

3 Reasons

to Choose Flexible Modular Infrastructure For Software-Defined Storage



Organizations deploying software-defined storage should look for flexible, modular platforms that offer excellent performance, agility, and scalability while keeping costs low.

A growing number of organizations are deploying software-defined storage (SDS). A 2015 study by Enterprise Strategy Group found that 60% of midmarket and enterprise organizations were committed to SDS, with 20% having already implemented the technology.¹

SDS technology virtualizes access to storage, removing the need for applications to know where their storage hardware physically is (or even what type of storage it is). This approach allows companies to use whichever physical devices they prefer for their storage needs. It also lets them create pools of storage devices and enables simplified policy-based management — all of which can help businesses lower their costs significantly while improving their efficiency and increasing their agility.

While it might not be right for every situation, SDS is becoming so popular that it's having a significant impact on the enterprise storage market in general. In a 2016 report titled "[Software-Defined Storage Appearing in Production Deployments Across Organizations of All Types and Sizes](#)," Eric Burgener, research director for storage at IDC, noted,



"Software-defined storage promises reduced costs, improved agility, and easier management relative to more hardware-defined legacy architectures, which makes it an excellent fit for 3rd Platform computing environments. It is used extensively for workload consolidation, and we are seeing an increasing number of organizations using it with what they consider to be mission-critical workloads when they deem the deployment model to be a good fit with their applications."²

Many of SDS's benefits are accentuated by modular infrastructure that features Intel® processors and consolidates compute, storage, and networking capabilities on a shared chassis. To meet the growing demand for this type of infrastructure, manufacturers have developed a new generation of highly flexible, modular platforms. This hardware is ideal for SDS environments for three key reasons:

REASON 1 Faster Performance

Modular infrastructure often provides a speed boost to applications running in an SDS environment. In a modular platform, the storage hardware is physically much closer to the compute nodes than in a traditional server setup with a separate SAN or NAS array. This reduces latency and increases performance for many common enterprise workloads, particularly for data-intensive applications.

[A Principled Technologies study](#) found that a Dell EMC PowerEdge FX2 modular solution, powered by Intel® Xeon® E5-2600 processors and running VMware vSAN SDS software, could process up to 3.1 times as many database operations per minute as a traditional HPE server

with an external storage array.³ And a [separate Principled Technologies test](#) found that a PowerEdge FX2 solution could support twice as many virtual desktop infrastructure (VDI) users in 91% less space compared with a legacy Cisco blade solution with a traditional SAN.⁴

Many of today's modular platforms give enterprises the option of using flash SSDs for an additional performance boost. And some integrate caching and tiering technologies that speed applications even more. In [another set of benchmark tests](#), Principled Technologies compared a PowerEdge FX2 modular platform using SanDisk DAS Cache with a traditional rack-mounted Dell EMC PowerEdge R820.

SDS lets a company buy hardware that best meets its needs and scales easily as its business grows.

The modular platform with the innovative caching technology was able to support up to four-and-a-half times as many database virtual machines and processed up to 43 times as many orders per minute as the traditional solution.⁵

The advantages seen in benchmark

testing environments translate into noticeable gains in real-world situations. Tapad, a digital marketing firm that provides services to 80 of the world's 100 largest advertising agencies, was able to double its compute density and improve its network performance by 2.5 times when it consolidated on FX2 modular platforms.

Ryan Tennant, VP of technical operations at Tapad, explained, "We have just milliseconds to respond to an auction bid or we miss the opportunity. To help marketers deliver a unified experience to consumers across all of their devices, we analyze billions of data points and then cross-reference those points to match up devices with consumers in a privacy-safe way."⁶ Modular infrastructure allows Tapad to support that high level of performance while minimizing space needs and power consumption.

REASON 2 Greater Agility and Scalability

Organizations often opt for SDS in part because it helps them become more agile by letting them purchase the hardware that best meets their needs and scales easily as their business grows.

Flexible, modular platforms take that agility and flexibility to a whole new level. With this type of hardware, organizations are able to select the compute, storage, and networking nodes that best fit their needs.

Here again, Dell EMC's FX2 platform offers a good example. Enterprises can easily construct a variety of configurations, some designed for high-performance computing, some for Web serving, some ideal for database applications, and others that are specific to various applications. Organizations can choose the appropriate FX compute nodes and the right number of flexible FD332 DAS nodes that make sense for their workloads. If their needs change over time, they can easily swap out compute and storage modules and reconfigure them to meet changing business requirements.

These newer modular platforms also make it painless for organizations to scale up. In the case of the FX2 platform, the chassis requires just two units of rack space. That allows organizations to add capacity in bite-sized chunks instead of having to make a big upfront investment in a chassis that sits half-filled or less for months or years, as might be the case with some other solutions.

In Tapad's case, the company tripled its staff in just two years and has been able to support such extremely rapid growth thanks in large part to its modular platforms.

REASON 3 Lower Costs

Of course, one of the biggest reasons companies deploy SDS is because it allows them to reduce their capital and operational expenditures. Flexible, modular platforms let them lower costs even further thanks to three key characteristics.

First, modular platforms take up much less space than traditional servers and storage arrays. For example, with the FX2 architecture, companies can pack up to 168 FC430 two-socket servers into a single rack. So with the Intel® Xeon® E5-2600 processor's 18-core capability, it can deliver 336 processors, translating into 6,048 cores! That sort of density reduces real estate costs as well as related costs for utilities.

Speaking of utilities, today's modular platforms are extremely energy efficient. In [Principled Technologies' benchmark test](#), FX2 infrastructure in an SDS environment provided up to 4.2

The Right Fit

Every business has its own digital strategy, its own existing IT resource portfolio, and its own IT budget allocation structure. Data center managers will therefore have different priorities when it comes to modular infrastructure. They also often need to take different approaches to infrastructure for different areas of the enterprise.

That's why Dell offers distinct modular infrastructure platforms powered by Intel® processors:



Dell EMC M1000e

A modular blade platform that delivers industry-leading density, efficiency, reliability, scalability, and performance in a 10U chassis form factor. Ideal for enterprise data centers moving to a software-defined cloud model with adaptive pooled capacity.



Dell EMC FX Architecture

A modular 2U solution purpose-configured to optimally support specific workloads such as VDI, HPC, and large-scale Web serving. Ideal for applications with demanding performance requirements and/or unpooled infrastructure chargeback.



Dell EMC PowerEdge VRTX

An all-in-one server, storage, and networking solution that requires 77% less space, 33% less power, and 80% less cabling.

Ideal for remote/branch office deployments where space is limited and management is performed by central IT staff.



Dell EMC PowerEdge C6320

A high-performance 2S/2U rack server that scales with maximum performance per unit and is the ideal platform for SDS.

times as much performance per watt as a traditional server and SAN.⁷ That results in ongoing cost savings and a low total cost of ownership.

In addition, modular platforms are easy to deploy and manage, which helps free up valuable IT resources for other tasks. Most of these platforms come with built-in software that enables remote management and simplifies the process of deploying, configuring, and maintaining infrastructure.

Tapad has experienced all three of these cost savings as a result of its switch to the FX2 platform. “We’re doubling and potentially quadrupling our compute density by using the Dell EMC PowerEdge FX architecture,” Tennant said. “Removing redundant componentry translates directly into lower power consumption, better space utilization, and cost savings — without degrading performance. And we now get 2-to-1 oversubscription from our switches, so we’ve increased their efficiency and utilization.” Thanks to the new platform, he added, “our infrastructure team is more efficient in delivering the resources needed for our developers, data scientists, and especially our customers.”

Better Together: SDS and Modular Infrastructure

Deploying SDS and flexible, modular infrastructure together allows organizations to maximize their cost savings while increasing the performance, agility, and scalability of their infrastructure. All of that helps make IT more valuable to the business.

However, buyers should be aware that not all modular infrastructure is alike. There’s a wide range of features and form

factors on the market, so companies will need to do some homework to find the hardware that best fits their needs. In general, organizations that are deploying SDS should look for modular architecture that’s highly flexible and scalable. They also should consider the platforms’ management capabilities, whether they support SSDs and offer advanced caching and tiering technologies that provide greater performance. ■

About Dell EMC

Dell EMC, a part of Dell Technologies, enables organizations to modernize, automate, and transform their data center using industry-leading converged systems, servers, storage, and data protection technologies. This approach provides a trusted foundation for hybrid cloud environments that can run cloud-native applications and big data solutions, enabling businesses to streamline their processes and better serve their customers. Dell EMC services its customers — including 98% of the Fortune 500 — with the industry’s broadest, most innovative infrastructure portfolio from edge to core to cloud. For more information, visit www.Dell.com/modularinfrastructure.

1. ESG Research Report. “2015 Data Storage Market Trends.” October 2015.
2. IDC. “Software-Defined Storage Appearing in Production Deployments Across Organizations of All Types and Sizes.” Sept. 2016.
3. Principled Technologies Test Report. “Increasing Performance with the Dell PowerEdge FX2 and VMware Virtual SAN.” June 2015.
4. Principled Technologies Test Report. “VDI Performance Comparison: Dell PowerEdge FX2 and FC430 Servers with VMware Virtual SAN 6.0.” December 2014.
5. Principled Technologies Test Report. “Consolidating Older Database Servers onto Dell PowerEdge FX2 with FC830 Servers and FD332 Storage Blocks.” May 2015.
6. Dell, Intel®. “Personalized Advertising in the Blink of an Eye.” October 2015.
7. Principled Technologies Test Report. “Increasing Performance with the Dell PowerEdge FX2 and VMware Virtual SAN.” June 2015.