Pay Attention IT: A New Convergence is Afoot

Old IT models won't cut it anymore. To thrive among ever-changing technology trends, businesses need an agile IT strategy.

Executive Summary

New demands from consumers, employees, and customers are placing enormous pressure on organizations: it's all about competitive advantage. Organizations need to be more agile, grasp opportunities as they arise, and do it all faster than ever before. As expectations around IT change, new business models and opportunities are up for grabs. To take advantage of this value, organizations need to implement the right combination of strategies, processes, and infrastructure. A piecemeal approach to leveraging new technology—in the midst of a fast-paced market—could leave businesses disaggregated and left on the sidelines by faster competitors.

Those who have converged technology trends to produce an agile IT strategy will have the systems, processes and organizations to work at an accelerated pace. Increasingly, technology capabilities have become the determining factor in an organization's ability to succeed.

Today's Enterprise Technology Landscape is Changing Rapidly

Over the years, "enterprise convergence" has described the interplay among a wide range of technology trends. However, most of those synergies have focused on hardware integration (*e.g.*, blade chassis with networking), transport integration (*e.g.*, Fibre Channel over Ethernet), or services integration (*e.g.*, voice and data over IP).

Today, organizations are seeing **real** convergence happening at a completely different level. A transition is afoot that brings together data, applications, and systems to help accelerate business in a more connected world.

Businesses are in transition to take advantage of new technology innovations. As part of that, IT is being driven to become more agile and move more adeptly to assist decision making. IT managers are faced with a simultaneous explosion of data and technologies, increased consumption access, and usage models encompassing cloud and mobile. IT departments are also under pressure from cloud providers like Amazon Web Services. IT needs to deploy services quickly or risk having business units bypass IT and purchase services directly from outside sources.

Enterprises that can marry together the people, processes, data, and devices to increase business agility will be better positioned to capture new opportunities in the future. With product lifecycles shrinking and communication increasing (both within

companies as well as across markets), companies need to move quickly to capitalize on trends and establish competitive differentiation.

Data volume has been growing at an explosive rate which puts pressure on businesses that must store, transmit, and process this data at a greater rate than ever before. Cisco estimates that global IP traffic will increase nearly fourfold between 2011 and 2016 reaching an astounding 110 exabytes per month.[1]

The move from a user-input driven model to a more automated model of data input is stressing the limits of IT as well. Integration is a key concern. The Internet of Things (IoT) will drive collection of an even wider set of data through devices and sensors that all can be connected and networked in real time. With less than 1% of all of the potential devices connected today,[2] it stands to reason that as more of these devices come online, data streams will continue to drive even greater increases in the information to be processed. By 2020 the number of connected devices is expected to reach 50 billion,[3] bringing a massive increase in the amount of data that needs to be handled and accessed securely. In addition, when one considers adding the people and process elements, the potential for complexity increases even further.

Demand for data and knowledge (output) is growing exponentially. While information once sat protected, it now is being pushed out of the datacenter— accessible both to internal users and also directly to end customers and partners. Because businesses are adopting cloud technology to help drive down costs and reduce response times, the market for global cloud services is growing quickly. It is expected to increase almost 6 times its 2010 size up to $241 billion by 2020.[4] Cloud services will give businesses additional flexibility but will also bring additional challenges over data security, cost, and transport. Data may now reside in both the corporate datacenter and with a variety of cloud providers. IT needs to ensure that it has a comprehensive cloud strategy to stay ahead of the business units. Failure to do so could send business units around IT, direct to the providers, where a credit card swipe gets them what they need instantly.

Device proliferation both inside and outside the firewall is complicating access, as users are demanding access to information over a wider range of devices, and IT has less control over device access than ever before. Mobile workers are now representing a larger portion of the workforce each year and by 2015, their numbers are expected to exceed one billion—nearly 38% of the total workforce.[5] Connecting these mobile users securely will be a daunting challenge, while failure to comprehend how data and services will be consumed by end users can be catastrophic for IT organizations.

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[1] Source: Cisco VNI Forecast (2011-2016), May 30, 2012
[2] Source: Cisco IBSG, 2013
[3] Source: Cisco IBSG, 2011
[4] Source: CIO Systems, Forrester Research, 2010
[5] Source: IDC, 2012

Combining the rapidly growing number of mobile devices with expanding cloud usage, security risks, and data (with a more complex set of outputs and locations) will prove challenging. But this combination is essential for businesses to be competitive. **The key to adapting to these growing trends is the ability to be flexible and agile**. IT infrastructure must be able to react to system-level changes and adapt—whether those changes are the need for more resources, alterations in how services are being consumed, or reactions to threats and security issues.

The ideal end state for IT is a holistic, autonomous entity that can respond and react to changes in the business. Instead of alerting administrators of what is happening then waiting for administrators to intercede manually, the infrastructure should alert administrators of what is happening and tell administrators how it is responding. IT infrastructure is like a large supertanker—90 degree turns are not possible—so constant monitoring and automated course corrections are required to stay on the right trajectory.

Business is Changing: Be Agile or Be Left Behind

Where disruption happens in the market, at either a micro or macro level, there is chance to profit—but only if companies have a mechanism that allows them to seize the opportunity.

A chief goal for businesses today is agility: moving faster and capitalizing on opportunities before they dissipate or are captured by the competition. To be more agile and leverage these technology trends, **businesses need to view their IT infrastructure as an enabler** for building relationships with their customers and increasing employee productivity. While most companies are not in the business of IT, every company needs to view itself as a technology company to capitalize properly on opportunities.

For businesses to capitalize on change, IT first needs to be aligned with a supporting strategy and a goal to connect everything. In a highly interconnected business environment, **IT needs to be aligned with business**. It must be part of an overall plan.

Companies are now looking to IT to help accelerate their business. But increased complexity means IT needs to take a more holistic approach to their systems, applications, and infrastructure to avoid deploying technology in disconnected silos. As the technology landscape evolves, IT will need to evolve its role. IT needs to focus more on the automation and orchestration of systems, and IT needs to remove as much manual intervention as possible. As companies move faster, they are demanding that all underlying support functions move faster. For companies to use technology to differentiate, they need IT to move faster. If it cannot move faster, IT simply will be relegated to maintaining back office systems like payroll and HR.

Fitbit, a manufacturer of activity tracking devices, provides an instructive example. The Fitbit monitors not only allow users to track their fitness activities and progress, but it also sends extensive information back to Fitbit regarding customers' activities and

routines. Fitbit can correlate the monitor's sensor data and location (GPS) information with social media and other data sources. Such analyses help drive more complete user profiles and deepen Fitbit's insight into individual behavior and aggregate behavior of segments and groups. As the monitor's popularity grows, the data will grow, and information profiles will become clearer and more predictive.

An agile IT strategy can benefit many industries. Retail companies can roll-out new engaging personalized mobile experiences to delight customers with real-time promotions, concierge services, and information about local trends. IT agility could enable access to new business insights by providing the right IT resources to the right people at the right time. Or consider the healthcare changes happening in the US today. Changing laws bring opportunity to healthcare businesses that can quickly deploy servers, applications, and infrastructure to expand in newly developing areas.

The New Role of IT

The changes in technology that will help drive a new era of agile convergence will occur across all domains. We are witnessing IT grow from dedicated, discrete, and unconnected systems with limited access into a more connected, standardized set of systems that can better leverage more automation. But there is still more room to grow.

An excellent example of changing data patterns occurred when HBO aired the season finale of its critically-acclaimed series *True Detective*. While HBO's traditional business relies on cable system providers to distribute content, HBO also provides HBO GO on products like tablets, smartphones, and media streaming devices. For these devices HBO is the direct distributor. HBO was sitting on what could have been a perfect convergence of mobile, cloud, social media, and security all rolled into one.

However, *True Detective*'s tech-savvy, younger viewership caught HBO off guard. Younger viewers are shifting toward mobile experiences (*e.g.*, HBO GO) and away from traditional terrestrial cable distribution. But HBO did not have enough datacenter capacity properly provisioned to handle the episode's "non-traditional" demand—even though social media laid out enough clues about user anticipation. This was clearly an opportunity where mobile trends were evident, and social media input was there; HBO should have had a more elastic system to scale up to meet the demand. All of the signals were there, but the datacenter was not agile enough to adapt. Although there were probably enough resources in the datacenter to handle the spike, HBO was unable to respond and provision them to handle the traffic in a timely way. Manual processes could not keep pace with changing market dynamics.

Inflexible strategy, along with project vacuums, leaves IT struggling to comprehend and deploy the latest technologies. IT needs to bridge the current infrastructure between today's capabilities and the visualized end state with a strategy that can handle projected growth **while allowing the business to capitalize on opportunities along the way**. Ideally, IT infrastructure of the future is agile. It needs to be designed to adapt automatically to handle business realities.

IT needs to have an automated, software-programmable set of technologies that work together to anticipate need, to morph flexibly to the current situation, and to respond rapidly to changes—all without requiring human oversight or interaction.

What IT Needs to Change

Breaking down system-level barriers is critical, especially when manual processes are involved. Then IT can simplify and accelerate, thus removing latency and creating the capabilities that will help drive the future.

The key to this new connected world is process optimization. Businesses need to prepare for the future and simultaneously leverage a fully-connected environment for more agile business decisions. The following four IT attributes, which build on each other, are vital. While companies can begin to plan for and implement the different attributes across their infrastructure, starting at the base and working upwards will yield the most efficient results.

Figure 1: Hierarchy of the New Convergence
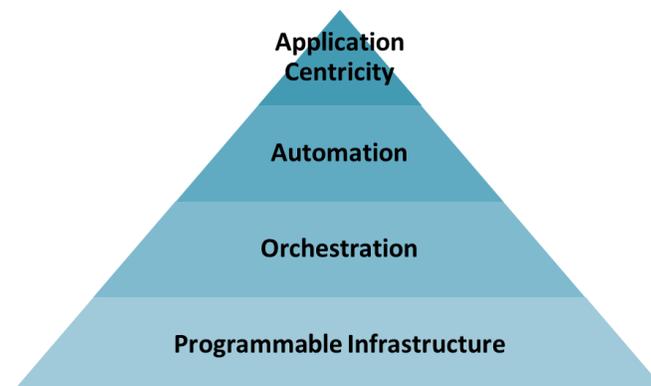
Programmable Infrastructure

Servers and storage have already surpassed network infrastructure in terms of programmability. For the network, programmability will enable businesses to break free of the hard-wired, hard-coded devices and processes that have plagued infrastructure in the past. As the "base of the pyramid", programmable infrastructure enables the other three attributes to function effectively. Flexibility and cost savings come from enabling full infrastructure control through automation and orchestration. With programmability, abstraction capabilities make it easier to install, configure, integrate, and run applications across physical, virtual, and cloud-based infrastructures.

Orchestration

Once the environment is programmable, the next step is orchestration: enabling different devices and applications to work together seamlessly in a coordinated way. As businesses move applications to the cloud, complexity and the need for rapid changes increase; thus orchestration becomes more critical to ensure that all components work

together regardless of location. Orchestration helps integrate today's datacenter with external servers and applications. This integration enables the consistent application of all policies across server, storage, network, and security for the uniformity that an expanded enterprise demands.

Automation
To become an agile organization that can move quickly and seize opportunity, it is critical to automate mundane, repeatable tasks. Adding a new user or mobile device should not necessitate a flurry of manual activities. Instead, it should initiate a series of automated steps that all execute autonomously and in the correct sequence (orchestration). Provisioning new network resources and launching applications should happen at an accelerated pace by automating the entire workflow across all domains. The ability to detect and automatically respond to threats instantly is critical—before they can inflict catastrophic damage. To create capabilities that promote productivity and innovation, companies need to automate the tasks which will streamline the process of installing, configuring, integrating, and running applications across infrastructures so that IT resources can be deployed on more strategic endeavors.

Application Centricity
Through an application-centric approach, IT can define workflow and policies in advance, so infrastructure can keep applications optimized dynamically. Condition-based actions and action synchronization can eliminate guesswork and manual processes—preventing operational slowdowns and preventing increases in long-term operational costs. When application conditions drive actions, platforms can run at peak performance, and applications/services can be delivered quickly and more securely.

Customer Impact

The new enterprise convergence is a journey, not a destination. Many enterprises are already taking steps today to begin this process. They are using technology to tie infrastructure and applications together and begin to automate their processes.

For instance, Transwestern (a privately-held real estate firm specializing in agency leasing, property, and facilities management) uses IT automation not only as competitive differentiation but also to accelerate revenue. "Our tenants receive network services in days, not the many weeks they would have to wait in most office buildings," says Roger Vasquez, Director of Engineering for Transwestern. Reducing deployment time shortens the time between need and delivery. Transwestern capitalizes on that shorter time, simultaneously outmaneuvering the competition and monetizing end customer need.

Efficient IT can help differentiate a business similar to the way inefficient IT illuminates poor backend processes. For example, Jacques Orces, Chief Medical Information Officer, Miami Children's Hospital, sees efficient IT technology as being a crucial component of his organization's differentiation. "For our staff, they rely on the upgraded wireless technology for flawless, fast, and reliable [Capabilities] day-to-day. It's made

the staff's job easier because now they can, without worry, provide patient information right at the bedsides."

By delivering new personalized, context-aware, location-based experiences, businesses can increase the relationship value with their end customers. Access to secure data anywhere—on any device—helps create a tighter relationship with the customer and allows capturing greater opportunities over time.

Call to Action

The next step for customers depends on where they sit in the process.

For enterprise customers, an assessment of inputs and outputs is a key first step.
- **First**: Mapping your company's business imperatives to strategies around cloud, mobility, security, and IoT (sensors, devices, and flows), as well as data/applications is a necessary first step. For background, a comprehensive IoT segmentation can be found [here](#).
- **Second**: Virtualization and programmability should encompass not only the server and storage components but also extend out to networking. Understanding virtualized infrastructures is critical both on premises and off.
- **Third**: Build out an optimized IT strategy by layering programmability with orchestration, automation, and an application-centric approach. This step ensures that applications and devices work together seamlessly and securely. And it frees up time for IT to innovate.

Service providers need to perform the same tasks. But complexity is increased, because these operations need to extend into their customers' datacenters as well. That analysis should be more comprehensive and look at services/applications across customers with horizontal capabilities.

Everything is connected now. An effective IT strategy needs to reflect this new reality.

Important Information About This Paper

Author
[John Fruehe](), Analyst at [Moor Insights & Strategy]().

Review
[Patrick Moorhead](), President & Principal Analyst at [Moor Insights & Strategy]().

Editor
[Scott McCutcheon](), Director of Research at [Moor Insights & Strategy]().

Inquiries
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