White Paper

Enterprise Journey to the Clouds

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November 2012

Cisco Internet Business Solutions Group (IBSG)

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Introduction

Cloud evolution is accelerating at an impressive pace. To gain a deeper understanding of this current rate of change, the Cisco® Internet Business Solutions Group (IBSG) has been engaging with wide-ranging groups of IT executives and decision makers. Our first cloud survey took place in 2010,[1] when cloud was in a nascent stage. This time, the core goal was to understand decision makers' current and forward thinking, strategy, and implementation around cloud, including their answers to the overarching question: *"How is the enterprise journey to the cloud progressing?"*

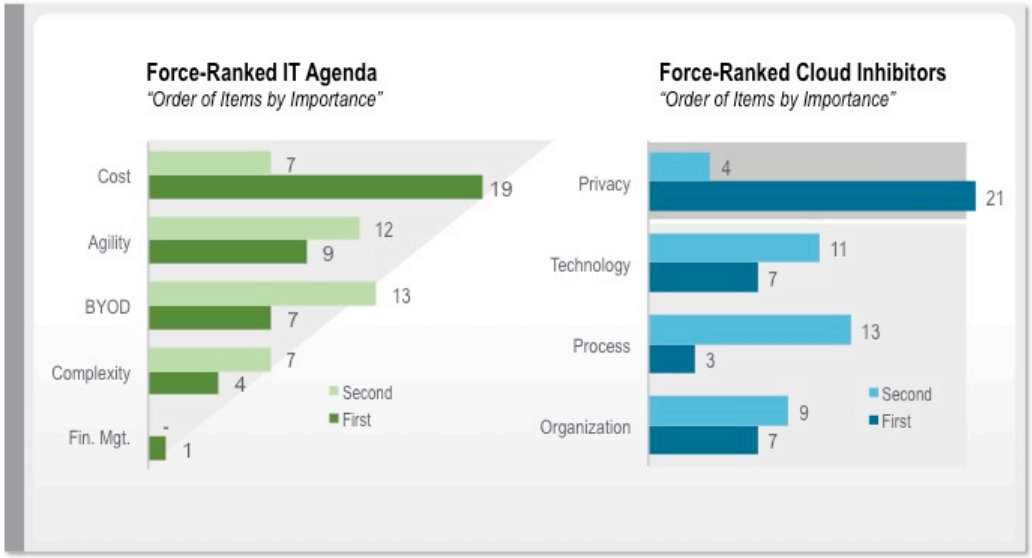
In seeking these insights, we interviewed CIOs, IT general managers, and cloud initiative directors at 45 companies around the world. The in-depth discussions were carefully structured and averaged 90 minutes in length. Our discussions included representatives from many Global 50 companies and focused primarily on five industry verticals: government, manufacturing, financial services, professional services, and retail.

Key topics included "Drivers and Inhibitors of Cloud," "Cloud Adoption Dynamics," and "Cloud Implementation Types" used to achieve current goals and future strategy objectives in the short and medium term.

Cloud Drivers and Inhibitors: Cloud Addresses Many IT Challenges

Increasingly, enterprise IT executives are turning to cloud solutions to address some of their key challenges. To pinpoint which issues are top of mind, we asked respondents to rank five predominant IT challenges. High rank means that cloud helps address the challenge. Additionally, we discussed four inhibitors that stop or slow enterprises' move to the cloud (see Figure 1).

Figure 1. Drivers and Inhibitors of Cloud Computing for Enterprises.



Source: Cisco IBSG, 2012

To no one's surprise, cost and agility stood out as the primary reasons to introduce cloud. CIOs believe that cloud allows an enterprise "to do more with less," even though the up-front investment can be daunting.

As we will discuss, many CIOs are challenged by BYOD (Bring Your Own Device) and see cloud—with its virtualization of applications and desktops—as part of the solution. To a lesser extent, cloud is viewed as a way to reduce complexity: Some CIOs plan to use the cloud momentum to standardize IT platforms, applications, and business processes. Regarding financial management, the often-quoted "CapEx-to-OpEx" dynamic is overhyped. To most enterprises, "money is money."

By far, the main concern when moving to the cloud is privacy. However, it is an issue only for public cloud implementations. Less troubling but still valid for both internal and public clouds are questions regarding technology (legacy issues, performance, licensing), process (adapting procurement processes to self-service), and organization (fragmentation of IT ownership, personal agendas).

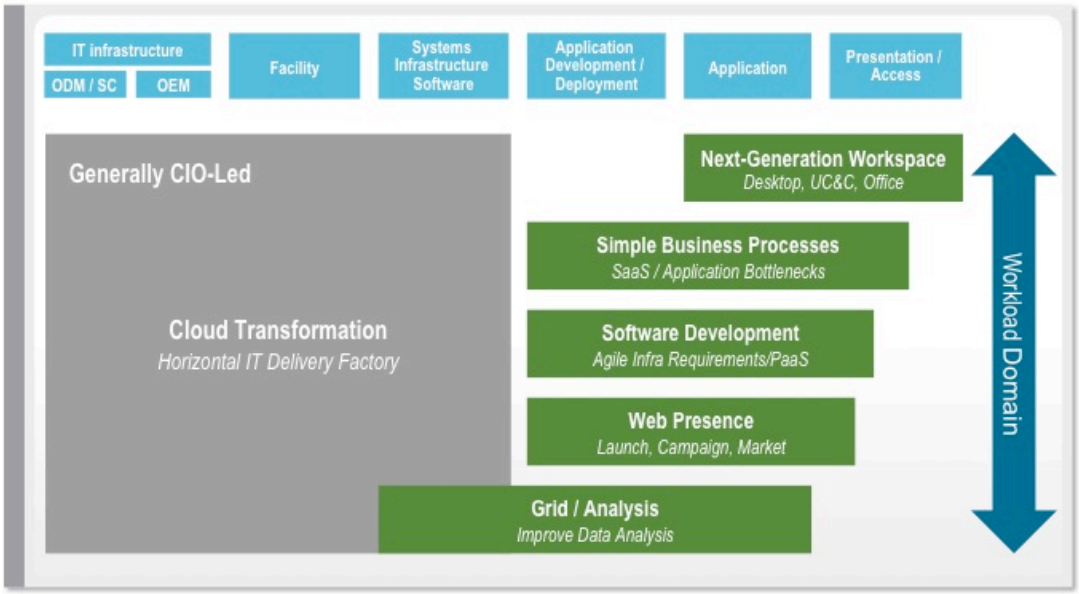
The Journey to Cloud Computing

Early Dynamics Open the Door to Cloud Transformation

While there is no prescribed order, enterprises often begin with smaller, well-defined projects. These projects are on the right side of the value chain,[2] near the IT user, and revolve around specific applications, workloads, or the virtual desktop (see Figure 2). At the same time, enterprises often start to explore optimization of the "factory," focusing on a more or less holistic cloud transformation of their data center, computing, network, and storage estate.

In our survey, all interviewees confirmed that the "adoption projects" model is "correct" and describes the Enterprise Journey to the Clouds in a concise way. We believe this to be an important finding. By aligning with cloud projects, for example, cloud providers will already have a suitable structure for a go-to market approach.

Figure 2. Horizontal Transformation and Point Cloud Initiatives.



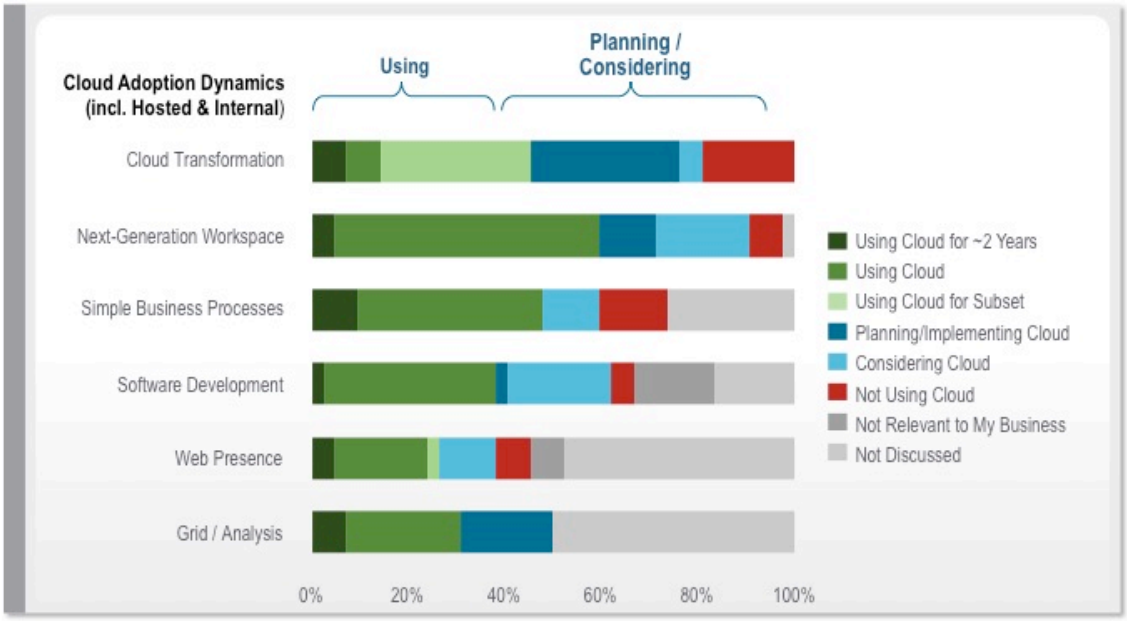
Source: Cisco IBSG, 2012

Here is a short overview of the six typical cloud projects that constitute the Enterprise Journey to the Clouds:

1. **Next-generation workspace:** Transforming the work environment through mobility, BYOD, virtual desktop, and collaboration tools.
2. **Simple business processes:** Modifying back-office business processes that tend to be less interconnected. Often, such processes are carved out and implemented via an external software-as-a-service (SaaS) solution.
3. **Software development:** Transforming development processes with cloud using infrastructure as a service (IaaS) *and* platform as a service (PaaS)—internally and in hosted environments.
4. **Web presence:** Using cloud to deliver an agile and scalable web presence. Interestingly, cloud competes with "old world" efficiency programs such as outsourcing.
5. **Grid/analysis:** Employing cloud to transform grid and analytics capabilities (for example, in credit scoring). Companies often use their grid experience to drive companywide cloud transformation programs.
6. **Cloud transformation:** Working holistically through the IT factory to consolidate production platforms into cloud. This process often starts with data-center consolidation, virtualization, and automation. The next step to a true self-service, IT-utility model proves a challenge for most enterprises.

There is no prescribed order of adoption steps. Nevertheless, we found that all enterprises adopt one or more early adoption projects (1-5), and often use the experience gained therein to structure a larger cloud transformation program (project 6).

Figure 3. Early Dynamics Open Door to Cloud Transformation.



Source: Cisco IBSG, 2012; N = 42 interviews

To gain a better understanding of the pace of cloud transformation, we asked survey participants if specific adoption projects had been implemented in their organizations for at least two years, were being implemented, or were on the roadmap (see Figure 3). It became evident that next-generation workspace, cloud transformation, and simple business processes are the most implemented and the most "in play" as organizations go through the planning and scoping stages.

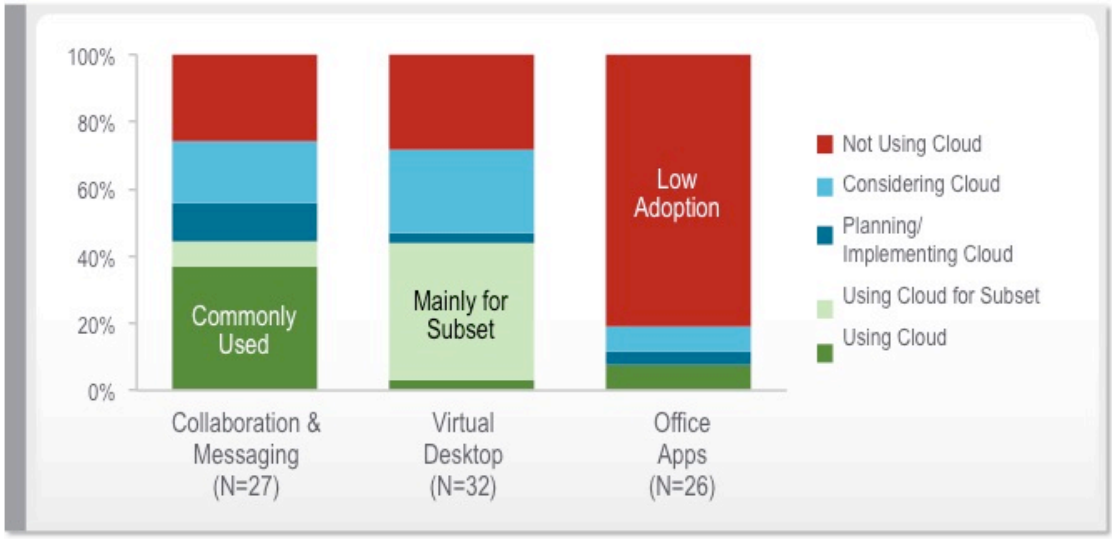
The most important message is that no enterprise representatives advised us on any significant activities outside this core set of six adoption projects.

What follows is a breakdown of each of these projects, how they are being implemented, and the extent to which they are impacting the overall Enterprise Journey to the Clouds.

1. Next-Generation Workspace

Under the umbrella of next-generation workspace, we've considered IT items "in reach" of employees: collaboration and messaging, virtual desktop, and office applications. This space, in general, is being transformed by cloud computing, and changes are driven by the liberation of the workplace from a fixed, location-centric model.

Figure 4. Next-Generation Workspace: Collaboration & Messaging Lead Other Applications.



Source: Cisco IBSG, 2012

Enterprise *collaboration and messaging* is leading the pack. As collaboration includes multiple parties, it is easiest to implement outside the firewall, and within a cloud paradigm. Email, moreover, is considered complicated to manage and undifferentiating, and therefore best run in the cloud by a third party.

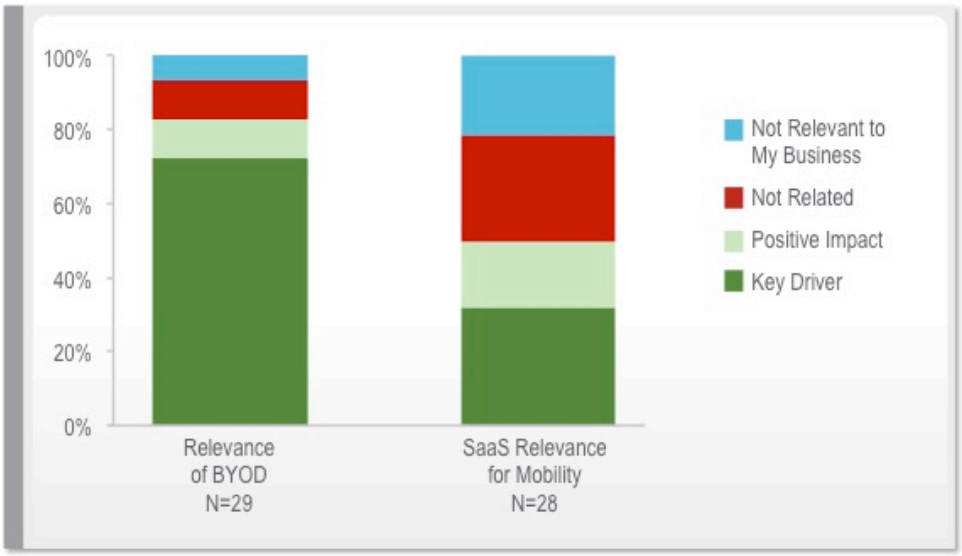
> "Collaboration is much more an 'anywhere' thing than desktop."
>
> **—Global bank**

Virtual desktops are generally not deployed for the entire workforce, but for subsets of employees. Often, CIOs are concerned about the reaction of powerful core user groups (for example, developers) and prefer to limit virtual desktop deployments to temporary staff, training resources, task workers, and call centers. The virtual desktop business case is not just based on cost savings, but also on security improvements (data stay central) and ease of desktop management. For performance and security reasons, all the virtual desktop deployments that we came across were implemented in-house.

To date, few enterprises have moved *office apps* to the cloud. The most-quoted reason is that cost savings are hard to realize in this area, and that office apps are easier to run on the desktop.

> "MS 365 is too expensive; it was 150 percent of our own private cloud."
>
> —Consultancy

Figure 5. Mobility and BYOD: A Priority and a Challenge.



Source: Cisco IBSG, 2012

BYOD and mobility are top of mind, as evidenced in the "Drivers and Inhibitors" section of this paper. They seem to be a challenge everywhere, with the exception of places where they are prohibited by IT policy. Adapting applications for mobility is often regarded as a priority and an important challenge for CIOs. But developing mobile apps for different platforms and form factors is resource-consuming and rarely a strength of enterprise IT teams. Some enterprises are waiting for HTML5 to mature before developing mobile-client apps, but many others feel they lack the capabilities for mobile-app development altogether.

> "Consumerization hit us like a tidal wave. It's not a stretch that, in two years, everybody will have a tablet."
>
> —Consultancy

As the right side of Figure 5 reveals, many IT executives count on SaaS to address the mobility and BYOD challenge. Commercial SaaS applications often come with quality mobile, device-independent clients. And they run outside the firewall, which eases the security challenge of mobile access.

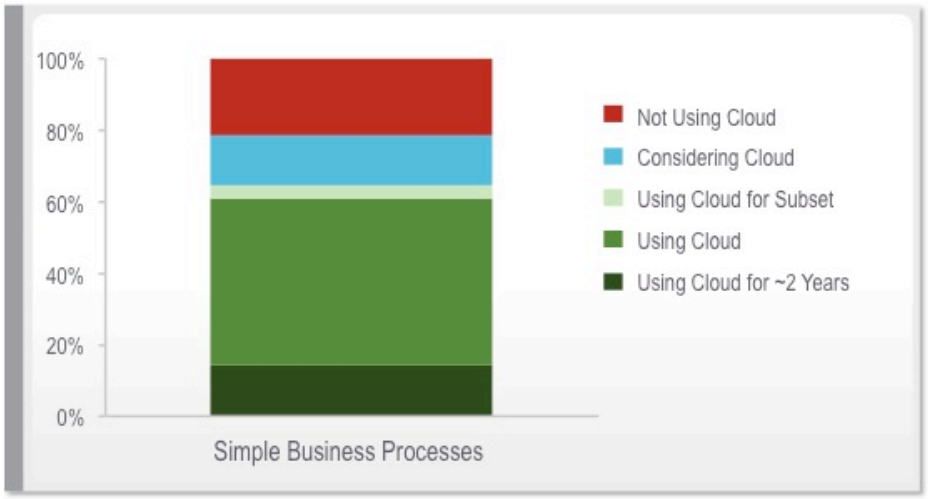
Therefore, we expect that mobility and BYOD will accelerate SaaS adoption throughout the enterprise and into new areas, such as business intelligence.

> "SaaS has done a great job on mobility. You can't afford to do that kind of development yourself."
>
> —Global automotive manufacturer

2. Simple Business Processes

Utilizing SaaS for "simple" business applications has been an early trend in cloud computing. These applications typically include customer relationship management, human resources, financial management, messaging, and payroll. Within enterprises, adoption of SaaS for such applications is not only widespread but a common starting point of the cloud journey. At the same time, these deployments are relatively independent of the more complex cloud journey undertaken by the enterprise's core IT, and often represent only a small amount of the overall IT budget.

Figure 6. Simple Business Processes: A Common Starting Point on the Cloud Journey.



Source: Cisco IBSG, 2012; N = 28 interviews

"Simple" business applications share some key elements, easing SaaS deployment: (1) they are back-office processes, for which migration is less intrusive to end-users; (2) they are discrete applications, which don't carry the complexity of being interlinked with many other applications; and (3) they are non-differentiating, meaning that deploying a standardized configuration does not affect a business's overall competitiveness.

Decisions about simple business processes are often based on cost, but time to market and functionality play an equally strong role. As we have seen, mobile access is an important functionality driver of SaaS.

"Decisions on moving to SaaS are about functionality, not about cloud vs. non-cloud."

—Global tech

"We launched Salesforce.com for the time-to-market advantage."

—Financial services

Some companies in Cisco IBSG's survey have ambitious plans to implement cloud computing for their simple business processes. A logistics company, for example, told us that it aims to have 50 percent of its applications on public SaaS platforms by 2014.

As to the difficulty of integrating SaaS into the wider application environment, opinions vary widely. Some survey respondents describe it as extremely hard, especially in industries with regulatory restraints. Others view the process as unproblematic; they argue that the integration of predefined SaaS modules is actually easier than integrating discrete applications.

Clearly, SaaS has to be seen in the context of other application delivery methods. To deliver applications to the end user, most enterprises use a wide mix of approaches, such as desktop virtualization, application virtualization, and browser-based applications through service-oriented architecture (SOA) and SaaS. The choice depends on the type of user, application, and access device.

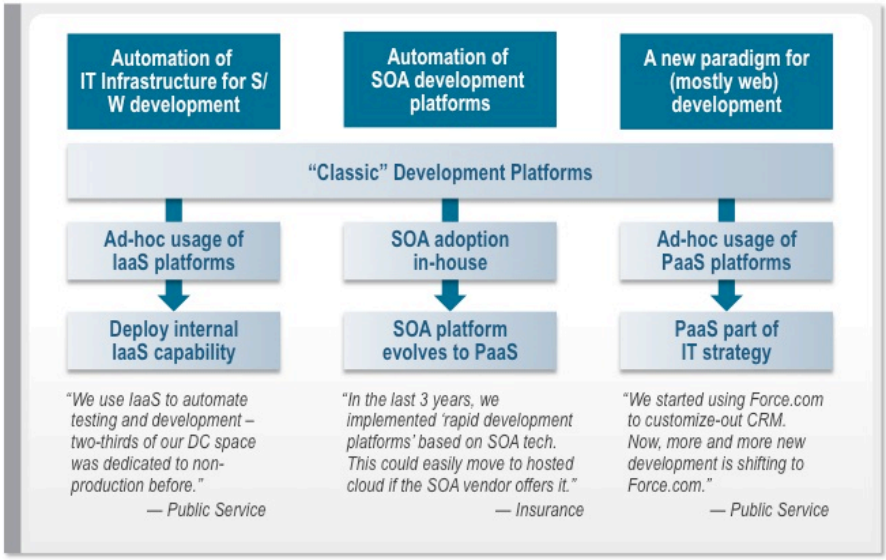
3. Software Development

Developers have strong requirements for agile development and testing platforms, and they often select the runtime environments for their applications. Developers use both IaaS and PaaS to address the challenges of the software development process (see Figure 7). Some focus on the sole automation of infrastructure, others automate and evolve their SOA platforms, and a few consider moving to a cloud-based, PaaS offering.

"We have 24,000 developers, an internal dev cloud. And we spend too much on 'bastardizing software'—making low-value changes and then having to maintain it."

—Global bank

Figure 7. Three Flavors of Software Development Adoption Projects.



Source: Cisco IBSG, 2012

Many representatives expressed that their companies suffer from "development fatigue." As a result, they have outsourced or wish to outsource software development in order to focus on off-the-shelf software only. They observe that too many resources focus on software customization with unclear long-term value. The left-hand bar in Figure 8 depicts companies without any software development or customization, or with outsourced development.

Use of Cloud. For companies that focus on in-house development, test systems and development are often the first environments that are automated and enabled for self-service. As Figure 8 shows, enterprises have by far preferred internal, private-cloud deployments, but this has not always stopped developers from using external resources on an ad-hoc basis. When developers start using ad-hoc public resources, it often triggers CIOs to increase the quality of the internal cloud to lure/force developers back in-house. An alternative is to enable a process for controlled external cloud usage.

Even though external cloud is often more expensive, CIOs mention improved agility and immediate availability as the main reasons for using external cloud services.

"Before they went to internal cloud, the developers were using Rackspace."

—Logistics company

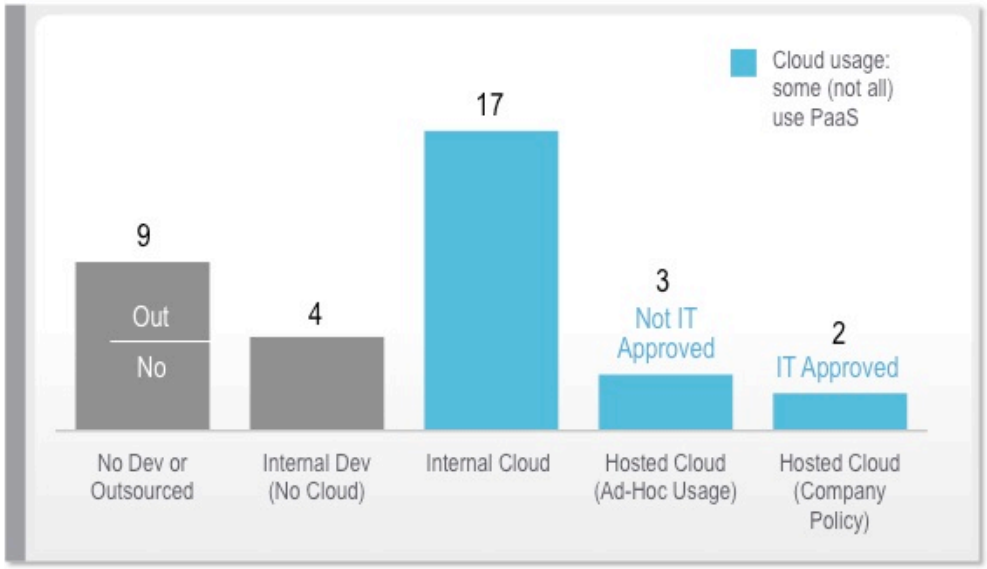
"Developers moved first to EC2. It is more expensive, but agility is worth it."

—Learning specialist

"We used Amazon, and we paid £5,500 for one month. This was due to high data-transfer volumes. Still, the lead-time was great."

—Call center / VoIP operator

Figure 8. Developers Are Heavy Users of Cloud Computing.



Source: Cisco IBSG, 2012; N = 35 interviews

Use of PaaS. Although many enterprises use cloud computing for development and testing, only a small portion uses PaaS (see Figure 9). The decision process on PaaS is a trade-off analysis between the benefits of automation and the dangers of lock-in.

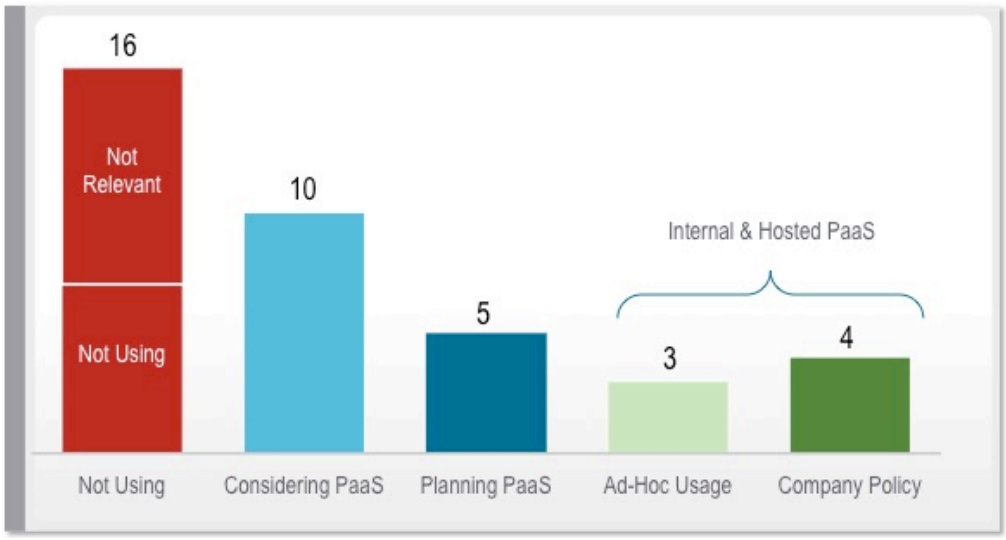
The advantages of PaaS—accelerated and modular development of applications with lower risk and higher standardization—are well understood by most enterprises. In addition, the consistent look and feel of applications is appealing to users.

But on the downside, PaaS comes with lock-in to partners and stacks. We tested the notion that PaaS lock-in is decreasing rapidly. Some enterprises agreed while others did not. The fact that certain PaaS stacks (such as VMware's Cloud Foundry) can run across enterprise and service provider data centers helps, but it does not alleviate all fears of lock-in and is a relatively recent and therefore less-known development. Interestingly, interviewees did not seem concerned with the lock-in of their existing SOA vendors.

PaaS can be implemented internally or in a hosted cloud. Most companies will start with internal implementations. In this case, the PaaS solutions often evolve from SOA development tools, and sometimes are partly hosted by the SOA provider. This results in no change in lock-in; companies stay with their established vendors without concern.

Overall, while only a few enterprises involved in our survey are using PaaS today, a large number of interviewees are considering or planning to use PaaS software stacks, in-house or on a hosted cloud. The time for PaaS will come.

Figure 9. Use of PaaS Has Been Limited Thus Far.



Source: Cisco IBSG, 2012; N = 38 interviews

"2012 is the year PaaS becomes real for us. It makes it much easier to develop cloud-aware web applications."

—High-tech manufacturer

"I am much more concerned about stack lock-in than about partner lock-in."

—Airline

4. Web Presence

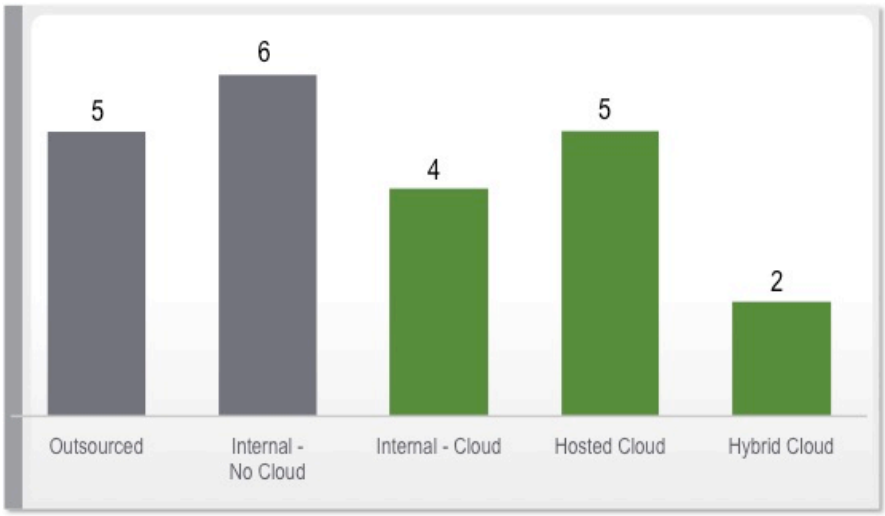
Enterprise web presence has been an obvious space for early cloud adoption. As a result, we find that the enterprise adoption picture is highly diversified.

Many companies outsource the development, hosting, and management of websites. When they do, they are often indifferent to the implementation details, and whether or not the cloud is used. In addition, companies with basic web requirements (stable and not enormous) have little use for cloud resources.

Hosted cloud makes sense for companies that have dynamic web-capacity requirements. Overall, enterprise adoption is highest in business-to-consumer and government-to-citizen communications.

The prevalent mix of stable and volatile workloads makes web presence a typical hybrid-cloud computing environment. Companies will, for example, use internal resources for the portal, while they use hosted cloud resources for web campaigns. Even when cloud is not used for web hosting, other web functions, such as certificates and vaults, are often drawn from the cloud.

Figure 10. Web Is the Cradle of the Hybrid Cloud.



Source: Cisco IBSG, 2012; N = 22 interviews

"Our portal runs in-house, while we use hosted cloud for campaigns."

—High-tech manufacturer

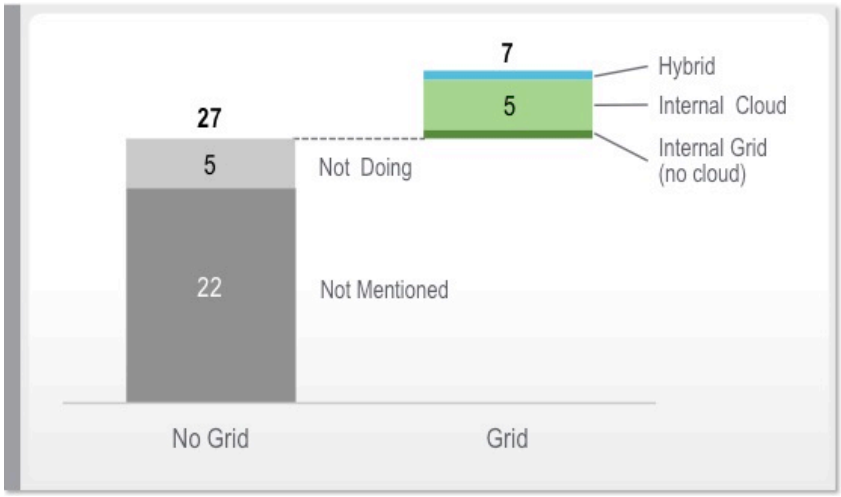
"We manage and host our website. But we use cloud for specific things like certificates, vaults…"

—Large bank

5. Grid/Analysis

Across many industries, enterprises have traditionally used grid computing to perform a wide variety of functions that require large amounts of processing power. Among our interviewees, examples of activities included credit scoring and customer data analysis.

Figure 11. Grid Computing Is Mostly Done on Internal Cloud Resources.



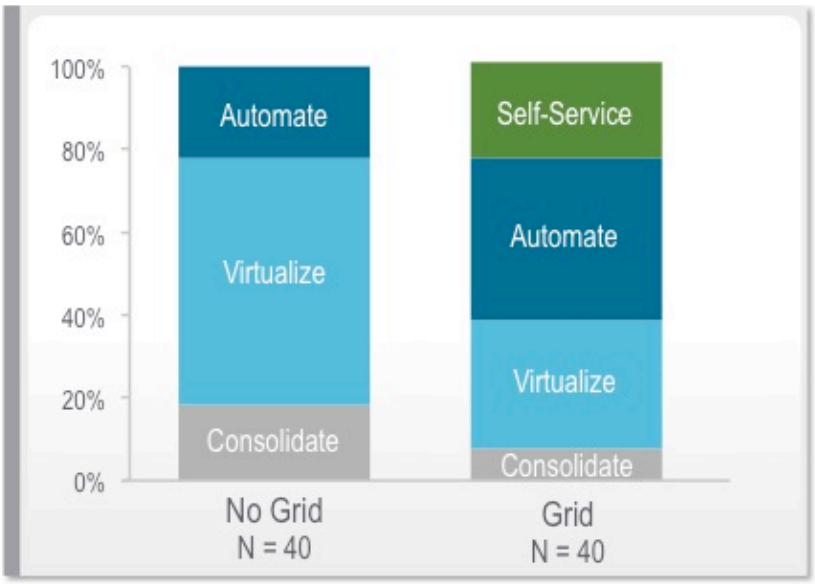
Source: Cisco IBSG, 2012; N = 34 interviews

The survey respondents found that compute grids are generally deployed in-house. Traditional grid implementations are a lot like internal clouds: they have all the automation and self-service elements that define IaaS deployments. This similarity has had two impacts.

First, companies using grid computing have, over the last couple of years, considered off-loading grid workloads to public clouds. But few companies have actually done it. The main issues mentioned are moving big data sets in and out of public clouds, intellectual property concerns, and customized middleware stacks that make migration to public clouds difficult.

Another implication of the similarity between grid and cloud is that grid expertise accelerates internal cloud implementations to other IT areas: different enterprises with which we spoke have used the skills of their grid teams to build companywide, internal-cloud infrastructure services. Companies that use grid implementations are much more likely to have implemented companywide IT automation (see Figure 12).

Figure 12. Companies with Grids Are More Advanced in General Cloud Transformation.



Source: Cisco IBSG, 2012

As for "Big Data," we found that enterprise implementations have been limited to date. Most companies still count on traditional data warehouses to do data analysis. At best, some of the enterprises represented in our survey have small-scale, ad-hoc Hadoop implementations. Early adopters utilize Big Data analytics for a single, specific company activity (such as data to optimize technical support services).

Most companies are still trying to figure out how Big Data could create value for them. Few understand the potential role and benefits of Big Data in their organization. Many others fear that the major challenge will not be technology, but rather shortcomings in the culture and skills required to benefit from Big Data.

Figure 13. Big Data Implementations Are Rare.

Source: Cisco IBSG, 2012; N = 40 interviews

"We've looked at offloading grid peaks to public cloud. We had some concerns on IP, but the main issue was to get the large data sets into the cloud quickly enough."

—Global manufacturer

"My whole cloud team came from the grid team. Any of our peers that do grid are the ones that have implemented private cloud quickly."

—High-tech manufacturer

"Our multichannel strategy screams for Big Data. But today, we don't even have people to leverage the data we already have."

—Bank

6. IT Efficiency/Cloud Transformation

The previously discussed cloud adoption projects are focused on specific activities within enterprises. They can have a local business and IT impact, but they fall short of a transformational change or in significantly impacting overall IT efficiency. Nevertheless, they are often early learning opportunities and open the door to companywide cloud initiatives.

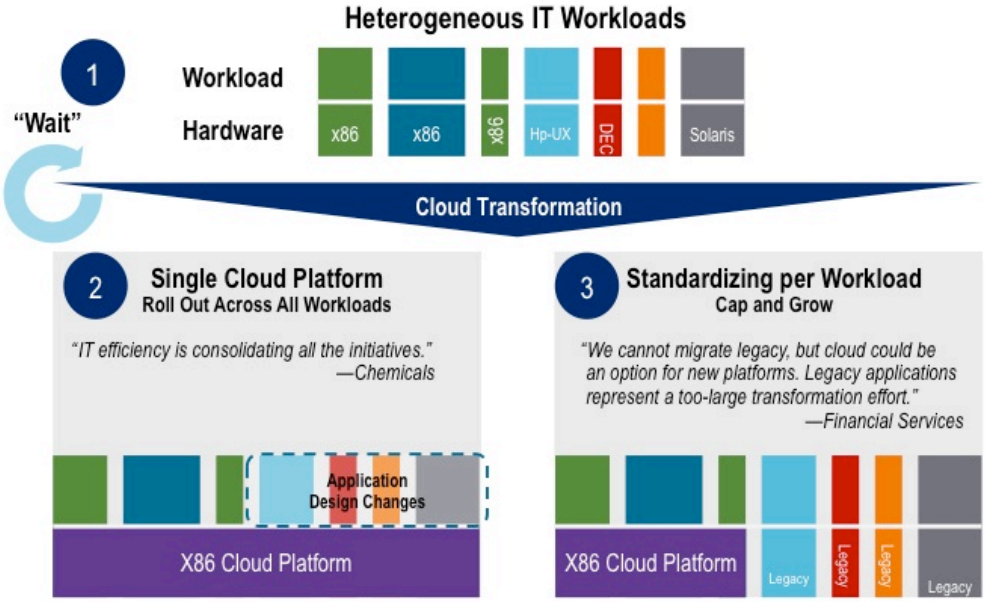
Cloud transformation initiatives are generally initiated by the CIO, who has appointed a "cloud team" to build the horizontal IT factory of the enterprise. The intended end game is that business units can buy cloud computing (infrastructure, applications) on an on-demand basis, and get billed by the IT department per unit, user, or transaction.

One factor that limits the speed and impact of cloud transformation projects is the ominous presence of legacy applications. These often run on RISC or mainframe platforms, and are difficult to re-platform to virtualized x86 platforms. Multi-tier applications often run the presentation layer on x86, while the business and data layers often run on legacy platforms.

In our survey, we encountered three different attitudes toward the legacy problem, as shown in Figure 14:

1. Some companies are in waiting mode—they feel that any eventual cloud platform will need to enable the integration of (all) legacy platforms. These companies are not very positive about the business case of a transformation or associated risks.
2. Other companies take a "roll-out-across-all-workloads" approach—they implement a cloud platform and make the investment to re-platform legacy applications.
3. The third group takes a "cap-and-grow" approach—they maintain legacy applications on legacy platforms, but implement new applications "in the cloud." This creates a forward-looking business case, as legacy applications by and large don't have to be considered.

Figure 14. Enterprises Take Different Approaches to Virtualizing and Automating Heterogeneous Workloads.



Source: Cisco IBSG, 2012

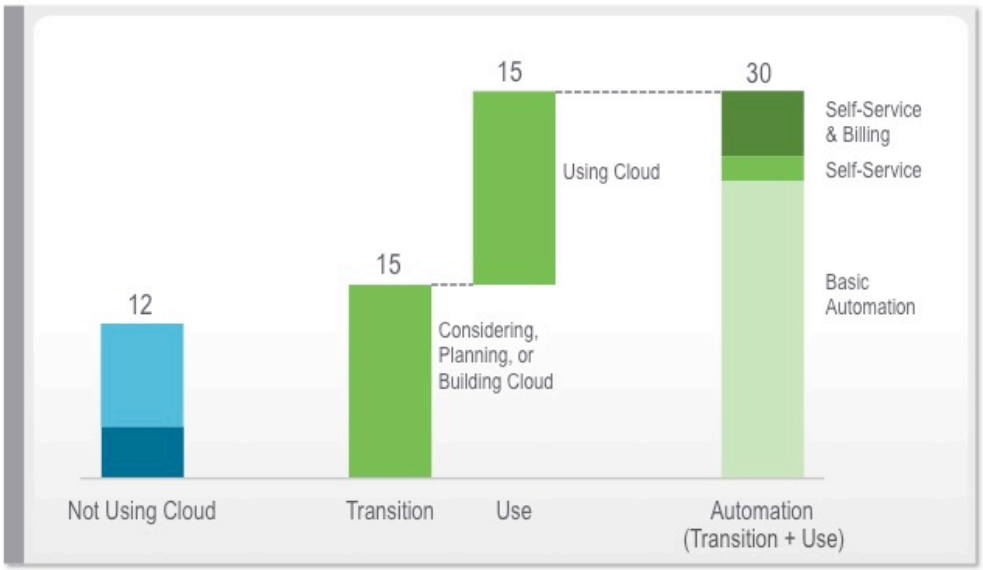
Our interviews revealed that most enterprises have begun the cloud transformation project to at least some extent. As Figure 15 reveals, more than a third of companies run cloud to improve general IT efficiency; another third are planning or building cloud. These results apply across public and private cloud deployments.

As can be seen on the right bar in Figure 15, self-service and billing are rarely in scope. To date, most enterprises have not achieved the true cloud promise for utility computing. Three reasons for this were quoted:

1. It is difficult to build a fully automated, self-service-enabled IT platform. Most CIOs find that the tools are neither ready nor complete, and do not deliver on what is promised by the vendor. One important element frequently missing from the tools is network automation to reach true end-to-end automation.

2. Enterprises lack the skills and breadth for such a complex transformation.
3. The business case does not fly. There are obvious advantages to self-service with automated cross-billing. But it is expensive to implement and difficult to show significant cost savings or revenue advantages.
4. On the "soft side," enterprise IT organizations are concerned with losing control by offering self-service. This is a skill problem in itself—defining and implementing the policies that make self-service risks manageable is a highly complex task.

Figure 15. Most Enterprises Have Begun the Cloud Transformation Journey.



Source: Cisco IBSG, 2012; N = 42 interviews

Infrastructure Services for Cloud Transformation

Sometimes, the cloud transformation starts with infrastructure services: IT teams seek more agility and efficiency by providing on-demand infrastructure to other business units. This is often based on earlier data-center consolidation and server virtualization initiatives. Assuming those steps are accomplished, we see a transition, as shown in Figure 16, which depicts a matrix of internal and hosted versus enterprise and web-grade IaaS architectures.

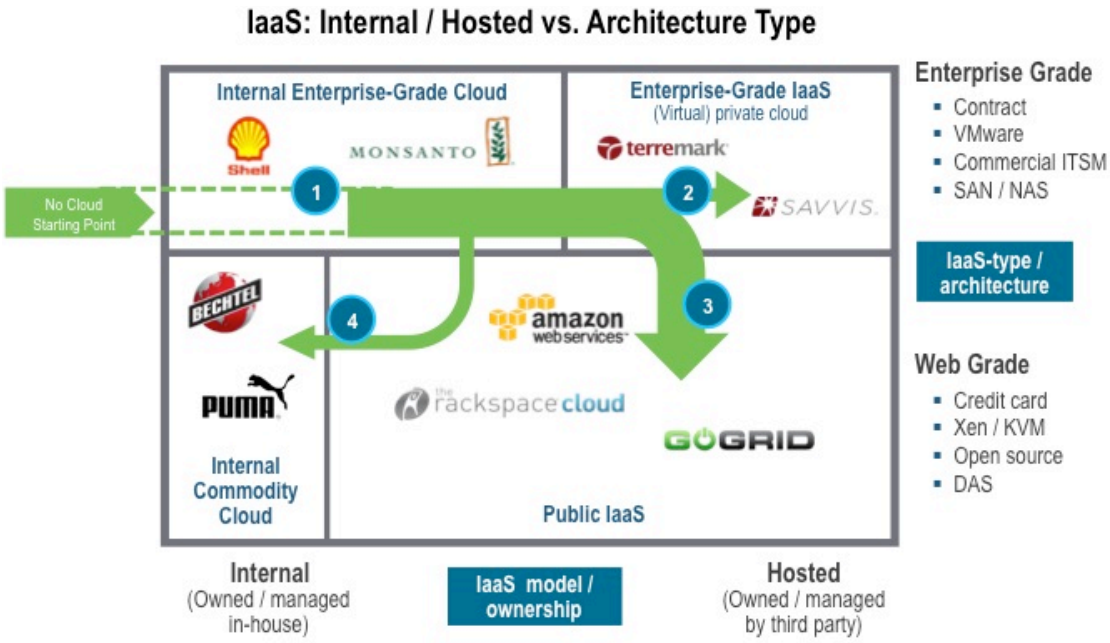
The boundary between "web-grade" and "enterprise-grade" infrastructure platforms is fuzzy, but relevant nonetheless. Generally, web-grade platforms deliver services that use open-source tools; offer low-end, direct-attached (often distributed) storage; and can be purchased by credit card from providers. Enterprise-grade platforms are environments with commercial enterprise cloud software stacks and high-end storage, such as SAN or NAS. In a provider environment, customers sign longer-term contracts.

A typical infrastructure cloud transformation journey follows the steps below (see Figure 16):

1. Enterprises start with deploying an internal cloud, based on enterprise-grade architectures and solutions.
2. As they gain insight into cloud technology and its operational complexity, they look for external (hosting) partners to run and own the platform.

3. In parallel, as enterprises explore benefits and trade-offs of web-grade architectures, they migrate some of their platforms to web-grade solution providers.
4. Depending on internal scale and core/context reasoning, the move to web-grade architectures can also be implemented internally.

Figure 16. The Infrastructure Cloud Transformation Journey Typically Follows a 4-Step Progression.



Source: Cisco IBSG, 2012; IDC; Tier 1

The left side of Figure 17 highlights in greater detail the current preference for internal cloud solutions in the enterprise.

Internal IaaS is more widely accepted than hosted IaaS: 44 percent of interviewees are actually using or building an internal cloud, while another 35 percent of companies have concrete plans to do so. Public-cloud propositions are currently much less attractive: 60 percent of companies have no concrete plans for activities on hosted IaaS.

The main reasons for starting the IaaS journey in-house are privacy, lack of trust, and an absence of suitable hosted IaaS propositions. Many enterprises believe that IaaS can be done better and cheaper in-house. Equally, enterprises resist a direct move to hosted IaaS, as it involves two giant leaps at the same time: self-service and public resources. First and foremost, enterprises believe that internal IaaS is a "logical starting point," evolving naturally from existing solutions. They often indicate that they prefer to solve the self-service challenge in-house and later add public resources to the mix. That approach is documented in Steps 1 and 2 of Figure 16.

Figure 17. (Left) Most Enterprises Start Cloud Transformation with Internal IaaS.
(Right) Enterprises that Build Internal IaaS Have More Interest in Hosted IaaS.

Source: Cisco IBSG, 2012; Left: N = 35 interviews; Right: N = 34 interviews

> "We've done some stuff with AWS—we figured out Amazon is not as good as what we do for hosting. By the time you add everything [monitoring...]—we can do it just as well internally."
>
> **—Automotive manufacturer**

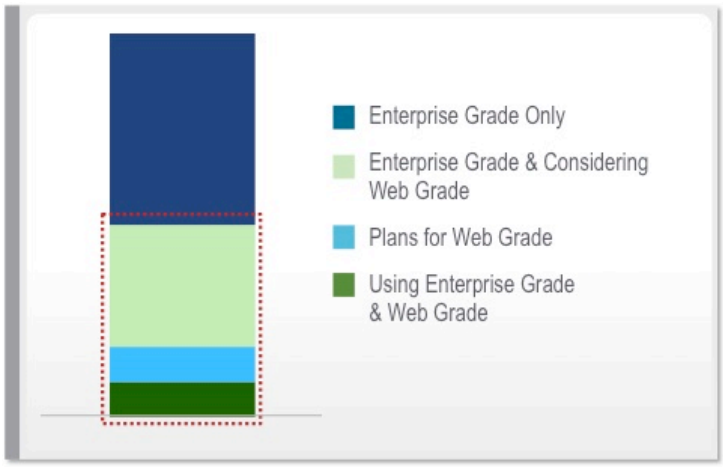
The right side of Figure 17 validates Step 2. Companies that already plan or use internal IaaS architectures have much higher interest in hosted IaaS solutions than newcomers.

This finding has two implications. First, more advanced adopters of cloud *will* consider hosted IaaS, giving a strong future role for public clouds in enterprises. Second, enterprises look at hosted IaaS as a complement to in-house solutions. Therefore, enterprises will seek broad interoperability between in-house and hosted solutions. Specifically, enterprises will expect to implement a common orchestration and management plane across these hybrid internal and external solutions.

Overall, we found that few enterprises (less than 10 percent) are actually using web-grade architectures to build clouds today. Nevertheless, a large proportion of enterprises are not averse to the idea. About 40 percent of enterprises are currently planning or considering the use of web-grade architectures for building cloud solutions.

We also found that enterprises using hosted IaaS are much more likely to employ and build clouds based on web-grade architectures. Based on this, we have a clear expectation that enterprises will use more web-grade architectures, both in-house and in hosted solutions, as cloud adoption increases.

Figure 18. Few Enterprises Use Web-Grade Architectures, but Many Consider Them.



Source: Cisco IBSG, 2012; N = 25 interviews

"We will use public cloud for demand spikes. We will run workloads across private and public cloud."

—Automotive manufacturer

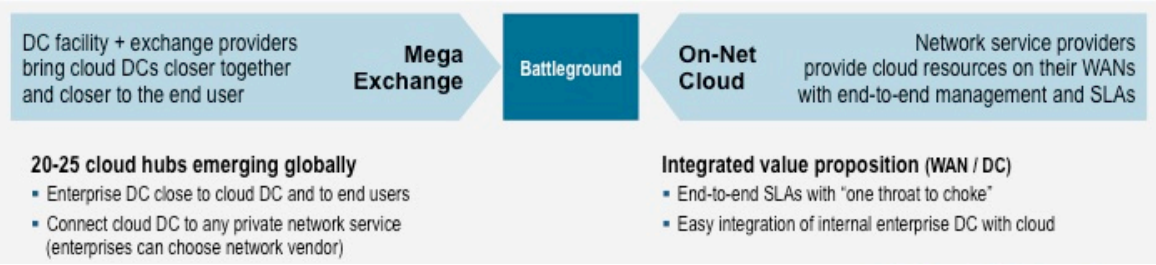
"We use AWS because it has redundancy across data centers and regions to complete our own footprint."

—Learning specialist

Facility Models for Cloud Transformation

With the accelerated build-out of cloud and hosting services, the role of multi-tenant data center (MTDC) facilities and wide-area networks (WAN) is changing quickly. This leads to two emerging cloud-facility implementation strategies: the mega exchange, which provides customers the choice between network providers in an MTDC, and the on-net cloud, which offers an end-to-end value proposition across data center and WAN. More detailed descriptions of these two approaches, and the trade-offs between them, can be found in Cisco IBSG's earlier white paper, "The Cloud Value Chain Exposed: Key Takeaways for Network Service Providers."[3]

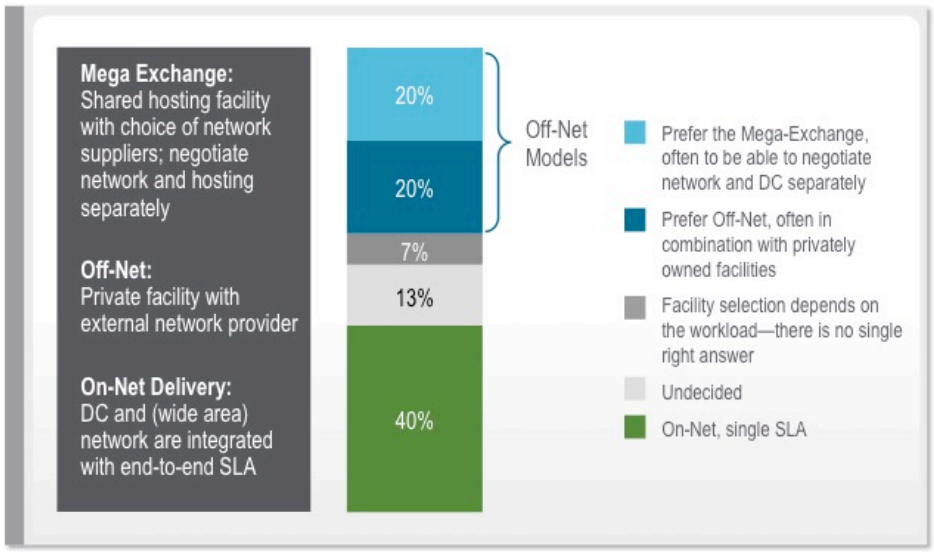
Figure 19. The Cloud Value Chain Exposed: The Rise of On-Net Clouds and Mega Exchanges.



Source: Cisco IBSG, 2012; Equinix; Optus

Our interviews show that there is no single preference to which enterprises adhere. As can be seen in Figure 20, 40 percent of the interviewees said that they see more value in the on-net facility model because they appreciate the end-to-end SLAs and the integrated, simplified buying process. Twenty percent of enterprise representatives said that they see the value of the mega exchange in negotiating the network and data center services separately. Yet another 20 percent prefer an off-net model, in which they run a private facility and buy provider network capacity. Other enterprises (7 percent) would use a combination of on-net and off-net models, depending on the workloads in question. Overall, the tendency in facility models is not clear; it is up to service providers to shape enterprises' perception, opinion, and choices.

Figure 20. Some Enterprises Prefer the On-Net Facility Model; Others Prefer Off-Net.



Source: Cisco IBSG, 2012

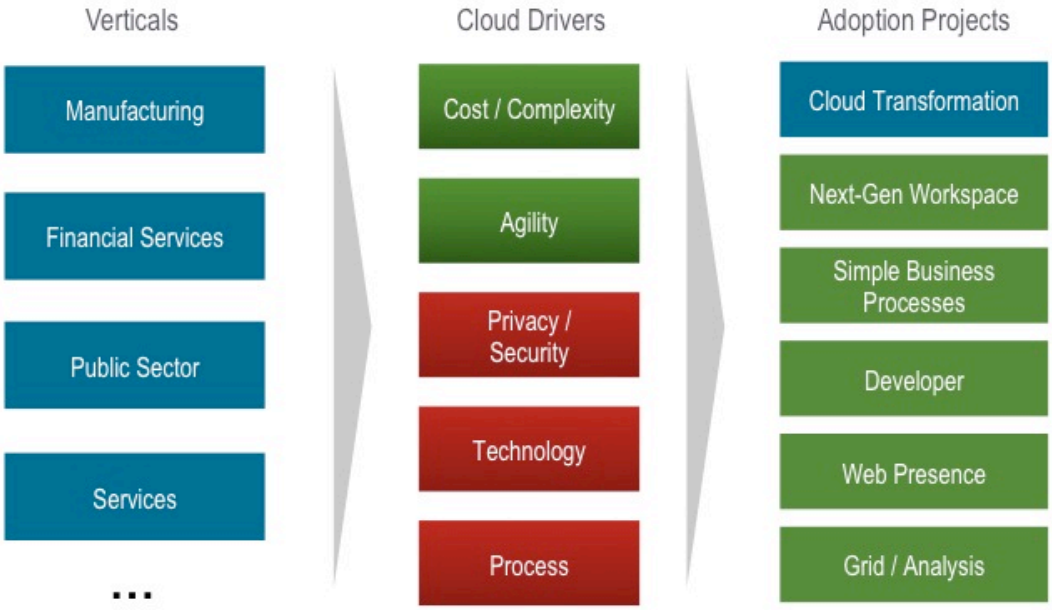
The issue of facility models is most closely related to our earlier survey.[3] In that survey, enterprises much preferred network and IT combinations (the On-Net Delivery model). Today we can provide a broader understanding and see a more diversified set of needs depending on customer workload type.

Industry Verticals

In our interviews, we encountered many examples of cloud implementation projects. The obvious question is: Among enterprises that come from different industry verticals, how different is the cloud journey?

We found that despite obvious differences among verticals, cloud projects across industries are bound by the same drivers and inhibitors and can be categorized along the same adoption projects. A financial-services cloud and a manufacturing cloud do not differ because of the association with a vertical. If they differ, they do so because of a different constellation of drivers and inhibitors, which forms the basis for enterprises to make their choices.

Figure 21. The Journey to the Clouds Across Industry Verticals Is Influenced by the Same Cloud Drivers/Inhibitors, and Embodies the Same Cloud Adoption Projects.



Source: Cisco IBSG, 2012

To underscore this point, Figure 21 highlights industry-specific projects categorized by adoption projects. Many examples reveal how specific cloud projects in vertical-industry segments are motivated by similar drivers and inhibitors:

- In next-generation workspace, we found manufacturing companies that use VDI for developers in remote locations, while banks often use VDI for call centers. While the use cases differ significantly, both were motivated partially by a desire for security and ease of management.
- Both manufacturers and financial-services institutions have distinct legacy situations that slow the migration of core assets. In manufacturing, these applications are found on the factory floor; in financial services, they are among the core banking applications.
- All sectors have to safeguard the privacy of their data, but the focus is different. Manufacturing companies seek to maintain intellectual property, while both financial services and the public sector are concerned with safeguarding their customer data.

Figure 22. Enterprises Choose Cloud Technologies Based on Industry-Specific Business Strategies.

	Manufacturing	Financial Services	Public Sector
Cloud Transformation	• Factory floor app very old, cannot be migrated • Use grid expertise for wider cloud transformation	• Privacy—"Data is the new currency" => private cloud • Core banking apps remain on legacy	• Building a central IT service provider to serve government agencies
Next-Generation Workspace	• Collaboration for CAD and design • VDI for S/W developers in remote locations	• Use VDI for large call center operations and branches	• Wide-scale VDI deployment for schools & temp workers • Mobilize applications for government staff
Simple Business Processes	• HR systems, payroll, accounting: simplify and reduce cost, enable mobile access • Some companies aiming for high percentage of SaaS, for example 50% of IT workloads		
	• M2M firmware updates • Supply / distrbution support	• SaaS enablement of street surveys and queue breakers	
Software Development	• Legacy of independent development in global factory operations • Design data sets too large	• Extensive software development and "over-customization"—use internal IaaS	• PaaS for consistent user experience
Web Presence	• Cloud apps for connected TVs, etc.	• Variability of online banking traffic • Web portal, mobile app for customer front end	• Variable workloads for citizen services • Inter-agency customer-facing portal consistency
Grid / Analytics	• R&D simulations • Silicon chip synthesis • Thermodynamics modeling & crash testing	• Credit-scoring service • Price and risk analysis	• Disaster prediction • Tax analysis and prediction

Source: Cisco IBSG, 2012

Although they are all motivated by similar drivers and inhibitors, every enterprise will make its choice of cloud technologies in the context of its vertical-specific business strategy, and technical solutions will need to link and appeal to business drivers. Cloud service providers, then, need to adapt their go-to-market, sales, and product-bundling strategies to reflect vertical specifics. The examples highlighted in Figure 22 can be helpful in suppliers' conversations with specific verticals.

Finally, we tested the importance of horizontal (not industry-specific) cloud applications. Most enterprise representatives agreed that horizontal workloads (such as email, collaboration, and HR) would migrate to cloud faster. Horizontal workloads have a faster innovation cycle, greater application readiness, and greater scale. Thus, they tend to migrate faster.

Conclusion

Based on our 45 CIO-level interviews, Cisco IBSG has developed and validated a new framework of cloud-adoption projects that captures how enterprises are viewing their own journey to the clouds. This should assist other enterprises in finding their way through the cloud maze, while guiding suppliers to formulate better and more focused go-to market strategies. For example, hosted-cloud providers should keep in mind that the enterprise cloud journey starts in-house, and that hosted cloud solutions are often considered extensions of internal capabilities.

The Enterprise Journey to the Clouds is evolving and gaining momentum. While there is clarity around some challenges, others remain to be solved. Regardless, the journey continues, and the promise of cloud remains far too auspicious for enterprises to ignore.

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Endnotes

1. "Network Services Providers as Cloud Providers: Survey Shows Cloud Is a Bright Option," Cisco IBSG, November 2010, http://www.cisco.com/web/about/ac79/docs/wp/sp/Service_Providers_as_Cloud_Providers_IBSG.pdf
2. "The Cloud Value Chain Exposed: Key Takeaways for Network Service Providers," Cisco IBSG, March 2012, http://www.cisco.com/web/about/ac79/docs/sp/Cloud-Value-Chain-ExposedL.pdf
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