



ESG WHITE PAPER

Dell Technologies Continuously Modern Storage

Modernize Data Storage to Accelerate Operations and Digital Business Initiatives

By Scott Sinclair, ESG Practice Director and Monya Keane, ESG Senior Analyst

May 2022



This ESG White Paper was commissioned by Dell Technologies and Intel and is distributed under license from TechTarget, Inc.

Contents

Introduction.....	3
Why Rethinking IT Infrastructure Is Essential.....	3
The Modernization Movement.....	4
Rethinking Data Storage Technology.....	5
Integrated Automation	5
Integrated Security	6
Multi-cloud/Multi-location Control and Mobility.....	6
Dell’s Approach to Continuously Modern Storage.....	6
Automation.....	7
Security.....	7
Designed for Distributed, Multi-cloud Environments.....	8
The Bigger Truth	9

Introduction

IT's role in business has changed. IT organizations were traditionally once viewed as cost centers, but they are now perceived as true revenue creators. In turn, that change has fundamentally shifted IT's priorities in regard to infrastructure design and architecture. As these organizations try to adjust their priorities, however, they sometimes underestimate how quickly their environments could become disaggregated across multiple sites, including various data centers and public cloud providers.

Adoption of public cloud services has risen fast. But often, all that the business requires from IT can't be accomplished simply by using public cloud services. The scale of today's digital demands—the increase in business-related needs—surpasses what IT can accomplish in any one location. Distributed operations across public cloud services *and* private data centers will continue to be the essential mode of operations for the foreseeable future. For example, data security and corporate governance concerns alone will dictate that some data/workloads must remain on-premises no matter what.

This is why businesses must improve their agility and operational efficiency across their entire IT infrastructure, including within the data center. A need exists for more automation, as well as for more adaptable software architectures on-premises and seamless integration with the cloud. There are simply not enough people and budget money to accelerate operations with traditional systems alone.

In addition, all of those traditional allocations of personnel and budget come with significant opportunity costs, stealing resources away from what should instead be allocated to pursuing digital initiatives to boost revenue and improve operational efficiency.

So, data storage infrastructure must be modernized to support demands for increased efficiency in the data center and across distributed cloud environments alike. Fortunately, [Dell Technologies](#) and its Continuously Modern Storage approach provides an exemplary starting point to help IT decision makers rethink their strategy for IT architecture and design.

Why Rethinking IT Infrastructure Is Essential

ESG research highlights the challenges inherent in running modern IT environments and makes the case for investigating Continuously Modern Storage. Consider that today, 59% of ESG survey respondents identify data as “being their business,” and in two years, the percentage is expected to increase to 81% of respondents.¹ And as these digital businesses require more from IT, the pressure to accelerate operations increases. ESG found that:

- **More than two-thirds** of surveyed IT organizations are under pressure to accelerate IT infrastructure deployment and provisioning to support developers/line-of-business teams.
- **Nine out of ten** IT organizations now must move faster than three years ago—nearly half of them by more than 50%.²

As demands scale, so too does data and IT infrastructure, leading to storage sprawl. Data growth isn't slowing down. ESG research shows that, on average, organizations are expecting a 35% growth rate for on-premises capacity and a 39% growth rate for public cloud capacity over the next three years.³ Organizations are also increasingly using more than one cloud service: 86% report leveraging more than one public cloud provider, and 65% leverage more than two.⁴

¹ Source: ESG Research Report, [Data Infrastructure Trends](#), November 2021.

² Ibid.

³ Ibid.

⁴ Source: ESG Complete Survey Results, [Distributed Cloud Series: Application Infrastructure Modernization Trends](#), March 2022.

Back to on-premises, data center investments are expanding, too. Among IT organizations surveyed by ESG, 47% expected to increase their data center infrastructure spending in 2022, and an additional 48% expected to maintain their current spending rate.⁵ ESG also found that on-premises data center locations are expected to increase, with the percentage of organizations leveraging six or more data centers globally expected to rise from 40% today to 63% in five years.⁶

But as this IT scale and distribution increases, so too does complexity. Among survey respondents, 64% agreed that the complexity of their IT infrastructure is slowing operations and hampering digital initiatives. In regard to data storage specifically, 64% also agreed that infrastructure requirements and spending are hard to predict for their organizations.⁷

Problematic skill shortages across IT are further increasing the burden. Thirty-nine percent of surveyed organizations are experiencing problematic skills shortages in IT architecture and planning in particular.⁸ And 76% of respondents agreed that they have taken on added or new responsibilities to support their organization’s digital transformation goals and initiatives or are under pressure to do so.⁹

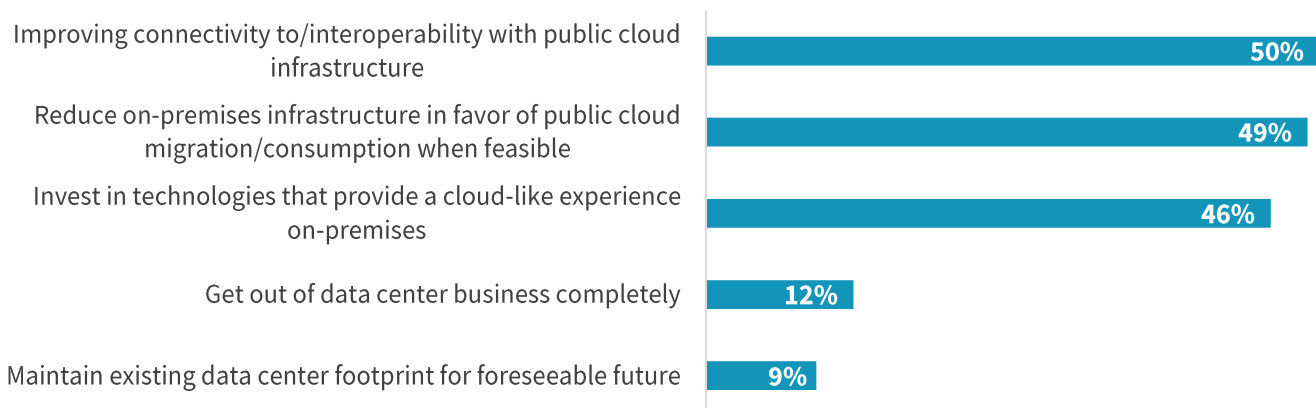
Lastly, the rising role/influence of developers on IT operations is coming into play as well. Developers are in charge of designing, building, and executing those all-important digital strategies—they are the teams that have the fullest visibility into every process that goes into creating a new digital solution for the business. IT Ops needs to work with and support these DevOps teams to the maximum extent possible.

The Modernization Movement

How are IT organizations planning to modernize their on-premises data center infrastructure environments? As Figure 1¹⁰ shows, few organizations (12%) expect to get out of the data center entirely, and fewer still (9%) expect to maintain what they have today. Instead, a combined 79% will modernize over the next three years with a focus on moving some workloads to the cloud, building-out better hybrid and multi-cloud interoperability, and becoming more cloud-like in their data center operations.

Figure 1. Dominant Three-year Data Center Strategies

Which of the following is or likely will be part of your organization’s strategy for on-premises data center environments over next three years? (Percent of respondents, N=372, multiple responses accepted)



Source: ESG, a division of TechTarget, Inc.

⁵ Source: ESG Research Report, [2022 Technology Spending Intentions Survey](#), November 2021.

⁶ Source: ESG Complete Survey Results, [Distributed Cloud Series: Application Infrastructure Modernization Trends](#), March 2022.

⁷ Source: ESG Research Report, [Data Infrastructure Trends](#), November 2021.

⁸ Source: ESG Research Report, [2022 Technology Spending Intentions Survey](#), November 2021.

⁹ Source: ESG Research Report, [Data Infrastructure Trends](#), November 2021.

¹⁰ Source: ESG Complete Survey Results, [Distributed Cloud Series: Application Infrastructure Modernization Trends](#), March 2022.

Overall, ESG found that IT decision makers expect to modernize their data center environments in the following areas:

- Implementing a software-defined data center strategy (reported by 32%).
- Using containers and other modern app elements to make apps more portable across multiple clouds (27%).
- Increasing use of data center infrastructure service management and automation tools (25%).¹¹

Which brings us to making the case for Continuously Modern Storage. Most IT leaders know that data center design is strategic and can lead to a competitive advantage. Data storage is an essential component of a data center, working to ensure that applications and users get the data they need, at the right availability, resiliency, and cost.

Rethinking Data Storage Technology

Storage infrastructure plays an important role in the success of digital initiatives and ongoing IT operations alike. But identifying the right infrastructure performance tier, price point, availability level, and resiliency level is not easy. Making a wrong decision can greatly impact application performance, user experience, cost, and risk.

The storage selected must meet all the enterprise storage requirements that businesses expect for application environments: simplicity, performance optimized for security and compliance, cost, resiliency, availability, and intelligent data management capabilities. The following sections detail what ESG believes are the “table-stakes considerations” for storage environments today.

Integrated Automation

Ease of use equates to both speed and elimination of steps via automation. With the current skills shortage challenges in mind, IT needs to understand the opportunity-cost implications of complicated infrastructure management. IT also needs to inject adaptability into the environment, choosing storage platforms that are able to scale rapidly and non-disruptively and that support multiple workload types and deployments (bare-metal, file, block, object, or HCI) depending on need.

Improvements to automation must be a priority. Consider that:

- **37%** of surveyed organizations identify as having a problematic skill shortage in IT orchestration and automation, suggesting that traditional automation technologies are too complex.
- **46%** of surveyed organizations expect to increase investment in management, orchestration, and automation tools in 2022.¹²

Dell PowerStore: A Productivity Booster

PowerStore gives organizations speed and scale, not complexity. It has a self-optimizing architecture with built-in AI and machine learning that auto-tunes efficiency, performance, and availability without requiring manual intervention or tweaking of infrastructure.

When users do need to make decisions, PowerStore lets them move forward quickly with intelligent analysis and connected insights across multiple infrastructure categories—including servers, storage, networking, and cloud.

PowerStore also automates and streamlines the overall workload environment with a programmable architecture that integrates leading DevOps, containerization, and open management frameworks—VMware, Kubernetes, Ansible, ServiceNow and more—to deploy new services in seconds versus days.

¹¹ Source: ESG Brief, [2022 Data Center Infrastructure Spending Trends](#), March 2022.

¹² Source: ESG Research Report, [2022 Technology Spending Intentions Survey](#), November 2021.

Integrated Security

Security is a critical pillar of modernization. IT doesn't necessarily want some applications in the cloud for security reasons; however, they do need to protect what is on-premises. In essence, they need to protect the availability and integrity of data and operations—wherever they reside. Cybersecurity is an essential IT priority that extends down to storage.

In particular, ransomware recovery capabilities are a must-have requirement these days. Ransomware is everywhere. ESG found that:

- 63% of surveyed organizations have been the target of ransomware in the last 12 months.
- 48% of surveyed organizations have been the victim of a successful ransomware attack.
- 64% of ransomware victims pay the ransom.¹³

Multi-cloud/Multi-location Control and Mobility

Data movement is pervasive and a challenge. Consider that:

- 57% of IT organizations repatriated workloads back from public cloud services.
- 65% agreed that their organization faces challenges with application and data portability across locations.
- 58% of organizations are moving data between their data center(s) and the public cloud “all the time” or “regularly.”¹⁴
- IT also needs to connect DevOps to the hyperscaler ecosystem in order to accelerate development.

Application and container mobility is critical to enable developers to choose on-premises and cloud services that best fit their needs. Organizations also want to seamlessly move copies of data from on-premises infrastructure to the public cloud for long-term retention and archiving or to use that data with additional cloud services.

Dell's Approach to Continuously Modern Storage

Dell Technologies, a trailblazer in IT, has an extensive portfolio of leading storage solutions. In fact, its broad portfolio covers the whole IT stack (storage, servers, software, networking, etc.) to help organizations simplify their IT ecosystems on a macro scale. Dell's specific approach for Continuously Modern Storage is enabled by software-driven innovation and marked by characteristics centered on automation, security, and an ability to support distributed multi-cloud environments. While software delivers on all these key features, it is the combination of software and highly specialized hardware using the latest Intel technologies that delivers the performance, efficiency, and hardware-enabled security needed in modern storage environments.

With the growing focus on AIOps, DevOps, security and multi-cloud, it's not just about storage capacity and performance anymore. Dell is delivering software innovations across its entire storage portfolio—including PowerStore, PowerMax, PowerFlex, PowerScale, PowerProtect, Unity XT, and CloudIQ.

¹³ Source: ESG Research Report, [2022 Technology Spending Intentions Survey](#), November 2021.

¹⁴ Source: ESG Survey Results, [2021 Data Infrastructure Trends](#), September 2021.

Automation

Adaptable software architectures have integrated intelligence, built-in AI, and automation. They adapt with you and deliver intelligent insights across the entire infrastructure. That capability is key to automating IT operations, and it allows IT to boost productivity and be ready for what comes next.

Dell's storage, including the VxRail hyperconverged appliance, offers intelligence with built-in AI and automation. All Dell storage can proactively monitor health, cyber resiliency, performance, and capacity. For example, Dell CloudIQ uses telemetry, machine learning, and analytic algorithms to help both traditional IT Ops and DevOps specialists resolve infrastructure issues up to ten times faster, per Dell.

Intelligent insights are available end-to-end, across the entire infrastructure. According to Dell, access to these insights can save up to one day a week of admin time—time that can then be allocated to higher-value tasks. For example:

- PowerStore extends its adaptable architecture with native replication for any workload (including file and vVol workloads) and new native metro sync replication—delivering simple, easy, high-availability shared storage across sites without any additional equipment.
- PowerMaxOS 10.0 adds multi-array smart provisioning and workload optimization, health and compliance monitoring/remediation, and NVMe/TCP networking configuration that reduces setup time by up to 44%, enabling IT to automate complex storage operations.
- IT can also increase performance and capacity independently. Data path optimization delivers linear scale with PowerFlex.

Security

Comprehensive cyber resiliency keeps bad actors out of an environment while providing the resiliency that data needs in the event of a cyberattack—throughout the data life cycle. It starts with zero-trust and is inclusive of isolation and immutability, so an organization can innovate securely and invest with confidence.

Dell believes it is delivering the world's most secure mission-critical storage with PowerMax, which is designed for robust, zero-trust security architectures. PowerMax offers protection against cyberattacks including ransomware attacks, with advances such as operational air-gapping with data isolation and immutability. Also offering protection is the Dell PowerProtect Cyber Recovery solution, which can find data corruptions with up to 99.5% confidence, according to Dell.

Key areas that Dell highlights include the following:

- PowerMax ransomware anomaly detection works 24/7 to detect suspicious activity before an operational attack can occur. PowerMax takes a comprehensive approach to cyber resiliency and is designed for zero-trust security architectures. It offers multifactor authentication, continuous ransomware anomaly detection, and a native air-gapped cyber vault for open system servers and mainframes. And it has excellent scalability—to 65 million immutable snapshots per array.
- For the on-premises infrastructure, Dell CloudIQ's intelligent insights now extend to ransomware capabilities, helping to detect early cyberattack behaviors, minimize exposure, and speed recovery.
- PowerProtect Cyber Recovery delivers modern protection against cyberattacks including ransomware attacks, with a secure vault (on-premises or in public clouds) to secure and recover critical data.

Designed for Distributed, Multi-cloud Environments

Multi-cloud ecosystem flexibility gives IT the ability to build, run, and manage container-based applications using intelligent storage—on-premises, in public clouds, in cloud-adjacent locations, or in colocation centers—all with a consistent operational experience. That is how IT gains multi-cloud control and mobility—to get more value from information, wherever it lives.

Dell's cloud-enabled software and DevOps-ready platforms work with all the leading hyperscalers. Dell has a long history of supporting the biggest companies in the world. It offers truly enterprise scale in both performance and capacity—as well as rich storage and data protection services such as Dell's scale-out file system and advanced data-reduction capabilities for applications running in the public cloud, all designed to provide a consistent operational experience. For example:

- Dell Technologies has a broad product portfolio supporting all major hyperscalers (e.g., AWS, Azure, and Google Cloud Platform across 3rd-tier storage, UDS, HCI/SDI, and DP).
- For cloud-native workloads and DevOps orchestration, PowerFlex has broad support for hyperscaler and container orchestration platforms for file and block data across bare metal and hypervisors—on a single platform. This solution thereby unifies compute and storage for file and block data on bare metal and/or hypervisors simultaneously. Organizations can choose which hyperscaler or container orchestration platform to run on any PowerFlex deployment combination (Amazon, Google, Microsoft, Red Hat, SUSE, and VMware).
- Dell has increased its data mobility and protection features. PowerStore 3.0 extends native replication capabilities for any workload, now enabling IT to protect file and vVol workloads (in addition to block) directly from PowerStore.
- PowerMax offers more options for seamless, secure data movement to AWS, Azure, and ECS—as well as 2x throughput performance, built-in redundancy, and high availability. IT can quickly move data to public clouds with faster cloud snapshot shipping and recovery, built-in high availability to avoid downtime, and easy restoration of cloud-based object storage data.

Dell's recently announced Tech Preview for Project Alpine is now reinforcing Dell's data protection capabilities by bringing block, file, and object storage software to public clouds, adding flexibility for managing data in on-premises and public cloud environments as necessary.

- Dell has demonstrated the benefits of using its storage software in both hybrid and native cloud use cases—offering cloud bursting, test/dev, data and container mobility, and cloud-based data analytics at scale.
- Dell's storage software in a public cloud provides replication targets for data stored on-premises in Dell arrays, so that IT can copy data to the cloud and leverage public cloud services against historical data collections and data lakes.
- Dell also brings its hallmark storage intellectual property to the public cloud in a cloud-independent way, so that IT can take advantage of capabilities such as performance and capacity scalability, high availability, deduplication, and copy management (snapshots and clones) with applications based on cloud-based processing and software services.
- The operational consistency between the on-premises and cloud versions of the storage software enables new cloud use cases for tens of thousands of organizations already familiar with Dell technology.

The Bigger Truth

The growth, diversity, and security of data and the prevalence of multi-cloud usage are all facts of life now. Organizations must optimize all of those aspects of modern IT, which points to an urgent need to implement and leverage Continuously Modern Storage.

Software innovation is what has kept Dell as a leader in the storage market for decades. And clearly, Dell intends to continue to advance that innovation. Dell is attempting to make the path forward into the future as easy as possible for its customers by equipping IT organizations with software innovation that will have a real-world impact on IT modernization efforts today and tomorrow.

All product names, logos, brands, and trademarks are the property of their respective owners. Information contained in this publication has been obtained by sources TechTarget, Inc. considers to be reliable but is not warranted by TechTarget, Inc. This publication may contain opinions of TechTarget, Inc., which are subject to change. This publication may include forecasts, projections, and other predictive statements that represent TechTarget, Inc.'s assumptions and expectations in light of currently available information. These forecasts are based on industry trends and involve variables and uncertainties. Consequently, TechTarget, Inc. makes no warranty as to the accuracy of specific forecasts, projections or predictive statements contained herein.

This publication is copyrighted by TechTarget, Inc. Any reproduction or redistribution of this publication, in whole or in part, whether in hard-copy format, electronically, or otherwise to persons not authorized to receive it, without the express consent of TechTarget, Inc., is in violation of U.S. copyright law and will be subject to an action for civil damages and, if applicable, criminal prosecution. Should you have any questions, please contact Client Relations at cr@esg-global.com



Enterprise Strategy Group is an integrated technology analysis, research, and strategy firm that provides market intelligence, actionable insight, and go-to-market content services to the global IT community.