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WHITE PAPER

The Value of Converged Infrastructure Solutions for the Business-Defined Economy

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Executive Summary

As businesses have scrambled to be profitable, gain market share and keep customers, the role of data in the organization has changed. There is now intense focus on speeding time to market, to value and to the return on investment. Lines of business leaders want to cull through old and just-generated data for fresh insights and new ways to innovate. End users expect all-the-time access to files and applications from anywhere, on any device. Customers want the same all-access pass to their information, too.

Organizations as a whole want greater efficiencies and higher service levels, which are dictating unprecedented levels of flexibility, performance and cost reductions across IT infrastructure. Departing from traditionally nonconverged IT environments is critical to transforming how organizations cope with future data demands and rapid application deployments. Converged infrastructure can offer a way to cost-efficiently and centrally manage compute, network and storage components, virtualization and applications. For businesses managing cloud infrastructure or considering private cloud, the promise of faster, simpler and cheaper IT is very appealing.

But not all converged infrastructure solutions are right for meeting tomorrow's business requisites. The 2 most important caveats of the right converged infrastructure are reducing the time to market or value and reducing operating expenditure (opex) to achieve it. This paper is intended to assist the technology buyer by delineating the critical converged infrastructure core competencies necessary to achieve desired business outcomes.

Introduction

In today's world of commerce, the changes that have been coming for a long time are now nonstop. Businesses of all sizes are accommodating new customer expectations and market demands, remodeling how information and services are delivered and shared, and crafting ways to drive up productivity and profitability. IT organizations are in a perpetual state of change, and challenge, too. They are working to keep up with unprecedented data growth, fluctuating line of business requirements, and not-so-fluctuating budgets.

Getting in front of monumental and continual change for the sake of the business is crucial. Forging a cleaner alignment between business outcomes and IT capabilities starts with first understanding what is at stake, then identifying the pain points and how to remedy them.

Recognize the Enormous Change Dynamics Happening Across Commerce

Exponential momentum is a phrase that could easily describe what is happening across the digital universe. Cloud computing, social media, big data and all facets of mobility are funneling into what major analyst firms are dubbing as the "3rd platform" and the "nexus of forces."

These 4 important market trends have changed the ways technology is consumed, business is conducted, employees are working and buying decisions are made. The future-focused enterprise is intent on capitalizing on new data sources, better ways to work and faster time to value. Busy professionals in all industries seem to share the belief that data, apps and services should be always available. Having anywhere, anytime access to information empowers them to be more productive, improve sales or customer relationships, and make better decisions, just to name a few benefits. Exploiting data, whether it is just being generated or has been untapped for years, enables organizations to drive fresh insights and innovation for competitive advantage, new customers and better economics.

Together, these forces have created a state of ubiquitous technology, an undiluted drive for better business, and an intense focus on driving down overall costs. And, they have collectively set the course for how business and IT must align to succeed in the foreseeable future.

Understand the Obstacles and Opportunities to Getting There Faster

Businesses want faster time to market, to value, and to a return on investment. Time to market is simply how long it takes for products and services to get to the customer. The IT resources required to support these processes have a direct parallel: If it takes weeks or months to enable or acquire the necessary IT capabilities, then the downstream effect is a longer time to market.

A quicker tempo to meet business requirements is critical. However, the factor of time comes into play if IT has labor-intensive procedures for retrieving and restoring data, or must learn or configure new technologies, or is managing multiple or dedicated environments. As IT is called upon to once again deliver on a myriad of priority demands, these time issues can be compounded by budget ones as well.

Rapidly incoming volumes of mostly unstructured data can seem nearly impossible to manage and scale cost effectively. Information growth, driven by social media, mobile content and new apps, continues unabated and has very little correlation to tight IT budgets. Organizations as a whole want greater efficiencies and higher service levels, and business leaders are focused on turning information into opportunity. Consequently, IT must become extremely flexible in order to hasten business responsiveness.

Most business-savvy IT organizations are crafting transformations to make infrastructure more agile, automated and cost effective. Yet, there is another hierarchy of challenges, especially in environments where compute servers, networking and storage resources are managed as independent silos. In these "nonconverged" data centers, IT administrators can

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spend almost 25% of their time on presystem deployments. At the same time, they are still grappling with better ways to provision, scale, consolidate and harness virtual machine (VM) sprawl and costs, or even move away from reduced instruction set computing (RISC) architecture. Managing highly dynamic IT environments can get very complicated, very quickly. Data growth is rampant, new modes of accessibility are required, and visibility and control both within and beyond the data center walls are imperative.

For organizations managing cloud infrastructure or considering private cloud, the promise of faster, simpler and cheaper IT is very appealing. The caveat is that doing so while providing visibility into the data center ecosystem is no easy undertaking. Performance, data protection and access control requirements must be addressed. Virtualization workloads and overall system health need to be monitored.

Do-it-yourself efforts to procure, test, assemble, integrate and administrate silos of resources tend to be more time consuming, tedious and expensive and less agile then intended. Often, the result may be an infrastructure that is difficult or inadequate to scale to meet extraordinary workload demands and growth. Organizations want to leverage and protect existing investments, not rip and replace, to efficiently consolidate, virtualize and automate.

Integrated computing platforms or converged infrastructure can mean the difference between success and failure in these scenarios. Converged infrastructure can quickly ease the burdens of deploying and managing servers, networking, storage, virtualization and applications for the data-driven business. Rather than the rigmarole of procuring, integrating, optimizing and deploying separate IT components or stacks, converged infrastructure centralizes, automates and simplifies. Common provisioning and administration help optimize all resources, including people. Better utilization of data center assets also leads to lower IT spending and less capital expenditure (capex) over time, while better productivity and environmental efficiencies help reduce opex. Furthermore, private cloud models supported by converged infrastructure are more flexible to address elasticity requirements and go-to-market velocity.

Tenets of Converged Infrastructure

An integrated computing platform or converged infrastructure is only as good as what it can do for the business. The 2 most important endeavors of converged infrastructure are reducing the time to market or value and reducing the opex to achieve it.

For organizations considering converged infrastructure to alleviate a plenitude of business IT challenges and pinch points, there are key must-haves to include and necessary steps to follow.

Accelerates Application Delivery and Operational Efficiencies

IT leaders evaluating converged infrastructure solutions expect to gain:

- Centralized management and visibility of assets.
- Consolidation of systems and increased resource utilization rates.
- Simpler and expedited deployment and automated IT operations.
- Private cloud service delivery aptitude.
- Lower overall costs.

These capabilities are possible by first sharing pools of storage, networking and storage resources across multiple departments and applications, then centrally managing the resources collectively via policy-driven processes. So, internal groups such as human resources and finance, apps including enterprise resource planning (ERP) and customer relationship management (CRM), and supply chain activities all come together. They are orchestrated according to their unique defined service levels in a simpler, more flexible and cost-effective manner. Converged infrastructure provides

tighter administrative control and superior visibility across a now-cohesive ecosystem, while lines of business and end users are poised to improve productivity and mobility.

Simplifying orchestration and system management helps accelerate application delivery and simultaneously improve operational efficiencies. Another chief criteria of potential converged infrastructure solutions is built-in intelligence for seamless integration of automation technologies, self-service features, multitenancy and continuous operations.

Departing from traditionally nonconverged IT environments usually begins with consolidation and virtualization of the resources. These activities not only optimize utilization and capacity across the infrastructure, but also facilitate advanced proficiencies, such as private cloud enablement, software-defined environments, and overall modernization of IT. High levels of automation, resiliency and overall agility are requisites for everything from rapid and on-demand deployments, pervasive data protection and nondisruptive operations to self-service testing for app and database owners. Automation promotes lower opex, self-correcting performance issues, nimble data movement and applications-aligned management, frequently without manual intervention or typical complexities. By removing the I/O bottlenecks and fostering highly dense, agile building blocks, converged infrastructure can accelerate business operations and trim unnecessary costs.

Supports Business-Defined IT

Along the continuum of transforming IT to embrace data growth and the nexus of technology forces is Business-Defined IT. To clear dynamic business hurdles and future-proof the data center, organizations are turning to Business-Defined IT. In this approach, IT and business stakeholders form a symbiotic relationship to achieve a single, integrated, aligned set of strategic goals and business outcomes. IT becomes an accelerant for the forward-moving enterprise, a profit center rather than a cost center, and proactively welcomes new opportunities to attain business advantage.

Business-Defined IT relies on a continuous infrastructure, which includes converged infrastructure, so that IT can focus on business core competencies such as increased workforce mobility, leaner economics and deeper informational insight. Using a combination of continuous services, policy-driven automation, and expansive levels of flexibility and access, Business-Defined IT equips organizations to fully succeed in the new information-led business reality. The right converged infrastructure will amply support these continuous demands, with enterprise-class levels of efficiency, agility, availability and performance. Some converged infrastructures are validated and tested as integrated reference architecture for optimizing application deployment.

Business-Defined IT fosters mobility of data, workplace and cloud for extreme productivity. By enabling continuous access to data, apps and resources from anywhere, anytime and from any device, Business-Defined IT empowers end-users to work smarter and more efficiently. Movement of data and workloads is acutely efficient and seamless, the business is able to quickly respond to market changes, and IT maintains control and visibility. To support mobility demands for Business-Defined IT, converged infrastructure should be highly adaptable and include intelligent built-in software management.

Business-Defined IT places an emphasis on realizing substantially lower total cost of ownership (TCO). Being able to predictably identify, measure and reduce IT costs while fluidly accommodating new as-a-service trends leads quickly to hyperaligned business value. In this way, Business-Defined IT economics emerges as a tangible framework that organizations can use to support changing business consumption models and purchasing practices, and improve profitability, revenue generation and overall costs.

Business leaders know the value of turning corporate data into meaningful information. Business-Defined IT allows organizations to innovate amid industry disruption and rampant growth because information is readily available for faster, deeper, broader capture and analysis. This Business-Defined IT insight means data is supple throughout its lifecycle to fuel better decisions, competitive advantage, new revenue streams, improved customer relations and expedited time to value. Organizations with highly dynamic, complex environments, such as SAP, Oracle and VMware want to ensure that

potential converged infrastructure solutions have analytic dexterity and inherent virtualization functionalities to support major applications.

Hitachi Unified Compute Platform

Hitachi Unified Compute Platform (UCP) is an enterprise-class family of converged infrastructure solutions with highest levels of efficiency, agility and resilience intended to fast-track more business value. UCP provides a truly solid foundation for protecting what is at stake, with best-in-class compute, networking and storage components, and superior software management of virtual and physical assets for mission-critical workloads. UCP solutions are custom built and certified to accelerate application deployment, private cloud and continuous operations.

One Platform for All Workloads

Hitachi UCP provides one platform for all data and workloads across virtualization and business applications, to catapult efficiencies and rapid deployment without technology compromises. Hitachi UCP is ideal for enabling the future-ready business, with:

- Faster time to deployment, production, market and return on investment (ROI).
- Support for continuous operations.
- Flexible IT and private cloud computing proficiencies.
- Expedited and sustained productivity and operational efficiencies.
- Substantially lower opex and risk.

Recent TechValidate surveys of Hitachi UCP customers cited 100% of the purchases were to improve application performance and answer high-availability demands. Nearly 90% of respondents saw drastic improvements, some reaching up to 50%, in TCO and simplified management with their UCP implementation.

Hitachi UCP solutions alleviate the guesswork that organizations often experience when deploying new infrastructure, for worry-free and immediate implementation. UCP offers superior VM density, nondisruptive operations, error-free template provisioning, ubiquitous automation and rapid deployment capabilities. UCP delivers seamless integration of automation, self-service, multitenancy and continuous technologies, and includes:

- Enterprise-class compute, networking and storage, with customer choice.
- Hitachi Unified Compute Platform Director software for supple, intelligent, simplified and centralized administration.
- Pretested and validated configurations for reference architecture or turnkey operations.
- 100% HDS support.
- Prevalidated application enablement for Microsoft, Oracle, SAP and VMware.
- Built-in flexibility to use Hitachi interface or integrate with existing management using RESTful APIs.

UCP can be rolled off the delivery truck, set up and provisioned in hours, not days or weeks. Across any application and any workload, UCP provides IT with:

- Comprehensive control of virtual and physical machines.
- Complete system visibility, monitoring and troubleshooting.

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- On-demand provisioning and event-based actions.
- All-inclusive deep and wide data protection.
- Ability to nondisruptively add or change server and storage resources.
- One-source support.

A Note About Hitachi Unified Compute Platform Director Software

A key differentiator among converged infrastructure solutions is the management capabilities for visibility and control over compute, networking and storage resources. Hitachi Unified Compute Platform Director provides intelligent, single-point management and end-to-end orchestration. In fact, Unified Compute Platform Director is able to capture intelligence across these layers and aggregate it for integration into existing and familiar management and orchestration tools: It is a cornerstone for nimble private cloud environments.

With support for apps on BareMetal operating system and automated nondisruptive firmware upgrades, Unified Compute Platform Director easily federates management for multiple collocated or dispersed UCP systems. It simplifies inventory and provisioning tasks, and automates operations, monitoring and data protection for lower capex and opex. With a single software-defined view of the data center, Unified Compute Platform Director helps organizations gain the full value of virtualization investments and mission-critical application environments. Deep native integration of Unified Compute Platform Director into VMware vSphere and vCenter also enables faster deployment of cloud infrastructure and efficient resource allocation.

"We see Unified Compute Platform Director as a game-changing technology. There is no other tool out there right now that can easily automate provisioning of space, provide crystal clear visibility within existing storage, or is truly aligned with VMware. This tool does it across multiple Hitachi UCPs, to repurpose, revitalize and mitigate underutilized resources. Unified Compute Platform Director is as revolutionary in this space as the iPhone has been for the cell phone market. "

— Ed Weigner, Director of Sales, US, oXya

UCP Family Solutions

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How UCP Maps to Business-Defined Everything

Hitachi Unified Compute Platform is an integral element for achieving business-defined end goals for IT, customer services and logistics. According to IDC, business are exploiting converged infrastructure for 3 main business reasons:

- *Faster time to service or market*. With line-of-business executives pushing to take advantage of mobile, social and analytical opportunities, IT is under intense pressure to swiftly respond to new business apps and projects. IT must provision and deploy storage faster, and deliver anytime, anywhere data access. Hitachi UCP bolsters real-time data access whenever and wherever it is needed, without sacrificing corporate security or IT control. UCP exudes cost-effective flexibility and elasticity of private cloud deployments, accelerates decision-making and business insight, and frees up resources to attain innovation that transforms business capabilities.

- *Cost advantage and efficiency*. Moving to converged infrastructure helps reduce operational and management costs over time by automating, centralizing and consolidating infrastructure. Hitachi UCP nurtures increased value with better economics, including lower TCO by up to 30% over 4 years while still experiencing aggressive data growth. By shrinking administrative cost and complexity with coordinated,

comprehensive, automated operations, UCP allows organizations to spend less time acquiring and managing resources, and more time focusing on business priorities. Backed by Hitachi Data Systems Global Solution Services for expert support, the UCP landscape offers a holistic, seamless deployment and post-deployment experience.

- *Infrastructure and operations improvement.* Advanced features, such as single-vendor point of contact for support, and widespread interoperability across software and stack resources, are critical to cultivating better disaster recovery, governance, risk and compliance. Hitachi UCP supplies all the necessary features in prebuilt and customized turnkey solutions to achieve supreme productivity across highly dynamic, business-defined organizations. Noted for delivering up to double the performance benefits of nonconverged solutions, UCP benefits mission-critical application environments with blazing speeds and advanced technology.

Hitachi UCP is one of the must-have building blocks of Continuous Cloud Infrastructure, which provides a cohesive framework of advanced Hitachi technologies united to effectively navigate through the often overwhelming, all-consuming levels of change. Continuous Cloud Infrastructure is always agile, always automated and always available: It is ideal for succeeding in the always-on business world. This pinnacle of Business-Defined IT enables business and IT leaders to take advantage of new opportunities and unconditionally innovate rather than be held back by technology limitations or overrun by data. Continuous Cloud Infrastructures powered by Hitachi remove the traditional and often tremendous barriers to achieving substantial productivity, market share and value.

"Hitachi has the technology, is providing innovation in its management layer, and is ready to demonstrate the value of UCP in some of the biggest ongoing IT initiatives. For any IT professional considering investment in an ICP [integrated converged platform] solution, Hitachi UCP is certainly worth a look."

— Mark Bowker, Liquefying IT Columnist, Network World, 2013

Overall Value of UCP for the Business-Defined Organization

Perhaps the greatest takeaway for business-savvy organizations seeking to accelerate time to market and value with converged infrastructure solutions is to transform the data center of the future for the perpetual success of the business. Transitioning that data center of for the future requires moving from a physical infrastructure with silos of independently managed assets to a virtualized, converged and automated one based on infrastructure services. When resources are pooled and managed as a whole, resources are stateless, so information is disassociated from applications and IT is poised for pervasive efficiencies.

UCP for Efficient IT

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Hitachi UCP makes possible the transformation into an infrastructure for all data. With intelligent, single-point management and end-to-end orchestration of compute, network, storage, virtualization and business applications, UCP lays the foundation for private cloud, for competitive advantage, and for supporting the future-ready enterprise. Expedited deployments, substantial cost reductions, improved flexibility and efficiencies, and continuous operations capabilities collectively position UCP as a key player in the business-defined economy. UCP helps organizations win in the new data-driven business realm.

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