

INTRODUCTION

“How do we avoid becoming obsolete?” It’s a pressing question on the minds of senior executives everywhere. One sobering reason: an industry study shows that 40% of today’s market leaders across various industries will be relegated to also-rans in as little as five years.¹ A prime cause is that more-agile competitors and startups will use innovative digital technology to establish themselves as tomorrow’s leaders.

“Digital disruption has the potential to overturn incumbents and reshape markets faster than perhaps any force in history,” according to a new report by the Global Center for Digital Business Transformation, based on a survey of senior leaders at nearly a thousand companies in a dozen industries.

In addition to predicting a shakeup of incumbents because of digital disruption, the survey identified some other alarming trends. Forty-three percent of the respondents said companies either do not acknowledge the risk of digital disruption or have not addressed it sufficiently. Instead, a third of the companies are choosing a “wait and see” approach, in hopes of seeing how competitors respond to the threat and then emulating successful practices.

By then it may be too late for those who choose to sit on the sidelines.

Today, a growing number of senior IT and business executives are turning disruption into competitive advantage. These progressive leaders are adopting a new and, in many ways, radical approach to managing IT as a strategic resource for business. In the process, they’re rethinking ways to optimize and accelerate the entire application deployment lifecycle. This is happening thanks to software-defined architectures, such as Cisco’s application-centric infrastructure (ACI), a combination of advanced technology, automation and standardized processes. The hallmark of this approach is an intense focus on the

quality of end-user experiences, whether for internal business departments or outside customers. Business success, in turn, is measured according to how well IT operations serve these customers.

As a result, IT leaders are not only ensuring organizations respond to the latest business conditions faster than competitors—in some cases they’re also becoming forces for creating new market opportunities.

With an intense focus on end-user satisfaction and the support of application-centric infrastructures, forward-looking enterprises find new opportunities where others struggle.

NEW IMPERATIVES FOR CIOs

To help businesses compete in the years ahead, IT operations must attain efficiency gains similar to those seen in other industry segments. According to the U.S. Bureau of Labor Statistics, productivity rose for most industries during the first decade of the millennium² in manufacturing, financial services and other sectors. By comparison, industry research shows that 80% or more of IT budgets still go to “keeping the lights on.”³

The bottom line: to avoid getting mired in unproductive processes and instead become a digital success story, modern enterprises require an application-centric approach using open standards to deliver today’s business services. In short, enterprises must do a lot more with a lot less, and do it a lot faster.

Few executives understand this as well as Sheila Jordan, senior vice president and CIO of Symantec Corp. She came onboard in early 2014 to reverse an earlier decision by the company to outsource its IT operations as a way to improve efficiency. But eventually the board decided modern internal operations would be a better way to improve resource management and service level agreements for business units. To orchestrate a fast and effective transformation, Jordan and her staff committed to software-defined networking

¹“Digital Vortex,” http://www.imd.org/uupload/IMD.WebSite/DBT/Digital_Vortex_06182015.pdf

²“Industry Labor Productivity Trends from 2000 to 2010,” <http://www.bls.gov/spotlight/2013/productivity/>

³“How to balance maintenance and IT innovation,” <http://www.computerworld.com/article/2486278/it-management/how-to-balance-maintenance-and-it-innovation.html>

(SDN) as part of a larger ACI strategy. But shortly after the implementation began, Jordan received a game-changing surprise—the board decided to split Symantec into two publicly traded companies, one devoted to security, the other for the Veritas line of storage products. The move would happen quickly—it's due to be finalized in the fall of 2015. "This is a case where our decision to have already gone with ACI was smart, forward-looking and lucky all at the same time," Jordan says.

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—SHEILA JORDAN
Senior Vice President and CIO,
Symantec Corp.

Cisco ACI gives the IT staff a framework for managing multiple users of technology while addressing the unique needs of each business segment. "With the split, we had to think of one tenant being not only a separate department, but an entirely different company, and that's exactly what we've done," she says. "We're hosting Veritas on this software-defined network infrastructure until we formally separate the company."

The infrastructure will remain vitally important beyond the breakup. In addition to Symantec's security market, it also serves consumers through the company's Norton Business Unit. Each has unique requirements based on different clientele, business volumes and marketing goals. Nevertheless, with ACI, the IT staff will support both operations with the same infrastructure.

"The excitement of the software-defined approach is we can create policies once and automatically apply them as needed to any application," says Vince Spina, Symantec's vice president of IT, global network infrastructure and data center services. "This means while it used to take four months to launch new applications, it now takes only about two weeks. That enables us to move at the speed of business."

TECHNOLOGY AS A DRIVER OF DIFFERENTIATION, GROWTH AND PROFITABILITY

Technology is becoming more intertwined in business activities today, prompting IT to become "a primary driver of market differentiation, business growth and profitability,"⁴ notes the management consulting and technology services company Accenture. "All enterprises must become digital businesses,"⁵ it adds.

IT leaders are taking this to heart by seizing on opportunities to use technology to help their companies gain a competitive edge in their markets. For example, if a company's digital capabilities have any glaring holes, and availability or reliability of its data breaks down, workflows become inefficient and costs skyrocket, says Erez Yarkoni, CIO and head of the cloud business unit at Telstra, Australia's leading telecommunications and information services company. User experience may also suffer because services aren't performing properly or products are not getting delivered. "When that happens, you're essentially impeding your ability to operate in today's world," he says.

When digital companies create infrastructures designed to avoid these problems, they also go a step beyond by giving outside customers and internal stakeholders visibility into data that's relevant to them. This allows end-users to make decisions that can ultimately improve their customer experience. New services like these help companies differentiate themselves from competitors, even in markets that have become commoditized.

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—EREZ YARKONI
CIO and head of the cloud
business unit, Telstra

Yarkoni knows this from direct experience. For many years, capital resources determined success in the mobile market. "Companies with deeper pockets could invest in better net-

⁴"Digital Operations for the Digital Business," <http://m.accenture.com/SiteCollectionDocuments/PDF/Accenture-Digital-Operations-for-the-Digital-Business.pdf>

⁵Ibid.

works and greater coverage,” he observes. “But over time, that gap closes and remains that way until there’s another major shift in technology.” Thus, while having an early funding advantage may give some organizations a head start in capturing market share, the lead evaporates over time as competitors expand their coverage areas and introduce new services.

This phenomenon plays out in Australia, which operates a national, government-owned broadband network. When communications companies have access to the same infrastructure, they must find ways to compete by delivering better broadband experiences for customers.

To do that, Telstra is deploying digital capabilities that let customers order and activate services on their own, without having to spend time with call centers and service reps. But understanding that competitors will quickly launch similar self-service applications, Telstra is already moving forward by building an underlying foundation for digital workflows to enhance customer experiences with new mobile and web apps. In addition, it will expand access to data and services to help Telstra engineers and field service personnel work more effectively. “We’re moving to the next phase by creating an architecture that enables us to move very quickly once we identify improvements to user experiences and business transactions that we feel are important,” Yarkoni says.

SHORT DEVELOPMENT TIMES YIELD CREATIVE SOLUTIONS

A digital approach can help innovative IT departments become competitive differentiators for companies in hard-fought markets, says Alan Boehme, CTO and chief innovation officer at Coca-Cola. This plays out in a concept he calls “throw-away IT,” which encourages developers to create inexpensive, quickly deployed applications and services to address emerging business needs. “We use these innovations for as long as they’re needed,” he explains. “We may then decide to enhance an app and roll it out to other parts of the company, or replace it with new capabilities.”

One quick-hit example is a new smartphone app the company created in less than two months to help manage its branded coolers in retail shops throughout India. “The goal is pure asset tracking,” Boehme says. “We wanted to make sure the coolers remained where we thought they were. In some cases, if they’re not installed properly, they’ll disappear.”

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CTO and Chief Innovation Officer,
Coca-Cola

A more traditional tracking option would have been to install an RFID radio transmitter on each cooler and then create a communications infrastructure for relaying location data to the asset tracking module of a central enterprise resource planning (ERP) system. “It’s a long, arduous process to roll out a solution like that,” Boehme says.

Instead, the company encourages consumers to download the smartphone app as the first step in “adopting” a cooler. Incentivized with opportunities to receive product coupons, adopters enter the location and photos of their coolers using the smartphones, and send the details to an associated website. Coca-Cola then uploads each day’s results to the central ERP system. “We’re getting all the information we need without having to worry about installing a new RFID infrastructure,” Boehme says.

In reality, the benefits of this approach surpass more traditional approaches. Thanks to the photos, company managers can gauge “cooler purity,” including whether bottles are placed with labels facing outward and only authorized products are being stored in each unit. The apps even provide sales leads. “If we see that a cooler isn’t full, we let our sales team know so it can contact the store owner about sending over more product,” he says.

Coca-Cola is contemplating game-ification techniques to foster even greater participation in the future. “We may turn this into a game with a leader board so people can compete to see who is sending the most photos and looking after their cooler better than anyone else,” Boehme says.

VENERABLE COMPANIES EMBRACE A DIGITAL FUTURE

Many long-time leaders in their respective markets now realize that digital innovation is a key to continued success. Harvard BioScience is a global manufacturer and distributor of medical devices and scientific instruments that's been in business for more than a century. Throughout much of that history, the company didn't aggressively adopt emerging technologies to power its internal operations. That changed about three years ago when new leadership issued a mandate to increase efficiency and lower costs by leveraging IT. Joshua Jones arrived as CIO shortly after that to guide this initiative.

"Since then, we've taken significant advantage of software-defined data centers and have plans to do more in this area going forward," Jones says.

His innovation strategy relies on using public clouds to spin up additional server and storage resources to sup-

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—JOSHUA JONES
CIO,
Harvard BioScience

port growing business requirements. "Shorter deployment times are a huge benefit of this approach," he says. "Predefined templates for server images enable us to stand up servers in the cloud in a matter of minutes and make them available in multiple locations throughout the world."

Launching traditional physical servers in the past would typically take weeks or months for procuring, imaging, testing and moving servers into production, Jones adds.

"The concept of services being 'liquid' makes it easier for our company to support enhancements to applications," he says. "At the same time, the implementation process itself has zero impact on the ability of business users within the company to do their jobs."

INNOVATION TRANSFORMS HIGHER EDUCATION

Commercial businesses aren't the only ones addressing the challenges and opportunities of digital disruption. Higher-education institutions are also transforming their operations to succeed in the months ahead. "Qatar University's overall strategic plan is to change from a traditional 'chalk and talk' approach to education to a new digital institution," says Trevor Moore, CIO. "And IT is a foundational part of that."

He notes that today's students are digital natives, and as a result they learn differently than their predecessors. "They expect to find course materials online and have them accessible any time, any place and via any type of device," Moore says.

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—TREVOR MOORE
CIO, Qatar University

A big step in this direction will materialize during the upcoming school year. Each semester the faculty requests that the IT department make available specific software applications in the computer labs. Engineering labs, for example, need authorized computer-aided design and analytics applications. "In the past, we had to go around to all the computer labs and manually install the software," Moore says.

Instead, his staff is now piloting a student portal that will include profiles for each student. All the applications individuals need, based on their class schedules, will be automatically provisioned for them. To do that, faculty members simply access the portal and select the desired programs. The university plans to roll out the portal to about 3,000 students this fall in the first iteration and make it available to the rest of the student population by the spring semester.

When that happens, Moore expects additional benefits

of the Cisco solution. “With ACI, we will have all these services in a central area, so we can use analytics to predict when a student has issues with understanding the topic,” he says.

He adds that industry research points to direct correlations between student success and the number of times per week they log into course-related applications and other learning materials. “We’ll be able to track these rates for our faculty, and if necessary send an alert. For example, a student who may have been doing well at the start of a semester may not be logging into the system as frequently and may be losing interest in the course,” he says. “This allows the faculty member to intervene to find out what’s wrong and help get the student back on track.”

The university’s research department will also benefit from on-demand IT services. Research is a quickly growing area, particularly for studies that focus on big data. This work requires high-powered computing for performing complex calculations. But with grants that may last for only three years, researchers can wait six months or more for these IT capabilities to come online. “We’ll allow the faculty to self-provision research computing needs as soon as they get a grant, so they’ll have the IT resources they need to start their research immediately,” Moore says. “ACI enables this to happen.”

HOW TO CREATE A FRAMEWORK FOR DIGITAL BUSINESSES

The opportunities associated with launching digital businesses are clear, but the question is, how can IT organizations create an environment for quickly deploying applications as business needs change?

Cisco ACI provides the answer by enabling IT staffs to manage network and application services using a centralized orchestration platform and using automation tools to configure the entire infrastructure. “To help my team focus more closely on delivering business value, we need a solid underlying infrastructure. ACI provides that foundation,” says Cynthia Stoddard, senior vice president and CIO at NetApp, a vendor of software, systems and services for managing and storing data. “ACI does this by abstracting the lower-level details that go into the design of applications and services. This takes complexity out of the application development process.”

The result is that NetApp can use a collection of design templates consisting of policy-based characteristics that programmers can reuse as needed for each new project. “The ability to create and manage applications in this fashion translates into faster delivery times, greater agility and higher-quality services,” Stoddard says.

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Senior Vice President and CIO,
NetApp

Cisco ACI also enables NetApp to create service catalogs so programmers and business users can select the IT resources they need and have them readily available, rather than enduring the delays of traditional implementation processes, she adds.

NetApp used an iterative approach when launching Cisco ACI. The company started a few years ago by running ACI and cloud resources in a discrete technology incubation area. Once the IT staff tested and approved the new resources, they were merged with the existing technology operations. “In many ways the evolution has been amazing,” Stoddard says. “We’ve seen the disciplines of the traditional group combine with the creativity of the cloud group, and the result is a powerful internal infrastructure that we didn’t have even a couple years ago.”

QUALITY TRUMPS SPEED

Cisco ACI may help the IT department translate new business requirements into a new service or application—indeed, into hundreds or thousands of them, if necessary—to promote efficiency and fast reaction times to changing market conditions. But speed isn’t the only factor. In fact, quickly launching new applications without proper con-

trols in place can easily backfire. “If you make a mistake, and something doesn’t work as planned, customers will penalize you by voting with their feet,” warns Yarkoni. “So we’re very careful that whatever we release creates a high-quality experience for customers.”

Cisco ACI delivers speed and quality using two main technology components: SDN and an application policy infrastructure controller, which apply a single, cohesive policy model for networks, servers, storage, services and security. Together they serve business needs by helping IT professionals deliver new applications and services in minutes, rather than the days or weeks required in the past.

In practical terms, here’s how ACI enables new development processes. First, IT departments meet with business colleagues to discuss the performance requirements of each application. This helps IT determine computing requirements and security needs for each application. The staff at Qatar University used discussions like these to create four classes of applications. When a new application must be created or an existing one is provisioned to a new business area, Moore’s staff simply selects the appropriate profile and all the necessary settings are automatically applied. For example, a Level One application includes programs that contain personal information about students and thus have the strictest security requirements. “The Level One profile applies the firewall settings, two-level authentication for people signing into the applications and other controls,” he explains. “My team and I have the confidence that the automated policy process will avoid mistakes that happen when someone has to apply policies manually and human error is possible,” he says.

The university also created a project management office that evaluates any new project, application or service for the strength of its business case and ensures that backers have fully mapped the necessary workflows and business processes. “Once those areas are in place, we stand up the projects,” Moore says.

The ability to automatically apply performance and security policies to individual applications is bringing new efficiencies to Symantec as well. “The real beauty of this is, if at any time we want to move that workload to a different part of the data center or even a different data center, we can do that, thanks to the policies that have been created using software-defined networking and ACI,” says Spina. “In the past, that would have required a lot of archi-

tectural engineering from the IT infrastructure people.”

Behind the scenes, sophisticated technology powers ACIs. This includes converged computing systems, such as Cisco Unified Computing System (UCS), which combines server and storage resources within a single appliance. Similarly, FlexPod offers an integrated computing, networking and storage solution developed by Cisco and NetApp.

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Instead, with converged systems, the components are already integrated and certified to work together, which relieves IT staffs of this time-consuming task and lets them standardize on a manageable number of primary vendors. “Our converged infrastructure makes significant use of FlexPod,” Stoddard says. “It’s a key foundational element of what we do, because its validated design means we don’t have to engineer something from scratch whenever we put a new piece of equipment into the data center.”

Stoddard adds that related tools for centrally managing the converged environment helps NetApp monitor and allocate applications using “a single pane of glass.”

THE ROI OF CISCO ACI

Speed and agility help IT departments heighten their role as a strategic resource for business operations. “We can shorten time to market for new applications, thanks to reusable, repeatable services and policies that we can apply to new programs,” according to Yarkoni.

Cisco ACI can also deliver quantifiable business benefits. Telstra is using data analysis tools within its application-centric foundation to actively monitor the behavior of individual applications and make changes necessary to maintain desired performance levels. “It also allows us to measure and manage IT as a business by determining what the cost of delivering a service will be,” Yarkoni adds. “We can then make adjustments by ramping up or ramping down services.”

At Qatar University, Moore anticipates significant savings by avoiding the need to reconfigure hardware and software on more than 5,000 student desktops at the start of each semester. “That’s expensive and a waste of time,” he says.

A new study by IDC delved into the potential impact of ACI at Symantec over the next five years, with impressive results.⁶ The research identified opportunities for an 87% reduction in application development lifecycles, along with an average of some \$25 million worth of annual business benefits related to risk mitigation and business productivity. These are on top of nearly \$10 million annually in IT infrastructure cost reductions. The bottom line: Symantec could see a payback from its ACI investment in about 11 months, with a 441% return on investment over five years.

CIO Jordan says the benefits also translate into higher availability for IT systems. “Because the monitoring tools are so sophisticated, we can reduce the number of incidences and their duration by reacting more quickly or being proactive enough to avoid many problems,” she explains. “As a result, the overall efficiency of our infrastructure services has increased significantly.”

Given the unprecedented demands for speed and agility in an era of digital disruption, it’s fortunate that launching ACI can also happen on a tight timetable. “We did the planning, design and execution for this whole software-

defined, ACI approach in four and a half months,” Jordan says. “That kind of speed is unheard of when implementing a leapfrogging technology.”

A FOUNDATION FOR THE FUTURE

Market forces are overturning incumbents, leaving many companies that now rank as market leaders in danger of disappearing over the next five to 10 years. Fortunately, forward-thinking enterprises can do more than avoid digital disruption and survive in this volatile market. With an application-centric approach to their IT operations, they can quickly deliver reliable and secure applications and services that will ensure their competitive superiority for years to come.

6 KEY STEPS FOR STARTING THE MOVE TO APPLICATION-CENTRIC INFRASTRUCTURES

1. Define a compelling business case for adopting the strategy.
2. Foster closer ties between IT and business operations.
3. Track improvements in customer experiences as a key metric for defining success.
4. Adopt an “Agile” mindset that embraces quick, iterative moves and the ability to rapidly change course as necessary.
5. Start with simple, less risky apps and gradually expand to other programs as successes accumulate.
6. Understand the concerns staff members will have about adopting a new approach to IT and help them see the long-term value it will have for their jobs and careers.

Is your organization poised to capture the speed, agility and efficiency benefits of an application-centric infrastructure? Cisco recently surveyed 2,400 IT professionals from around the world. The respondents self-ranked their capabilities in 10 categories that enable digital transformation in the data center. The research, to be published later in 2015, showed a 30-point difference between leaders and laggards, with security, automation and self-service platforms being the areas of greatest difference. How will your organization rank?

⁶“Symantec Delivering on Its Strategic Vision with Next-Generation Secure Datacenter Powered by Cisco ACI,” <http://www.cisco.com/c/dam/en/us/solutions/data-center-virtualization/application-centric-infrastructure/benefits-aci.pdf>

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