Executive Primer

Cisco CIO Summit 2010

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To help facilitate lively discussions during the Cisco CIO Summit, Cisco IBSG has created an Executive Primer that presents IBSG’s thought leadership on selected session topics.

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Open Sesame: Who Sees What?

By Chuck Adams, Cisco IBSG Innovations Practice

Protecting valuable customer information is one of the most important IT responsibilities in any organization—from doctors’ offices and hospitals, to financial institutions, to retailers. Traditionally, customer data, and all other information resources, were housed and processed in on-campus data centers under the watchful eyes of IT and security managers. Firewalls were placed around the perimeter of the enterprise to keep intruders out and data in. Maintaining strong protection at the border was enough to safeguard the most sensitive data. Unfortunately, this is no longer the case.

Today, enterprise borders are permeable, or even nonexistent. It is not unusual for important information resources—data services, applications, networking, storage, web services, and development services—to reside outside the traditional enterprise perimeter. Virtualization and cloud services have created a highly distributed environment in which data and processes might be hosted on virtual machines or “in the cloud” anywhere in the world. Increasingly, IT leaders are responsible for protecting data, applications, and processes that are outside their direct realm of control.

Upholding the Customers’ Trust

Consumers routinely entrust personal and private information to the entities with which they do business, having no idea where that information will go, who will have access to it, or how it will be used. They give banks their social security numbers. Retailers know their credit card numbers and buying preferences. Healthcare institutions collect vital personal information and store it in electronic health records. In all these cases, the task of the IT security executive is the same: to uphold the trust of the customer by protecting this personal data, whether it resides in the enterprise or in the cloud.

Sometimes they fail. In June 2010, AT&T inadvertently exposed the e-mail addresses of more than 100,000 iPad 3G customers, including U.S. government and military users.¹ Hackers have accessed hotel, restaurant, and grocery store computers, putting hundreds of customers at risk of credit card fraud. Banks have lost laptops containing unencrypted customer account information. Healthcare organizations have inadvertently released confidential patient information. According to the Privacy Rights Clearinghouse, more than 500 million identity-specific records have been compromised in the United States since 2005.² This total does not count millions of other instances in which confidential information...
was leaked that did not include account numbers, social security numbers, driver’s license numbers, or other information that could enable identity theft.

**Opportunity: Develop a Holistic Strategy for Embedded Security**

Security failures can happen anywhere: in the enterprise, in the cloud, and wherever an employee or partner can access sensitive information via a smartphone, laptop, tablet, or other portable device. Whether the security leak is due to a stolen BlackBerry, a lost flash drive, or a compromised cloud environment, the ultimate responsibility lies with the enterprise that has been entrusted with the customer data. As the borders of the enterprise become more permeable, security professionals are responsible for protecting sensitive data that may be distributed throughout an infrastructure owned and managed by multiple vendors and service providers in multiple locations. This presents an opportunity to design and implement a comprehensive risk-management strategy that embeds policy-based security controls throughout the information architecture. By embedding security across the extended environment, rather than just at the borders, enterprises can ensure a blanket of protection for their valuable customer information.

**Complication: “The Cloud” Extends Across a Patchwork of Local Jurisdictions, Regulations, and Standards**

That comprehensive blanket of protection must extend to the cloud. When companies outsource data storage, subscribe to cloud-based applications, or scale their networks via infrastructure as a service, they really don’t know where their information will reside, or what subcontractors may touch it. Customer management software may be hosted in Bangladesh or Brazil. Technical support representatives may access customer data from India or Ireland. Product development platforms may be distributed from Tennessee to Taiwan.

Each of these different geographies and jurisdictions has a different set of regulations and standards within which cloud service providers operate. Europe has more stringent privacy regulations than much of the rest of the world; California’s laws are more rigorous than those of most other states. But in some parts of the world, data hosting or cloud service providers may be virtually unregulated, or regulations may not be enforced. How can an IT executive be sure that customer data remains secure—wherever it is?

**Solution: Borderless Security for Borderless Networks**

As network borders continue to expand across multiple geographies, devices, technologies, and vendors, security must also expand across these same frontiers. Security policy and protection must reach into every corner of the far-flung network where customer data might be stored or processed. Securing information resources in an increasingly borderless world begins with an overarching network architecture that enables IT to efficiently manage access from multiple locations, from multiple devices, and to applications that can be located anywhere. The key element in providing this sort of secure, scalable access is a policy-based, information-centric security architecture that allows IT to implement controls and enforce policy throughout this network—from server, to infrastructure, to client. To accomplish this, security must be integrated into the very fabric of the architecture, not something that is added on.
Enterprises must then extend this blanket of protection to encompass all vendors and service providers that may touch the enterprise information, including the subcontractors and hosting services they may employ. They should investigate potential cloud service providers thoroughly and demand information about the hiring, training, and oversight of vendor employees who have privileged access to their sensitive data. They also need to understand the vendor’s data protection schemes and operational continuity procedures. Compliance with specific standards and regulations should be required in the contractual agreements enterprises make with their vendors.

It is the responsibility of enterprise IT professionals to ensure that vendors comply with all appropriate privacy standards defined by their organizations, not just the local regulations of the jurisdiction within which they operate. They should consider compliance with ISO 27001 data security standards as a baseline requirement for their vendors. On top of that are various national or regional regulations, such as those contained in the U.S. Sarbanes-Oxley legislation and California’s security-breach notification requirements. The third layer of compliance is composed of industry-specific privacy regulations, such as those contained in the U.S. Health Insurance Portability and Accountability Act (HIPAA), and in the Gramm-Leach-Bliley Act regulating financial services. On the global front, the Payment Card Industry (PCI) Security Standards Council continues to define more rigorous standards for all involved in processing major credit card transactions. Enterprises should expect full compliance with this complex regulatory framework to be verified by regular independent audits.

**Benefits: Flexibility and Efficiency, with Full Data Protection**

For organizations that carefully ensure the security of their cloud-hosted information, the benefits are many. With cloud services, enterprises can respond quickly to unusual spikes in demand without making additional capital investments. They can subscribe to special application services delivered over the network without having to manage and maintain those applications. And they can use the cloud as a development platform for additional applications that run on the cloud infrastructure. They can access virtually unlimited storage capacity and computing power, on-demand, and pay only for what they need.

While we have focused largely on the risks associated with cloud computing, there are also a number of security benefits. For example, the large-scale implementation of most cloud providers’ services makes it more affordable for them to hire a large staff of security professionals and to deploy the most effective and advanced security practices available. Their larger scale also makes it easier to dynamically allocate resources for filtering, traffic management, identity verification, data encryption, and other measures. This offers multiple response choices for certain types of security issues, and creates more resilient services.

Furthermore, because security is one of the most important factors in selecting a cloud-computing vendor, cloud service providers view ironclad security as an important competitive advantage. In many cases, especially for small and medium-sized companies, the security measures available through cloud computing vendors will be more effective and affordable than their in-house security services. And if there is a data breach, it will be easier to gather and retain log files and other evidence.
Conclusion

CIOs should begin to evaluate their current information security architecture and prepare to transform their role and organization. Begin by taking the following steps:

- Work directly with security managers to design a comprehensive and holistic strategy for information security, with a minimum goal of compliance with ISO 27000 standards and any additional requirement that are applicable.
- Determine the most critical types of information and design commensurate information security policies and controls to actively protect each. Where information is destined for an external enterprise, design contractual controls to ensure information security to the same degree as within your enterprise.
- Thoroughly investigate potential cloud vendors to ensure robust security capabilities and compliance with all appropriate standards and regulations, and prepare to routinely audit their performance.
- Transform security-management procurement processes and purchasing criteria to focus on interoperability and alignment with the security strategy; include the right to audit and evaluate audit results in contracts with vendors.

Keeping customers' trust means keeping their data secure, whether it is in the enterprise data center, or in the cloud. IT executives should take a comprehensive risk-management approach to their own networks, and then contractually extend that blanket of protection to all the vendors and service providers that touch their sensitive information resources.

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Momentum Now: Emerging Markets
Innovations East --> West: Which Way Is Up?

By Mohsen Moazami and Eileen Lavergne, Cisco IBSG Emerging Markets

Introduction
Two to three decades ago, U.S. corporate behemoths such as Walmart, GE, Coca-Cola, and Nike established their presence in developing countries with factories in Indonesia, China, Latin America, Asia, and elsewhere. Their objective was to take advantage of inexpensive labor to provide products at costs that aligned with the growing middle class in Western markets.

Today, approximately 21,500 multinational companies are based in the emerging world. They are innovating at a pace that is disrupting their Western counterparts—from cheaper products such as $3,000 cars, $300 computers, and $30 mobile phones that provide nationwide service for just 2 cents a minute, to wind turbines and high-speed bullet trains.

More important, these companies are reinventing product/distribution systems and experimenting with new business models to address the growing middle class in emerging markets.

New Frontiers for Future Growth
Emerging economies encompass a significantly growing portion of the world’s GDP. In fact, by 2020, the BRIC countries (Brazil, Russia, India, and China) are expected to account for a third of the global economy (in terms of purchasing-power parity), contributing about 49 percent of global GDP growth, according to Goldman Sachs. Multinationals expect about 70 percent of the world’s growth over the next few years to come from emerging markets, with 40 percent emanating from just two countries: China and India. According to Bloomberg Businessweek’s 2010 ranking of the “50 Most Innovative Companies,” 15 are Asian and, for the first time, 11 are from emerging economies.

Western companies are also expanding operations in emerging markets. General Electric’s healthcare division spent more than $50 million to build a vast R&D center in Bangalore, India. Cisco is spending more than $1 billion on a second global headquarters—Cisco East—in Bangalore. Microsoft’s R&D center in Beijing is the company’s largest outside its American headquarters in Redmond, Washington. IT specialists and consultancies have
increased the number of people they employ in developing countries. For example, a quarter of Accenture’s workforce is in India.\(^5\)

Furthermore, approximately 80 percent of the world’s population that falls outside the high-income per-capita bracket (as classified by the World Bank) is concentrated in emerging economies and is rapidly gaining middle-income status. They represent significant new customer and market segments for multinational companies operating in today’s connected global economy.

***Challenges***

The emerging world is no longer simply a source of inexpensive labor, but also a fountain of disruptive innovation that is being homegrown in the East for local markets and then exported to the West. To be successful, companies must find ways to innovate and sell in emerging markets. Doing so not only requires localization of products and services, but also development of entirely new business models that support a distributed way of doing business. CIOs looking at this evolving trend come from two perspectives:

1. **Western world:** If a company sets up operations in, say, Brazil and makes products that work for the growing middle class there, how can CIOs help the company keep operations costs (CapEx and OpEx) down to enhance business margins? By taking this approach, will the company cannibalize its “cash cow”? In other words, will it eat into the profits of the products that have served the company for years?

2. **Emerging markets:** Growing global multinationals from emerging economies have an advantage because they know their local markets. So the challenge becomes one of how to expand the company’s global footprint by providing products/services that are applicable to consumers in the West.

Regardless of perspective, one of the most essential questions many CIOs must address is, “How do I optimize global operations, rendering them agile while ensuring that they support and enable the front end of the business to be localized and close to the customer?” One answer is through *polycentric innovation*. A concept that is gaining ground, polycentric innovation is based on “multiple centers”—the belief that innovation will occur not only where the company is headquartered, but also in different places around the world based on how the company defines its operational culture and go-to-market strategy.

General Electric is an example of a company that has had a polycentric culture for some time through innovation in both the East and West (see “Reverse innovation” in the “New Business Models” section of this paper). Polycentric innovation is starting to happen for other companies as well. Tata Motors, for example, is tweaking its Nano car—an automobile designed for Indian consumers—for Western markets.\(^6\) Tata innovated first for its local market and then enabled its operations and systems to expand into foreign markets.

A polycentric view is essential for both Eastern and Western companies wanting to expand their global footprints and capture future market share. It will cultivate and lead to disruptive innovation that “thinks” beyond products and services by experimenting and testing new business models. It will build on and support the culture of collaboration across the global corporation and broaden the partner ecosystem across the entire value chain, including consumers.
New Business Models

Disruptive innovation in emerging markets has more to do with new business models than with sophisticated product design. The following examples demonstrate this point:

**Reverse innovation:** GE Healthcare historically sold sophisticated medical imaging devices in emerging economies such as India. Only 10 percent of Indian hospitals, however, could afford a $10,000 ECG machine. Rather than just cut costs, GE took a radical approach to innovation by considering that most Indians live in rural areas and do not have access to local hospitals. Therefore, the ECG machine needed to be mobile, affordable, and easy to use. GE built a device, called the “MAC i,” that fits into a shoulder bag and includes a built-in, replaceable printer, professional-level analysis software, and a battery that performs 500 ECGs on one charge and costs only $500. The MAC i created a new market in developing countries and was exported to the West for use in ambulances.

**Innovative distribution model:** Tata Motors’ Nano sells for just $2,500. In addition to focusing on the costs of every system of the car, Tata also took into account the costs of distribution and sales. To keep costs low, Tata created a modular design and an innovative distribution model that enables Tata to manufacture modules centrally and, in some cases, ship the cars as kits to local entrepreneurs, who assemble and sell them.

**Service innovation through partnerships and mobile technology:** Kingfisher Airlines of India partnered with PayMate, an Indian wireless transactions company, to provide an SMS-based service that allows customers to search, book, and pay for tickets using their mobile phones. The service enables a new business model that encourages partnerships and allows the airline to be proactive with its customers.

**Innovative Solutions Enabled by IT**

Identifying valuable players—employees, external partners, customers, and even consumers—along the value chain and connecting them through an IT architecture that enables them to share ideas and information is key to developing innovative business models that help companies understand their market. In this way, companies have the opportunity to be in closer proximity to new customers and partners, whereby market and business intelligence are gathered faster from the source and innovation takes place because of intraorganizational and intercompany collaboration. Following are examples of innovative solutions enabled by IT in emerging markets:

- The Turkish textile industry provides an example of an innovative business model anchored by a new ecosystem of partners brought together via a Web 2.0 collaborative platform. The textile and clothing sector in Turkey is predominantly comprised of small and medium-sized businesses (SMBs). In an effort to promote SMB development, Turkey worked with the Cisco Internet Business Solutions Group (IBSG) to adopt a virtual clustering/collaboration strategy that combines the efforts, resources, and expertise of SMBs in this sector to increase productivity and improve competitiveness. Turkey implemented Cisco Unified Communications tools integrated with web-conferencing technology to facilitate meetings with geographically dispersed partners, allowing them to easily share documents with other stakeholders in a secure environment. In addition to increased productivity, greater visibility and transparency
are achieved through the collaborative industry directory database, which serves as a marketing window to the textile industry inside and outside Turkey.

- M-PESA’s cell phone-based cash transfer system has changed the way Kenyans handle their finances. The system, which was introduced by mobile service provider Safaricom, lets users deposit, transfer, and withdraw funds via text messages. Other companies have since followed suit. In 2009, Nokia announced its plans to enter this market with its “Nokia Money” service, and will roll out the service on a county-by-country basis. Nokia’s move shows how a large, successful multinational is benefiting from innovation born in an emerging market and then taking this innovation global.

- Cisco uses its own virtual meeting system to operate globally and get closer to its customers in emerging economies. Cisco operates from two headquarters: one in San Jose, California, and the other in Bangalore. Each location has its own center for innovation and development, and each is tightly connected to the other so that both can operate as a single corporation. Much of this is accomplished through the use of Cisco TelePresence™, Cisco Unified Communications, and other collaboration tools that allow company executives and ecosystem partners in different parts of the world to work as if they were in the same room.

Borderless networks, communications and collaboration technologies, and Web 2.0 solutions are just some ways in which CIOs can help their companies construct an efficient global operation that favors and enables polycentric innovation.

Next Steps
To ensure long-term, sustainable success in emerging markets, a growing number of company leaders are taking a polycentric view toward innovation. One way of addressing this new reality is to adopt (as Cisco has) a distributed management style and implement focused globalization efforts enabled by communications and collaboration technology.

This approach requires a change in mindset about defining new business models, which may sound challenging to business executives accustomed to innovating and building their businesses in one country (typically in the West) and exporting the model elsewhere. Overcoming this challenge by investing, learning, and adapting to innovative business models being developed in these high-potential markets can yield much greater profits and tremendous growth opportunities. Companies that are successful in emerging markets stand to gain new consumer segments that can potentially wield $12.5 trillion in purchasing power.
Endnotes


3. Ibid.

4. “The 50 Most Innovative Companies,” *Bloomberg BusinessWeek*, April 15, 2010, [http://www.businessweek.com/magazine/content/10_17/b4175034779697.htm](http://www.businessweek.com/magazine/content/10_17/b4175034779697.htm)


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Living in a Borderless World
By Chuck Adams, Cisco IBSG Innovations Practice

During the past few years, the walls surrounding enterprise information assets have come tumbling down. The borders of the enterprise have been chipped away by cloud computing, social networking, and a whole new class of mobile consumer devices that enable employees, partners, and even customers to extend the enterprise to almost anywhere, anytime. These new technologies offer the promise of greater productivity, agility, and responsiveness—while presenting complex security threats to organizations’ most important asset: their data.

How should CIOs navigate this new borderless world? Should they simply close the door to all external consumer devices in an effort to maintain a walled fortress around their information assets? Or is there a way to provide full protection to the network—and full connectivity and productivity for all who need to access it? This paper explores the special challenges CIOs face in this increasingly borderless environment, and offers a strategy for balancing full security with full connectivity.

Blurring the Perimeter: Where Does the Enterprise End?
In the past, data, applications, and users were all housed within an organization’s physical campus. The traditional approach to security was to place firewalls around the borders of the enterprise, keeping proprietary data inside and unauthorized intruders outside. That began to change when enterprises started doing business online with customers, partners, and suppliers. This required IT architectures and policies that enabled certain kinds of interaction with outside users, while blocking the rest. In today’s workplace, it is not unusual for important business resources—data centers, applications, customers, and partners—to reside outside the traditional enterprise perimeter. Workers may be full-time remote employees, or contractors. Applications might be hosted off-site, or even in the cloud. No longer can these far-flung critical resources be treated in the same way as internal resources. Increasingly, IT leaders are responsible for protecting data, applications, and processes that are outside their realm of control.

The Workforce as Connected Consumers
This new environment also includes devices that are outside IT’s ownership and control. The last few years have brought wave upon wave of innovation in consumer technology—from music players, to smartphones, to always-connected tablets. Every enterprise has a workforce of connected consumers who use mobile devices to send text messages and
emails, access the Internet, play games, chat with friends, and share links to websites. They post updates on Facebook, tweet on Twitter, and post blogs, photos, and videos.

Many in this hyper-connected workforce are young people of the “millennial” generation, who have grown up online and expect their work environment to offer the same connectivity freedoms that they enjoy in their personal lives. In an era where work is increasingly global, and workers ever more mobile, business productivity can depend on mobile access to email, applications, and corporate data. Some organizations are also seeing value in having their employees visible on blogs, Twitter, and other social networking media as representatives of the company. Marketing and public relations efforts today are often built around these sorts of new media.

The dilemma for IT professionals is that as workers bring these devices and activities into the virtual workplace—whether they are employer-sanctioned or not—they may be opening a back door to the enterprise, threatening the security of valuable information assets.

Opportunity To Think Differently About Securing the Enterprise

IT and security executives have a wide range of responses to this new borderless environment. On one hand, they may think the safest way to prevent “back-door” access is to block all outside access from mobile phones, tablets, and other mobile devices, and to ban access to social networking media from within the organization. This approach may not be realistic, however, given the pervasiveness of new, highly connected consumer devices and technologies. More likely, security organizations will take a defensive approach to these new points of entry, reacting to each security breach as it occurs. This strategy is neither effective nor efficient, and results in a patchwork of expensive, stand-alone security products that may protect some important areas, but leave gaping holes in the organization’s overall protective fabric.

The technological environment is evolving too fast for organizations either to block out threats or to react to each one as it happens. With the current dramatic shift toward ubiquitous wireless connectivity, IT managers need a framework to unify wired and wireless access, including security, access control, and performance management across many different device types. They need to evolve their infrastructure to deliver seamless, secure access in a world with many and new shifting borders. They need a pervasive, policy-based, information-centric security architecture that controls the flow of information throughout the environment. In addition to focusing on protecting each piece of corporate data, they also need to manage the flow of that data.

Solution: Borderless Networks for a Borderless World

Securing information resources in a borderless world begins with an overarching network architecture that enables IT to efficiently manage access from multiple locations, from multiple devices, and to applications that can be located anywhere. The key element in providing this sort of scalable, secure network access is a policy-based architecture that allows IT to implement centralized controls with enforcement abilities throughout this network—from server, to infrastructure, to client. Ideally, security is integrated into the very fabric of the architecture, not something that is added on. A networking platform that is optimized to run security services allows you to “turn on” security across the network infrastructure at all appropriate points of potential attack, providing blanket protection without reducing network performance.
With central policies and consistent management, IT managers can enforce security without micromanaging each security function, user, or resource. A security function that dynamically assigns access and services for users and devices can help ensure that endpoint devices are authorized and healthy, using consistent, network-wide security policy enforcement.

The goal is to provide freedom and flexibility for users, while exercising absolute control over connected resources and everyone who wants to use—or abuse—them.¹

**Benefits: Full Protection, Full Performance**

With comprehensive security services integrated into the network infrastructure, IT can unleash the full productivity of the enterprise without compromising system integrity. Mobile workers can have free and easy access to the applications and data they need to do their jobs. Remote or telecommuting workers enjoy the same ubiquitous connectivity as those working on the corporate campus. Vendors have easy access to production schedules and project specifications. And Marketing can post up-to-the-minute video coverage of a major product announcement on the web, while monitoring customer reaction in blogs, discussion groups, and social networking sites.

But these examples are only the beginning. A robust and flexible borderless network provides benefits that go beyond the typical province of IT:

- **Broader talent pool:** When employers are not bound by geographical boundaries, they can search far and wide for employees, contractors, partners, and vendors with specific qualifications.

- **Productivity and work-life balance:** Mobile technology offers workers flexibility in when and where they choose to work, enabling parents to stay home with a sick child, or respond to a critical email while watching an after-school soccer game. This flexibility not only contributes to worker productivity—it can also help attract and retain good employees.

- **Business resiliency:** Business operations across the country and around the globe have been disrupted by natural disasters, inclement weather, and potential health threats such as last year’s H1N1 virus outbreak. Organizations that can support work from anywhere have the flexibility to keep people home and working productively even in the face of three feet of snow or the fear of infectious disease.

- **Path to the future:** With the convergence of data and voice, IT’s responsibilities began to expand beyond its traditional limits. Today, building management systems are being integrated with IP networks, and IT security is coming together with physical security systems. A borderless network architecture will enable seamless network expansion as previously distinct systems continue to converge.²

- **Market intelligence:** With converged physical and data security functions embedded in the overall network architecture, organizations can extend security-oriented video analytics capabilities to monitor and study customer behavior in order to gain valuable insights about consumer habits and attitudes. Already, major retailers, hotel chains, and other consumer service organizations are starting to use digital video and analytics to track customer traffic patterns, improve operational efficiencies, increase promotional effectiveness, and deliver better customer service.
Next Steps

CIOs should begin to evaluate their current information security architecture, and prepare to transform their role and organization. Begin by taking the following steps:

- Work directly with security managers to design a comprehensive and holistic strategy for information security
- Develop a comprehensive policy governing employees’ social networking activities and network access from mobile devices, and extend enterprise security to cover each potential point of entry
- Determine the most critical types of information and develop commensurate information security policies and controls to actively protect each
- Transform security-management procurement processes and purchasing criteria to focus on interoperability and alignment with the security and enterprise strategy

As mobile devices and social networking become more ubiquitous, the walls surrounding enterprise information assets will continue to tumble. To protect these assets in an increasingly borderless world, security must be integrated into the very fabric of the network architecture.

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Endnotes


2. These and other benefits of a borderless network architecture are cited by Matthias Machowinski in “Eliminating Borders To Enable Any Place, Any Time, Any Device Access: A Win-Win for Business, IT, and Users,” February 2010.

Cheri Goodman of Cisco IBSG provided writing and editing assistance for this paper.
The World, the Economy, and You:
New Opportunities for Technology-Driven Business Transformation

By Gary Bridge, Rick Hutley, Joseph Bradley, Doug Handler, and Andy Noronha, Cisco IBSG

The Rising Tide

Despite the economic turmoil caused by the “Great Recession,” developing nations and less-developed countries are seeing surges in productivity and gross domestic product (GDP)—bearing out the notion that “a rising tide lifts all ships.”

The block of developing nations collectively known as “BRICs”—Brazil, Russia, India, and China—is growing rapidly. Concomitant with economic growth, we are also seeing the rise of a middle class in these countries—which will significantly impact the quantities and types of products the BRICs will be importing in the future. Imports of high-value goods are likely to increase as low-value-added imports fall.1,2

Africa is at last emerging from stagnation, bringing the continent’s collective GDP to roughly the equivalent of Brazil’s or Russia’s. Real GDP rose by 4.9 percent per year from 2000 through 2008, and here, too, a middle class is on the rise. Just 32 percent of this increase has come from Africa’s abundant natural resources; the other two-thirds has come from other sectors such as wholesale, retail, transportation, telecommunications, and manufacturing.2

These transformations are taking place rapidly, and they will have significant impacts on the global economy, and on where and how enterprises choose to do business. In our era of increasing globalization, there is a greater need than ever before for communications, collaboration, and innovation to take place across organizations that are culturally diverse, geographically dispersed, and operating 24 hours a day around the globe. We must rethink and reevaluate how we consume and deploy technology to improve business outcomes. In addition, developing countries have the advantage of being able to implement the latest technologies, often being unencumbered by legacy technology and communications systems.

The Cisco® Internet Business Solutions Group (IBSG) has identified four technologies as having the greatest potential to spur transformation for global enterprises within the next two to three years: mobile Internet, business analytics, social networking, and cloud computing. While an awareness of these trends has existed for several years, CIOs must pay heed to the pending acceleration in these transformations as the global economic landscape shifts to a new configuration.
**Mobile Internet**

Analysts expect significant growth in the use of mobile Internet technology from 2011 to 2013. IDC forecasts that the number of mobile devices accessing the Internet could exceed 1 billion globally by 2013.\(^3\) This growth will be driven by mobile users seeking to access rich online applications and services. Business users, in particular, will access a growing list of business applications from their mobile devices, and the lines between corporate and personal use of mobile devices will continue to blur.\(^4\) By 2013, Gartner predicts that mobile phones will replace PCs as the most common device for web access, with worldwide mobile penetration rate reaching 90 percent by 2014.\(^5\)

Mobile growth in developing nations is expected to be particularly strong, as mobile users grow increasingly sophisticated. India and China alone are expected to account for more than 295 million units in handset shipments in 2010, setting the stage for these two nations to be drivers of mobile Internet growth in 2011-2013.\(^6\) Mobile users in developing nations are primed to be mobile Internet users. In a recent primary research study of 6,000 mobile users across 13 countries undertaken by Cisco IBSG, mobile users in developing countries were found to be most likely to make their phones an “on-the-go” link to the Internet (see Figure 2).

**Figure 1. Mobile Users in Developing Nations Are Receptive to the Mobile Internet**

![Percentage That Consider Their Phones To Be On-the-Go Link to Internet](image)

Source: IBSG Connected Life Market Watch, 2009

**Business Analytics**

During the next several years, business analytics will assume a more important role in decision making for global enterprises. The global financial crisis has exposed gaps in businesses’ operations, and has driven executives to question whether they have the systems to capture, retrieve, analyze, and transform data into actionable intelligence.\(^7\) Gartner predicts that
businesses will increasingly employ advanced analytical tools and models to enable simulation, prediction, optimization, and other business analytics to empower better decision making.9

Enterprise technology vendors have launched service offerings to support the analytics needs of global enterprises. In 2009, IBM launched its Business Analytics and Optimization services unit, its first new services business unit since 2002. The group employs more than 4,000 consultants and more than 450 researchers and mathematicians to deliver analytic services designed to “improve the speed and quality of business decisions.”10, 11 IBM also has made strategic acquisitions, most notably those of Cognos and SPSS, to boost its portfolio of business intelligence and predictive analytics solutions. In a recent interview, IBM CFO Mark Loughridge stated, “When we look at business analytics, we think that opportunity is going to be as big as TRM (trading and risk management) or ERP.” 12

Due to the rise of improved connectivity and network bandwidth, the cost of compelling an analytically driven customer purchase has fallen dramatically. Years ago, business analytics was used to support product-level marketing or logistics. Now, analytics can be inserted at the transaction level and be used to customize a specific customer experience.

Social Networking

Industry watchers believe that 2010 is the year that social networking achieves critical mass in terms of acceptance and adoption in the enterprise. Economic factors, maturing technology, and the desire by workers to integrate their personal and work lives will accelerate this trend.11 Enterprises will exploit the power of social computing on two fronts:

- They will use social software and social media within their organizations to improve employee collaboration and knowledge sharing.
- At the same time, they will use social networking to drive awareness, participation, and integration with their external constituents—customers, partners, suppliers, and the public—around the globe.13

Figure 2. Explosive Growth in Social Networking Users

![Explosive Growth in Social Networking Users](image)

Source: Cisco IBSG, 2009
Cloud Computing

According to IDC, cloud services will grow at six times the rate of traditional IT offerings, representing an annual growth rate of 26 percent. Still, by 2013, cloud services are projected to account for just 10 percent ($44 billion) of IT spending, up from 5 percent ($17 billion) in 2009. Thus, most of the expenditures related to cloud computing will be on the transformations that cloud computing enables rather than on the cloud itself. Inevitably, however, the compelling economics of cloud computing will result in a significant percentage of enterprise IT migrating to the cloud. (For more on this subject, see “Getting to the Silver Lining: Taking the Cloud Challenge,” by Jim Cooke, included in this compilation.)

Conclusion

The core disruptive technologies of mobile Internet, business analytics, social networking, and cloud computing will transform the preferred IT delivery and deployment models for global enterprises. As new markets open in regions of the world formerly considered unproductive, the need for effective communications and collaboration among widely distributed people and operations will grow exponentially. Enterprises will do well to evaluate how investment in these disruptive technologies may be instrumental in creating a position of strength once the economy fully recovers; those poised to move fast will likely win the race.

Source: IDC, September 2009
Endnotes

4. Ibid.
10. Ibid.
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*Kathy Keenan of Cisco IBSG provided writing and editing assistance for this paper.*
Culture Shift: Next-Generation Government

By Martin Stewart-Weeks and Paul Johnston, Cisco IBSG Public Sector Practice

“We’re living in an age where technology can put information that was previously held by a few into the hands of almost everyone. So the argument that has applied for well over a century—that in every area of life we need people at the center to make sense of the world for us and make decisions on our behalf—simply falls down.

“In its place rises up a vision of real people power. This is what we mean by the Post-Bureaucratic Age...skeptical about big state power, committed to social responsibility and non-state collective action. The effects of this redistribution of power will be felt throughout our politics, with people in control of the things that matter to them, a country where the political system is open and trustworthy, and power redistributed from the political elite to the man and woman in the street.”

—U.K. Prime Minister David Cameron

Introduction

In their private, social, and professional lives, people are learning to exploit the opportunities and manage the risks of a world increasingly characterized by new communication and collaboration tools. Businesses, large and small, are pioneering new models of value creation, service, and innovation afforded by these new tools.

More important, the habits and mind-set these tools reflect and reinforce are disrupting often-entrenched cultures of hierarchy and control. In business, in media, in personal social interactions, big shifts are emerging in a world that is less deferential and more open and transparent, where reputation and status are increasingly earned and sustained as a function of contribution, not status. We should expect—and welcome—the same impact in government and politics.

The emergence of a more connected world has changed the way all organizations operate, enabling distributed operating models that are less dependent on hierarchy and “command and control.” The public sector must embrace and master this new operating model, which is akin to the distributed networking design that provides the foundation of the Internet.

Distributed networks are, of course, the opposite of the traditional hierarchy and command-and-control centralization on which government continues to rely to produce public value at scale and with integrity. In an open and “distributed” world, this approach feels increasingly less appropriate because:
**Point of View**

- It is not good at dealing with change.
- It is not good at tackling complex problems.
- It delivers standard rather than personalized solutions.
- It treats the citizen as a stand-in-line recipient of public services.
- It is based on an “expert/leader-knows-best” philosophy.

Policymakers, public leaders, and public services are searching for governance models that can:

- Predict and preempt change (anticipation)
- Deal with failure (resilience)
- More effectively generate and implement change
- Distribute power, authority, and accountability back out to the edge (in the form of frontline staff in public agencies and to communities and networks)

It is a model in which public value is often created beyond the formal structures and boundaries of the public sector.

**Implications for the Public Sector**

The public sector now has an unprecedented opportunity to radically transform the way it interacts with citizens through the use of Web 2.0 tools and social media—and many governments and other public-sector organizations have implemented initiatives that provide citizens with greater access to information, along with opportunities to provide and review feedback and discussion on issues.

The Cisco Internet Business Solutions Group (IBSG) believes the public sector needs to go still further, exploring ways to enable citizens to coproduce public services, creating distributed models of public service provision where users of a service are actively engaged in producing the outcomes delivered. This has the potential of transforming the relationship between citizens and public institutions, and between citizens and their representatives through collaboration, transparency, and empowerment.

**Collaboration**

The web has transformed our ability to form groups. In many contexts, self-organizing groups can outperform traditional organizations. Wikipedia and the Linux operating system are well-known examples.

Self-organizing groups have a volunteer ethos that expects people to contribute what they can, with privileged roles assigned on a consensus or transparent meritocratic basis. Influence and impact are a function of the value of the ideas that people contribute and the energy they bring to the collective endeavor of the larger group. Because they tap into a shared interest (and through this, a shared identity), members are often more highly motivated than in conventional organizations, and are more agile and innovative because the costs of coordination and the costs of failure are vastly lower.

In public-sector organizations, control and rigorous processes for accountability are vitally important. Strongly hierarchical organizations also are less effective at innovating and have difficulty dealing with complex, rapidly changing problems. This suggests public-sector
organizations will find it difficult to move toward Web 2.0-style collaboration, but it also means they have the most to gain from it.

The possibilities for peer-to-peer collaboration in the public sector are almost limitless. In the central government context, this might mean creating platforms that allow individuals to share information and ideas across different teams and departments. Or it could mean connecting similarly tasked staff in different organizations. There already are real-life examples of this happening. The “rightsnet”² website provides a platform for offering welfare advice to U.K. citizens; people can discuss issues, raise questions, and share resources such as leaflets and fact sheets, whether they work for a central government department, a local authority, a charity, or a private-sector organization.

Sometimes it is the practitioners themselves who embrace the opportunities of self-organization. In the United Kingdom, one enterprising government IT professional thought it would be good to bring together all those working on helping the government adapt to the web. Through his efforts, the UKGovWeb Barcamp³ was launched—a one-day event (now in its second year) that brings together a passionate community of public, private, and third-party workers committed to web-based innovation in government. These are now becoming increasingly familiar hallmarks of the way new applications and solutions are developed. In this case, the community has weekly informal meetings and has sparked a wide range of virtual collaborations and conversations.

Encouraging new types of collaboration should be an important priority for the public sector. No one would deny the importance of due process and accountability, but given the opportunities provided by modern communication technologies, the emphasis should be on sharing more information within and among organizations, and on encouraging greater collaboration across teams and organizations as well as within them. Greater collaboration and adherence to the enduring values of due process are not mutually exclusive. In fact, in a more connected world, it’s possible that effective collaboration will be an indispensable feature of ensuring that due process, and the accountability that goes with it, can actually be delivered.

A less-siloed public sector would have better internal feedback mechanisms, be more open to new ideas, and be better able to deal with change. But achieving this will be a significant management challenge. Creating a new balance between command-and-control and frontline empowerment will be a long and difficult process, but it is hard to deny that it needs to be explored.

**Transparency**

Transparency is an area where there is strong external pressure for change. Sites such as “OMB Watch” (U.S)⁴ and the work of the Sunlight Foundation⁵ demonstrate the public’s thirst for user-friendly information about the actions of official bodies and elected representatives. Furthermore, these sites illustrate that it is often citizens themselves who are best placed to create the sites and tools that make public information come alive.

Generating citizen and media interest in the European Union’s complicated agricultural subsidy program might seem an impossible task, but through its use of mashups that literally put the subsidies on the map, a small group of unpaid volunteers has succeeded in highlighting many unexpected aspects of the program. For example, it is interesting to see how many
subsidy recipients in a country such as Sweden live in towns (and, in particular, the capital of Stockholm) rather than in the countryside (see Figure 1).

**Figure 1.** A Mashup Created by a Volunteer Group, Farmsubsidy.Org. Shows Recipients of E.U. Common Agricultural Policy Subsidies Who Live in the Area Around the Swedish Capital of Stockholm

Source: http://maps.farmsubsidy.org/sweden

Sites where citizens have made imaginative use of official data highlight the loss of social and economic value when government-held data either is not made available at all, or is made available in unimaginative or restricted ways. The U.K. government sought to tackle this issue by setting up a taskforce whose aim was to tackle the barriers that prevent society from maximizing the value of public data. As part of its work, the Power of Information Taskforce ran a competition where citizens were invited to submit ideas on how they would use public data if it were available. Despite offering only a tiny financial prize, the competition generated hundreds of entries, with winners ranging from a mashup that would show the location of every postbox in the United Kingdom, to a site where citizens could input a postcode and see a map showing details of all recycling facilities in that area.

Transparency offers myriad benefits. Some of these relate to efficiency as information about performance and the availability of public-sector resources becomes more freely available. An obvious example is travel-related information, and many cities such as Amsterdam are already exploring innovative ways of making such information easily and conveniently available to citizens. These initiatives not only save people time—they also secure better use of public assets such as roads, buses, and trains.
Transparency can also provide a strong impetus for improved performance. Publication of information on how long each stage of an administrative process takes would offer a strong incentive for tackling bottlenecks and dealing with large variances in performance among different administrative offices. There are risks, of course, in moving in this direction. In some situations, the raw data can sometimes be misleading and used in ways that are neither fair nor informative. But the response should be to explain the data and explore what it actually tells us about the different dimensions of performance. The reality for all organizations is that there are many things that could and perhaps should be fixed, but are not addressed because they are difficult to do or because they never become a priority. Transparency can help give added urgency to issues that impact citizens and impel real change.

In addition to helping improve performance, transparency can contribute to a better relationship and greater trust among citizens and public institutions.

Much of people's cynicism about public-sector processes and decisions is fueled by their invisibility and complexity, and sometimes a combination of both. Take a simple example: when traffic lights are out at an intersection for a prolonged period, and there are traffic jams as a result, the natural reaction is to assume that those in charge have not given much thought to the impact of not repairing the traffic lights more quickly. But there may be good reasons for the delay—perhaps repairing them more quickly was impossible or would have cost three times as much. Making more information available about this type of mundane but practical situation need not be expensive or difficult, but can have a huge impact on how citizens feel about public-sector organizations and decision makers.

In a world where sharing information has become vastly easier, public agencies should aim to make as much information as possible available, and enable citizens to give feedback and view the feedback of others. Transparency about what others are saying to a public-sector organization is important, because other citizens can qualify the comments of others (agreeing or disagreeing with them), and because this enables discussion among citizens, providing a clearer picture of what citizens really think.

Ultimately, we should move toward a world where the information, analysis, and deliberation that influence key decisions are easily accessible. Further, we should aim for a world where it is both simple and appealing for citizens to give feedback at the point of contact in many of their day-to-day interactions with the public sector. Undoubtedly, we have much to learn about how to provide information and feedback opportunities in ways that will encourage citizens’ participation. But if we want citizens who support and engage with public-sector institutions, we need to go in this direction.

**Empowerment**

Applying Web 2.0 tools and culture to the public sector suggests a new emphasis on empowering employees, citizens, and communities. The traditional e-government agenda of online services can make public-sector transactions more convenient and less time-consuming for citizens, but more radical change would involve enabling citizens to coproduce public services.

A simple example is the “FixMyStreet” website® created by the U.K. charity mySociety. This site enables people to highlight problems on their streets (such as abandoned cars, potholes, broken streetlights, litter, etc.). The information (which often includes a photo) is passed on
automatically to the relevant local authority, and citizens (or the local authority) can update the entry when the problem is fixed.

Empowerment might also involve shifting some control directly to citizens. One form this can take is client-held budgets, as in the U.K.’s “In Control” project. This approach has been used by various local authorities to allow social-care clients to directly access the support they believe they need. Usually, if someone is eligible for local-authority funding, social workers devise a care plan that allocates to the individual the services that are paid for and commissioned by the local authority. It is rare for the individual to have much of a say in how services are designed. By contrast, self-directed services put the citizen at the center. Professionals help an individual assess his or her eligibility, and the person is then given an approximate budget to design services that make the most sense. Once the authority approves the plan, the money flows to the individual and to the service providers of his or her choice. A similar reform is being developed in Western Australia for people with disabilities, including the introduction of individualized funding programs (http://www.disability.wa.gov.au/Research/PublicSearchView.aspx?pid=75).

Empowerment can also mean encouraging community self-help. An interesting example is the Southwark Circle Project in the London borough of Southwark. Instead of focusing on an unmet need for public services, this project explored how a locality might mobilize public, private, voluntary, and community resources to help older people define and create quality of life and well-being for themselves. This involved a radical change in the way resources were defined (not just financial resources, but other assets such as skills and networks) and the way services were configured (away from a near-exclusive focus on care and toward building relationships and participation). Following two months of user research, Participle—the consultancy firm leading this initiative—set up a cooperative social enterprise that will help people build social relationships and provide services to each other—some on a paid-for basis, others voluntary. The cooperative will also source some services externally.11

Conclusion

Collaboration has always been a function of good government. The need to talk to other agencies or to groups of experts and citizens in the course of developing policy or regulations, or when designing and delivering services, has always been a hallmark of effective government.

But some things have changed. One is the sheer range of interests, organizations, and individuals who are part of the collaboration process. Another is the pace and rate at which collaboration has to happen.

There is renewed interest in drawing more heavily on the insights of citizens themselves, especially where they have direct experience with services. An example is the Patient Opinion website, established by a general practitioner in Great Britain who wanted to find a way for National Health Service patients to share experiences regarding the care they received.

Solving public problems requires new combinations of experience and insight, enabled by easy access to convenient and appealing ways to talk, argue, design, test, and then scale solutions. Open and connected governance assumes an ability to find people rapidly, connect them in purposeful conversations, give them access to the right mix of knowledge and ideas (to which they will then contribute), and keep them working productively in ever-more complex and shifting coalitions of interest and practice.
The people and expertise needed to make this model work will be anywhere and everywhere. Often, they won’t be in large institutions or traditional organizations (private, public, or community). They will be in smaller, more distributed networks that come together to solve problems or share ideas. Much of the invention and inspiration for change will come from the edge, rather than the center, where people live and work and receive services that have often outgrown the contours of their lives or are not delivering the value people and communities need. The confidence to learn by sharing is often nurtured in small, local, highly connected places and communities where trust is high and tolerance for diversity and intelligent failure is similarly strong. Engaging with citizens becomes a vital part of building social capital, which, in turn, powers innovation.

Creative use of social networking and collaborative technologies is already impacting the way people think and act on “public purpose” issues. But we know that moving toward an open and transparent public sector will not be easy. Nonetheless, if we want to build a society where citizens feel closer to their public institutions and more in control of these institutions’ impact on their day-to-day lives, we need to build a model of government that learns from, and learns to adapt to, the more-connected world in which citizens now live.

Endnotes

3. http://groups.google.co.uk/group/BarcampUKGovweb
7. http://www.showusabetterway.co.uk/call
11. http://www.southwarkcircle.org.uk/

Kathy Keenan of Cisco IBSG provided writing and editing assistance for this paper.
Together, the Customer Is Everywhere and Everyone
How To Increase Sales and Win Market Share by Creating Exceptional Experiences

By Joanne Cheigh, Clive Grinyer, and Rachael McBrearty,
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Providing exceptional customer experiences is the new battleground for increasing sales and winning market share in today’s challenging economic environment. Given the growth of the Internet, popularity of social media, and rise of new consumer technologies, customers are more informed and empowered than ever before. With just a few clicks, customers can easily broadcast their opinions—positive or negative—to your competition, the media, and their peers.

The three new tenets of this “customer-in-control” universe are:

1. **Increasingly high expectations.** Customers demand high-quality service and company credibility (for example, positive feedback from other customers or independent experts), and consistency across every company touchpoint.

2. **Willingness and ability to share.** Customers have always been enthusiastic about sharing their experiences—especially bad ones. Today their voices are amplified by robust social networking tools that include blogs, wikis, and websites such as Facebook, Twitter, and YouTube—all of which provide the ability to broadcast their opinions to friends, family, colleagues, and even strangers.

3. **Desire to be heard.** Customers want to be part of the product development process. When this happens, customers are more satisfied and loyal because they feel that they have been heard and that their needs and desires will be addressed.

For businesses, customer empowerment offers both downside risks and upside potential.

**Downside Risks**

The ability of customers to voice their opinions can adversely affect companies’ reputations and tarnish brands that have taken years to build. There are numerous examples of negative stories being posted online about leading companies such as Apple, Dell, United Airlines, and many others. While there is no way to prevent customers from posting this type of material, companies should have a strategy for how to respond when it does happen. By acting smartly and quickly (within hours, not days), companies can show they are listening and reduce the potential impact from negative feedback.
Upside Opportunity

While the risks may seem daunting, there is significant upside to tapping into the new power of consumers. Direct communication with customers creates an unprecedented opportunity to learn what they care about. This allows companies to identify and correct issues such as weaknesses in new product launches. Armed with these insights, companies can respond more rapidly to shifting trends, and design products that will be more readily accepted by consumers. In a crowded and competitive marketplace, companies that focus on what people want will enjoy increased brand awareness and improved customer relationships that lead to growth in sales and market share.

Creating Exceptional Customer Experiences

As customers continue to gain control, delivery of exceptional experiences becomes even more critical to companies’ bottom lines. To create exceptional customer experiences, companies should implement the following four steps. This approach can be applied to new initiatives, specific process improvements, and company-wide transformation strategies. Once these steps have been completed for a particular project or initiative, they should be repeated to gain new insights, make ongoing improvements, and expand programs where appropriate.

Learn

- Identify and understand customer segments that offer the most potential
- Gather customer insights from reports (sales and customer service), behaviors (store visits and at-home usage), and discussions (roundtables and focus groups)
- “Walk in customers’ shoes” by using techniques such as secret shopping or observational studies to gain further insights and build empathy toward customers
- Brainstorm with customers about concepts or solutions that might meet their needs more effectively than current offerings

Analyze

- Map the customer journey and identify key touchpoints where you can improve conversion rates by delivering exceptional experiences with your company
- Develop personas (representations of target customers) with demographic, attitudinal, behavioral, consumptive, and technological attributes that embody your typical customer segments
- Ideate and innovate using customer-journey hotspots and personas. Seek ideas from inside and outside your company to receive multidisciplinary, diverse, and creative input.

Design

- Aggregate all of the insights, ideas, analysis, and input into a cohesive vision of the ideal experience for your customers
- Create and prioritize a roadmap and architecture that align with business, product / service, and technology goals
- Develop prototypes that depict customer experience touchpoints. Test the experience with customers and make adjustments based on feedback until you are satisfied with the results
Implement

- Build the technology solutions, service experience, and new processes
- Test the experience with actual customers at multiple stages to evaluate process flows and solution performance
- Develop metrics that track performance and customer satisfaction after the launch

Critical Success Factors

While these steps explain how to create exceptional customer experiences, it is important to consider several factors that are critical to success:

Cross-functional teams. Customer experience is no longer just the responsibility of contact centers and marketing groups. Cross-functional teams that consist of executives and employees from all business units—including IT—need to align around a comprehensive, customer-centric strategy, with the goal of exceeding customer expectations.

Brand representation. Brands are a key differentiator in today’s commoditized world and should not be underestimated. Because brands represent the sum of customers’ experiences with and perceptions about a company, it is critical that customer experience embody the brand promise at every touchpoint.

Technology innovation. As new technologies such as digital signage and more powerful smartphones emerge, technology will play an even greater role in the delivery of customer experiences. And while the ability to introduce new technologies into the customer experience is key, it is important to remember that great experiences are not just about gadgets and new devices—they’re also about balancing technology with the right content, organizational support, and process changes. Here are several points to keep in mind when considering how to use technology to enhance customer experiences:

- **Determine the right devices** to support by analyzing which devices your customers are using and understanding how they are using them. For example, Gilt Groupe, an online retailer of luxury goods, claims that 10 percent of its sales come from customers using iPads and iPhones.¹

- **Make the experience simple and easy to use.** It is often a challenge to hide all of the underlying complexity of a solution from customers. JPMorgan Chase has done a good job of this with the company’s new phone application, which allows customers to deposit checks electronically. To make a deposit, customers photograph the front and back of the check with the phone’s built-in camera, then transmit the images to their account.²

- **Personalize the experience when possible.** As you get to know your customers, acknowledge and reward them for their business by using mechanisms such as targeted offers and suggestions.

- **Create a platform** that makes it easy to deliver content to multiple sources in multiple formats. Whether it’s a direct mail piece, digital signage, or a website, employees should be able to update content quickly to respond to rapidly changing situations.

- **Empower employees** with access to the right content at the right time. Extend their ability to communicate with customers through video conferencing and sharing content across all touchpoints.
Zappos.com: Selling More than Just Shoes

Zappos.com (now part of Amazon.com) has become a leading seller of shoes over the Internet. The company contributed $200 million in revenue to Amazon.com’s fourth quarter 2009 results (since being acquired, Zappos.com no longer reports separate results). Zappos.com’s meteoric success is partly due to the more than 4 million pairs of shoes located in its Kentucky warehouse, next to a UPS hub. It also offers free delivery and pays shipping costs for items that are returned within a year of the purchase date.

Even so, it’s the emotional connection with customers that makes Zappos.com stand out. The company is fanatical about providing service that not just satisfies customers, but delights them. For example, the company touts free, four-day delivery but often delivers orders the next day.

Zappos.com has also mastered the art of telephone service—a challenge for most Internet retailers. Zappos.com publishes its free customer service number on every website page. Its smart and entertaining call-center employees are also free to do whatever it takes to make customers happy. There are no scripts, no time limits on calls, no robotic behavior, and plenty of legendary stories from customers about Zappos.com’s service.

By selling exceptional customer service, in addition to a great selection of shoes, Zappos.com has become a leading example for other companies to emulate when determining how to increase sales and win market share by creating and delivering exceptional experiences.

Next Steps

To create exceptional customer experiences, CIOs should take three steps:

1. **Assess their companies’ current customer experience delivery capabilities**
   - Examine the company’s current customer journey. During this process, you will find areas of excellence and areas that are inconsistent or need improvement.
   - Important questions to ask include: Are the values of your brand visible at every touchpoint and interaction? Do touchpoints come together in an easy-to-use and intuitive fashion? Where are the gaps that don’t work as well as they should? What is the competition doing that you are not?

2. **Identify critical areas for improvement**
   - Create quick wins by addressing the most effective fixes first.
   - Learn customers’ needs by using social networking to establish a two-way dialogue.
   - Look for opportunities to exceed customer expectations. Examine what leading companies are doing outside your industry, and identify areas where you can delight customers even more than you originally anticipated.
   - Use the creativity and knowledge that exists within your own company to identify innovations that will enhance the customer experience.

3. **Gain executive support and establish a team to address issues by following the four-step process described in this paper**
   - Customer experience is the sum of your company’s activities. Set up cross-functional groups to learn, analyze, design, and implement great customer experiences that reflect your brand, build loyalty, and enhance your bottom line.
Endnotes


2. JPMorgan Chase, September 2010.


Michael Adams of Cisco IBSG provided writing and editing assistance for this paper.
Reaching into the Cloud
By Jim Cooke, Cisco IBSG Innovations Practice, with Contributions from Cisco IBSG Public Sector Practice

Cloud Computing Is Not About Technology
If you listen to the ongoing hoopla around cloud computing, you might conclude that cloud is the next technology revolution. In reality, the technology underpinning cloud is nothing new. Nor is technology the primary impetus to shift from traditional, data-center-based IT. We are actually seeing a change in the way we consume IT resources due to the economics of using the cloud versus the physical data center.

Economics have produced many market transitions throughout history. The Industrial Revolution, electricity generation, telecom, and so forth are all examples of situations where a service or product became commoditized, margins decreased, and industry consolidation occurred. The value of the individual service decreases as the value of orchestrating the service increases.

This is what is taking place today in the IT arena as we begin to shift from producing all IT services consumed in our own data centers to consuming IT services produced in the cloud by service orchestrators. Economically, cloud computing is compelling for IT service con-sumers and IT service providers alike, making this transition both inevitable and desirable.

Why Now?
If the technology behind cloud computing isn’t new, why are we seeing a shift to the cloud now? Why didn’t it happen before? In IT, many factors (both technological and non-technological) have converged. Network speeds increased by 18 million times over the past 15 years, processor speeds have risen exponentially, and cost per transistor fell from an average price of $5.52 to today’s price of one ten-millionth of a cent. Something that used to require a physical box with a physical location now can be done in software located anywhere.¹

Concurrently, the price of storage plummeted in just 50 years from $70,000 for one megabyte to about a tenth of a cent, making the cost of storage 10 million times less expensive.² We evolved the ability to store massive amounts of data inexpensively, to decouple functions from physical hardware, and to transmit data at high speeds over long distances, putting the technology for cloud computing into place by the late 1990s. But a catalyst was still required to make cloud computing economically compelling, and that catalyst was virtualization.
Virtualization in its simplest form is the separation of software from hardware. Historically, deploying a given application required a server with dedicated storage. Today, that physical connection between software and hardware can be decoupled, or virtualized, providing great flexibility in deciding where you want that server and storage to reside. You can set up data centers in less-expensive locales—or you can decide to divest yourself of the hardware altogether, and run the software on servers that are paid for and maintained by others. Virtualization allows you to run your applications anywhere, and change where you run them at will—disrupting the traditional delivery and consumption of IT services.

Another factor that arose to impact the shift to cloud is culture. Fifteen years ago, it was unthinkable to store sensitive data outside the corporate firewall or to delegate mission-critical processes to a vendor. Today, people are willing to consider purchasing IT services from a vendor, just as they might purchase electricity—with the same assumptions of reliability, accessibility, and customer service.

The final impetus for the shift to cloud was the global economic downturn, which forced people to reexamine their business models from stem to stern. IT underwent stringent evaluation, and cloud computing had to be considered as a possible alternative to the traditional model. Cloud enables the conversion of fixed costs (the ownership cost of servers and storage, plus employee salaries and overhead) to variable costs. There is always a certain amount of excess capability (and its attendant costs) with on-premises IT, because IT must be provisioned for peak demands. If you are using your equipment at peak capacity only during certain times (the pre-holiday shopping season, for example), the rest of the time you are paying for extra, unused capacity. Some experts estimate average asset utilization rates for enterprise IT equipment at 25 percent, which is unacceptably low for any other capital-intensive asset. Cloud computing is both flexible and scalable, allowing you to buy only what you need, when you need it.

Another economic benefit is the ability to reallocate resources. For example, a hospital needs IT services, but the focus of the business is healthcare, not IT. In fact, IT is viewed as a necessary evil. When hospital IT shifts to the cloud, not only does it transform a fixed cost to a variable cost—it unburdens the hospital of the cost of the equipment and people required to support IT functions, freeing resources that the hospital can redirect to its core mission.

There are also savings in the time it takes to scale IT services. If a business with internal IT suddenly ramps up to meet a peak demand, it must buy new hardware, wait for it to be built and shipped, then wait longer for it to be installed and integrated. The business becomes permanently committed to the additional capacity it has purchased. If a business using cloud computing needs to ramp up, it can do so almost instantaneously. When peak demand has passed, the business can scale back and save money.

The technology is a given; it’s there and it’s ready. Instead of worrying about the technology, businesses should compare the total cost of ownership of running an internal IT shop—hardware, software, licensing fees, facilities, and IT staff—to that of moving to the cloud, with its variable cost and scalability. The economics are compelling; the cloud wins.

Cloud Readiness for the Enterprise

When is cloud computing right for your business? That depends on the state of the business’s current IT environment. Few enterprises will leap wholesale into cloud computing, nor should they.
Cloud computing makes immediate sense for most small and medium-sized businesses (SMBs). The economic argument between in-house IT and cloud computing has already been settled in favor of the cloud, which can provide more capabilities and access to greater IT expertise than most SMBs could ever afford in-house—at tremendous cost savings.

Larger enterprises, on the other hand, should approach cloud computing in stages. If the company owns highly underutilized assets, there is less impetus to move to the cloud as long as those assets can be utilized over time without significant additions to IT staff. Even in this case, however, cloud computing principles used in-house to virtualize IT and deliver the technology as services—creating an internal cloud—will be more cost-effective than the traditional IT model of delivering discrete silos of technology.

Deploying an internal cloud is less about changing technology than it is about transforming culture and how the IT function is managed. Many organizations still have hardware dedicated to specific business units (BUs). As each BU must be provisioned for peak usage, about 75 percent of that capability is unused much of the time. Each BU has its own hardware and software budgets. Each BU makes independent decisions about which hardware and software to purchase, how many licenses it needs, and so forth. Clearly, these resources are not optimized across the organization, and a great deal of computing capacity is tied up in dedicated equipment.

In an internal cloud, where resources are virtualized, each BU purchases the capacity it needs, when it needs it. An entire organization can be served with fewer resources at lower cost because of the cloud’s ability to scale. There is little need for excess capacity, because the BUs rarely will require peak capacity at the same time, and peaks usually can be planned for and provided on an as-needed basis.

Internal clouds are a viable interim phase in enterprise IT migration to hybrid and public cloud services. Traditional, siloed IT shops will struggle to compete with cloud-computing providers in the areas of cost, flexibility, and scalability unless they virtualize their own operations. In addition to the near-term financial benefits realized by deploying an internal cloud, the process also assures cloud readiness. If you get your processes right before you move to the cloud, you’ll be well-positioned to make the transition successfully.

Issues with trust and security remain as short-term challenges, but in reality it is no more likely that a hacker will invade a cloud than your in-house data center. Nonetheless, these concerns will persist for a while, and they are probably the reason some organizations will opt for internal clouds first.

All organizations should stay informed about the evolution of cloud computing, and reevaluate the potential benefits of cloud against their current IT services delivery and consumption model. For organizations ready to adopt cloud services in the near term, the Cisco® Internet Business Solutions Group (IBSG) offers a five-point roadmap to help enterprises embark on the most essential elements of a cloud-computing program:

1. **Services Roadmap.** Optimize the current IT environment by providing an internal set of cloud services and enabling the incorporation of external services. Depending on the maturity of your IT organization, start with consolidation, move into standardization, and then virtualize. Once you start virtualizing, you begin to develop service delivery models and manage your IT assets as sets of services rather than discrete technologies. Then you’ll be able to take a hard look at adopting cloud services for
production environments. You will experience cost benefits by optimizing your infrastructure and increasing utilization of existing assets, and there’s no downside.

2. **Services Portfolio.** Identify cloud services opportunities based on business needs, value proposition, and the ability to adopt/support those services. Which functions or processes is the organization willing and able to assign to an external cloud service, and which must remain behind the corporate firewall? Build a portfolio of end-user services and recommendations for how you think they should be delivered. Evaluate how they will be delivered as an external service versus delivered internally. Can you reduce costs and improve service levels?

3. **Communications Plan.** Communicate with the business units about cloud services and the roadmap for incorporating them into the architecture, whether the services are internal or external. Communication is vital because independent software vendors (ISVs) are not meeting with IT to sell their products and services—they are talking directly to the BUs. You need to let the BUs know what you are doing so that you are not working at cross-purposes.

4. **Test Bed.** Experiment with and pilot various services, internally and externally, to identify where the real issues will arise. Take advantage of opportunities that require quick development work to test the cloud environment, and look to cloud-based providers for discrete functions such as CRM to test the concept.

5. **Sensing and Strategy Evolution.** Designate a cross-functional team to continually monitor which new services, providers, and standards are in this space, and to determine whether they affect the roadmap. It’s better to discover where the bumps are in a test environment than in a production environment.

And, of course, iterate and refine your operating model constantly as it relates to consuming, delivering, and supporting cloud services.

**Cloud Computing in the Public Sector**

The five-point roadmap outlined above is also appropriate for public sector organizations, and the same benefits apply.

Some public sector organizations have made early moves into cloud computing. For example, in Washington, D.C., all 38,000 city government employees have unlimited access to Google documents and services such as Gmail. The U.S. General Services Administration recently announced moving the government-wide portal, usa.gov, to the cloud and issued an RFI for cloud infrastructure services. In Japan, the Ministry of Internal Affairs and Communications has announced plans to shift all government agencies into a private cloud environment by 2015.

One of the most significant cloud computing opportunities for the public sector is the ability to share IT resources among multiple agencies. While governments have tried hard to create frameworks geared toward shared services, these have not always been successful. Cloud computing offers an easier and less burdensome route to more efficient and effective public sector information management. This may be especially true for developing countries that do not have the technology, skilled personnel, or resources to create world-class IT infrastructures.
Of course, cloud computing is not without its challenges:

- A service provider residing outside a government’s legal or territorial jurisdiction may put access or security at risk.
- Open standards and interoperability may not be guaranteed, leading to risk of vendor lock-in.
- Data privacy is a concern when using public clouds. This can be addressed by the development of private clouds.
- Business continuity will continue to be a concern. Cloud computing, however, may also mitigate this risk, as cloud vendors are likely to use more robust and better-maintained computing platforms that provide more redundancy and are less likely to fail.

In addition to the five steps already described, public sector IT managers preparing for adoption of cloud computing should take the additional step of identifying which data cannot be held in public cloud computing environments for legal and/or risk-mitigation reasons.

**Conclusion**

There is no reason to hold back from cloud computing-based on untried technology issues; as previously mentioned, there’s nothing new about the technologies used in cloud computing. It’s all a matter of economics, following a pattern of commoditization we have seen many times throughout history. There are many things that enterprises can do today to get ready for the inevitable shift to the cloud. It is difficult to predict, but Cisco IBSG expects that within 10 years, the majority of IT services will be delivered via public or private clouds.

The network is the foundation of cloud computing. The software and hardware are important, but the services simply cannot be delivered without the network and its ability to monitor, manage, and report.

For more information about the economics of cloud computing, please contact:

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**Endnotes**

2. Ibid.

*Kathy Keenan of Cisco IBSG provided writing and editing assistance for this paper.*
The amount of data is exploding, endangering organizations that don’t take the proper steps now to turn this threat into an opportunity.

By 2012, 20 typical broadband households will generate more traffic than flowed across the entire Internet in 2008. By the end of 2010, half a zettabyte of data will travel across the Internet—equivalent to the information contained on a bookshelf 36 billion miles long (10 times the distance from Earth to Pluto). And every five minutes, we create a blizzard of digital data equivalent to all of the information stored in the Library of Congress (U.S.). This amazing growth is happening for three main reasons:

1. **Video.** According to Cisco Chairman and CEO John Chambers, “Video is the new voice.” Because video is a rich form of communication, it contains much more data than text-based documents. In addition, the amount of video is expected to increase dramatically. By 2012, more than 9 percent of Internet traffic will come from rich media (video, audio, and photos). By 2015, movie downloads could equal 100 exabytes, equivalent to the information contained in 5 million Libraries of Congress. And while the world’s data will increase sixfold over the next couple of years, corporate data will grow 50 times.

2. **The burgeoning Internet.** The Internet is still expanding rapidly. In fact, the next 1 billion people (about 20 percent of the earth’s population) will get online using wireless devices. In addition, the number of nodes and devices (cars, buildings, appliances, and so forth) on the Internet is expected to double every 5.32 years. This means that by 2020, there will be more things on the Internet than people. Once connected to the Internet, devices and people become content creators.

3. **Ubiquitous cameras.** Almost every new device—from PCs to iPhones—now comes equipped with a camera. This allows ordinary citizens to become amateur photographers and videographers. In addition, most TVs will have an embedded camera within two years. With the proliferation of inexpensive, high-quality, easy-to-use cameras, the amount of data from rich media will continue to increase dramatically.
The Challenge of “Infolution”

Pollution is defined as the introduction of contaminants into a natural environment, causing instability, disorder, harm, or discomfort to the ecosystem. Similarly, the sheer amount of data being generated today can often “contaminate” the corporate “environment” and cause “instability, disorder, harm, and discomfort” for businesses. This phenomenon has been termed “infolution”—pollution caused by the rapid proliferation of data.

The impact of infolution can be seen in the amount of money corporations spend to store excess data. Cisco, for example, spent $77 million in 2010 to store data that hasn’t been accessed in more than a year. And Cisco is not alone. Gartner estimates that more than 70 percent of all data in a typical enterprise has not been accessed within the past year.

Another challenge is learning how to convert this mountain of data into information that creates knowledge. Data by itself isn’t useful; data must be tagged, organized, searched, combined, and filtered before it can be considered information. Finally, information must be processed into a form that helps people do something productive, such as making an important business decision. In short, knowledge is information that can be acted upon based on accurate and reliable data.

In addition to the challenge of managing the sheer volume of data, companies are finding it difficult to use the increasing amount of video coming into their organizations. To date, there is no effective way to categorize, index, and search video. With video representing an increasing percentage of data being created, companies may not be able to find and use important information contained in videos stored on their systems.

Turning Data into Information

How can companies turn data into knowledge? The answer may come from the human brain. For example, people are adept at filtering out noise to concentrate on what is important to them; blood rushing through our ears creates an audible noise that we can’t hear because our brains have determined the sound isn’t important.

Companies are successfully mimicking the human brain to manage the data onslaught by enabling information to find employees, rather than the other way around. This is done by allowing employees to register their interests based on categories of information such as accounting, marketing, product engineering, and so on. When information on these topics is created or found, it is sent to the person who needs it.

A good example of this approach is Cisco Pulse, a network-based appliance that “listens” to network traffic and creates relationships from the data it scans. In a practical sense, Cisco Pulse delivers a powerful new way to harness the collective expertise of a company’s workforce, making it quick and easy for employees to find the people with whom they need to collaborate.

Turning Information into Knowledge

Once information has been generated from data, the next step is to turn this information into knowledge. This is critical because knowledge is essential for executives to make important business decisions. Cisco is one of several companies successfully turning information into knowledge by changing how information is made available to employees.
Cisco is in the process of building its Integrated Workforce Experience (IWE) platform, which will replace the company’s existing employee portal. IWE is contextual and dynamic—it brings information to employees when they need it. When attendees join a meeting, for example, IWE will provide background information on other participants, including areas of expertise, relevant documents based on the topic of discussion, and links to external sources of information. IWE consists of three components:

1. **People.** The people section of IWE adds to the traditional employee directory by including information such as skills, documents created, and communities of interest (see below).

2. **Information.** The information area of IWE is a repository of all the information created by Cisco employees. When employees search on a specific topic, IWE will provide a list of relevant files and documents. In addition to the filename and brief description, users will be able to see other information created by the same author, as well as related content.

3. **Communities.** Communities are the most powerful aspect of IWE because they make it easy for employees to collaborate with others and find the information they need to do their jobs better.

The three areas of IWE are fully integrated, so employees have easy access to the information they need no matter where they are in the system.

**An Enabling Technology Architecture**

IWE is supported by Cisco Quad, an enterprise collaboration platform that combines the power of social networking with communications, business information, and content management systems. Cisco Quad helps businesses:

- Improve productivity by optimizing and scaling employee expertise, and by encouraging collaboration and knowledge transfer.
- Enhance innovation by building environments that encourage employee participation, protect sensitive documents and materials, and move products to market faster.
- Generate growth by customizing communities and content around specific sales opportunities, making specialists and other subject-matter experts more available and accessible to people in the field, sharing best practices and lessons learned, and driving a collaborative sales culture.

**Next Steps**

To transform the data explosion from “challenge” to “opportunity,” Cisco IBSG recommends CIOs take four steps:

1. **Analyze and project.** Assign a team of employees to analyze the current situation and project how the company will be affected by the huge increase in data over the next two to three years. This information can then be used to demonstrate storage and management costs to the company. It is also important to survey employees about the challenges of finding the right information to do their jobs effectively. This, combined with the cost information, should be enough to convince CEOs that something needs to be done now.
2. **Explore and evaluate available data management solutions.** Although it may be several years before video data can be effectively tagged, sorted, and searched, new tools are emerging almost daily that can help companies manage the video avalanche. Evaluating and deploying solutions available today will make it easier to benefit from the large amounts of data coming in the future.

3. **Create a vision and gain support.** Once there is support for change, it is important to have a clear vision of where the company should be in three to five years. This will make it easier to establish interim, attainable goals to reach the end objective.

4. **Execute.** Once there is a clear and achievable vision, execution can occur in a phased manner to keep costs low and manageable. Even though some level of investment is necessary, Step 1 can be used to show that development of the right platform will save money in the long term.

By taking these steps now, CIOs can ensure their companies are not only prepared for the coming data onslaught, but can lead their industries by turning infolution into knowledge that improves business results.
Endnotes

1. Source: Jim Cicconi, senior executive vice president, AT&T.

2. A zettabyte is a unit of information or computer storage equal to 1 sextillion bytes (1000^7 or 10^21); http://en.wikipedia.org/wiki/Zettabyte


6. An exabyte is a unit of information or computer storage equal to 1 quintillion bytes. One exabyte equals 10^18 bytes; http://en.wikipedia.org/wiki/Exabyte


14. Source: Dr. Paek-Jae Cho, former president and CEO of Korean Telecommunication Corporation.


Michael Adams of Cisco IBSG provided writing and editing assistance for this paper.
Complete Renovation: Transforming Today’s Business for Future Growth

By Rick Hutley, Cisco IBSG Innovations Practice

As technology creates new ways of doing business, companies are realizing that they must transform their processes. They need to work with partners all over the world, and they must be agile enough to keep up with changes that come at a dizzying pace. For many industries, new products generated by research and development aren’t enough to drive growth, so innovation takes on an increasingly important role.

CIOs everywhere are challenged by the need to keep up with current and future technology trends, and to move quickly when unforeseen disruptions come along.

There are tried-and-true ways for CIOs to create an environment that fosters innovation. One is to develop a keen sense of where to apply innovation in an organization. Another is to enable innovation through collaboration tools that connect workers around the globe to make decisions quickly and smartly, with the input of colleagues, customers, and communities.

The Innovation Cycle

Innovation has always been a driver of business opportunity, but different types of innovation are needed at different stages of a product or service’s lifecycle. By taking a step back to assess the fundamental role of a business and its value proposition, and then determining the type of innovation from which it would profit, a CIO can put business models and processes in place for the present and the future.

The phases of innovation include:

- **Product innovation**: Early in a product lifecycle, innovation is focused on adding features and functionality. Cell phones, for example, added memory, then applications, then one camera, and finally, two cameras.

- **Process innovation**: As a product matures, it reaches a limit of features for which consumers are likely to pay. At that point, innovation may shift to process: can it be manufactured faster or more cheaply? Should it be marketed differently?

- **End of life**: At the end of a product’s lifecycle, the focus is on selling it quickly and cheaply, and perhaps reinventing it with a new business model and starting the innovation cycle all over again. Cell phones followed that scenario when they essentially became mini-computers and again started adding new features.

Cisco Internet Business Solutions Group (IBSG)
Most companies have products and services in various stages of maturity, so CIOs and their colleagues need to think about what kind of innovation is needed for each. Ideally, they would have a balanced portfolio of innovation: some areas that need modest changes to keep products refreshed, and some that call for fresh ways of doing things to address new opportunities.

**Connected Innovation**

One area that has provided new business opportunities is social media. The rapid growth of Facebook, Twitter, YouTube, and others is a major driver of business transformation.

Social media has already dramatically increased connectedness in social innovation and creative industries, where diverse groups of motivated individuals come together. In larger, more traditional organizations, however, innovation remains slow and unconnected. CIOs need to ask themselves how they can use that technology to enable their colleagues to market products differently or to capture market intelligence in this new way.

“Connected innovation” uses collaboration technologies to transform the way companies and organizations innovate. It is a vision of innovation that embraces technology to make the right connections—with the right people, at the right time, in the right medium. Connected innovation is faster way of doing business because it removes process delays, and it’s better because it includes a wider range of people.

In an ideal connected business environment:

- A diverse mix of people with the right skills and experience are included in the innovation team to find the best ideas, resolve issues, and make decisions.
- Rich media is used to bring ideas to life and to engage, link, and inspire people to innovate.
- Customer and citizen needs are central to the innovation process to make sure that what is designed and developed is what the customer wants.
- The extended team operates collaboratively to develop and implement ideas quickly and efficiently across boundaries, regardless of location.

The single most important benefit that this environment would provide is speed—speed to gather ideas from anyone, anywhere; faster qualification and selection of ideas by linking to experts and decision makers; technology-enabled rapid prototyping; and collaborative partnerships for implementation and delivery.

Faster innovation allows organizations to develop and test new concepts quickly with customers and citizens, and make their ideas operational sooner. Innovation inevitably includes an element of failure, but a rapid innovation process allows organizations to fail fast and improve.

**The Case for Business Architecture**

When a company’s products or markets hit “midlife” in the innovation cycle, leaders need to look ahead and plan for what is coming next. Examples abound of businesses that failed, or barely survived, because they couldn’t or wouldn’t respond to unforeseen competition or changes in consumer mindset. Sony, for example, created the market for portable music players with the company’s Walkman device, but missed the transition from hardware-only solutions to an ecosystem of products that includes integrated hardware, software, and services. Encyclopædia Brittanica has struggled with competition from search engines and Wikipedia...
because, for too long, it held onto the idea that its purpose was to provide information in print, even as readers moved online. Blockbuster, the world’s largest movie-rental company, with about 3,000 stores in the United States, filed for bankruptcy in September 2010 after failing to adapt its storefront model to online technology pioneered by rivals.

Disruptive changes such as these often demand more radical innovation. Consumer preferences for green technology might mean that instead of building the world’s biggest router, Cisco develops the “world’s most energy-efficient router,” thereby capturing a market segment that it wasn’t servicing in the past.

When major changes in tastes or technology come along, companies need to ask what that means to them both positively and negatively, how the competition might use it, and if it poses a threat.

The best defense against the unexpected is for CIOs to have a business architecture that clearly maps to business goals. Companies with a vision and solid understanding of their value proposition are better positioned to shift priorities and resources when something new affects the market.

Following are some ways CIOs can build in the flexibility they’ll need when disruptions come along:

- Understand the business, first and foremost. Align with colleagues on business goals, and strive to be just as knowledgeable about business issues as about technical issues.
- Have a plan in place for architecting the technology to keep pace with business goals.
- When disruptions come along, tweak the existing plan rather than creating a new one from scratch.

*Jon Ann Lindsey of Cisco IBSG provided writing and editing assistance for this paper.*
Scenario Planning: Are You Ready?

By Dave Evans and Rick Hutley, Cisco IBSG Innovations Practice

Disruptions Abound

Events that disrupt business occur every day. And while it is impossible to predict exactly where and when these disruptions might happen, scenario planning can help organizations protect revenue streams, increase profitability, and ensure business continuity despite major upheavals.

Effective scenario planning starts with categorizing the various types of disruptive events that might occur. According to the Cisco Internet Business Solutions Group (IBSG), disruptions can be sorted into four primary groups:

1. Market disruptions (new competition, market transitions, technology advances).
   Market disruptions, while significant, are often the easiest to predict. Even so, many companies have been caught off-guard by market changes such as shifting consumer preferences, significant technology advances, and unexpected competition. Sony, for example, created the market for portable music players with the company’s Walkman device, but missed the transition from hardware-only solutions to an ecosystem of products that includes integrated hardware, software, and services.

2. Natural and biological disasters (earthquakes, hurricanes, tornadoes, pandemics).
   Even though natural disasters are difficult to predict, they are relatively easy to prepare for because we know where they are likely to occur. For example, companies based in California need to be prepared for disruptions caused by earthquakes, while businesses located in the Gulf of Mexico and on the East Coast should be ready for the effects of the annual hurricane season.

   Pandemics, while in the same category, are harder to predict. From history, we know a pandemic is coming, but we don’t know exactly when it will occur or how severe it will be. Fortunately, the past two outbreaks (SARS and H1N1) were relatively benign and gave businesses an opportunity to prepare for the next pandemic, which could be even more disruptive.

   Most CIOs have contingency plans for disruptions likely to affect their technology operations, yet many companies have not prepared for the impact of natural and biological disasters on the overall business. In the case of a major disruption from a new pandemic, for example, businesses must be able to answer questions such as:
• How can employees continue to work if they can’t go to the office?
• How will we communicate with customers?
• How will we continue to manufacture our products?
• What are our business strategies?

3. Political or social change (terrorist attacks, new regulations, “green”).
Disruptions caused by political or social change are both easy and hard to predict. For example, most terrorist attacks are nearly impossible to foresee, while increasing regulations from a shift in political parties can be relatively easy for which to prepare. As businesses become more global, preparing for political and social disruptions becomes more complex since each region of the world is subject to different political and social forces. Complicating matters further, we tend to think about the world from our own vantage points.

Google, for example, was recently caught off-guard by China’s action to block its service. Google’s stock price has dropped more than 15 percent (as of September 23) from its 2010 peak, in large measure over concerns about the China standoff. By being aware of worldwide political environments, CIOs can help their companies make more informed business decisions.

Although green fits within the political / social category, it is a special case. Green has moved beyond politics to become widely accepted by businesses worldwide. Today, most executives realize their companies have a social responsibility to care for the planet. Many companies have also determined that being green simply makes sense since it can have a positive impact on the bottom line by attracting more customers, improving customer loyalty, and increasing profits due to reduced costs from being more efficient.

4. Unexpected events. It is impossible to be prepared for every disruption. Given this, CIOs can help their companies prepare for and respond to unexpected events by creating business and technology architectures that are agile and flexible.

To do this, it is important to establish the right architecture, since it is difficult to reverse course once implementation has begun. If done right, an agile architecture makes it easy to replace individual solutions in order to stay current. As an example, the roads, freeways, airports, and railways that make up a country’s transportation infrastructure are relatively set. Yet, it is easy to introduce vehicles—cars, trucks, planes, and trains—that operate more efficiently within the transportation infrastructure.

CIOs can play a critical role in selecting and implementing an architecture that will support objectives that businesses want to achieve in the future, while being prepared for disruptions that may occur at any time. In building the architecture, it is also important that CIOs rely on strategic partners that have a vision for the future.

Impact of Disruptions
The impact of not being prepared includes missed revenue opportunities, increased costs, and even going out of business. The following examples highlight some of the risks of failing to prepare for the types of disruptions just discussed.

• **Blockbuster**—The world’s largest movie-rental company, with about 3,000 stores in the United States, filed for bankruptcy in September 2010 after failing to adapt its storefront model to online technology pioneered by rivals. Conversely, Netflix grew by renting
movies online and through the mail, while Coinstar prospered by placing Redbox vending machines offering $1 DVD rentals in supermarkets, drugstores, and other convenient locations.²

- **Encyclopædia Britannica**—This provider of learning and knowledge products did not fully envision how disruptive the Internet would be to its business. By the time executives recognized that most customers no longer wanted the company’s content in book form, it was almost too late. The company has since done a good job of transforming itself by offering a mix of printed and online products. In doing so, Encyclopædia Britannica has retained its reputation as one of the world’s most trusted sources of information.

- **Kodak**—Once known as a leading innovator in the photography market, Kodak’s business was severely disrupted by the transition from physical media to digital media. And while the company no longer enjoys the leadership position it once held, it has reinvented itself by moving into several commercial imaging and cinematography markets.

While these examples highlight the risks of losing focus and not preparing for future events, for most companies, the impact is much less dramatic. By not being prepared, however, businesses can expect higher costs and longer recovery time, potentially causing decreased customer loyalty and confidence.

It is important to note that many companies have used disruptions to their advantage. Amazon.com, for example, helped transform retailing by enabling people to buy products online. YouTube created an entire business from the positive disruption of inexpensive, prolific video-camera technologies. And Facebook is benefiting from peoples’ desire to connect and share information.

**Benefiting from Disruptions: Take a Broader Business View**

Disruptions are a risk only if businesses aren’t prepared. Effective scenario planning requires CIOs to take a broader view of their roles. Because technology underpins everything companies do, CIOs are in a strong position to provide valuable insights about how technology can improve their businesses.

CIOs should also initiate dialogues with colleagues about how technology can help prepare their business units for disruptions. Even though CIOs won’t have all of the answers, they can be the catalyst for further discussions. For example, a CIO could approach the head of customer service and mention that younger customers prefer to communicate using instant messaging rather than email and voicemail. This could then lead to a discussion about developing a new service that would rely on the company’s technology architecture.

In addition, CIOs should consider:

- Using mechanisms such as customer advisory boards to receive feedback from customers
- Establishing strategy groups that can step back from day-to-day issues to determine which businesses to pursue, what customers will require to meet their future needs, and where major market opportunities exist
• Holding scenario-planning exercises to help foresee and prepare for future events, as well as to uncover indicators that allow companies to determine when certain disruptions typically occur.

• Starting a council that brings business and technology leaders together to discuss how IT can play a role in advancing the company to benefit all of its constituents, including owners, shareholders, employees, communities, and the environment.

**Business Benefits of Scenario Planning**

By being prepared, companies can avoid the pitfalls discussed at the beginning of this paper. Other benefits include:

• **Greater customer loyalty and retention**—Companies that know where they are headed instill greater confidence in their customers. This confidence often translates into greater loyalty, which protects important revenue streams. In addition, by moving swiftly when disruptions occur, companies can keep their customers from worrying and switching to other vendors.

• **Increased revenues**—Companies that are prepared for disruptions can attract more customers. This is because customers want suppliers on whom they can rely on for a steady stream of products and services.

• **Reduced costs**—Companies become inefficient when they don’t have a roadmap. By establishing confidence and a clear direction based their ability to predict possible disruptions, companies can be more effective and efficient.

• **Enhanced employee productivity and retention**—A common direction also instills confidence in employees, increasing their productivity and company loyalty.

• **Creating new business opportunities**—By anticipating market disruptions and technology trends, visionary companies can create and enter new markets to ensure future revenue streams.

During the economic downturn, for example, Cisco was able to quickly detect what was happening, react to the situation, and communicate with its customers, employees, and partners. This allowed the company to limit damage from the crisis and recover more quickly than many other companies.

**What To Do Now**

To successfully prepare for and respond to the next wave of disruptions, Cisco IBSG recommends CIOs complete the following six steps. By doing so, CIOs can ensure their companies will not only survive, but thrive, in the face of upcoming disruptions—no matter what they are or when they happen.

1. Contemplate all of the possible disruptions that could affect your company.
2. Ensure your company and each business unit have a plan for every potential disruption.
3. Develop a business strategy based on possible disruptions for the short, medium, and long term.
4. Align the IT vision, strategy, and execution plan with that of the company.
5. Review IT disaster recovery plans to ensure adequate capacity and effective processes are in place.
6. Instill a culture of mobility and virtualization now. By using technologies such as telepresence and web conferencing, you can socialize concepts, such as working remotely, with executives and employees. When a disruption does occur, it will be easier for people to adjust because of their familiarity with solutions that can lessen the impact of a disruption.

Endnotes


Michael Adams of Cisco IBSG provided writing and editing assistance for this paper.
Making Room: IPv6
Transition to New Internet Protocol Brings Challenges and Opportunities

By Dave Evans and Shaun Kirby, Cisco IBSG Innovations Practice

Just as the proliferation of cell phones overloaded area codes in the 1990s, the nearly 14 billion devices connected to the Internet today have nearly exhausted the supply of IP addresses in the current Internet protocol, known as Internet Protocol Version 4 (IPv4).

The continued growth of the Internet means every customer in the market will eventually need to transition to IPv6, the next generation of Internet architecture. IPv6 will provide what Cisco Futurist and Cisco IBSG Chief Technologist Dave Evans calls “connectivity without meaningful limits”—enough capacity for every atom on the surface of the earth to have 100 IP addresses, which is more than sufficient to accommodate new technologies used by the growing numbers of users, applications, appliances, and services.

The challenge for CIOs over the next few years is to come up with an IPv6 transition strategy. And although the technical aspect requires a clear plan, that’s likely to be the easy part. The larger strategic issue will be to plan for the business opportunities that come with the ability—at least in theory—to connect anything and everything to the Internet.

“It’s a mistake for CIOs to look at IPv6 as a technical issue—it is a business issue,” said Rick Hutley, vice president of global innovations for Cisco IBSG. The addressing capability “opens up huge potential for managing business models and changing processes. For example, if you had an IP address to track everything, what would you do with that? How could it fundamentally change your business?”

Most networks have been running both protocols for several years, and any modern operating system is already IPv6 capable. Because of that, many businesses have been slow to develop transition plans. Evans sees that as a strategic misstep.

“There is a burning platform here,” he said. When the IPv4 addresses run out within the next year, the Internet won’t stop working, “but what opportunities are going to be lost because devices can’t talk to each other?”
IPv6 Advantages

Some of the benefits of IPv6, as outlined in the publication “Planning Guide/Roadmap Toward IPv6 Adoption within the U.S. Government,” include:

- **Addressing and Routing:** IPv6’s extremely large address space enables global connectivity to many more electronic devices—mobile phones, laptops, in-vehicle computers, televisions, cameras, building sensors, medical devices, and more.

- **Security:** IPv6’s security comes in the form of IPsec, which allows authentication, encryption, and integrity protection at the network layer.

- **Address Auto-Configuration:** IPv6 address auto-configuration enables simple devices to achieve out-of-the-box, plug-and-play network access that is key to self-organizing networks.

- **Support for Mobile Devices:** IPv6-enabled applications can benefit from seamless mobility. The mobility comes in the form of Mobile IPv6, which allows devices to roam among different networks without losing their network connectivity.

- **Peer-to-Peer (P2P) Communication Tools that Can Improve Interagency Collaboration:** True end-to-end connectivity, enabled by the IPv6 address space and elimination of private network addresses, will allow optimization of media-streaming applications. This will permit timely video feeds and quality-rich information to be easily distributed to millions of locations.

On a business level, IPv6 has implications for productivity and services. One possible use, according to Hutley, might be for hospitals to put RFID tags on wheelchairs. They’re expensive to buy, and it’s costly to have nurses spend time trying to find them throughout a large hospital. Case studies have shown that tagging them would be more cost effective.

Taking it a step further, hospitals under IPv6 could track every surgical instrument, even individual cotton swabs, to make sure that nothing got left inside a patient during an operation. “From a technical perspective, it’s feasible,” Hutley said. “Would there be a business value in doing that? That’s the question. The CIO needs to get with his or her business colleagues and say, ‘Given that I can bring you this technical ability, let’s have a conversation about what new services it would allow us to offer our customers.’”

Starting in 2011, IPv4 addresses will simply not be available in certain parts of the world, forcing those customers to go to IPv6. Even if companies are not directly impacted, they will need IPv6 to connect, communicate, and collaborate with those people, whether they are customers, suppliers, partners, or employees.

Hutley believes that the time to have those conversations is now, because the transition to IPv6 will take planning, procedures will need to be put in place, and technical issues will need to be resolved. “It may take two or three years,” he said. “So now is the time to think about it and start asking yourself those questions.”

IPv6 Roadmap

Cisco’s Chip Popoviciu said companies should focus on getting “IPv6-ready,” positioning themselves to be able to execute on a deployment plan with minimal cost and minimal impact on production. That means making sure the infrastructure and applications are ready, and that
operations and design considerations have been addressed. Once that has been achieved, migration could take place over a period of several quarters.

Popoviciu outlined several major steps to prepare for IPv6:

- Educate staff about IPv6 and its implications in an organized, well-planned manner.
- Assess where the organization stands with respect to IPv6, from infrastructure all the way to applications.
- Determine where the organization wants the network to be in 5-10 years, and what the gaps are between that and the current network.
- Align projects to IPv6 to reap the benefits of early planning.
- Build organizational awareness to promote the IPv6 strategy to all levels of management. Otherwise, parts of the organization might not observe the requirements of IPv6.

"In order to continue communicating at a global level, it’s time to migrate to this next generation,” said Peter Tseronis, chairman of the U.S. government’s IPv6 working group. “Continuity of communications is the business case.”
Seeing Is Believing: The Power of Video Collaboration

By Rick Hutley, Dave Evans, and Rachael McBrearty, Cisco IBSG Innovations Practice

“Video is the next voice.” – John Chambers, chairman and CEO, Cisco

Video is changing how we work, live, play, and learn. For businesses, video presents both a major disruption and a significant opportunity; companies across all industries that use video to improve collaboration will be the winners in the next decade. This paper describes current trends, provides examples of how innovative companies are benefiting from video collaboration, and discusses how CIOs can use video to gain a competitive advantage.

Collaboration Trends
The environment in which companies operate has changed dramatically. The economic downturn has had a significant impact, forcing employees to change the way they work. Another source of this change is the advent of next-generation web tools (sometimes called Web 2.0), such as social networks and video sharing, which have made technology easier to use, more pervasive, and highly influential. This has had an impact on companies’ workforces, customers, and technology-enabled ecosystems.

Workforces
Influenced by the consumer world, employees have changed the way they work. More and more, they are coming to work equipped with knowledge of how to use new collaboration tools from their experience with them in their personal lives. These employees expect to be able to use these new technologies at work. While some organizations are beginning to explore and understand the potential of these tools, few companies have a strategy to take full advantage of collaboration.

Customers
Customers are now in control and changing so radically that companies will be at a disadvantage if they don’t keep up.

Embracing technology. Consumer technology adoption makes interacting with end users more complex. Customers are now in the driver’s seat thanks to the power of Internet connectivity. Businesses are now dealing with a new generation of customers who have different skills, different expectations, and different needs.
**Sharing thoughts.** Customers have many options for sharing information, comparing prices, and writing and reading reviews. Peers have greatest influence over decisions, making the delivery of great customer experiences critical. Dissatisfied customers can actually tell millions of others about their bad experiences almost instantaneously.

**Self-serving and co-creating.** Customers want to be involved and take control. Inclusive or open innovation is resulting in new and better ideas.

**Technology-Enabled Ecosystems**

New video technologies such as telepresence, webcams, and ultra-portable camcorders are enabling people to work remotely, as well as with employees, customers, partners, and suppliers in different locations. Maximizing the effectiveness of employees means:

- Providing them with anywhere, anytime access
- Enabling flexibility to use different communication methods in different contexts
- Enabling sharing of relevant information both inside and outside the organization
- Enabling them to support teams in different locations and time zones with new processes as well as technologies

**What Is Collaboration?**

The fundamentals of collaboration have not changed. At the core, collaboration still means people working together to achieve a common goal. What has changed is that new tools and emerging technologies are allowing companies to greatly improve what is possible by:

- Using platforms to contribute knowledge and ideas
- Accessing real-time information
- Using shared workspaces
- Making decisions in real time
- Finding the right people at the right time

**How Video Improves Collaboration**

As humans, we want to view and consume content visually because it’s the most interesting, stimulating, compelling, and engaging way for us to communicate. If a picture is worth a thousand words, then video is worth a thousand pictures. And now, with the proliferation of video cameras in most mobile phones and the rapidly growing market of ultra-portable video devices such as the Flip Video® camera, people expect to communicate using video in the work environment.

By enabling a live, “face-to-face” meeting experience for people who might be thousands of miles apart, telepresence has become one of the most effective ways to deliver the full benefits of collaboration. In fact, innovative companies are already using telepresence to improve collaboration, with significant business results.
Case Study: Video Collaboration Helps Transform One of World’s Largest Banks

Challenges

Financial institutions are finding that the fallout of the financial crisis continues to pressure their businesses. Strict cost-cutting measures have been widely implemented, and technology spending—previously justified as a means to increase efficiencies and gain competitive advantages—has been subject to intense scrutiny.

A leading financial institution was also dealing with a significantly larger global footprint due to acquisitions made during the downturn. Effectively coordinating, integrating, and collaborating with this newly expanded myriad of partners around the world, while heeding severe budget restrictions such as limiting internal travel spending, was proving a formidable task.

The issue for this company was "How to imbue transformative technology into business operations in order to effectively—and cost-efficiently—operate in the "new normal" global economy?"

Solution

Cisco TelePresence™ is allowing this leading financial institution to optimize business processes and maximize productivity by transforming and extending the concept and benefits of in-person interactions.

To make this happen, Cisco IBSG assembled a working team with representation from key stakeholder communities, including Corporate Workplace, Finance, HR, Learning and Leadership Development, Travel, Business Continuity and Sustainability, Associate Services, and Enterprise Technology and Delivery. The team assessed cost and productivity challenges, compared utilization of Cisco TelePresence (11 units were already in use) with that of traditional video conferencing, and reviewed Cisco TelePresence case studies from other large institutions, including Cisco.

Next, Cisco IBSG identified multiple use cases with high potential for driving productivity, process improvement, and cost reduction through increased utilization of Cisco TelePresence. These use cases highlighted several opportunities to expand collaboration value beyond travel replacement:

- Establish the priority and collaborative focus of projects or processes with "in-person" appearance of key executives
- Improve client management for corporate banking
- Increase collaboration and project management
- Accelerate product and service development and innovation
- Streamline merger integration
- Transform education, training, and policy communication to associates
- Enhance HR hiring and retention processes
- Strengthen business continuity crisis management and enterprise resiliency
- Uphold environmental commitments
Perhaps most important, by exploring the impact of emerging collaboration technologies on business operations, Cisco IBSG demonstrated that it is essential to take a “transformation approach” to these types of opportunities rather than focusing solely on the ROI calculations of “hard savings.”

**Results**

Based upon its existing base of 20+ rooms, the company is already realizing some of its anticipated benefits, with room utilization in the 40 percent to 60 percent range—compared to the 10 percent utilization level it experienced with traditional video-conferencing installations.

As Cisco partners with this financial leader to deploy its extensive network of Cisco TelePresence rooms over the next three years, Cisco IBSG is working closely with the bank to track performance against estimated benefits and continue to drive use cases that will redefine the operating model and create new business opportunities. In the end, Cisco plans to help the company transform its operating model so that over the coming years, it can “do more with less.”

**Other Video Platforms for Collaboration**

In addition to telepresence, several other forms of video help companies improve collaboration, including ultra-portable video cameras, web-based video, and mobile video.

**Ultra-portable video cameras.** As the cost and quality of ultra-portable video cameras continue to improve, companies can use devices like Cisco’s Flip Video camera or the Apple iPhone with FaceTime to improve collaboration. These devices are especially good at improving collaboration by streamlining business processes and improving communication among team members.

For example, the Cisco IBSG Advanced Technologies (AT) Group follows an eight-phase, structured waterfall process to develop demonstrations and pilots that showcase technology in action. A recent innovation to the process was the use of Flip Video cameras to keep remote teams and stakeholders up to date. As projects evolve, an AT Group member takes a Flip Video of the laboratory setting, showing the critical components of the project, and giving a detailed description of progress made and any challenges that need to be resolved. The clip is then sent to the extended team members.

This simple step, which takes approximately three to five minutes, has greatly improved communication and collaboration among the groups and individuals involved in a given project. “Since everyone can `see’ exactly how things are progressing, the use of Flip Video cameras has also helped increase trust and understanding as projects move forward,” commented one AT Group member.

**Web-based video.** Improvements in bandwidth have made web-based video an effective way for people to collaborate over the Internet. Cisco WebEx™, for example, has added video capabilities that let participants with webcams see each other during meetings. This feature is particularly powerful for presenters, since they can see how the audience is reacting in real time. This allows presenters to ask questions if the material isn’t clear, or to shift focus if it is not capturing their attention.

Cisco also offers Show and Share™, a social video system similar to YouTube that helps enterprise organizations create highly secure video communities to share ideas and expertise. With Cisco Show and Share, companies can optimize global collaboration through simple
creation of videos, and personalize connections between customers and employees through user-generated video content.

**Mobile video.** Almost every new device—from tablet PCs to iPhones—now comes equipped with a camera. In addition, new applications such as Apple’s FaceTime, which makes it easy to conduct video conferences on the iPhone, are allowing more and more people to participate in video collaboration. This is important because companies can now cost-effectively expand the number of people who can collaborate both within and outside of their organizations.

Mobile video devices can also be plugged into telepresence and web-based video sessions. This means that people no longer need to be in a specific location, such as a telepresence room, to participate via video in a collaboration session.

**Business Benefits of Video Collaboration**

In addition to the benefits already described, Cisco IBSG believes video collaboration will be one of the key drivers of future revenue and profitability. By implementing video successfully, businesses can:

Create a borderless enterprise that includes all stakeholders. Video collaboration enables a “borderless enterprise” that maximizes the power of people working together across the entire ecosystem.

Empower the ecosystem at reduced costs. In this era of globalization, outsourcing, and tightly linked supply chains, companies cannot continue to go it alone if they want to maintain a competitive advantage. As companies become more serious about partnering, best practices are still being defined. Despite the uncertainties, organizations that network with other organizations, companies, and partners in a collaborative fashion, can increase their competitiveness while, at the same time, lowering their costs.

Transform organizational models to improve speed, scale, and relevance. Organizations (including Cisco) are finding ways to support video collaboration by enhancing organizational structures. For example, using video collaboration, Cisco’s boards and councils enable the expansion of cross-company priorities to enhance decision making without increasing executive work time. Collaboration can also be used to build communities with groups that have similar goals to improve knowledge sharing, decision making, operational efficiencies, and innovation.

Improve customer experiences to increase loyalty. Customers want to interact differently with organizations, yet many companies are still in the early stages of customer video collaboration. Knowing your customers can lead to creation of new products, increased loyalty, and acquisition of new customers.

Optimize stakeholder involvement to improve speed, efficiency, and quality. There are several benefits of using video collaboration to involve target audiences in the development of new products and services: richer idea generation, shorter time from concept to cash, customer satisfaction, faster adoption, and greater market differentiation.
Next Steps

To take advantage of video collaboration's benefits, CIOs should follow three steps:

1. **Develop a strategy and multidirectional approach.** To realize the full benefits of video collaboration, organizations should develop a business-led strategy. This begins with evaluating and documenting overall goals and objectives to provide the baseline for rationalizing a set of video-collaboration-enabled capabilities. A viable strategy should include an understanding of:
   - The business needs to meet the objectives, such as stronger innovation processes, improved workforce productivity, stronger external partnerships, growth in emerging markets, and global expansion
   - The changing nature of work, and where there is an increased emphasis on knowledge generation
   - Changing demographic needs and how people interact
   - Emerging technologies

2. **Measure collaborative readiness and effectiveness.** For video collaboration to succeed, four areas must be in place:
   - **Leadership:** Establish a culture and top-down organizational structure to support a collaborative work environment
   - **Competency:** Educate and motivate stakeholders to work collaboratively
   - **Governance:** Implement processes and metrics that engender and sustain optimal collaboration
   - **Technology:** Provide the collaborative platform and tools to connect and empower all stakeholders

   Most companies start by deploying technology. For video collaboration to have a positive impact, however, all four areas need to be considered and addressed; collaboration must also be embraced from an enterprise-wide perspective.

3. **Build a video collaboration architecture.** According to Cisco, 92 percent of Internet traffic will be from rich media (much of it video) by 2010. Because of this, it is important for companies to have an IT architecture that can support video for collaboration. The good news is that a common core architecture for video collaboration can be implemented in phases to achieve immediate value and increase returns on collaboration investments over time, while keeping costs manageable. The network as the platform, combined with collaborative applications, enables a seamless collaboration experience.

*Michael Adams of Cisco IBSG provided writing and editing assistance for this paper.*
Momentum Now: Europe
Drivers of a New Economic Paradigm: Case Studies from the Leading Edge

By Bart Sweerman and Nicola Villa, Cisco IBSG

Europe faces significant economic challenges: a fragile macroeconomic recovery with executive confidence levels trailing those of the rest of the world; limited access to credit; low consumer spending; and a highly stringent regulatory environment.

In addition, the region faces demographic challenges such as aging societies, low birthrates, and a migrating workforce. The ratio of workers to pensioners is expected to decrease from 5:1 today to 2:1 by 2050.¹ This presents a major productivity crunch for European companies and governments.

Despite these challenges, Europe is a strong knowledge economy with a heritage of innovation and e-readiness. European consumers are technically sophisticated and demanding, adopting the latest technology-driven disruptions such as broadband and smartphones en masse.

Technology-driven disruption, however, is a major concern among European business leaders. Seventy-four percent of IT and business executives believe their companies are susceptible to IT-enabled disruptions, while only 48 percent believe they are well prepared for those disruptions.² This gap is larger in Europe than anywhere else in the world—many CXOs see technology innovation as a threat to their operations, and some European leaders are worried that the region will be left behind.

How can CIOs help their companies and governments embrace these disruptions to drive innovation and productivity? Technology can lend insight into these issues.

Technology: Threat or Opportunity

We are in a time of serious market transitions driven by technology-enabled disruption. The Internet is connecting everything and everyone, challenging companies and governments to manage their operations and employees around the world. Ensuring productivity, security, and other risks becomes a major challenge in the midst of technology migration.

One recent migration is toward cloud computing, a model whereby shared resources, software, and information are provided to computers and other devices on-demand over the Internet (or cloud). The challenge for CIOs is whether to host cloud services internally or go through a managed service.
Desktop virtualization extends the cloud model by providing users with a “virtual desktop” experience. When users work from their remote desktop client, all of the programs, applications, processes, and data used are kept and run centrally. This scenario allows people to access their desktops from any capable device, such as a PC, laptop computer, smartphone, or thin client.

Web 2.0 tools such as wikis and blogs are becoming more prevalent in the enterprise. Executives use these means to communicate to global employees. Companies also use these tools to speak with customers and collaborate with partners across distances.

Video, popular among consumers due in large part to YouTube, has migrated to the private and public sector. Not only do businesses use video for internal communications, but also externally to create/maintain brand awareness, educate customers on products, entertain the masses, and more.

Governments have also jumped on the video bandwagon. The official website of the United States White House and President Barack Obama, [www.whitehouse.gov](http://www.whitehouse.gov), is a prime example of video’s impact in the public sector. Videos posted to the site range from press briefings, weekly presidential addresses, and speeches, to behind-the-scenes features on national and local topics.

CIOs are asking if these technological disruptions give them less or more control over their IT. The playing field is littered with questions, and CIOs are expected to have the answers. Their concerns include:

- How do I build infrastructure and take advantage of technological innovation?
- Which services do I provide employees, partners, and customers?
- How do I provision such services? Do I use a hosted or cloud model? For example, do I own my own telepresence virtual meeting solutions or opt for a telepresence exchange solution?
- How do I provide access to these systems?
- How do I manage associated risks while taking advantage of the upside?

**The Good News**

CIOs can explore ways to use IT to their advantage to disrupt rather than be disrupted. This is happening today. For example, broadband is changing the way cities are being designed, built, and managed—people can now work in city centers and live in suburbia, using broadband to collaborate and exchange information. In Amsterdam, a “Smart Work Network” of more than 100 neighborhood community centers enabled by public Cisco® TelePresence™ suites reduces traffic in the area and unites workers from all backgrounds and interests into a regionally distributed innovation cluster.

Healthcare providers are turning to Cisco HealthPresence™ technology to offer patients remote care. Paris Hospital Group (AP-HP), in partnership with Cisco and Orange Business Services, installed one Cisco HealthPresence consultation room in the long-stay geriatric Hôpital Vaugirard and a second station for experts in acute care at Hôpital Européen Georges Pompidou. Both stations were connected over the hospitals’ secure, high-speed network. Elderly inpatients attend consultations from a local Cisco HealthPresence consultation room rather than having to travel to the hospital. Using life-size video, HealthPresence connects patients to a specialist, while being assisted by a geriatrician and auxiliary nurse.6
Utilities are building Smart Grids, which have the potential to increase existing capacity by 30 percent without adding new power stations and, at the same time, reduce consumer bills by 15 percent.⁵

Retailers are revamping the online shopping experience using social networking tools (“shop with a friend”) and mobile access; are employing information and communications technology (ICT) in the store to provide personalized video messages; and are capturing real-time marketing intelligence and traffic patterns through the use of networked security cameras. Tesco, Britain’s largest retailer, uses both Cisco TelePresence and WebEx™ collaboration technologies to improve the way it makes decisions and shares expertise across continents.⁶

Cisco’s use of its own technology has enabled the company to collaborate and improve productivity in ways that result in huge benefits. Here are two examples:

1. **Community-based IT support via wikis**—Cisco’s growing population of Mac users created its own community support website—the Mac Wiki—which provides migration instructions, FAQs, troubleshooting tips, and user forums. With 10,000 unique visitors per month, the Mac Wiki enabled Cisco to reduce helpdesk costs by 10 percent ($2 million a year), improved productivity with increased uptime—$4 million annual value for Cisco—and created an IT self-support model that is being expanded to other platforms.

2. **Executive communications**—Cisco has a globally distributed workforce, and face-to-face meetings are limited by travel restrictions. Cisco executives and managers needed a better way to keep in touch with employees. Cisco developed C-Vision, a video-sharing application that makes it easy for any employee to create and publish informal, engaging videos. Ease of use has encouraged many managers—including Chairman and CEO John Chambers—to post video blogs frequently. The benefits are improved employee alignment and morale, a 20 percent reduction in voluntary attrition, $10.4 million a year savings in training and recruiting costs, and $1.2 million a year in savings from self-service video production (versus using Cisco studios).

**Solutions**

CIOs can create an IT foundation to support transformational developments, starting with an open, scalable, robust, and secure network architecture that is future-ready. For example, networks must handle significant growth of video traffic throughout all parts of the enterprise so that the user experience is guaranteed. In addition to network architecture, CIOs need both a collaboration and data center architecture.

By focusing on delivering a superior customer experience and creating a productive, borderless organization, companies will emerge as clear winners when the economy begins to recover. Innovation to create a superior customer experience in a cash- and labor-constrained environment can be achieved in several ways:

**Harness collective organizational knowledge:** Nokia uses internal wikis to drive innovation. Philips Electronics uses Cisco TelePresence technology to bring together executives from around the world in a virtual room. Cisco has moved away from a purely command-and-control organization to one embracing cross-functional boards, councils, and working groups to accelerate innovation and reach a wider number of leaders.
Move to an open innovation model: Leading companies are starting to harness the power of open innovation. P&G uses Cisco TelePresence to build on its extensive R&D capabilities. In addition, online marketplaces like InnoCentive and social networking tools like Twitter are helping companies establish a dialogue with partners, suppliers, and customers.

Develop new business models and partnerships: Telecom providers and software companies are offering managed services, hosted solutions, and pay-as-you-go models, allowing customers to reduce fixed costs and achieve flexibility to scale when needed. Meanwhile, broadband and video are changing the way people collaborate across enterprises and in social environments.

Productivity gains can also be realized with smart investments, as illustrated in the following examples.

- **Increase employee time efficiency and reduce expenses:**
  - Swiss Post experienced a 15 percent to 20 percent increase in productivity of its salesforce by using Cisco advanced Unified Communications, Web 2.0 technologies, and Cisco TelePresence to collaborate internally and interface with customers.arenote
  - Using its own TelePresence technology, Cisco reduced its annual travel budget from $740 million in FY2008 to $240 million in FY2009.
  - GE’s use of Cisco collaboration tools—including TelePresence—allowed GE to increase its rate of innovation by more than 50 percent in the development of new healthcare products for China. Engineers across the Pacific collaborated in product development and accelerated go-to-market processes without having to relocate. The products, co-designed for China by local and U.S. engineers, were also a huge success in the United States. Enterprise TV capabilities and video podcasts help disseminate knowledge more effectively and efficiently.

- **Make efficient use of scarce resources:**
  - Office space can be optimized by creating virtual desks, enabling enterprisewide wireless access, and by implementing modern home office solutions. New capabilities such as Cisco EnergyWise software allow real-time monitoring of all equipment plugged into the corporate network, leading to significant energy savings. IT virtualization and cloud computing can boost data center productivity by more than 30 percent.

- **Experiment with emerging technologies:**
  - Bankinter, S.A. uses automated Short Message Service text messages triggered by customer purchases to make timely and relevant insurance offers.

Next Steps
CIOs must become strong business partners in addition to efficiently running their IT departments if they want to contribute to IT-enabled disruption. This requires four key actions:

1. **Talk IT**—Engage in business dialogue and advocate how IT can support and substantiate the business impact of deploying new IT solutions to drive innovation and productivity. Establish and actively participate in cross-functional partnerships and project teams including R&D, finance, facilities management, sales, marketing,
and service. IT must become embedded in decisions regarding buildings, customer service, or product development.

2. **Think “architectures”**—Create thorough architectural blueprints for IT to support business growth and productivity.

3. **Evaluate public/private cloud models, desktop virtualization, social networking, and video**—will you operate everything through an internal service or in the cloud?

4. **Pilot new technologies**—Seeing is believing: a “petri dish” approach can help business peers experience new tools and demonstrate business value.

Overcoming the traditional departmental “silos” existing in most organizations today will create a truly borderless organization that will allow IT-enabled innovation to come to fruition, leading to breakthrough results. Now is the time to invest wisely and embrace IT.

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**Endnotes**


3. Cisco HealthPresence creates a live, “face-to-face visit” experience over the network for clinicians and patients, even though they might be hundreds of miles apart. The visit is enhanced by the availability of physical (such as vital signs) and diagnostic information generated from a variety of medical devices integrated with Cisco HealthPresence.


_Cynthia Bournellis of Cisco IBSG provided writing and editing assistance for this paper._
More Information
Cisco Internet Business Solutions Group (IBSG), the company's global consultancy, helps CXOs from the world's largest public and private organizations solve critical business challenges. By connecting strategy, process, and technology, Cisco IBSG industry experts enable customers to turn visionary ideas into value.

For further information about IBSG, visit http://www.cisco.com/go/ibsg.