DataCore SDS: Enabling Speed of Business and Innovation with Next-Gen Software-Defined Building Blocks

Executive Summary

The enterprise IT infrastructure market is undergoing a once-in-a-generation change due to ongoing digital transformation initiatives and the onslaught of applications and data. The need for speed, agility, and efficiency is pushing demand for modern datacenter technologies (and architectures) that can lower costs while providing new levels of scale, quality, and operational efficiency. This has driven strong demand for next-generation solutions such as software-defined storage/networking/compute, public cloud infrastructure as a service (IaaS), flash-based storage systems, and hyperconverged infrastructure. Each of these solutions offers enterprise IT departments a way to rethink how they deploy, manage, consume, and refresh IT infrastructure. These solutions represent modern infrastructure that can deliver the performance and agility required for both existing virtualized workloads and next-generation applications — applications that are cloud-native, highly dynamic, and built using containers and microservices architectures.

As we enter the next phase of datacenter modernization, businesses need to leverage newer capabilities enabled by software-defined storage (SDS) that help them eliminate management complexities, overcome data fragmentation and growth challenges, and become a data-driven organization to propel innovation.

IDC believes that as enterprises embark on their core datacenter modernization initiatives with compelling technologies, they should evaluate enterprise-grade solutions that redefine storage and data architectures designed for the demands of the digital-native economy. Digital transformation is a technology-based business strategy that is becoming increasingly imperative for success. However, unless infrastructure provisioning evolves to suit new application requirements, IT will not be viewed as a business enabler. IDC believes that those organizations that do not leverage proven technologies such as SDS to evolve their datacenters truly risk losing their competitive edge.

Enterprise IT Trends

Digital transformation imperatives and a paradigm shift in application development are making next-generation technologies such as software-defined infrastructure (SDI) an industry standard. IDC estimates that as many as 400 million applications will be developed in the next four years — the same number that was created in the past 40 years. In addition, businesses are grappling with 50% data growth each year. There is a growing urgency for enterprise firms to shift to a modular, do-it-

Automation and orchestration, legacy infrastructure, and multicloud management are the top three datacenter infrastructure challenges for enterprises today, reveals IDC's 2019 Multicloud Survey. Modern SDS can offer an abstracted unification layer to eliminate complexity and a single pane of glass for complete storage management today and as the infrastructure evolves for the demands of tomorrow.

yourself, software-defined infrastructure to meet modern demands of speed, scale, simplicity, and automation.

In the past few years, SDI has shifted from being an emerging technology to a proven technology. Thanks to maturity in individual components such as SDS and software-defined networking (SDN), SDI is instrumental in the digital transformation journey for its ability to provide extraordinary agility, scalability, and competitive advantage.

SDI logically pools resources of compute, memory, storage, and networking, which are managed by software with minimal human intervention. SDI systems are independent of the underlying hardware, which are industry-standard commercial off-the-shelf products that have enterprise-grade certifications such as white-box servers with internal storage used in software-defined storage. SDI enables policy-based automation of IT operations such as monitoring, provisioning, and configuration. Typically, SDI is accessible via open APIs. The obvious benefits of SDIs are that they are less expensive, more flexible, and easier to deploy, scale, and upgrade. As a result, SDI has become the leading option for enterprise executives who want to cut costs, simplify IT management, and eliminate platform silos in the datacenter.

Adoption of technologies such as SDI has also paved the way for hybrid cloud environments to bring the best of infrastructure for all applications.

SDS is a key component of SDI architecture. It offers a panoply of benefits that distinguish it from traditional multicontroller array architectures. Different customer types appreciate different SDS features and benefits, but in general, those include ease of scalability and management, better economics, hardware flexibility, and the ability to quickly integrate new hardware technologies and products as they become available.

In IDC's view, SDS is a modern architecture that represents a fundamental shift from hardware-defined storage platforms. By leveraging new design tenets that include "self-managed storage," SDS introduces levels of automation that make it easier to configure, provision, migrate, and manage than legacy storage platforms. In addition, an SDS approach enables a consistent set of data services such as mirroring and encryption that make storage smarter and brings simplicity as it eliminates different implementations that may be unique for each type of storage hardware. IDC believes that all of these features are critical to supporting infrastructure modernization efforts, and that SDS will continue to grow and cannibalize revenue from more traditional enterprise storage market segments.

IDC forecasts the SDS market to grow at 15% CAGR to $21.3 billion by 2022 globally. In Western Europe, where there is cautious adoption of public cloud over regulatory and sovereignty concerns, SDS is seen as a viable alternative that brings a public-cloud-like experience to on-premises infrastructure modernization. Here IDC forecasts even more accelerated growth of 21% CAGR to 2023.

Hyperconverged infrastructure (HCI) is the highest growth subsegment of the SDS market segments. Growing at a 25% CAGR to 2023, HCI will account for more than half of the overall SDS market in the next four years. In fact, a quarter of

organizations IDC surveyed listed HCI as "critical" for their hybrid cloud strategy. Beyond that, object-based SDS will grow at a 10% CAGR, file-based storage at a 7% CAGR, and block-based storage at a 4% CAGR.

IDC expects strong growth across block, object, and file storage within enterprise IT. Over time, these multiple technologies from various vendors have resulted in silos, management complexity, and a high dependency on niche admins with expertise in individual storage environments. Modern SDS can offer an abstracted unification layer to eliminate complexity and a single pane of glass for complete storage management today and as the infrastructure evolves for the demands of tomorrow.

The SDS growth numbers are well aligned with enterprises' top investment priorities for 2019 and beyond. Modernizing datacenter infrastructure is a top investment priority for 65% of organizations over the next 12 months. Figure 1 shows the key priorities with storage.

Figure 1
Top Storage Investment Priorities for 2019
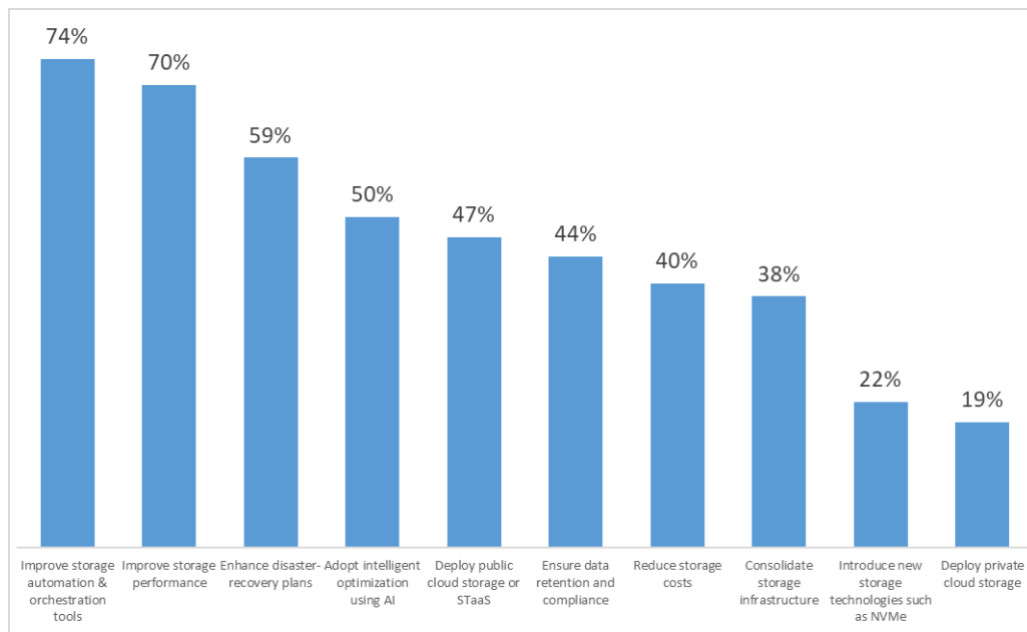
Source: IDC European Multicloud Survey, 2019

Growing Importance of SDS in Architecting IT for the Digital Future

As SDI enables policy-based automation of IT operations, its obvious benefits are that it is less expensive, more flexible, and easier to deploy, scale, and upgrade, making it a key technology to meet organizations' storage-related priorities.

What is SDS? As a subset of SDI, SDS fundamentally alters how storage systems are delivered. IDC refers to software-defined storage as complete systems that deliver the full suite of storage services via a software stack that uses (but is not dependent on) commodity hardware built with off-the-shelf components.

The future of enterprise IT is software-defined, API-driven, cloud-connected, and scale out.

Figure 2
Software-Defined Storage Platform Components
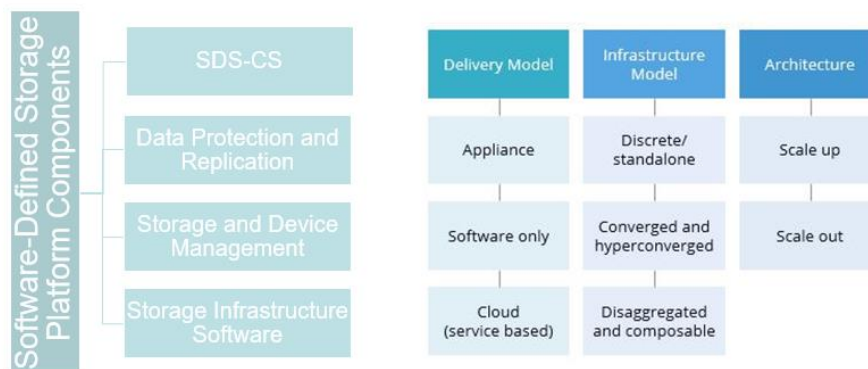
Source: IDC SDS Taxonomy

The hallmarks of SDS solutions are:

- They should not contain any proprietary hardware components, such as custom ASICs, chipsets, memory components, or CPUs.

- They should be capable of running on multiple (physical or virtual) hardware instances, commonly used, and, based on customer choice, easily included in an HCI configuration.

- They are a standalone system or an autonomous system. In other words, they provide all essential northbound storage services and handle all southbound data persistence functions without requiring additional hardware or software.

IDC's *2019 Multicloud Survey* reveals that automation and orchestration, legacy infrastructure, and multicloud management are the top three datacenter infrastructure challenges for enterprises today. SDS can become a unification layer that simplifies life for IT in addition to bringing flexibility, efficiency, and speed.

DataCore Software

The future of enterprise IT is software-defined, cloud-connected, and API-driven.

DataCore is a proven SDS provider serving high-profile customers with SDS solutions for their tier 1 workloads and infrastructure modernization challenges, including NASA, Quorn, the University of Oxford, TUI Cruises, Hanover Hospital, Volkswagen, and Lufthansa Systems.

Founded in the late '90s, the company has extensive expertise in parallel processing and holds multiple patents for improving I/O performance on multicore systems, which helps them leverage inexpensive CPU cores and memory architecture available from cheaper, off-the-shelf x86 servers and cloud virtual machines. DataCore's performance optimization technology provides an immediate performance boost after deployment, and enables organizations to extend the life of existing systems.

Under its new leadership team, DataCore is transforming the business to bring next-gen capabilities to SDS and develop a unified platform to simplify and optimize primary, secondary, and archive storage tiers, all managed under a unified predictive analytics dashboard.

DataCore is unifying primary and secondary storage, offering smart data tiering capabilities, introducing all access types (block, object, and file storage), as well as introducing an insights layer to simplify storage management, scale, and integration. It is also offering a rich set of data services such as deduplication, replication, encryption, and ML-driven auto-tiering services. IDC's *2019 Multicloud Survey* indicates that data protection, data migration, data quality, and security and compliance are top challenges for enterprises, indicating that DataCore's SDS evolution is aligned to meet the complexities of fragmented enterprise IT environments.

DataCore can also be deployed as hyperconverged infrastructure, with all its unique SDS capabilities, insights, and predictive analytics, either as an easy-to-consume software-only offering or as a turnkey integrated HCI appliance. This makes SDS accessible for organizations with limited IT skills and resources.

In addition, a significant evolution in DataCore's strategy is to introduce pricing flexibility in the form of a subscriptions-based licensing model. IDC's research shows that enterprises value ease of doing business with cloud-like buying experiences and vendor support as critical non-technical criteria when investing in technology providers and solutions.

How DataCore's Next-Gen SDS Offering Differentiates in the Market

Some of the reasons customers give for not buying SDS platforms include performance on workloads at scale (in particular latency), availability, and platform maturity. HCI presents an additional concern with its inability to scale compute and storage resources independently, something that can be an issue for certain large-scale workloads. As newer technologies such as NVMe, NVMe over fabric, and storage-class memory (SCM) move to volume production with lower costs, they can be effectively used to help address some of these concerns.

DataCore's broad support for technologies and its dynamic auto-tiering can ease customers' adoption of new technologies, eliminate migrations, and leverage faster storage class memory and NVMe across applications. This can accelerate the datacenter modernization journey.

The company has invested engineering efforts in data placement optimization and converging primary and secondary storage to help eliminate silos. IDC's research shows silos are another key concern enterprises have around their storage environments. DataCore's latest storage strategy to make its SDS platform a unified control plane to manage primary, secondary, backup, and archive environments across block, file, and object can be attractive to enterprises seeking to overcome complexities.

In addition to the general SDS benefits, DataCore's broad support for technologies and data services (including snapshots, replication, deduplication, data protection, integration, and orchestration) offers a combination of patented performance

enhancement technologies that can provide additional benefits to users. Its Parallel NFS and Parallel I/O technologies, which are popular with its existing customers as they boost performance at scale (evidenced by DataCore's SPC record), are extended to its new hyperconverged infrastructure so enterprises can leverage familiar performance-boosting technologies. Lastly, the vendor has built integrations to have a rich ecosystem of cloud, backup, and primary storage platforms, enabling seamless data movement between hot storage and cold storage.

Next-generation SDS solutions are extensible and autonomous, and enable data access via known and/or published interfaces (APIs or standard file, block, or object interfaces).

These solutions include and combine block, file, object, and hyperconverged software offerings that enable the creation of a unified storage system which integrates more functionalities such as data protection, replication, storage/device management, and storage infrastructure software to eliminate complexity. They also converge primary and secondary storage environments to give a unified view and insights for end-to-end management. DataCore Software's newly engineered SDS architecture and added dimensions make it a key player in this mature, modern SDS solutions space.

Recommendations to End Users

Enterprises with digital transformation and innovation strategies should consider cloud-connected, container-native software-defined storage options to support the needs of their evolving front-end applications and users.

One of the trends enterprises must be aware of is that storage software segments are becoming increasingly converged and software defined in nature, resulting in complex competitive dynamics as market leaders and fast-growing competitors seek to differentiate with platforms and services that can accommodate enterprise demands for scale, automation, and cloud deployment.

The optimum use of an enterprise's financial resources is essential in maximizing exploitation of digital-transformation-related business opportunities. IDC estimates that by 2020, 55% of infrastructure services will be delivered as opex. Enterprises should consider SDS as a mature technology to enable this transition and improve IT's ability to respond rapidly, effectively, and conclusively to all types of operational issues.

IDC Conclusion

Data is the lifeblood of a digital-native enterprise. Building the right storage and data management foundation is the first critical step for enterprises looking to capitalize on their data and become more data-driven to gain a competitive advantage in the digital world.

Digital transformation continues to drive the creation of value, growth, and competitive advantage through new product/service offerings, innovative business models, and deeper business relationships. A major threat to successful transformation for most businesses remains the failure of their IT organizations to

convert from being the back-office enabler of internal business processes to playing a leading role as the engine powering digital business flows between people, things, and data.

With the availability of next-generation technologies, enterprises have plenty of opportunities to modernize their core infrastructure and make it software-defined, efficient, secure, and cloud-like.

At a time when agility, innovation, and speed of business are increasingly important, organizations should not merely invest in point solutions, but rather seek enduring technology partnerships with vendors such as DataCore that can help evolve and elevate their IT and business processes to become the data stewards of the digitally transformed future.

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