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The Business Value of Storage Solutions from Dell Technologies

RESEARCH BY:

Eric Burgener
Research Vice President, Infrastructure Systems, Platforms and Technologies Group, IDC

Matthew Marden
Research Director, Business Value Strategy Practice, IDC

Navigating this White Paper

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BUSINESS VALUE HIGHLIGHTS

Click on highlights below to navigate to related content within this white paper.

308%
three-year ROI

8 months
to payback

52% faster
to deploy new storage

79% less
unplanned downtime

31% lower
three-year cost of
storage operations

23% lower
cost of acquiring and running
storage

46% more efficient
IT storage teams

Executive Summary

In the era of digital transformation — the evolution toward much more data-centric business models — information technology (IT) organizations of all sizes are challenged to meet higher performance, agility, availability, and scalability requirements while staying within strict budgetary constraints. Adapting to the demands of digital transformation is not a choice — it is an imperative that organizations ignore at their own risk. To best support the business on its digital transformation journey, IT must be able to respond faster to take advantage of changing market conditions and new business opportunities, all the while enabling increasing use of big data and analytics (real time and otherwise); more personalized interaction with customers, around-the-clock operations; and better use of innovation to drive competitive differentiation.

Prompted by the demands of digital transformation, almost 70% of organizations are planning to modernize their server, storage, and/or data protection infrastructure in the next several years and are looking to specific technology to help streamline IT infrastructure while meeting all these new requirements. Those technologies include software-defined storage (SDS), cloud, cybersecurity enhancements, NVMe, and artificial intelligence (AI) and machine learning (ML).

Dell Technologies offers a broad IT infrastructure portfolio that differentiates it from its competitors that just sell storage. The vendor has taken advantage of its server, data protection, and storage infrastructure offerings to create well-integrated solutions that can be easier to deploy and manage than a customer-assembled IT infrastructure built from point products. To cater to increasing customer needs to choose from both capital expenditure (capex) and operational expenditure (opex) consumption models, Dell Technologies provides both outright purchase and subscription-based pricing models across its entire portfolio. IDC undertook a primary research project, commissioned by Dell Technologies and Intel, to identify key storage infrastructure requirements among Dell Technologies' customers undergoing digital transformation and determine what factors were important in selecting Dell Technologies as their enterprise storage supplier during infrastructure modernization.

The results were illuminating. Existing Dell Technologies' customers identified five aspects of the vendor that, in their view, differentiates it from the competition: proven, mature, and high-performance solutions; a strong reputation for delivering a positive customer experience; responsive and high-quality tech support; deep cross-product integration that heightened the value of IT infrastructure solutions; and the availability of multiple consumption models (both capital and operating expenditure oriented). For Dell Technologies' customers, those aspects were instrumental in selecting the vendor for their storage infrastructure modernization. As part of the research project, IDC also looked at the financial implications of choosing storage solutions from Dell Technologies.

IDC interviewed organizations that are using Dell EMC PowerMax, PowerStore, PowerScale, PowerFlex, and Unity XT storage solutions powered by Intel and about their impact on storage-related costs and operations. Study participants reported achieving significant benefits by optimizing and upgrading their storage environments to meet changing expectations in terms of cost, agility, and performance.

Based on interviews with Dell Technologies' customers, IDC calculates that they will realize benefits worth an average of $267,200 per 100 usable terabytes ($3.96 million per organization) by:

▶ **Enabling development and business activities** through enhanced storage availability and agility

▶ **Improving employee productivity levels** by delivering better application performance

▶ **Reducing storage costs for running equivalent applications** by leveraging increased access to flash storage, enhanced data compression and data deduplication capabilities, and extended storage life spans

▶ **Requiring less IT storage staff time for day-to-day activities** by improving performance levels and delivering new software-based management capabilities

Research Methodology

With most enterprises undergoing digital transformation, IT infrastructure purchase decision metrics are changing. Dell Technologies and Intel commissioned IDC to conduct extensive primary research to better understand not only the nature of these changes but also how enterprises buying storage solutions from Dell Technologies make infrastructure decisions. This research included a United States—only survey and an extensive round of in-depth interviews with organizations in both the United States and abroad.

The survey portion of the research explored evolving storage and data protection infrastructure purchase criteria in the era of digital transformation. Survey respondents were IT managers with purchase decision responsibility for storage and data protection products that were already existing Dell Technologies storage customers, had existing hybrid cloud environments, and self-identified as working for enterprises that were currently undergoing digital transformation.

The survey included small and medium-sized enterprises (firms with 500–999 employees), with 60% of the respondents hailing from these types of organizations. 20% of the respondents worked at companies that had fewer than 500 employees, and 20% of respondents worked at companies that had more than 1,000 employees. The sample size was 208.

For the business value component of the study, the interviews were designed to understand the impact of Dell Technologies customers' use of these storage solutions from both a quantitative perspective and a qualitative perspective. Interviewed organizations were large in terms of both average and median employee bases (27,474 and 5,250, respectively) and annual revenue ($6.11 billion and $1.59 billion, respectively) Interviewed organizations were mostly based in the United States but also in Canada, Italy, Switzerland, and Australia. They offered perspectives on the impact of Dell Technologies' storage solutions from a variety of industry verticals, namely higher education (4), manufacturing (3), healthcare (2), insurance (2), agriculture, entertainment, fintech, government, IT services, legal, professional services, transportation, and utilities (see Table 1).

TABLE 1

Demographics of Interviewed Organizations: Business Value Research

	Average	Median
Number of employees	27,474	5,250
Number of IT staff	592	93
Number of business applications	3,133	200
Number of terabytes	12,050	3,315
Revenue per year	$6.11 billion	$1.59 billion
Countries	United States (16), Canada, Italy, Switzerland, and Australia	
Industries	Higher education (4), manufacturing (3), healthcare (2), insurance (2), agriculture, entertainment, fintech, government, IT services, legal, professional services, transportation, and utilities	

n = 20, Source: IDC In-depth Interviews, November 2020

Situation Overview

Enterprises of all sizes are going through what IDC defines as digital transformation — the evolution toward much more data-centric business models. This evolution is changing the world; IDC expects that by 2022, 65% of global gross domestic product (GDP) will be digital. Businesses are capturing, storing, protecting, and analyzing more data than ever before and using that data to glean insights that drive better business decisions.

How IT organizations use data to innovate and guide business decisions is becoming a competitive differentiator in most industries. Innovating with data is encouraging significant changes in business processes and workflows to meet much more dynamic business conditions. The need for better performance, higher availability, improved security, increased scalability, and nimble agility is driving significant changes in how IT infrastructure is architected, deployed, and managed as well as in what types of workloads are deployed. Clearly, one of the goals during digital transformation is to create a more flexible IT organization. From primary research conducted in 2020, we know that roughly two-thirds of IT organizations traversing the digital transformation journey will modernize their server, storage, and/or data protection infrastructure as part of that evolution, and that of those organizations, 91% deem technology modernization as a critical factor in their overall digital transformation success.

For enterprises undergoing digital transformation, several key objectives stood out. As shown in Figure 1, almost 45% of organizations sought to improve the efficiency of IT infrastructure. Newer technologies can help IT managers meet this objective through systems that deliver increased performance and/or capacity density using less energy and floorspace to meet evolving requirements. Lower storage latencies can drive up CPU utilization in application servers, reducing the number of servers required and lowering application licensing costs. Storage efficiency features such as compression and deduplication, combined with thin provisioning and space-efficient snapshots, can significantly lower raw storage capacity requirements even as they enable increased scalability and are particularly interesting when they can provide these benefits without imposing any performance penalties. Orchestration tools can automate repetitive workflows and processes, making them more reliable while driving higher administrative productivity. All of these factors contribute to improved IT efficiency.

FIGURE 1
Key Objectives to Be Achieved During Digital Transformation
(% of respondents)

Objective	%
Improving the efficiency of IT infrastructure	44.7%
Enabling better IT agility	35.1%
Better enabling remote work while maintaining business continuity	34.1%
Deploying more automation	26.4%
Making our on-premises infrastructure look more like cloud infrastructure	24.3%
Leveraging new technologies necessary to handle NGAs	24.0%
Moving to newer app development and deployment methodologies	23.6%
Putting the right hybrid cloud strategy in place	22.1%
Moving in the direction of server-based, software-defined storage	21.8%
Moving to an optimal workload placement strategy	19.2%
Staying within a strict IT budget	15.9%

n = 208 | Source: IDC's *Storage Portfolio Survey,* September 2020

As the pace of business increases, many constituencies are looking for faster response from their IT organizations to support new projects, handle high data growth rates, and accommodate more real-time workloads. Enabling better IT flexibility is the second-most important objective, with 35% of storage decision makers looking to refreshed IT infrastructures to create a more flexible IT organization. Access to SDS solutions (selected by 43.8% of respondents), cloud-based data protection (43.3%), nondisruptive expansion (17.8%), and simpler, easier application and system deployments (17.3%) all give IT the ability to respond to business demands much more quickly, better enabling businesses to respond to rapidly evolving business conditions. Automation (26.4%), easily integrating newer technologies into existing systems (24.0%), and better cloud integration (22.6%) were each called out separately in the survey responses as well, but all the three factors contribute to better IT agility. Increased responsiveness on the part of IT to support business needs enables businesses to not only respond more quickly to new market opportunities and provide better customer experience but also improve time to market and help lower overall costs.

Better enabling remote work while maintaining business continuity was another top objective, with 34% of IT organizations calling it out. This requirement demands not only better agility (e.g., to enable quick, easy rollout of new virtual desktop infrastructure to support the ability to work from anywhere) but also data protection that can keep pace with a more distributed workforce. Data protection has both local needs, met by features such as RAID, snapshots, and application integration, and remote needs, met by replication, stretch clusters, backup, and public cloud–based options. It also has to be scalable to accommodate the increased data growth associated with digital transformation, leverage automation to ensure coverage for remote workers as well as improve administrative productivity and the reliability of operations, and deliver high-performance data movement to meet increasingly stringent recovery point objectives (RPOs) and recovery time objectives (RTOs).

Critical business challenges identified in the survey included meeting higher-availability requirements for edge deployments (28%), automating IT operations for improved productivity (27%), and meeting higher-availability requirements in core environments (25%). The need for improved availability is driven by the fact that, as businesses move to more data-centric business models, the IT infrastructure that captures, stores, protects, and analyzes that data becomes more mission critical. As a result, the ability to support extremely high levels of availability is a top product attribute that IT organizations look for when making storage purchase decisions. 69% of organizations manage their most strategic on-premises infrastructure to at least 99.99% (four-nines) availability, and all can optionally pay to achieve that same service-level agreement (SLA) for public cloud–based workloads when its required. 32% of survey respondents required "five-nines" or greater for their strategic workloads, indicating that these applications would be maintained in on-premises infrastructure because of the high-availability requirement.

Several other trends are also impacting storage infrastructure buying criteria. By 2024, 24% of all data created will be real-time data. 87% of organizations expect to see an increasing need to support more real-time data and response within the next three years, and 62% of them expect to see that within the next one to two years.

Much of this will be driven by AI/ML workloads that require real-time response in numerous different areas: social media, personalized offers, managing infrastructure performance and/or availability in real time, driving transactional decisions in financial services environments, fraud analytics, delivering customer service, or resolving customer issues. AI/ML workloads do not have to be real time to drive new storage requirements — improved performance and scalability are required even for many batch-oriented big data and analytics environments. 44% of survey respondents already support AI/ML workloads today, and another 28% expect to add them within the next two years.

Survey respondents were also clear about the technologies they were looking to leverage as part of a storage infrastructure modernization. SDS, cloud-based data protection, better cybersecurity, and cloud-based technologies outside the scope of data protection topped the list (see Figure 2). IDC research over the years has confirmed that IT organizations are primarily interested in SDS for three reasons: improved flexibility/agility, ease of use, and better economics. SDS provides the flexibility to deploy on the hardware of choice and is very simple to expand as needed — just add a new node and the software transparently starts using the additional resources. With virtual and Linux/Windows administrators taking on more storage management responsibilities — particularly at small and medium-sized organizations — the ease of use is a particularly welcome feature. And organizations of all sizes are looking to get better value for their money so the better economics of SDS platforms (relative to legacy SAN and NAS systems) help them to achieve their budget objectives while meeting the need for enhanced performance, availability, and functionality.

FIGURE 2
Most Desired New Technologies
(% of respondents)

Technology	%
Software-defined storage	43.8%
Cloud-based data protection capabilities	43.3%
Cybersecurity capabilities	40.9%
Cloud-based technologies (private and/or public) that are not data protection related	37.5%
Software-defined networking	35.1%
AI/ML capabilities in on-premises infrastructure	33.2%
Better data management tools	32.7%

n = 208 | Source: IDC's *Storage Portfolio Survey,* September 2020

Cloud-based data protection options are of interest for several reasons. They provide a convenient, easy-to-use location to store backup data while offloading infrastructure management responsibilities, allowing administrators to focus on more strategic tasks. Public clouds can provide a very cost-effective alternative to maintaining multiple datacenters when disaster recovery strategies require one or more remote sites. And they can provide literally unlimited capacity scalability at low cost that make it easy to handle high data growth environments. Many public cloud providers also offer additional data protection–related products, such as disaster recovery as a service (DRaaS), that provide options for meeting increasingly stringent RPO and RTO requirements. Backup and disaster recovery were one of the first use cases for public cloud, and over the past five years, cloud technologies have proved themselves very adept at providing cost-effective data protection options.

With malware and ransomware attacks making headlines on a regular basis and privacy regulations (e.g., General Data Protection Regulation [GDPR]) evolving, IT organizations of all sizes are very focused on protecting both their data and the privacy of their customers. Encryption is a desirable feature to protect data and should conform to AES 256 standards. Administrators will need to decide whether they need data encryption for data both in flight and at rest and evaluate storage systems options appropriately. Some organizations such as federal agencies may require validated encryption capabilities (i.e., FIPS 140-2). When administrators also want to use compression and/or deduplication capabilities to maximize storage capacity utilization, they will need to ensure that their storage platform of choice can use all three capabilities simultaneously (if and when that is needed). Air-gapped data protection uses a combination of snapshots and replication to ensure that data can be recovered even in the event of data corruption or ransomware attacks and is a must for most organizations today (regardless of whether the data they're "air gapping" is going to a corporate facility or the public cloud).
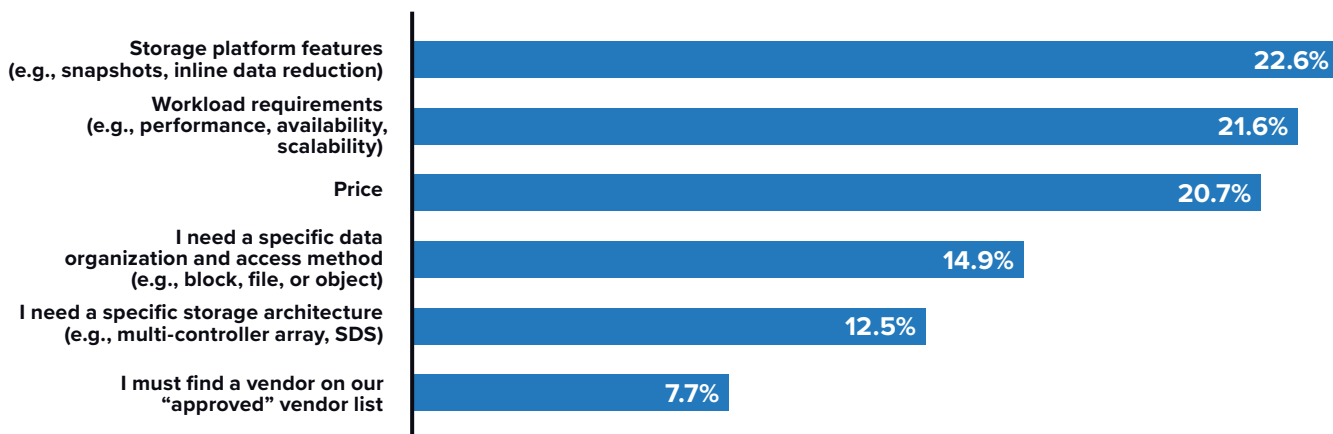
Data growth is exploding, particularly for organizations undergoing digital transformation. Over the next five years, 70–80% of that data will be unstructured. Use cases for this unstructured data range from backup and disaster recovery to archive and big data and analytics, and the public cloud offers a convenient, cost-effective platform for much of this data. Organizations may want to use extremely low-cost capacity for long-term data retention to meet regulatory requirements, or they may store petabytes of data in the cloud, renting access to accelerated compute, which they use for AI/ML-driven analytics against this data. Or they may want to explore the advantages of containers for new application development and deployment in the cloud first before setting up on-premises environments. For everything from offloading infrastructure management to collaboration and active archives to cloud bursting, organizations are looking to leverage public cloud–based technologies to improve their agility, gain access to new services, better enable "work from home" strategies, and lower retention costs for data. These are all use cases that drove the high interest in leveraging cloud technologies for non-data protection–related reasons.

In other primary research performed by IDC in 2020, more than 80% of IT organizations have repatriated at least one workload from the public cloud back into on-premises infrastructure. Reasons for this vary, but the top concerns driving workload repatriation include security; access to cost-effective, efficient, and scalable in-house modernized IT infrastructure; unpredictable cost variability; and regulatory mandates. As organizations evolve their hybrid cloud strategies, many of them will be determining workload placement from three options: traditional on-premises, private cloud, and public cloud infrastructure. As two of those leverage on-premises equipment, it's clear that the need for in-house IT infrastructure is not going away for most organizations, even as they look to make better strategic use of public cloud–based options.

Focus on Storage Infrastructure Requirements

We explored purchase drivers for storage infrastructure at both the product and vendor levels. The top 3 responses for general storage requirements — storage platform features, workload requirements, and price — all ranked relatively close in terms of importance (see Figure 3). Almost 23% of respondents tagged new features as the priority, indicating services such as support for new media types, inline hardware-assisted compression, flexible snapshot capabilities, and replication to meet their evolving performance, storage efficiency (cost), availability, and disaster recovery requirements. Workload requirements were selected by almost 22% of respondents, with these driving specific performance, availability, and scalability requirements as well. Price came in third, with almost 21% of respondents selecting that as a top purchase criterion.

FIGURE 3
Top Enterprise Storage Purchase Criteria
(% of respondents)

Criterion	%
Storage platform features (e.g., snapshots, inline data reduction)	22.6%
Workload requirements (e.g., performance, availability, scalability)	21.6%
Price	20.7%
I need a specific data organization and access method (e.g., block, file, or object)	14.9%
I need a specific storage architecture (e.g., multi-controller array, SDS)	12.5%
I must find a vendor on our "approved" vendor list	7.7%

n = 208 | Source: IDC's *Storage Portfolio Survey,* September 2020

Vendor reputation and capabilities also played a key role in storage purchase decisions. 80% of survey respondents had an approved vendor list, and many of them worked with multiple storage vendors on a regular basis. 34% of survey respondents expressed a preference for primarily working with a single storage vendor, primarily because buying was easier, different infrastructure products were better integrated with each other, and pricing and customer service were both better from their primary vendor. Other factors survey respondents called out as important aspects of a vendor relationship included the quality of technical support, the availability of multiple consumption options (license based, pay per use, etc.), cloud integration, portfolio breadth, the account team's alignment with customer objectives, and the vendor's strategies around emerging storage technologies. When specifically asked about key vendor attributes for new storage purchases, 26% indicated both performance and the overall quality of the customer experience, 25% chose the breadth of a vendor's portfolio in not only storage but other areas as well (servers, converged and hyperconverged infrastructure, storage software, etc.), and 23% selected the maturity of the vendor's portfolio.

Dell Technologies' Storage Reputation Among Existing Customers

The survey had been purposefully targeted at Dell Technologies' storage users so as to determine how the vendor is perceived among its existing customers. Among survey respondents, 37% had experience with Dell EMC PowerMax (a multi-controller primary storage array), 33% were using Dell EMC PowerScale/Isilon (a scale-out file system platform), 28% were users of Dell EMC PowerFlex (a software-defined storage solution), 24% had Dell EMC Unity XT (a unified storage system supporting block- and file-based storage), and 13% had Dell EMC PowerStore (the vendor's latest unified storage platform).

Briefly, the NVMe-based Dell EMC PowerMax is the vendor's flagship primary storage platform that scales from one to eight controller pairs and can deliver storage latencies under 100µs, handle up to 15 million IOPS and 350GBps of bandwidth, accommodate almost 5PB of effective capacity (assuming a 4:1 data reduction ratio), and support the highest levels of availability. The PowerMax is a block-based array that is primarily used for an enterprise's most latency-sensitive, mission-critical workloads, but it also supports a NAS gateway.

Dell Technologies' newest storage platform, the NVMe-based Dell EMC PowerStore, is a unified storage platform (i.e., that can natively support both block- and file-based workloads) available in five different models that supports federated clustering (up to four appliances), over 4 million IOPS, and over 3PB of effective capacity (assuming a 4:1 data reduction ratio) and delivers very high availability. It can be deployed as traditional external storage or in an optional "hypervisor mode" (called AppsON) running applications directly on the storage processors for lower latencies. Unity XT is a SAS-based midrange unified storage platform that is FIPS 140-2 validated and delivers excellent value for the money. It does not support federated clustering or AppsON.
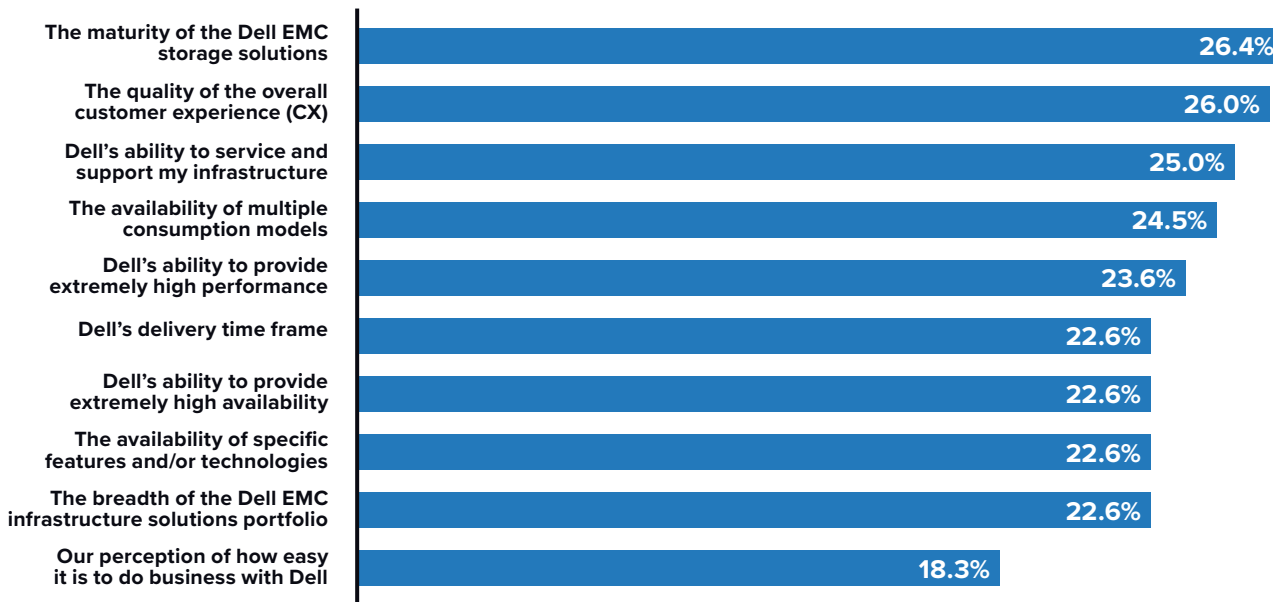
Dell EMC PowerScale is a scale-out NAS platform with a truly distributed file system, a global namespace that can span on- and off-premises locations and multi-protocol data access (NFS, SMB, S3, HTTP, FTP, HDFS, IPv4, and IPv6) and can scale up to 252 nodes and hundreds of petabytes of capacity. It offers excellent deployment flexibility, with models that support edge, core, and public cloud–based locations with the same set of enterprise-class features, configuration options that support different levels of resiliency, and nondisruptive expansion as well as multigenerational technology refresh (at the node level). PowerScale nodes (i.e., appliances) are available with NVMe or SAS and in all-flash, hybrid flash, and HDD-based configurations, all of which can be mixed and matched in the same global namespace. PowerScale systems are widely deployed for high-performance production workloads in media and entertainment, healthcare, financial services, and surveillance as well as general-purpose file sharing and are widely used as a storage consolidation platform for unstructured workloads.

Dell EMC PowerFlex is a block-based, scale-out, software-defined storage platform that can be deployed as a disaggregated compute/storage architecture, a hyperconverged architecture, or a mixed architecture — depending on customer requirements. It supports SAS-based drives, NVMe flash drives, and/or Intel Optane drives while offering a comprehensive set of enterprise-class data services and deployment flexibility. PowerFlex can be run on bare metal or on top of a variety of virtualization platforms, including VMware, giving customers the option to use the networking technology of their choice and is ideal for high-value databases and workloads, agile private clouds, and datacenter consolidation.

PowerFlex offers a comprehensive IT operations and life-cycle management toolset with PowerFlex Manager that can manage compute, storage, and networking infrastructure.

Capabilities that drove a Dell Technologies' storage decision among the vendor's existing customers tracked closely with more general purchase preferences. The top 5 considerations were all relatively close in terms of the percentage of survey respondents selecting them: the maturity of the vendor's storage solutions (26%), the quality of the overall customer experience (26%), the vendor's ability to service and support their storage systems (25%), the availability of multiple consumption models (24%), and Dell Technologies' ability to provide extremely high performance (23%) (see Figure 4).

FIGURE 4

Decision Drivers to Buy Storage from Dell Technologies

(% of respondents)

The maturity of the Dell EMC storage solutions	26.4%
The quality of the overall customer experience (CX)	26.0%
Dell's ability to service and support my infrastructure	25.0%
The availability of multiple consumption models	24.5%
Dell's ability to provide extremely high performance	23.6%
Dell's delivery time frame	22.6%
Dell's ability to provide extremely high availability	22.6%
The availability of specific features and/or technologies	22.6%
The breadth of the Dell EMC infrastructure solutions portfolio	22.6%
Our perception of how easy it is to do business with Dell	18.3%

n = 208 | Source: IDC's *Storage Portfolio Survey,* September 2020

It is easy to see how these preferences map to Dell Technologies' storage capabilities. As an enterprise storage vendor, Dell Technologies has over 30 years of experience providing both primary and secondary storage systems for mission-critical use. In primary storage, the vendor is particularly known for the maturity of its PowerMax array, which delivers "six-nines" availability, and the flexibility and reliability of its replication technologies. In scale-out file-based storage, the vendor has been recognized as a leader, both for the quality of its PowerScale solution and its leading market share by revenue with the PowerScale/Isilon platform. The vendor also has an excellent reputation for technical support, a factor that among others feeds into the high rating customers give to it for the quality of its overall customer experience. CloudIQ, the vendor's AI/ML-driven predictive analytics platform, proactively monitors the health of Dell Technologies' storage systems, including PowerMax, PowerStore, PowerScale, PowerFlex, and Unity XT, providing infrastructure insights that help administrators more efficiently manage their Dell Technologies' infrastructure.

Dell Technologies offers outright purchase options for its on-premises IT infrastructure products, while Project APEX gives customers the option to experience the benefits of many of the vendor's newer storage platforms through as-a-service delivery models. The vendor provides Dell Technologies Cloud Platform (which is VMware Cloud Foundation running on VxRail) for on-premises private cloud infrastructure and also offers a number of managed services offerings built on VMware Cloud Foundation (virtualized infrastructure based on VMware vSphere) that can run in multiple public clouds (Amazon Web Services, Microsoft Azure, and Google Cloud). Dell Technologies' comprehensive portfolio of IT infrastructure products, including servers, storage, networking, data protection, and storage infrastructure software, combined with traditional, private cloud, and public cloud deployment options, gives customers a number of options for creating highly optimized hybrid cloud environments that lower cost, maximize agility, and drive business success for digitally transforming organizations.

Dell Technologies supports NVMe and related technologies such as storage-class memory, Intel Optane Solid State Drives, and Intel Optane persistent memory in PowerMax, PowerStore, PowerFlex, and PowerScale systems for scalable, high performance. Intel Optane technology enables larger memory pools, fast caching, and faster storage that can accelerate applications and reduce transaction costs for latency-sensitive workloads. All systems offer the flexibility to scale compute and storage resources independently to support balanced and efficient scalability. Storage solutions from Dell Technologies are built on Intel Xeon processors optimized for a variety of enterprise-class data services, including host multi-pathing, T10 DIF data integrity checking, active/active controller architectures, built-in hardware redundancy, hot-pluggable components, nondisruptive software upgrades and system expansion, multiple RAID levels, snapshots, quality of service, replication, and cloud tiering that provide a number of options to configure "defense in depth" strategies to achieve the levels of availability required.

Dell Technologies is also recognized for the breadth of its IT infrastructure portfolio. The vendor offers server, storage, data protection, and networking technology, which can be purchased separately or in integrated solutions such as converged or hyperconverged infrastructure that deliver single-pane-of-glass management for complete IT infrastructure solutions. Survey respondents indicated which features of portfolio breadth were most important to them, including converged infrastructure options (51%), various storage platforms with different architectures (51%), a choice of both cloud and noncloud options (46%), different storage platforms (low, midrange, and high end) with the same architecture (40%), both capex and opex consumption models (38%), and a full complement of deployment and consulting services (35%). 83% of respondents indicated that vendors with broader IT infrastructure portfolios can drive noticeably better total cost of ownership, depending on the vendor, while 74% of respondents highly valued the simplified ordering, pre-certified product compatibility, integrated management, and single point of support contact offered by converged and hyperconverged infrastructure solutions.

Taken together, Dell Technologies' IT infrastructure solutions give digitally transforming organizations a better ability to innovate with data, work, and learn from anywhere and deliver flexible IT services that operate at the higher pace of business today.

The Business Value of Storage from Dell Technologies

IDC's research shows the strong value that interviewed organizations are achieving by running business applications on storage solutions from Dell Technologies, including Dell EMC PowerMax, PowerStore, PowerScale, PowerFlex, and Unity XT. Interviewed Dell Technologies' customers consistently reported lowering their overall storage costs while gaining from enhanced storage agility, reliability, and performance.

Selection and Use of Storage Solutions from Dell Technologies

Interviewed organizations described both common and unique purchasing criteria for their storage solutions from Dell Technologies. Many study participants cited both concrete considerations such as cost efficiencies and performance benchmarks and more intangible factors such as recommendations from their account managers. For the most part, they reported upgrading within Dell Technologies' storage solutions, although some interviewed customers migrated from other storage vendor solutions. Reasons for choosing specific storage solutions from Dell Technologies also related to their respective strengths, including optimal storage performance levels, design from an architectural perspective, scalability, and the ability to handle diverse storage workloads.

Table 2 (next page) provides an overview of some of the most frequently mentioned factors considered during purchasing decisions by storage product alongside a quote that captures the essence of one organization's purchase decision.

Table 3 (next page) provides more information about study participants' use of storage solutions from Dell Technologies. Interviewed organizations had deployed an average of eight Dell Technologies' storage arrays at the time of their interviews, with an average of almost 2PB of raw storage capacity (1,950TB). Of this raw storage, approximately three-quarters (1,481TB) is usable for study participants, which they have deployed to handle a nearly equal mix of structured and unstructured data for 152 business applications.

TABLE 2

Reasons for Selecting Storage Solutions from Dell Technologies

	Key Drivers	Sample Quote
Dell EMC PowerMax	Need for a storage platform that delivered both more performance and scalability	"We chose Dell EMC PowerMax because we run a big data platform that was requiring a lot more processing on the storage back end than our existing [other vendor storage solution] could handle. That was greatly impacting performance for the end users and affecting our IT staff when they had to handle related management tasks."
Dell EMC PowerStore	Need for a higher-performing and more adaptable all-flash storage solution	"We have moved to Dell Technologies as our primary storage provider … . We are on board with their product road map and liked that Dell EMC PowerStore is a flash solution that combines NAS and block-level capabilities."
Dell EMC PowerScale	Need for a highly available, more efficient platform for file server consolidation	"We chose Dell EMC PowerScale based on the type of workloads and data, the bandwidth required, the number of devices connected, and the analytics required … . Our experience has been good in terms of growth and simplicity to manage."
Dell EMC PowerFlex	Need for improved IT agility	"Dell EMC PowerFlex was more streamlined for databases and gave us greater flexibility for future changes. We also wanted more agility and improving the upgrade process."
Dell EMC Unity XT	Need for high-performing unified storage platform for SAN and NAS workload consolidation and cloud interoperability	"We needed a new platform to standardize on for replacing multiple storage silos. Dell EMC Unity XT is a powerful, versatile general-purpose solution within the Dell EMC product line that could simultaneously handle both general and more specialized workloads."

n = 20, Source: IDC In-depth Interviews, November 2020

TABLE 3

Dell Technologies' Storage Environments: Interviewed Organizations

	Average	Median
Number of terabytes (raw/usable)	1,950/1,481	421/306
Structured data	50%	55%
Number of arrays	8	3
Number of applications	152	9
Number of users of applications (internal)	12,990	1,250

n = 20, Source: IDC In-depth Interviews, November 2020

Business Value Analysis

Interviewed organizations described leveraging storage solutions from Dell Technologies to optimize and upgrade the storage supporting many of their most important business applications. They reported that the deployment of storage solutions from Dell Technologies — including Dell EMC PowerMax, PowerStore, PowerScale, PowerFlex, and Unity XT — has helped them meet changing business needs and heightened performance expectations of both customers and employees while balancing the need to maintain cost-effective storage environments.

Interviewed customers spoke to these core benefits, reflecting the drivers of value with the specific storage solution they are using:

▶ **Dell EMC PowerMax provides needed levels of reliability, stability, and performance:**
 "Dell EMC PowerMax has the reliability and stability we need for our customers … . PowerMax offers great efficiencies and constant performance improvements that our customers require."

▶ **Dell EMC PowerStore provides stable and comprehensive storage for a hybrid environment:**
 "We are moving to a mix of on-premises and cloud storage, and Dell EMC PowerStore will be in each of our two datacenters, one primary and one for replication … . My experience with the PowerStore beta is that it is the most comprehensive, stable storage platform we've ever been on."

▶ **Dell EMC PowerScale provides strong performance in terms of access to various data files:**
 "Dell EMC PowerScale is our storage solution for all unstructured data … . Quick access to data is a significant benefit of PowerScale. Data is processed and then transferred to either a slower or faster storage array depending on the business needs."

▶ **Dell EMC PowerFlex is better able to expand storage as needed:**
 "We are looking to continue to expand the environment and can do so in different ways with Dell EMC PowerFlex … . For example, if we have a greater storage need, we can increase storage capacity. If we have a higher compute requirement, we can flex that within the same managed framework. We can flex different resources within the environment independent of one another to some degree, but still can keep that same kind of management structure and architecture."

▶ **Dell EMC Unity XT is a high-performing unified storage platform that can accommodate growth:**
 "Dell EMC Unity XT is a general-purpose storage solution that meets our performance needs and is also an answer to our storage growth requirements. With Unity XT, we feel we have comfortable headroom to grow."

Based on the interviews, IDC puts the value that study participants will achieve through their use of storage solutions from Dell Technologies at an annual average of $267,200 per 100 usable terabytes ($3.96 million per organization) in the following areas (see Figure 5, next page):

▶ **Business productivity benefits:**
 Study participants generate improved business results and operational efficiencies with more agile and higher-performing storage environments. IDC calculates that they will achieve higher revenue and user productivity worth an annual average of $174,400 per 100TB ($2.58 million per organization).

▶ **IT staff productivity benefits:**
Study participants require less storage staff time to maintain and manage their upgraded Dell Technologies' storage environments and enable development teams with greater storage agility and performance. IDC estimates that they will realize value from time savings and higher productivity worth an annual average of $66,300 per 100TB ($981,200 per organization).
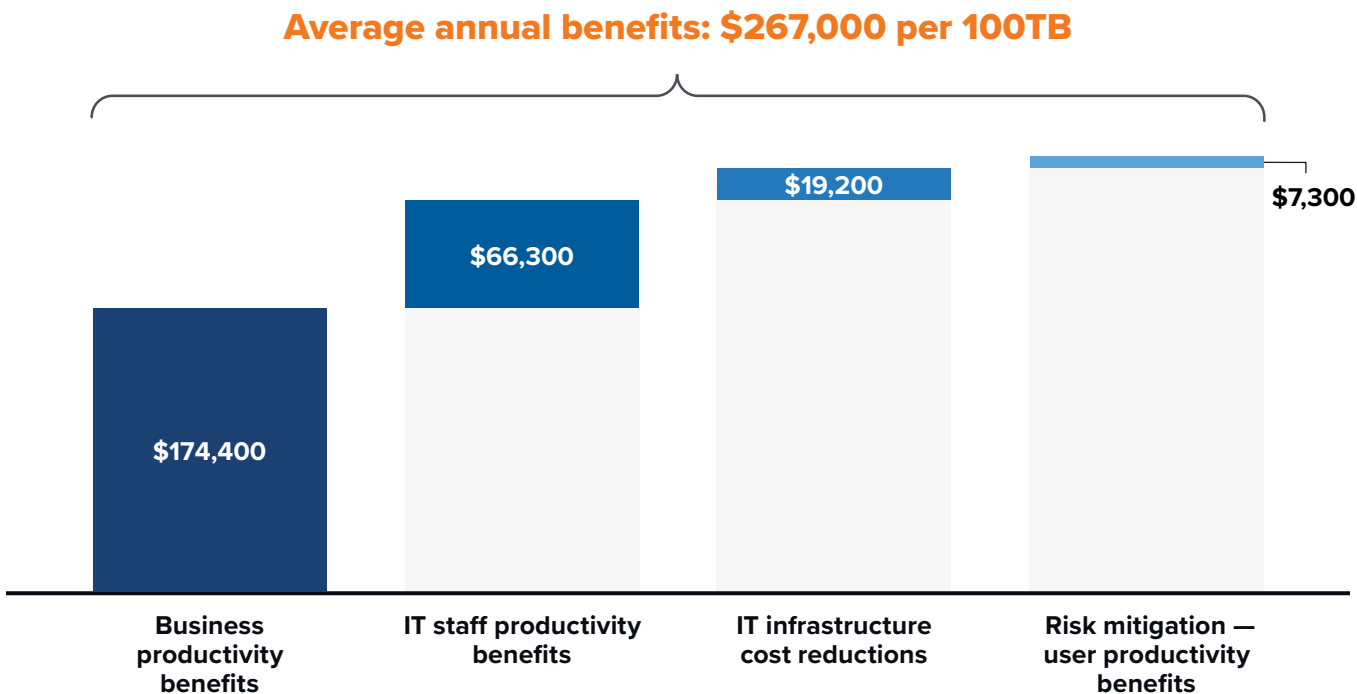
▶ **IT infrastructure cost reductions:**
Study participants take advantage of higher performance related to increased flash storage as well as data deduplication and compression capabilities to make more efficient use of storage hardware and capacity. IDC puts the resultant cost savings at an annual average of $19,200 per 100TB ($284,300 per organization).

▶ **Risk mitigation — user productivity benefits:**
Study participants face fewer business interruptions due to storage-related outages with their Dell Technologies' storage solutions. IDC quantifies the value of productivity gains related to minimizing unplanned outages at an annual average of $7,300 per 100TB ($107,500 per organization).

FIGURE 5
Average Annual Benefits per 100TB

Average annual benefits: $267,000 per 100TB

Business productivity benefits	IT staff productivity benefits	IT infrastructure cost reductions	Risk mitigation — user productivity benefits
$174,400	$66,300	$19,200	$7,300

n = 20 | Source: IDC In-depth Interviews, November 2020

Improved Storage Performance and Business Impact

Study participants rely on their storage environments to deliver the levels of application performance and gain access to data required by their businesses and operations. Suboptimal storage performance in terms of latency, availability, or access to data needed for queries and other analytical activities negatively affects user experience in a way that can exert costs in the form of productivity or even revenue losses. As noted previously, most interviewed Dell Technologies' customers made storage performance a key criterion in their purchasing decisions, understanding the need to improve performance levels.

Interviewed organizations nearly uniformly reported that they have achieved noticeable improvements in storage performance levels with Dell Technologies. They linked these improvements to their ability to successfully carry out business operations. One study participant commented on its improved ability to deliver to business standards: *"We've seen an impact on application stability and performance with Dell EMC PowerMax … . We're meeting all of our internally communicated SLAs compared with probably 95% of these SLAs previously."* Another interviewed organization noted experiencing fewer performance issues: *"We've noticed about an 80% reduction in performance issues with Dell EMC PowerScale — those have nearly disappeared."* Another organization commented generally on improved performance for core applications: *"Our VMware environment's performance is much better with Dell EMC Unity XT, and we are not fighting for memory anymore."*

Figure 6 reflects these performance-related improvements achieved with storage solutions from Dell Technologies. Study participants reported achieving important gains in performance metrics such as reducing the time needed to run analytical queries (34% faster on average), reduced latency (22% lower), and improved application performance (30%).

FIGURE 6

Storage Performance Improvements

(% of improvement)

Reduced time to run analytical queries	34%
Other improved application performance	30%
Reduced latency	22%

n = 20 | Source: IDC In-depth Interviews, November 2020

Study participants linked these types of performance improvements with storage solutions from Dell Technologies to improved business and operational results. They cited specific ways in which enhanced performance benefits their employees and customers, providing a foundation for bolstering productivity levels and also business results.

Examples provided included:

▶ **Improved application performance leads to more revenue:**
"We are seeing more revenue opportunities because of how the applications are running on Dell EMC PowerFlex … . People can do things more quickly from a performance perspective, which leads to more revenue."

▶ **Faster completion of processes and reports enables data scientist team:**
"We have data scientists who create data sheets that hold more data and pull data much more quickly. What we did before was pull information from multiple Excel sheets, some going back 10 years. What used to take an average of 1 hour to run on the previous array is now done in 20 minutes with Dell EMC PowerScale."

Table 4 provides specifics about the business and operational improvements realized by study participants using storage solutions from Dell Technologies. Importantly, a number of interviewed organizations tied higher revenue to improved storage performance, agility, and availability. Interviewed organizations attributed an average higher revenue of $7.52 million per year to their use of Dell Technologies' storage solutions. Meanwhile, they also spoke to the day-to-day benefits for employees using applications supported by their Dell Technologies' storage environments. A substantial number of employees — over 6,600 on average — benefited from an optimized user experience, thereby helping them work more efficiently and effectively in support of their businesses and objectives.

TABLE 4

Business and User Impact

	Per Organization	Per 100 Users
Higher revenue and business enablement		
Total gross revenue gain per year	$7.52 million	$57,900
Total net revenue* gain per year	$1.13 million	$8,700
Higher user productivity		
Number of impacted users	6,642	51
Higher productivity* (equivalent FTEs)	23.0	0.2
Value of higher productivity per year	$1.60 million	$12,300

n = 20 | Source: IDC In-depth Interviews, November 2020

* IDC applies a 15% margin assumption to all gross revenue and user productivity numbers for purposes of the IDC financial model.

Higher Storage Availability and Reduced Risk

Given the vital nature of access to data for interviewed organizations, storage performance is also critical from the perspective of availability. They can ill afford outages that limit employees' ability to use business applications and leverage data to support business operations.

Study participants noted that storage solutions from Dell Technologies provide the levels of availability and reliability required by their businesses, both minimizing losses associated with unexpected outages and bringing down data-related risk:

▶ **Reliability and redundancy:**
 "First and foremost is the reliability of Dell EMC PowerMax and the full redundancy of all the components that are contained within the platform."

▶ **Reliability allows for focus on business:**
 "The reliability, performance, and monitoring of Dell EMC Unity XT that is integrated into our VMware infrastructure provides a solid platform for the organization, allowing everyone to focus on our business, which is our mission."

Table 5 shows how study participants have reduced costs associated with unplanned storage-related downtime and minimized risk. They reported bringing down the amount of unplanned downtime affecting their Dell Technologies' storage environments by an average of 79%, which equals going from losing just more than two hours per user of productive time to less than one-half hour per year. One study participant noted the user impact: *"Our users are absolutely, phenomenally, unreservedly more productive when working on Dell EMC PowerScale. I'd say it's a lot, compared to when they are working on the [previous storage solution]. I'd say 20% higher, as they are now working instead of emailing us complaining about performance."*

As importantly, they have greater confidence that their Dell Technologies' storage environments will support business operations without interruptions or unplanned outages, reducing both quantifiable risk associated with outages such as revenue losses and less quantifiable but extremely costly risk such as data losses or publicly known outages that can cause reputational damage.

TABLE 5

Impact on Unplanned Downtime and User Productivity

	Without Storage from Dell Technologies	With Storage from Dell Technologies	Difference	Change
Frequency of unplanned downtime per year	1.9	1.1	0.8	42%
Time to resolve (hours)	2.9	0.8	2.1	74%
Hours of lost productivity per year per user	0.3	0.1	0.2	79%
Productivity impact per year per organization (FTEs)	2.1	0.4	1.7	79%
Cost of lost productivity per year per organization	$144,700	$31,000	$113,700	79%

n = 20 | Source: IDC In-depth Interviews, November 2020

Improved Storage Agility and Development Efficiency

Many interviewed organizations' storage environments are critical to their ability to deliver new services and products, as well as to their internal development activities. In turn, these activities require them to have the ability to deploy new storage resources quickly and flexibly as business and development needs change. Study participants spoke to their ability to deploy new storage capacity in a timely manner with storage solutions from Dell Technologies. One interviewed organization commented: *"The installation process with Dell EMC Unity XT, including getting the arrays ready to use, is very easy. Our team needs to get data volumes and LUNs ready and assign them to servers. That process is probably 50% more efficient, maybe 75% more efficient."* Another organization reported: *"Our ability to deliver has improved with Dell EMC PowerMax. One good example is having a critical but non-production environment for application testing and evaluation … . It used to take a week to create this copy of our production environment, maybe more, but now it takes a day. We take a snapshot and move it to the restricted network, and we are done."* Table 6 reflects these storage deployment improvements, with study participants needing an average of 52% less time overall to deploy new storage arrays, 51% less staff time to upgrade, and 49% less staff time to deploy new storage arrays.

TABLE 6

Impact on Storage Agility

	Without Storage from Dell Technologies	With Storage from Dell Technologies	Difference	Change
Time to deploy new storage array (days)	2.5	1.2	1.3	52%
Staff time to upgrade storage (hours)	5.9	2.9	3.0	51%
Staff time to deploy new storage array (hours)	19.5	10.0	9.5	49%

n = 20 | Source: IDC In-depth Interviews, November 2020

Study participants reported that improved agility with storage solutions from Dell Technologies have enabled their development teams to a substantial extent. Development teams require constant access to storage resources to plan, test, integrate, and deploy new applications and features, and their ability to spin up and access new storage with ease facilitates improved efficiency and productivity levels. One study participant explained: *"Our ability to deliver has improved with Dell EMC PowerMax. One good example is having a critical but non-production environment for application testing and evaluation. It is an exact copy of our production environment operating behind a restricted network. That whole process used to take a week, maybe more, to set up, but now it takes a day."* Another study participant commented: *"We can do more innovating with Dell EMC PowerFlex because we have the resources to easily spin up environments for developers to use. So if they want to run tests, then they can now spend more time doing that."*

Interviewed organizations reported that their development teams are on average 9% more productive with Dell Technologies' storage solutions, reflecting incremental improvements in these teams' ability to provide timely and relevant application services to employees and customers.

Storage Cost Optimization

In addition to the agility and performance benefits described previously, interviewed organizations reported optimizing their direct storage costs with Dell Technologies. They cited a number of contributing factors to their ability to establish more cost-effective storage environments, including having access to more flash storage (134% more on average), much improved data compression capabilities (125% improved), and longer expected storage life spans (29% longer) (see Table 7). Further, moving to storage solutions from Dell Technologies that provide enhanced software-based capabilities allows for more optimized use of storage capacity. As a result, these organizations are able to run equivalent applications and workloads with streamlined storage environments, allowing them to invest in less storage hardware and capacity.

They provided examples of efficiencies in procuring storage resources related to these improvements with Dell Technologies:

▶ **Lower cost with deduplication and compression capabilities**
"The cost savings with Dell EMC PowerMax alone is competitive, but the improved capacity utilization from compression and deduplication is clearly driving a lower cost of ownership for us through the entire life cycle."

▶ **Consolidated storage environment and higher performance mean less raw storage required:**
"We went down by a huge number of arrays, from 12 to 3, with Dell EMC PowerScale. We'll also avoid purchasing 30–45TB of additional storage because of improved data deduplication capabilities."

TABLE 7

Impact on Storage Cost and Use

	Without Storage from Dell Technologies	With Storage from Dell Technologies	Difference	Change
Flash storage as a percentage of storage environment	28.0	65	37	134%
Average storage life span (years)	4.1	5.3	1.2	29%
Data compression rates	2.7	6.1	3.4	125%

n = 20 | Source: IDC In-depth Interviews, November 2020

These storage-related improvements have allowed interviewed Dell Technologies' customers to build out storage environments for equivalent workloads at an average cost of 23% lower than with their previous or other storage solution. This equates to savings of over $53,000 per 100TB over three years, an important cost reduction for organizations seeking to optimize costs even as storage and data volumes continue to grow and become more vital to their business operations (see Figure 7).

Three-Year Storage Infrastructure Costs
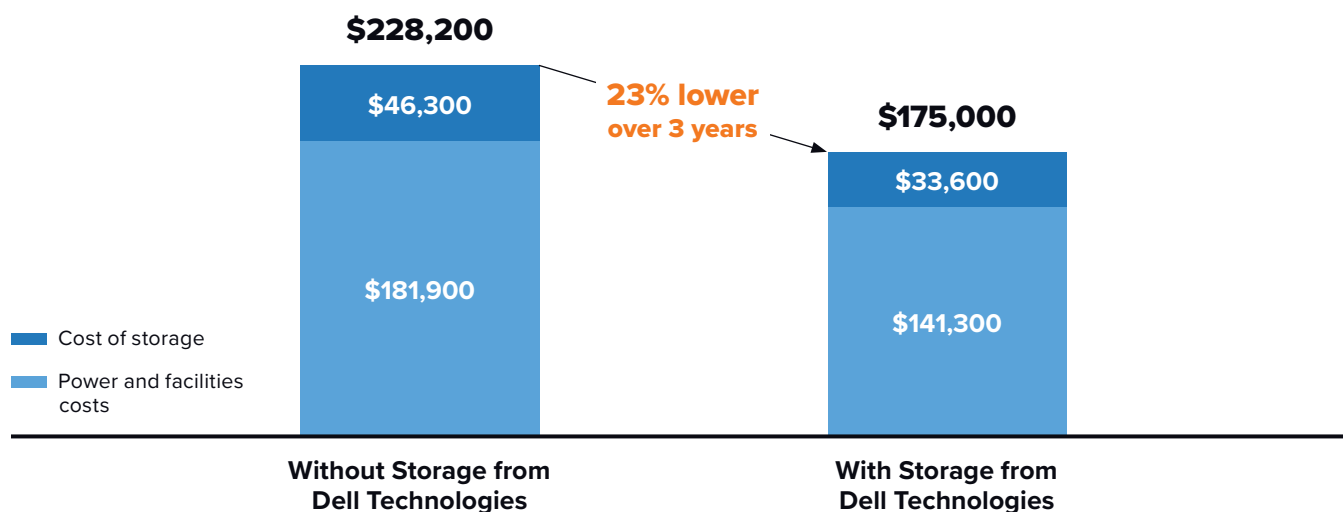
n = 20 | Source: IDC In-depth Interviews, November 2020

Storage Management Efficiencies

Study participants reported that they have benefited from specific management-related capabilities of their Dell Technologies' storage environments to minimize the amount of storage team time required for day-to-day operations. Study participants noted the benefits in terms of management stemming from both consolidated, high-performing storage and specific features such as CloudIQ: *"Dell EMC PowerMax makes configuration and administration much easier … . CloudIQ is another great innovation that gives us performance and capacity data from the storage array to a cloud-based website."* Beyond reducing the direct costs of running their storage environments, study participants emphasized that staff efficiencies are beneficial because they have opportunities to reallocate or refocus saved time on other IT or business activities.

Interviewed organizations provided a number of examples of how they are leveraging these efficiencies:

▶ **Ease of use enables focus on other activities:**
"Dell EMC Unity XT's monitoring and interface capabilities offer an ease-of-use benefit … . Time freed up allows the team to work on other storage areas and needs such as expanding into the VMware area — that is the current project."

▶ **Reduced day-to-day work means more focus on application performance/architecture:**
"Not having to invest time and management with Dell EMC PowerMax has freed the team up to focus on getting more on monitoring and reporting specific to the application performance for customers. It also allows the team more time to put into architecting new or better solutions to be more efficient rather than spending time on break/fix and keeping things at status quo."

▶ **Time freed up to work on other business-focused projects:**
"Dell EMC Unity XT has reduced the time our storage team spends on managing the storage … . We can work on more projects with Unity XT with the virtualization team. The unified team increases productivity in other areas as well — we have more time for planning, researching, testing, stuff like that."

▶ **Focus storage staff on business enablement:**
"With Dell EMC PowerFlex, we are able to focus on other projects that are needed by the business. We are able to help the business progress on the things that they need, instead of having to build servers, for example."

Table 8 provides the impact of using storage solutions from Dell Technologies on IT storage infrastructure teams' time requirements. IT storage teams have benefited from shifting their time from "keeping the lights on" (42% less on average) to other activities such as innovation (30% more on average). Overall, interviewed organizations reported running equivalent storage environments with 46% less storage team time, representing an important improvement in operational efficiency.

TABLE 8

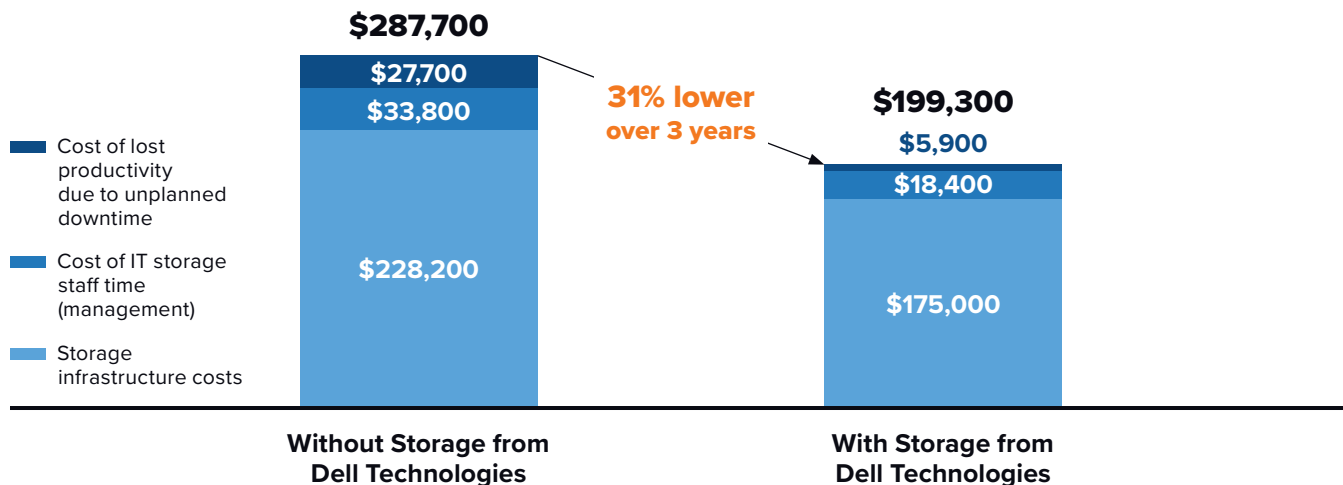## Impact on IT Storage Infrastructure Team

	Without Storage from Dell Technologies	With Storage from Dell Technologies	Difference	Change
Staff time per organization (FTEs)	1.8	1.0	0.8	46%
Value of staff time per organization per year	$176,400	$95,800	$80,500	46%
Staff time "keeping the lights on"	41%	24%	17%	42%
Staff time for other activities	59%	76%	17%	30%

n = 20 | Source: IDC In-depth Interviews, November 2020

Cost of Operations

IDC's analysis shows that study participants have realized both significant cost efficiencies and value relative to their investment with storage solutions from Dell Technologies. As shown in Figure 8 (next page), IDC calculates that study participants will lower the total cost of operating their storage environments by 31% over three years, thereby saving over $88,000 per 100TB in terms of storage infrastructure costs, IT storage staff efficiencies, and higher productivity by reducing the impact of unplanned outages.

FIGURE 8

Three-Year Cost of Operations

$287,700

$27,700

$33,800

$228,200

31% lower
over 3 years

$199,300

$5,900

$18,400

$175,000

Cost of lost
productivity
due to unplanned
downtime

Cost of IT storage
staff time
(management)

Storage
infrastructure costs

Without Storage from
Dell Technologies

With Storage from
Dell Technologies

n = 20 | Source: IDC In-depth Interviews, November 2020

ROI Analysis

Table 9 (next page) presents IDC's analysis of the benefits and costs for study participants of using storage solutions from Dell Technologies. IDC calculates that study participants will realize three-year discounted benefits worth an average of $9.44 million per organization ($637,700 per 100TB) in storage infrastructure cost savings, staff efficiencies and productivity gains, and higher revenue. These benefits compare with three-year discounted investment costs of $2.31 million per organization ($156,100 per 100TB). IDC calculates that these benefits and investment costs would result in an average three-year ROI of 308% for interviewed Dell Technologies' customers, with breakeven in their investment occurring in an average of eight months.

TABLE 9

Three-Year ROI Analysis

	Average per Organization	Average per 100 Usable Terabytes
Benefit (discounted)	$9.44 million	$637,700
Investment (discounted)	$2.31 million	$156,100
Net present value (NPV)	$7.13 million	$481,600
Return on investment (ROI)	308%	308%
Payback period	8 months	8 months
Discount rate	12%	12%

n = 20, Source: IDC In-depth Interviews, November 2020

Challenges/Opportunities

As a vendor, Dell Technologies is facing many of the same challenges as its competitors in meeting evolving storage infrastructure requirements for businesses undergoing digital transformation. More traditional storage architectures and technologies are often not the best way to deliver the agility that IT organizations need in today's business climate. Gaining access to newer technologies and more flexible architectures is part of what's driving the need for storage infrastructure refresh at so many businesses undergoing digital transformation.

That said, Dell Technologies has a very broad portfolio that features the new technologies that our survey respondents identified as most desirable — more software-defined infrastructure, an ability to better leverage cloud across operational areas, and increased cybersecurity — as well as the key storage features specifically called out by survey respondents — hardware-assisted inline data reduction and encryption, NVMe technology, and multiple access methods (for storage consolidation). With its broad product offerings, Dell Technologies can meet a wide range of customer requirements, and this provides the company an excellent opportunity to offer differentiating value for digitally transforming customers, particularly against competitors that just sell storage infrastructure.

Conclusion

Dell Technologies' storage portfolio includes comprehensive IT infrastructure offerings that customers looking for proven, mature, and high-performance solutions; a strong reputation for good customer experience; responsive and high-quality tech support; deep cross-product integration; and the availability of multiple consumption models value. And our survey results showed a clear correlation between these requirements and the selection of Dell Technologies as the storage vendor of choice. Across the board, Dell Technologies' customers we interviewed confirmed increased agility (due to faster deployment and easier expansion and upgrades), higher availability (79% less unplanned downtime), 46% increased efficiencies for both development and IT management, and 23% lower storage costs. Customers of all five types of Dell EMC storage platforms we focused on noted that the systems' high performance allowed them to consolidate more workloads onto fewer platforms, simplifying administration by minimizing separate storage silos. And the breadth of the IT infrastructure portfolio offers platforms that can cost effectively meet the needs of small, medium-sized, and large businesses alike while providing room for ample growth.

Our survey data indicated that customers have a clear perception of what differentiates Dell Technologies from the competition, and that those aspects — mature, high-performance platforms; positive customer experience; high-quality tech support; deep cross-product integration; and the availability of multiple consumption models in purchasing — are critical in meeting digital transformation objectives. Prospects that find these five aspects attractive will want to evaluate infrastructure solutions from Dell Technologies during their own digital transformation.

Appendix: Methodology

IDC's standard ROI methodology was utilized for this project. This methodology is based on gathering data from organizations currently using Dell Technologies' storage solutions as the foundation for the model. Based on interviews with these study participants, IDC has calculated the benefits and costs to these organizations of using Dell Technologies' storage solutions.

IDC used the following three-step method for conducting the ROI analysis:

1. **Gathered quantitative benefit information during the interviews using a before-and-after assessment of the impact of Dell Technologies' storage solutions.** In this study, the benefits included staff time savings and productivity benefits and storage- and IT-related cost reductions.

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 Dell Technologies' storage solutions and can include additional costs related to migrations, planning, consulting, and staff or user training.

3. **Calculated the ROI and payback period.** IDC conducted a depreciated cash flow analysis of the benefits and investments for the organizations' use of Dell Technologies' storage solutions over a three-year period. ROI is the ratio of the net present value (NPV) and the discounted investment. The payback period is the point at which cumulative benefits equal the initial investment.

IDC bases the payback period and ROI calculations on a number of assumptions, which are summarized as follows:

▶ **Time values are multiplied by burdened salary (salary + 28% for benefits and overhead) to quantify efficiency and manager productivity savings.** For purposes of this analysis, based on the geographic locations of the interviewed organizations, IDC has 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 assumes that employees work 1,880 hours per year (47 weeks x 40 hours).

▶ **Downtime values are a product** of the number of hours of downtime multiplied by the number of users affected.

▶ **The impact of unplanned downtime is quantified** in terms of impaired end-user productivity and lost revenue.

▶ **Lost productivity is a product** of downtime multiplied by burdened salary.

▶ **The net present value of the three-year savings is calculated** by subtracting the amount that would have been 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.

▶ **Because every hour of downtime does not equate to a lost hour of productivity or revenue generation, IDC attributes only a fraction of the result to savings.** As part of our assessment, we asked each interviewed organization what fraction of downtime hours to use in calculating productivity savings and the reduction in lost revenue. IDC then taxes the revenue at that rate.

▶ **Because IT solutions require a deployment period, the full benefits of the solution 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.

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

About the Analysts

Eric Burgener
Research Vice President, Infrastructure Systems,
Platforms and Technologies Group, IDC

Eric Burgener is Research Vice President within IDC's Enterprise Infrastructure Practice. Eric's core research coverage includes Storage Systems, Software and Solutions, quarterly trackers, end-user research as well as advisory services and consulting programs. Based on his background coverage enterprise storage, Eric's research includes a particular emphasis on flash-optimized arrays, emerging persistent memory technologies, and software-defined storage. He is an active participant in the IT Buyers Research Program at IDC and blogs throughout the year on the topic of Infrastructure and Data Management.

More about Eric Burgener

Matthew Marden
Research Director, Business Value Strategy Practice, IDC

Matthew Marden is a Research Director in the IDC Business Value Strategy team. He 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 (ROI) 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

For more information on storage solutions from Dell Technologies, please visit:

DellTechnologies.com/Storage

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