Making the cloud relevant: E-business, IT as a Service, and Everything as a Service

By Keith Jahn

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Is the sky falling?

You may recall the childhood story of Chicken Little being hit on the head by a falling acorn which in turn leads her to conclude that the sky was falling.

What unfolds is a story of a frantic fowl on a seemingly life or death journey to inform the king of this dire situation. Along the way she garners support from like-minded friends who take up the cause and join the journey to inform the king. In the last portion of the story the group runs into a tricky fox that convinces them that he has a better path, one that will enable them reach their destination much quicker.

This being a very old story, there are two popular ending scenarios:

1. The animals are eaten by the fox and never see the king – espousing the age-old lesson of "don't believe everything you hear."
2. The king's hunting dogs intervene and dispatch the fox enabling the king to hear the story – teaching a lesson about courage and perseverance in pursuing goals.

What does this story have to do with anything IT-ish? This document explores a scenario that IT organizations could face in the not too distant future, brought about by the advent of the cloud phenomena – one that forces radical change or results in dire consequences for IT as we know it – perhaps even eliminating the function altogether. If IT organizations are eliminated, this will, quite obviously, have a significant impact on the entire technology supply chain.

As an IT veteran and consummate worrier, I have first-hand experience responding to "the sky is falling" challenges and have heard many more accounts from fellow IT'ers over the years. Some challenges originate from business events and others are driven by changes to the technology landscape.

Over the course of time, both story endings have materialized: UNIX did not kill the mainframe, Ethernet did kill token-ring, Y2K didn't stop the world, and the dot coms did get eaten by the fox.

And here we are face-to-face with yet another inflection point in the form of cloud. But what does it actually mean? Why should we care? And how will the story end?

The natural rhythm in an IT organization is to view cloud as a technology disruption and assess it from a delivery orientation: how this new technology enables them to deliver solutions to the business, better, faster, and/or cheaper. Most IT practitioners, suppliers, and advisors are approaching cloud exclusively from this perspective, generating more hype and confusion than actual results. I assert that an equally important but often ignored dimension to pay attention to is what cloud services are and how they are consumed: these services are ready to run, self-sourced, available anywhere, subscription-based, or pay as you go.

This might seem like a subtle distinction, a *delivery* orientation versus a *consumer* orientation. After all, they are two sides of the same coin. But in fact, if IT shops continue to focus on the delivery aspect only, they'll miss the boat altogether, because the consumption model has changed so profoundly: businesses now expect to consume services, not technologies.

As businesses re-orient themselves around a cloud model and services mature and grow, new capabilities will emerge. Businesses will be able to solve new problems that weren't addressable before. In addition, they will be able to solve old problems quicker, cheaper, and with higher-quality results.

Because of this, the cloud will ultimately usher in new business models which in turn will force IT to reinvent itself in order to remain relevant to the business in the emerging service-oriented economy. This means that IT must move away from its exclusive focus on delivery and management of assets and toward creating a world-class supply chain for managing supply and demand of business services.
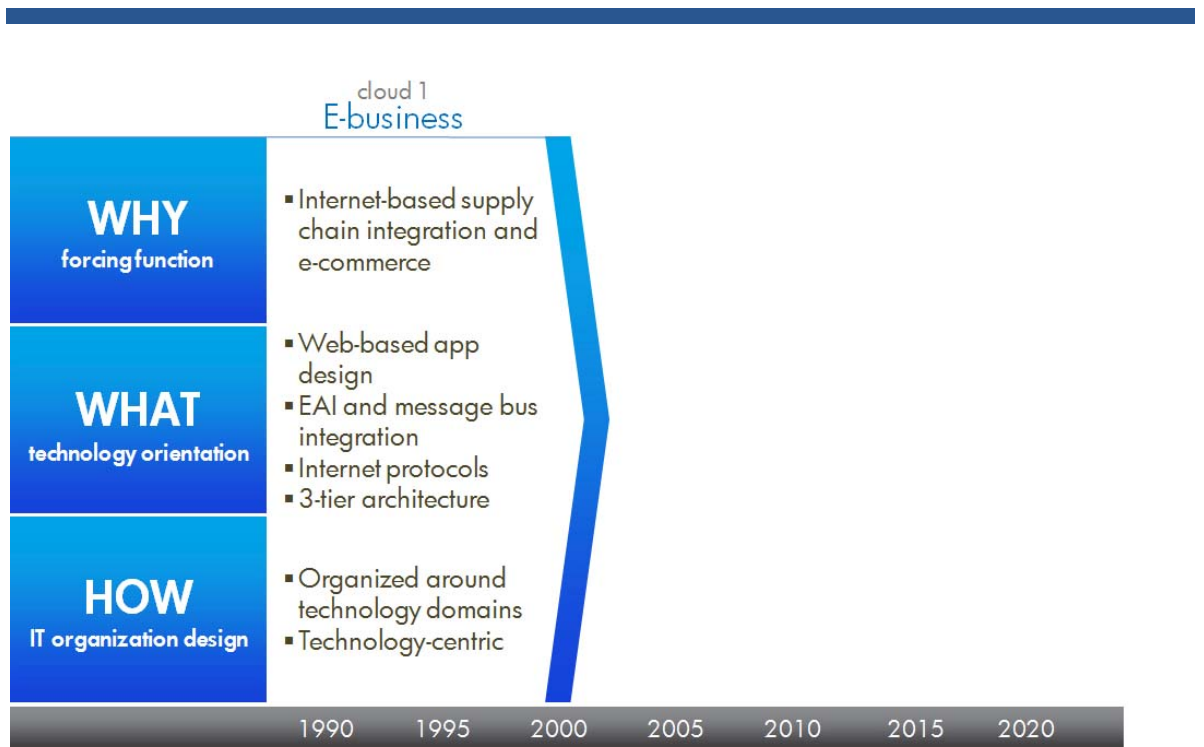
Contextually, the cloud actually becomes a forcing function – forcing IT to transform. It may not be next year or the year after but we will arrive relatively soon at a place where the business can source services on its own from any provider it chooses (fulfilling Nicholas Carr's 2003 assertion that "IT doesn't matter"). CIOs that ignore this fact and fail to take transformative measures are likely to see their role devolve from innovation leader to CMO – Chief Maintenance Officer – responsible for maintaining all of the legacy systems and services sourced by the business.

My intention with this essay is to provide a high-level explanation for how this will likely occur, and offer an alternative strategy to enable a happy-ending scenario.

Cloud 1

News flash: the cloud isn't new. It's been around for years now, starting with what many now refer to as the "internet era." Remember when we as IT people used to talk about what was being hosted "in the cloud?"

This was the first generation/version of cloud. Let's call it cloud 1. It was an enabler that originated in the enterprise. Commercial use of the internet as a trusted platform revolutionized supply chain management processes and brought about new shopping experiences for consumers. Over time, these technologies became mainstream and fundamentally changed the IT architectural landscape. We moved from two-tier to three-tier architectures, embraced externally hosted applications and transitioned to internet protocols and development techniques internally as a means of delivering solutions. And this internet-enabled, cloud 1 ecosystem made its way through the entire portfolio of IT capabilities, solving new problems and driving efficiency gains into old ones.

cloud 1
E-business

WHY forcing function	▪ Internet-based supply chain integration and e-commerce
WHAT technology orientation	▪ Web-based app design ▪ EAI and message bus integration ▪ Internet protocols ▪ 3-tier architecture
HOW IT organization design	▪ Organized around technology domains ▪ Technology-centric

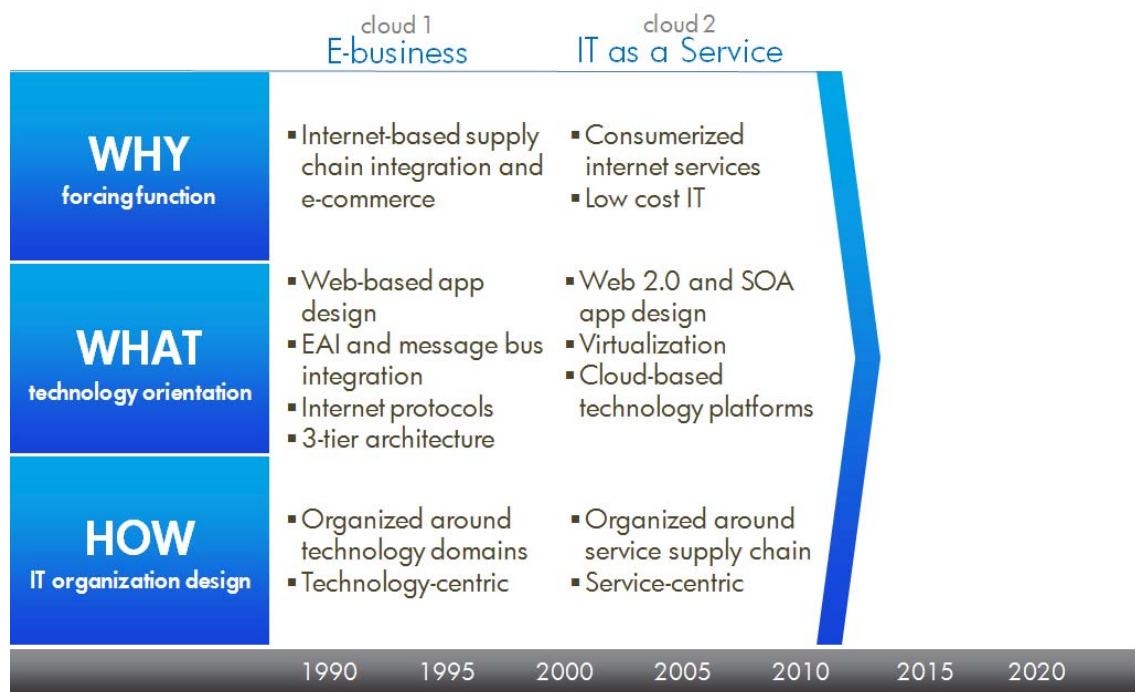1990   1995   2000   2005   2010   2015   2020

As an offshoot of this, the enterprise-oriented technologies moved out of the computer room and into the living room of the employees as they became internet shoppers and searchers. How long did this take? Maybe five years – give or take a year.

As this model evolved and matured it gave birth to thousands of consumer class services. These services use next-generation internet technologies on the front-end and massive-scale architectures on the back-end delivery, and are low cost, good enough services as far as the service consumer is concerned. And while these consumer-class services don't necessarily pass the smell test for compliance and security concerns of large enterprises, they are good enough for small companies and individuals and are maturing rapidly. These services and delivery techniques have ushered in a more advanced generation or version of cloud: cloud 2.

Cloud 2

The current generation of cloud services is driven by the consumer experiences that blossomed from cloud 1 living rooms. Internet-based shopping, search, and countless other services have brought about a new economic model and introduced new technologies. Services can be self-sourced, from anywhere and virtually any device and delivered immediately. Infrastructure and applications can be sourced as services in an on-demand manner. This consumer-oriented model is forcing its way back into the enterprise on the backs of employees.

Most of the attention around cloud services in the enterprise today is focused on the new techniques and sourcing alternatives for IT capabilities – IT as a service. Using standardized, highly virtualized infrastructure and applications, IT can drive higher degrees of automation and consolidation, thus reducing the cost of maintaining existing solutions and delivering new ones. In addition, externally supplied infrastructure, software, and platform services are delivering capacity augmentation and a means of using operating expense funding instead of capital.

	cloud 1 E-business	cloud 2 IT as a Service
WHY forcing function	▪ Internet-based supply chain integration and e-commerce	▪ Consumerized internet services ▪ Low cost IT
WHAT technology orientation	▪ Web-based app design ▪ EAI and message bus integration ▪ Internet protocols ▪ 3-tier architecture	▪ Web 2.0 and SOA app design ▪ Virtualization ▪ Cloud-based technology platforms
HOW IT organization design	▪ Organized around technology domains ▪ Technology-centric	▪ Organized around service supply chain ▪ Service-centric
	1990 1995 2000 2005 2010 2015 2020	

This cloud service orientation is also spawning new ideas for business innovation in the enterprise. For example, think of the impact that publicly available GPS services and mapping technologies have had on logistics processes. With these technologies and services, integrated into logistics management systems, tracking of assets, shipments, and personnel has reached a higher degree of accuracy and improved cost efficiency than ever before.
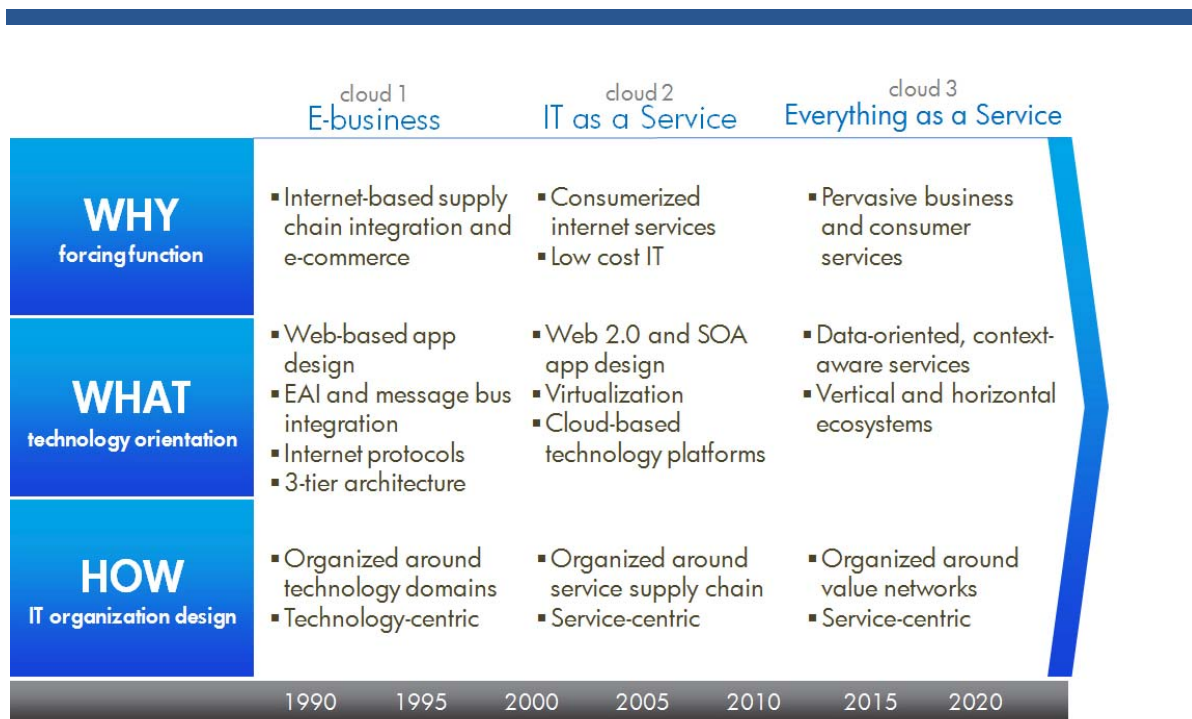
Meanwhile, business people are attempting to further exploit this service orientation to eliminate complexity and barriers in their monolithic processes. They read about examples; they visualize new opportunities and approaches but are typically "held hostage" by their IT department and the inherent latency of project-driven processes required to make it happen. And missing the IT planning window can add years to the cycle time of getting the desired results. This is adding stress to the already tenuous relationship between IT and the business it services.

How long is this going to last? Here's a prediction – don't blink.

While many companies are wrestling with the technology transitions required to move from cloud 1 and 2, the volume of services in the commercial cloud marketplace is increasing, propagation of data into the cloud is occurring, and web 3.0/semantic web technology is maturing. And because of this we are just starting to see the next generation of cloud materialize: cloud 3.

Cloud 3

That data and information is growing at a break-neck pace is just the tip of the iceberg. Within three years there will be more information produced and consumed than in the history of man. The next version of cloud will enable access to information through services that are set in the context of the consumer experience. This is significantly different: it means that data will be separated from applications. Processes can be broken into smaller pieces and automated through a collection of services, woven together with access to massive amounts of cloud-based data. It eliminates the need for large-scale, complex applications that are built around monolithic processes. Changes can be accomplished by refactoring service models and integration achieved by subscribing to new data feeds. This will create new connections, new capabilities, and new innovations surpassing those of today.

	cloud 1 E-business	cloud 2 IT as a Service	cloud 3 Everything as a Service
WHY forcing function	• Internet-based supply chain integration and e-commerce	• Consumerized internet services • Low cost IT	• Pervasive business and consumer services
WHAT technology orientation	• Web-based app design • EAI and message bus integration • Internet protocols • 3-tier architecture	• Web 2.0 and SOA app design • Virtualization • Cloud-based technology platforms	• Data-oriented, context-aware services • Vertical and horizontal ecosystems
HOW IT organization design	• Organized around technology domains • Technology-centric	• Organized around service supply chain • Service-centric	• Organized around value networks • Service-centric
	1990 1995 2000 2005 2010 2015 2020		

For example, think about the problem of trying to understand the salmonella outbreak in the U.S. a couple of years ago. We were all originally led to believe by the experts that it was caused by tomatoes. You couldn't buy a tomato for six weeks and the entire industry almost went under. Then they revised their position and said "well, no, it's the jalapenos." The actual root cause was never really figured out. Solving this kind of problem with traditional approaches would require integrating with the supply-chain management systems of every participant in an extended ecosystem, which is very expensive, complex, and just won't happen. This means that when events such as the salmonella outbreak do occur, the response is to comb through manual reports, trying to do the correlation by hand, which delivers answers three months too late – if ever.

In 2009, a cloud service was developed to enable the GS1 Canada Product Recall program. GS1 Canada is the Canadian arm of GS1 – a leading, global, not-for-profit organization dedicated to improving supply chain efficiencies. This program runs on HP's cloud computing platform for manufacturing, allowing companies to expediently exchange product recall information in a secure and direct manner using GS1 supply chain identification keys. Participants in the ecosystem simply propagate data to the program and then all of the analytics happen in the cloud. This approach helps to eliminate the challenges and inaccuracies that result from manual product recall processes.[1]

Which cloud should IT focus on today?

IT organizations are still struggling to understand how to utilize technologies associated with cloud 2. Discussions and debates about the how/what/why of virtualization, private cloud, Infrastructure as a Service, Software as a Service, and Platform as a Service are occurring each and every day. And as seasoned IT folks, we are comfortable dealing with technology disruptions and have industrial strength processes to respond to them.

The reality is that by focusing attention here, we'll miss the forest for the trees. Taking a technology-oriented approach to cloud will only exacerbate existing problems over time. One reason is because technology can only be calibrated to cost – thus the anchor IT metric: Total Cost of Ownership. Cloud 3 is not so much about delivering cost reduction through technology as it is about value. It's about services that people are willing to pay for because of the direct and visible benefit they provide.

Cloud 3 services offer businesses opportunities to solve existing problems in new ways or to solve problems not solvable until now. As more cloud 3 services materialize, businesses will not wait in line for IT projects to deliver them. Instead, equipped with two very powerful tools – an internet connection and a credit card – they will be able to circumvent IT to get the desired results, diverting precious innovation funding away from IT budgets.

Therefore, it's vital that IT leaders start focusing on reinventing themselves. Transforming to a model where 90 percent of the deliverables still flow through a project-oriented pipeline will not lend itself to competing in the new economy. In the not too distant future, the business will not want IT projects that deliver applications; it won't want to invest in IT assets. So, what will it want?

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[1] Adapted from Transcript of 3x2 matrix discussion: Russ Daniels, CTO Enterprise Services, HP

It's the service, stupid!

People in the business just want services. They want the right technology-enabled services that help them get their job done, and that help broaden their horizons into new opportunities.

But here's the problem: The traditional role of IT has been to deliver and manage technology-based capabilities that are an aggregation of assets such as applications, databases, networks, storage, and servers. IT is typically organized around the various technology domains, taking in new work via project requests and moving it through a plan-build-run lifecycle. This delivery-oriented, technology-centric approach to IT has inherent latency built into the model which has in turn created an ever-increasing tension between itself and the business it serves.

Cloud 3 is not driven by technology delivery, per se. It's led by sourcing and consuming services. And the operating model around these services is flexible, elastic, and on-demand. The sourcing is simple, self-sourced, pay as you go. The project request gate standing between a consumer and the value delivery has been replaced by a simple credit card transaction. This does not fit inside the traditional IT model envelope. In fact, it challenges all aspects of IT – and makes people really nervous. But commercial cloud service providers get it. They are building and expanding around this new operating model and are rapidly becoming the chief competitors with the internal IT department.

So, how will IT compete in the service economy?

One school of thought is that by waving the security, compliance, and availability banners, IT won't have to compete with external providers. And this might be true – for a little while. But cloud will ultimately force wholesale change for IT, shifting the focus from technology *delivery* to service sourcing and *consumption* – transforming IT into a service-centric organization.

Scoffers will say that cloud is hype, a fallacy, a replay of utility computing or web hosting on steroids. There are too many security issues, too many reliability concerns with technology-enabled services over the internet. That's not the point. The point is that the consumption model for business services is changing, yet as an industry, IT remains focused on the delivery and management of technology assets. Even more relevant is that there is a next wave on the horizon that is focused on propagation of massive amounts of data delivered via context-aware services. Unfortunately, the operating model and structure of the IT organization is not designed to address the needs associated with this next wave.

IT must reinvent itself, organizing in such a way that it becomes the central service-sourcing control point for the enterprise, or else realize that the business will source them on their own. Doing so will ensure that IT can maintain the required service levels and integrations. In order to get there, changes to behavior, cultural norms, and organizational models are required, and for many this will be viewed as too painful and too expensive.

And if the lines of business continue to go around their IT departments to self-source services, the core customer of IT suppliers will lose its buying power. The IT department will be forced into a situation where they are maintaining self-sourced services from the business. Seasoned IT veterans will recall the 1980's when processes were run using spreadsheets or niche applications running on desktop computers in business user offices. It was a mess for both IT troubleshooters and suppliers who couldn't figure out whom to sell to and who had decision-making authority. History has a way of repeating itself.

There are legitimate barriers that stand in the way of mainstream cloud 3 acceptance (security, reliability, etc.) in the business – but time and maturity have a way of resolving issues and breaking down barriers. This period is no different.

The sky is falling indeed!

Cloud forces a service-centric IT organization

In order to survive, IT must transform itself from an asset-focused or technology-centric delivery organization (providing and managing assets) into the strategic service-sourcing control point for the enterprise. I call this the service-centric model. This means that IT has to fundamentally change what it does for the business and how it gets it done. And this is hard work.

But what does this mean and what does it look like in the end?

Service-centric represents an advanced state of maturity for the IT function, enabling it to operate as a business function – a service provider, deliberately structured around a set of products that customers value and are therefore willing to pay for. The deliverables of the service-centric IT organization are technology-enabled, pre-integrated services. Technology-enabled services are comprised of the full roster of technologies and capabilities that, when aggregated together, can be calibrated to business value. For example, an order management service is comprised of application services, infrastructure services (storage, compute, network), data services, security services, etc., and one specific SLA target.

These services come into being as part of the business strategy and are organized into a service portfolio. In other words, IT develops a service portfolio that contains services it and the business needs and are willing to invest in and/or pay for (calibrated to value). The differentiator between this model and the technology-centric model is that the deliverable is a service that is procured as a unit through a catalog and for which the components (and sources of the components) are irrelevant to the buyer. Contrast this with the technology-centric model where the deliverables are generally a collection of technology assets that are often visible to the economic buyer and delivered through a project-oriented lifecycle.

In a service-centric function, the organizing principle is the service. This means that everything is structured around the sourcing, delivery and management of services – much like a value network-oriented supply chain. Employing a structure similar to a supply chain model, the work associated with the services can be completed using a configure-to-order approach where standard components are used (sourced internally or externally) to quickly fulfill a service request.

The connective tissue for the value chains are the processes (sometimes expressed using ITIL or eTOM framing) that describe how work associated with the service is supposed to flow both vertically and horizontally through a source-integrate-manage lifecycle.

The service-centric model will eliminate some existing roles and generate new ones within the IT organization. For example, service managers will be vital to packaging, pricing, and sourcing the deliverables, and business relationship managers will be needed to oversee supply and demand planning for services. In addition, existing roles will change in scope and areas of responsibility. For example, governance functions like a PMO might be tasked with overseeing the sourcing strategy for the IT function, i.e., which are in-sourced, which are out-sourced.

What emerges is a more nimble, agile IT organization, one that can quickly respond to changing business needs based on actual consumption, and can compete head-on with commercial providers in the cloud service marketplace.

A happy ending?

Cloud 3 is an enabler for business – it enables business users to source services that meet their needs quickly, at the right price, at a good enough service level, and without the help of an IT organization. It will usher in innovations and breakthroughs at a pace and scope not seen before. It will introduce new threats in existing markets for companies and open new markets for others. Therefore, the cloud is more of a business revolution than a technology evolution.

While today's business models and policies create real barriers to cloud adoption in the enterprise, commercial service providers and technology suppliers are working to deliver solutions that break them down. In addition, small-to-medium businesses are leaning toward the power of cloud services to avoid high cost IT departments. These businesses are creating new models for how work gets done. They are using "good enough" services that enable parts of their processes and integrating them by subscribing to new data feeds. And they're doing this on their own.

It would be unwise for IT organizations to focus exclusively on positioning themselves to adopt and implement cloud technology. By doing so, IT will feed the growth in "shadow sourcing" of services within the business functions. Unlike shadow IT, where assets purchased by the business can be discovered on the network, cloud services are not easily detectable using traditional IT methods. Instead, a more effective approach is to focus on transforming the IT organization into a service-centric model, one that is able to source, integrate, and manage services with world-class efficiency. Doing so will prepare IT to support new business models while, at the same time, utilizing new technological breakthroughs in a manner that adds value to both the top and bottom line of their business.

As with the original Chicken Little story, there are two possible endings:

Scenario 1: IT will ignore the fact that its role is being threatened and follow the fox to its den by continuing to focus on the delivery aspects of cloud. Even those that see virtualization, automation, and/or private cloud as the end-state are at risk. As a result, many CIOs will be eaten alive, leaving their organizations to spend an ever-shrinking number of maintenance funds while the business invests in innovation on its own. This will have a significant impact on technology suppliers. Current practices are built around selling to an IT customer, quote to cash cycle times are predictable, and techniques for what to sell and how to sell it are commonly understood. A fractured model, one where IT-ish buyers are spread across the different lines of business will add complexity and delays into the sales cycle.

Scenario 2: IT is rescued by the king's hounds in the form of transformation to the service-centric organization model, emerging as the strategic sourcing control point for services in the enterprise. This will lay a strong foundation for embracing the next wave of cloud (or other) disruptions and put IT in the driver's seat for fostering business innovation.

IT leaders will very soon find themselves at a crossroads, faced with a choice. Turning one way results in changes in what they do and how they do it, keeping them at the forefront of business innovation in a new service-oriented economy. Turning the other way leads them into the maintenance business, rendering them virtually irrelevant to the businesses they serve.

It's time to decide which path you will take.

About the author

Keith Jahn is a director in the office of the CTO for HP Software & Solutions. During his career as an IT practitioner, architect, and strategist, Keith has successfully designed and implemented technology, automation, and service management strategies and led several large-scale transformation initiatives. He has a passion for IT-led business effectiveness and has held leadership roles in IT and commercial outsourcing at several Fortune 500 corporations.

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