



HPE Hyper Converged 380 Business Value Analysis

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Executive Summary

IT planners are looking to cloud-based services, server and desktop virtualization solutions, and agile development practices to accelerate the pace of innovation and contain costs. But legacy IT implementations composed of independent compute, storage and storage area networking (SAN) platforms can't meet the increased agility, scalability and price-performance demands of today's dynamic IT environments.

Many organizations are evaluating hyperconverged infrastructure solutions to eliminate cost and complexity. Hyperconverged appliances have the potential to transform economics and accelerate service agility by consolidating compute and storage resources into compact x86 building blocks that are highly virtualized and uniformly administered. But does hyperconvergence really live up to the hype? Is hyperconverged infrastructure significantly more efficient and cost-effective than traditional IT infrastructure? Do the business benefits really outweigh the costs and risks of introducing yet another new technology platform? Porter Consulting took a look at HPE's newest hyperconverged appliance to find out.

This report explores the business requirements and technology trends driving hyperconvergence adoption. It reviews the functional capabilities and business benefits of hyperconverged appliances in general and the new Hewlett Packard Enterprise Hyper Converged (HC) 380 system in particular. We examine the business advantages of the HC 380 by comparing it to a conventional siloed IT implementation based on standalone compute, storage and SAN solutions. **After analyzing both approaches Porter concludes the HPE HC 380 offers significant business benefits especially in the critical areas of time-to-value, IT service agility and total cost of ownership (TCO).**

Introduction - Hyperconvergence Business Drivers

Advances in technology—the advent of increasingly powerful multicore x86 servers, the widespread adoption of server virtualization solutions like VMware® and the growing popularity of virtual desktop infrastructure (VDI) solutions like Citrix® XenDesktop® and VMware Horizon—are transforming the way organizations deliver and consume IT services. Many businesses are deploying private or hybrid clouds and instituting agile development processes to accelerate the pace of IT and contain costs.

Legacy IT implementations, originally architected to support conventional business applications and software development methodologies, are too costly, complex and inflexible for today's dynamic environments. Many organizations are constrained by disjointed IT infrastructure—-independent compute, storage and SAN silos—often dedicated to specific business applications.

These fractured implementations are fundamentally difficult to deploy, configure and manage—each technology platform supports a unique (often low-level) administrative interface and requires special training and expertise. And they are inherently costly to operate—each platform consumes power, cooling and rack space. In addition, many organizations purchase server, SAN and data protection solutions from different vendors, complicating product procurement, licensing and support arrangements.

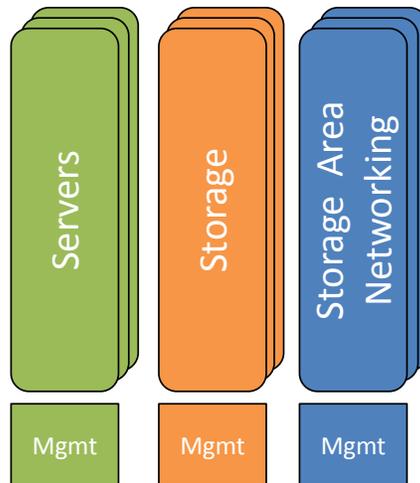


Figure 1: Siloed Data Centers are Inherently Costly and Inefficient

Siloed IT implementations are also inherently expensive to stand up and scale. Data centers are routinely overprovisioned to support future requirements—an inefficient approach that squanders capital. Implementing a new application, adding capacity or supporting a new business initiative can be a manually intensive, error-prone undertaking involving a number of different technology platforms, administrative interfaces and operations teams. Deploying new systems, provisioning storage and server resources, can take days or even weeks, and involve application, storage and networking specialists. **In Porter’s view, the legacy data center has become a barrier to innovation, rendering IT unable to respond to the needs of the business in a timely manner.**

Hyperconverged Infrastructure Solutions Transform IT Agility and Economics

Today’s dynamic applications and services—on-demand computing, VDI, DevOps—require a more agile, scalable and affordable IT framework. To deliver a competitive advantage to the business, the next-generation IT platform must:

- Be simple to install, configure, manage and scale.
- Support rapid, automated provisioning of compute and storage capacity to enable on-demand applications and dynamic workloads.
- Offer a modular, pay-as-you-grow product design that closely aligns CAPEX and OPEX with business demands.
- Meet strict availability requirements and SLAs for business-critical applications and core IT services.

Porter believes hyperconverged infrastructure platforms are well suited for today’s data-intensive applications and dynamic services. They eliminate infrastructure cost and complexity and accelerate time-to-value by consolidating disaggregated technology stacks into uniform, highly virtualized x86 building blocks that are managed in a cohesive fashion from a single user interface. IT assembles these building blocks into a large universal resource pool, transforming data center economics. Best-of-breed

hyperconverged infrastructure solutions include start-up wizards, provisioning templates and VM-centric administrative tools that streamline initial system setup and simplifying ongoing operations, eliminating the need for server and storage expertise.

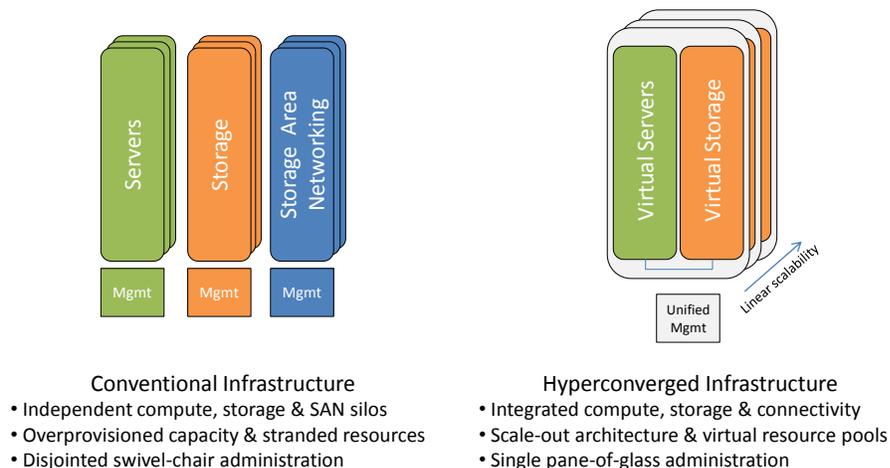


Figure 2: Hyperconvergence Eliminates Infrastructure Cost and Complexity

HPE Hyper Converged 380 System Overview

The Hyper Converged 380 is HPE’s newest hyperconverged infrastructure platform, aimed at mid-sized businesses, enterprise remote office branch office sites and enterprise line-of-business (legacy and DevOps) environments. Each HC 380 “building block” combines extensible compute, storage, hypervisor and management capabilities into a compact, 2U scale-out appliance. More specifically, the HC 380 incorporates HPE ProLiant Gen9 DL380 x86-based server technology, HPE StoreVirtual software-defined storage, VMware vSphere® hypervisor, HPE OneView InstantOn software and the HPE OneView User Experience (UX) interface.



HPE Hyper Converged 380

Each HC 380 appliance includes two server nodes. Up to 16 server nodes can be clustered as a system and managed from the same user interface. CPU, memory, networking, SSD and HDD are preconfigured for key workloads such as cloud and VDI.

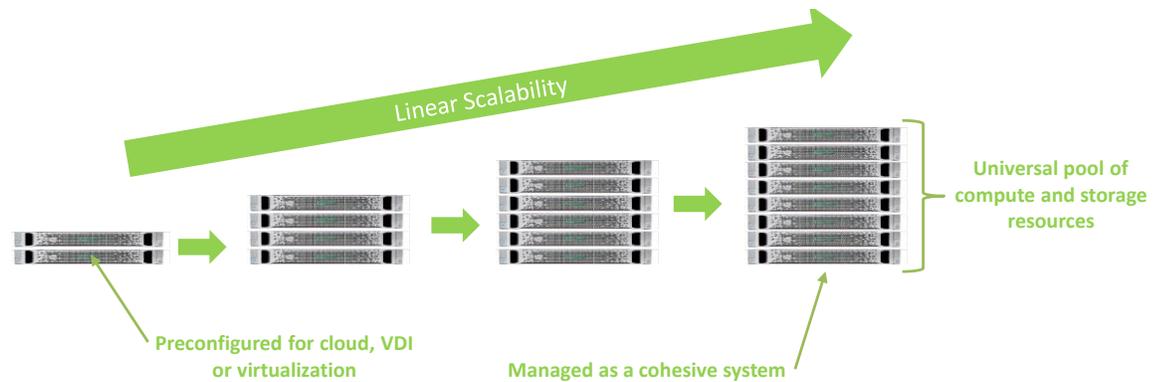


Figure 3: Scale Out, Building-Block Architecture

Noteworthy product features and attributes include:

- **Building block simplicity** – HC 380 configurations are tuned for specific use cases like virtualization, VDI or cloud, simplifying system planning, procurement and expansion.
- **Quick and easy deployment, expansion and maintenance** – All hardware and software components are factory-installed and pre-integrated, simplifying installation and setup. A self-guided startup program (OneView InstantOn) streamlines initial system configuration as well as adding nodes to the cluster. (HPE asserts IT generalists can add capacity in as little as 15 minutes). Firmware and driver updates can be applied with just three simple UI clicks.
- **Rapid IT service provisioning** – HPE positions the HC 380 as a “VM vending machine” with a “consumer-inspired” user interface. Day-to-day operations such as provisioning virtual machines are performed via a simple-to-use user interface (HPE OneView User Experience) accessible via desktop or mobile device. (See Figure 4)
- **High scalability and VM density** – The HC 380 offers outstanding density, supporting up to 576 cores per 16U system (16 two-socket server-nodes X 18 cores/processor). It can easily handle traditional data-intensive applications such as large-scale databases as well newer applications like persistent VDI or Big Data analytics.
- **High availability operation and efficient data mobility and data protection** – The HC 380 supports transparent VM failover and data mobility across nodes, systems and sites for business continuity. HPE StoreVirtual Application Aware Snapshot Manager and HPE StoreVirtual Recovery Manager are included with the product for efficient data backup and recovery.
- **Proactive management** – predictive analytics and troubleshooting tools simplify performance management, capacity planning, and problem identification, isolation and resolution tasks.

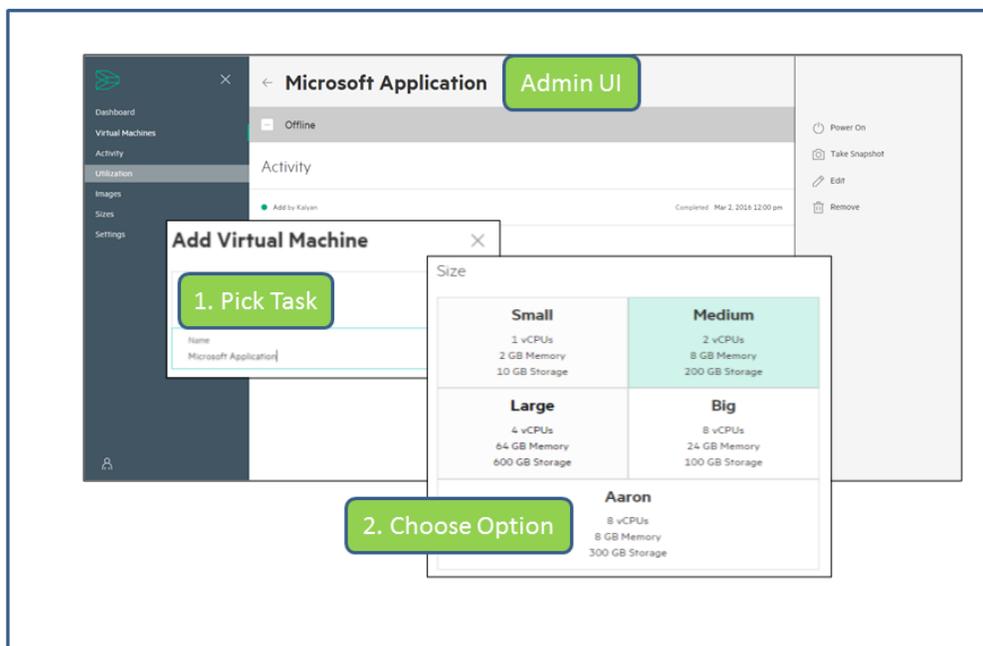


Figure 4: HPE HC 380 Management User Interface

HPE HC 380 TCO and ROI Analysis

Porter analyzed the ROI for the HC 380 for a typical midsize business with annual revenues of \$100 million USD. We compared the initial and ongoing costs of the hyperconverged solution with the ongoing costs of an incumbent solution made up of discrete servers, storage systems and SAN switching platforms.¹ We assumed a system with 400 VMs and .5 TB/VM of storage, with 4 vCPUs and 8GB RAM allocated per VM. Using [HPE's Converged Infrastructure Business Value Calculator](#) tool, we compared the direct and indirect costs of both solutions as detailed below.

Direct costs

- **Hardware** – the initial capital equipment costs of the HC 380, assuming a 30% discount off U.S list. (We assumed the incumbent hardware was paid off.)
- **Software** – the initial software licensing fees of the HC 380.
- **Services** – optional HPE on-site “start-up” installation and configuration services fees for the new solution. (Assumes a 30% discount.)
- **Support** – annual maintenance fees for both solutions (Assumes annual support costs equal 15% of initial investment. Legacy solution includes separate server, storage and networking equipment support fees)
- **Power** – ongoing electrical expenses for both solutions. (Assumes \$.10 per kWh.)
- **Data center infrastructure** – ongoing real estate costs for both solutions. (Assumes \$300 per square foot.)

¹ HP ProLiant BL460c servers, HP StorageWorks EVA6000 storage and Brocade SAN switching platforms

Indirect costs

- **IT staff efficiency** – represents ongoing VM administrative expenses.² (Assumes \$44/hr. for burdened IT admin costs.) The HC 380 Management UI simplifies VM adds/moves/changes reducing recurring operational expenses for the hyperconverged solution.
- **User productivity** – opportunity costs associated with employee idleness due to application deployment, support and downtime.³ (Assumes \$29/hr. for burdened business-user costs.) The hyperconverged system improves user productivity by offering inherently faster virtual server and application installation and configuration; inherently faster and less-disruptive virtual server and application upgrades and changes; and inherently higher system uptime.
- **Time-to-solution** – the opportunity cost of delaying the IT refresh.⁴ (Assumes the hyperconverged solution results in 5% revenue growth and company profits equal 20% of revenues.)

TCO and ROI Findings

Table 1 summarizes the cumulative three-year TCO for both the incumbent and hyperconverged solutions. **The HC 380 offers substantial *absolute costs savings especially in the areas of support, IT efficiency, user productivity and time-to-solution.*** These savings are achieved largely by reducing upfront capital equipment expenses (which drive support pricing), simplifying ongoing system administration and operation tasks, and increasing system uptime and application availability. Overall, the hyperconverged solution delivers a 74% TCO savings over the three year period.

Table 2 summarizes the key financial results for the new solution including the ROI, net present value (NPV) and payback period. **The HC 380 pays for itself in just 7 months, and yields a 424% investment return in three years.** The rapid payback is achieved largely through support, IT efficiency and user productivity cost savings compared to the incumbent solution. [Appendix A](#) explains the Table 2 financial metrics.

² IT staff efficiency is expressed as an opportunity cost. Annual IT admin savings are compared to a non-integrated legacy solution assembled by the customer. They are assumed to be 27 hours/VM and 8.9 hours/VM for the incumbent solution and hyperconverged solution, respectively, based on HPE-commissioned research performed by the Enterprise Research Group. The opportunity cost contribution is conservatively calculated at 20% of the estimated expenses.

³ Application deployment, support and availability savings for the hyperconverged solution are assumed to be 42 hours/VM, 48 hours/VM and 56 hours/VM, respectively based on HPE-commissioned research performed by the Enterprise Research Group. The opportunity cost contribution is conservatively calculated at 20% of the estimated expenses. The model assumes 40% employee efficiency, i.e. employees are productive only 40% of active hours.

⁴ The opportunity cost is calculated at 40% of the estimated expenses.

	Incumbent Solution	HPE HC 380	Absolute Savings	Percent Savings	Comments
DIRECT COSTS					
Hardware	\$0	\$538,317	-\$538,317	0%	Cost of new systems
Software	\$0	\$127,266	-\$127,266	0%	VMware licensing fees
Services	\$0	\$1,225	-\$1,225	0%	Optional deployment services
Support	\$1,341,705	\$46,670	\$1,295,034	97%	Lower maintenance fees
Power	\$115,832	\$44,927	\$70,905	61%	More compact and efficient form factor
DC Infrastructure	\$4,712	\$4,129	\$583	12%	More compact and efficient form factor
INDIRECT COSTS					
IT Efficiency	\$516,937	\$317,054	\$199,882	39%	Faster, more efficient planning, deployment, operations
User Productivity	\$1,010,136	\$0	\$1,010,136	100%	New revenue through faster time to deployment, lower cost through less employee downtime and revenue loss
Time to Solution	\$1,195,893	\$22,998	\$1,172,895	98%	Opportunity cost lost to delayed refresh
TOTAL	\$4,185,215	\$1,102,586	\$3,082,629	74%	
TCO per VM	\$10,463	\$2,756	\$7,707	74%	

Table 1: Cumulative Three-Year TCO

ROI	462%
Net Present Value	\$2,830,660
Payback Period	7 Months

Table 2: Investment Return Analysis

Additional Considerations

Porter believes customers considering the HC 380 should also take into account the product's technological underpinnings as well as HPE's experience delivering converged solutions and the company's strategic vision.

Proven Technology

The ProLiant Gen9 DL380 provides a solid foundation for the HC 380. The DL380 is the world's best-selling server⁵ and is field-proven in a variety of use cases including virtualization, VDI and cloud applications. Similarly, HPE StoreVirtual software-defined storage is field-proven in a range of use cases including virtualization and ITaaS applications. The scale-out, software-defined storage platform provides data mobility across tiers and locations and between physical and virtual storage, enabling linear scaling of capacity and performance.

Experience and Vision

HPE has a long history of helping customers break down technology silos and reduce operational complexity with innovations like Converged Infrastructure, Blade Systems and OneView unified management. The HC 380 represents the next step in HPE's architectural path to "Composable Infrastructure" where IT resources are intelligently provisioned as needed to support dynamic workloads and satisfy evolving business demands. The HC 380 eliminates the operational inefficiencies of conventional siloed IT architectures by introducing a software-defined intelligence layer that enables the entire system to be dynamically managed and controlled in a cohesive fashion from a single administrative interface. Compute and storage resources are intelligently allocated by software to address real-time requirements. The HC 380 places customers on the road to composability, efficiently supporting traditional workloads as well as virtualized applications and on-demand services. Figure 5 illustrates HPE's view of the architectural path to Composable Infrastructure.

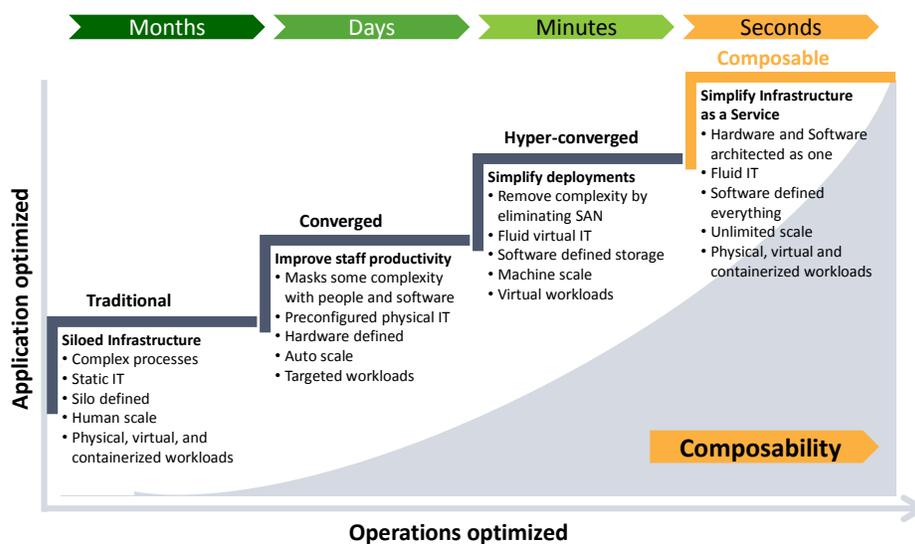


Figure 5: Evolution to Composable Infrastructure (Source: HPE)

⁵ CQ3'15 IDC Server Tracker

Conclusion – Hyper Converged 380 Lives up to the Hype

Conventional siloed IT implementations can't meet the increased agility and price-performance demands of contemporary applications. Hyperconverged systems, such as the HC 380, eliminate expense and complexity by consolidating compute and storage resources into highly virtualized, uniformly administered x86 building blocks. The hyperconverged approach enables IT to respond to the needs of the business more quickly and cost-effectively.

After analyzing the functional capabilities and financial benefits of the HC 380, Porter concludes IT organizations can realize a rapid investment return and gain substantial business advantages by re-hosting applications from incumbent IT systems to HPE's latest hyperconverged infrastructure solution. Specific benefits include:

Improved IT Efficiency and Economics

- **Rapid time-to-value** – accelerated product installation and startup, along with simple node-by-node expansion. Pre-configuration for selected workloads reduces planning and rollout time, while ensuring high performance.
- **Simplified administration** – IT generalists are able to manage ongoing system operations.
- **Simplified logistics** – with a single point-of-contact for product procurement, maintenance and support.
- **Reduced operating costs** – lower power, cooling, rack space and IT labor expenses.

Improved Business Support

- **Accelerated IT service agility** – commission virtual compute and storage resources, rollout new applications and spin up services quickly and easily.
- **Greater user productivity** – improve service levels with high availability configurations and data mobility.
- **Improved business innovation** – free up IT staff for strategic business activities.

Appendix: ROI Terminology

Net Present Value

NPV is the difference between the present value of the future cash flows derived from the HC 380 investment and the cost of the investment. A discount rate of .76 is assumed for the calculation.

Payback Period

Payback period indicates when the customer will start to see a positive return on the HC 380 investment. It examines savings benefits accrued over time and costs incurred over time to determine the investment's breakeven point (in months).

Return on Investment

ROI is a profitability ratio for the HC 380 investment. It is calculated by dividing the total savings of the hyperconverged solution by the upfront investment expenses (initial hardware, software and services costs).