

STUDY:

Hyperconverged Infrastructures in the Enterprise

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Hyperconverged Infrastructures are an exploding market, one that's projected to reach almost \$4B by 2020 with a combined annual growth rate of sixty percent[†]. To date, the majority of adoption has come from the small-to-medium business category. While the potential for growth in the enterprise is significant, less attention has been paid to this segment of the hyperconverged market. So Evaluator Group undertook a study with the Storage Network Industry Association (SNIA) to explore how Enterprise IT is adopting hyperconverged technology.

The objective of this study was to find out how enterprises are using hyperconverged infrastructure solutions, or plan to use them, and which products they prefer. We also wanted to know what IT professionals in these big companies thought about this new technology in general. We asked them what benefits they saw in these products, compared with traditional IT solutions, and how well they thought hyperconverged technologies fit in an enterprise data center, running "tier-one" production workloads.

[†] IDC Worldwide Hyperconverged Systems 2015–2019 Forecast

METHODOLOGY

In this study we defined a “Hyperconverged Infrastructure” as the following:

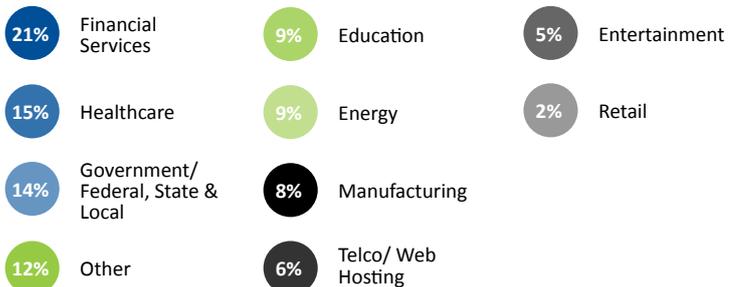
Hyperconverged Infrastructures (HCIs) combine compute, storage and hypervisor functions into the same chassis, typically using industry-standard, x86 servers with internal storage devices (disk and/or flash). Using a scale-out topology, these clustered infrastructures pool physical resources and share them between virtual machines running on any host in the cluster. HCIs can be assembled by the end user or an integrator from independent software and hardware components, or companies can buy an HCI appliance, turnkey, single-vendor products that include comprehensive support.

COMPANIES AND PEOPLE

We surveyed companies focused predominantly in the enterprise space. Starting with 268 valid respondents, we reduced that to 127 after excluding those who identified as “Technology Vendor”, “Reseller / VAD or Integrator” and “Press / Analyst / PR”. Of those, 90 had more than 1000 employees (small-to-medium enterprise) and 70 were over 5000 employees (enterprise).

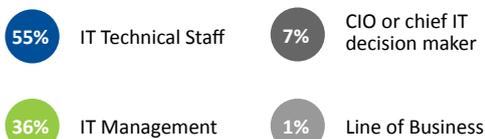
The breakout of industry verticals was captured with the question below. The “Other” category included Technology, Business Services and Transportation. The results in this report are based on survey responses from those 90 IT professionals as well as phone interviews we conducted with a subset of those respondents.

Q WHAT INDUSTRY IS YOUR COMPANY MOST ASSOCIATED WITH?



This study focused on IT practitioners, but also included managers. The majority of survey respondents identified as “IT Technical Staff”, with more than one-third identifying as “IT Management”

Q WHAT IS YOUR TITLE OR JOB DESCRIPTION?



DATA AND DECISIONS

Like most enterprises, the companies in this study had large data sets. Roughly half reported managing over 1PB of data, but most had much more, according to the interviews conducted.

Q HOW MUCH DATA DOES YOUR ENTIRE IT ORGANIZATION STORE/MANAGE/HANDLE?



As mentioned, the objective of this study was to better understand hyperconverged adoption in the enterprise, specifically products and use cases, not to determine the relative popularity of hyperconverged versus traditional IT infrastructures. Consequently, we sought out companies that had already decided to pursue a hyperconverged solution. Over half were evaluating with a defined use case and almost one-third had made a purchase decision.

Q WHICH OF THE FOLLOWING BEST DESCRIBES YOUR HYPERCONVERGED DECISION?



THE BEFORE PICTURE

We asked the companies what type of storage they were replacing with HCI or what other technologies they had considered. Not surprisingly, with enterprise-level companies, “Fibre Channel SAN” was number one by a wide margin.

Q WHAT OTHER TYPE OF STORAGE INFRASTRUCTURE WAS CONSIDERED FOR THIS IMPLEMENTATION, OR WHAT INFRASTRUCTURE WAS REPLACED?



FINDINGS

The Hyperconverged Infrastructure market is one of many technology areas covered in the Evaluator Group Research. In this survey we listed thirteen products that are covered in this research, mostly HCI appliances, but also some that were software solutions. Our respondents showed a strong preference for six vendors, VMware (vSAN), EMC, Nutanix, HPE, Dell and SimpliVity. The remaining seven vendors were chosen by well below 10% of the respondents.

What we also found out was that hyperconverged technologies aren't being driven by one or two applications or specific use cases. HCI is part of a larger shift in enterprise IT, one that's moving away from traditional SAN-based systems. Companies are determined to find alternatives to these “big iron” infrastructures for as many workloads as they can, to improve agility and lower costs.

THINGS ARE CHANGING, PEOPLE ARE CHANGING AND THE DEMAND IS CHANGING. FOR CORPORATE, FOR THE BUSINESS, I.T. IS NOT WORKING FOR US. IT NEEDS TO BE MORE AGILE.”

- LARGE CLOUD PROVIDER

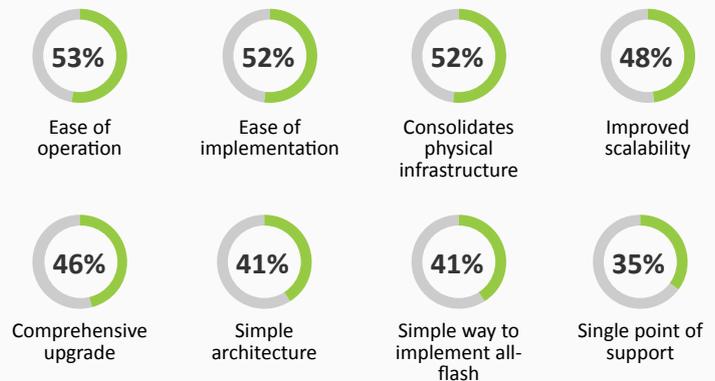
CHANGE IS COMING

The speed of business is increasing and information is at the core of this change. Companies are embracing real-time, data-driven operations and transaction-based business models to stay up with their customers and stay ahead of the competition. Agility is a key IT characteristic that all the interviewees emphasized, and, along with cost containment and the availability of IT skillsets, it's driving the enterprises we spoke with to find alternatives to traditional infrastructure.

TIME TO DATA

A theme echoed by all interview respondents was a need to simplify their infrastructures to shorten the amount of time it takes to get new systems up and running and improve their ability to respond to the next set of changes that are coming. They can't tolerate the weeks or months it has historically taken to get traditional IT integration projects completed. They also don't or won't have the people qualified to make these implementation decisions and run the complex systems that result. When we asked respondents to rank the relative appeal of HCI characteristics, "ease of operation", "ease of implementation" and "consolidation" were most often listed, as indicated by a "3" ranking.

Q RANK THE IMPORTANCE OF THE FOLLOWING IN CHOOSING A HYPERCONVERGED SOLUTION



Hyperconverged infrastructures are one way they are addressing these challenges. The ability to consolidate their compute, storage and storage networking requirements into a single chassis is very appealing to the IT people we interviewed. But infrastructure wasn't the only issue, most respondents said their IT organizations needed to evolve as well.

WE WANT A SIMPLE I.T. SOLUTION, NO MORE SILOS - SERVERS, WINDOWS, UNIX, STORAGE, NETWORK AND MIDDLEWARE."

- NATIONAL HEALTHCARE PROVIDER

IT SERVICES, NOT RESOURCES

Historically, IT has been organized along resource lines with separate teams managing the discrete storage, server and networking systems that were described in the previous section.

These groups support their internal "customers", originally application and lines of business owners, and lately server virtualization teams, that need compute infrastructure to generate the data to run their business units. This process typically involves these user groups requisitioning specific server, storage and networking systems and then waiting the hours or days required for the resources to become available. The ongoing management of these resources can also involve

a significant amount of interaction between the users and these various IT teams.

HCLs represent a way to break down this slow and inefficient organizational structure by allowing these groups that are consuming the resources to manage them as well. The thing that makes this possible is the way HCLs are built for ease of use and operation by non-IT personnel. Instead of a resource-delivery model, HCLs enable a services-based or self-service IT model. In the process these internal users are gaining an understanding about the infrastructure behind their applications, understanding that one IT Manager said improves efficiency and reduces the chance of problems.

HCI USE CASES IN THE ENTERPRISE

INFRASTRUCTURE CONSOLIDATION

As we mentioned at the beginning, one of the original intentions of this project was to identify the use cases of HCI technology that enterprises were most interested in. We knew VDI was popular in both large and smaller companies, but wanted to find out where else enterprise IT saw HCIs as a solution.

“Infrastructure Consolidation (replace traditional compute and storage)” and “Server Virtualization Project” were the number one and number three most common choices (VDI was second, more on that below). This indicates that HCIs are seen as a technology alternative or an option for embracing the change mentioned in the first section above, not just a point solution for a specific project.

In the survey, 70% of the companies were looking at hyperconverged solutions to either replace, refresh or upgrade an existing infrastructure. Only 30% planned to use it for a new project.

Q WAS THIS A NEW INFRASTRUCTURE PROJECT OR AN UPGRADE / REPLACEMENT OF EXISTING INFRASTRUCTURE?



Also, based on the interviews we conducted, many enterprises don't see HCI as the focus, server virtualization is, and it's a big change agent in these companies as well. For them, virtualization has consolidated their physical server inventory and they see HCI as a way to consolidate the storage and storage networking infrastructures that support their new virtual server environments.

“WE DON'T HAVE TO WORRY ABOUT THE VIRTUALIZATION TEAMS OVERLOADING ONE OF OUR ARRAYS AND CAUSING IMPACT FOR ONE OF OUR ORACLE DATABASES. IT ALSO GIVES US BETTER FAULT SEPARATION. WE'RE ALL ABOUT SEPARATING RISK.”

– LARGE HEALTHCARE SERVICES COMPANY

HCI FOR SERVER VIRTUALIZATION

In many of the enterprises we spoke with, HCI was bought for the server virtualization teams to provide an infrastructure that they could run themselves, separate from the existing shared storage systems. Besides spreading out the operational overhead by managing their own infrastructures this separation of workloads provides some other benefits as well.

For one large healthcare services company, moving their ESX environment onto an HCI solution lessened the chance that virtualization workloads would adversely affect the operation of the large databases that were resident on those same arrays. Also, as an IT organization, they had a policy to reduce the size of the storage arrays they bought, diminishing the potential impact of a system failure, something they knew from experience would happen eventually. The modular HCI architecture allows them to easily create clusters as large, or as small, as their policies dictate, creating a potentially more fault-tolerant environment.

VDI STRONG SECOND

Out of the top five use case choices, VDI came in second, behind “Infrastructure Consolidation”. This popularity is in line with how VDI fares in the wider HCI market that includes small and medium-sized companies. VDI was listed by half of the interviewees as a planned use case as well. In these organizations VDI is often run on a separate infrastructure, one leveraging flash storage due to its performance requirements. VDI deployments typically start small then are rolled out to more desktops in an incremental fashion that fits an HCI's scale out architecture.

BACKUP, DATA PROTECTION AND DR

In fourth place was “Backup, Data Protection and Disaster Recovery”. Like VDI, this use case indicates a need for infrastructure to support a more specific project. One regional bank was planning to use an HCI as a storage target for their existing backup system, saying the scale-out architecture and data reduction (deduplication and/or compression) made this an attractive alternative to their primary storage system for retaining backups.

Another company was planning to use a hyperconverged cluster as an upgrade for their existing DR site. Rather than replicating their primary data center infrastructure an HCI would allow them to implement a comprehensive solution in the secondary data center that was easier to deploy and costs less.

PRIVATE CLOUD

The last of the top five use cases was as an “Infrastructure supporting a private cloud”. With its roots in the hyper-scale world of software-defined storage and commodity hardware, HCIs would seem to be well suited for cloud-like deployments. Companies are looking for agility, simple set up and self-service operation for their private cloud infrastructures, all characteristics of hyperconverged solutions.

In the interviews, we asked about the role of public and private/hybrid clouds in the enterprise. The consistent response was that the cloud provided another alternative to traditional servers and storage infrastructure, one that these IT organizations were either using or exploring, along with their hyperconverged evaluations.

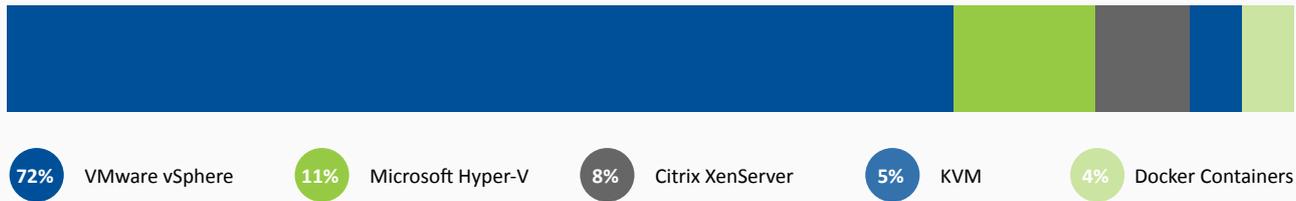
HYPERCONVERGED PRODUCT CHOICES



VSAN AND VMWARE LEAD

A significant majority of survey respondents (64%) chose VSAN as the HCI solution they were buying or evaluating. And all but one interviewee included VSAN as either the product they chose or were evaluating (the other chose SimpliVity). These organizations were even more consistent when it came to their hypervisor, with 72% choosing VMware.

Q WHAT HYPERVISOR(S) DO YOU RUN OR PLAN TO RUN IN YOUR ENVIRONMENT?



VxRail, which was only released a few months ago by EMC, came in second in the HCI product choice. The fact that an essentially unreleased product scored this high confirms the power of VMware as the predominant hypervisor supplier in the enterprise and the importance of established suppliers in general, over the smaller, independent companies which comprise a majority of the current HCI vendors.

This conclusion was confirmed by the other interviews. These IT professionals were very consistent in their responses about the importance of the supplier in the overall product decision and seemed to be less inclined to take a risk on a new supplier than on a new product or technology solution like HCI.

NUTANIX IS TOP CHOICE AFTER VSAN

After VSAN and VxRail (which runs VSAN as its software), Nutanix was the solid third-place choice. With about two-thirds of companies responding that they had not made a final purchase decision yet, these rankings reflect a product's awareness in the market and other preference factors, besides objective evaluation data.

This is interesting because the market data shows Nutanix, the company that many attribute to starting the hyperconverged product category itself, with ~50% of sales in 2015 (IDC). This indicates the importance of the hypervisor in an HCI choice, but also confirms the point made previously about enterprise IT and established suppliers. The choice of VSAN also supports a preference for a software HCI solution over an appliance that we picked up from the interviews. – see “HCI can be Software in the Enterprise” below

This was emphasized by one interviewee who listed Nutanix as one of the products they evaluated, but said it was too expensive, compared with buying HPE's StoreVirtual VSA software and using their current standard server platform. They weren't willing to pay more for a turnkey solution and were comfortable with their existing server vendor.

HPE AHEAD OF SIMPLIVITY

Overall HCI market data shows SimpliVity in a strong second position, after Nutanix, but our enterprise respondents chose HPE over SimpliVity. This is an indication of the HPE's presence in the enterprise data center and the overall strength of its nameplate. That said, SimpliVity's position, well ahead of the other independent vendors, is a testament to its market success, even in the enterprise. One large web-based services company we interviewed has been using SimpliVity since mid-2015 and plans to expand its footprint.

The remaining seven vendors showed up on less than 10% of respondents' evaluation lists, even though most of those vendors offer their products as software solutions as well as appliances (see next section). This suggests that either enterprise IT professionals are less interested in small suppliers, as discussed above, or just don't know about the other HCI vendors. (Note: In a broader review that included smaller businesses we would expect these vendors to perform better.)

“WE THINK BUYING HYPERCONVERGED AS SOFTWARE IS AN ADVANTAGE. INDEPENDENT HARDWARE AND SOFTWARE MEANS WE ARE NOT LOCKED IN IF ONE DOESN'T WORK WELL.”

- LARGE FINANCIAL INSTITUTION

HCI IN THE ENTERPRISE

HCI has been very successful in the market, which has been mostly small and medium-sized businesses to date. The turnkey, appliance form-factor has been one reason for this adoption. It's appealing to those with limited IT expertise and to the technology generalists who make up many smaller company IT departments. For the enterprise, where VSAN was the lead choice, it's a different story.

We asked interviewees who chose VSAN or another software-only solution if they were aware this meant they would have to source the server hardware and do the implementation (to “roll their own” HCI) and if this detracted from the benefits.

Not only was this not an issue, for many the fact that they weren't buying hardware and software in the same product was an advantage. Some had standardized on a server vendor that they wanted to use for their hyperconverged infrastructure. One such company had bought \$25M of Cisco UCS servers so they weren't interested in an HCI appliance.

One of the areas we asked each interviewee was what they thought of hyperconverged as a technology, how well it fit in their enterprise data center. Their responses were consistent about two things. They were moving slowly, starting “at the edge” with less critical applications and they were open to taking HCI as far as it would go in their data centers. This included using hyperconverged solutions to support tier-one, production databases and other mission critical workloads. While most hadn't gotten to that point yet, for them it was “so far so good”.

“WE HAVEN'T REALLY COME ACROSS ANYTHING THAT'S A GOTCHA OR A SHOW STOPPER”

- INSURANCE COMPANY

WE ARE GOING TO PUT CRM AND BILLING APPLICATIONS FIRST AND AFTER THAT WE HAVE MANY OTHER APPLICATIONS IN THE PRODUCTION ENVIRONMENT. VENDOR SELECTION IS A DIFFERENT QUESTION BUT WE ARE CONVINCED WITH THE TECHNOLOGY.”

- LARGE TELECOMMUNICATIONS COMPANY

CONCLUSIONS

Enterprise IT needs to change.

They have to reduce their reliance on big, expensive infrastructure and find storage that costs less, on a per-TB basis. They also need to move to a less complex infrastructure than traditional SAN-based shared storage, one that provides a faster “time to data”. This evolution will include an organizational change as well, one that simplifies the provisioning process and removes organizational silos as they remove physical ones. According to the results of this study, enterprise IT is looking to hyperconverged infrastructure as a way to embrace that change.

The companies we contacted are using or planning to use the software-defined architecture and commodity hardware of hyperconverged products to lower IT costs. But more importantly, they see the simplicity of HCIs as a key part of a more agile infrastructure, one that can be set up and run without IT personnel.

These enterprises see HCIs as a way to consolidate existing compute and storage systems and as a standard infrastructure to support server virtualization. They're also looking at this technology for VDI, backup/DR and private cloud use cases. They're more interested in using existing suppliers than new companies and generally more interested in a software-based hyperconverged solution, rather than the turnkey appliance that's been so popular in the small and mid-market space.

ABOUT THE SNIA

The **Storage Networking Industry Association** is a not-for-profit global organization, made up of member companies spanning the global storage market. SNIA's mission is to lead the storage industry worldwide in developing and promoting standards, technologies, and educational services to empower organizations in the management of information. To this end, the SNIA is uniquely committed to delivering standards, education, and services that will propel open storage networking solutions into the broader market. For more information, visit www.snia.org.

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