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Measuring the Business Value of Converged Systems

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IDC OPINION

The world of IT is in the midst of a massive structural shift from the PC- and client/server-based “2nd Platform,” which dominated the past 25 years, to what IDC calls the “3rd Platform,” which is built on the foundation of mobile computing, social media, big data and analytics, and cloud technologies. Given that the 3rd Platform will dominate IT investments in the next decade, the datacenter that supports the 3rd Platform’s enabling technologies is the foundation for new business models.

Businesses are demanding that their datacenter operators reliably deliver large and highly variable amounts of transactions, content serving, and analytics on time, with no delays and no excuses. In this new agile business universe, IT assets can no longer be deployed and managed in a fragmented and siloed fashion. Converged systems such as those designed, built, and delivered by HP will play a key role in enabling the agile IT infrastructure required. Their simplicity of deployment translates into lower costs, less downtime, and faster provisioning.

This study, the second in an ongoing series of HP-sponsored research initiatives to understand the business value of converged infrastructure, reinforces and extends our earlier positive findings. Organizations that have been transitioning to converged infrastructures report across-the-board reduced deployment times (67% less), reduced downtime (70% less), reduced IT costs per user (52% less) and, importantly, less IT staff time required to run the infrastructure and “keep the lights on” (28% less). Increasing convergence levels can dramatically improve IT’s ability to support and improve the business.

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New Business Challenges Require a Transformed Datacenter

From 1985 to 2012, the world of IT was dominated by the PC- and client/server-based “2nd Platform.” Today, IT leaders are extending their datacenters into the “3rd Platform” — an IT environment built on the foundation of mobile computing, social media, big data and analytics, and cloud technologies. The three characteristics that define a 3rd Platform-ready datacenter are:

- » **Scale.** Accommodating up to tenfold increases in supported users and/or data sets without comparable increases in datacenter footprint
- » **Speed.** Creating and updating applications and services in weeks/days, not years/months, without increasing IT operations and development staff levels
- » **Scope.** Enabling coordination of multiple applications and data sources, internal and external, to deliver new services to customers without sacrificing data integrity and user experience

Today, business innovation is based on leveraging the 3rd Platform to gain new functionality. IT organizations must extend the value of tens of thousands of existing 2nd Platform applications with mobile and analytic add-ons. They must also create high-value solutions and services that are based exclusively on this new platform to transform their own industry, whether financial services, manufacturing, retail, or healthcare.

In this new world, regardless of company size and/or industry, the datacenter is the most important point of contact with customers, defining the customer experience. Business leaders expect their datacenter operators to deploy IT solutions that reliably and dynamically deliver compute, storage, and network capacity on time — with no delays and no excuses. In IDC’s conversations with CIOs, CTOs, and IT leaders, one consistent message, no matter the level of convergence their companies have attained, is that ever-greater use of converged infrastructure solutions like those delivered by HP is key to meeting this demand — today and for the foreseeable future.

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Organizations Are Making the Most of Converged Systems

In 2014, organizations will spend over \$4.8 billion on integrated systems like the HP ConvergedSystem offerings.

From their roots in the mid-2000s as a strategy for a few large enterprises to rationalize their server inventory in response to the aggressive use of hypervisors and virtualization, converged systems are now one of the most critical IT solutions in any datacenter transformation effort. In 2014, organizations will spend over \$4.8 billion on integrated systems, like the HP ConvergedSystem offerings, that target workloads like cloud and big data. These solutions pre-integrate compute, storage, and network hardware along with an optimized bundle of systems, data, and (in many cases) application software to rationalize datacenter footprints, boost IT operational efficiency, improve availability, and accelerate application deployments.

Strategies for Using Converged Systems to Boost Business Value

The most common questions that IT leaders ask when it comes to their potential use of converged systems are, Where do we start, and then, where else can converged systems improve the business?

Based on our conversations with organizations that aggressively adopted converged infrastructures in the past three years, IDC identified three key strategies for getting the most from converged systems:

- » **Datacenter transformation:** Changing the standard of excellence for overall system utilization, availability, and operational efficiency in datacenters throughout the organization (typically associated with updating systems of record)
- » **Application-specific acceleration:** Speeding time to deployment or update of specific business- or mission-critical applications while also improving predictability in performance and reliability (typically associated with systems of insight and analysis)
- » **New service creation:** Providing a foundation for the rapid creation and expansion of new customer-facing services based on cloud and DevOps operating approaches (typically associated with systems of mobile user engagement)

All the converged infrastructure adoption strategies include the requirement for drastically improved agility.

For each strategy, the decision makers/influencers, the key values sought from converged systems, and the key sticking points that slow adoption can vary significantly. What they all have in common, however, is their requirement for drastically improved agility when it comes to the deployment, use, and maintenance of the underlying IT assets. Providers of converged systems, like HP, must continually enhance their solutions to address ever more constant demands for improved agility.

In the section that follows, IDC dives deeper into how organizations deploy converged systems for virtualization, big data and analytics, and cloud to boost IT scalability, reliability, and efficiency. It also assesses how the growing use of converged systems is translating into greater business value.

The Business Value of Converged Systems: A Real-World Analysis

The team interviewed 20 managers of datacenters spanning a range of infrastructure convergence levels.

To identify and assess the business value of a converged datacenter infrastructure, IDC opted for in-depth interviews to allow extensive profiling of convergence, throughput, and costs. The team screened many prospective respondents to identify and interview managers of enterprise datacenters that satisfied the criteria for size, datacenter ownership, and management. In the final survey, 20 managers of datacenters spanning a range of infrastructure convergence levels were interviewed to quantify the financial benefits of attaining more advanced levels of convergence and to identify a set of key best practices that corresponded to these levels. These are large enterprises (median of 5,000 employees) across a wide range of industries, including agriculture/forestry, healthcare, insurance, manufacturing, media/marketing, retail/wholesale, transportation, and technology.

For this study, IDC assessed convergence based on the percentage of datacenter resources (e.g., storage, memory, server nodes, network I/O, virtual OS images) that administrators can deploy from a pooled collection versus the percentage of resources dedicated to a specific domain (e.g., a technology island or a separate application or organizational silo).

The remainder of this white paper presents the findings from a field study of enterprise datacenters that assesses their relative level of infrastructure convergence, costs per datacenter workload, IT staff innovation and business application delivery speed and resiliency. It provides a foundation for identifying how adopting a converged datacenter infrastructure strategy based on solutions like those from HP can translate into immediate and sustained business value for organizations.

How Can We Measure the Effect of Convergence?

Measure the relationship between the level of convergence and the cost to deliver IT.

To measure the effect of convergence, IDC analyzed the relationship between the level of convergence (e.g., consolidation, standardization, virtualization, automation) of an enterprise's IT infrastructure components and processes and the cost to deliver IT infrastructure capability (e.g., work/throughput/capacity) and business applications. To model this, we needed to measure key real-world values for a sample of datacenters:

We can assess convergence by measuring the percentage of datacenter resources that administrators can deploy from a pooled collection.

- » **What “work” or throughput the datacenter pushes through.** We can consider a datacenter’s network capacity (ports, aggregate bandwidth, effective throughput) for data flow to/from the datacenter as a proxy for the datacenter’s throughput or “work.”
- » **How “converged” the datacenter has become.** We can assess this value by measuring the percentage of datacenter resources (e.g., storage, memory, server nodes, network I/O, virtual OS images) that administrators can deploy from a pooled collection versus the percentage of resources dedicated to a specific domain (e.g., a technology island or a separate application or organizational silo).
- » **The cost or expense to run the datacenter.** We can determine this cost by the annual budget for equipment hardware, infrastructure software (OS, middleware, administration, and DBMS, but not applications), and IT infrastructure administration staff (versus application development and support). We also include as cost the effects of unexpected downtime, including work stoppage, revenue loss, and/or wasted labor due to downtime or delayed application response time.
- » **The efficiency of IT staff operations.** We measure IT staff efficiency in two ways: as part of the datacenter costs discussed previously and the time IT staff spend keeping the lights on. Reducing the percentage of time spent *keeping the lights on* means limiting the need of IT staff resources to manage and support technology and freeing up their time to support the business in more innovative and strategic activities.
- » **The agility of business operations.** We determine agility by measuring the time it takes to roll out a business application. Delivering business applications is the key metric of IT value, and the time required to deliver an application to support business needs drives the business’ ability to implement change.

Measuring the Impact

To achieve the benefits of a converged IT infrastructure, organizations have to start from wherever their infrastructure is today. Most large organizations have serious sprawl and incompatibility issues created by years of meeting their immediate needs using a project-by-project approach. (i.e., the 2nd Platform). As part of our research, we assessed each company’s maturity across a set of best practices. Table 1 highlights some important findings on key measures and the best practice indicators for organizations at different levels of converged IT infrastructure:

- » **Traditional and Compartmentalized (Level 1)** organizations have only begun to initiate convergence.

- » **Standardized and Optimized (Levels 2 and 3)** organizations have implemented many of the best practices but are just realizing benefits such as lower infrastructure costs and IT productivity and process improvements.
- » **Automated and Adaptively Sourced (Levels 4 and 5)** organizations have optimized IT infrastructure as far as possible given currently available technology and are technically capable of offering cloud services and have governance practices in place.

TABLE 1

Leading Indicators of Best Convergence Practices

	Traditional/ Compartmentalized	Standardized/ Optimized	Automated/ Adaptively Sourced
Share of servers (x86, Unix) running hypervisors (%)	12	46	83
Number of virtual images per server	3	8	13
Share of total infrastructure made up of integrated systems (%)	0	8	66
Number of separately governed IT/datacenters	13	4	2
Number of consoles used to manage the infrastructure	8	5	3
Number of vendors for server, storage, and network hardware	17	8	4
Number of management tool vendors	12	9	4
Number of different OS images running on virtualized servers	10	6	2
Share of IT using industry-standard best practices , such as ITIL, ITSM, and CobiT (%)	0	53	94
Share of <i>all</i> storage using shared storage (%)	0	31	94
Share of automated provisioning (%)	22	43	90

Notes: Scores represent average values for the respondents falling into each category.

Source: IDC, 2014

Results

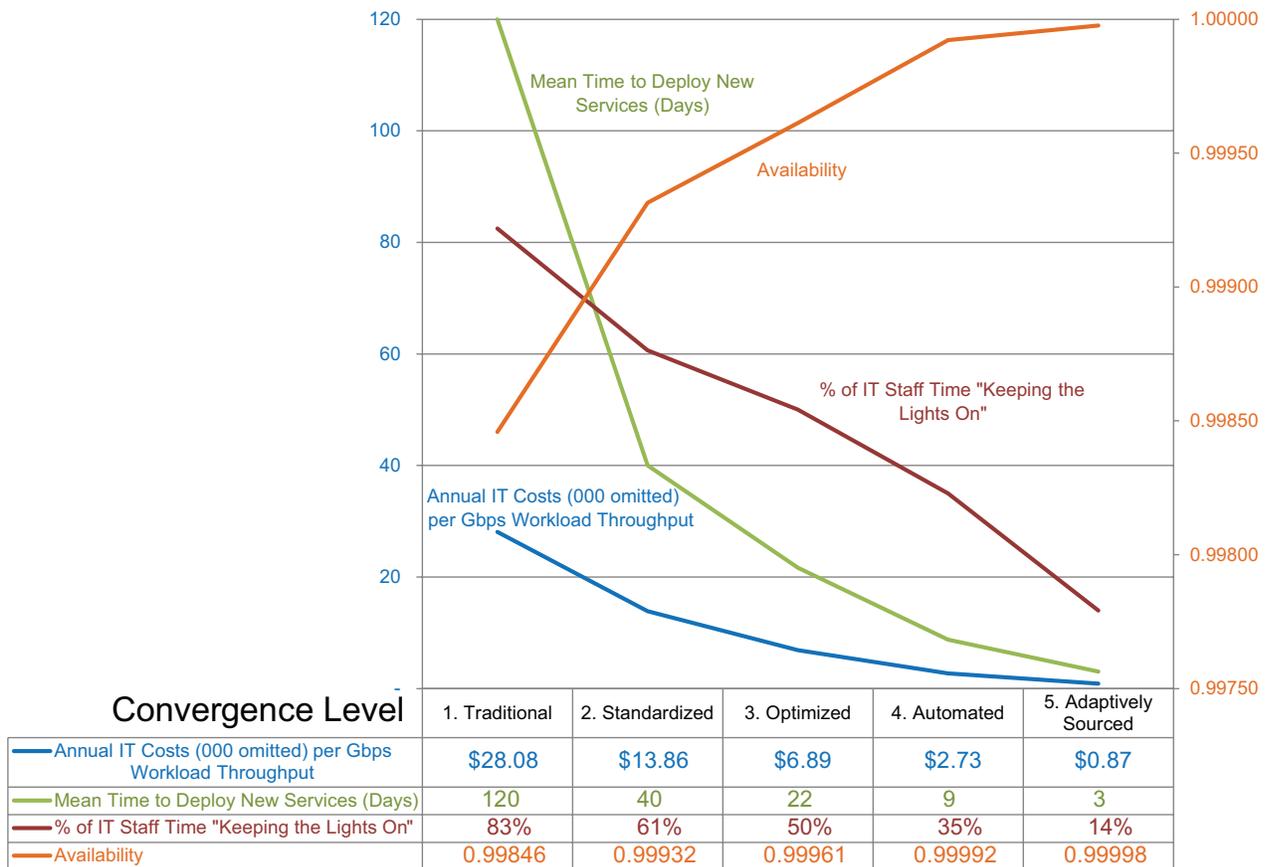
As discussed, the research team requested not only information about each company's throughput and level of convergence but also information about each company's datacenter total cost, IT labor efficiency, speed of deployment, and uptime characteristics. The results indicated a marked correlation between higher levels of convergence and reduced IT costs per unit of workload, faster deployment, optimization of IT staff, and reduced downtime. Figure 1 shows how all of these factors play out for organizations at each of the convergence levels.

The team requested information about datacenter total cost, IT labor efficiency, speed of deployment, and uptime characteristics.

As shown in Figure 1, companies at higher levels of convergence benefited from lower costs per unit of IT workload. For example, organizations at Level 4 convergence reported almost 60% lower costs per unit of IT workload than those of organizations ranked at Level 3.

FIGURE 1

The Effect of Increased Convergence Levels on IT Costs, Uptime, Costs of Keeping the Lights On, and Speed of Deployment



Note: IDC assigned companies to different convergence maturity levels based on a composite ratio that included percentage of nodes using virtualized storage, percentage of storage linked via virtualized I/O, percentage of OS images configured/provisioned automatically, and other measures of standardization and best practices.

Source: IDC, 2014

We also asked companies that had made significant investments in convergence to quantify the benefits of convergence in regard to their operations. Specifically, we asked them to measure the key metrics mentioned previously (time to deliver new applications, costs per user, downtime, and time spent keeping the lights on before and after implementing convergence initiatives). Figure 2 shows

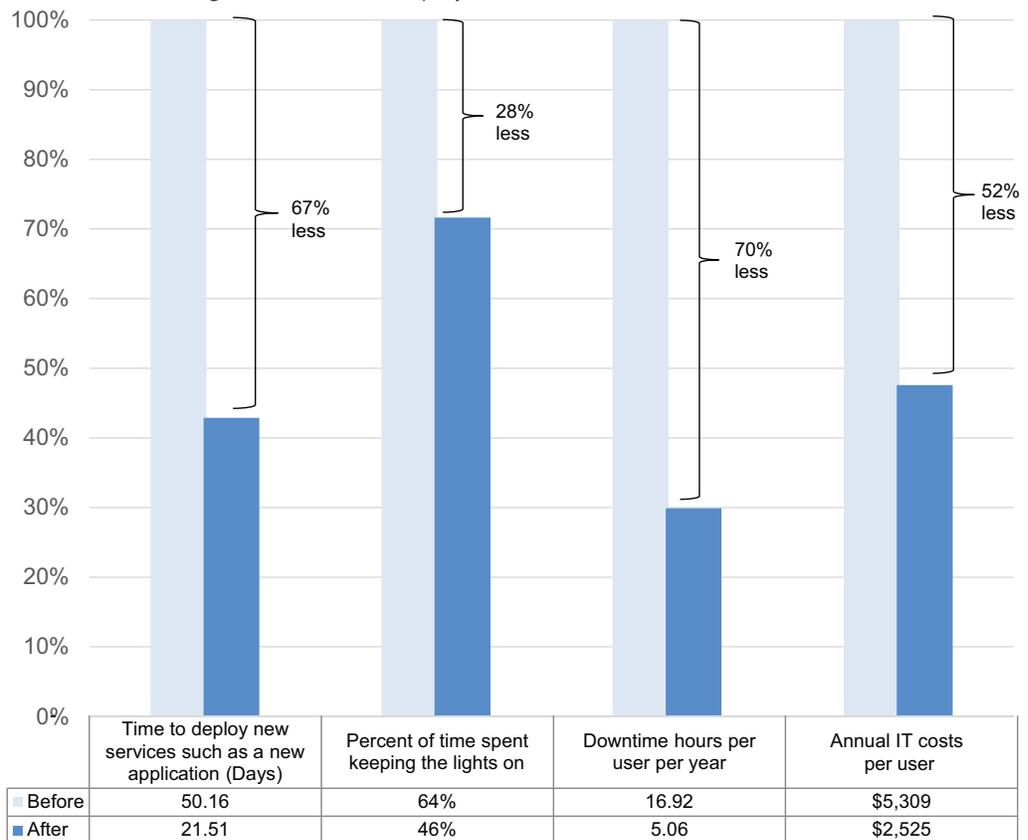
the average results. Keep in mind that each company experienced different levels of movement: some as extreme as moving from Level 1 to Level 5, but most moving only one or two levels.

In addition, among the IT organizations interviewed, those that had been transitioning to converged infrastructures reported improvements in each of the following metrics: mean time to deploy new services such as a new application, percentage of staff time spent “keeping the lights on,” downtime hours per user per year, and annual IT costs per year. Figure 2 depicts the improvements experienced by organizations, showing reported average scores on these measures before and after their transition to converged infrastructures.

FIGURE 2

The Positive Effects of Increased Convergence — Key Performance Before and After Increasing Convergence

Q. For each of the following questions, please indicate both the current values and the values before the organization made the transition to significantly increased convergence (measures: deployment, downtime, etc.).



Note: Approximately 75% of the 20 respondents indicated they had been making the transition to significantly increased convergence. These findings come from that 75% subset.

Source: IDC, 2014

Boosting Business Outcomes with HP's ConvergedSystem and OneView Solutions

HP has historically been a leading provider of IT infrastructure, helping customers through the transition to x86 architectures and virtualized environments. With the industry now moving to the next era of IT, HP is offering the HP ConvergedSystem portfolio, purpose-built systems that integrate HP servers, storage, and networking technologies. As our research has indicated, a pre-optimized, pre-integrated system simplifies IT operations and enables IT staff to focus more time and resources on generating business outcomes.

HP has collaborated with its software partners to optimize system configurations for a particular application or use case.

Along with integrating core HP technologies in HP ConvergedSystem, HP has collaborated with its software partners to optimize system configurations for a particular application or use case:

- » **Infrastructure as a service (IaaS):** HP ConvergedSystem for IaaS is optimized for IaaS, private cloud, and single and mixed workloads. Every system ships with factory-integrated server, storage, networking, and HP OneView management — all preconfigured to handle customers' most demanding workloads. The HP ConvergedSystem 700 is targeted at larger general-purpose infrastructure environments. It delivers virtual pools of resources for up to 9,000 virtual machines that can be provisioned quickly and managed efficiently. HP has also partnered with VMware on two hyper-converged products that are ideal for small and medium-sized businesses and branch and remote offices. These systems offer super-fast deployment and centralized, simplified management. The HP ConvergedSystem 200-HC EVO:RAIL is optimized for VMware-centric environments, and the HP ConvergedSystem 200-HC StoreVirtual includes additional HP data services software for availability and performance.
- » **Data analytics:** Combining an HP ConvergedSystem with SAP and Microsoft software provides an optimized platform for running database and data analytic workloads. Taking full advantage of in-memory computing capabilities, HP systems are tuned to run SAP HANA in medium-sized and large SAP landscapes with the HP ConvergedSystem 500 and HP ConvergedSystem 900, respectively. The HP ConvergedSystem 300 tailored for Microsoft Analytics Platform quickly handles structured and unstructured data sets.

- » **Mobility:** To deliver better workforce productivity, customers can implement an HP ConvergedSystem for virtual desktop infrastructure (VDI). The system is configured for Citrix XenDesktop and VMware to deliver a reliable VD environment.
- » **Cloud:** The HP CloudSystem fully integrates hardware, software, and services; is built on the HP ConvergedSystem 700; and delivers an all-inclusive private cloud that includes automation and provisioning capability. Customer flexibility is ensured with an open system that offers multi-hypervisor and multi-OS environments. Further, the hybrid cloud is capable of bursting to HP Public Cloud, Windows Azure, Amazon Web Services, Arsys Cloud Solutions, and SFR environments.

HP OneView

HP OneView enables more efficient and flexible system configuration, provisioning, and operations.

Systems management software is increasingly seen as a critical differentiator in the hardware industry, especially within integrated systems. HP OneView is a common management platform for the servers, storage, and networking in the ConvergedSystem. As the next generation of system-specific monitoring and automated management tools, HP OneView enables more efficient and flexible system configuration, provisioning, and operations.

HP OneView, based on four years of HP research, was built from the ground up to serve as a unified replacement for multiple management tools. It is designed to optimize the systems configuration and monitoring processes based on people-centric versus device-centric terms. User-intuitive dashboards and robust visualizations combine with predefined templates and automation capabilities to simplify system management and enable IT staff to more easily execute workflow processes. HP OneView also includes plug-ins to VMware vCenter, Microsoft System Center, Red Hat Enterprise Virtualization, and a variety of HP operations management tools.

Challenges/Opportunities for HP

While companies are already taking advantage of converged systems to transform their business in response to new needs, these systems are on the cusp of a major transformation. The key factors driving this major re-architecting include:

- » End-to-end incorporation of solid state technology into the integrated system design to greatly improve density, power efficiency, and performance
- » Use of very high-speed Ethernet (40Gb+) along with software-defined networking (SDN) software to create an extensible fabric/bus to enable greater flexibility and scale

- » Support for new hardware options including simple DASD storage, GPUs, and new processor types to support new mobile and cloud-scale use cases
- » Tighter integration of component provisioning and orchestration software to further simplify operations and deployment.

Essential Guidance

As the interviews IDC conducted for this study made clear, IT executives have opted for solutions like HP's ConvergedSystem because of the simplicity of deployment, which translates into lower costs, less downtime, and faster provisioning. Not mentioned as frequently, but implied, is that customers expect their use of these converged systems to make it easier to migrate from a specific platform, if that should become necessary for any reason.

The costs, risks, and pain associated with migrating applications from installed systems are the leading reasons why companies don't keep pace with technology changes and end up spending excessive portions of their annual budget on support and maintenance. Greater use of converged systems is a key part of attacking this barrier to innovation, especially because the systems are designed and optimized with workloads and applications in mind (app centric). HP and its channel and alliance partners must play a leading role in proving that they're the right partners to help organizations navigate this transition and enable a change in the "speed of IT" in their datacenters.

Greater use of converged systems is a key part of attacking this barrier to innovation.

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