



HPE Pointnext on Digital Transformation

Enhance customer experience and achieve great business outcomes

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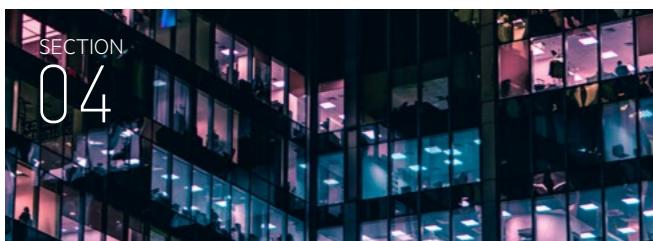
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Introduction



By Ana Pinczuk, senior vice president
and general manager, HPE Pointnext

Your future is digital

Imagine this: A fan at a GT car race taps her smartphone and watches her favorite driver maneuver the course from a camera installed inside the vehicle's cabin.

Or a printing press worker wears a pair of Google's smart glasses that lets IT experts in a different location see a tech problem as if through the worker's eyes and then helps him fix it. How about a city Internet system that allows a mother to use her smartphone to check up on her kids in school?

These are not futuristic scenarios but actual examples from a handful of forward-thinking companies and cities around the world. The M1 GT team, which races the Audi R8 LMS, worked with us to create such an app for its race fans. We helped the HP Printer Group, our former sister division, adapt Google Glass technology for troubleshooting at a large printing press company. And we partnered with the Smart Dubai Government initiative to create a state-of-the-art connected city for Dubai citizens.

What's making these improvements in the way we work and live possible is our ongoing digital revolution. Advances in digital technologies are disrupting whole sectors of our society. Today, both businesses and governments want their users to enjoy new experiences. The digital revolution can help them drive customer satisfaction or boost revenues or reduce costs or manage the risks—in other words, achieve real outcomes.



One of my favorite stories of digital transformation is Netflix. It started as a logistics company that mailed movie DVDs to your home. Then it pivoted to streaming video over the Internet, which became hugely popular. Now the company is building services on top of that digital platform, enabling customers to watch Netflix original shows like “House of Cards” and “Narcos.” Netflix has gone through a continuous digital transformation to enhance its customer experience and achieve great business outcomes.

Everything is being transformed by IT, and the change is constant.

IT services, of course, are at the center of these digital transformations. Cutting-edge consumption models that offer flexibility and an Intelligent Edge that spawns innovation will help deliver new customer journeys and new ways of experiencing the world. The way to think about it is that the customer experience is the IT experience. Whether it's a product like Dropbox cloud storage, a brand like craft e-tailer Etsy, or a relationship like low-income entrepreneur financing via global platforms like Kiva, these are experiences that are enabled through IT. Everything is being transformed by IT, and the change is constant.

The best IT consumption models today deliver flexibility and optimal business outcomes. Some of our customers, for example, tell us that they don't know if they have the right capacity to handle the mountains of data being produced. Our research shows that 50 percent of enterprises have experienced downtime because of poor capacity planning. Sometimes data is growing so fast that a business is not able to manage it in the right way. Sometimes companies have all this expensive equipment and they are underutilizing it. We can help you manage your IT capacity so you can achieve the outcomes you need when you need them. And if financing is an issue, you can pay as you go.

Today, with Hybrid IT, we can manage capacity for you with third-party cloud providers so you can add what you need in minutes instead of waiting up to three months, as is typical today. At the same time, you can keep your mission-critical data on your in-house servers. You get the speed and affordable cost of the cloud with the security and control of your own environment.

Ultimately, flexible consumption will bring greater benefits than just speed and cost savings. It can help your operations move from being reactive to proactive and ultimately predictive. One of the benefits

of public cloud is you don't have to worry about the infrastructure, but what if your infrastructure took care of itself on-site? What if your IT systems could tell you about potential issues before they occur? For example, a shipment of crucial parts could show up at your factory when you didn't even know there was a potential problem. The beauty of this is that the more we can add artificial intelligence to data analytics and operational support, the more your infrastructure can take care of itself and the more time gets freed up for line managers to work on innovation.

At the same time, we're witnessing innovation driven by what's called the Intelligent Edge. Thanks to the exponential growth in sensors, smartphones, and other devices, you can now communicate and analyze information gathered from workspaces, consumers, and even natural phenomena such as the weather. The Intelligent Edge encompasses computing, storage, and connectivity that can be trusted and secure, and that will enable businesses to harvest data for insights and actions near the source of that data, whether it's by the objects themselves or in nearby servers.

"The future is already here. It's just not evenly distributed yet."

WILLIAM GIBSON

The M1 GT race team mentioned above is a great example of this. We worked with the team to create a mobile, location-aware app. The technology brings fans closer to the event and the event sponsors. It has the race schedule, information about the drivers, real-time weather updates during the race, plus the time and position of the car fans are following. You can even see the driver in the car live, which has never before been done. And, of course, if you get hungry, you can order popcorn and lemonade and have it delivered already paid for at your seat. We worked with many outside partners to integrate these software solutions to provide these custom-focused services. The point is, we are not sitting still. We have to drive continuous innovation.

The new technological world I've described here is within our reach. The articles that follow describe real-world examples of how flexible consumption models, Hybrid IT, Intelligent Edge, and security infrastructure work in the real world. As the science fiction writer William Gibson put it, "The future is already here. It's just not evenly distributed yet." I believe that this future is in reach for all companies no matter what size or industry. It's simply a matter of embracing the technology in ways that are smart, economical, customer-focused, and result in desired business outcomes. Now let's begin.

01

IT as a service: Cornerstone of the digital enterprise

By Toby Weiss, director of the Hybrid
IT platforms team, Global Center of
Expertise, HPE Pointnext

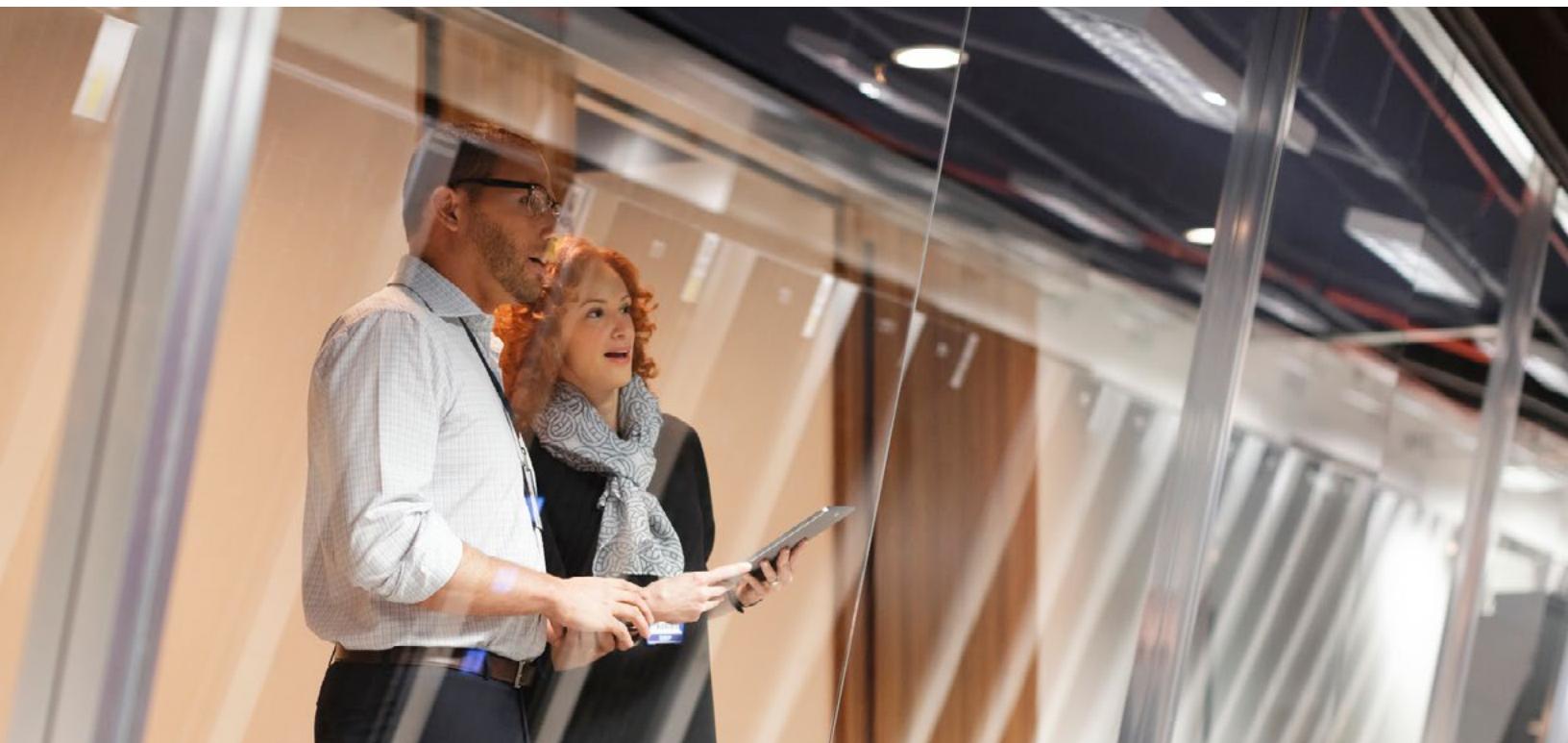
The next service revolution

Think about the last time you went to your favorite restaurant. Did you choose from a rich selection of menu items? Did you weigh cost versus value? Did a delicious meal arrive within a reasonable period of time? We're betting the answer is yes, or you would have gone elsewhere.

Now think of your most recent experience with your company's IT department. Were you able to choose from a varied catalog of IT services to get the outcome you wanted? Did you pay only for the IT firepower you needed? And was the entire process, from request to completion, speedy?

If you answered yes to all those questions, you're working in a company where the IT department is running like a well-oiled machine. The organization is engaging in what we call IT as a service. When a company moves to such a service model, IT becomes standardized, consolidated, and virtualized. It offers a catalog of software services and hardware configurations designed specifically to meet each business units' needs. Instead of working in bureaucratic silos and reacting—often slowly—to various projects on an ad hoc basis, the IT staff is flexible, fast, and focused on the needs of their internal customers.

Just as consumers have a multitude of choices for where they shop for goods and services, businesses now have numerous options for sourcing IT to help them get their work done. With that one simple change, the IT landscape has changed dramatically. Put plainly: IT departments now have competition. If they attempt to remain in their old role—as technical guru—they will eventually become obsolete.



The premise behind the concept of IT as a service is simple: Offer your internal clients the power of choice, allow them to pay only for what they use, and deliver it speedily. In this model, IT functions less as a tightly controlled department and more as a business. It becomes a broker for its internal clients, finding the best technology at the best price and negotiating service-level agreements (SLAs) and orchestrating IT from the initial request to support of the final outcome. With the advent of cloud computing, most companies now function under the Hybrid IT model. They use a combination of legacy systems, cloud computing, and internal and external IT. The new role of IT is to act as a broker for all these different choices. For an example of how the IT-as-a-service model works, see “Otto Group accelerates IT service delivery by 90%” below.

40%

Amount Otto Group cut its IT running costs after implementing HPE's transformation framework.

Moving to an as-a-service model is no small task, however. It involves more external partners and moving parts and therefore a very different mind-set. As your organization moves to a service-oriented model, you will need a roadmap. Having helped hundreds of such companies, we offer a few suggestions as you begin your journey.

What to think about as you move to an as-a-service model

Having worked on hundreds of IT transformation projects, we are able to identify seven major areas companies should address in their overall strategic plan for transformation. While leadership teams that miss any one may exact positive change, they will fall short of true transformation.

To become a true digital enterprise, offering IT as a service with full benefits, the following areas need to be addressed:

- **Technical infrastructure and architecture:** Moving to an IT-as-a-service model means looking at enterprise infrastructure architecture differently. Rather than organizing your architecture around projects, you need to organize it around relevant business services. It requires a shift from thinking in terms of hard assets to thinking instead of the business needs of customers.
- **IT management framework:** Here again, IT leadership should move the focus away from assets and projects to service architectures. Along with that shift, leaders need to rethink security, network, and risk management policies, because of the increased number of interactions with third parties.
- **Finance:** The as-a-service model flips IT's finance model on its head. How do you price on a pay-as-you-go consumption basis, which comes with far more variables than traditional pricing models? For instance, price too low and IT has a budget deficit; price too high and business units will find external providers that are more cost-effective.

- **Culture/people:** Moving to IT as a service can ruffle the feathers of IT specialists. Deeply technical, hands-on types may not have the skills or temperament to move to a cross-functional, service-oriented culture focused on managing IT rather than delivering it. Training helps, but in some cases, even the right training will not equip some employees with the skills needed for a service-oriented culture. Be open to hiring people with different skills or outsourcing some functions.
- **Process:** Business users see IT as an enabler, not as an end goal. To better serve business clients, IT leaders will need to make internal processes more consistent and agile. Determining how they will handle, say, unforeseen incidents such as outages or how they measure success will play a role in customer satisfaction.

The as-a-service model flips IT's finance model on its head.

- **Service management:** Most IT departments are good at managing systems, figuring out, for example, how many servers are required at what run rate. Because IT professionals will now be acting on behalf of their business clients when negotiating SLAs, they will need to become well versed in the language and logic of business. The technical knowledge is still necessary, but IT professionals now need to add business savvy to their wheelhouse.
- **Application management:** Business units own the applications, but IT tends to have control over them. Getting business units to buy into pricing models and support agreements is key—otherwise, SLAs, no matter how well negotiated, will become a point of contention. IT employees need to clearly understand the business user's end goal and day-to-day requirements in order to successfully manage the company's application landscape.

The new model

IT as a service takes companies from the old model—siloed and slow—to a much more customer-centric one. Otto Group is just one example of what companies around the globe are doing to transform IT as they become digital enterprises. With internal clients now able to access a multitude of external options and service providers, IT departments need to continue to up their game.

IT is on a journey we expect will keep morphing as the business landscape does. We expect companies with the most flexible, service-oriented IT will emerge the winners.

Otto Group accelerates IT service delivery by 90%

Alexander Hauser, vice president of IT at the Otto Group, was worried. The global retailing giant's subsidiaries were under no obligation to use his IT department. "This put us in direct competition with external service providers," recalls Hauser. When he measured how his IT team was doing compared with external providers, he found that it came up short. For one thing, his IT team was simply taking too long to provide hardware and services for databases, networks, and other areas. "Our businesses needed to provide their customers with new services such as online stores—and quickly," says Hauser. "In our modern world, it's simply unacceptable to take two months to do something such as provide new servers for tasks like these."

Franck Borchard, head of IT at Otto Group, also saw the need for change. "It was clear to us that we had to completely modernize our traditional IT delivery model." The company used Hewlett Packard Enterprise's transformation framework to address not just architecture and technology, but also its service portfolio, organization and culture, operating and software development processes, and governance.

After working with HPE, Otto Group IT is now 90 percent faster at providing new infrastructure services. "Shorter IT delivery times mean that businesses within the Otto Group can implement their own projects—and therefore innovation—significantly faster than before," explains Borchard. "This includes a number of projects which are driving digital transformation within the group, something that is a top priority for us."

But shorter delivery times were not the only win. Otto Group IT's running costs went down by roughly 40 percent, a benefit that can be passed on to customers. The improvements are having a profound impact. Otto Group IT now has signed contracts with some of the internal businesses that previously did not work with the organization.

And these days, Hauser isn't worrying so much.



01

NOW TO NEXT

IT as a service: Lessons for leaders

IT as a service is about offering internal clients the power of choice. They pay only for what they use and get it quickly.

Implementing a service-oriented model is no small task, requiring a roadmap and a new mind-set to deal with more external partners and moving parts.

A successful strategy will address seven major areas, starting with technical infrastructure and ending with application management.

A photograph of a man with a beard and glasses, wearing a light grey sweater and dark trousers, standing in a server room aisle. He is looking towards the right, holding a small black tablet in his hands. The room is filled with tall, grey server racks on both sides. In the background, there's a white control panel with various buttons and indicators. The floor is a polished concrete.

02

How to modernize your data infrastructure

By Lorenzo De Amici, worldwide storage transformation practice lead, HPE Pointnext

Modernizing your data infrastructure

A coming wave of IoT will generate vast amounts of data, but most companies are using an outdated patchwork storage system that's woefully inadequate.

The Internet of Things is revolutionizing how we do business. GE monitors its jet engines remotely to identify potential breakdowns before they happen. Homeowners use Google's Nest thermostat to control their air conditioning remotely. And Barcelona's city government collects real-time traffic information to help manage parking and reduce congestion in the city.

The IoT allows companies to gather crucial data from remote sensors and chips placed in products, cars, supply chains, and even a customer's smartphone. This information helps companies improve their products and services and thus their bottom lines. However, the IoT revolution is also generating an explosion of data for which few companies are prepared. Gartner forecasts that the IoT will grow to include 8.4 billion objects worldwide this year, up 31 percent from 2016. That number is expected to exceed 20 billion by 2020.

These objects generate far more data than traditional software applications. The storage infrastructure that most companies currently rely on simply cannot keep up with the coming wave of data, which includes unstructured data, machine data, media information, and object-based data.



Many companies will be overwhelmed by it. As it is, the typical data platform is already challenged and overloaded, yielding sub-optimal performance and efficiency.

Scaling these outmoded platforms to keep up with rapid data growth is out of the question. Why? Most companies today use patchwork storage systems built from multiple individual projects over time. The result is a complex collection of applications, each with its own claims on available storage, tied together in a way that is often highly inefficient. It is costly and complicated for companies to manage these overloaded, fragmented storage resources, especially when they have multiple applications and users. And it only gets worse as new data sources flood available storage resources and companies need to serve users spread out around the globe.

Companies must modernize their data infrastructure to prepare for the coming tsunami of IoT data.

Unexpected—and costly—downtime is a far too common by-product of such legacy architecture. As a result, many companies spend an inordinate amount of time and effort attempting to manage, protect, and back up their data. Often, they cope by simply adding more storage—which can lead to further storage management headaches—and adding more people to manage it all. Operational expenses continue to rise, while performance continues to deteriorate.

Riding the IoT wave

Companies must modernize their data infrastructure to prepare for the coming tsunami of IoT data. Instead of a patchwork approach, companies should employ a comprehensive data management strategy that takes their workload and data needs into account and includes automated processes to manage, provision, back up, and protect data. This approach yields faster applications, simplified infrastructures, and reduced costs.

Where to start? Throwing additional storage at the problem is not the answer—in fact, it usually exacerbates it. The transformation to a modern data infrastructure begins with envisioning storage optimization for each particular enterprise. Customers understand their own data storage needs best. That's why HPE Pointnext experts work with each customer to create a bespoke transformation roadmap. The goal is to create a modern, integrated storage system with zero disruptions to a company's business applications along the way.

New kinds of storage—faster, more efficient all-flash storage in particular—are a key aspect of this modernization. All-flash storage can provide a real boost to the performance of business applications. But merely layering faster storage on top of an enterprise's current architecture is the wrong approach. Instead, all-flash storage must be integrated seamlessly into the existing infrastructure. Companies must identify mission-critical applications that need the speed and performance of flash storage. They also need to prioritize workloads, processes, and applications for migration to the all-flash tier. This triage frees up existing storage resources for other workloads, including second-tier data that is accessed less frequently.

Many companies need to maintain multiple data centers in far-flung locations. They need fast and reliable access to these centers, with syncing between them. This requires a geographically distributed data repository and the ability to access data on public and private clouds. Traditionally, most companies have operated a main data center along with secondary facilities. This architecture is becoming outmoded and needs to change. A better design entails a distributed system in which applications can leverage storage resources from any data center, regardless of location.

Why automation matters

Automation is critical to a modern data architecture. According to market research firm IDC, 30 percent of the typical company's IT budget is spent on storage. Yet the bulk of that money—about 85 percent—is spent on managing copies, often a manual process that increases head count and operational expenses while reducing quality.

Truly digital organizations need to implement software-defined data management and automation. This reduces costs and also facilitates the integration of far-flung data centers. In addition, data analytics can reduce the overall cost of data storage by identifying redundant, obsolete, and trivial data and then removing it from primary storage to be managed elsewhere.

Companies also need the right software tools to map infrastructure and workloads that manage provisioning and configuration, and then factor in application requirements and infrastructure topology. Modernization also means incorporating data management, migration, protection, monitoring, analytics, and operations. Crucially, a modern storage infrastructure must prioritize data recoverability and business continuity.

Infrastructure that is fragmented into silos increases the risk of unplanned, unexpected, and costly downtime. HPE Pointnext ensures end-to-end data protection by making recoverability and

85%

of IT storage budgets
are spent just
managing copies.

business continuity part of the infrastructure design. That means designing a tiered infrastructure for resiliency and long-term data protection. The next step is policies that define backup and recovery strategies to protect all applications and business processes from interruptions, and to protect all data from loss or corruption. This requires organizations to plan and test for disaster recovery.

The goal is to create a modern, integrated storage system with zero disruptions to a company's business applications along the way.

The last step in the modernization process is education. Once HPE Pointnext has completed the phased transformation required to modernize an enterprise's data storage architecture, it educates the customer about how to operate and oversee the new system.

The end result is a modern infrastructure with storage resources that can be mapped dynamically to different workloads, applications, and uses. This architecture is managed and orchestrated by software, with minimal manual intervention. Data is protected, while downtime and business process interruptions are minimized. It all combines to boost efficiency, reduce complexity, and slash costs.

New Zealand bank speeds data delivery 14x

FNZC had a problem. The New Zealand brokerage and investment banking firm relied on an aging storage architecture that was inefficient, slow, and difficult to manage, with constant network delays. The backup technology was even older, which threatened the company's ability to recover and restore data in a timely manner.

"Our goal was to find a simplified solution with a better management approach. [We needed] a game-changing solution that could future-proof us for the next five years," says John Sew Hoy, the company's infrastructure architect. Additional goals included saving money and reducing the firm's carbon footprint.

After researching different solution providers, FNZC turned to Hewlett Packard Enterprise to modernize its storage platform. HPE delivered a single, high-performance backup architecture with all-flash storage, high-performance servers and backups, and virtual desktops for users. The simplified system allows the bank to access its two data centers in Auckland and Wellington via a single, user-friendly application. Previously, employees had to connect with one or the other.

The benefits have been substantial. Updating and maintaining desktop systems, a process that once took an hour, was reduced to 15 minutes, significantly reducing downtime for users. A data load exercise that previously took four hours was cut to 45 minutes, freeing up engineers to focus on other pieces of infrastructure rather than devoting hours at a time to storage.

Non-technical FNZC employees also saw big benefits. They say they're now enjoying a better experience with faster response speeds, including data delivery that's up to 14 times faster than with the old system. Applications are reading and writing data to storage 18 times faster than before. That's an especially big deal in finance, where speed and accuracy are everything.

The firm's carbon footprint has shrunk considerably as well. Instead of the 17 servers and 59 disk drives that FNZC's previous system required, the HPE solution uses just two server racks and 12 disk drives. The reduced carbon footprint is delivering solid cost savings in power consumption and cooling requirements.

Today, FNZC enjoys faster data delivery and backups, more secure data, easier maintenance, and energy and cost savings. "It just works," says Sew Hoy.

02

NOW TO NEXT

Modernizing data infrastructure: Lessons for leaders

Companies need to modernize their storage infrastructure in order to manage the coming explosion of IoT data.

This requires a new approach to storage, notably faster, more efficient all-flash storage.

Data recoverability and business continuity are absolutely essential to your data architecture.

The background of the page features a nighttime photograph of a city skyline. In the foreground, the motion of vehicles on a highway creates long, colorful streaks of light (light trails). The city skyline in the background is composed of numerous skyscrapers, their windows glowing with various colors of light against the dark sky.

03

IT on the fly

By Mohammed Safder, worldwide lead, IT strategic consulting services, HPE Pointnext

Drill or hole?

Ted Levitt, the legendary Harvard Business School marketing professor, once said, “People don’t want to buy a quarter-inch drill. They want a quarter-inch hole.” This holds true more than ever in today’s fast-paced digital age.

C-suite leaders have long stifled yawns as their technical counterparts waxed eloquent describing IT tools such as computing capacity and server configuration. But talk to chief marketing officers about providing speedy, online ordering for customers during peak selling season or to chief financial officers about chopping time off a new product launch and you suddenly have their attention. Why? Because you’re speaking the language of business outcomes.

Partnering with business units to help them reach their goals is a far cry from the traditional support role IT plays. IT staffers must grapple with how to handle internal customers of every size and type—from marketers who are designing a customer portal to manufacturing chiefs who are trying to decipher the flood of data from machine sensors. To serve such diverse clients well, IT professionals need to know how the business works and provide the technological firepower to solve new challenges as soon as they arise.

In most cases, today’s legacy systems aren’t up to the task of providing speedy, flexible service. They lack the capacity to ramp up or down as business units start and stop projects—sometimes at a moment’s notice. Traditionally, it has taken IT departments days, weeks, or months to install new server hardware to accommodate the needs of internal business units. That won’t fly in today’s rapidly shifting markets.



What companies need is an IT system that can automatically adapt to changing market demands without disrupting or delaying the organization's workflow. This is where composable infrastructure (CI) comes in. Essentially, CI is an IT framework where computer processing, storage, and networks become a shared resource that can be accessed anytime, anywhere. In other words, the IT department can quickly "compose" or reconfigure its resources based on the needs of the business. The business gets and pays for only the IT resources it needs.

Today's legacy systems aren't up to the task of providing speedy, flexible service.

In a traditional IT infrastructure, computer processing, storage, and networks usually run on separate platforms. This division creates islands of hard-to-manage, underutilized resources. In contrast, CI pools resources for maximum efficiency and flexibility, much like a cloud computing model. When a business unit requires IT resources, a software developer can simply request the infrastructure capacity needed for a project by writing a single line of code. The extra capacity becomes available in not days, weeks, or months but minutes. When the business unit no longer requires as much IT firepower, that extra capacity gets "returned" to the pool. In essence, the job of the IT department is to orchestrate the ebb and flow of IT resources throughout the organization on a continual basis.

How composability boosts your ROI

The beauty of CI is that it reduces the operational complexity for the IT department, which in turn lowers the total cost of ownership by reducing capital expenditure and operating expenses. Here's how:

- **It covers multiple priorities simultaneously.** With composability, management no longer has to choose between funding legacy applications that are business-critical and investing in new apps that can lead to innovation and growth. The CI environment is robust enough to support both at a lower cost than legacy systems.
- **It moves IT from cost center to a business partner.** If IT keeps functioning as a support cost center, the business will eventually turn to external suppliers to save money. With CI, IT has the tools to work with the business units to find creative ways to lower costs while improving service.
- **It allows more efficient management of resources.** Apps have different requirements for computing, storage, and networking. For example, some apps require high-performance storage, while others have low-performance requirements. CI's fluidity provides the right resources for an app at any one time, eliminating the waste that occurred in the traditional, siloed, static model. This translates to cost savings that can be used to fuel growth.

Strategically, CI allows you to compete in the digital age in a way traditional infrastructure never could. Bimodal IT, a term coined by research firm Gartner, is what most companies must deal with now—two modes of IT operating simultaneously. Mode one is the traditional, stable model that emphasizes safety and accuracy. Mode two is the wave of the future—meaning IT becomes exploratory and nonlinear, emphasizing agility and speed.

CI allows companies to function in both modes at the same time, adapting and changing to whatever the future holds. And that is what winning in the digital world is really all about—innovating on the fly.

The business benefits of composable infrastructure

From speed to market to improved employee productivity, CI can help organizations more easily achieve their business goals.

Business Goal	Composable Infrastructure Benefits
Beat competitors to market	Composable infrastructure reduces provisioning time from weeks to minutes. Its fast, automated, flexible consumption model delivers capacity ahead of demand.
Improve employee productivity	Because composable infrastructure uses automation, it minimizes human friction—reducing the chance of human error and freeing employees to focus on more strategic areas like innovation.
Optimize costs	Paying only for what is used provides companies with significant savings. Being able to repurpose IT resources from one project to another provides additional cost savings.
Improve customer experience	Composable infrastructure helps ensure the right resources are available during peak periods of customer need. For instance, a mobile banking app serving hundreds of thousands of customers may be far more taxed on the 15th day of the month when customers get their paychecks. With composable infrastructure, the spike is handled and then computing resources are returned to the lower levels of a typical day.
Secure proprietary and customer data	IT departments gain more control of their infrastructure in vulnerable areas like data centers that hold confidential customer information. Composability allows them to act speedily to protect privacy.

Composable infrastructure accelerates cures for rare diseases

As creator of one of the world's first genomic medicine programs designed to diagnose rare diseases, nonprofit HudsonAlpha wants to help eradicate childhood genetic disorders, cancer, and a host of other maladies. But to do that, it needed a more robust and flexible infrastructure, one that could handle the massive amounts of data that genomics research produces. The Huntsville, Alabama, organization generates more than one petabyte of data per month—roughly four times the size of the Library of Congress' database. And as a nonprofit, it had to be able to crunch all this data while watching costs. Enter Peyton McNally, HudsonAlpha's CIO.

McNally and his team found it increasingly difficult to provide researchers with the data they needed when they needed it. Part of the problem was that genomics algorithms and apps require extremely powerful computers. With roughly 800 researchers and scientists using the IT system to generate increasing amounts of genomics data, McNally knew the organization's traditional infrastructure no longer had the firepower to meet the company's needs. HudsonAlpha chose Hewlett Packard Enterprise's composable infrastructure, Synergy, to address its challenges.

Now, since deploying Synergy, the organization can repurpose hardware rapidly and almost instantaneously provide software solutions. In addition, with Synergy, HudsonAlpha's storage capacity increased and its cost per terabyte was reduced. "Having resources that can be recapitalized for other efforts was obviously a huge driver for our decision to use Synergy," McNally explains.

Now HudsonAlpha is positioned for a strong IT future with an infrastructure that can grow and flex as the organization does. And the organization is a step closer to finding cures for rare genetic diseases.



03

NOW TO NEXT

Composable infrastructure: Lessons for leaders

Composable infrastructure is an IT framework that enables resources to be quickly “composed” or reconfigured based on business needs.

Unlike traditional IT infrastructure, CI pools resources for maximum efficiency and flexibility, much like a cloud computing model.

CI lowers the total cost of ownership by reducing capital expenditure and operating expenses.

The background of the entire page is a photograph of a modern office building at night. The building has many windows, some of which are lit from within, creating a grid of glowing points against the dark sky. The facade appears to be made of glass and steel.

04

How to build a more effective workplace

By **Kitty Chow**, worldwide director for workplace and mobility services, HPE Pointnext

Jordan Whitmarsh, worldwide Intelligent Edge strategist, HPE Pointnext

Intelligent spaces

If you want to glimpse the workplace of the future, visit Box's new smart headquarters in Redwood City, Calif. The cloud storage company has designed an office complex that combines ultra-fast Wi-Fi, mobile "anywhere" communications, and Internet of Things (IoT) connectivity. When you arrive at Box, a mobile app linked to building-wide sensors recognizes you and provides you with turn-by-turn navigation to the correct meeting or work space within the company's 334,000-square-foot, seven-floor facility. Employees and visitors can quickly and easily find conference rooms or work desks, freeing up time for innovation and collaboration.

This is just one of the many benefits of marrying workplace design with technology. We call this the world of intelligent spaces, where employees can be productive, seamlessly and securely, anywhere, anytime, whether in a quiet work space, a conference room, a boardroom, or even an outdoor space such as a rooftop café. This is a world in which every employee has fast and complete access to the applications and data they need and can use any mobile device to schedule space, operate electronic whiteboards or projectors, or set up video conference calls.

How is this achieved? By ensuring that every technology and facility design decision is laser-focused on a single objective: Creating a workplace that adapts to how people want to work. Getting this right will allow organizations, small or large, to orchestrate workflows for maximum efficiency and productivity. And if done right, it will unleash the kind of innovation, creativity, and productivity needed to compete in the new digital economy.



Digitizing your workplace

Many companies have already made great strides in digitizing their workplaces—basic Wi-Fi and video conferencing are now very common. And closed-door offices and cubicle farms have given way to open-space designs, casual meeting areas, food bars, and other amenities that encourage idea sharing and other collaborative exchanges among workers.

Yet we still have a long way to go when it comes to creating intelligent spaces. Too much friction and inefficiency hampers our office environments. Many creative and talented workers still remain

Every technology and facility design decision is laser-focused on a single objective: Creating a workplace that adapts to how people want to work.

shackled to desks on which sit hard-wired computers that act as their main—and sometimes only—access point to the applications, software, and data they need to do their work.

The corporate world is moving away from a hierarchical organization structure toward a team-based architecture. Today, teams need to form and disband depending on the project at hand. Cross-functional teams meet when necessary to make sure a new product launch is on track or when a new digital marketing initiative needs adjusting. This means employees need the right tools to work in a fluid environment where they and their colleagues can collaborate whenever and wherever the need arises.

49%

of employees at companies with “work anywhere, any time strategies” say they’re more productive.

For example, why do so many workers have to struggle to locate and reserve conference rooms? When they arrive at these spaces, why are they often unable to access the information they need to conduct their meeting? Why does presenting or sharing information require burdensome technologies that must be delivered and implemented by an IT professional?

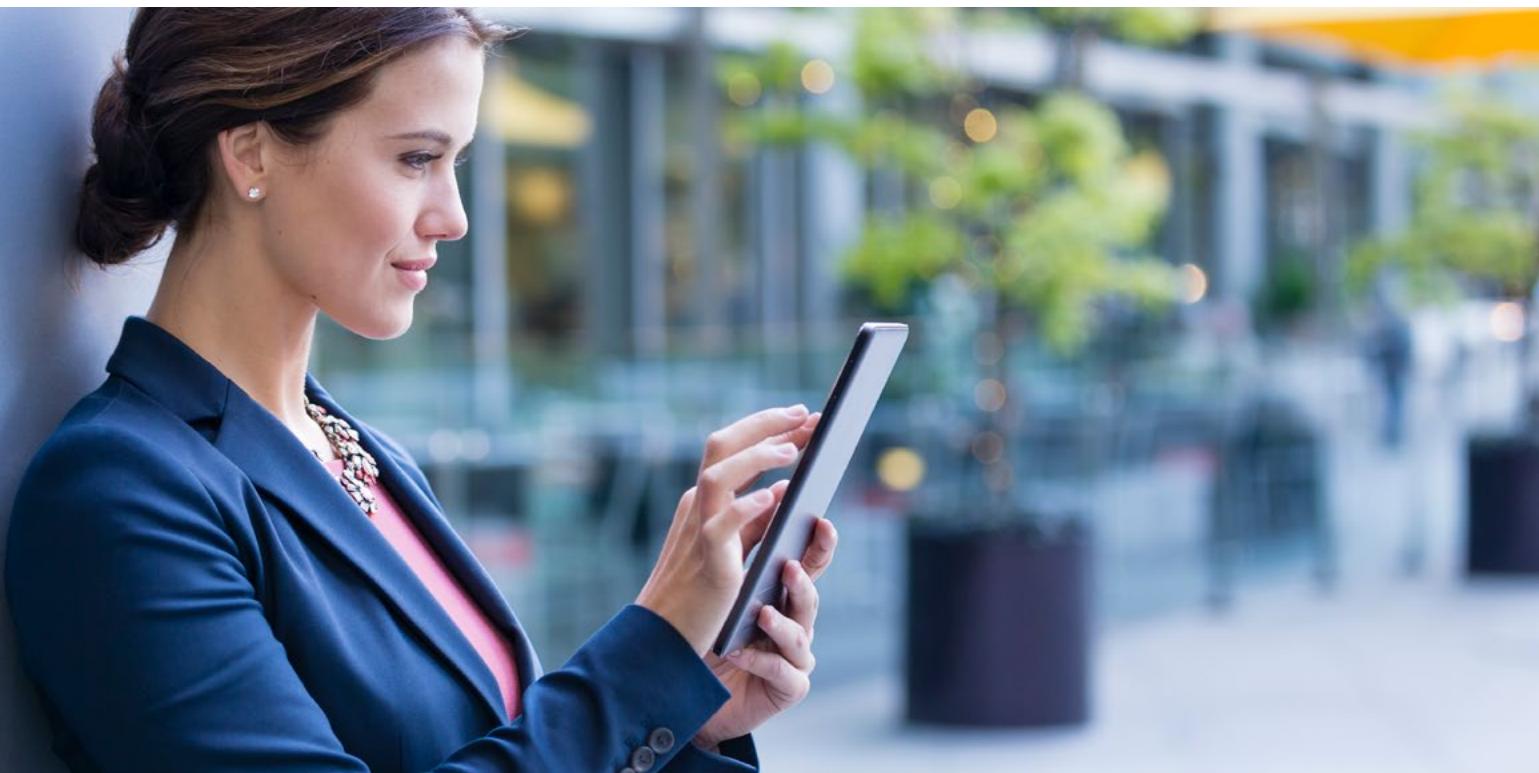
Imagine a world where workers can set up a meeting with the touch of a smart screen, invite people from different departments, share data and files, and at the same time loop in an expert who

might be sitting in a company subsidiary in Singapore. This world already exists. Employees at the new 230,000-square-foot Santa Clara, Calif., campus of Aruba have rapid and secure access to all applications and data at all times, the ability to find colleagues or reserve conference rooms using mobile devices, and wireless projection for idea or information sharing.

Aruba invested in its facilities to make employees happier. The company realized that to attract and retain the most talented workers, it must provide employees with a modern, digital environment where they can work efficiently and seamlessly. For many workers, these factors are just as important as pay and benefits when choosing an employer. In fact, among employees who work for companies that pursue mobile strategies that support the ability to work anywhere and at any time, 49% say those strategies make them more productive and 38% say they make them more satisfied with work, according to a 2016 study by the Economist Intelligence Unit.

Better working through design

Many organizations have little or no visibility into how their facilities are being used or how productive their employees and processes truly are. And these businesses may also be losing—or worse, failing to attract—the talented employees for whom the physical space in which they work is increasingly important. Static, unattractive work environments that lack support for spontaneity continue to constrain workers and prevent them from realizing their full potential. Such environments have also meant enormous costs for organizations in terms of lost productivity and inefficiency, as well as forgone opportunities for new ideas and innovations, and revenue and profits.



Many organizations have implemented piecemeal solutions to these problems, of course, including innovative facilities, architecture, and technology. What continues to elude even these forward-thinking companies, however, is a fully harmonious workplace where information technology and facilities work together seamlessly to deliver an ideal user experience. This is the experience that talented digital workers want and increasingly demand.

Creating this truly harmonious experience requires a fundamental rethinking of how the workplace is designed. Facilities and information technology, the physical and the digital, for too long have been silos considered and created separately from each other. They must be integrated, and decisions about technology and workplace design—finally unified—must always be considered through the lens of the people actually doing the work.

Many organizations have little or no visibility into how their facilities are being used or how productive their employees and processes truly are.

The good news is that the mobile-first, cloud-first and IoT technologies that enable such intelligent spaces already exist. To enable these environments, IT departments need to deliver:

- Secure, untethered, and consistent connectivity anywhere
- Consistent workplace productivity solutions across all devices
- Collaboration solutions with cloud economics
- Insight and experiences driven by location services and connected things
- Context and automation that delivers efficiency and promotes innovation

These are the building blocks of a truly digital workplace. Hewlett Packard Enterprise can deliver them, along with the map to connect them with existing facilities and legacy systems to integrate islands of technology functionality and curate a true user-centered work experience.

Five steps to an intelligent workspace

HPE Pointnext, the services organization of HPE, can accelerate this transformation to the digital workplace, starting with a mobile-first campus and branch network and universal productivity access from any device. This combination provides reliable and dynamic collaboration forming the foundation upon which to build and create immersive, IoT-enabled intelligent spaces.

The workplace transformation to intelligent spaces consists of five steps. First, connect and protect organizations with a Wi-Fi network that delivers capacity and performance above and beyond any wired connection. Then add location context with indoor location services and Microsoft's cloud productivity suite of applications to provide the tools users need. Follow that with deployment of the latest productivity solutions to enable employees to identify and make the best use of work spaces, including meeting rooms, huddle spaces, and desks. Finally, pull all the parts together with digital workflow and expert integration of identity and location data, facility availability, and calendars, for an experience that maximizes workflows and minimizes friction, bottlenecks, and slow points in employees' workdays.

Of course, each business and organization is unique. There are no off-the-shelf, turnkey solutions. Instead, HPE works with your organization, taking its workflow needs and goals into account, to design a tailored solution that works.

Organizations now have an opportunity to transform and integrate the technologies they use and the physical spaces in which they work. In doing so, they can create workplaces that truly support their employees, bringing them together to inspire one another, spark innovation, and ultimately thrive in the new digital economy.

Context-aware tech sparks collaboration

Consider this scenario: A multinational telecommunications company finds it is not using the space at its regional headquarters efficiently. In addition, employees are opting to work from home more than the company would like, limiting opportunities for collaboration.

It's a common problem that's hitting corporate America's bottom line. The U.S. General Services Administration has estimated that, on average, unused employee work spaces cost organizations \$10,000 to \$15,000 per employee annually.

The company in question overcame these issues by creating a "Next Generation Workplace" that incorporated cutting-edge workplace technology, reduced location costs, delivered new efficiencies around employee communication and collaboration, and increased overall employee satisfaction.

In collaboration with HPE, the company designed and implemented a new facility that uses state-of-the-art, context-aware technologies. Instead of fixed and named desks, the focus is on flexible working: shared desks, "hot desking," and easy-to-use collaboration technology. Employees can work virtually and cross-functionally. Multiple collaborative spaces encourage spontaneous conversations.

In this way, the company was able to create a virtuous cycle: By building a work environment that fosters collaboration, productivity, and innovation, it is able to attract and retain the best employees.



04

NOW TO NEXT

Building the workplace of the future: Lessons for leaders

Ensure that every technology and facility design decision is laser-focused on a single objective: creating a workplace that adapts to how people want to work.

Intelligent spaces are becoming vital as the corporate world moves away from a hierarchical organization structure and toward a team-based architecture.

Dynamic work environments and user choice promote employee engagement, which maximizes their full potential.

05

How to drive business at the network edge

By Yanick Pouffary, chief technologist for IoT and Intelligent Edge Services, HPE Pointnext



The coming data storm

Imagine a state-of-the-art airport where you can use your phone or tablet to effortlessly check in for a flight or avoid long lines at customs or immigration. The same technology keeps you updated with flight status alerts. While you wait to board your flight, it sends you special discounts from airport vendors. Just tap on an indoor navigation app to locate them.

Not impressed? How about a state-of-the-art hospital where inventory management is automated so that each operating theater, test facility, and storage room always has the correct supplies and medical tools when needed? Think of what that would do for the quality of patient care.

Or maybe an industrial equipment manufacturer embeds sophisticated sensors in the compressed air systems it sells. Those sensors generate data that can be collected and analyzed in order to predict and prevent unexpected and costly outages on customers' production lines.

Corporate networks are expanding rapidly, encompassing more people, objects, systems, and physical spaces every day. By 2020, Gartner predicts that some 20.4 billion Internet of Things (IoT) devices will connect to enterprise networks each second. These devices will range from wearable computers to agricultural sensors that test soil moisture to diagnostic chips inside heavy equipment such as power plant turbines. The number of connections among these objects will expand exponentially, along with the systems and users that tap into them.



It is a perfect storm of data, the sheer magnitude of which will require businesses to change how they design and operate their networks—and the processes by which they absorb and analyze the information those networks generate.

Intelligence must be built into all layers of the network, including the edge, the cloud, and the core data centers.

An opportunity to innovate

Managing such networks is complex, to be sure, but it also offers businesses an unprecedented opportunity to innovate, realize efficiencies and cost reductions, and enhance the experiences of customers, employees, and other users, all by using the insights gained from people and things at the edges of their networks.

The businesses that can best exploit the digital connections between systems, people, places, and things—incorporating them into the Intelligent Edge of their networks—will win the day with useful services, disruptive technologies, and compelling business models.

How will it work? The network's Intelligent Edge—defined as the people, spaces, and objects that connect to the network around the edges—is where data is collected and where the network will need to analyze and act on that data in real time. For example, it will be able to detect a failing piece of equipment and generate a maintenance event, recognize low inventory and automatically place an order to restock, or identify a nearby potential consumer and deliver useful information or a special retail offer to their smartphone. The possibilities are endless, but they all entail seamless and automated connections between people, places, objects, and systems.

While that data collection, analysis, and action takes place at the Intelligent Edge, much relevant analysis will still take place back at data centers, as businesses will need to aggregate all that data over time and analyze it in order to improve the way the network reacts to it in future. So intelligence must be built into all layers of the network, including the edge, the cloud, and the core data centers.

Any business hoping to create an Intelligent Edge needs to take three steps now to prepare:

- **The edge of your network—people, devices, and spaces—must be a growing, significant piece of your Hybrid IT infrastructure.** This will require shifting some of the computing workload from centralized data centers to the network edge. The challenge here is to establish core principles around your intelligent network so that it can adapt to ever-changing requirements, seizing and acting on opportunities that it may not have encountered before.
- **Businesses need a hybrid cloud strategy to take full advantage of the Intelligent Edge.** What are the opportunities for cloud computing based on your business and workload needs? Identify the systems, services, and applications that have the biggest impact on your mission and revenue, as well as the costs of network modernization and moving processes from the core to the cloud and the edge. Work with human resources to make sure you have the best talent to create and maintain the dynamic, Hybrid IT environment that an Intelligent Edge will require.
- **Security and dependability are key aspects of every network.** With new devices added to your network each day, transparency decreases, and it becomes more difficult to know what exactly is running on your system. Applying traditional IT logic to maintain security across such an unstructured network is tricky. Some 84 percent of IoT adopters say they have experienced at least one security breach as a result of connecting to objects. Of course there is always the risk of disruption to the network—as well as to critical enterprise applications and processes—that comes from continuously introducing new capabilities. To mitigate this risk, try to find the right balance between incremental and innovative changes.

Prepare to accommodate change

How you respond to these three complex challenges will vary depending on your technology, your industry, and your strategy. But the one constant that can facilitate all responses is a network architecture that is simple, policy-driven, agile, and scalable. The network will need to be aligned with your business goals. Speed and flexibility will matter immensely.

When you design your architecture, think about “what we can do,” not “how it can be done.” With such an architecture in place, networks can adapt on the fly and react to problems, take advantage of new opportunities, and enhance user experiences, all by reacting at the edge instead of back in the data center. That means efficiency gains and cost reductions, as well improved business processes and better customer engagement, satisfaction, and loyalty. Simply put: It’s about making the network a source of value, not just another cost center.



Reinventing Rio's airport

As the primary host airport for last summer's Olympic Games, the managers of RIOgaleao knew they had a problem: The technology that helped them deal with 17 million passengers annually was barely adequate. And given the sharp increase in traffic that the Games would bring, they had to upgrade the airport's network infrastructure quickly.

With 90,000 passengers per day during the Games—an increase from the 40,000 it handles on an average day—the airport network needed to be much faster and more reliable. It also needed to be able to support mobile applications that could help travelers navigate the huge facility and assist airlines, concessionaires, service companies, and airport employees in serving the needs of those passengers.

That meant connecting the edges of the network—passengers via their mobile devices, spaces such as terminals and gates, and stores and lounges—with systems providing flight information, security, and check-in and boarding.

With a new one-kilometer long terminal and 26 boarding bridges, the most of any South American airport, RIOgaleao is not easy to navigate. So the airport installed more than 3,000 Bluetooth beacons and 500 Wi-Fi hot spots that allowed the airport to offer its own indoor navigation app, helping passengers find everything they needed with maps and turn-by-turn navigation on travelers' mobile phones, much like Google Maps or a GPS system in a car.

That same app also offers real-time information on flights, eateries, and shops, and allows passengers to pay for parking and get live help, all available in three languages. The faster network accelerated check-in, security, and boarding processes for all those passengers.

"It's crucial for us to give passengers an environment that becomes part of their journey, a place where they want to spend more time and money," RIOgaleao CIO Alexandre Villeroy said when the upgrade was completed just before the Olympic torch was lit. With the new network in place, further enhancements are underway, including connecting airport personnel with Internet of Things devices such as air conditioning, lighting, and water systems so they can help keep visitors comfortable. The airport is even downloading data from aircraft to keep flight status information for travelers as accurate as possible. Welcome to the future.

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NOW TO NEXT

Leveraging the Intelligent Edge: Lessons for leaders

The sheer magnitude of data that businesses must deal with requires them to radically alter the way they design and operate their networks—and how they absorb and analyze the information those networks generate.

The businesses that can best exploit the digital connections between systems, people, places, and things will be the ones that win the day.

The “edge” of your network—people, devices, and spaces—needs to become a growing, significant piece of your Hybrid IT infrastructure.

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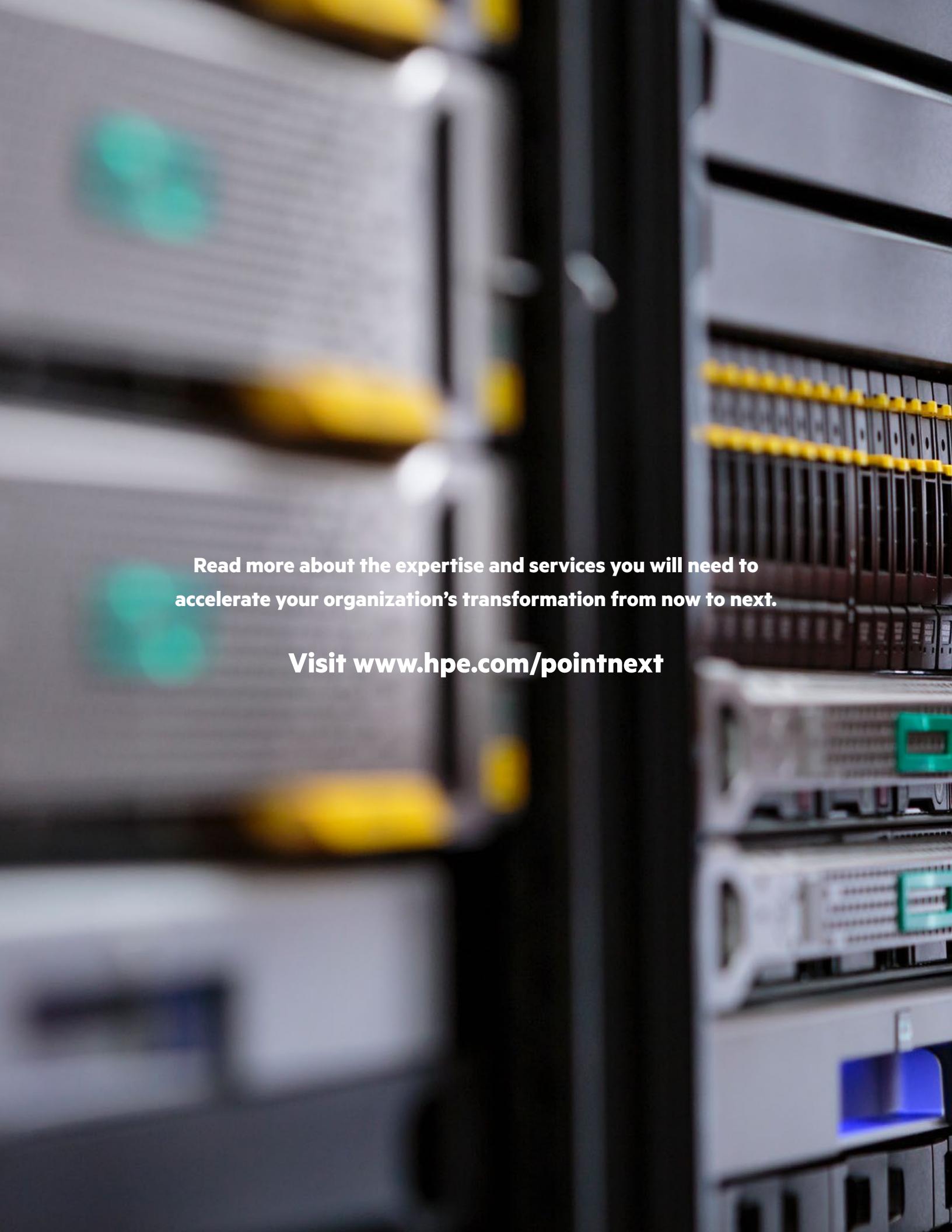
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