



WHITE PAPER

Lenovo Converged HX Series: Why Lenovo for Hyperconverged?

Sponsored by: Lenovo

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EXECUTIVE SUMMARY

Today's enterprise datacenter can be one of the most complex business environments with dozens (for smaller businesses), hundreds (for larger and midsize businesses), and even thousands (for hyperscale businesses) of servers that must be managed and monitored. At this level, just being able to manage the cords can be a challenge – let alone keeping up with the growing need for more agility and scalability within the datacenter. Simply put, companies are aggressively looking for less complexity and more agility from their servers. Hyperconverged solutions deliver simplicity in spades with their plug-and-play setup and their ability to deploy workloads faster than traditional servers, storage, and virtualization.

What Is Hyperconverged?

Hyperconverged systems are an emerging breed of solutions that natively collapse core storage, compute, storage networking, and virtualization functions into a single software solution or appliance. This is in contrast to traditional integrated platforms and systems in which autonomous compute, storage, networking, and virtualization systems are integrated at the factory by the vendor or by resellers. In addition to integrating storage and compute functions into a single node (or a cluster of nodes, each offering compute and storage functions), all hyperconverged systems employ:

- A distributed file system or an object store that serves as the data organization, management, and access platform
- A hypervisor that provides workload adjacency, management, and containerization in addition to providing the hardware abstraction layer (Further, the hypervisor hosts essential management software needed to manage the platform and is also used to bootstrap the server hardware.)
- An (optional) Ethernet switch to provide scale-out and/or high-availability capabilities (However, switching and/or networking is used not to bridge the compute and storage layers but to provide high-availability and resiliency capabilities to the storage and computing stacks.)

The hyperconverged infrastructure (HCI) market segment integrates a collection of technologies that span the functional areas of storage, computing, networking, hypervisor-based virtualization, containers, and infrastructure management. IDC estimates that the market for hyperconverged infrastructure is in the beginning stage of development and penetration, and we believe the opportunity for this market to be quite significant.

Market Trends

Hyperconverged systems offer advantages including simplicity, lower administration costs, and reduced vendor involvement. This technology sits in the middle of a confluence of trends that will continue to provide the hyperconverged market with momentum, including:

- **Investment in the software-defined datacenter will continue to grow rapidly.** Hyperconverged infrastructure is positioned well to ride the current wave of software-defined infrastructure. IDC defines software-defined infrastructure as platforms that deliver the full suite of compute, storage, or networking services via a software stack that uses (but is not dependent on) industry-standard x86 hardware built with off-the-shelf components. The modular nature of hyperconverged will find significant traction, with organizations choosing to walk the software-defined path.
- **Adoption in the public sector.** While hyperconverged systems are having an impact in many different private sector industries, including financial, retail, and transportation, it is within the public sector where the impact of hyperconverged may go overlooked. The benefits of hyperconverged systems play well within the state and local government and education (often called "SLED") market. Some hyperconverged vendors have made inroads with large deals within the Department of Defense and universities. The appeal is obvious as government agencies and universities must handle a large variety of workloads while often dealing with very limited IT budgets.
- **Scale-out workloads will continue to be an IT driver.** In a recent IDC survey of 250 IT managers and executives, respondents indicated that they are expecting double-digit growth in scale-out workloads over the next 24 months. In essence, hyperconverged systems are modular systems built with scale-out workloads in mind. This bodes well for vendors of hyperconverged technology that have made scalability a key feature in their product development road maps.
- **The need for optimization for 3rd Platform workloads is growing.** 3rd Platform workloads such as Internet of Things, Mobility, and Cloud are driving an explosion of data. As a result, the need for new infrastructure hardware optimized for the 3rd Platform is growing rapidly. This growth in 3rd Platform workloads presents an opportunity for hardware vendors to provide technology that is specially designed to handle the rigors of big data, analytics, private/public cloud, and virtualization as well as emerging IT workloads and technologies such as DevOps and Containers.

Use Cases

While the trends mentioned previously are driving companies to consider hyperconverged systems, the benefits to the line-of-business (LOB) users are even more pronounced and often serve as an even stronger catalyst for consideration and purchase of these systems (see Figure 1):

- **Simple deployment and rapid scalability.** Currently, virtual desktop infrastructure (VDI) is one of the biggest drivers within the hyperconverged market, and it accounts for an even larger portion of midmarket hyperconverged system shipments primarily because of the simplicity that hyperconverged solutions offer. Hyperconverged eliminates the up-front design and integration work necessary for large VDI deployments. In addition, hyperconverged systems allow IT resources to scale quickly as the number of business users ramps up.

- **Simple and lower-cost remote office/branch office (ROBO) solutions.** Remote offices and branch offices, like retail stores, bank branches, or manufacturing plants, play a crucial role in company operations and often have specialized IT infrastructure needs and challenges. The locations, though geographically distributed, often must be managed with little to no specialized IT support. Hyperconverged systems are well suited for this market because they present IT managers with a simple, lower-cost scaled solution.
- **Highly available and redundant clusters that lower risks.** As enterprise-level applications such as ERP, CRM, Email, Collaboration, and other database-driven workloads grow in complexity, managing the risk of data loss and/or disaster becomes even more important. With legacy infrastructure, the data backup and disaster recovery process can be complicated and time consuming at best and completely ineffective at worst. Hyperconverged systems offer high availability and redundancy because of their multinode deployment capabilities.

FIGURE 1

Use Cases for Hyperconverged



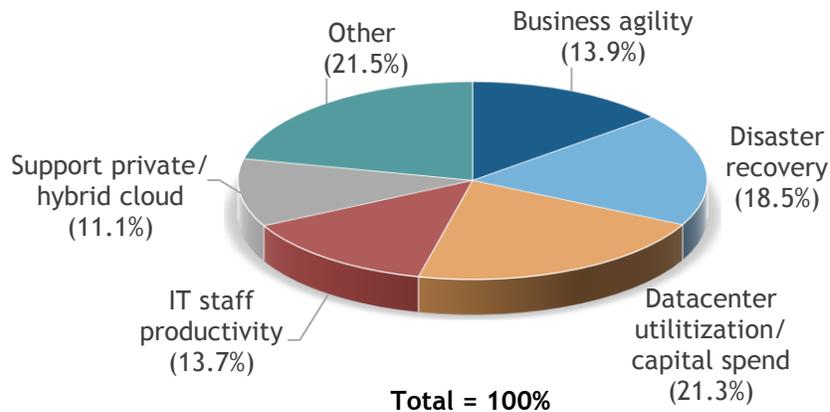
Source: IDC, 2016

Why Hyperconverged Versus Other Options?

Hyperconverged systems are part of the new thinking regarding datacenter infrastructure technology. Ever tasked with doing more with less, CIOs are aggressively looking for technology to help them meet their business needs while improving overall operational efficiency (see Figure 2).

FIGURE 2

Top Hyperconverged Drivers



n = 108

Source: IDC's *Converged Systems Survey*, December 2015

Hyperconverged solutions present today's CIOs with several key advantages over traditional IT infrastructure, including:

- **Lower capex.** Hyperconverged systems combine servers and storage hardware into one single solution, reducing the number of overall physical systems (both servers and storage) that must be purchased upon first deployment. Hyperconverged systems are very often built with "industry standard" hardware, further reducing their initial purchase costs. Finally, there is additional saving at the time of purchase because hyperconverged systems greatly reduce the costs and complexity around deployment and systems integration – most systems can be deployed in less than two hours with hyperconverged systems as opposed to weeks and often months with traditional IT hardware.
- **IT productivity.** With traditional IT, staff productivity is stunted by the heavy daily environment management needs. With hyperconverged systems, IT staff are free from the obligation of daily management of application-related tasks. A new virtual machine (VM), for example, can be provisioned in minutes with hyperconverged systems as opposed to hours with traditional IT hardware/software. In turn, IT staff can spend more time exploring new ways to support the business and innovate new tools/techniques.
- **Long-term opex.** Hyperconverged systems allow for system cluster management at the hypervisor level, allowing IT administrators to handle more virtual machines than with traditional shared storage solutions. This greatly minimizes the day-to-day maintenance needed for a hyperconverged system; it also reduces the need for employees with specialized storage skills. Also, some hyperconverged systems allow for the use of APIs, which lessens the amount of administrative work required to maintain the system. With some hyperconverged systems, the time needed to manage storage can shrink from one to two hours per day to one to two hours per month.

Hyperconverged Competitive Dynamics

The hyperconverged competitive landscape continues to expand, with new entrants and new products being introduced at a rapid rate. A few overarching trends are helping shape the competitive landscape for hyperconverged solutions:

- **Wave of bigger generalists.** For years, the start-up company hyperconverged players had the market to themselves. As growth continued and the broader IT markets felt the pinch of a slowdown, many larger players took notice. Over the past 18 months, some of the biggest names in the technology market have introduced hyperconverged offerings by either internal development or strategic partnership.
- **Growth in hyperconverged software deployments.** The vendor landscape in this market has coalesced around two deployment strategies: appliance and software only. While the majority of vendors in the hyperconverged market are appliance vendors, the number of software-only vendors continues to grow rapidly. Software-only vendors promise customers more hardware flexibility, allowing customers to modify their systems for greater storage or enhanced performance. The appliance vendors further simplify the deployment for the customer by pre-integrating and delivering the infrastructure as a turnkey implementation. Some vendors have the ability to offer both options to their customer base.
- **Evolving strategic partnerships.** The hyperconverged market at its core is about bringing together traditional infrastructure (server, storage, networking, virtualization, etc.) into one single package. Many vendors have joined forces with leaders to offer a complete hyperconverged solution. Though there are a few examples of true OEM arrangements integrating the hardware and software in the factory, many of these partnerships remain simple packaging exercises or "meet in the channel" type of agreements. Such partnerships have often left end users with far less than seamless support. For the market to continue to mature, there is a need for deeper and more seamless partnerships.

Why Lenovo? Lenovo/Nutanix Differentiation Factors

In November 2015, Lenovo announced an OEM arrangement with Nutanix to develop and sell a new line of hyperconverged appliances. These appliances will target organizations looking to bring the agility and scalability of public clouds into their own datacenter environments. The appliances that feature the Nutanix software are currently on the market, with three models available for purchase:

- **Lenovo Converged HX3500:** Targeted at smaller virtualization workloads and some remote office/branch office environments
- **Lenovo Converged HX5500:** Targeted at big data workloads including Hadoop and Splunk, in addition to disaster recovery
- **Lenovo Converged HX7500:** Targeted at large database workloads and I/O-intensive workloads such as SQL and Oracle RAC

These appliances offer end users a couple of potentially powerful points of differentiation:

- **Added value of XClarity.** Lenovo's new centralized resource management software allows IT managers to automate a number of lower-level tasks, including hardware discovery, hardware inventory status, and firmware updates. This capability, along with a dashboard-driven interface, allows IT staff to spend less time running/managing their IT and more time innovating and improving their business.

- **Integration with Acropolis Hypervisor.** As the amount of data these hyperconverged systems handle continues to grow, the role of the hypervisor becomes increasingly important. The new line of Lenovo-branded hyperconverged appliances will integrate seamlessly with the KVM-based Acropolis Hypervisor (AHV), which is built into the Nutanix software at no additional charge. The ability to leverage Acropolis Hypervisor, which is included within the Acropolis operating system, presents end users with the flexibility to forgo more expensive hypervisors if they choose.

The partnership between Lenovo and Nutanix also presents some potentially compelling characteristics that set it apart from other partnerships within the hyperconverged market:

- **Deeper-level partnership.** Partnering within the hyperconverged market is nothing new. In fact, Lenovo and Nutanix have other partnership agreements. However, this is an OEM contractual agreement and thus goes beyond simple resale and packaging. These two companies have agreed to work closely at every level, including engineering, go to market, sales and support.
- **Dedicated Lenovo sales and support.** For customers, the possible benefits of this partnership include the seamless level of support offered for these products. Lenovo will handle the sales with its larger multinational salesforce in over 160 countries. Further, Lenovo will manage lower-level to midlevel software support coupled with a guided handoff to a Nutanix software expert when needed for high-level software support.
- **Lenovo's large partner network.** Lenovo has a large network of VARs and partners, allowing these appliances to extend their reach into vertical markets and specialized submarkets. Also, Lenovo's customers will be able to deploy a Nutanix-based hyperconverged solution without giving up their preferred Lenovo support contract.
- **Long-standing reputations.** This partnership will merge one of the leading hyperconverged software solutions and one of the largest suppliers of x86 servers in the world. Further, Lenovo's servers are built on System x, which has a long history of deployments within datacenters where quality, reliability, and security have been high priorities. This will provide customers with a deeper sense of confidence about the potential quality of the products. The track records of both companies should help alleviate any trepidation among customers regarding longer-term investment.

CHALLENGES/OPPORTUNITIES

The hyperconverged systems market has grown at a torrid pace over the past four quarters. The higher growth and the larger profit margins in this market (relative to the growth and profit margins in the traditional enterprise systems market) are rapidly attracting new entrants. The challenge for Lenovo will be to make the appliances stand out from the crowd and provide a reason for potential customers to choose the appliances versus others on the market. This can be done in a number of ways; however, according to IDC's most recent survey of current and potential hyperconverged customers, better service/better support was one of the top reasons for switching converged systems suppliers. By focusing on providing seamless support for the appliances, Lenovo can go a long way toward truly differentiating itself in this crowded market.

Lenovo must lead with the message that it is much more than a server company and that it provides a full spectrum of enterprise datacenter products, including switches, storage, and workstations. This "one-stop shopping" aspect is attractive to many potential customers and may be a major point of differentiation for Lenovo's HCI appliances. In fact, according to IDC's most recent survey of current and potential hyperconverged customers, nearly 80% of companies felt that it was important

for their HCI vendor to be able to offer a complete product portfolio outside of hyperconverged systems. Lenovo must work this message throughout its marketing and selling of these products to truly set them apart from many of the other HCI solutions.

CONCLUSION

As mentioned previously, companies are aggressively looking for less complexity and more agility from their servers. Hyperconverged solutions deliver simplicity with their plug-and-play setup and their ability to deploy workloads faster than traditional servers. Any solution that provides the desired level of simplicity while meeting the rigors of datacenter performance demands will find purchase among end users. However, only solutions that truly differentiate themselves will be positioned to become leaders within this market.

The appliances from the deeply integrated partnership between Lenovo and Nutanix address many of the shortcomings of traditional infrastructure mentioned previously. Also, this partnership leverages Nutanix's reputation as one of the leaders in HCI software and Lenovo's servers with their System x heritage to provide end users with an additional sense of confidence as to the potential quality of the appliances. Further, this level of partner integration is a new and exciting shift in the HCI market, providing customers with rare advantages regarding support and maintenance. Indeed, the Lenovo appliances are well positioned to make an impact on the HCI market.

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