Greater resiliency, with no impactful outages:**

*“VMware vSAN provides a distributed architecture, so it’s much more resilient ... In terms of downtime, we’ve never experienced a vSAN cluster being down.”*

**Important improvement in availability:**

*“Based on our internal SLAs, improvement with VMware vSAN reduces downtime from several days a year to just a few hours.”*

The results in **Table 5** reflect the highly positive results in storage availability and performance that study participants achieved with VMware vSAN. They reported 70% fewer impactful outages and 76% faster outage resolution on average, which together lowered the overall detrimental effect of unplanned outages on employee productivity by 96%. The absolute numbers underscore the extent to which higher availability with VMware vSAN benefits study participants, with the average application user going from losing more than one hour of productive time per year to only minutes, reflecting a 96% reduced impact. Interviewed VMware customers also emphasized security efficiencies in these environments, reporting an average 26% efficiency gain for security teams.

► **TABLE 5**  
Impact on Unplanned Downtime

Average per Organization	Before/Without VMware vSAN	With VMware vSAN	Difference	Improvement
Number of unplanned outages per year	7.7	<b>2.3</b>	5.4	70%
MTTR, hours	4.2	<b>1.0</b>	3.2	76%
Productivity loss, hours per user per year	1.3	<b>0.0</b>	1.3	96%

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Average per Organization	Before/Without VMware vSAN	With VMware vSAN	Difference	Improvement
Productivity loss, FTEs per organization per year	22.8	<b>0.8</b>	22.0	96%
Value of lost productivity, \$ per organization per year	\$1.60M	<b>\$57,800</b>	\$1.54M	96%

n = 8; Source: IDC Business Value In-Depth Interviews, September 2024

## Data Use Improvements and Business Benefits

Study participants leverage improved performance with VMware vSAN to generate more value from their data, including through analytics. They were able to improve data-related activities by accelerating data preparation by 13%, data analysis completion by 11%, and data operationalization to support business activities by 11%. These helped analytics teams achieve better outcomes, with IDC calculating an average 20% productivity gain for these teams from using VMware vSAN.

Study participants tied improved storage availability, agility, and performance to improved business outcomes. In some cases, they noted the value of freeing up valuable staff time to focus on business-generating initiatives and the ability to move faster to meet customer demand and deliver higher-quality and value-added services and solutions to their customers.

### Interviewed VMware customers provided the following details about the impact on their business activities:

**Agility and scalability to meet changing business needs:**

*“We’re launching in the U.S. for the first time, which involves significant infrastructure work. With extra capacity from resources no longer fully dedicated to managing on-premises infrastructure with VMware vSAN, we’ve been able to meet tight timelines. This flexibility allows us to reallocate 30%–40% of our capacity to other projects, greatly improving management efficiency.”*

**Ability to refocus staff time and energy on business-generating activities:**

*“VMware vSAN enhances staff efficiency by focusing on customer value, increasing project output, and faster delivery. Instead of waiting three months, we now deliver quicker and handle more projects efficiently ... We provide value to the business quicker, like 20%–30% faster, because of VMware vSAN.”*

**Storage democratization accelerating the adoption of new technologies and development efforts:**

*“VMware vSAN enables our business by democratizing access to storage data, driving previously impossible initiatives. A faster data layer has accelerated our AI roadmap, allowing quicker responses. This agility supports the ‘develop fast, fail fast’ mantra, reducing time investment from a week to a day.”*

**Ability to overcome storage-related limitations, enabling digital transformation efforts:**

*“Traditional storage systems lacked remote capability, scalability, performance, and reliability. VMware vSAN overcame these limitations, enabling our transformation initiatives and digital transformation delivery.”*

Table 6 shows the extent of improved business outcomes for study participants from using VMware vSAN, with IDC calculating average revenue gains of \$6.67 million per organization per year.

► **TABLE 6**  
**Business Impact, Use of VMware vSAN**

	Per Organization	Per 100 TBs
Higher revenue per year	\$6.67M	\$191,800
Assumed operating margin	15%	15%
Higher net revenue per year	\$1.00M	\$28,800

n = 8; Source: IDC Business Value In-Depth Interviews, September 2024

## ROI Summary

Table 7 (next page) shows IDC’s analysis of the total benefits and investment costs that study participants gained and incurred using VMware vSAN. IDC calculated three-year discounted benefits of \$134,900 per 100 TBs (\$15.10 million per organization) in storage cost savings, storage infrastructure and development team efficiencies, and higher user productivity and net revenue. These benefits compare with three-year discounted investment costs averaging \$29,000 per 100 TBs (\$3.24 million per organization). These benefits and costs would provide study participants with an average three-year ROI of 365%, with investment breaking even an average of six months after the beginning of VMware vSAN deployment.

▶ **TABLE 7**  
**ROI Analysis**

	Three-Year Average per Organization	Three-Year Average per 100 TBs
<b>Benefit</b>	\$15.10M	\$134,900
<b>Investment</b>	\$3.24M*	\$29,000*
<b>Net present value</b>	\$11.86M	\$105,900
<b>ROI</b>	<b>365%</b>	<b>365%</b>
<b>Payback</b>	<b>6 months</b>	<b>6 months</b>
<b>Discount factor</b>	12%	12%

\*Investment costs calculated based on data VMware provided for vSAN annual subscriptions and data that interviewees provided in terms of staff time to deploy/manage and other third-party costs associated with their using VMware vSAN.  
n = 8; Source: IDC Business Value In-Depth Interviews, September 2024

## Challenges/Opportunities

Hyperconverged systems can provide substantial benefits to organizations wanting to modernize their IT infrastructure but may also present challenges for scaling in hybrid cloud environments. IDC survey data shows that HCI users have encountered issues trying to maintain a single view of HCI clusters in a multivendor environment. They also point to concerns about protecting data economically without having to spend additional money on extra nodes. VMware requires a three-node minimum for RAID 5 protection but, to address this, also offers a two-node cluster deployment option to withstand two failures. Other problems HCI users have flagged include achieving sufficient storage performance without entailing excessive costs and scaling compute and storage resources separately. VMware has taken steps to address these challenges with its ESA and vSAN Max alternatives, respectively.

VMware customers have gone through a period of transition since Broadcom acquired VMware in 2023, with many reporting higher costs with the introduction of new subscription models and the end of perpetual license and renewal sales. To use vSAN, customers must purchase either VMware Cloud Foundation (VCF) or VMware vSphere Foundation (VVF). With VCF, customers receive one terabyte (TiB) of vSAN entitlement per core, and with VVF,

they must add on vSAN entitlement in 1 TiB increments. VMware argues that although a new subscription's list price may be higher than a support renewal was under the old model, the subscription would generally cost less than a net-new perpetual license plus support for customers that were on a three-year renewal cycle while providing the full suite of enterprise vSAN features and offering flexible deployment options.

## Conclusion

Shifting from traditional three-tier IT architecture to hyperconverged infrastructure can provide significant benefits to organizations pursuing digital business initiatives. Consolidating storage, compute, and networking resources can facilitate deployment and management, save hardware costs, and reduce the need for special storage skill sets among IT staff and enterprise development teams. Because software-defined HCI systems generally run on premises and in public cloud environments, they tend to be a good fit for organizations using a hybrid cloud approach to data storage infrastructure. IDC survey data shows that enterprises of all sizes deploy HCI systems for a wide range of use cases — from mission-critical workloads in core datacenters to ROBO applications at edge sites.

IDC conducted in-depth interviews with eight organizations to gain insight into the quantitative and qualitative impact of using VMware vSAN software-defined storage for hyperconverged infrastructure. The IDC study showed that VMware vSAN customers, on average, received a payback on their investment within six months and a three-year ROI of 365%. The study participants' ability to allocate storage capacity more efficiently and reduce physical storage hardware and resource requirements factored into average cost savings of 28% on storage infrastructure, or nearly \$1.5 million per year for each organization. Their IT teams required less staff time to deploy, manage, and support VMware vSAN than their prior storage systems, resulting in average savings of 42% and freeing up staff to focus on higher-value projects, such as AI, to enhance business outcomes. Accelerating storage provisioning also helped development teams realize productivity gains of 31% on average when working with VMware vSAN-based infrastructure. In addition, the IDC study showed that the number of unplanned outages fell by 70% and that outage resolution required 76% less time, lowering downtime impact on employee productivity by 96%. This IDC study underscores VMware vSAN's role in helping to drive digital transformation, enhance agility, and support business growth.

# Appendix 1: Methodology

This project used IDC's standard Business Value/ROI methodology, which was based on gathering data from organizations currently using VMware vSAN storage virtualization solutions as the model's foundation. Based on interviews with organizations using VMware vSAN, IDC performed a three-step process to calculate the ROI and payback period:

- 1. Gathered quantitative benefit information during the interviews using a before-and-after assessment of the impact of using VMware vSAN:** In this study, the benefits included storage-related cost savings, IT staff and development team efficiencies and productivity gains, reduced costs associated with risk, and higher revenue.
- 2. Created a complete investment (three-year total cost analysis) profile based on the interviews:** Investments go beyond the initial and annual costs of using VMware vSAN and can include additional costs related to migrations, planning, consulting, and staff or user training. VMware provided the estimated costs for VMware vSAN licensing based on the number of usable terabytes and virtual machines used.
- 3. Calculated the ROI and payback period:** IDC conducted a depreciated cash flow analysis of the benefits and investments for the organizations' use of VMware vSAN over three years. ROI is the ratio of the NPV and the discounted investment. The payback period is the point at which cumulative benefits equal the initial investment.

## IDC based the payback period and ROI calculations on several assumptions as follows:

- Time values are multiplied by burdened salary (salary + 28% for benefits and overhead) to quantify efficiency and manager productivity savings. For this analysis, IDC used assumptions of an average fully loaded salary of \$100,000 per year for IT staff members and an average fully loaded salary of \$70,000 per year for non-IT staff members. IDC assumed that employees work 1,880 hours per year (47 weeks x 40 hours).
- IDC calculated the net present value of the three-year savings by subtracting the amount organizations would have realized by investing the original sum in an instrument yielding a 12% return to allow for the missed opportunity cost. This accounts for both the assumed cost of money and the assumed rate of return.
- IDC applied a net margin assumption (15%) for gross revenue gains attributable to the interviewed organizations' use of VMware vSAN, resulting in the net revenue calculations the study applied to IDC's model.
- Because using VMware vSAN requires a deployment period, the solution's full benefits are not available during deployment. To capture this reality, IDC prorates the benefits on a monthly basis and then subtracts the deployment time from the first-year savings.

# Appendix 2: Quantified Benefits of Using VMware vSAN Storage Virtualization Solutions

Table 8 provides specifics about the areas of value that VMware customers reported they achieved by using vSAN. As the table shows, IDC calculated that they will realize a total annual value worth an average of \$183,400 per 100 TBs (\$6.37 million per organization).

**TABLE 8**  
**Average Annual Benefits**

Category of Value	Average Quantitative Benefit	Calculated Average Annual Value per 100 TBs*	Calculated Average Annual Value per Organization*
Storage infrastructure cost savings	28% reduced storage hardware/capacity requirements, saving an annualized \$1.46M	\$37,800	\$1.31M
IT storage infrastructure team efficiencies	42% more efficient, worth 3.3 FTEs, \$100,000 salary	\$8,600	\$299,100
IT storage security team efficiencies	26% more efficient, worth 1.2 FTEs, \$100,000 salary	\$3,100	\$108,400
Development team productivity gains	31% higher productivity, worth 14.5 FTEs, \$100,000 salary	\$37,500	\$1.30M
Unplanned downtime — higher user productivity	96% less unplanned downtime, worth 22.0 FTEs, \$70,000 salary	\$39,700	\$1.38M
Unplanned downtime — higher net revenue	\$5.77M in revenue loss avoidance per year, applying a 15% margin	\$22,300	\$775,400

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Category of Value	Average Quantitative Benefit	Calculated Average Annual Value per 100 TBs*	Calculated Average Annual Value per Organization*
Business enablement, higher net revenue	\$6.67M higher revenue per year, applying a 15% margin	\$25,800	\$896,300
Higher analytics team productivity	28% higher productivity, worth 4.8 FTEs, \$70,000 salary	\$8,600	\$298,900
<b>Total annual benefits</b>	<b>\$183,400 per 100 TBs (\$6.37 million per organization)</b>		

\*Includes 3.7 months of deployment time in year one. n = 8; Source: IDC Business Value In-Depth Interviews, September 2024

*Note: All numbers in this document may not be exact due to rounding.*



# Appendix 3: Supplemental Data

This appendix provides an accessible version of the data for the complex figures in this document. Click “Return to original figure” below each table to get back to the original data figure.

**FIGURE 1 SUPPLEMENTAL DATA**

## Average Annual Benefits per 100 TBs

Risk mitigation — user productivity benefits	\$62,000
IT staff productivity benefits	\$49,200
IT infrastructure cost reductions	\$37,800
Business productivity benefits	\$34,400
<b>Total</b>	<b>\$83,400</b>

n = 8; Source: IDC Business Value In-Depth Interviews, September 2024

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**FIGURE 4 SUPPLEMENTAL DATA**

## Impact on What IT Storage Teams Spend Their Time On

	Time keeping the lights on	Time proactive/strategic	Difference
Before/Without VMware vSAN	55%	33%	<b>41% less time</b>
With VMware vSAN	45%	67%	<b>51% more time</b>

n = 8; Source: IDC Business Value In-Depth Interviews, September 2024

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## Appendix 2: Supplemental Data (continued)

FIGURE 5 SUPPLEMENTAL DATA

### Three-Year Cost of Operations per Storage TB

	Before/Without VMware vSAN	With VMware vSAN
Cost of storage capacity	\$1,499	\$1,078
Cost of storage staff time	\$231	\$135
<b>Total</b>	<b>\$1,730</b>	<b>\$1,213 (30% lower)</b>

n = 8; Source: IDC Business Value In-Depth Interviews, September 2024

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# About the IDC Analysts



## **Carol Sliwa**

**Research Director, Infrastructure Systems, Platforms and Technologies Group, IDC**

Carol Sliwa is a research director for Storage Systems in IDC's Enterprise Infrastructure Practice. Her core research area spans block, file, and object storage, with a special focus on the storage of unstructured data. With more than 25 years of experience as a technology journalist, including 13 years covering enterprise storage, Carol gained extensive insight into the ways in which the industry has adapted systems over time to address the evolving needs of IT customers.

[More about Carol Sliwa](#)



## **Matthew Marden**

**Research Vice President, Business Value Strategy Practice, IDC**

Matthew is responsible for carrying out custom business value research engagements and consulting projects for clients in a number of technology areas with a focus on determining the return on investment of their use of enterprise technologies. Matthew's research often analyzes how organizations are leveraging investment in digital technology solutions and initiatives to create value through efficiencies and business enablement.

[More about Matthew Marden](#)

# Message from the Sponsor



**VMware vSAN is the premier storage solution for VMware Cloud Foundation, and it brings the power of cloud to your storage with consistent performance, scalability, efficiency, and support for any application in a private cloud architecture. vSAN is the only hyperconverged storage solution natively integrated with the hypervisor for consistent application performance. It uses familiar tools that admins already know and trust and integrates seamlessly into customers' VMware environments.**

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IDC Research, Inc.  
140 Kendrick Street, Building B, Needham, MA 02494, USA  
T +1 508 872 8200

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