DATACORE™

Dynamic Hyper-Converged Infrastructure: Future-Proof Your Data Center

Overview

As IT professionals and leaders in lines of business make technology decisions, they must thoughtfully balance those decisions against competing needs. This is especially true when it comes to weighing data center technology resources against allocation of IT resources for the operational parts of the business. It's also imperative for organizations to move away from managing resources and IT engineering skills – including data centers and remote offices – in silos. This paper explores how emerging data center technology – particularly purpose-built hyper-converged infrastructures (HCI) – can help address these challenges while driving additional benefits across the enterprise.

Today's hyper-converged infrastructures offer the following advantages:

- **Rapid, flexible deployment**
- **Scalability, with no impact to performance and reliability**
- **An integrated, open, software-centric approach that simplifies resource management**

BRIDGE EXISTING INFRASTRUCTURE WITH RAPID, FLEXIBLE DEPLOYMENT

IT organizations are continuously striving to reduce the amount of time and effort to deploy new resources for the business. Data center and remote office infrastructures are oftencomplex and rigid to deploy, causing operational delays. As a result, many IT organizations are looking at a hyper-converged infrastructure.

A hyper-converged approach is flexible and easy to deploy and offers:

- Lower CAPEX because of lower up-front prices for infrastructure
- Lower OPEX through reductions in operational expenses and personnel
- Faster time-to-value for new business needs

However, not all hyper-converged solutions are equal. If not deployed correctly, some offerings can introduce new complexities and limitations to the data center or remote office, and can create new silos if disconnected from existing storage infrastructure.

THE VALUE OF THE HYPER-CONVERGED INFRASTRUCTURE

Hyper-convergence is a way to scale without compromising the performance, reliability, and availability for your applications. It also allows you to optimize your data center by maximizing utilization with a unified management interface as well as a "pay-as-you-grow" model. According to TechTarget, hyper-convergence is a type of infrastructure system with a software-centric architecture that tightly integrates

compute, storage, networking and virtualization resources, and other technologies in a commodity hardware box supported by a single vendor.

THE HISTORY OF HYPER-CONVERGENCE

Hyper-convergence evolved from the converged infrastructure, which is a vendor-based, preconfigured bundle of hardware and software in a single chassis, designed with the goal of minimizing compatibility issues and simplifying management. These technologies were disparate and used independently. In a hyper-converged infrastructure, however, the technology, platform, and hardware are highly integrated and not typically separate components. This approach is proving necessary for IT organizations to provide a way to roll out their own hyper-converged infrastructure to meet the needs of the business.

THE SIGNIFICANCE OF HYPER-CONVERGED INFRASTRUCTURES

Why is a hyper-converged environment important? HCI entered the market several years ago as the next phase of convergence, and was intended to bring simplicity to the management of increasingly complex data centers and remote offices. In more traditional models, the IT department must continually purchase additional resources to respond to new organizational requirements. This, in turn, creates data center resource sprawl, and often significantly increases operational expenses and the total cost of ownership. Clearly, this is not the most cost-effective or easiest way to address continuously changing business needs.

According to recent industry research, most data centers have, on average, storage arrays from three to nine different vendors. Multiple vendors and so much diverse storage means IT resources are stretched thin with the management of many different products, the high cost of the skills required to configure these products, and escalating operational costs. These legacy infrastructures — with separate enterprise storage, networks, and servers — do not have the capability to effectively meet the growing demands of enterprise applications and fast-paced modern businesses.

The hyper-converged approach emerged to empower IT departments to better manage growth and also to optimize the operational efficiencies of the business. HCI offerings bring unparalleled elasticity that allows for scaling resources in and out as business needs contract and expand. The caveat is that many hyper-converged offerings are "closed," meaning they can introduce another silo into the data center. This is why an open, software-defined storage approach is essential to an HCI.

EXPECT MORE FROM HYPER-CONVERGED

While hyper-converged infrastructures offer many benefits, IT organizations must also consider how to make HCI work with their existing and future storage investments. HCI is intended to deliver on-premises IT services with the speed and operational efficiency of the public cloud, but can add yet another diverse type of storage to be managed, often without the ability to move data among storage tiers.

A better approach is to integrate HCI with existing resources using storage virtualization software that gives a single interface and allows for movement of data across storage tiers. This method bridges the old and the new, and leaves the door open for future technologies to come into play – all operated through a unified management layer.

This more modern definition of hyper-convergence, one that brings legacy storage into the fold alongside HCI, is based on this software-defined storage approach. Managed this way, the hyper-converged investment becomes highly attractive with its financial, operational and business benefits, and past investments in classic storage architectures are not wasted.

A PAY-AS-YOU-GROW DATA CENTER MODEL

Hyper-converged systems can be expanded through the addition of nodes, which supports the "pay-as-you-grow" model. In fact, a recent ***ESG research[1] study supports this statement by focusing on the factors driving organizations to adopt hyper-converged technologies: "85% of survey respondents currently use <Hyper-converged> technology or plan to use it within the next 12 months."*** These factors include cost savings, simplicity, and the faster speed at which business goals can be achieved[1]. 451 Research analysts also expect that number to rise substantially over the next two years[2].

EMBRACE YOUR HERITAGE INVESTMENT WHILE ELIMINATING THE SILOS

Don't be confused by popular hyper-converged solutions – most cannot support external legacy storage already in the data center. These hyper-converged systems assume that legacy storage is replaced by the shared virtual volume it creates. Most data centers do not have the capability to take this approach. Instead, they end up having to support hyper-converged with yet another storage silo, contributing further to storage sprawl.

DataCore™ offers hyper-converged and software-defined storage solutions that bring value to legacy storage already in the environment. This value includes a single point of management and unified storage feature sets such as deduplication. Additionally, because these solutions leverage existing storage architectures, they let you take full advantage of dedicated storage networking and storage compute. In other words, you get the management simplicity of a "shared everything" environment without risking predictable performance or forcing a repurchase of additional storage.

TRANSITIONING TO A HYPER-CONVERGED INFRASTRUCTURE

Moving to a hyper-converged infrastructure can often mean rethinking the way you look at storage in the data center. Obviously, most companies are not going to throw away their data center investments when adding hyper-converged appliances. This means data centers need to leverage hyper-converged offerings that maximize existing storage for a transitional period. This type of coexistence between the old and the new may even be a permanent state for those that choose to use modern hyper-converged solutions that bridge HCI with legacy systems, avoiding vendor lock-in costs that can come with some vendors. The DataCore hyper-converged infrastructure lifts these restrictions, breaks down storage silos, and provides options to make the most of your existing investments.

MANAGING ALL YOUR STORAGE TOGETHER

When considering hyper-converged storage options, you may need to use your existing storage area network (SAN) or network-attached storage (NAS) device. Using a hyper-converged offering built on an integrated storage software architecture that leverages internal storage, external direct-attached storage (DAS), SAN and cloud storage is key for flexibility. It makes transitioning from the legacy environment to the hyper-converged environment far simpler. Internet Small Computer System Interface (iSCSI), network file system (NFS), and Server Message Block (SMB) connections from hypervisor may also be leveraged in the hyper-converged environment.

SUMMARY: ADVANTAGES OF A HYPER-CONVERGED INFRASTRUCTURE

Hyper-converged infrastructure adoption is accelerating as IT organizations seek to improve operational efficiency, agility, and simplicity. Its use is moving beyond niche applications to mainstream workloads, especially as hyper-converged infrastructure technology has matured.

As these offerings mature, modern HCI solutions augment the existing data center by providing:

1. **Data protection:** transparent data management where it can be restored in the event of loss or corruption is a key IT requirement
2. **Cost efficiency:** sustainable pay-as-you-go economic model
3. **Future-proof:** migrate legacy systems to new technology without impacting applications or users
4. **High availability:** availability that was not previously possible in legacy systems without huge costs
5. **Storage and resource elasticity:** provision resources by scaling out or scaling up for business demands
6. **Data efficiency:** reduces storage, bandwidth, and IOPS requirements

With this approach, your IT department will be able to add value to the organization by better supporting its business objectives, all with less infrastructure to manage.

BENEFITS OF A SOFTWARE-DEFINED SOLUTION

DataCore technology provides the ability to create a high-performance, cost-effective hyper-converged infrastructure using DAS or internal storage on your cluster of hosts. With DataCore HCI solutions, you can achieve up to 10 times performance improvement utilizing our Parallel I/O and RAM caching technology. High availability is available with as few as 2 nodes, but easily expands up to 64 nodes while fully supporting all major hypervisors.

Added flexibility is provided with support for self-provisioning using VMware vSphere VVols or Microsoft System Center VMM. DataCore HCI can run in the root partition on Windows Server 2012 and Hyper-V without taking up a virtual machine.

The benefits are clear for leveraging a modern full-featured hyper-converged solution, eliminating "data islands" and the management complexity of hyper-converged storage silos. If your application requires high-performance disk access, solid-state disk and flash technology can be included in the auto-tiered storage capacity managed by DataCore, and DataCore's adaptive parallel I/O technology brings even faster performance in addition to gains from flash.

NEXT STEPS IN YOUR HYPER-CONVERGED JOURNEY

DataCore Hyper-converged Virtual SAN software enables the fastest performance, highest availability, and optimal capacity utilization, while bridging old and new storage technology under a single management console. Its proven integrated storage architecture has been perfected over two decades and deployed at over 10,000 customers in large data centers.

If you are looking to augment your existing data center or manage your remote office / branch office environments, the DataCore Hyper-converged Virtual SAN software is designed for environments that require high availability in a low-cost, small footprint. It is well suited for latency-sensitive environments, where you need to move data close to your database applications but need to share it across a cluster of servers.

Learn how DataCore can provide you with a full-featured, robust hyper-converged solution satisfying your infrastructure, operations, and applications strategy.

[1] Source: ESG Research Report, The Cloud Computing Spectrum, from Private to Hybrid, March 2016

[2] Source: 451 Research Survey press release, 40% of Enterprises Are Using Hyperconverged Infrastructure URL: https://451research.com/images/Marketing/press_releases/09.29.16_VOTE_Q2_Converged_PR_FINAL.pdf

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