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WHITE PAPER

Competing in an Always-On, Always-Changing World: Guidance to Achieving a Business-Driven Data Center

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Contents

Executive Summary	3
Introduction	4
The World Is Always On	4
The Current Business Response	4
The Inventory of Change	5
Considering People, Time and Value	5
Address Persistent IT Challenges	5
The Era of Business-Defined I.T.	6
The Point of No Return	6
Hitachi Data Systems Digs Deeper to Reveal New Insights	7
What Is Continuous Cloud Infrastructure?	7
A Glance at the Technologies Involved	7
It's About Agility	8
It's About Availability	8
It's About Automation	8
And a Lot More	8
Why It Matters	9
Improved Productivity	9
Faster Time to Market	9
Highest Quality of Service, Forever	9
Industry-Leading Efficiency	10
Economically Superior Architectures	10
Final Notes	10

Executive Summary

Change is happening at startling speed in an “always-on” world. From the rate of new technology adoption and subsequent data growth to perpetually changing business requirements and a faster push to market, the challenge to keep up has never been greater. Customer requests, real-time expectations and competitive advantage are creating new business obstacles, and opportunities, which in turn affect IT. Applications need to be deployed faster. Complexities are reaching beyond basic comprehension. Risks and costs must be incessantly monitored and mitigated.

Enterprises facing continuous change must go about their business with a different approach, if they wish to stay ahead of whatever is coming next. IT and business need to forge a new partnership for the overall success and survival of the enterprise. IT must become an accelerant of change to meet business needs and promote revenue generation. And it must be the business that defines how best to balance its challenges and what the data center of tomorrow will look like.

In this new era of the business-driven data center, line-of-business leaders are looking to the data center to be futureproof, reliable, adaptable and responsive to changes. Likewise, IT professionals understand that to meet business needs, the data center technologies must be software-defined, automated, high-performance, nondisruptive, extensible and virtualized.

The Hitachi vision for Business-Defined IT starts with the concept of continuous cloud infrastructure. As the foundation for a future-ready enterprise, Continuous Cloud Infrastructure is agile, available, automated and acutely efficient. Always. This white paper offers guidance for organizations intent on thriving in the new business reality and identifies the technologies necessary to transform.

Competing in an Always-On, Always-Changing World: Guidance to Achieving a Business-Driven Data Center

Introduction

Best case scenario for the world as we know it: The future is dynamic, global and uncertain. For businesses hoping to compete and succeed in this morphing reality, the need to instantly adapt to change and stay ahead of whatever is coming next has never been greater.

The World Is Always On

The world as we know it is experiencing an epic shift in technology. According to IDC analysts, we are in the midst of a once-every-20-to-25-year shift to a new technology platform for growth and innovation. In the span from 1960 to 1980, millions of computer users and thousands of apps were in play. From 1980 through 2005, the volume bloated to hundreds of millions of users and tens of thousands of apps. By 2020, those numbers will burgeon to billions of users and millions of apps, plus services and content: trillions of things. This trend is being called “the 3rd platform” and is built on mobile devices and apps, cloud services, mobile broadband networks, big data analytics and social media¹. The paradigm is expected to drive at least 80% of industry growth for information and communications technologies (ICT). And traditional business processes, such as just-in-time manufacturing and assembly, and sales and financial transactions, have not slowed their march toward the perpetual generation of data. It seems as though the digital universe never pauses; rather, it has catapulted us toward continuous change, at an ever-increasing pace.

The Current Business Response

Business and IT leaders alike are looking for answers to survive and thrive in such an inevitably frenetic climate. From lines of business to the data center, many professionals are overwhelmed by mandates to do more, yet are underwhelmed with viable technologies and solutions. Organizations often end up mired in day-to-day requests and crises rather than progressing with overarching business strategies.

Customer demands, real-time expectations and competitive advantage are driving new business hurdles. There is a real urgency to keep up with the demands of the business. Applications need to be deployed faster. Risks and costs must be monitored with razor-like attention. Organizations are reacting in myriad ways, looking to everything from cloud computing and big data and anything in between.

Cloud offers many opportunities to address business IT priorities, but adoption tends to be slow. The requirements and solutions for cloud vary greatly, and there is a fine art to balancing control and security with cost and flexibility. Big data promises unparalleled business insights, yet the rates of growth are hard to imagine and difficult to manage. The analytics of big data encompass staggering levels of velocity, volume and variety, which can be very intimidating to take on. Mobility and social networks present innovative ways to reach new business audiences, but there may be uncertainty about how to leverage these trends. Fresh paradigms and novel technologies could be diluting the focus for what might be the next competitive edge or just a passing fad.

Shifts in the market are happening quicker than ever before. Now there are more questions than answers. How will new data types affect retention and availability requirements? Will the data infrastructure keep up? What can be done to address increases in complexity, costs and data duplication? How can we more flexibly control data and leverage

¹ <http://www.idc.com/research/Predictions13/index.jsp>

resources? Can we take advantage of new technologies and existing budgets to maximize efficiencies while growing the business?

The Inventory of Change

Not that long ago, the only constant was change. In today's business environment, even that quip has changed. Yesterday's focus on business productivity and IT agility and services is today's emphasis on information agility and next-gen business innovation. With the accelerating churn and intensity of changes happening now and to come, organizations must be exceptionally nimble, smart and always ready. Business requirements have become a moving target, with modifications in direction or scope occurring not annually or even monthly, but sometimes daily, in the moment, on the fly.

Considering People, Time and Value

The only relatively stable ground seems to be what drives the business and IT relationship: people, time and value. Businesses want their IT organizations to help increase employee productivity. Improving how people work usually means supporting more applications, enabling new and varying data formats, and providing greater remote access. In fact, more enterprises are creating their own apps: to maintain control of their brand, for compliancy reasons, to improve employee communications, track expenses, and manage better customer relationships and helpdesk services². A recent study of 600 enterprise organizations revealed that 95% have employees who rely on personal mobile devices and apps for work, and 92% see adopting mobile apps as a way to gain competitive advantage.³

Adoption of new technology is happening at almost alarming rates. But often, time is money so businesses prosper by being able to bring services and products to market sooner. IT is pressed to deploy applications and services in less time with greater elasticity. The ability to pivot quickly among control points, such as consumption models and service characteristics, can be the competitive difference in reaching a goal or losing a customer.

Value is really about the usefulness or importance of doing something that is relevant. For the business, value means improving overall quality to meet customer expectations. For IT, value translates to quality of service (QoS), availability and guarantees. Services need to be online and available 24/7, with no downtime, forever. Performance must be fast and facilitate complete data recovery. The definition of an unacceptable business disruption has escalated from business-critical system downtime after the hours of operation in one locality, to, well, never. The new benchmark is 24/7 global access. Data protection and governance must seamlessly transverse from internal to external access, from local to global usage. Even conducting technology refreshes to improve performance or add services faces a zero tolerance for downtime.

Address Persistent IT Challenges

IT professionals have been dealt an extraordinary set of challenges. They continue to be resilient in the trenches and consistently work with line of business managers to identify and mitigate issues. However, rising costs, enduring inefficiencies and business disruption are still fundamental difficulties

Topping the list of persistent IT challenges is cost. Capital expenditures (capex) for hardware and software can tally quickly to meet new requirements for service level agreements (SLAs) and programs. Operational expenditures (opex) comprise the ongoing costs associated with supporting and maintaining a system over its lifespan, including power, cooling, floor space and administrative labor.

² "Predicts 2013: Mobility Becomes a Broad-Based Ingredient for Change," Gartner 2013, <http://www.gartner.com/newsroom/id/2324917>

³ Mobile in Workplace, April 2013, <http://blog.newrelic.com/2013/04/18/what-you-need-to-know-about-the-booming-enterprise-apps-industry/>

Running closely behind cost challenges is overall inefficiencies that can lurk across the infrastructure. Consider the disparate systems that demand multiple management points and do not pool resources, or silos proliferating duplicate data and present “available but not accessible IT resources.” Wastefulness across data centers may be widespread. Systems dedicated to applications drive up underutilization and overprovisioning, while low levels of automation undermine opportunities to capitalize on shared resources.

IT is also busy ensuring that services remain uninterrupted and data availability and security are not compromised. As technology permeates every department and dominates the way business is conducted, it is no surprise that the enterprise as a whole depends upon, and has become keenly interested in, the success of IT. The relationship is symbiotic, of course, as IT is working more collaboratively than ever with the business to deliver on specific requests and react to changes as they come.

The Era of Business-Defined I.T.

After years in a volatile global economy and flat year-over-year IT budget growth, the news that worldwide IT spending is forecasted to have a slight uptick in growth could be exciting⁴. The newsworthy fact, however, is that IT spending by groups, such as marketing, customer service and sales, is outpacing spend by IT departments: nearly 2.5 times faster⁵. Line-of-business executives are more involved in evaluating technology and making IT purchase decisions than ever before. On average, nearly 30% of named marketing-related technology and services are purchased by marketing already. Moreover, marketing now influences almost half of all purchases and digital marketing is often credited with driving business growth⁶.

Business-
defined IT
Architecture

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Business must continue to perform and serve customers no matter what. Consequently, the goals of IT and business have become inextricably tied for future success of the enterprise. It is the business that is defining how best to balance its challenges and what the data center of tomorrow will look like. A newly minted era has emerged: the era of Business-Defined IT.

The Point of No Return

For the organization intent on flourishing in the new business reality, there is no going back. Business-Defined IT will usher in superior capabilities for the enterprise to prioritize requirements and deliver services faster and continuously. It will proactively greet new technology and opportunities and demonstrate new levels of cost efficiency.

At the point of no return, IT must be an accelerant for new business models and advantage. Decision-makers and line of business heads require reforms for consumption models, support for new applications and workplace mobility. Large or custom applications present varying performance and capacity characteristics, and resultant overhead. End users and external customers are depending on IT to anticipate and expedite improvements to QoS and privacy guarantees, system resiliency and cost transparency.

Business-Defined IT strives to balance the needs of a future-ready business with lowering risk, complexity and cost. This demands acute IT efficiency. Emphasis is on achieving a sustainable lower total cost of ownership (TCO) and spending justifications that are transparent, flexible and competitive with outside services. IT efficiency dictates uninterrupted services that remain accessible and secure, period. Ensuring data availability and security are not compromised by attempts to lower overall IT costs.

⁴ Source: Gartner G00259314 Forecast Alert: IT Spending, Worldwide, 27 December 2013

⁵ Source: IDC Predictions 2014: Battles for Dominance and Survival — on the 3rd Platform. Dec. 2013

⁶ Source: <http://www.forbes.com/sites/lisaarthur/2012/02/08/five-years-from-now-cmos-will-spend-more-on-it-than-cios-do/>

Business leaders know the value of turning company data into meaningful information. The companies that will win in these emerging information-led business models can innovate even as data grows unabated and budgets do not. Agility and adaptability are instrumental in the organization's ability to immediately respond to changes so when the unexpected suddenly happens, Business-Defined IT is ready to roll. As products become obsolete, organizations need to diversify and collaborate into areas at the edge of current capabilities⁷. The rewards will be growth and survival. It means exploiting new data sources and big data to drive business possibilities. It promotes an optimistic competence that the organization can respond quickly to market trends and customer inclinations. So how exactly can companies enter into this new era?

Hitachi Data Systems Digs Deeper to Reveal New Insights

As a leader in pioneering enterprise technology solutions, Hitachi Data Systems is actively engaged in helping business and IT leaders architect a new best way to solve their unique challenges. We recognize that there is no panacea for the intensities and intricacies driving this new era of doing business. We understand that the digital universe has reached a level of complexity that makes it difficult for organizations to cope with the massive changes required to move the business forward.

Hitachi Data Systems has been integrally involved in shaping how Business-Defined IT will empower organizations to make smart choices for accelerating the business. We believe Business-Defined IT illuminates how to navigate through persistent IT challenges, beyond status quo strategies and day-to-day firefighting. The Hitachi vision for Business-Defined IT embraces a future-ready IT infrastructure that is always available, always agile and always automated.

The "always-on world" demands unwavering reliability and proven innovation that will readily adapt to an uncharted, nebulous future. It is for this world that Hitachi introduces the technology to power a transformation to Continuous Cloud Infrastructure.

What Is Continuous Cloud Infrastructure?

Continuous Cloud Infrastructure provides the foundation for a future-ready enterprise. Continuous Cloud Infrastructure is agile, available, automated and acutely efficient. Always. This is for the business that will not be held back by limitations of IT infrastructure or overrun by information. IT-accelerated businesses will not allow technology to define their options. Instead, they will unconditionally innovate.

If Continuous Cloud Infrastructure is to provide continuous delivery of applications and service through the cloud, perhaps it makes sense to take a side step and identify the industry requirements for cloud infrastructure:

- Has the ability to increase utilization and agility of rigid infrastructures.
- Provides consistent availability.
- Needs to be services oriented: Provides resources as services and delivers on demand.
- Exudes highest levels of automation to monitor, manage and reduce costs.
- Ensures security measures for authentication, encryption and authorization.
- Facilitates multitenancy and chargeback capabilities and is transparent.
- Follows standards and best practices, including open interfaces.

A Glance at the Technologies Involved

⁷ Ernst and Young: Business 2020, [http://www.ey.com/Publication/vwLUAssets/BusinessRedefined-FINAL/\\$FILE/BusinessRedefined-FINAL.pdf](http://www.ey.com/Publication/vwLUAssets/BusinessRedefined-FINAL/$FILE/BusinessRedefined-FINAL.pdf)

Built upon the powerful combination of advanced and innovative Hitachi technologies, a Continuous Cloud Infrastructure provides business and IT leaders with a trusted foundation for enterprise private cloud. It is efficient and optimized for scalable computing. At a high level, a Continuous Cloud Infrastructure is based on the following technologies:

- **Hitachi Virtual Storage Platform G1000** for unprecedented performance, availability and scale with zero downtime.
- **Hitachi Storage Virtualization Operating System** for enterprise capabilities that maximize cost-performance needs, deliver built-in active-active storage, and provide consistent functionality.
- **Hitachi Unified Compute Platform** for new levels of efficiency, agility and resilience.
- **Hitachi Command Suite** to simplify storage management, align with business policies and facilitate self-service customization.
- **Hitachi NAS Platform** for enhanced performance, manageability and availability of NAS workloads to ensure smooth consolidations.

It's About Agility

Always being agile demands one platform for all workloads to accelerate time to value. Now, the business-driven data center manages new data types and ever-increasing volumes of data without issue. Upgrades happen in place without disruption or frequency. Software-led practices foster a choice of hardware to meet changing business requirements. Integration with key business applications and rapid deployment of new technology are the norms. It can be consumed in many different ways, including cloud and on-demand models.

It's About Availability

Availability is defined by no downtime, no disruption, no matter what. Always being available is a capability that thrives on active-active environments and eliminates services interruptions. Now, the business-driven data center boasts a higher echelon of reliability that garners confidence to quickly roll out fresh initiatives or support new data streams. Labor-intensive, costly migrations are replaced with fluid data mobility between tiers, systems and sites.

It's About Automation

Being always automated means leveraging built-in intelligence and tools to detect changing conditions and optimize assets. Automation promotes lower opex and alleviates manual intervention. Performance issues and bottlenecks correct themselves and data is moved to the right tier at the right time. Automation is policy-based and dials down complexities to encourage applications-aligned management and service level attainment. Always automated streamlines the entire data center cost structure.

And a Lot More

Continuous Cloud Infrastructure is also about acute IT efficiency. Always-efficient infrastructure capitalizes on existing hardware resources and technologies, such as storage virtualization and unified computing solutions, to do more: faster, easier and economically. Now, Business-Defined IT reduces opex from increased automation within the infrastructure layer to move data and achieve SLAs. Self-service customization and business policy alignment are realistic ventures. The foundational elements of private clouds can be more easily expanded in order to consolidate, virtualize and automate. Resilient, responsive infrastructure scales and supports both business revenue generation and improved TCO.



Why It Matters

Continuous Cloud Infrastructure is important to enterprises trying to get where they want to go without compromising on business goals, customer services or bottom-line musts. The always-on infrastructure fortifies how to make the leap without taking the typical risks. The organization is less tied to specific hardware requirements, to geography limitations, or to infrastructure improvement obstacles.

Hitachi-powered Continuous Cloud Infrastructure removes the traditional and often tremendous barriers to achieving substantial productivity, market share and value. It simply makes better business sense.

The world is not waiting for organizations to understand, accept and prepare for change. Moving forward appears to be the only logical option and with good reason.

Key benefits of the IT-accelerated, future-ready business include:

Improved Productivity

Improved productivity across the data center is critical in the information economy of the 21st century. Business leaders will depend on instant access to relevant data for highly accurate decision-making. Continuous Cloud Infrastructure can rapidly make that possible:

- Manageability of all data formats for meaningful information output.
- Integration across platforms and applications to optimize assets.
- Fluid data mobility with policy-based automation.
- Mitigation of stubborn management complexities and subsequent costs.

Faster Time to Market

The breadth of competition and the attention span of consumers are rousing new reasons to get products and services to market earlier. Organizations must swiftly deploy enabling technologies to improve business velocity. Continuous Cloud Infrastructure champions the need for speed without taking unnecessary risks:

- Control and centralize product data across development processes.
- Optimize how information is shared to improve processes and shorten cycles.
- Improve consistency across launch phases and delivery channels.
- Profit from new data streams and business initiatives.
- Promptly adapt to changes in business direction, scope and timetables.
- Meet unexpected market conditions and maintain competitive advantage.

Highest Quality of Service, Forever

Data is starting to live forever and the very existence of many businesses depends on 24/7 availability. Providing guarantees on the ability to predictably and consistently deliver services is especially important for the new generation of Internet applications such as video-on-demand, VoIP and other consumer services. Continuous Cloud Infrastructure helps deliver the highest quality of service forever with:

- Outstanding data protection with high availability technologies, built-in active-active storage and no need for clumsy appliances.
- Nondisruptive migrations and upgrades for always accessible, highly responsive data centers.

- Manageability of growing data volumes without being limited by geography or scaling complexity.
- Ability to meet or exceed SLAs, increasing application requirements and overarching business objectives.

Industry-Leading Efficiency

Unprecedented increases in efficiency are required to move past just keeping the lights on. Efficient solutions with increased automation mean more available investment in revenue-generating IT activities and lowering TCO. Continuous Cloud Infrastructure promotes industry-leading efficiency with:

- Greater use of existing hardware resources through storage virtualization and automation.
- Personalized management capabilities through self-service customization and business policy alignment.
- Less time spent on IT and more focus on application needs and business readiness.
- Better aptitude for consolidating, virtualizing and automating infrastructure for private cloud.

Economically Superior Architectures

Hitachi Data Systems IT Economics identifies the key ingredients of economically superior architecture. They include virtualization, dynamic thin provisioning, dynamic tiered storage, 3-D scaling, application-centric converged systems, and common management, along with other advanced technologies. Continuous Cloud Infrastructure exploits these traits in order to:

- Achieve lowest TCO by reducing opex costs and better utilizing capex resources.
- Deliver tremendous performance, and capacity scale and efficiency.
- Extend useful life and improve return on assets.
- Streamline deployment and remove potential for human error.

Final Notes

With the right technology in place and a keen focus on orchestrating the data center to nimbly support the business in all its endeavors, enterprises can redefine their own future. The evolution to Continuous Cloud Infrastructure tenders more reliable, trusted and cost-effective solutions for critical business information. The world isn't waiting. Consider Hitachi-powered Continuous Cloud Infrastructure to achieve agility, availability and automation. Always.



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