Cloud Computing in Large Enterprises

Questions for the C-Suite

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Questions for the C-Suite

Business executives and chief information officers (CIOs) alike are curious about cloud computing. Many senior executives were caught off-guard in the 1990s by the rapid development of the Web, and they do not want to miss the next big shift. Others have used cloud-based services such as Mozy, Dropbox, and Flickr at home and wonder when their corporate systems will be so easy to use, accessible, and ubiquitous. At the same time, they are understandably skeptical about vendors’ claims that cloud computing is the next new thing.

Where do clouds belong in the computing landscape of large organizations? To answer that question, we talked to more than 30 technology leaders in global companies and government agencies, discussed strategy with leading vendors, analyzed our client case experience, and examined the leading edge of the market.

Cloud computing has a definite role at large organizations. Today, both companies and governments are realizing sizable gains in cost and efficiency from the cloud. Some are starting to build potentially disruptive new business models enabled by cloud computing.

Although it is right to be skeptical about any hyped-up new technological development, it is risky to dismiss the cloud as a passing fancy. The benefits of cloud computing today are real. The potential of cloud computing tomorrow is tantalizing. The time to explore both is now.

This paper is the second in a series on cloud computing. In the next paper in the series, we plan to quantify the potential value of the cloud to large enterprises.

How Can the Cloud Create Value?

Cloud computing has many widely debated meanings. It is generally described as a model for enabling convenient, on-demand access to a shared pool of computing resources. We view cloud computing as an approach to delivering value to organizations through information technology. (For common definitions of the different types of clouds, see the sidebar “Different Clouds for Different Folks.”)


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<thead>
<tr>
<th>Different Clouds for Different Folks</th>
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<tr>
<td><strong>Public clouds</strong> are available to the general public but are owned by an organization selling cloud services.</td>
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<tr>
<td><strong>Private clouds</strong> are operated solely for a particular organization but may be managed by either the organization itself or a third party.</td>
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<tr>
<td><strong>Community clouds</strong> are shared by several organizations and support a specific community. Examples include a supplier and key customers, sister agencies within a government, or trusted partners such as procurement organizations within an industry.</td>
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<td><strong>Hybrid clouds</strong> are composed of two or more clouds, which can be private, community, or public. They are bound together by standardized or proprietary technology that enables data and application sharing.</td>
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1. These definitions are abbreviated versions of those used by the National Institute of Standards and Technology.
The cloud provides opportunities for value creation at three levels in large enterprises: the utility level, the process transformation level, and the business model innovation level. (See the exhibit “Cloud Computing Offers Three Levels of Value.”) Initially, most large organizations focus on the utility level, but increasingly they are exploring the other two levels as well.

**Utility Level.** CIOs see tangible opportunities to save 10 to 50 percent in costs and to go to market more quickly with new applications and upgrades. Most organizations are currently focused on infrastructure and are moving standard applications, such as e-mail and other productivity tools, to the cloud.

**Process Transformation Level.** The primary benefits of this level are higher efficiency, closer collaboration, and superior integration and coordination across processes. Avon Products, for example, is starting to rely on the cloud—available on both computers and smartphones—to coordinate communications with its 150,000 sales leaders, who oversee nearly 6 million sales representatives. GlaxoSmithKline, The Coca-Cola Company, Valeo, and the City of Los Angeles have used cloud-based messaging, collaboration, and workflow to lower costs by 10 to 30 percent. Some organizations are moving customer-facing processes to the cloud, taking advantage of existing services such as Web-based calendars, Facebook, and social-networking tools. Early pilots suggest that time to market can be cut by 30 to 50 percent.

**Business Model Innovation Level.** At this emergent level, the cloud can power new business strategies and sources of competitive advantage built around ecosystems and supported by massive computing power and scale.

**What Does the Cloud Mean Today?**

Most large organizations are just starting to exploit these opportunities and to lay the foundation of their cloud-computing strategies. At many companies, we find senior executives pushing their IT staffs to be more aggressive and experimental. In our interviews, CIOs said that they recognized many benefits of cloud computing but were adopting a test-and-probe approach built around four principles:

- Creating a More Industrialized IT Shop. The cloud enables companies to introduce **standardization, automation, self-service,** and **massive scale** in order to lower costs and provide more flexible service.
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- **Extending Traditional IT Outsourcing.** The cloud provides greater flexibility and shorter contracts than traditional hosting arrangements. It also provides a benchmark to compare price and service levels.

- **Sourcing New Capability and Innovation.** Especially in its sweet spots of communication and collaboration, the cloud enables rapid delivery of new services.

- **Redefining the Role of IT.** Moving commodity activities to the cloud can potentially free resources for higher-value uses, such as supporting core business activities.

**How Quickly Should You Move to the Cloud?**

For large organizations, the public cloud is still a work in progress, with relatively limited adoption. It may be good enough for small enterprises and consumers with no great need for lockdown security and reliability, but it is not yet ready for prime time for critical activities at large enterprises. In the meantime, large organizations are focusing their cloud efforts primarily on private and community clouds.

**Private Clouds.** Most large enterprises are already working on some form of private cloud and expect to move 25 to 50 percent of their computing workload within three to five years. Private clouds enable CIOs to gain some of the benefits of the cloud while maintaining better control over their data and applications. Royal Philips Electronics and Royal Mail Group (the U.K. postal service), among others, are using private clouds.

**Community Clouds.** Community clouds bridge private and public clouds. A community cloud can generate greater scale advantages than a private cloud because resources are shared within a defined community—and it can provide greater control over data and performance than a public cloud can. Google’s government cloud (Google Apps for Government) is an example.

**Public Clouds.** Although some CIOs expect the cloud to handle as much as 80 percent of their IT needs, others—particularly those in highly regulated industries such as banking and insurance—are reluctant to move anything meaningful to the public cloud.

What stands in the way of wider adoption of the public cloud by large enterprises? In our interviews, CIOs cited several cautionary flags:

- **Technical limits** restrict the ability of enterprises to move legacy applications and complex applications to the cloud. Our analysis suggests that at least 20 percent of a typical company’s workload is unlikely to move to the cloud for technical reasons.

- **Laws** and **regulations** restrict the movement of data in many jurisdictions and require that the data of individual corporations be segregated. The legal framework for contracting is also still evolving.

- **Standards** to encourage data sharing across clouds are not yet in place. Until they emerge, CIOs will be concerned about interoperability and vendor lock-in.

- **Commercial terms** are still evolving. Pricing is not yet as flexible and unrestrained as vendors’ pay-as-you-go marketing suggests. Performance and service levels are improving but are frequently inadequate for everyday, must-have, always-on applications.

- **Security** and **data protection** remain key topics, less for technical reasons than because the services do not yet have long-term track records.

The majority of CIOs expect most of these issues to be resolved in the next three to five years, perhaps longer for government applications—although government entities are nonetheless beginning to embrace the cloud. (For examples of the latest trends in the public sector, see the sidebar “A New Model for Government.”)
How Could the Cloud Play a Broader Role in Business Strategy?

While CIOs are working through the logistical limitations of today’s cloud, business executives are correctly wondering whether the cloud will upend their business strategies, as the Web did in the 1990s. It makes sense to be both skeptical and prepared. The cloud will potentially disrupt and reshape entire industries in at least three ways.

**Ecosystem Development.** The cloud can knit together multiparty ecosystems. Apple and Google have been able to upend the media industry using cloud and cloud-like technologies. Google, in particular, is building cloud-based business models around standardization, scale, and ubiquity.

**Data Analytics.** The cloud can enable companies to process far more customer data than is feasible in traditional computing environments. Terapeak, for example, is crunching data sets from eBay and PayPal to offer insights into pricing, products, categories, and sellers. Online merchants are then able to adapt their marketing and sales strategies—nearly in real time. In the energy industry, smart-home initiatives are starting to use the cloud to run the data analytics that enable better decisions about energy use, home security, and entertainment.

**“Light” Business Models.** The cloud can facilitate asset-light business models. Small and midsize enterprises, which have fewer legacies to protect and risks to manage, are early adopters. In India, for example, dozens of community banks are relying on Tata Consultancy Services’ “bank in a box” cloud offering to automate deposit and loan processing.

Attention should be paid to these developments. Craigslist was able to vaporize a large segment of newspapers’ profits by offering free classified advertisements. The cloud could allow the next Craigslist to disrupt any of several industries in ways that are not necessarily apparent today.

What Actions Should Business and IT Leaders Be Taking?

The cloud should be viewed as both an IT tool and a business opportunity. The tactical goals of lower costs and greater agility should not overshadow the potential strategic shifts that may emerge. The following three steps will help to bring the cloud into both short- and long-term focus.

**Understand how the cloud can reshape your industry.** Business and IT executives should develop a common view on the cloud. As an exercise, they should look carefully at their industry’s value chain to uncover opportunities built around lower costs, agility, collaboration, advanced analytics, and mobility. They should also look more broadly to identify activities that would benefit from the cloud’s strengths in the areas of scale, managing massive amounts of information, and facilitating standardized processes.
Create a road map to capture value as the market matures. Enterprises should have a plan to build internal capabilities and to transition to the cloud as the market evolves. A road map should include an “experiment and learn” approach with several checkpoints to evaluate new approaches by vendors and to understand issues such as security, the development of standards, and integration across clouds. As systems are replaced and new capabilities are added, emerging opportunities in the cloud should be part of the discussion.

Reshape the IT organization. Executives should use the heightened interest in the cloud to accelerate internal adoption. The prospect of lower costs should motivate business leaders to adopt standardization, consolidation, and good-enough technologies in nonstrategic areas. As companies become more comfortable with the cloud, they can expand the boundaries of outsourcing to activities that have highly variable demand, involve multiple parties, or are outside the skill set of traditional vendors. During this transformation, the IT department can start to offer technology on a pay-as-you-go model. Without stifling creativity, companies need to pay attention to the governance of cloud initiatives.

Caution is always important. Outsourcing can work when it is initiated thoughtfully and with a clear view of costs, service levels, and demand. Companies should buy only what they want, not necessarily what vendors are selling.

Our analysis of the market suggests that clouds are here to stay, having proved their worth in many ways and settings. There has been—and will continue to be—uncertainty around timing, penetration, and deployment. But we are certain that clouds are in the forecast for the foreseeable future. It is smarter to pay attention to them—and develop strategies around them—than to pretend that they will blow over.
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