HPE Hyper Converged 250 for Microsoft® CPS Standard

Business Value Analysis

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Executive Summary

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

Many organizations are evaluating hyperconverged infrastructure solutions to support Microsoft Hyper-V® and Microsoft VDI deployments and Azure® hybrid cloud initiatives. Hyperconverged appliances have the potential to transform economics and accelerate service agility by eliminating SANs and consolidating compute and storage resources into compact x86 building blocks that are 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? Are new hyperconverged appliances easily tied into standard Microsoft administrative systems and practices? Porter Consulting took a look at the Hewlett Packard Enterprise Hyper Converged (HC) 250 for Microsoft Cloud Platform System (CPS) Standard to find out.

This report explores some of the business requirements and technology trends driving hyperconvergence adoption. It reviews the functional capabilities and business benefits of hyperconverged appliances in general and the HPE HC250 for Microsoft CPS Standard in particular. We take a look at how the HPE product supports key Microsoft technologies and services like Hyper-V, System Center and Azure. And we examine the business advantages of the appliance for virtualized IT 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 HC250 for Microsoft CPS Standard offers significant business value especially in the critical areas of time-to-value, IT service agility and total cost of ownership (TCO). In addition, factory-installed Windows Azure Pack software and System Center integration, give the HPE HC250 for Microsoft CPS Standard a distinct competitive advantage over other hyperconverged infrastructure appliances for customers pursuing Microsoft virtualization technology.

Introduction - Hyperconvergence Business Drivers

Server virtualization solutions like Microsoft Hyper-V and virtual desktop infrastructure solutions like Microsoft VDI—are transforming the way organizations deliver and consume IT services. Many organizations are implementing private or hybrid clouds and instituting agile Development and Test (Dev/Test) processes to accelerate business agility and contain costs.

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

Microsoft Cloud Platform System provides an Azure-consistent cloud-in-a box for virtualized Windows and Linux® workloads. Aimed at midsized businesses and smaller enterprises, CPS Standard is a fully integrated and pre-configured system combining a high performance hardware platform and proven Microsoft software. The turnkey solution accelerates time-to-value and simplifies operations.

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.
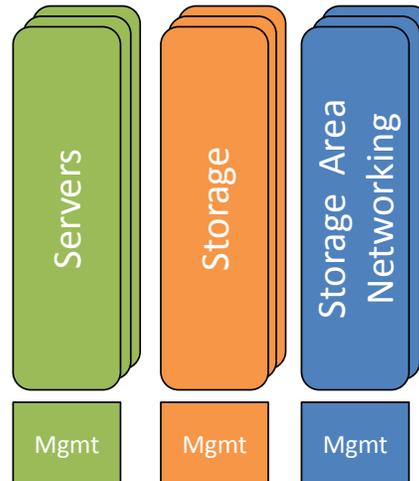

Figure 1: Siloed Data Centers are Inherently Costly and Inefficient

Siloed IT implementations, whether Linux or Windows, are also inherently expensive to deploy and scale. Even with virtualization, rolling out a new application, adding capacity or supporting a new business initiative can be a manually intensive, error-prone proposition involving a number of different technology platforms, administrative interfaces and operations teams. Standing up 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, Dev/Test—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.
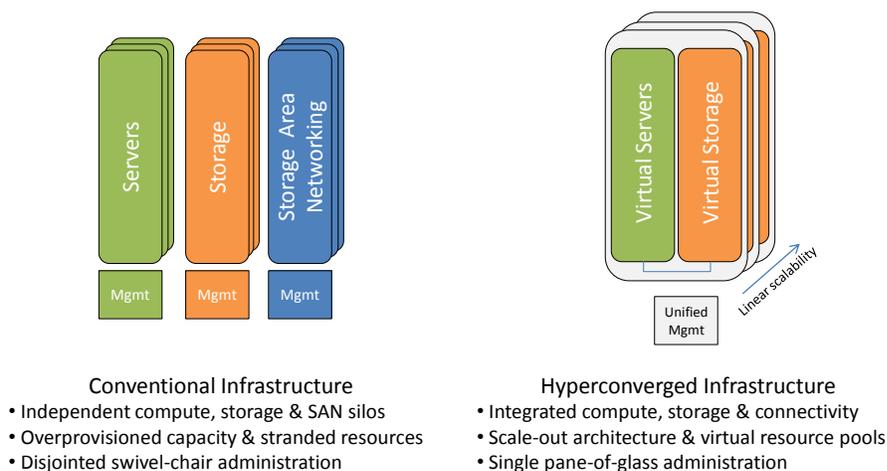
And for customers interested in Microsoft virtualization technology in particular, the next-generation hyperconverged platform must:

- Natively support Microsoft Hyper-V for server virtualization.

- Integrate tightly with Microsoft System Center for seamless administration.

- Optimally support Microsoft applications such as SharePoint® and Exchange for investment protection.

- Bring an Azure-consistent experience to the private cloud for ease of use.

- Support optional Azure public cloud services like backup and recovery for added flexibility and cost savings.

Porter believes hyperconverged infrastructure platforms are well suited for implementing private clouds and supporting Dev/Test efforts. Hyperconverged platforms eliminate infrastructure cost and complexity by collapsing disaggregated technology stacks into uniform, highly virtualized x86 building blocks that are managed in a unified fashion from a single administrative interface. They bring web-scale economics and simplicity to the corporate data center.

Hyperconverged systems are also well suited for unattended sites such as remote/branch office locations. Delivered as self-contained building blocks, hyperconverged platforms can be easily installed and expanded by IT generalists.

And certain hyperconverged platforms like the HPE HC250 for Microsoft CPS Standard protect and extend Microsoft investments, supporting key Microsoft technologies and applications such as Hyper-V, System Center, Azure, SharePoint and Exchange.

Conventional Infrastructure
- Independent compute, storage & SAN silos
- Overprovisioned capacity & stranded resources
- Disjointed swivel-chair administration

Hyperconverged Infrastructure
- Integrated compute, storage & connectivity
- Scale-out architecture & virtual resource pools
- Single pane-of-glass administration

Figure 2: Hyperconvergence Eliminates Infrastructure Cost and Complexity

HPE HC250 for Microsoft CPS Standard System Overview

HPE Hyper Converged 250 for Microsoft Cloud Platform System Standard brings the benefits of hyperconvergence to Microsoft customers implementing server or desktop virtualization initiatives, cloud-based services or agile development practices. The product combines compute, highly available storage, hypervisor and management capabilities into a single, 2U scale-out appliance, with up to four appliances (16 nodes) in a single managed system.

HPE Hyper Converged 250 for Microsoft CPS Standard

Key features and capabilities include:

- **Azure-Ready:** HPE and Microsoft collaborated to deliver an "Azure-consistent out-of-the-box experience" through Windows® Azure Pack, a collection of Microsoft Azure technologies bundled with the HC250. All HC250 hardware and software components, including Hyper-V and Windows Server® 2012 R2, System Center 2012 R2, and Windows Azure Pack are factory-installed and pre-integrated.
- **Linear Scalability:** The HC250 for Microsoft CPS Standard assimilates HPE ProLiant Gen9 x86-based server technology, HPE software-defined storage technology and Microsoft Hyper-V hypervisor technology. Each 2U appliance supports up to four server nodes. Up to 16 server nodes can be clustered together as a system and managed from the same console. The product features a wizard-driven startup program that simplifies deployment and expansion.
- **Simple Administration:** Day-to-day operations such as commissioning VMs and configuring resilient virtual storage pools (datastores) are performed using the HPE OneView for Microsoft System Center administrative application. HPE asserts the HC250 for Microsoft CPS Standard can be managed by IT generalists and does not require any specialized storage, server or virtualization expertise. For Azure customers, a self-service portal provides a consistent user experience across private and public clouds.
- **Built-in Resiliency:** The HC250 for Microsoft CPS Standard supports transparent VM failover across nodes, systems and sites for business continuity. Data backup and recovery is supported via storage-based snapshots and HPE Remote Copy integration with virtualization platforms and Microsoft Windows applications such as SQL Server and Exchange. The HC250 for Microsoft CPS Standard also supports optional Azure public cloud backup and recovery services.

For additional product information consult the HPE HC250 QuickSpecs and the Microsoft Cloud Platform System Standard datasheet.

HC250 for Microsoft CPS Standard System TCO and ROI Analysis

Porter analyzed the ROI for the HC250 for Microsoft Cloud Platform System Standard for a typical midsize business with annual revenues of $50 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 50 VMs and .5 TB/VM of storage, with 2 vCPUs and 4GB 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 HC250 for Microsoft CPS Standard, assuming a 30% discount off U.S list. (We assumed the incumbent hardware was paid off.)

- **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.)

Indirect costs

- **IT staff efficiency** – represents ongoing VM administrative expenses.[2] (Assumes $44/hr. for burdened IT admin costs.) The administrative 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

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

[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.

upgrades and changes; and inherently higher system uptime.

- **Time-to-solution** – the opportunity cost of delaying the IT refresh.[4] For the mid-sized businesses modelled by the HPE TCO tool, the hyperconverged solution is assumed to enable 5% revenue growth, and company profits are assumed to equal 20% of revenues. The opportunity cost advantages stem from faster cycle times to deploy infrastructure and provision resources. **As with any projection, these assumptions should be validated on a per-project basis.**

TCO and ROI Findings

Table 1 summarizes the cumulative three-year TCO for both the incumbent and hyperconverged solutions. **The HC250 for Microsoft CPS Standard 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 59% 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 HC250 for Microsoft CPS Standard pays for itself in just 9 months, and yields a 306% investment return in three years.** Appendix A explains the Table 2 financial metrics.

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

	Incumbent Solution	HPE HC250	Absolute Savings	Percent Savings	Comments
DIRECT COSTS					
Hardware	$0	$203,009	-$203,009	0%	Cost of new systems
Software	$0	$0	-$0	0%	Microsoft software licenses are transferred
Services	$0	$2,456	-$2,456	0%	Optional deployment services
Support	$170,292	$76,230	$94,062	55%	Lower maintenance fees
Power	$15,488	$20,744	-$5,256	0%	Offset by IT efficiency savings
DC Infrastructure	$4,652	$4,069	$583	13%	More compact and efficient form factor
INDIRECT COSTS					
IT Efficiency	$139,845	$112,442	$27,403	20%	Faster, more efficient planning, deployment, operations
User Productivity	$126,267	$0	$126,267	100%	New revenue through faster time to deployment, lower cost through less employee downtime and revenue loss
Time to Solution	$597,947	$11,499	$586,448	98%	Opportunity cost lost to delayed refresh
TOTAL	**$1,054,490**	**$430,449**	**$624,041**	**59%**	
TCO per VM	$21,090	$8,609	$12,481	59%	

Table 1: Cumulative Three-Year TCO

ROI	303%
Net Present Value	$629,022
Payback Period	9 Months

Table 2: Investment Return Analysis

Conclusion – HC250 for Microsoft CPS Standard System Lives up to the Hype

Conventional siloed IT implementations can't meet the increased agility and price-performance demands of today's dynamic IT environments. Hyperconverged infrastructure platforms like the HC250 for Microsoft CPS Standard eliminate cost and complexity, and accelerate service agility by eliminating SANs and consolidating compute and storage resources into virtualized, uniformly administered x86 building blocks.

The HPE HC250 for Microsoft CPS Standard offers a number of unique advantages including:

- Integral Microsoft Hyper-V hypervisor support

- An Azure-consistent out-of-the-box experience

- Unified system administration using the familiar Microsoft System Center console

- Optional Azure public cloud backup and recovery capabilities

- Azure self-service portal for consistent management of public and private cloud resources

After analyzing the functional capabilities and financial characteristics of the HPE HC250 for Microsoft CPS Standard, Porter believes organizations interested in Microsoft virtualization technology can gain substantial business benefits by leveraging HPE's hyperconverged infrastructure appliance for server and desktop virtualization projects, private and hybrid cloud initiatives, and Dev/Test implementations. Specific benefits include:

IT Efficiency

- **Accelerated IT agility** – scale-up capacity and add users on demand.
- **Lower administrative costs** – simplify system planning, configuration and support tasks.
- **Lower operating costs** – reduce power, cooling and rack space requirements.
- **Simplified logistics** – interact with a single vendor for procurement, maintenance and support.

User Productivity

- **Faster time-to-value** – rollout new applications and services more quickly.
- **Greater user productivity** – deliver consistently higher IT service and availability levels.
- **Improved business focus** – free up IT staff for strategic business activities.

When evaluating the business case for a hyperconverged solution, Porter strongly recommends IT organizations consider the indirect costs discussed in this report. **We believe significant cost savings in the critical areas of IT efficiency, user productivity and time-to-solution will enable a rapid investment return.** The particular customer scenario analyzed in this report provides a strong business case for the HC250 for Microsoft CPS Standard with a short payback period of just 9 months.

Appendix: ROI Terminology

Net Present Value

NPV is the difference between the present value of the future cash flows derived from the HC250 for Microsoft CPS Standard 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 HC250 for Microsoft CPS Standard 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 HC250 for Microsoft CPS Standard investment. It is calculated by dividing the total savings of the hyperconverged solution by the upfront investment expenses (initial hardware, software and services costs).