Ultimate Guide to Digital Transformation in the Data Storage Environments

I. OVERVIEW: DATA ACCESS IN THE ERA OF DIGITAL TRANSFORMATION

Access to data is the lifeblood of your enterprise and how you leverage it differentiates your business. In this digital era, data proliferation requires a fundamental change in how it is accessed, stored and managed. Whether you're undertaking large-scale digital transformation or a smaller series of incremental digital initiatives, meeting the needs of a digital enterprise means embracing a strategy that has zero tolerance for downtime and consistently delivers fast and uninterrupted access to all of your data for ever-growing numbers of users and applications.

Digital transformation is not a specific technology or a set of technologies — it is an essential business strategy in today's digital era. The MIT Sloan Management Review survey, *The Nine Elements of Digital Transformation,* shows that companies that are more mature in their digital transformation journey outperform those that are not.

Storage Virtualization and Data on Demand

In a new world of distributed and diverse data, the traditional data warehouse verges on obsolescence. When it comes to data storage, a *2017 Gartner report* on disruptive technologies shows that better management of data growth and ensuring high availability of data in support of business demands are today's top priorities (see Figure 1). This underscores the importance of digital initiatives requiring rapid and reliable data integration, data sharing, and data storage by users and by applications.
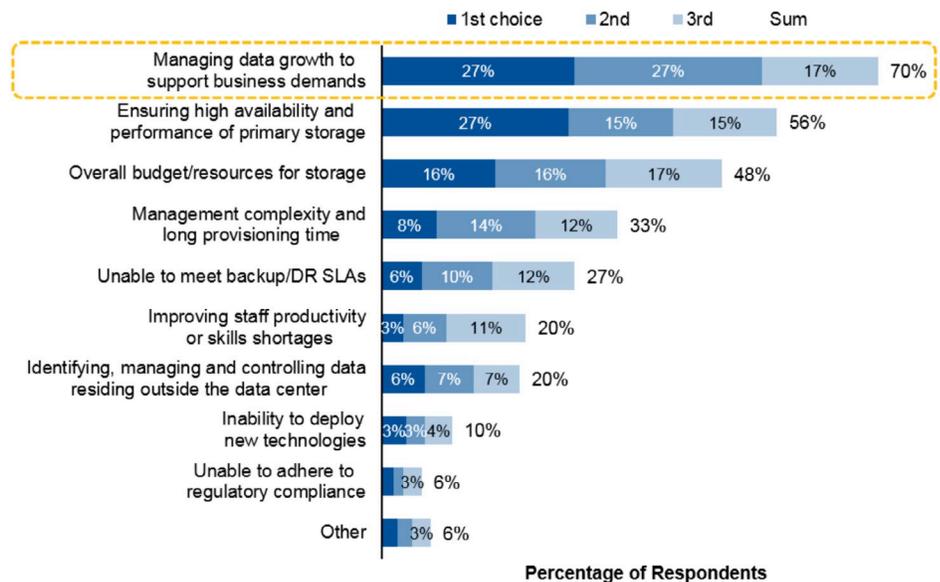
Figure 1. Recent Gartner report shows top business priorities include managing data growth.

In this paper, we'll explore three strategic focus areas to digitally transform the enterprise by enabling easier access and management of data growth: customer experience, operational processes and business models.

II. ENHANCE THE CUSTOMER EXPERIENCE WITH STORAGE VIRTUALIZATION

Digitization brings tremendous opportunities to your business, no matter what industry you're in. By allowing your organization to remove physical, geographic and device-specific restrictions of data storage equipment that slow, interrupt or endanger your IT operations, you can dramatically and positively transform the customer experience. In addition, your users and customers expect IT services to be always on, and always connected—or you risk losing business. Storage virtualization is changing the game for all things digital—including big data, cloud, mobile apps, SaaS, IoT and even artificial intelligence and machine learning.

Storage virtualization is a single data integration platform that lets you not just query and access data across your network, but also the data residing in the cloud and on premises across various sources and systems. Storage virtualization technology has expanded beyond data federation to provide what is essentially a virtual data layer across the entire enterprise. The benefit of storage virtualization software is that it lets you access and query all types of data across the network as if it were stored in a single place. It's creating a "universal access" environment without ever having to physically move the data.

This frictionless access means you can deliver required data to business users and apps quickly, regardless of where it is physically located. It also simplifies application management and supports the unification of endpoint management. With storage virtualization, you get a flexible data management approach that delivers significant savings over traditional data replication and consolidation. All of this lays a foundation for increased productivity, an empowered digital workspace, and rich desktop and mobile experiences for users, delivered where and when they need them.

Virtualization also gives you the ability to develop, test, iterate, update and scale rapidly, further supporting your digital initiatives. So, what does this mean to you? More insight from your data, and faster responses for analytics and business intelligence applications. Ultimately, your business becomes empowered with more insight and agility to respond to changing conditions.

Seven Benefits of Storage Virtualization Software

1. Access and query all your data as if it's stored in a single location

2. Frictionless access provides rapid connectivity for users and applications

3. Simplifies application and endpoint management

4. Delivers significant cost savings over traditional data replication and consolidation

5. Provides a foundation for increased productivity and better user experience

6. Easier development, testing, updating and scaling of your digital initiatives

7. The significance of hyperconverged infrastructures

III. CREATE HIGH-PERFORMANCE IT OPERATIONS

Organizations are increasingly migrating away from siloed IT solutions dedicated to operations or departments and toward platform models that integrate functions such as data storage and network management. This hyperconverged approach is a trend that is transforming traditional IT delivery by creating a high-performance, cost-effective infrastructure.

Best Practices for High-Performing IT Operations

The results from a recent *IDC survey* of 2,500 IT executives strongly suggest that companies who are successfully transforming IT operations are able to more easily meet defined business objectives. Businesses effective in transforming IT have a significant common denominator that stands out— the IT organization must be lightning-fast in response to the needs of key stakeholders. The IDC report also shows this superior level of business support was cited by 80% of organizations as a key feature of successful IT transformation.

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For your business to see similar benefits, your IT operations strategy must include several initiatives.

Here are three ways digital transformation improves IT operations:

1. **Leverage technology that creates a unified environment in which to access data.** Fast, continuous, and easy access to data by users and applications adds value across the enterprise from improved cost efficiencies, better end user experiences, and the rapid delivery of solutions under continuously changing requirements.

2. Employee training. Among organizations successfully transforming IT, 98% of them integrate employee training into their strategic plan. The results? Your expensive IT staff spends up to 20% less time on IT maintenance and repair. This collaborative approach also fosters a limitless atmosphere that lets IT focus on innovation, leverage external benchmarks to raise standards, and continue to drive better overall results by focusing on core business initiatives.

3. Adopt highly integrated data storage and network management. When your organization embraces hyperconverged infrastructures (highly integrated data storage and network management), this allows you to easily modernize, automate and transform every business line.

High-Performance IT Demands a Data-First Approach

Digital transformation initiatives require a "data-first" approach where access to the information is paramount to the customer journey. Reducing complexity by adding new hyperconverged solutions while also leveraging your existing systems of record (SOR) investment and rapid access to data in applications or systems of engagement (SOE) provides IT the ability to be agile in delivering results to the business lines. As a result, many organizations are looking at hyperconverged systems.

In fact, a recent ESG survey stated that 85% of Information Technology and Digital Media (ITDM) professionals have deployed, or plan to deploy, hyperconverged systems. The results show how hyperconverged solutions empower organizations on their IT transformation journeys with these 3 benefits:

- 26% faster deployment

- 1 in 4 experienced enhanced scalability

- 1 in 5 experienced a simplified management

A Hyperconverged Approach: Three Proven Benefits for IT

1. 26% faster deployment

2. 1 in 4 experienced enhanced scalability

3. 1 in 5 experienced a simplified management

When considering a hyperconverged solution, it needs to be able to complement your existing environment by leveraging and providing access to existing systems while managing new resources and infrastructure seamlessly.

IV. UNCOVER A BETTER BUSINESS MODEL

As you can see, going digital is no longer optional. Regardless of the industry you're in, today's business imperative is to reach customers and new business opportunities across an array of devices, applications, and buying channels. However, true digital transformation goes beyond application development and related short-term tactics. Let's look at one of the most intriguing potential benefits found in digital transformation—discovering new, and more profitable, ways of doing business.
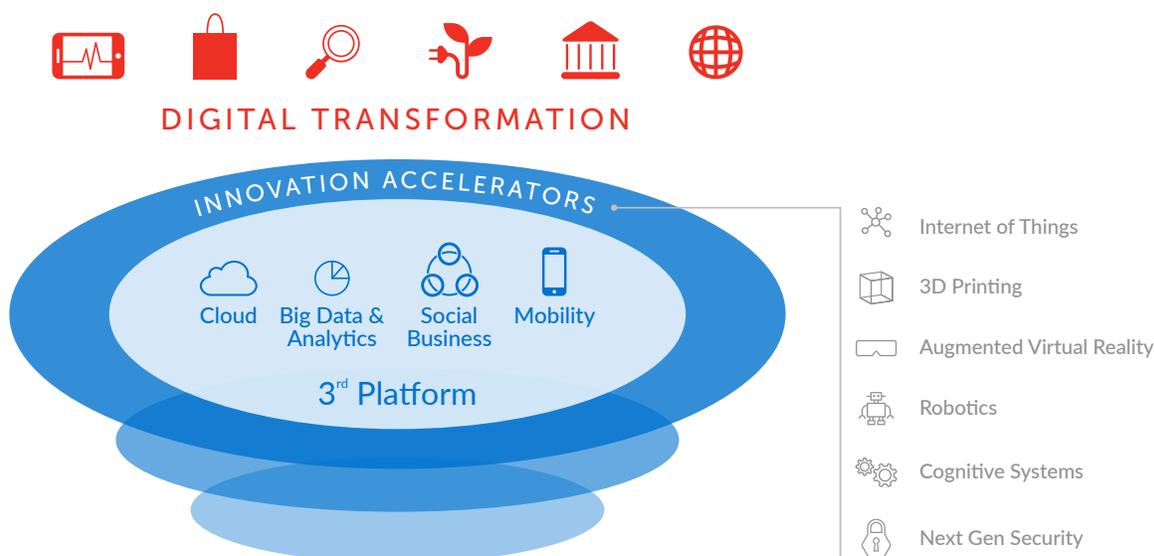
Source: IDC: 3rd Platform, Innovation Accelerator

Third Platform Technologies and Digital Success

The key is to understand that digital transformation is underpinned by *third platform* technologies like cloud, mobility, big data, social, internet of things (IoT), and robotics. The core of the third platform is s*oftware-defined storage*, which is the essential foundation of a hyperconverged infrastructure. This data-first approach drives the innovation accelerators and enables the success of digital transformation initiatives. In fact, according to Enterprise Strategy Group's Software-Defined Storage (SDS) Market Trends report, *"52% of organizations are committed to software-defined storage as a long-term strategy."*

Looking at IT in a New Way

Leading digital change requires IT managers, C-level executives and other business leaders to have a vision of how to transform their company for a digital world. They are looking to:

- Automate the deployment of IT services

- Optimize IT operations and reduce TCO

- Explore a whole new way to look at storage

Digitization brings tremendous opportunities to your business, no matter what industry you're in. By allowing your organization to remove physical, geographic and device-specific restrictions of data storage equipment that slow, interrupt or endanger your IT operations, you can dramatically improve operational processes—in turn, enabling you to uncover new value propositions for the business.

Rethink Your Business with Software-Defined Storage

Business are moving from siloed IT solutions toward an integrated technology model. This becomes possible only when you embrace a *software-defined storage infrastructure*. The core characteristics for SDS infrastructures include:

- **Performance:** Acceleration of access to data and utilizing the right technology for the application

- **Availability:** Zero downtime utilizing continuous access to data sets in distributed locations

- **Efficiency:** Seamlessly and dynamically add storage resources transparently to applications

- **Management:** Analysis / reporting with complete integration of hybrid, on premise and cloud-based storage offerings

Unlock Performance: Why Parallel I/O Is Critical to Your Digital Transformation Strategy

Today's digital ultimatum means that companies of every size must embrace the path of digital transformation to improve the customer experience, enhance operational processes, and drive better business outcomes. To deliver on these principles, they must store, access, and manage data at hyper speed toward the cloud while leveraging on-premises resources.

Powered by Parallel I/O

Hyperconverged, storage virtualization and data storage solutions are the foundation of an integrated data storage infrastructure. This software-based approach provides the ability to fully leverage all your resources and manage them centrally, letting you scale storage capacity independently of compute and memory. Combined with *Parallel I/O,* this infrastructure delivers the lightning-fast access that today's users, processes, and applications demand.

Parallel I/O is a subset of parallel computing that performs multiple input/output operations simultaneously and helps eliminate I/O bottlenecks, which can stop or impair the flow of data. Rather than process I/O requests serially, one at a time, Parallel I/O accesses data on the disk simultaneously. This allows a system to achieve higher write speeds and maximizes bandwidth. With Parallel I/O, a portion of the logical cores on the multicore chip are dedicated to processing I/O from the virtual machines and any applications the remaining cores service. This allows the processor to handle multiple read and write operations concurrently.

The recent rise in popularity of big data analytics signals a new demand for parallel computing in business applications, which often face significant I/O performance issues. A lightning-fast infrastructure is essential for today's "real-time" connected world, artificial intelligence, and the IoT. Rapid access to your data storage is essential for innovation within every department in your enterprise. When you adopt Parallel I/O to power your servers and access your data storage, this elevates your infrastructure to a new level of performance. In many digital initiatives, this intermediate link is overlooked.

The Advantages of Parallel I/O at a Glance

Parallel I/O offers maximum utilization of your hardware by consolidating multiple workloads on a server, leveraging all available compute resources for extreme optimization and a reduced TCO. When encapsulated business applications

are running in a traditional storage virtualization scenario, the reliability and uptime increases, which means few hardware failures. However, this causes hypervisors and containers to process I/O serially, even though workloads are scheduled to run across several CPUs, which creates an I/O bottleneck and causes applications to run slower.

In the past, this problem was addressed by adding more servers to distribute the I/O, limiting the number of virtual machines (VMs) per server. Adding more servers to ensure all the necessary resources are in place increases the cost of ownership.
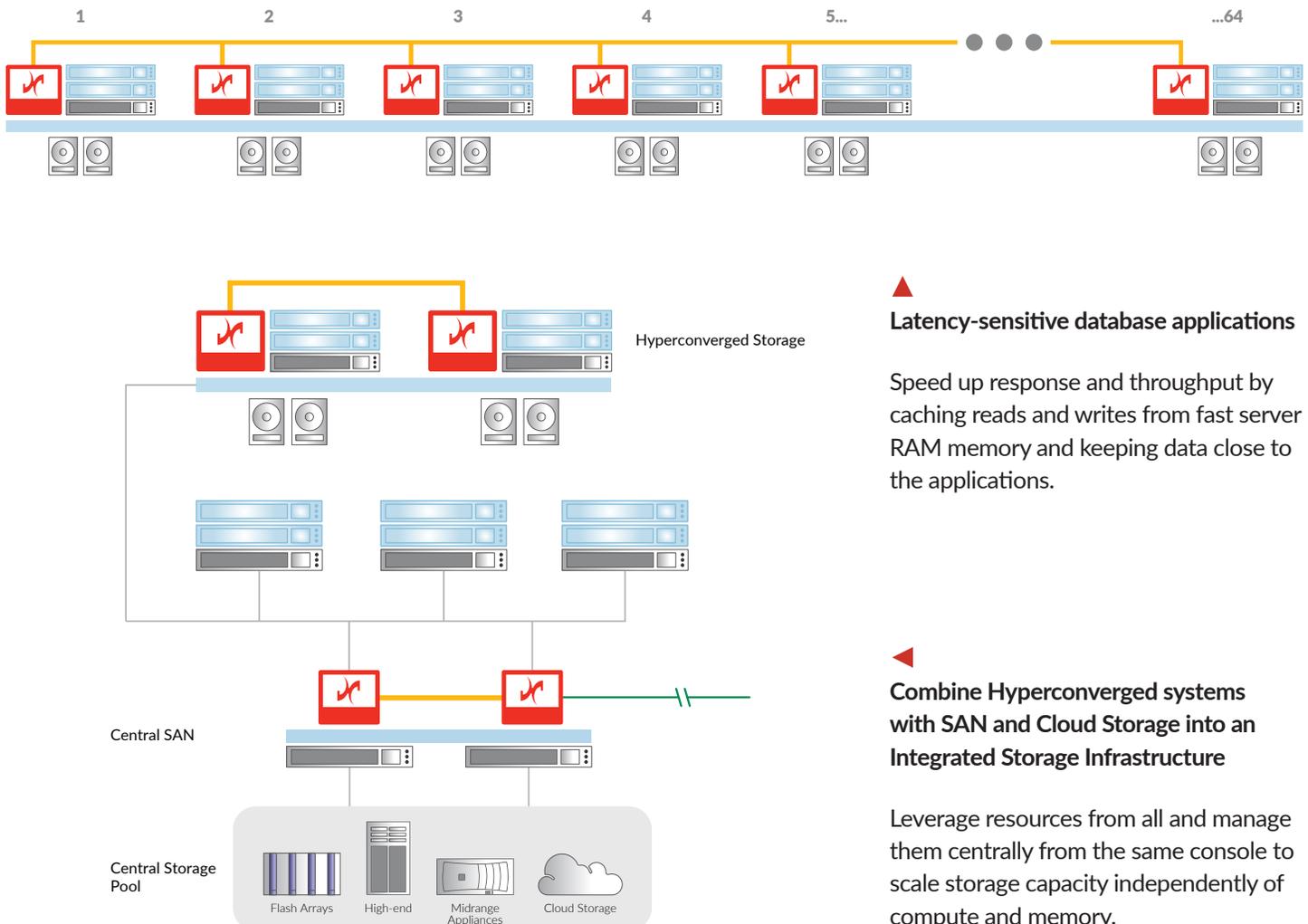
Move to the Future with Multi-Core Servers

Modernization in the world of Parallel I/O is possible with fewer multi-core servers optimized for utilization and maximum efficiency. Fewer servers, in turn, create a smaller resource imprint. Another advantage when using a best-in-class parallel architecture as described here, is that both physical and virtualized applications have dramatic performance improvements, up to 10x faster—completing the process in one-tenth of the time. The overall impact is a lower TCO, a simplified environment (with fewer servers) and better performance.

Digital Initiatives Require a Software-Defined Infrastructure

In the past, increased data loads were managed by adding more servers, more storage and more network pathways, which is no longer feasible. In today's user-driven culture, it's about building an integrated software-based infrastructure that enables a unified storage architecture that can quickly access the data. At the same time, it's essential to have the capability to dynamically grow resources, storage and functionality.

Hyperconverged Storage

Central SAN

Central Storage Pool

Flash Arrays High-end Midrange Appliances Cloud Storage

▲

Latency-sensitive database applications

Speed up response and throughput by caching reads and writes from fast server RAM memory and keeping data close to the applications.

◄

Combine Hyperconverged systems with SAN and Cloud Storage into an Integrated Storage Infrastructure

Leverage resources from all and manage them centrally from the same console to scale storage capacity independently of compute and memory.

The takeaway? It's imperative that today's enterprise environment become highly agile and offer the ability to incorporate high-speed, cloud-based compute, storage and networking resources while leveraging older infrastructures. Digital initiatives are destined to fail unless there is a software-driven storage architecture that lets you easily access your enterprise data while maintaining or even improving speed and performance.

V. ACCELERATE YOUR DIGITAL JOURNEY

Digital transformation requires companies to move at hyper speed toward the cloud. Hyperconverged storage solutions enable you to modernize, automate and transform your business with faster deployment, enhanced scalability and simplified management, all while building an integrated data storage infrastructure.

With the right technology, this approach offers lightning fast access, as well as the ability to leverage all of your resources and manage them centrally to scale storage capacity independently of compute and memory. In addition, you get the load balancing benefit of virtualization, which creates significant performance improvements through efficiency. This trifecta of technology optimizes access to your data so your business is poised to take the next step in digital transformation.

DataCore™ provides you with the ability to virtualize your existing storage hardware, create converged storage from servers and internal storage, and integrate Flash/SSDs with existing storage.

With DataCore virtualized storage solutions, not only are you better positioned to go to the next level of maturity in your digital transformation journey, you also experience:

- **Lower cost of ownership** (75% reduction in storage costs)

- **Faster applications** (10X performance increase)

- **Higher availability** (100% reduction in storage-related downtime)

- **Greater productivity** (90% decrease in time spent on routine storage tasks)

For additional information, please visit **datacore.com** or email **info@datacore.com**