

Digital Systems & Technology

# Going Digital? Not Without a Simple, Modern and Secure IT Backbone

To compete in today's always-on digital world, all enterprises need a fast, efficient and extensible IT foundation. It must reduce complexity, enhance agility, be easier to manage, and enable more resilient and protected ways of working. Here's our blueprint to help your organization get started.

# Executive Summary

In every industry and around the globe, companies of all shapes and sizes are seeking an ideal mix of best practices, technologies and thinking to be truly digital. Being digital, however, isn't as simple as purchasing a bespoke technology stack, laying out the piece parts, assembling them and voilà – a digital enterprise emerges. The drive to digital requires careful planning and integration of an array of technologies and models. These range from social, mobile, analytics and cloud platforms, to instrumented devices on the network's edge – the so-called Internet of Things (IoT) – to accommodations for automated tools and artificial intelligence (AI) engines that power everything from chatbots and quality assurance testing environments, through predictive analytics and machine learning systems.

To achieve this nirvana, IT organizations will need an IT backbone that is agile, intelligent, resilient and able to accommodate the accelerating progression of digital technologies and tools that are on most companies' IT roadmaps, or could appear from left field at a moment's notice. With this backbone, businesses will be equipped to fend off the continuous threat of “born digital” competitors, and defeat corporate saboteurs and fraudsters that seek to turn an enterprise's digital operational advantages into critical liabilities. Just as important, they will be positioned to take advantage of the vast opportunities on the horizon that arise from new digital business models.

To grow revenue, market share and profitability in today's digital world, businesses need to consider technology changes at every layer of the enterprise. This assessment begins with an overhaul of the user experience, leveraging digital tools such as natural language search and virtual or augmented reality to help customers choose the most appealing products and enable staff to support them. These changes ultimately ripple down to the business processes required to deliver these new experiences; the applications that manipulate the data underlying the processes; and the databases that store customer, product and financial data.

These accelerating requirements have forced IT organizations to extend their legacy systems with modern digital platforms. The piecemeal approach, unfortunately, has also added unnecessary complexity to their IT infrastructures. To get their houses in order, CIOs and their IT organizations must adapt to changing needs with faster and more flexible delivery through techniques including Agile development methodologies and DevOps (combining development and operations to speed new applications to market). They must scale their capacity and their spending as demand changes, while protecting the organization against a rising volume and variety of threats that can cripple an organization in a highly public New York minute.

With so much changing so quickly and with so much at stake, it's no longer feasible for organizations to spend 80%, 70% or even 60% of their IT budgets on maintaining their legacy systems. Nor is it acceptable that every acquisition, reorganization and strategic partnership require cumbersome changes in legacy systems and the painstaking creation of point-to-point interfaces among them.

Simplifying, modernizing and securing the digital infrastructure is IT's three-fold answer to today's digital mandate.

- **Simplification unlocks value by creating a more efficient digital backbone**, reducing the cost of providing current IT services and freeing scarce funds and skills to work on “change the business” initiatives.
- **Modernization introduces newer (cloud-enabled) architectures** and replaces point-to-point interfaces between siloed systems with a services-based approach that makes it easier, faster and less expensive to create the unified experiences users demand.
- **Securing the infrastructure means making, establishing and maintaining a resilient IT landscape** that can fend off the new and unpredictable threats that come with digitization without breaking the bank.

This white paper explains why it is essential to simplify, modernize and secure the organization's digital backbone and provides key recommendations for doing so. We end with a future vision of how effective IT landscapes will evolve, and detail the next-generation business opportunities they will enable.

## Simplify to unlock value, streamline processes and tightly align IT with the business

Everywhere senior business and IT managers look, they find an increasingly complex competitive landscape. Businesses are selling more products and services in more markets, across more channels and supporting them in new and different ways, while complying with ever-increasing regulatory requirements – many of which impose conflicting demands. Every one of these requirements – not to mention recurring reorganizations, mergers or acquisitions – can mean more technologies for the IT organization to support.

Add to that the sprawl of systems most organizations have accumulated over the years and the pockets of non-standard, “zombie platforms” adopted to meet short-term needs. These have made it difficult for IT to effectively manage operations and meet service level agreements (SLAs). The result is an all too common situation in which IT is a hindrance rather than an enabler of digital business. The more platforms an organization must support, the higher its training and licensing costs, the harder it is to change business processes, and the more likely it is that performance, reliability or security will suffer.

A simplified digital backbone not only meets the perennial need for lower costs through reduced staffing needs and vendor consolidation; more strategically, it also enables a lean and flexible organization that can deliver innovative products and services more quickly and efficiently to drive business growth.

Traditional, incremental cost containment or process improvements aren't enough. To overcome complexity and drive value, IT organizations must achieve a step-change simplification through three critical efforts:

**I Reducing legacy debt**, which is the ongoing work required to maintain, enhance, secure and update existing applications and platforms. Every time the business creates or acquires a new application or infrastructure component, it adds to this debt. Year over year, application by application, this raises the cost of maintaining existing systems, the risk they will fail or leak valuable data, and the cost, time and effort to adapt to change.

Trimming this debt requires consolidation and rationalization. That means taking inventory of existing applications, platforms and infrastructure, eliminating those that are not essential and upgrading aging platforms whose value doesn't justify their cost. It also requires integrated services delivery to ensure efficiency, coordination and control of the entire IT portfolio, as well as new methodologies such as DevOps to make it easier to quickly replace or enhance older applications.

**I Simplifying processes.** This begins with process engineering, guided by a cross-enterprise IT process framework for better and more effective management of functions such as management of service providers, Agile development, DevOps and testing. Simplification is further driven by process automation using frameworks such as IT service management (ITSM) and robotic process automation. Such automation reduces the cost of configuring and managing IT systems while enhancing quality and productivity.

Process governance ensures the ongoing benefits of process simplification through a centralized framework encompassing IT architecture and data and IT/business interfaces that ensures efficient stakeholder management and delivers measurable results. This approach also creates a standardized process for sourcing and vendor governance while establishing joint business/IT process improvement efforts.



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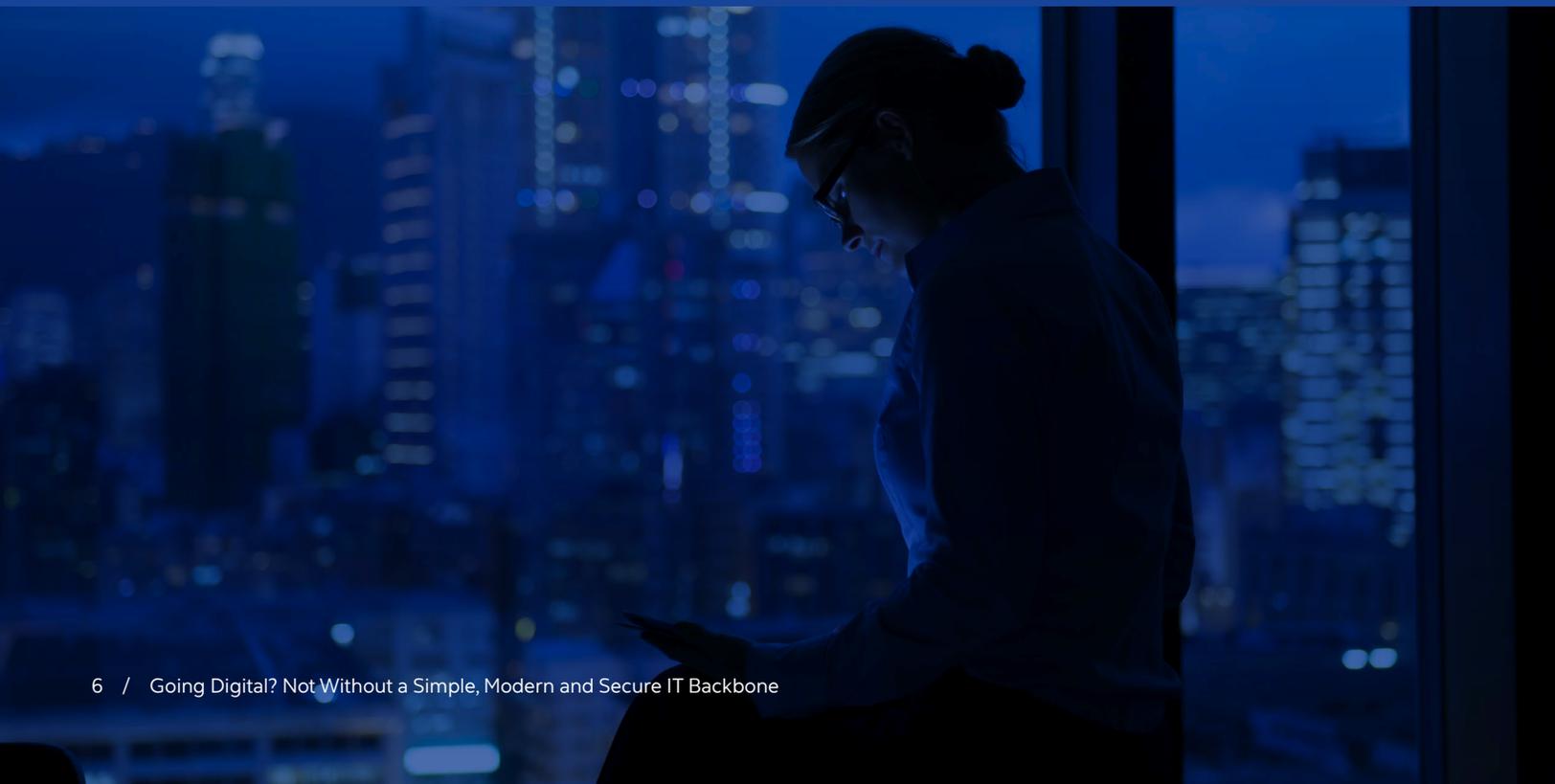
# Quick Take

## Untangling IT for a Wireless Communications Services Provider

A major wireless provider reduced its total cost of ownership by 34% while improving service levels by streamlining what had been a combination of three outside service providers and its own 400-person support staff.

We worked with the company to improve its service management model and consolidate to a sole provider of Level 2 support for more than 370 applications in 28 domains, including application enhancements, test environment support and release testing.

Among other benefits, this simplification prevented more than 2,000 service incidents in the first six months and improved first-level resolution to 45% in the first five months. SLA performance improved significantly through a governance-driven operating model.



**I Facilitating business/IT alignment.** This is the never-ending process of ensuring that the work (and budget) of the IT organization most effectively and efficiently supports the needs of the business. The alignment that is required can be achieved through business value management, which includes an articulation of IT's value and its ability to meet if not exceed SLAs. Doing this alerts business leaders to how much they are paying, what they are paying for, and the value they are receiving to maximize the value of IT investments.

Once the business has decided which IT capabilities to invest in, real-time service intelligence gives business managers up-to-the-minute insights that connect real-time events with historical patterns to automatically address problems or opportunities. Effective business/IT alignment also requires best practices in business-IT governance and effective portfolio management that (like an investor managing his assets) continually realigns spending based on the importance and performance of various IT assets.

## Unlocking value through simplification

	Approach	Benefits/drivers
 LEGACY DEBT REDUCTION	<ul style="list-style-type: none"> <li>■ IT consolidation/rationalization</li> <li>■ Integrated services delivery</li> <li>■ Implement DevOps</li> </ul>	<ul style="list-style-type: none"> <li>■ Reduced TCO</li> <li>■ Lean and flexible organization</li> <li>■ Better maintainability, resilience</li> </ul>
 PROCESS SIMPLIFICATION	<ul style="list-style-type: none"> <li>■ IT process engineering</li> <li>■ Process automation (ITSM, RPA)</li> <li>■ Process governance</li> </ul>	<ul style="list-style-type: none"> <li>■ Speed to market</li> <li>■ Enhanced IT productivity</li> <li>■ Flexible and more nimble IT</li> </ul>
 BUSINESS-IT GOVERNANCE	<ul style="list-style-type: none"> <li>■ Business value management</li> <li>■ Business-IT governance</li> <li>■ Portfolio management (for optimized operation model)</li> </ul>	<ul style="list-style-type: none"> <li>■ Faster decision making</li> <li>■ Clear articulation of value</li> <li>■ IT perceived as a strategic partner</li> </ul>

Figure 1

Yet another tool is intelligent demand management, which aligns IT capabilities and business requirements by explaining the cost of various IT services, prioritizing those services based on their value, and working with the business to optimize spend. An effective program management office (PMO) helps by mapping the IT portfolio with business needs, which keeps the business informed about the cost and value of various IT initiatives.

The result is improved alignment, faster and better decision making, improved customer satisfaction through a clearer understanding of the value of IT investments, and the opportunity for IT to become a strategic partner to the business rather than providing “back room” support services.

## Modernizing the digital infrastructure

Fast-evolving cloud, mobile, social and analytic platforms, combined with the rise of microservices,<sup>1</sup> IoT and virtual and augmented reality, make for a dynamic and fluid IT landscape. These technologies enable the rise of digital business models while also enabling new customer services that can drive change in almost every business process across the organization.

Yet, too many organizations are stuck with an alphabet soup of inflexible, aging and poorly integrated systems that soak up resources while making it harder, not easier, to meet business goals. They also keep organizations mired in broken, inefficient processes that reduce employee productivity and customer satisfaction.

There are many excuses not to modernize, ranging from fear of spending in an uncertain or sluggish economy to not knowing where to start, to the difficulty of measuring the value of existing applications, to lack of top management support. But, modernization is an imperative for competing in today's customer-aware, hyper-personalized and always-on digital marketplace, in which customers expect products and service offers that are based on the digital trails<sup>2</sup> they leave with every interaction.

## Creating a unified experience with modernization

	Approach	Benefits/Drivers
 LEGACY MODERNIZATION	<ul style="list-style-type: none"> <li>  Value-driven accelerators</li> <li>  Modern architectures                             <ul style="list-style-type: none"> <li>&gt; Cloud, microservices, devices</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>  Extensibility                             <ul style="list-style-type: none"> <li>&gt; Functional &amp; non-functional</li> </ul> </li> </ul>
 PROCESS TRANSFORMATION	<ul style="list-style-type: none"> <li>  Business process transformation</li> <li>  Modern ADM (Agile), ITSM (DevOps)</li> </ul>	<ul style="list-style-type: none"> <li>  Enhanced time-to-market</li> <li>  Enhanced business productivity</li> <li>  Better user experience</li> </ul>
 OPERATING MODEL TRANSFORMATION	<ul style="list-style-type: none"> <li>  Service &amp; commercial models (pay-per-use, captive, etc.)</li> <li>  Workforce transformation</li> </ul>	<ul style="list-style-type: none"> <li>  Modern operating models</li> <li>  Value articulation</li> </ul>

Figure 2

# Quick Takes

## IT Modernization Saves Cash and Cycles for a Leading Financial Institution

A premier financial institution saved \$1 million in the first year of a program to improve how it monitors and supports its tier-one applications and messaging over multiple networks. The organization needed to stabilize its business-critical applications, enable high-touch support for its inbound and outbound financial messaging, and increase the handling efficiency of its high volume of production incidents and service requests.

We helped the organization implement an automated software testing solution and an efficient, low-cost support model. The use of centralized monitoring dashboards has reduced response time, improved customer experience and reduced critical incidents by 30%.

## How a Modern IT Backbone Speeds App Dev, Advances Quality & Cost Savings

Financial services firms competing in fast-changing markets must speed their application deployment while cutting costs and maintaining quality. A U.S. bank holding company reached all three goals by planning and managing 16 new release environments serving five lines of business, more than 300 interdependent applications and 4,000 users.

We enabled this through the application of various disciplines, including data management, service virtualization, performance testing and an ITIL-based incident management process to boost the productivity of test and development teams.

Among the benefits realized were a 30% reduction in test cycle time, a 93% reduction in defects, more than \$400,000 in cost avoidance in the first year through early detection and remediation of defects, and a 25% reduction in outages for test and development environments.

A modern IT infrastructure requires:

- I **A legacy landscape refresh through value-driven accelerators (tools and related utilities)** to replace or reengineer existing systems with modern architectures, open API (application programming interface) platforms, development languages and databases.

Cloud-based solutions for back-office services such as e-mail and collaboration can help organizations lower costs and improve flexibility. A microservices architecture for middle-office applications provides business functions as loosely coupled modules through APIs, simplifying complex processes. As a result, the architecture supports a slew of mobile devices that front-office employees can use to improve customer experience. All this helps organizations deliver new, different and better services to customers, reducing costs while differentiating themselves from the competition.

- I **Process transformation achieved through business process mapping, modern Agile development methodologies, DevOps and the use of management practices** such as ITSM to reduce costs, increase consistency and security, and speed time-to-market. Among other benefits, ITSM defines the business processes to be served by IT operations and supports new, more efficient methodologies such as DevOps.

- I **Operating model transformation to accommodate modern technologies and to scale IT spending up and down as needed.** This may require new service models such as pay per use, in which an enterprise has access to potentially unlimited resources but only pays for what it uses, and managed services, in which the enterprise owns or has direct oversight of the organization or system being managed, with the provider delivering services under a contractual, service-level agreement.

Such a transformation also requires a systematic approach to training that extends beyond “just-in-time” skills in the latest hot technology to creating and updating career architectures for each employee. This helps organizations nurture hard-to-find skills among existing employees who understand the industry, as well as the culture and history of their employer. Such career development is especially important in light of scarce skills; according to one recent study,<sup>3</sup> more than half of respondents said their organization was actively looking or planning to hire or reassign IT professionals strictly for the purpose of managing cloud technologies, and nearly half believe IT professionals entering the workforce lack the skills to manage hybrid IT environments.

## Securing the digital infrastructure

Today’s headlines about security are often shocking, encompassing more than 4,000 ransomware attacks every day since the beginning of 2016<sup>4</sup> and an estimated \$6 trillion in annual cybercrime damage by 2021.<sup>5</sup> While cybersecurity spending is expected to exceed \$1 trillion from 2017 to 2021,<sup>6</sup> as many as 20 billion IoT devices<sup>7</sup> will need securing in that same time period, and 1.5 million cybersecurity jobs will go unfilled.<sup>8</sup>

# Quick Takes

## Securing the Data & Reputation of a Payment Processor

For one third-party payment processor, attacks on credit card data threatened the company's reputation by exposing customer data. These challenges were also expensive, incurring switching fees even for rogue transactions. Just as bad, the extra traffic caused by the attacks increased the risk of failure for its credit card authorization systems.

To meet these challenges, we helped this client deploy a real-time rules-based fraud monitoring system that evaluates declined transactions against predefined fraud patterns, blocks suspicious transactions and notifies security staff within seconds. This early detection and prevention saves the company \$20,000 to \$30,000 per month in switch fees and stops more than 1,500 attempted fraudulent transactions per day.

## No-Cost Regulatory Compliance to Secure a Regional Bank

Security not only has to be comprehensive and reliable – it must also be affordable. When a software vendor told a large regional bank it needed a \$9 million upgrade to its collections platform to meet regulatory requirements for security, the bank looked for another opinion.

We helped the bank implement a continuous improvement framework program to evaluate its GRC program, enabling the organization to be in full compliance at no cost under our existing managed services engagement.

The critical imperative for CIOs is not just to prevent the embarrassing and costly breaches that can devastate a company’s earnings and reputation, but also to make it safe for permissioned users to quickly and flexibly share data via both internal and external systems. On the other hand, unsubstantiated security concerns can make an organization overly protective and prevent it from accessing and sharing information. If not dealt with the properly, being too strict or overly permissive with security can potentially erode an organization’s customer satisfaction and brand equity.

A secure digital infrastructure encompasses the following:

- I Defense against attacks.** Key components include perimeter and network security (physical and software-defined preventive measures), a security operations center that manages and coordinates protection against technical security threats while addressing reputational and business risk, and threat intelligence services that collect, analyze and filter data about emerging threats to produce actionable information for decision makers.
- I Identity, application and data protection.** Identity and access management provides the right individuals with access to the right resources at the right time and for the right reasons. Application penetration testing proactively identifies vulnerabilities an attacker could exploit so they can be remediated. Data classification and encryption ensures that the most sensitive data receives the highest level of protection, making the proper tradeoffs between cost, accessibility and security.
- I Information security management, which links basic security to wider needs such as cost-effective compliance with changing business, legal and regulatory needs.** This includes information risk management, which involves weighing the cost of security against the likelihood and severity of IT and related business risks. It also encompasses business continuity and disaster recovery planning, as well as governance risk and compliance (GRC) automation, bridging gaps among these activities to ensure efficient operation and effective information sharing. Automation of GRC activities will introduce process efficiencies through real-time dashboards that enable proactive insights and decisions to prevent incidents.

## Security: Maximizing business resilience

	Approach	Benefits/Drivers
 CYBER & CLOUD SECURITY	<ul style="list-style-type: none"> <li>I Perimeter/network security</li> <li>I Security operations center</li> <li>I Threat intelligence services</li> </ul>	<ul style="list-style-type: none"> <li>I Resilience against cyber threats</li> </ul>
 PROTECTING IDENTITY APPLICATION & DATA	<ul style="list-style-type: none"> <li>I Identity and access management</li> <li>I Application security (pen test, etc.)</li> <li>I Data classification encryption</li> </ul>	<ul style="list-style-type: none"> <li>I Stringent security controls</li> </ul>
 INFORMATION SECURITY MANAGEMENT	<ul style="list-style-type: none"> <li>I Information risk management</li> <li>I Compliance services, BCP/DR</li> <li>I GRC automation</li> </ul>	<ul style="list-style-type: none"> <li>I Improved IT and business risk management</li> </ul>

Figure 3

## Looking ahead: what to do today and tomorrow

In today's fast-moving market, change is inevitable, perpetual and, if managed right, capable of triggering positive results. For CIOs and their IT organizations, success means not only keeping up with business change, but also facilitating and leading it. All too often, however, IT hobbles the business with legacy technical debt, overly complex business and IT processes, reluctance to adapt to new technologies and operating models, and increased exposure to security threats.

Leaders who want to drive their organizations to market-leading futures must re-think how to build and maintain an efficient, extensible, resilient and safe digital backbone. High-performing enterprises will quickly assess their current environment, and lay the foundation for success by simplifying, modernizing and securing their infrastructure.

To get started:

- Plan for the investment and change management required to enable the shift to a modern architecture and related technologies that can boost operational agility, enable tighter functional integration, and ease the maintenance and upgrading of systems and services. Building a modern digital backbone isn't for the timid. It requires significant investment and a pioneering spirit.
- Build the management and technical skills to move more systems to public and hybrid clouds as you retire heritage systems. The payback will be platforms that are better equipped to address today's dynamic business environment and speed time-to-market for new products and services while reducing IT overhead.
- Manage your organization's efforts with a well-focused strategic vision and concrete implementation plan championed by top management. The digital transformation of infrastructure can only drive long-term business benefit if it aligns with the enterprise's direction. Success requires that "digitization" percolates beyond IT throughout the corporate culture.

## Endnotes

- <sup>1</sup> Microservices is a variant of the service-oriented architecture (SOA) approach that structures an application as a collection of loosely coupled services. This makes it easier to integrate applications, make changes to them and share data to meet changing business needs.
- <sup>2</sup> For additional insights, read *Code Halos: How the Digital Lives of People, Things and Organizations are Changing the Rules of Business*, Malcolm Frank, Paul Roehrig & Ben Pring, John Wiley & Sons, April 2014.
- <sup>3</sup> “Portrait of a Hybrid IT Organization,” SolarWinds, 2017, <http://it-trends.solarwinds.com/reports/2017/portrait-of-a-hybrid-it-organization/north-america.pdf>.
- <sup>4</sup> “6 Must-Know Cybersecurity Statistics for 2017,” Barkly Blog, January 2017, <https://blog.barkly.com/cyber-security-statistics-2017>.
- <sup>5</sup> “Global Cost of Cybercrime Predicted to Hit \$6 Trillion Annually By 2021, Study Says,” DarkReading, Aug. 26, 2016, [https://www.darkreading.com/attacks-breaches/global-cost-of-cybercrime-predicted-to-hit-\\$6-trillion-annually-by-2021-study-says/d/d-id/1326742](https://www.darkreading.com/attacks-breaches/global-cost-of-cybercrime-predicted-to-hit-$6-trillion-annually-by-2021-study-says/d/d-id/1326742).
- <sup>6</sup> “Cybersecurity Market Report, Q2 2017,” CyberSecurity Ventures, 2017, <https://cybersecurityventures.com/cybersecurity-market-report/>.
- <sup>7</sup> “Gartner Says 8.4 Billion Connected ‘Things’ Will Be in Use in 2017, Up 31 Percent From 2016,” Gartner, February 2017, <http://www.gartner.com/newsroom/id/3598917>.
- <sup>8</sup> “Workforce Shortfall Due to Hiring Difficulties Despite Rising Salaries, Increased Budgets and High Job Satisfaction Rate,” ISC2, April 17, 2015, [http://blog.isc2.org/isc2\\_blog/2015/04/isc-study-workforce-shortfall-due-to-hiring-difficulties-despite-rising-salaries-increased-budgets-a.html](http://blog.isc2.org/isc2_blog/2015/04/isc-study-workforce-shortfall-due-to-hiring-difficulties-despite-rising-salaries-increased-budgets-a.html).

## About the author



### Pradeep Shilige

#### Executive Vice-President, Cognizant Digital Systems & Technology

Pradeep Shilige is Executive Vice-President and heads Cognizant's Digital Systems & Technology business unit. In this role, he is responsible for DS&T's solutions that help clients optimize their legacy IT infrastructure, thus freeing up capital to invest in a modern, simple and secure technology backbone to succeed in the digital economy. Prior to this, Pradeep was leading the delivery function for Cognizant's Enterprise Applications Services (EAS) Practice. In this role, Pradeep led strategy, delivery and competency development for the growth of the practice. His responsibilities included project delivery, account planning, competency building and business development. Pradeep can be reached at [Pradeep.Shilige@cognizant.com](mailto:Pradeep.Shilige@cognizant.com) | LinkedIn: [linkedin.com/in/pradeep-shilige-37853014/](https://www.linkedin.com/in/pradeep-shilige-37853014/).

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## About Cognizant's Digital Systems & Technology

The Cognizant Digital Systems & Technology Practice works with clients to simplify, modernize and secure IT infrastructure and applications, unlocking the power trapped in their technology environments. We help clients create and evolve systems that meet the needs of the modern enterprise by delivering industry-leading standards of performance, cost savings and flexibility. To learn more, contact us at [simplify@cognizant.com](mailto:simplify@cognizant.com). You can also visit us at [www.cognizant.com/cognizant-digital-systems-technology](http://www.cognizant.com/cognizant-digital-systems-technology), or e-mail us at [Inquiry@cognizant.com](mailto:Inquiry@cognizant.com).

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## About Cognizant

Cognizant (Nasdaq-100: CTSH) is one of the world's leading professional services companies, transforming clients' business, operating and technology models for the digital era. Our unique industry-based, consultative approach helps clients envision, build and run more innovative and efficient businesses. Headquartered in the U.S., Cognizant is ranked 194 on the Fortune 500 and is consistently listed among the most admired companies in the world. Learn how Cognizant helps clients lead with digital at [www.cognizant.com](http://www.cognizant.com) or follow us [@Cognizant](https://twitter.com/Cognizant).

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