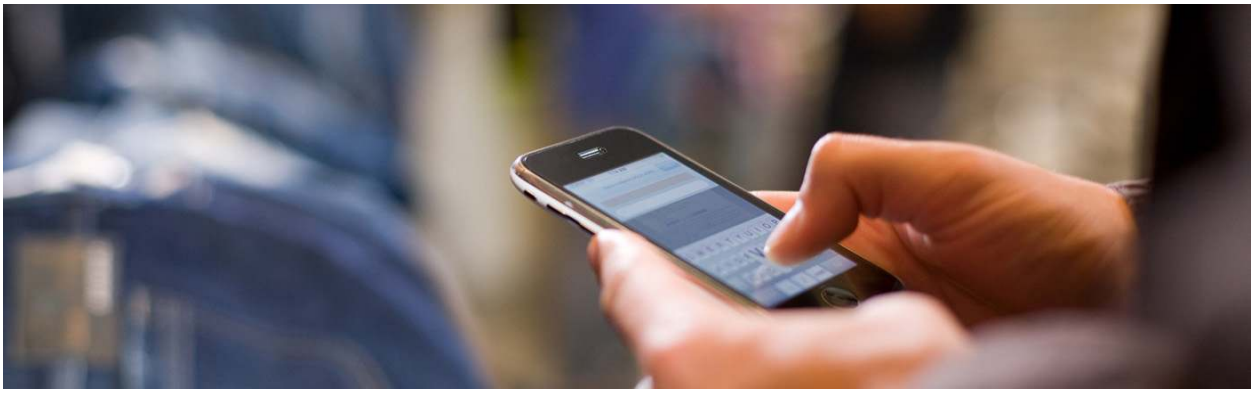
CIO Survival Guide: The Convergence of Collaboration, Cloud, and Clients

Savvy CIOs can leverage today's technologies to create a whole greater than the sum of its parts



Introduction: Convergence or Collision?

Today's workers demand mobile devices, software as a service (SaaS), and online collaboration tools in order to be more productive. They want to get their work done in the most productive way possible.

As Scott Archibald, managing director of IT consulting firm Bender Consulting, wrote in *CIO Update* in December 2010, "The reality is that the consumerization of IT is very real and legitimate. It's here to stay and companies need to address this phenomenon whether they want to or not." But the problem is that CIOs do not serve employees individually - they serve them collectively.

CIOs need to make these new technologies work together; they hear that request every day. While employees are clamoring for innovative technologies such as Android phones and iPhones, social networking, and cloud computing, CIOs must consider how these new technologies affect data security and performance of the network and applications, as well as how they fit into the overall enterprise architecture strategy. In addition to increasing employee efficiency and improving the overall efficiency of the business, CIOs must also ensure that their IT staff maintains its productivity.

Experts are also starting to emphasize the importance of integration and interoperability when implementing mobility devices and solutions. From the internal applications and systems that will link to the devices; to the data generated and captured; to the personnel expected to implement, run, and support these technologies, a clear understanding and approach to how all these factors will work together is needed from the start.

Given that these new consumer-inspired technologies cannot be divorced from the current IT infrastructure, CIOs face even more difficult questions. First, how do CIOs derive expanded business benefits by *combining* these technologies? Second, how can they create an architecture that can support the convergence of these technologies? And third, how can CIOs continue to innovate as technologies continue to evolve?

In short, how do CIOs ensure that they are orchestrating a harmonic convergence rather than a horrific collision?

Today's Innovative Technologies: Benefits Unto Themselves

It is important to note that these technologies are increasing efficiency not only for employees, but also for IT departments. Just as these technologies bring freedom, flexibility, and productivity to business, they bring similar benefits to IT departments. Let's look at the rise of each technology in more detail:

Mobility

The increasing acceptance of mobile technology over the last few years has been nothing short of astonishing. In October 2010, Gartner Vice President Nick Jones predicted that worldwide mobile voice and data revenue will exceed $1 trillion a year by 2014. In December 2010, research firm ComScore reported that 234 million Americans ages 13 and older used mobile devices (in the 2010 census, the U.S. government reported the U.S. population as 310 million, meaning that three out of four Americans have a mobile device.

This surge in mobile technology comes from a convergence all its own. Processors, memory, and hard drives are now smaller and more powerful, and thus better able to handle graphics and data. Besides mobile phones and smartphones, the laptop has evolved as well, to include netbooks and tablets.

Netbooks specialize in accessing web- or cloud-based applications using a convenient form factor. Tablets replicate the size of the traditional pad of paper, but offer unprecedented connectivity and communication. The Cisco Cius™ tablet, for instance, includes three different wireless antennas (802.11, third and fourth generation [3G and 4G, respectively], and Bluetooth 3.0), as well as video capability for conferencing and collaboration applications.

With the ability to conduct business from anywhere - on the road or after traditional working hours - employees have become more productive. According to one Cisco study, 45 percent of employees work an extra 2 to 3 hours per day. Thus corporate productivity increases, because being able to communicate with anyone, anywhere minimizes the cycle for discussions and decision making among global partners and colleagues in far-flung time zones.

Collaboration

Increasing productivity also encompasses the need for collaboration applications. Employees need more than interaction with data - they need interaction with each other. Not surprisingly, in July 2010, research firm IDC reported that worldwide revenue for the collaborative applications market was $7.6 billion in 2009. That number represented a small decline from the previous year, attributable to the economic downturn, IDC said, but also included a significant uptick in social networking platforms.

Like client devices, collaboration is evolving and encompassing a variety of methods. Unified communications, based on the convergence of voice and data networks, has blossomed, as has the use of video conferencing tools such as Cisco WebEx® meeting applications. As a method of sharing information - whether through training or discussion - the use of video will only increase. According to the Cisco Visual Networking Index, video accounted for approximately 40 percent of Internet traffic in 2010 and will exceed 90 percent by 2014.

At the same time, collaboration has encompassed the highly popular world of social networking. Social networking capabilities allow colleagues to contact and interact with appropriate counterparts within their company and with partners in order to compile the best insight and the best information.

Concurrently, social networking is proving to be a remarkable method for breaking down the barriers between customers and corporations. It brings a higher level of interaction with both customers and prospects, energizing efforts at both research and development and customer service. CIOs are looking for ways to offer the benefits of social networking with enterprise security and policy. New enterprise social software solutions, such as Cisco Quad™ software, enable CIOs to combine the power of social networking with communications, business information, and content management systems, while meeting their needs for policy management, scalability, security, and ease of management.

Cloud Computing

The outlook is no less bright for cloud computing. In June 2010, research firm Gartner forecast stunning growth for cloud computing, from $68.3 billion in 2010 to $148.8 billion come 2014. That prediction is not surprising. Building from a foundation of virtualization - a technology that saves IT significant amounts of money - cloud computing helps CIOs derive value and efficiency from public cloud capabilities such as external software applications (SaaS), application development (platform as a service [PaaS]), and infrastructure availability (infrastructure as a service [IaaS]). By giving employees access to data residing in a public cloud, CIOs can more easily break down internal silos and improve operations.

And that is just externally. From an internal standpoint, by using a private cloud IT can offer access to highly secure data centers through a variety of client devices, including the aforementioned mobile devices, as well as virtualized desktops. The latter offer all the processing power of a traditional PC, but because they can be managed, updated, and serviced remotely, they come with radically simplified technical support requirements.

Finally, there is the astonishing potential CIOs can derive from a hybrid cloud network, an amalgamation of public clouds and private clouds in which IT assigns applications to either depending on need, security, seasonal activity, and cost. Consider the scenario many years ago when lingerie retailer Victoria's Secret broadcast a fashion show online and its servers crashed. By setting up cloud-based systems for that time period, the company could have avoided the embarrassment.

Splitting such applications requires a flexible infrastructure that allows the offloading and downloading of data in a smooth, highly interoperable way. But it also unleashes CIOs from having to deploy data center and server technology based on a company's highest potential workload, and gives them the flexibility to rent extra computing capacity only when necessary.

Upsides and Downsides

CIOs have seen new technologies before. But if there is an overarching theme to the boom in mobility, collaboration, and cloud computing, it is that they can work together to create a whole that is greater than the sum of its parts.

However, in bringing together mobile, collaboration, and cloud computing, CIOs face some unique challenges. First, all of these technologies create more data. Data is good, especially when it is shared and acted upon, because it creates information and then knowledge. But it creates storage and data-management challenges. Furthermore, it creates an integration challenge, because just as colleagues need to share information, so too do applications. The data that employees collect from their mobile devices - from sales orders to inventory queries to customer service requests - should be analyzed for insights and plumbed for patterns. Thus it needs to be accessible to applications such as business intelligence, customer relationship management, and inventory management and logistics.

On the other hand, combining mobility, collaboration, and cloud computing represents a significant upside. In fact, as Terry Burnett, a 30-year IT veteran of several Fortune 100 companies, argues, they *must* work together. "The information necessary won't ever be solely on mobile devices. It will be somewhere else that the device connects to. But you will also need elasticity in the infrastructure to accommodate things like coupons and promotions, and measuring the success of those promotions, and that's where the cloud comes in."

Some applications, such as the Cisco Quad enterprise-based collaboration platform, are already considering this reality. The platform combines social networking, real-time communication, content management, and both public- and private-cloud capabilities. With employees able to collect and access data wherever they work and upload it to flexible cloud-computing systems - in addition to collaborating with colleagues easily - the gears of both commerce and technology run more smoothly. By identifying and reacting more quickly to trends they see in the marketplace, employees can identify potential revenue opportunities more quickly. By avoiding the wait for procurement of servers to deploy a new application or online e-commerce site, companies can reduce their time to market. By taking advantage of a wider variety of more robust mobile devices, IT can offer employees a richer set of applications and services. The result: more agility within the company and improved customer service and satisfaction outside of the organization.

Potential Business Scenarios

The idea of combining mobility, collaboration, and cloud computing is not farfetched. In fact, it is already happening on the consumer side, according to Robert Fort, CIO of Guitar Center. “Customers can stand in your aisle with a mobile Internet connection and check competitors’ pricing and inventory. And what are Facebook and Twitter but massive cloud-based collaboration tools? If customers are unhappy, they’re not even out the door before they’re twittering that this place is awful.”

But with the same tools, CIOs can create the same kind of fluidity for their employees. Consider the following scenarios:

Retailing

Retailers are constantly looking for opportunities for up-selling and cross-selling. Imagine then an integrated system that tracks credit card usage and purchases within a certain geographic area, and then suggests ancillary products and services (gift wrapping and delivery) before the consumer has even left the mall. Such applications could also include links to social networking sites that rate the products and the services. As mobile devices begin to act as wallets, the credit-card tracking and geolocation capability may not even be necessary.

At Guitar Center, CIO Fort is working on what has been deemed a “client-telling” environment, in which sales associates using mobile devices can see what customers have already bought for potential cross-selling and upgrading opportunities. But he believes that that information should be shared with customers as well. “In our situation, we can gather the data, but how can we use it to benefit the customer? It’s not enough to know that someone is in a band, it’s that they love a certain manufacturer’s keyboards. If I know that the manufacturer is coming out with a lower-cost version of its high-end keyboard using the same technology, I should be able to use that information to bring the customer into the store.”

Mercedes-Benz is also testing a tablet-based application with 40 of its dealers. All the time staying close to customers (and keeping customers close to the cars they want), salespeople can download payment schedules, check sales promotions, and even start the loan process.

Utilities

With increasing intelligence being built into home-utility systems, it is now possible to upload temperature and other energy-consumption data to utilities’ data centers. From there, utilities could broadcast alerts that consumption is beyond certain accepted thresholds through an email or instant message to customers. The customers could then access their home systems and reduce the temperature to reduce consumption. At the same time, family members could use collaboration systems to notify each other of their estimated arrival at home so that any of them could turn up the thermostat prior to their arrival. To determine how popular such a service would be without committing internal resources, utilities could set such systems on a public-cloud infrastructure first.

Real Estate

When homebuyers and apartment hunters are looking for new residences, they tend to focus on a particular area. Consider the ability to combine search capabilities on real-estate sites with information about other available homes or apartments in the same area, along with information about open houses, listing agents, and even financing options. Because such searches tend to be seasonal, with more of them conducted during the spring and summer than the fall and winter, setting up such a system in the cloud is more appropriate. A link to social networking applications could include positive and negative comments about the neighborhood, local shopping, playgrounds, and other amenities.

Product Research and Development

This scenario is well suited for the convergence of mobile, collaboration, and cloud. Consider a company wanting to develop a new product. It identifies a core group of committed customers or appropriate prospects for a pilot, using social networking applications to discover high levels of customer commitment and intimacy. It then distributes prototypes of the new product to this group. “You can push predeployment polls to this group”, suggests IT executive Burnett, “generating comments on quality and service, and letting them upload and share their likes and dislikes.” Because it is a short-term project, compiling comments and suggestions on public cloud-based servers makes the most financial sense.

But collaboration gives a boost to ongoing projects as well. Consumer packaged goods manufacturer Procter & Gamble (P&G) is using Cisco TelePresence® conferencing to increase global collaboration among divisions while avoiding travel expenses. As a result, P&G executives report, employees can make decisions in minutes that used to take days.

Undoubtedly, CIOs in other industries can envision scenarios in which information can be collected in the field, shared on a cloud-based system, analyzed for insights, and made available for download. The result: a virtuous cycle of information sharing, as opposed to a vicious cycle of siloed data locked away until it is too old to have any value.

The Importance of Infrastructure

The foregoing scenarios represent the full-fledged acceptance by IT of a plethora of consumer devices and capabilities, particularly the ability of individuals to access and share data simply and easily according to their personal needs. But as CIOs have long known, the simpler the interface, the more complex the underlying system must be to support it. And although the technologies in the hands of the employees might be consumer-focused, those technologies behind the scenes are the fundamental mainstays of IT dating back to the days of the glass house.

Those mainstays are simple. They represent the core of what IT has always had to and will always have to offer: reliability, availability, security, and performance. Today, however, as every CIO knows, it is a little more complicated. IT must accommodate input from a remarkable variety of devices and networks that have no boundaries. It must provide the network bandwidth to ensure performance. And it must employ technologies such as web services to share the information among multiple enterprise applications, making it available on a time-sensitive basis for collection and analysis, whether the data resides in an internal or external system.

More than ever before, IT needs an infrastructure that accommodates both these enterprise mainstays and the consumer-focused needs of employees. Without such a flexible infrastructure - one that can holistically accept and share data - the value of mobility and collaboration is diminished considerably.

On the other hand, with cloud computing, IT can take advantage of scalability to accommodate those needs. It can try out applications to determine their value, expand and contract capacity, and even use external systems to

develop and test applications without creating an internal test bed. The result: IT becomes more economical in multiple facets of its responsibilities.

Laying the Groundwork for the Future

Network architecture continues to be important for three reasons. First, only through a holistic architecture can you track the cost of the entire IT system, and - even more important - the value it brings to the company. “IT departments used to measure its success by how well they knew the model numbers of their product and how big their data center was and how big their pipe was,” says Fort. “The real measure of success is how many sales IT produced. CIOs have to think like CEOs, but they have to think from the strategic level down to the tactical level.”

Second, for this convergence of mobility, collaboration, and cloud computing to work, there must be an inherent commitment to multiple facets of security, including not only password authentication but also identity management, policies, and permissions regarding the information consumers allow others to see and protection of corporate data. The entire infrastructure must contain the intelligence to safeguard this information.

The final, and most important, reason: Technology changes. Granted, architecture technology evolves too, but not as quickly as the technologies that take advantage of it. Today it is mobile devices, collaboration technology, and virtual servers. No one knows what tomorrow’s advances will be; we can only be sure that there will be something new.

No matter how new technologies come into the enterprise, they will need a strong yet flexible foundation to accommodate them and interconnect them with other elements of the enterprise. Technology that does not accommodate flexibility, that does not accommodate collaboration - whether between people or data - no longer has a place in the enterprise. To best prepare for the future, CIOs should create a network architecture that accommodates not only end users but also the IT department and the holistic insights that will help the business itself thrive.

Americas Headquarters
Cisco Systems, Inc.
San Jose, CA

Asia Pacific Headquarters
Cisco Systems (USA) Pte. Ltd.
Singapore

Europe Headquarters
Cisco Systems International BV Amsterdam,
The Netherlands

Cisco has more than 200 offices worldwide. Addresses, phone numbers, and fax numbers are listed on the Cisco Website at **www.cisco.com/go/offices.**

Printed in USA C11-654649-00 03/11