How the Right Infrastructure Can Prepare Your Data Center for Business Disruptors

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INTRODUCTION

It seems strange to think that just a few years ago, the IT department was considered a supplier to the business. Today, IT leaders are at the forefront of their companies' march into the digital age. Technology is now recognized as a key enabler for achieving strategic business goals, including revenue growth, market expansion, and customer satisfaction; and IT leaders have risen to the challenge of simultaneously running the business while identifying and leveraging innovative solutions that can drive growth.

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No matter how many technology disruptors businesses have adapted to in the past, we know more are on the horizon. Today's successful IT leaders have skillfully handled the evolution from mainframes to PCs to cloud; from desktop devices to laptops to tablets and smartphones; from shared drives to collaboration tools; from "800" numbers to omni-channel support; from static Web sites to sophisticated customer and employee portals. But even those leaders will have to do more in the future to ensure their organizations are prepared for the next generation of disruptors. The truth is, in the future, IT will be less about tackling each disruptor as it appears, and more about establishing a flexible, "change-resilient" organization. That means investing in infrastructure, operations, and even technical skills that are adaptable—enabling you to "hit the ground running" when tomorrow's disruptors hit.

How do you get there? Not through a forklift revamp of the data center (that would cause unnecessary disruption and expense). Instead, it's best to develop a strategy for the future: one that allows you to best prepare your business to leverage the disruptors we know about today, and the ones we have yet to imagine.

In this paper, Stratecast discusses the technologies that are disrupting how business is conducted— and how they impact and are impacted by your data center infrastructure. We define the ideal IT environment, and present ways to achieve it with flexible, composable infrastructure.

TOP BUSINESS DISRUPTORS

No doubt, you have already addressed many technology disruptors, either at the request of your line-of-business colleagues or as part of your own IT plans. However, as the volume, pace, and rate of disruptions increases, you may find that your current data center is showing the strain.

Following are the top six disruptors that are affecting business and IT operations—and how your data center infrastructure can be either a help or a roadblock.

1. Big Data & Analytics for Business Decisions

Businesses across all industries increasingly rely on data to make critical business decisions. Spurred by an increase in business process automation and the Internet of Things, businesses are collecting and using exponentially more data points than in the past. That data is working harder, thanks to sophisticated analytics software. The data remains active for a longer period of time, to support both regulatory compliance and trend analysis. And, because data drives many business decisions, businesses require a high-availability environment for primary and backup data. No wonder over a third of IT leaders responding to a 2014 Frost & Sullivan survey cited "growth of data storage" as their top data center challenge.

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The increase in business analytics workloads can overwhelm existing data center infrastructure and configurations. For optimal performance, analytics-intense workloads require high-performance systems, engineered to support high Input/Output Operations per Second (IOPS), and fast processing. To support some workloads, your analytics software may be required to pull data from multiple sources and databases—both in house and cloud-based—and deliver responses to disparate users and systems in real-time; which requires a closer look at network configurations. For mission-critical applications, you need to ensure that your backup and recovery solutions are sufficient to handle the volume of data and rate of change. For sensitive or regulated data, you need to configure primary, backup, and warehoused data with appropriate security profiles.

2. Round-the-Clock User Productivity

Technology has been a productivity enabler, going back at least to the introduction of the first calculator. What is new (and disruptive) in recent years is the idea that business can be transacted anytime, anywhere. Even the smallest of businesses can be freed from the limitations of the "business day," and leverage the global market, thanks to new technologies. Employees, business partners, and even customers, are able to engage with one another and the business from anywhere, via any network and device, and platform.

The data center implications are obvious: IT needs to be prepared to deliver data and applications to users securely and with optimal performance, to the platform, device, and network of their choosing (i.e., mobile, Internet or private corporate network). Communications and collaboration tools must be enabled across multiple platforms, to ensure maximum productivity. And all applications must be maintained in high-availability mode.

3. Line-of-Business Empowerment

An interesting phenomenon in recent years is that technology decisions are no longer restricted to the IT department. Instead, as technology becomes more accessible to non-technical users, employees from other areas of the business are taking charge of their own technology decisions—in some cases, circumventing onerous IT

processes in order to procure the tools they need to do their jobs. According to a 2013 Frost & Sullivan global survey, more than 80% of line-of-business (LoB) employees have procured business software without authorization; the top reason is that IT processes are too slow or cumbersome.

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In response, IT organizations are making an effort to partner with LoB to better address business goals for agility and market responsiveness. This includes implementing methodologies such as DevOps, which streamlines and automates software development and deployment processes. Rather than waiting for lengthy release cycles to deploy software and updates, DevOps supports continuous integration, test, and deployment, allowing changes and tweaks to be made and released quickly.

DevOps is often the catalyst for process transformation, as IT organizations replace waterfall processes with a collaborative approach. But people and processes alone will not enable IT to meet business expectations for speed-of-deployment. It also requires flexible and easily configurable data center infrastructure. Furthermore, to understand the impact of their decisions at a product or project level, LoB leaders need visibility and actual usage-based costs.

4. Increased Customer Expectations

In today's rapid-paced business environment, in which new competitors can appear overnight from anywhere in the world, from adjacent industries, even from nowhere, businesses need to work harder than ever to retain customers. If they are disappointed, customers will quickly look elsewhere—perhaps after leaving negative feedback on social media sites. However, if they are delighted, they will reward you with their loyalty. The most loyal customers often view the relationship as a partnership, which means they expect to participate in your business. They expect to interact with you via multiple channels, with an immediate response—whether the interaction is via phone, email, live chat, mobile apps, self-service portal, Web page, or social media. Furthermore, they want to be empowered with always-available, self-service access to their own account data, as well as ordering systems tied to your inventory and delivery systems.

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Earning the ongoing loyalty of customers requires a combination of focus (establishing a customer-centric business ethos); skills (ensuring all employees are trained to prioritize customer needs); processes (incorporating customer feedback and input into business processes); and, importantly, infrastructure. Data center infrastructure needs to be agile enough to respond to changing customer demands. It also needs to support high availability and high performance so that customers aren't driven away by sluggish performance or system downtime.

5. The Rise of Automation and Standardization Tools

As in the Industrial Revolution, automation and standardization are perhaps the greatest productivity boon of the digital era. At the core of deployment models such as cloud, development methodologies such as DevOps, and integration enablers such as Platform as a Service, automation and standardization software offloads manual and customized tasks that can be a drain on staff productivity and business agility. This results in lower costs, shorter deployment times, and higher quality (since user-introduced errors are minimized).

However, to take advantage of automated provisioning functionality, the data center must be equipped with flexible infrastructure, middleware, and management platforms, all integrated to support the frequent changes.

6. Emergence of Hybrid Cloud

Perhaps the most-hyped disruptor of the past decade has been the cloud, the scalable method of delivering IT resources on demand. While the first clouds to capture the market's imagination were public clouds, enterprises quickly made it clear that they expected to utilize the public cloud as an adjunct to—not a replacement for—their own data centers. In a 2014 Frost & Sullivan survey, fully 86% of cloud users said they utilize a hybrid cloud environment that links their on-premises data center with public cloud services.

But a hybrid cloud means more than standing up some applications in a cloud provider's data center, and others in your own data center. Enterprises are increasingly looking to split workloads among environments; for example, placing a Web server in the cloud, but the secure database on premises. To ensure the workload delivers appropriate levels of performance, availability and security, the data center requires infrastructure systems and management platforms that are engineered to support the unique requirements of the hybrid workload.

WHY TECHNOLOGY DISRUPTORS REQUIRE A NEW WAY OF THINKING ABOUT THE DATA CENTER

As many IT leaders have already determined, many of these disruptors do not easily lend themselves to a stand-alone technology "fix." For example, vendors do not sell a pre-packaged "customer expectations" solution (in either hardware or software), nor an "employee empowerment" package. Where applications do exist (for example, to support data analytics or hybrid cloud), the solutions generally address only part of the overall challenge.

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Because technologies rarely exist in a vacuum, there are few applications or platforms or solutions that are totally isolated from one another; and there will be fewer in the future. Yet, that is how traditional data centers have been configured, with software custom-deployed on purpose-built servers. Such a "siloed" approach adds cost and complexity to the data center, hindering business goals and introducing challenges such as the following:

- Increased business risk associated with inconsistent application of security policies and data compliance across domains.

- Increased errors and time associated with manual and custom deployments; increased time and cost for testing.

- Lack of granular visibility into resource utilization and costs, with disparate management platforms inhibiting the ability to calculate and compare metrics across apps, platforms, delivery models, or projects

- Limited infrastructure flexibility associated with hardware-focused configurations, compared with software-defined solutions.

- Hardware- or software-specific specialization limits staffing flexibility; IT staff is narrowly focused on performing IT tasks, rather than solving business problems.

- Difficulty implementing DevOps, because developers and operations teams must forge new processes, while provisioning inflexible infrastructure. This limits IT agility and responsiveness.

To minimize these challenges, technology leaders should not look to solve each disruptive force (whether it appears as a threat or an opportunity) with a stand-alone solution. Instead, they should prepare the data center for the future, with a "composable" infrastructure.

THE DATA CENTER OF THE FUTURE WILL BE BUILT ON A "COMPOSABLE" INFRASTRUCTURE

What is a "composable" infrastructure? Introduced by Hewlett Packard Enterprise (HPE), the term composable infrastructure denotes data center hardware, middleware, and management software that is engineered to be highly flexible and functional; optimizing performance for both traditional architectures and workloads, and for new cloud-native apps.

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Composable infrastructure leverages powerful automation tools, high-functionality management and reporting platforms, and application programming interfaces. It enables you to manage all your infrastructure resources to deliver the optimal mix of performance, security, scalability, and cost for your workloads.

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Not to be confused with "modular" infrastructure, a composable infrastructure does more than ensure that hardware components can be interchanged. Composable infrastructure leverages powerful automation tools, high-functionality management and reporting platforms, and application programming interfaces (API). It enables you to manage all your infrastructure resources (physical and virtual, general-purpose and application-optimized, premises-based and cloud) to deliver the optimal mix of performance, security, scalability, and cost for your workloads.

It's as if a child's set of Lego bricks came with the ability to replicate blocks as needed—and programmed-in instructions to configure themselves into a Ninja temple today and a working race car tomorrow.

Composable infrastructure delivers the following functionality:

- **Abstract infrastructure resources.** By utilizing software-defined technology, composable infrastructure enables you to optimize existing hardware for as long as possible, while replacing aging infrastructure with pre-engineered, high performance systems.

- **Manage compute, storage, and fabric as a fluid pool of resources.** This gives you the flexibility to provision apps on demand, while maintaining service levels—without over-investing in infrastructure.

- **Support business demands** for high-performance, high availability apps and databases. You no longer have to configure for peak loads, which enables you to defer capital investments in infrastructure.

- **Support "Infrastructure as Code."** Standardized, automated provisioning functionality enables continuous integration and delivery of apps. This allows you to implement DevOps processes in your data center, and even introduce Platform as a Service tools for developing and deploying cloud applications.

- **Support integration of app and management functionality**, via a unified API. To reduce management complexity, you need to be able to manage your entire physical and virtual IT environment via a single interface.

- **Support granular visibility and reporting** across the environment. As IT increasingly takes on the role of "service broker" to the business, the department will be expected to understand and compare costs and performance of workloads across different deployment models. A composable solution will normalize metrics to support business decisions.

- **Position for cloud and DevOps** environments. Flexible, scalable, on-demand models will be the norm for future applications. Composable infrastructure will continue to support your traditional workloads, but be finely engineered to support tomorrow's preferred methods for developing and deploying apps.

GETTING STARTED

Because composable infrastructure is an approach to data center architecture, IT leaders can start by building a roadmap. Here are some valuable steps to aid the transition:

- Assess the applications currently running on your traditional data center infrastructure. Are they consistently delivering the appropriate level of performance, at an acceptable price?

- Assess whether your infrastructure is well-suited for your most demanding workloads. Are you spending too much time and effort on maintenance tasks? Is the hardware on which your applications are running ready for a refresh? As the hardware reaches the end of its life, or as additional capacity is required, consider installing high-performance systems that will provide greater flexibility for the future.

- Install a powerful automation and management platform that can provide visibility and consistent functionality across multiple environments and deployment models. By introducing a platform like HPE OneView, you can eliminate the complexity associated with disparate management tools, while providing IT and LoB stakeholders with the visibility they need to make business decisions.

- Bring your current cloud applications back into the fold—and prepare for tomorrow's applications and technologies—by deploying an API that offers a high level of integration with multiple environments. Look for an API that enables you to pool resources, allowing you to automate deployment and scaling of cloud apps across environments.

- Talk to your IT partner about innovative, new on-demand consumption and financing models, to make the most of your capital investments, and prepare you to respond quickly to changing business needs. Seek out a service that provides a "buffer" of resources to augment existing data center infrastructure, allowing you to rapidly scale on-premises workloads without paying for unused capacity.

THE LAST WORD

The relentless pace of technology innovations shows no signs of abating. To prepare to leverage tomorrow's disruptions—or perhaps to introduce a few of your own—you need an IT department that is fully adaptable and ready for anything. That may require new processes that reflect a tighter working relationship among LoB and IT; and between developers and operations. It may require new skills, as IT specialists broaden their scope. It certainly will require a flexible infrastructure foundation.

Composable infrastructure describes a fully integrated data center environment, in which infrastructure resources are largely abstracted, with software-defined functionality controlled by powerful platforms; and in which APIs enable disparate environments to function as a single, fluid pool of resources. Composable infrastructure maximizes flexibility and control, ensuring that compute, storage, and fabric resources are allocated to applications as needed.

Composable infrastructure also provides your business with a smooth pathway to the hybrid future. As workloads draw from more and more data sources, and micro-services become the building blocks for enterprise applications, businesses will increasingly run on a hybrid cloud infrastructure—one that comprises multiple environments and delivery models: traditional and cloud, self-managed and hosted, local and remote, physical and virtual.

The good news for IT leaders is that composable infrastructure is a future-facing approach to engineering the data center. You can build a roadmap that supports both traditional workloads on your existing infrastructure and new apps that were built for scalability and rapid deployment in the cloud.

The goal of composable infrastructure is to provide your business with a technology foundation flexible enough to support today's needs (people, processes, and technology), and prepare you for the unknown future. If you can do that for your business, you will be able to not just weather, but embrace, tomorrow's disruptors.

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For information about composable infrastructure, visit www.hpe.com/info/composable

For information about composable infrastructure for hybrid cloud environments, visit www.hpe.com/info/CloudGiants.

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