



White Paper

IBM and Nutanix Partnership Expands Hyperconvergence into New Markets Without Compromises

Sponsored by: IBM and Nutanix

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IN THIS WHITE PAPER

This IDC white paper offers an overview of important hyperconverged and private cloud market trends. It also provides an overview of the recently announced partnership between IBM and Nutanix, highlighting the benefits customers can expect from this partnership.

SITUATION OVERVIEW

Companies of all sizes are undertaking digital transformation projects intended to streamline costs of doing business, strengthen customer relationships, capitalize on new sources of revenue, and improve workforce productivity. This is placing considerable pressure on IT departments that are tasked with supporting these important business initiatives at a time when budgets are shrinking and well-established processes no longer work. IT teams are finding that the levels of scale and agility needed in today's environment cannot be achieved using their long-standing practice of buying silos of datacenter resources that are managed by silos of experts. As such, IT departments have begun transforming datacenter operations.

Looking to new types of enterprise infrastructure has been a big part of transformation currently under way within the datacenter. IT teams are shifting away from deploying discrete servers, networking, and storage systems in favor of fully integrated solutions that can be centrally managed with tools that offer new levels of automation. Such converged systems are increasingly built with new technologies (e.g., flash media, software-defined data services) and architectures (e.g., server based, scale out) that are driving previously unmet levels of cost and operation efficiencies. Importantly, converged systems are increasingly deployed as a platform for private clouds and a critical component to holistic hybrid cloud environments.

Evolution of Datacenter Infrastructure Convergence

At a broad level, converged systems represent the consolidation of disparate datacenter technologies that can be acquired, deployed, managed, and supported as though they were a single system. Fundamentally, converged systems differ from traditional hardware platforms and architectures in that they are designed to be deployed quickly using a modular building-block approach to rapidly scale up resources and workloads. Early converged systems deployments have traditionally included servers, shared storage, networking equipment, and system infrastructure software (e.g., hypervisors, management tools). Most traditional converged systems deployed to date have focused on providing a

seamless user experience by combining discrete datacenter infrastructure (networking, servers, and compute) in the following ways:

- **Integration and testing.** Technology suppliers put considerable resources into the integration and testing of select server, storage, and networking models to ensure that the converged solution will provide the performance, availability, interoperability, and life-cycle management capabilities expected within the most demanding datacenters around the world.
- **Packaging.** Traditional converged systems offer multiple "pre-SKUed configurations" and are normally delivered to the customer as a complete system, which simplifies the procurement process and helps ensure orders can be fulfilled in days if required.
- **Support.** Converged systems offer a single-support contract that greatly reduces complexity for users and accelerates time to problem resolution.

IDC has been covering the converged systems market for nearly a decade. During this time, solutions in this market have proven to be a very effective way to improve datacenter resource utilization, increase IT staff productivity, improve business agility, and reduce time to services.

Total spending on converged systems surpassed \$13 billion during the 12 months ending June 30, 2017, and is expanding at rates far higher than those of the total enterprise infrastructure market. This type of market expansion is a clear indication of the degree to which converged systems can drive real benefits within the datacenter. That said, most of the traditional converged systems in use today leverage legacy server, storage, and storage networking as their core building blocks. Such systems represent the first phase of the converged systems market and have undeniably helped push datacenter infrastructure convergence into the most demanding mission-critical applications in use today. The use of legacy systems as core building blocks has also kept average selling prices (ASPs) of traditional converged systems relatively high. IDC data shows ASPs of converged systems built with discrete server, storage, and storage networking components above \$350,000 for the complete solution. While such ASPs have not impeded the continued expansion of converged systems, they have held back adoption within many organizations looking for smaller starting points and more granular building blocks.

Hyperconverged Infrastructure: The Next Generation of Converged Systems

Like today's IT departments, the converged systems market is rapidly evolving. An important element of this evolution is the relatively recent emergence of hyperconverged infrastructure (HCI), which IDC considers a subset of the \$13.1 billion converged systems market and the next phase of the market's life cycle. HCI solutions deliver the proven benefits of the first generation of converged systems but do so through a clustered, scale-out architecture historically built on commodity servers. A key difference between HCI and traditional converged systems is the ability of HCI solutions to provide all compute, storage, and networking functions tightly integrated into a single chassis and then grouped together through a cluster of server-based nodes. Each node within a cluster contributes all of its resources to an abstracted pool of capacity, memory, and compute resources. This pool of resources provides the foundation for all server-centric workloads (e.g., hypervisors, virtual machines, and applications) as well as storage-centric workloads (e.g., data persistence, data access, and data management).

Benefits from Hyperconverged Infrastructure

Hyperconverged infrastructure deployments are driving benefits in the following key areas:

- **Lower capex.** Lower capex can be achieved through the elimination of SAN-based storage solutions in favor of industry-standard servers that offer fully virtualized compute and data services. The scale-out architecture of hyperconverged solutions further lowers capital costs by helping reduce the need to overprovision resources. Instead, customers can buy only the nodes required at the time of initial deployment and scale later as needed.
- **Reduced opex.** Reduced overprovisioning and elimination of storage silos have positive impacts beyond capex. In fact, these benefits can directly lead to lower costs of power, cooling, and floor space within the datacenter. HCI solutions often integrate management software that automates many of the complex tasks needed during initial deployment while reducing the number of steps required to provision new workloads. The results are improved IT staff productivity and increased agility within the datacenter. These same solutions also help IT departments leverage IT generalists for low-value tasks, thus freeing up time for infrastructure specialists to work on more innovative projects.
- **Reduced risk.** The highly automated nature of HCI solutions also helps reduce the risk of downtime associated with common life-cycle management tasks (e.g., firmware upgrades, system refresh). The scale-out, software-defined nature of HCI solutions helps eliminate the need for complex and risky forklift upgrades, which have become all too common within the datacenter. Many companies leverage hyperconverged solutions as a way to improve their disaster recovery/high-availability (DR/HA) processes and costs in ways not possible just a few short years ago. HCI solutions also allow users to reduce the number of technology suppliers involved within a full solution, which helps better coordinate patches and upgrades while reducing the number of support calls needed for the solution.

Entering a New Era of Hyperconvergence

First made popular by public cloud operators such as Google and Facebook, hyperconvergence emerged as a modern converged infrastructure architecture for next-generation applications. Smaller companies that were "born on the cloud" ignited further demand for scale-out, software-defined HCI systems. In time, established enterprises with a long history of managing their own infrastructure and datacenters awoke to the benefits of hyperconvergence and began deploying HCI solutions in their own datacenters. Awareness of the benefits these solutions bring to the table has risen steadily among enterprise IT teams, resulting in increased market adoption. Once these solutions are deployed, IT teams frequently expand the set of workloads running on HCI. This considerable growth of new hyperconverged deployments and the expansion of workloads running on these systems have helped drive global sales of hyperconverged solutions (including hardware and software) beyond \$2.8 billion during the 12 months ending June 30, 2017, up 168.5% year over year.

Although not widely realized, the hyperconverged market has entered a new phase of maturity. In contrast to the early years of deployments, HCI solutions in use today are more frequently running mission-critical workloads, are larger in scale, and are in use by a wide range of companies. Figure 1 shows the most common types of workloads running on HCI solutions based on a recent IDC survey. Thirty-nine percent of survey respondents were running business applications (e.g., ERM, CRM, supply chain management, financial management, and payroll/accounting) on their HCI solutions. The top 5 most common applications running on HCI were rounded out by collaborative and content applications (34% and 31%, respectively) and structured data analytics and structured data management applications (28% and 27%, respectively). It should be noted that virtual desktop infrastructure (VDI) was the eighth most common workload on the list.

Twenty percent of survey respondents said they are running VDI on their HCI deployments. This is higher than the average for all datacenter infrastructure but clearly not the most common workload.

FIGURE 1

Workloads Running on HCI



Note: For more details, see *2017 Midyear Hyperconverged Market Update* (IDC #US43038817, September 2017).

Source: IDC, 2017

Modern HCI Solutions: Addressing the Gaps Found in Early Offerings

The types of workloads running on hyperconverged solutions are a good indication of how far the HCI market has come since its early days, but other important indicators tell us where the hyperconverged market is headed.

Today's most advanced HCI solutions have expanded capabilities that go beyond foundation benefits provided by software-defined, web-scale architectures to include key features required to build private cloud platforms that tie into hybrid cloud environments. Such features can include:

- Infrastructure designs that unite the configuration, provisioning, and management of cloud resources
- Use of service catalogs that support on-premise resource and workload deployment

- Management of private cloud and public cloud resources through a unified service catalog
- Support for highly portable workloads and automated bursting
- Ability to seamlessly move workloads between on-premise private clouds and public clouds
- Support for chargeback of resource utilization

In addition to becoming a platform for on-premise private clouds and a key part of hybrid clouds, modern hyperconverged solutions are also increasingly supporting organizational transformation within the datacenter. Most commonly, IDC sees a consolidation of roles that have been dedicated to a single technology such as networking, storage, or server management. With the use of HCI, one administrator takes on the responsibility for virtualization, compute, and storage and operates at a more generalist level. This is helping free up time within the IT team for more innovative projects and ultimately helping shift human capital to other critical parts of the datacenter such as application development.

Overview of the Newly Formed IBM and Nutanix Partnership

Although workload expansion has been a critical part of hyperconvergence market growth to date, it's important to note that we are currently in the midst of an expansion that is far from complete. As highlighted previously, HCI has expanded into many types of mission-critical business. It has also expanded to include a considerable part of the database and analytics market. That said, adoption within the most demanding data-intensive workloads has been limited. This is exactly the area that IBM and Nutanix are targeting with their newly announced partnership. Indeed, IBM and Nutanix have come together to bring the benefits of HCI and IBM's Power architecture to a new group of data-intensive workloads.

IBM and Nutanix initially announced their intention to partner on May 16, 2017. Through this partnership, the two companies are now co-engineering and shipping a new portfolio of hyperconverged solutions that combines IBM's OpenPOWER systems running Linux with Nutanix's Enterprise Cloud Platform software. The result is IBM Hyperconverged Systems powered by Nutanix.

Nutanix x86 solutions have been deployed for compute-demanding and analytics workloads. Splunk, Oracle, and Microsoft databases; DB2; and multiple open source databases are quite common within Nutanix deployments. This partnership, however, will drive HCI further into a new set of horizontally scaling data-intensive workloads, running on rapidly adopted databases such as MongoDB, EDB Postgres, and MariaDB. IBM and Nutanix have run tests to compare a cluster of three IBM CS822 Hyperconverged Systems with 22 cores and 512GB of memory each against three x86 hyperconverged systems with 24 cores and 512GB of memory each. When both environments are configured with comparable software, support, and warranties, the two companies claim the IBM system provides a price-performance benefit

"IBM has tested multiple hyperconverged configurations running Nutanix software. These tests produced results showing that IBM Hyperconverged Systems have a price-performance advantage for data-intensive applications. For example, the test results returned 2.3X better price-performance for MongoDB, 2.1X better for EDB Postgres, and 1.68X better for IBM WebSphere."

- Stefanie Chiras, VP Cognitive Systems Hardware Offerings, IBM

of 1.68x when running WebSphere, a price-performance benefit of 2.24x when running EDB Postgres, and a price-performance benefit of 2.3x when running MongoDB. It should be noted that IDC has not verified these numbers.

IBM Hyperconverged Systems (starting with the CS821 and CS822 systems) offer multiple models for maximum configuration flexibility of HCI solutions based on IBM's eighth-generation Power processors. All models can run Linux from multiple distributors. All models are built with Nutanix's AHV hypervisor, distributed storage fabric (Acropolis), and full management framework (Prism). They are offered with a full range of warranty and support services. It's important to note that although based on IBM's OpenPOWER systems, they integrate cleanly with all existing x86-based Nutanix environments thanks to the use of common code for AHV, Acropolis, and Prism. In fact, Prism can be leveraged to create a common management framework or "pane of glass" for all Nutanix-based hyperconverged solutions, regardless of the processors.

Many types of partnerships have been formed within the hyperconverged market, some running deeper than others. It's important to note that the IBM-Nutanix partnership runs very deep and should not be considered just an OEM/rebranding exercise. The two companies have co-engineered these solutions, are offering a well-thought-out support structure, and are putting comparable resources into go-to-market efforts. In short, both companies have invested considerable resources into engineering, support, training, and education/marketing.

Benefits Each Company Brings to the Partnership

Both companies bring substantial strengths and expertise to this partnership that are truly complementary.

Nutanix brings the following strengths to the partnership:

- A recognized leader and pioneer in the hyperconverged market
- A successful track record as a technology innovator and thought leader within the private cloud market
- Nutanix's large number of customers, across a wide range of vertical markets, which provides an unmatched understanding of how HCI and private cloud drive real-world value
- A complete (and mature) software-defined infrastructure stack (used for x86 and Power platforms) that is proven to drive real business value benefits such as reduced costs and improved operational simplicity
- Public cloud-like capabilities with application orchestration, a self-service portal, platform scalability, one-click provisioning, one-click expansion, one-click backup, and built-in security

IBM brings the following strengths to the partnership:

- A long history as a trusted technology supplier/partner to the largest organizations in the world
- An expansive, mature global supply chain built to provide rapid support in any part of the world
- Thousands of dedicated partners around the world
- Recognition as a leading vendor and pioneer within critical next-generation technologies such as cloud computing, cognitive computing, machine learning, artificial intelligence, analytics, and big data

- A long and proven track record as a provider of resilient, high-performance datacenter infrastructure ideally suited for data-intensive workloads
- A road map to "cognitive cloud," which includes cognitive/accelerated analytics solutions able to deliver faster business insights through innovations in silicon while being simple to deploy and manage

IDC believes this partnership provides a truly unique set of hyperconverged solutions that will help fill important gaps within today's market. Namely, IBM Hyperconverged Systems will:

- Instantly create an enterprise HCI and private cloud solution for horizontally scaling, data-intensive, high-performance workloads
- Greatly expand the HCI and private cloud total available market (TAM) by providing a differentiated offering that is able to meet the needs of a massive set of untapped workloads
- Maintain a critical value of hyperconvergence by allowing x86 and Power Systems workloads to operate within the same Nutanix management framework and thus preventing the need for silos of datacenter infrastructure

Together, IBM and Nutanix have set out on a path that will combine their unique areas of expertise in a way that will drive hyperconvergence into new areas of the market without asking customers to deploy silos of hyperconverged clusters. For customers already leveraging Nutanix solutions, IBM and Nutanix have worked to ensure full compatibility between their HCI offerings and all x86-based Nutanix solutions. The user experience will be the same no matter what mix of x86 and Power Systems is deployed. This provides seamless management, avoids the need to deploy individually managed silos of clusters, and eliminates learning curves associated with introducing Power Systems into a traditionally x86-based datacenter.

CHALLENGES/OPPORTUNITIES

IDC has found that many datacenters currently leveraging converged infrastructure (including HCI) have been heavily influenced by astute IT leaders who are aware of the inefficiencies associated with relying upon older datacenter architectures. The challenge for most IT leadership is in driving change. This change can be in IT processes, the technology used, and/or the people responsible for the change. Revolutionary rather than evolutionary technology shifts such as hyperconvergence and private cloud solutions can mean the most change. And change in any domain or discipline can be hard to navigate. However, it is often with the most revolutionary change that the most material benefits are realized. Such a change doesn't happen overnight and will likely require considerable training and a set of management tools that can support a move to IT departments with a cross-functional skill set. With HCI, such a transition can be incremental, thus avoiding a painful "rip and replace" upgrade from current solutions. IDC believes that partnerships like the one IBM and Nutanix have announced can provide the much-needed industry prowess, know-how, and technology that such visionaries need to drive change within their organizations.

CONCLUSION

Hyperconvergence has entered a new phase of market maturity. Workload expansion has been impressive and largely overlooked by many within the broader IT industry. That said, this remains a nascent market with a tremendous amount of new adoption still ahead. There are many capabilities that suppliers must introduce into this market to capitalize on the large opportunity ahead. IBM and

Nutanix have hit on a key combination of capabilities and market expertise that is very likely to take HCI into new data-intensive workloads that remain largely untapped today. Combining the performance capabilities of IBM's Power Systems with Nutanix's private cloud, their hyperconverged technology stack represents a powerful new solution that is sure to be attractive to a considerable number of datacenters. Ensuring that the OpenPOWER systems-based IBM Hyperconverged Systems share the same Nutanix source code as x86-based systems preserves critical HCI benefits, thus bringing HCI to new workloads without compromises.

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