



White Paper

Analyzing the Economic Value of HP ConvergedSystem 700 2.0 for Citrix XenDesktop

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Introduction

Executive Summary

ESG was engaged by HP to develop a detailed economic model that estimates the economic outcomes of utilizing HP ConvergedSystem 700 2.0 converged infrastructure to support a virtual desktop infrastructure (VDI) deployment compared with a “present mode of operation” (PMO) that reflects a traditional built-by-customer virtual infrastructure based on discrete infrastructure components. This analysis is designed to help IT organizations considering VDI deployments review the relative costs and benefits of leveraging different solutions for their VDI requirements and builds upon ESG’s evaluation of the ConvergedSystem 700 2.0 solution, in-depth interviews with technical stakeholders at HP, quantitative market research with converged infrastructure customers, and ESG’s general familiarity with traditional infrastructure products currently available in the market. This analysis provides potential customers with a comprehensive picture of the potential direct and indirect cost and benefit drivers they should consider when evaluating VDI and a HP ConvergedSystem 700 2.0 investment.

As discussed in the following pages, HP ConvergedSystem 700 2.0 offers the opportunity for organizations to drastically increase their IT and user productivity at a significantly lower TCO compared with alternative approaches to VDI. In fact, ESG’s analysis indicates that a typical use case for HP ConvergedSystem 700 2.0 for VDI results in excess of \$1.6M in financial benefit for the organization over three years (compared with ~\$830K in benefit being delivered by the PMO over the same timeframe). For organizations struggling to overcome IT operations challenges tied to infrastructure complexity, embracing the automation and intelligence offered by today’s integrated computing platforms can prove invaluable. VDI implementations supported by converged systems are faster to deploy, easier to manage, and offer opportunities to automate as well as predictably expand and contract based on business requirements. These factors can have a significant impact on the financial success of enterprises.

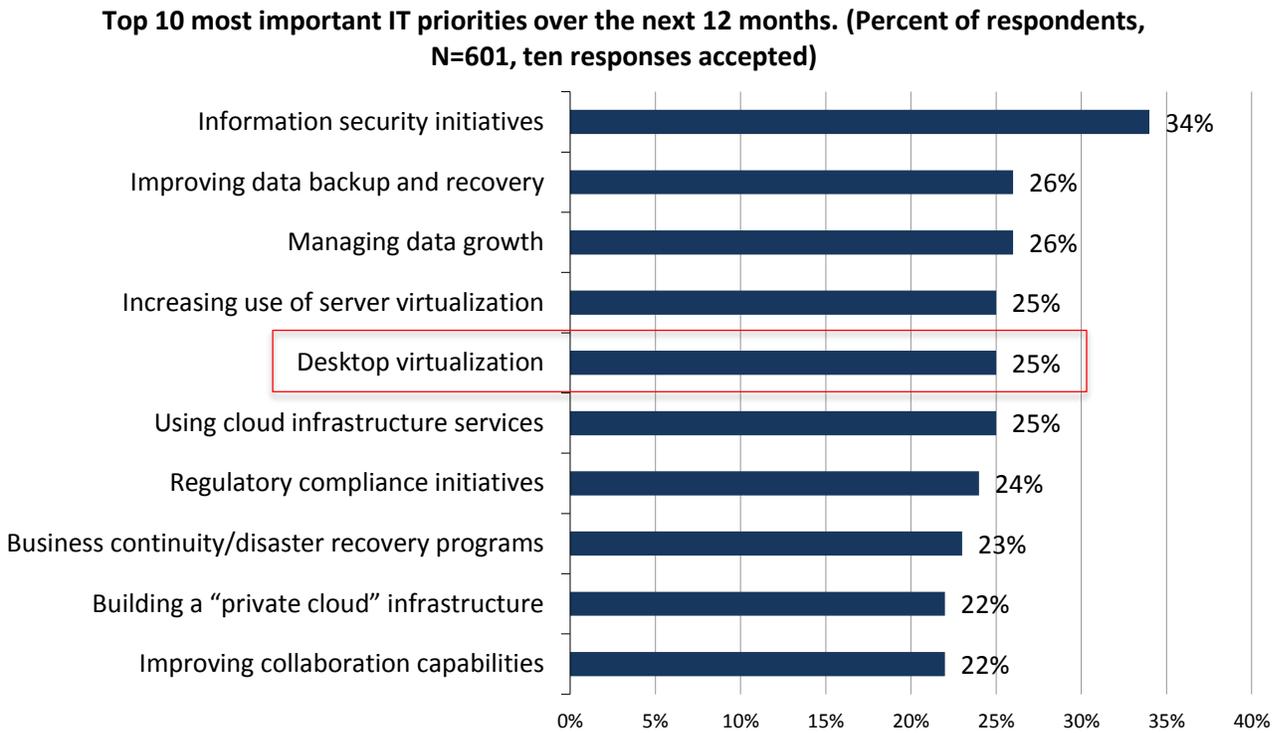
Market Overview

Businesses Report Significant Focus on Desktop Virtualization Technology

The challenges surrounding traditional PC management and maintenance are intense. In ESG’s annual spending intentions research, desktop virtualization was one of the top ten most frequently cited IT priorities for 2015 (see Figure 1). Clearly, IT organizations are looking to alleviate the time and cost associated with redundant, labor-intensive PC management tasks by implementing various desktop delivery technologies and associated infrastructure.¹

¹ Source: ESG Research Report, [2015 IT Spending Intentions Survey](#), February 2015.

Figure 1. Top Ten IT Priorities for 2015



Source: Enterprise Strategy Group, 2015.

The Increasing Usage of Integrated Computing Platforms (ICPs) for VDI

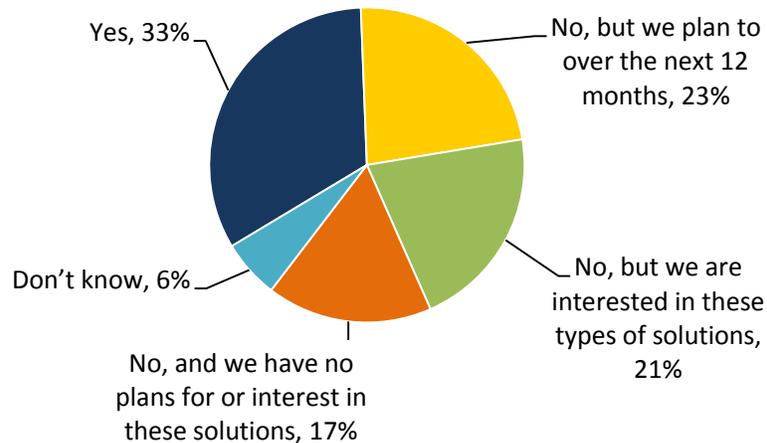
The value of consuming infrastructure that is preconfigured and validated is building momentum across a spectrum of use cases; this paper specifically discusses the IT community that has targeted VDI as a desktop delivery model. VDI lends itself as an ideal green-field solution for organizations growing their desktop footprint and is also a brown-field opportunity for aging distributed desktops that need to be retired. In either case, VDI deployments align very well with ICP solutions. Though IT can build a workable virtual computing infrastructure by piecing together separate components designed and delivered in isolation, the added degree of system integration required for VDI has begun to transition IT procurement strategy away from do-it-yourself (DIY) virtual computing infrastructure and toward integrated computing platforms. These solutions consist of tightly integrated converged systems that encompass servers, networking, and storage infrastructure plus virtualization and intelligent management software—all architected, tested, qualified, and supported as a single unit that is designed and certified for the VDI workload.

In order to assess the pace of adoption of ICP, ESG asked IT decision makers about their organizations’ usage of or interest in integrated computing technology, which was defined as platforms in which servers, storage, network connectivity, and (in most cases) software are combined in a single solution. According to Figure 2, one-third of respondent organizations report already having deployed integrated computing platforms, while an additional 44% have plans for or interest in these types of solutions.²

² Source: ESG Research Report, [Trends in Private Cloud Infrastructure](#), April 2014.

Figure 2. Usage of Integrated Computing Platforms

**Does your organization currently use any type of integrated computing platform?
(Percent of respondents, N=303)**



Source: Enterprise Strategy Group, 2015.

Further inspection of the investments IT organizations are making in these systems reveals that there is a strong correlation between VDI and integrated computing platforms. Specifically, as found through qualitative assessment with IT end-users and vendors, VDI is the leading workload deployed with ICP solutions due to the predictable nature of the solution and its ability to remove the complexity associated with DIY attempts. VDI initiatives that include an ICP investment help deliver a predictable end-user computing experience that is certified by both the VDI and ICP vendors.

Cost Reduction and Simplified Management Drive Desktop Virtualization Deployments

HP ConvergedSystem 700 2.0 with Citrix XenDesktop represents the latest development of HP Converged Systems designed to deliver infrastructure required for VDI and expand into WAN optimization tools, load balancers, printing capabilities, and potential thin client solutions. A quick look at the specs of HP ConvergedSystem 700 2.0 reveals the consistency this system has with the demands of VDI environments. The system is powered by Intel Xeon processors and is comprised of BladeSystem c7000, HP Virtual Connect Flex Fabric 10GB models, HP 3PAR StoreServ 7000, Citrix XenDesktop 7.5, and VMware vSphere 5.5 Update 1.

The solution is based on a modular design and can scale both vertically and horizontally, enabling IT to add capacity based on need without requiring entirely new systems. Scalability is a key value for HP as customers make an initial investment with plans to potentially build upon the foundation. Citrix XenDesktop 7.5 provides the foundation for workspace delivery, including entire desktop images or individual applications. IT administrators can choose the optimal delivery model and project the workspace out to the end-user with the FlexCast architecture and HDX end-user experience.

In an effort to build upon the operational value of integration, HP ConvergedSystem 700 2.0 is designed for simple scaling, high availability, and superior manageability with HP OneView and is validated to integrate with VMware and Citrix solution stacks. This pretested software package enables customers to quickly configure the system when it arrives onsite and efficiently begin to power on virtual machines.

HP ConvergedSystem 700 2.0 for Citrix XenDesktop: Economic Value Analysis

Methodology

For this project, ESG adhered to the following research and modeling methodology:

- ESG conducted initial market research across HP and other relevant IT vendors to assess current market trends, vendor value claims, and the purchase considerations that are most important and relevant to existing and prospective VDI customers.
- Based on the results of this initial research, ESG subsequently:
 - Identified a “present mode of operation” (PMO)—effectively, an alternative approach that customers may take to meet their VDI requirements—against which the costs and benefits of utilizing HP ConvergedSystem 700 2.0 for VDI was to be compared.
 - Developed a comprehensive financial model designed to qualify and quantify the potential costs and benefits of utilizing HP ConvergedSystem 700 2.0 compared with the PMO.
- ESG then conducted a series of in-depth interviews with systems engineering, service and support, and technical marketing representatives from HP. The data collected in these interviews was used to refine assumptions built into the model related to current customer environments and the direct and indirect costs and benefits attributable to both the HP ConvergedSystem 700 2.0 approach and the alternative VDI delivery approach. Product demonstrations, configurators, and case studies of HP ConvergedSystem 700 2.0 were also used to identify specific IT tasks and the labor burden (in both time and cost) associated with those tasks. These findings were then compared against the results of ESG’s qualitative and quantitative market research with organizations currently using integrated systems (inclusive of HP and other vendors). This research helped to inform ESG’s understanding and analysis of integrated computing adoption drivers and usage trends, and the technical, operational, and financial benefits that have been realized by customers.
- Once the economic model was finalized and all validation was complete, ESG modeled a default scenario that is designed to demonstrate the relative costs and benefits of HP ConvergedSystem 700 2.0 in a hypothetical environment. Those results were then compared with model outcomes for a similar-scale traditional VDI approach based on separate compute, storage, and network components. The results for this default scenario are described in the remainder of this paper.

Please note that the data and conclusions presented in this report regarding the costs and benefits associated with implementing HP ConvergedSystem 700 2.0 for VDI compared with alternative VDI approaches reflect the output of ESG’s economic value analysis based on the specific use case and default scenario assumptions modeled for this report. ESG acknowledges that changes to these assumptions will lead to a different set of results and as such, advises IT professionals to use this report as one validation point in a comprehensive financial analysis process prior to making a purchase decision. HP provided current standard pricing information for HP ConvergedSystem 700 2.0 to ESG. Other IT equipment and labor cost assumptions were obtained from publicly available sources such as IT vendor and channel partner websites and published price lists.

Economic Value Model Overview

As previously noted, ESG’s economic value analysis compares two scenarios: The first is an organization that elects to use HP ConvergedSystem 700 2.0 for its VDI requirements. The second scenario is a “present mode of operation” (PMO) that reflects a more conventional “built-by-customer” approach that most customers currently take to meet their virtual desktop requirements. The basic profile for each scenario follow:

- **HP ConvergedSystem 700 2.0 scenario:** In this scenario, the customer is using HP ConvergedSystem 700 2.0—a factory-integrated building block that combines HP servers, storage, networking, and management software components with VMware virtualization software. The organization then

deploys Citrix desktop delivery software on the system. ESG's model takes into account the purchase price of the system, VMware software and maintenance costs, Citrix software and maintenance costs, and related IT labor costs for planning, ordering, implementing, administering the system, and training.

- **Built-by-customer PMO scenario:** In this scenario, the customer is using a comparable set of hardware and software components to support its VDI implementation, which are selected, installed, and configured manually by the end-user customer or a systems integrator on the customer's premises. ESG's analysis assumes that the customer is using blade servers and SAN storage, and that the configuration will be clustered using 10 GB Ethernet switches and networking interfaces for server interconnects within the cluster, for SAN storage, and for external access to the servers. ESG also assumed redundant network switches and interconnects for high availability. Comparable operating system, hypervisor, systems-management, and desktop delivery software is also assumed in this scenario. ESG's model takes into account all hardware, software, and data center infrastructure costs associated with this solution, plus related IT labor costs for planning, ordering, implementing, ongoing environment administration, and training.

For both scenarios, ESG modeled the costs and IT savings benefits associated with the following tasks:

- Planning and architecture/design tasks required to scope the solution and prepare for deployment.
- Deployment tasks including initial installation and setup, desktop provisioning, periodic upgrades, and ongoing maintenance activities.
- IT administration tasks such as provisioning and configuring new VDI instances.
- IT administration tasks related to storage and network installation, configuration, provisioning, and management.
- Change management tasks performed as new software is added to clients, existing software applications are upgraded, virtual desktops are migrated across physical server resources, and existing infrastructure components are upgraded or replaced.
- Ongoing systems management activities performed by the system and personnel for monitoring system activity, taking actions, and reporting on system status.

Note that ESG's model considers both the current infrastructure needs and the expected growth of the environment over three years to size the configuration of the solutions considered at the outset of the three-year time horizon.

Simply put: ESG's analysis estimates the likely cost and potential benefits of implementing and managing—according to the tasks outlined—both HP ConvergedSystem 700 2.0 and component infrastructure solutions to support a VDI implementation. More detail on the specific cost and benefit categories included in ESG's analysis—plus assumptions related to technology or product usage—is included in the Appendix.

Cost Categories

This ESG analysis considers six cost categories: hardware, software, infrastructure, professional services, staff, and maintenance and support. The sum of these categories equals the total cost of ownership (TCO) of each solution. See the Appendix for full details.

Benefit Categories

This ESG analysis considers two primary benefit categories: IT efficiency savings and user productivity improvements delivered over a baseline formulated to be roughly representative of an organization utilizing traditional desktop infrastructure. The sum of these categories equals the total benefit of each solution. See the Appendix for full details.

Default Scenario

ESG developed a baseline profile of a typical VDI implementation to illustrate the relative costs and benefits of HP ConvergedSystem 700 2.0 compared with the PMO discussed in this report. For the purposes of this analysis, ESG assumed an initial VDI deployment of 400 instances. Furthermore, to account for the costs and benefits of both solutions as virtual environments grow, ESG created a three-year analysis and assumed that the organization would add 20 VDI instances to the environment per year over that time period. Additional key assumptions used in ESG’s default scenario are summarized in Table 1.

Table 1. Key Default Scenario Assumptions for VDI Use Case

Parameter	Default Assumption
Initial number of VDI instances at deployment	400
Annual growth of VDI instances	20
Average annual burdened cost – typical IT administrator	US\$80,000
Average annual burdened cost – typical employee (application user)	US\$65,000
Time horizon of analysis	3 years
Cost of capital	15%
HP Converged Systems model in use (if applicable)	ConvergedSystem 700 2.0 for VDI

Source: Enterprise Strategy Group, 2015.

Summary of Results

With the model parameters tuned to the default assumptions in Table 1, ESG’s analysis concludes that the estimated net benefits of implementing HP ConvergedSystem 700 2.0 to support a VDI implementation greatly outweigh the associated costs. Table 2 shows the modeled return on investment (ROI), project payback period, net present value (NPV), annual total cost of ownership (TCO), and annual benefit over the time horizon for an HP ConvergedSystem 700 2.0 deployment compared with a similarly sized component-based infrastructure approach. The following section details the most compelling findings from this analysis as they relate to both the costs and benefits associated with HP ConvergedSystem 700 2.0 and how they differ from other virtual computing infrastructure approaches.

Table 2. Economic Value Summary, HP ConvergedSystem 700 2.0 versus PMO

Scenario	Project ROI	Payback Period (years)	Net Present Value (NPV)	Annual TCO	Annual Benefit
HP ConvergedSystem 700 2.0	67%	1.59	\$173,190	\$330,240	\$552,861
Built-by-customer PMO	-27%	5+	\$(400,694)	\$379,165	\$277,405

Source: Enterprise Strategy Group, 2015.

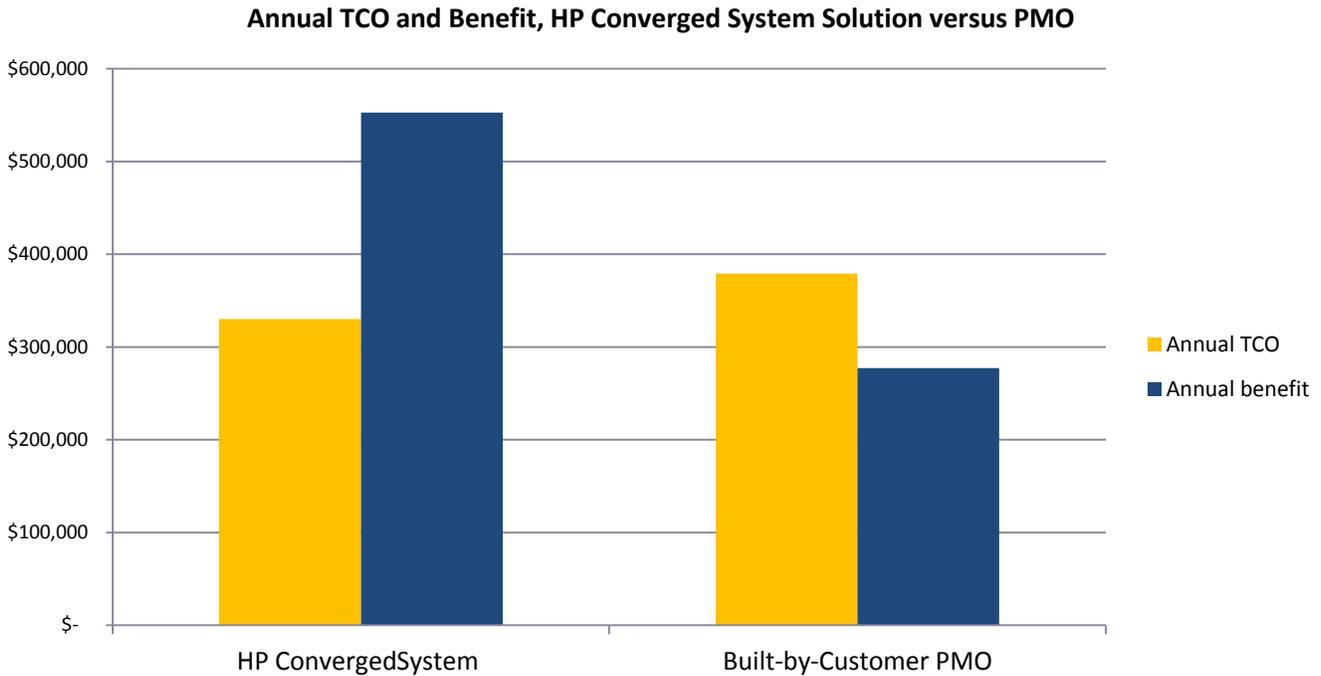
Annual TCO

Annual TCO is the sum of all the cost categories included in the analysis (as outlined in Table 5), averaged over three years. As displayed in Table 2, the annual TCO for HP ConvergedSystem 700 2.0 is estimated as \$330,240, compared with \$379,165 for the built-by-customer PMO. However, TCO should be only one part of the customer consideration when weighing available VDI approaches. As shown in Table 2—and discussed in the Annual Benefit section—the lower costs associated with HP ConvergedSystem 700 2.0 are augmented by significant benefits in the areas of increased IT efficiency and improved user productivity.

Annual Benefit

Annual benefit is the sum of all the estimated benefit categories included in this analysis (as outlined in Table 6), averaged over three years. As displayed in Table 2, the annual benefit associated with HP ConvergedSystem 700 2.0 is estimated as \$552,861, compared with \$277,405 for the built-by-customer PMO. The modeled annual costs and benefits for both scenarios is depicted graphically in Figure 3.

Figure 3. Annual TCO and Benefit, HP ConvergedSystem 700 2.0 versus PMO



Source: Enterprise Strategy Group, 2015.

ROI

ROI is a profitability ratio for investments. It is calculated by dividing the net benefits of an investment (total benefits minus costs) by the total cost of the investment. A positive ROI indicates that total benefits exceed the costs of the investment. As displayed in Table 2, the modeled ROI for HP ConvergedSystem 700 2.0 using the inputs defined in Table 1 is 67% (significantly higher than the ROI calculated for the PMO, -27%).

Payback Period

Payback period is an estimate of when customers will start to see a positive return from the VDI solution they select; it measures benefits achieved over time and costs incurred over time, and indicates the investment’s breakeven point. As displayed in Table 2, the expected payback period for an HP ConvergedSystem 700 2.0 deployment in an environment described by the inputs in Table 1 is about one and a half years. By contrast, the PMO is not expected to break even within the bounds of a five-year time horizon.

Net Present Value (NPV)

NPV is used to calculate the difference between the present value of cash returns and the present value of cash outflows. It assumes a discount rate to calculate the present value. Projects with positive NPVs are generally considered to be worthwhile investments. As displayed in Table 2, the modeled NPV for HP ConvergedSystem 700 2.0 using the inputs defined in Table 1 is \$173,190 while the PMO’s modeled NPV is actually negative.

Benefits Analysis

Potential customers evaluating infrastructure models to support a VDI deployment must be cognizant of the benefits—in this analysis, broken down into IT efficiency savings and user productivity benefits—they will achieve from that technology solution. The three-year itemized benefits for HP ConvergedSystem 700 2.0 compared with the PMO alternative ESG developed are displayed in Table 3. As shown, total benefits for HP ConvergedSystem 700 2.0 (estimated as \$1,658,582) are modeled as nearly twice that of the built-by-customer PMO (estimated as \$832,214).

Table 3. Three-year Benefits, HP ConvergedSystem 700 2.0 versus PMO

Category	HP ConvergedSystem 700 2.0	Built-by-customer PMO
IT Efficiency Savings	\$1,083,956	\$554,740
<i>Initial System Design, Integration, Deployment, and Configuration</i>	\$69,979	\$24,583
<i>Systems Maintenance, Support, and Management</i>	\$158,706	\$47,875
<i>Resource Management Including Storage and Network Management</i>	\$586,875	\$350,625
<i>VM Administration</i>	\$268,396	\$131,667
User Productivity	\$574,625	\$277,464
<i>Application Deployment</i>	\$175,597	\$95,977
<i>Application Support/Management</i>	\$253,378	\$108,591
<i>Application Availability</i>	\$145,290	\$72,896
Total three-year benefits	\$1,658,582	\$832,214

Source: Enterprise Strategy Group, 2015.

Major Benefit Differences for HP ConvergedSystem 700 2.0 versus the Built-by-customer PMO

Benefits were calculated based on observations and estimates related to the value of HP ConvergedSystem 700 2.0 and “do-it-yourself” alternatives (represented by the PMO) obtained through past quantitative and qualitative ESG research, relevant product demos, literature reviews, and in-depth interviews with technical stakeholders at HP. Key benefit differences between HP ConvergedSystem 700 2.0 and the built-by-customer PMO for VDI implementations are summarized as follows:

- In a component-based IT infrastructure, the burden of solution design and integration falls on IT. With HP ConvergedSystem 700 2.0, the responsibility of planning, designing, and validating the system resides entirely with HP. These advantages dramatically decrease implementation times for the customer. ESG estimates that many systems could be production-ready in as few as three to four weeks compared with several months for any build-your-own alternatives.
- With respect to the ongoing management and administration of physical resources, HP ConvergedSystem 700 2.0 offers a higher degree of automation than is possible with conventional, build-your-own virtual infrastructure. HP OneView seamlessly integrates management and provisioning of servers, IP network, and SAN connectivity. Changes across all system components are automated, which helps to eliminate potential configuration errors and rework. Furthermore, HP OneView exploits iLO capabilities for agentless discovery, monitoring, and change management, such as BIOS settings configuration. HP OneView also includes built-in logic to show dependencies on pending changes, and prevent changes such as network or storage de-

provisioning that would disrupt operations for system components. Finally, although infrequent, most systems will incur some hardware change events over their lifetime. With ConvergedSystem 700 2.0, hardware components can be easily replaced while the system remains operational. Redundant hardware and software architecture enables system availability and resiliency. The HP system continues to operate while repairs are completed.

- With respect to the ongoing management and administration of virtual resources, HP ConvergedSystem 700 2.0 also outstrips build-your-own-infrastructure scenarios. HP OneView allows for template-based/automated provisioning and easy decommissioning of VDI instances. Furthermore, the time required for change management tasks, including changing VDI parameters, VDI migrations, or updating guest OSs, is reduced from hours to minutes.
- HP ConvergedSystem 700 2.0's ability to decrease the IT staff resources required for solution planning, design, and installation is measured directly as an IT efficiency benefit. However, this benefit does not occur in a vacuum. A significant benefit of reducing the time required to implement and provision virtual infrastructure—and thus virtual desktops reliant on that infrastructure—is speeding time to value for those desktops. This corollary benefit is captured and included in the “Application Deployment” benefit quantification in Table 3.
- A factory-integrated system such as HP ConvergedSystem 700 2.0 is much less likely to have interoperability problems than a customer-integrated solution and is therefore more reliable over time. This benefit, coupled with the other reliability and error prevention features mentioned, has a profound impact on application end-users and is a component of both the “Application Support/Management” benefits and the “Application Availability” benefits modeled for the organization over three years.
- HP ConvergedSystem 700 2.0 also differs from alternatives because all components originate from HP. This allows HP to offer converged support to complement its converged system. HP support provides direct access to solution experts to resolve issues in the shortest time, with single a point of contact. Moreover, HP has a global call management footprint and globally dispersed field engineers. By contrast, with alternatives, support issues may be escalated to any of a number of tiers or vendors, lengthening the time to resolution. Another area of value for HP ConvergedSystem 700 2.0 is the *proactivity* of its support. Included within HP's standard support for Converged Systems are proactive health checks and system recommendations. This differentiator is modeled to impact both administration activities and the time spent troubleshooting issues.

TCO Analysis

For the hypothetical customer scenario described in Table 1, the estimated three-year total cost of ownership for HP ConvergedSystem 700 2.0—compared with the three-year TCO estimated for the PMO—is displayed in Table 4. As shown, from a TCO perspective, HP ConvergedSystem 700 2.0 is projected to be less expensive over a three-year time horizon than the PMO; ESG estimates that compared with the PMO, HP ConvergedSystem 700 2.0 customers should realize an approximate 13% TCO advantage.

Table 4. Three-year TCO, HP ConvergedSystem 700 2.0 versus PMO

Category	HP ConvergedSystem 700 2.0	Built-by-customer PMO
Hardware	\$459,110	\$383,076
Software	\$172,810	\$354,093
Infrastructure	\$11,500	\$27,646
Maintenance and Support	\$305,169	\$124,687
Professional Services	\$12,275	\$81,336
Staff Personnel	\$29,854	\$166,656
Total three-year costs	\$990,719	\$1,137,495

Source: Enterprise Strategy Group, 2015.

Major Cost Differences for ConvergedSystem 700 2.0 and the Built-by-customer PMO

- Combined Hardware and Software Purchases:** ESG utilized publicly available component pricing from vendors and VARs when formulating how the model would configure the built-by-customer PMO. ESG’s analysis concludes that by purchasing a complete hardware stack, with integrated management software and desktop delivery software, as a single integrated system, the customer is able to achieve lower costs compared with purchasing components like servers, storage arrays, switches, enclosures, and management tools separately, from potentially many different vendors. Much of this TCO reduction is due to the fact that HP has dedicated its world-class engineering resources to balancing and optimizing resources in the ConvergedSystem 700 2.0 for VDI workloads. IT organizations do not have capabilities commensurate with HP’s engineering skill and, as such, are estimated to overbuy system resources. To meet the requirements of the scenario described in Table 1, ESG estimates that HP ConvergedSystem 700 2.0 represents a 14% reduction in these costs over three years.
- Professional Services and Administrative Staff:** As a single factory-integrated system, ESG modeled the planning, procurement, installation, integration, and project management associated with HP ConvergedSystem 700 2.0 to be significantly reduced when compared with the built-by-customer PMO. The result is that both employee staff time dedicated to these functions and paid-for, third-party consulting to accomplish these goals will be drastically reduced. In the scenario described in Table 1, ESG estimates that HP ConvergedSystem 700 2.0 represents a \$205,863 reduction in these labor cost areas.

The Bigger Truth

As evidenced in ESG research, nearly one-fifth of IT decision makers identified total cost of ownership as the primary reason they deployed or planned to deploy integrated computing platforms.³ HP ConvergedSystem 700 2.0 helps IT organizations maximize the value of virtualization, and aligns with the demands of enterprise workloads—like VDI—and IT's transition to cloud consumption models. The factory integration, scalability options, and management capabilities enable businesses to achieve significant value coupled tightly to:

- **IT administration savings** – due to significant reductions in the time and resources required to plan, design, install, configure, and manage virtual and physical infrastructure and applications.
- **Ease of management** – thanks to integrated management tools and the automation of common IT tasks with HP OneView.
- **Improved application performance and availability** – as a result of reliable, pre-integrated, tested, and qualified components, plus proactive monitoring across the complete infrastructure stack.
- **Accelerated time to value** – thanks to the faster, more agile deployment of applications and virtual infrastructure, and improvements in IT operations.
- **Increased user productivity** – due to faster application deployments and reduced application downtime.
- **IT efficiency and agility** – achieved by aggregating compute, storage, and network assets into homogenous resource pools that can be dynamically managed, automatically provisioned, and easily scaled according to need.
- **Streamlined service and support** – because customers can rely on a single organization, as opposed to many, for infrastructure support and consulting services.

HP ConvergedSystem 700 2.0 offers a consumption model that has the potential to revolutionize the way businesses think about data center infrastructure investments and plan for future desktop delivery models. It forms an ideal foundation for VDI deployments and basis for enhanced desktop and application delivery strategies. Citrix XenDesktop helps bridge multiple delivery models through a common set of policies and management tools.

Most businesses do not gain a competitive advantage or drive significant economic value based on their IT infrastructure components. They accelerate growth through improved business processes and well-planned access to applications and desktops, which in turn drive productivity and business results such as increased revenue. As evidenced by the profile of the financial benefits afforded by virtual infrastructure solutions in ESG's financial analysis, this is the real promise of new integrated computing platforms. Consequently, IT should look beyond today's IT operational challenges that have them hamstrung deep into the inner workings and configuration of individual infrastructure components, and begin to embrace the automation and intelligence designed into today's integrated computing platforms and enhanced with desktop delivery strategies that streamline IT operations while delivering an enhanced end-user experience. Virtual computing solutions coupled to VDI deployments that are faster to deploy, easier to manage, can automatically react to change, and predictably expand and contract based on business requirements are essential if IT is to implement a strategy that will have the most significant economic impact on the organization.

³ Source: ESG Research Brief, [Integrated Computing Platform Trends](#), August 2014.

Appendix

Table 5. Cost Categories in the Scope of the Analysis

Category	Description
Hardware	<ul style="list-style-type: none"> For both HP ConvergedSystem 700 2.0 and the built-by-customer PMO, this includes capital costs associated with enclosures, blade servers, network switches, and storage.
Software	<ul style="list-style-type: none"> For HP ConvergedSystem 700 2.0: <ul style="list-style-type: none"> Licenses for VMware vSphere. Licensing costs associated with HP OneView system management software. Licensing costs associated with Citrix XenDesktop. For the built-by-customer PMO : <ul style="list-style-type: none"> Licenses for VMware vSphere. Licenses for comparable systems management and administrative tools. Licensing costs associated with Citrix XenDesktop. Note application stack components, such as SQL Server, web servers, or other components, are not included in the scope of the analysis. ESG made general assumptions about application configurations that are the same for the systems/solutions compared.
Infrastructure	<ul style="list-style-type: none"> For both scenarios, this includes costs related to data center infrastructure, such as racks, cables, power, cooling, and overhead.
Professional Services	<ul style="list-style-type: none"> For both scenarios, this includes additional services from IT suppliers or third-party firms to provide planning, design, implementation, best practice consulting, and training services. These include both one-time activities at the time of solution planning and installation as well as periodic additional activities (such as training) on an ongoing basis.
Staff	<ul style="list-style-type: none"> For both scenarios, this includes IT staffing costs associated with tasks such as project management, system/solution procurement, and system deployment and management. Additional outcomes of reducing the time associated with these IT activities are captured as benefits. All position-specific salary information is based on publicly available median average salary data. For all employees, the model uses a fully burdened rate (i.e., cost of benefits, payroll taxes, etc.) of 40%.
Maintenance and Support	<ul style="list-style-type: none"> For the HP ConvergedSystem 700 2.0 scenario, support costs include support for VMware software components, Citrix software components, and for the system itself. All pricing is taken from publically available price lists or directly from HP. For the built-by-customer PMO scenario, this applies primarily to software-related expenses, but also covers any necessary hardware- and infrastructure-related support costs. Support costs for VMware and Citrix software are taken from publically available price lists, and additional support costs are estimated on an annual basis as 15% of the cumulative capital investments made.

Source: Enterprise Strategy Group, 2015.

Table 6. Benefit Categories in the Scope of the Analysis

Category	Description
IT Efficiency Savings	<ul style="list-style-type: none"> • For both scenarios, this includes operational cost savings for IT staff related to the following activities: <ul style="list-style-type: none"> ○ Initial system design, integration, deployment, and configuration. ○ Systems maintenance, support, and management. ○ Resource management including storage and network management. ○ Virtual desktop administration. • These savings are calculated based on the estimated number of IT staff hours required to perform the tasks described in this report.
User Productivity Improvements	<ul style="list-style-type: none"> • For both scenarios, this includes operational cost savings for application users related to the following activities: <ul style="list-style-type: none"> ○ Improved end-user productivity that results from faster virtual desktop configuration and deployment. ○ Improved end-user productivity that results from faster and less-disruptive client upgrades and changes. ○ Improved end-user productivity that results from reduced desktop downtime and performance impacts. • These savings are calculated based on the estimated number of application end-user hours that are positively or negatively impacted by these events. For these calculations, ESG also assumes a productivity correction factor of 0.90 (i.e., the model assumes that 90% of the end-user hours “saved” will actually be productive hours).

Source: Enterprise Strategy Group, 2015.



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