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Hyperconvergence And Its Effect on IT

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Introduction

Hyperconvergence is an attractive option in today's changing data center. However, many organizations have reservations about such a change, especially when it stands to change more than just technology.

Hyperconvergence changes the operational practice of an IT organization, and dictates that IT administrators and executives alike view the infrastructure from a fresh perspective.

The first set of challenges encountered when an organization evaluates the move to hyperconverged infrastructure is made up of questions like "How do we perform the migration?" and "How do we manage it moving forward?"

The second set of challenges come on the back side of the migration – IT professionals have to decide how their organization changes and how their administration practices change moving forward. They have to answer questions like "How does hyperconvergence change our IT infrastructure team?" and "How does hyperconvergence change our IT budgeting for hardware refresh?"

This paper addresses both sets of challenges to help IT practitioners feel comfortable while modernizing their datacenter with hyperconverged infrastructure.

Hyperconvergence Adoption

Migrating from Legacy Platforms to Hyperconverged

One of the scariest parts about embracing a paradigm shift in the data center is attempting to migrate systems to the new way of doing things. For a few customers, a fairly high amount of risk in the data center is tolerable. But for the rest of the world, the prospect of fallout from the migration impacting the business (and their bottom line) carries too high a risk. Once one decides it's worth making the change, how do they go about it? And how much risk is associated with it?

A Solid Foundation

There are a number of intricate systems that make a robust hyperconverged solution what it is. But in a lot of cases, the most foundational parts of the platform are systems that the industry already knows and trusts. vSphere, Hyper-V, and KVM are commonly used as the foundational software layer in server and desktop virtualization in legacy infrastructures. Hyperconvergence is no different. Many vendors support a variety of commercial hypervisors and those who do not are typically using a variant of a trusted open source hypervisor.

The fact that HCI solutions are based on proven technology dramatically reduces the risk to your business and the migration can now be seen as a shift in operational practices rather than a shift in technology. That's not to say that hyperconverged solutions don't bring with them large amounts of innovation and technology. But the bedrock of the solution being already proven should inspire confidence in hyperconvergence.

Migration Is Straightforward

It also means that the migration tends to be relatively simple, as the virtualization platform in use in the organization likely already has a mechanism to facilitate the migration. VMware vSphere is the most widely used virtualization platform in commercial venues, so it will make a good example. A migration from a legacy vSphere infrastructure to a hyperconverged vSphere infrastructure would proceed as follows (simplified for brevity):

- Configure new hyperconverged system
- Attach hyperconverged storage to existing vSphere hosts
- Storage vMotion virtual machines to new datastore(s)
- vMotion virtual machines to new hosts
- Test/Validate connectivity, performance, functionality
- Decommission old infrastructure

This migration involves no downtime, has a simple back-out plan (vMotion back to original location), and involves very little overhead in terms of enabling the migration. The platforms natively allow this migration to take place.

In the case where a migration is slated to cross platforms, for instance a vSphere shop migrating to a hyperconverged platform that uses a fork of KVM, that vendor typically provides tools to help with the migration. Those tools help take existing workloads and swap out virtual hardware, update OS drivers, and help automate moving them to the new platform.

How Hyperconverged Platforms Are Managed

Over the past few years, the IT infrastructures have suffered with 'management sprawl' due to most every hardware or software system having its own management console. This management sprawl leads to confusion and inefficiency about where and how to manage things. Important information was often overlooked, due to infrequent access to certain consoles. In the worse cases, management sprawl also leads to extended downtime or performance degradation, as IT infrastructure staff struggles to use the right management tool to remediate trouble or resolve capacity bottlenecks in the datacenter.

In response to this, there has been a push towards unified management that has been characterized by the brilliant idea turned buzzword – "single pane of glass."

Centralized Management

Hyperconvergence, by it's very nature, pulls disparate systems together. It would make sense, then, that the platform would provide a unified interface where all things related to the platform could be seen, analyzed, and acted upon.

Hyperconvergence vendors have accomplished this in one of two ways, and one isn't necessarily better than the other.

The first way is to create a console from scratch where everything related to the platform is managed. There are both large and small players in the industry who have created a proprietary management UI. This could be a good decision due to the fact that they aren't bound by another vendor's decisions, and they are free to do whatever they please.

The second way is to plug in to the primary hypervisor management interface such as vCenter, System Center Virtual Machine Manager, or the like. This method of management comes with the advantage that the foundation for the interface doesn't have to be created from scratch; it's also a familiar interface to an administrator who has not dealt with hyperconvergence before.

The Effect of Hyperconvergence On IT Staff

Many IT administrators, especially at larger organizations, focus very specifically in one area. They know what they know, and anything outside of that is someone else's problem. Their usual response upon considering hyperconvergence is, "If this platform really took off in my organization, what would happen to my job?"

The Silos Crumble

Because of the way hyperconverged infrastructure brings many disparate systems under one umbrella, it's hard to create clear boundaries where multiple teams would be responsible for only certain parts of the system. What this likely leads to is organizational shake-up, where traditional silos of expertise are torn down and administrators with varying skillsets collaborate on managing an HCI platform.

It is correct to assume that hyperconvergence puts the status quo at risk. Whether or not that puts *one's job* at risk is only dependent on how adaptable and resilient to change they are. HCI should be viewed as a catalyst for change and an opportunity to learn new skills and grow as an administrator and as an IT organization as a whole.

There's no avoiding the fact that due to its simplicity, hyperconvergence likely will not require the same number of dedicated staff to maintain it that the legacy system before it did. In a healthy organization, this just means resources are freed up to focus on proactive improvements to the environment and plow through the backlog of other infrastructure projects.

How Hyperconvergence Affects Hardware Refresh Cycles

One of the more painful aspects of enterprise IT is that thanks to Moore's Law, data center administrators find themselves replacing hardware every couple of years. Depending on the current configuration of the data center, this can be a major time drain at best, and a massive headache at worst (including outages, late nights, and even data loss).

Thanks to virtualization abstracting running workloads from the underlying compute resources, and with the support of technologies like VMware's Enhanced vMotion Compatibility, vMotion, and Storage vMotion, a hardware refresh can be less painful than it was a decade ago. However, major refreshes are still plagued by potential interoperability issues, opportunity for human error, and limitations in platform design. As an example, swapping out storage controllers for bigger ones on a monolithic storage array tends to be a real chore.

Budgeting for Refreshes Is Hard

Another challenge - especially at the executive level - is budgeting for which hardware refreshes will come due at a given time and making sure that all the disparate resources get uplifted at the proper time. The storage array needs refreshed in Q2 of this year, followed by the deduplicating backup appliance in Q3, compute hardware in Q4, and so on.

Budgeting both money and time for this can become quite a cumbersome process, and all of this is simply to stay afloat. *This isn't even progress.*

Hyperconvergence Has the Answer

Hyperconvergence can have a dramatic impact here, as the converged architecture makes upgrading a snap. Because the SDS component of an HCI solution fully abstracts underlying storage hardware from the storage platform presented to the hypervisor, refreshing storage is easy now too.

Rather than keeping 20 different plates spinning in a legacy architecture, wouldn't it be nice to purchase a cluster of HCI nodes and a redundant network switches and be done with it? The burden on both CIO/CTO's and the IT administrators doing the work is significantly reduced when an organization is fully shifted to a hyperconverged model.

Conclusion

Hyperconvergence is easily one of the most revolutionary paradigm shifts in the data center industry in recent years. And adoption doesn't have to be scary. Find out how SimpliVity can help your organization with the transformation by visiting https://www.simplivity.com/.