Network Service Providers as Cloud Providers
Survey Shows Cloud Is a Bright Option

Authors
Wouter Belmans
Scott Puopolo
Sailesh Yellumahanti

November 2010

Cisco Internet Business Solutions Group (IBSG)

Network Service Providers as Cloud Providers
Survey Shows Cloud Is a Bright Option

As Cisco was making investment decisions about cloud computing, it wanted to understand the needs and preferences of enterprise executives when it comes to cloud. Cisco quickly learned, however, that there is no applicable secondary research in the marketplace. As a result, the [Service Provider Practice](#) of the Cisco® [Internet Business Solutions Group (IBSG)](#) recently conducted in-depth, one-on-one interviews with more than 80 enterprise IT decision makers (CIOs, CTOs, and infrastructure VPs) from 43 enterprises and public-sector organizations across the industry in the United States, the European Union, and India. Additionally, Cisco IBSG interviewed 20 subject-matter experts. The primary focus of the study was "public cloud": the desire of enterprises to use external, on-demand infrastructure and applications.

Survey participants were asked a broad range of questions: How are they reacting to cloud value propositions? How are enterprise decision makers approaching cloud migration? Which applications or workloads are customers initially likely to move to the cloud? What is the role of the network, and which network service provider (NSP) capabilities can add value to the cloud experience? This paper reports on the results of Cisco IBSG's primary research.

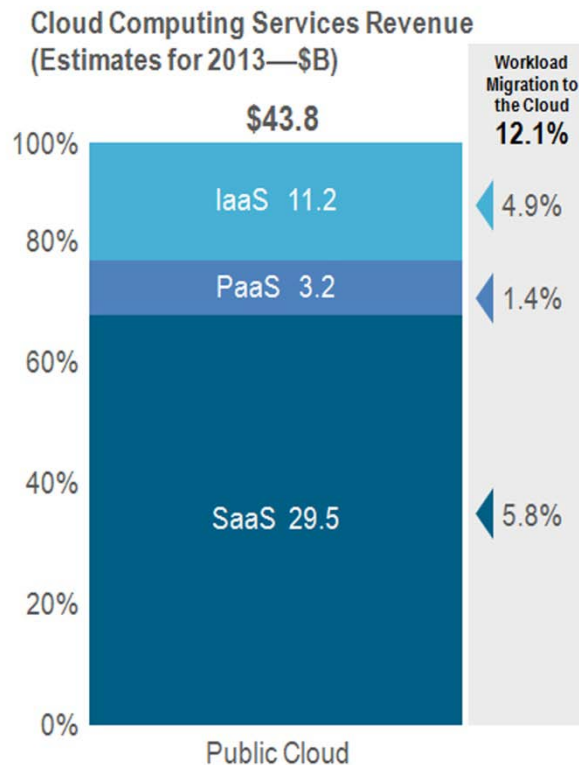### Executive Summary: Clouds on the Near Horizon

The study showed that enterprises across many sectors—including manufacturing, financial services, retail, healthcare, professional services (systems integrators, IT service outsourcers, technical consulting, and so forth), and public sector organizations—are seriously considering cloud computing. Companies are at different stages in the thought process, however—from strategy to planning to piloting.

The study also revealed that cloud-migration decisions are being made at the application level. Most decision makers envision a staged migration to cloud services, beginning with noncritical applications. Enterprise executives believe that in the long run, however, no applications should be automatically excluded from migration to cloud.

For enterprises, the decision about moving to an internal (private) versus public cloud is not binary. It hinges on executives' perceptions around security and control, data-center overcapacity and scale, and access to skilled IT personnel. Enterprises will potentially use both the private and public cloud to manage their IT resources going forward.

Based on direct feedback from enterprise decision makers, Cisco IBSG estimates that close to 12 percent of enterprise workloads will run in the cloud by the end of 2013. This, in turn, will yield a market for public-cloud services of approximately US$43 billion.

Figure 1. Worldwide Service Revenues Expected To Reach Nearly US$44 Billion by 2013

Cloud Computing Services Revenue (Estimates for 2013—$B)

$43.8

	Workload Migration to the Cloud 12.1%
IaaS 11.2	4.9%
PaaS 3.2	1.4%
SaaS 29.5	5.8%

Public Cloud

Source: Cisco IBSG, 2010

The study also reveals that a significant opportunity exists for network service providers to differentiate themselves by becoming cloud service providers, offering on-demand IT and network resources supported by end-to-end service-level agreements (SLAs). NSPs are uniquely positioned as cloud providers, due to their expertise in networking, SLAs (that guarantee availability, performance, and security), and enterprise-class billing. While enterprise decision makers appreciate the value of networks offered by service providers, they highlight a perception issue regarding NSPs' ability to be agile providers of flexible IT services.

The study identified a set of target applications for cloud that spans various verticals. Targets for infrastructure as a service (IaaS) include application development and testing, disaster recovery, simulations, data warehousing, and analysis. Targets for software as a service (SaaS) are customer-relationship management (CRM), email, unified communications (UC), web applications, and desktop environments.

From a vertical perspective, manufacturing, public sector, and professional services showed the highest potential for public-cloud computing.

The study also revealed an organizational convergence taking place across the IT and networking departments within enterprises. Eighty percent of the enterprises surveyed by Cisco IBSG have converged or are in the process of converging these departments into one organizational structure. This trend should facilitate sales of end-to-end network and IT propositions.

Cloud Computing: Value Proposition

Cisco IBSG tested two network-differentiated approaches to public-cloud computing with the executives in the study: IaaS and SaaS.

IaaS: Provides on-demand and automated provisioning of infrastructure elements in the data center (compute, storage, data center network) as well as the wide-area network (bandwidth reservation, MPLS-VPN, etc.), with end-to-end enterprise-class SLAs around availability, performance, and security.

SaaS: Offers on-demand applications with availability and performance guarantees across the application and the network, with ability to offer value adds such as embedded communications features (for example, click-to-chat and video calling), integration of SaaS applications, and deployment of applications in data centers close to the end user for low latency.

For simplicity and to keep the interviews focused, Cisco IBSG did not introduce a separate value proposition for platform as a service (PaaS). PaaS generally refers to an on-demand application development and run-time environment targeted at developers. Our numbers and conclusions for PaaS have been extrapolated from enterprises' interest in doing development on IaaS / SaaS platforms.

Figure 2.   Cloud Value Propositions with Network Differentiation
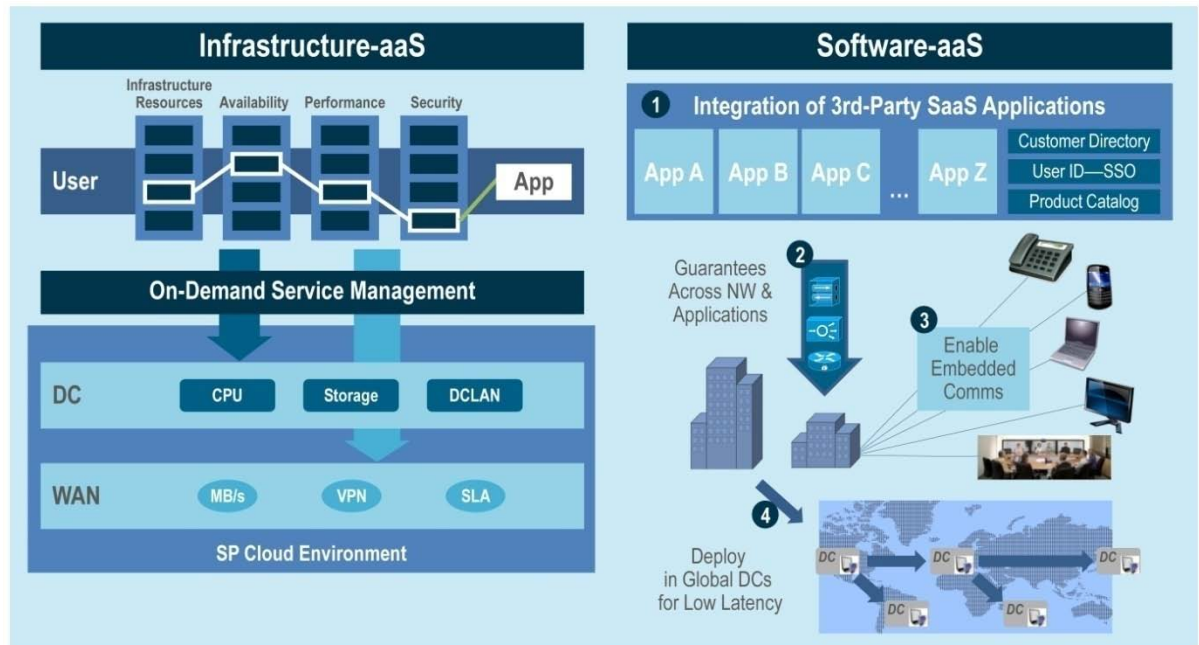
Source: Cisco IBSG, 2010

Decision-Making Process: To Cloud or Not To Cloud?

From the enterprise point of view, the primary reason for both IaaS and SaaS is to reduce costs and increase agility. The actual decision about whether to migrate to the cloud is made at the application level; there are application aspects that will impact the cloud, such as

"desirability" (benefits gained from migrating to cloud) and "cloudability" (constraints when moving applications to the cloud).

Desirability: This study found that workload variability / unpredictability, need for agility, and application functionality are the main application aspects that drive cloud migration.

First on the docket for departure to the cloud are workloads with variable or unpredictable resource requirements. Workloads that are project-based or seasonal (such as tax season), customer- or public-facing applications (for example, online sales), and analysis and simulations will be the first applications shifted to the cloud. The impetus for moving such applications to the cloud is economics: provisioning for peak loads leads to overcapacity in traditional IT environments.

Second in line are applications that require agility or quick setup of functionality, such as sales-and-marketing campaigns and application development. "Agility" is relative here; the enterprise may want to reduce setup time from several weeks to one week, or from a week to an hour, depending on the nature of the application and the task to be performed. IaaS providers can take advantage of the need for agility by providing application templates to their customers. Moving these applications to the cloud can lead to cost reductions, but can equally impact the top line: quicker setup of IT environments enables enterprises to react in a timely way to market changes and increases the level of innovation by eliminating the need for capital investments.

Finally, there are some applications that just perform better in the cloud, such as process interfaces to partners and suppliers, or data entry across public sector divisions (see Figure 3).

"Five to 10 years from now, I don't foresee our data centers existing in their present form . . . . We just don't have the scale to be cost-effective."

CTO
Large U.S. State

Figure 3.   Application Aspects Driving Cloud Migration
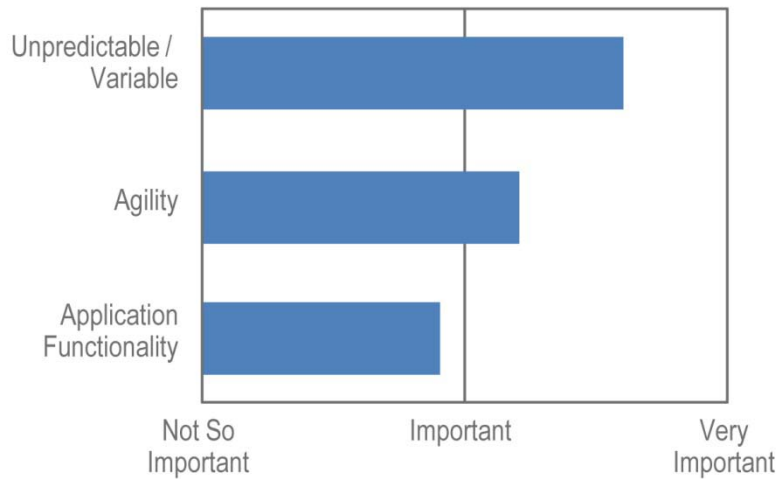
Source: Cisco IBSG, 2010

Cloudability: Cisco IBSG found that security and privacy, legacy architectures, and sunk costs are the main application aspects inhibiting cloud migration. Most enterprises believe, however, that these concerns will be short-lived as cloud computing matures. Many IT executives (more prominent in midsized enterprises) feel that cloud security could become superior to security in their own data center.


"How can I guarantee cloud security? Actually, I'm not guaranteed security in my internal DC, either."

> Cloud Leader
> Global Systems Integrator

Legacy architectures also impede public-cloud migration: the majority of enterprise workloads are still running on RISC or mainframe architectures. Many IT executives indicated that the emergence of on-demand infrastructure platforms may accelerate the migration of RISC to x86 environments, with IaaS used to reduce the cost of migration testing. Moreover, variable workloads such as order management often run on RISC and mainframe environments; enterprises could therefore see the benefit of non-x86 IaaS propositions.

Sunk cost, or capital preservation—especially the cost of software licenses and customization—is another inhibitor of cloud migration. Enterprises are reluctant to walk away from these investments, at least in the near term, but understand that a time will come in the lifetime of the application when moving to the cloud will make sense.

Figure 4.   Application Aspects Inhibiting Cloud Migration
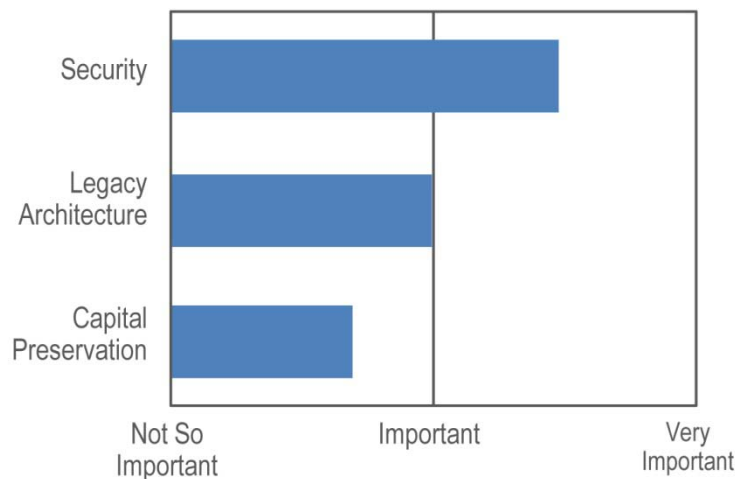
Source: Cisco IBSG, 2010

Other factors inhibiting migration to the cloud include:

- High requirements for network bandwidth/latency
- High requirements for application availability
- Fear of vendor lock-in
- Coupling of application with business processes
- Undefined application licensing in the cloud

When assessing the application landscape for cloud migration, enterprises must make a decision whether to build an internal (or private) cloud. The decision between public and private cloud is by no means binary; even enterprises that decide to manage an internal cloud will still consider public clouds for part of their application landscape. The Cisco IBSG study found that when considering the build-out of a private cloud, enterprises evaluate the following factors:
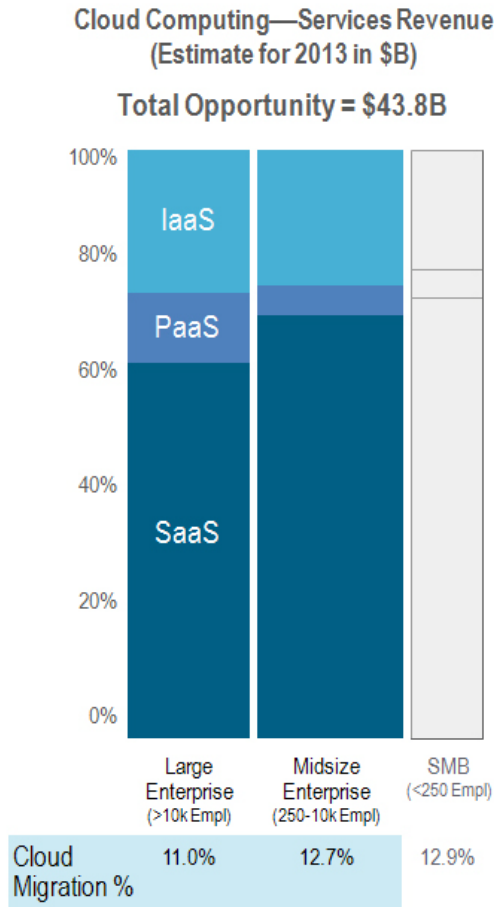
- Current DC overcapacity—sunk cost that can be used
- Scale efficiencies, comparable to public-cloud players
- Access to skilled IT personal, enabling successful build-out of an automated IT environment
- High need for security and control, driving preference toward internal cloud usage. For example, while larger financial institutions are increasingly leaning toward an internal-cloud model, manufacturing companies are favoring public-cloud options.

Cisco IBSG found potential for cloud services across all sizes of enterprise, but the potential is slightly higher in the midmarket (250 to 10,000 employees; see Figure 2). Small and medium-sized businesses (SMBs) were not interviewed for this study, but in a separate body of research, Cisco IBSG found that similar migration percentages can be expected from the SMB segment.

Midmarket enterprises are more likely to adopt cloud computing because they often lack the ability to drive scale efficiencies possessed by larger organizations. Cisco IBSG also

discovered frequent references to skills gaps in their IT staff, making cloud migration more attractive. Some large organizations believe they have the scaling ability and critical skills to be cost-effective compared to the cloud, although perhaps not for all applications.

Figure 5. Midmarket Firms Are Somewhat More Likely To Migrate to the Cloud

Cloud Computing—Services Revenue
(Estimate for 2013 in $B)

Total Opportunity = $43.8B

Cloud Migration %	11.0%	12.7%	12.9%
	Large Enterprise (>10k Empl)	Midsize Enterprise (250-10k Empl)	SMB (<250 Empl)

Source: Cisco IBSG, 2010

Horizontal Opportunity:
Applications / Workloads of Interest Across Industry Verticals

As stated earlier, cloud migration decisions are made at the application level. To better understand what drives cloud migration, we took enterprise IT executives through a list of applications and workloads that are relevant in their respective industries and probed about expected migration toward IaaS and SaaS for each. As indicated in Figure 3, the migration potential differs strongly, based on the type of application. Also, some applications have a clear tendency toward IaaS, while others migrate more easily to SaaS.

Figure 6. Cloud Migration Percentages per Application

How likely are you to migrate these workloads to Iaas / SaaS by 2013?
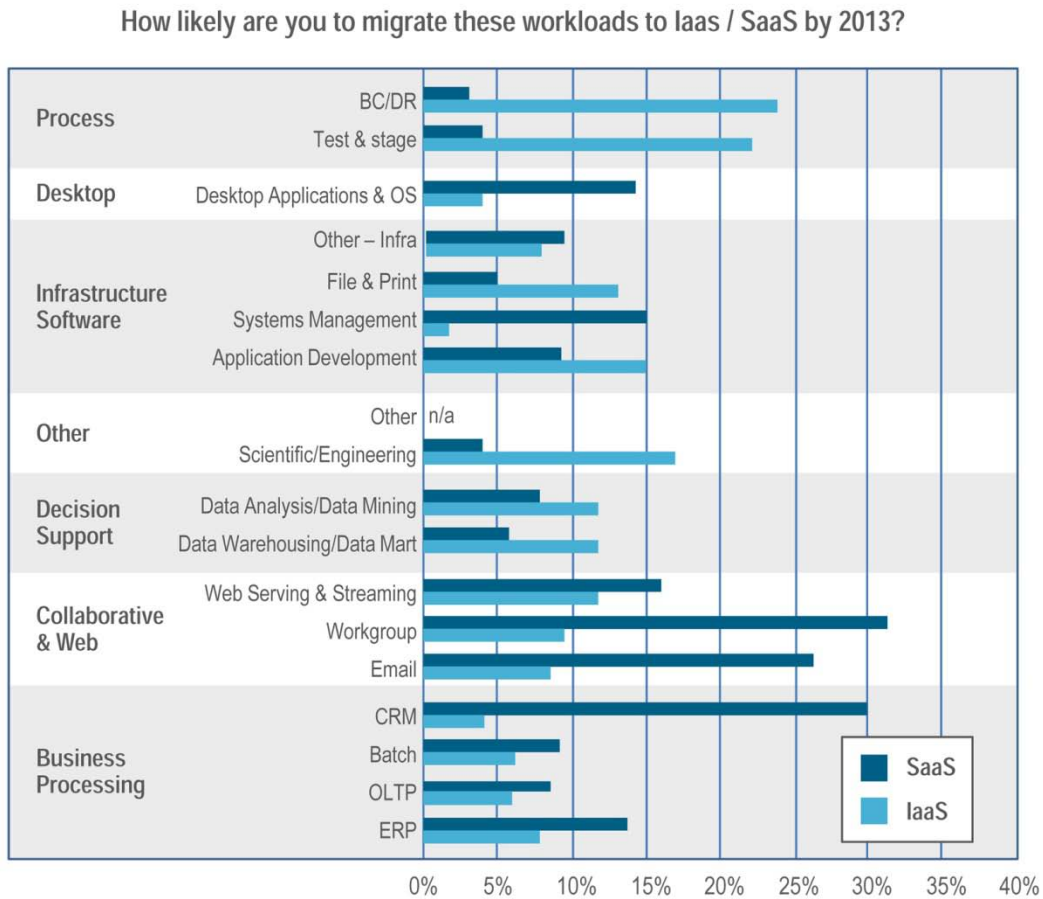
Source: Cisco IBSG, 2010

Cisco IBSG used these migration percentages to derive the market potential for cloud computing to support different applications.

For IaaS (and PaaS), the opportunity is driven by applications that display variable and/or unpredictable resource demand. Enterprises currently must provision for peak capacity. They try to soften the peaks through in-house virtualization projects, but often find their scale and capabilities are insufficient to arrive at stable resource demand. Enterprise-server utilization is typically under 20 percent—and often under 10 percent of installed capacity.

Figure 7. Worldwide Market Potential for IaaS / PaaS per Application
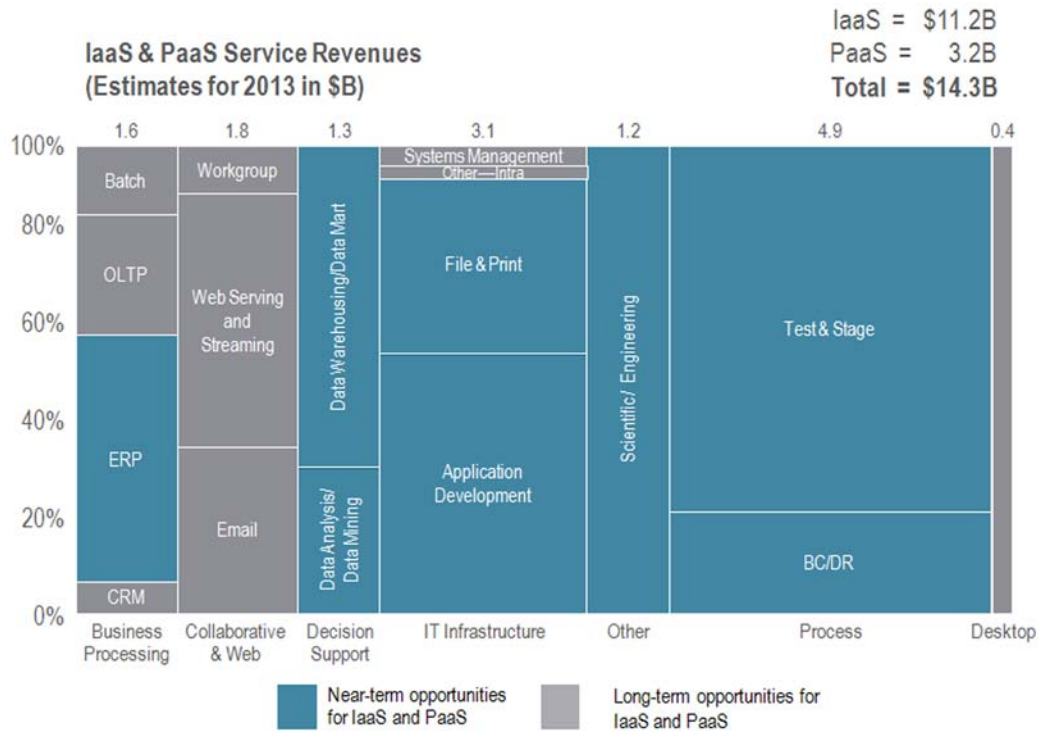
Source: Cisco IBSG, 2010

"Seventy out of 300 servers are for testing. Test system is utilized only 10 percent of the time."

> CXO
> Large U.S. State, on Test & Stage

"Our local DR environment is much underutilized; I want to pay by the drink. But SPs have to come up with realistic and secure solutions not available today."

> Global BPO

Table 1 provides a quick look at the near-term opportunities for IaaS / PaaS and the primary motivations for cloud migration. When architecting the infrastructure for IaaS and PaaS environments, SPs need to understand the requirements of these different workloads, and how they can use their unique capabilities to deliver a value-added solution.
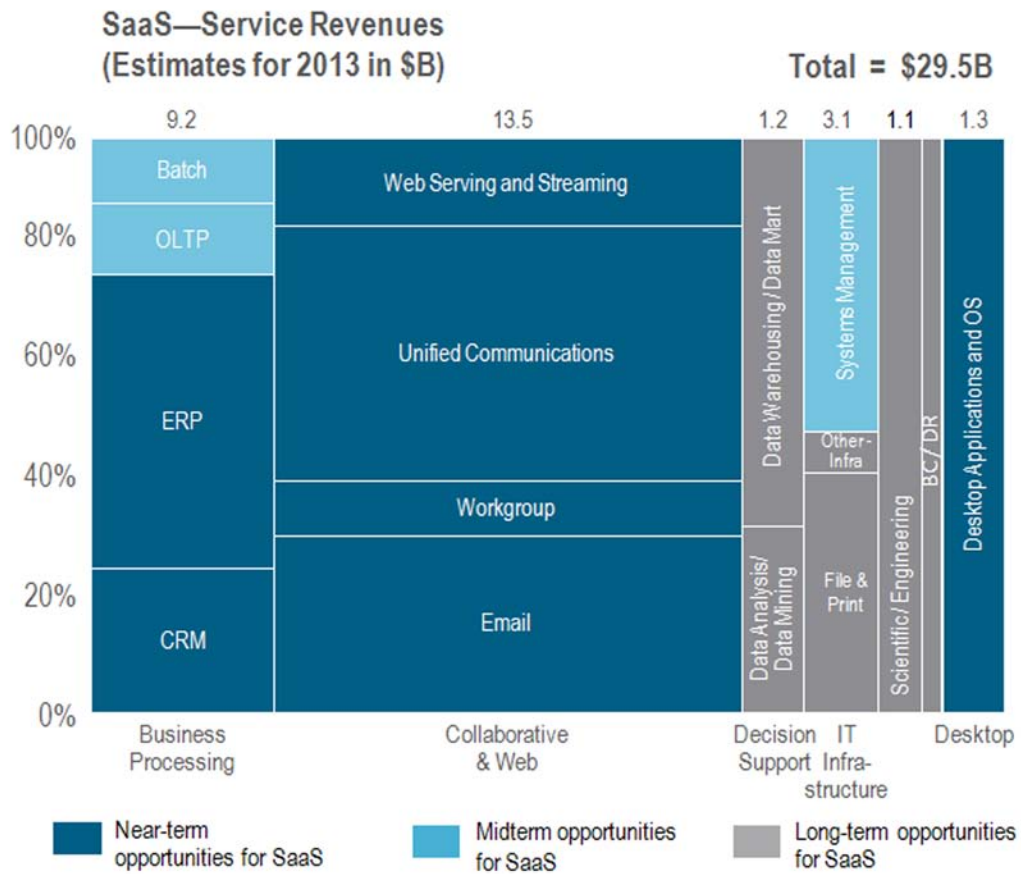
Table 1.   IaaS / PaaS Opportunities and Their Main Drivers

Workload Type	Current Challenges	Advantage of IaaS / PaaS
ERP	• Spiky resource demand, e.g., seasonal • Customers want to customize the application	IaaS can reduce overcapacity
Decision Support Systems (DWH)	• Seasonal variations and short-term projects • Large data sets (TBs) expensive to manage	With adequate latency (I/O) and security, IaaS improves efficiency
Unstructured Data	• Demand driven by end users (wiki, file systems, etc.) is unpredictable • Data not regarded as mission-critical	Low-cost IaaS can accommodate sporadic growth of user-generated content
Application Development & Testing	• Developers make unplanned resource requests • Requirements on testing environments huge and volatile	Cloud (IaaS & PaaS) can improve speed, quality, and cost of development and testing
Business Continuity/ Disaster Recovery	• DR equipment idle 99% of the time • In case of disaster, DR equipment often turns out to be underprovisioned	• IaaS enables cost reduction • DR servers provisioned on pay-per-use basis
Scientific / Grid	• Huge, short-term requirements— *"1000s of servers for a couple of hours"* • Non-core for enterprises across many segments	IaaS can reduce cost of parallel compute jobs in many industry verticals

Source: Cisco IBSG, 2010

When enterprises consider **migrating an application to SaaS,** the equation they use is simple: they try to obtain a functional application at a lower cost per user or transaction. Much of the cost of running an application is in application maintenance and customization; for commodity functions, enterprises will consider standardization on a SaaS platform. Figure 8 shows the potential per application / workload for SaaS services.

Figure 8. Worldwide Market Potential for SaaS per Application

The near-term SaaS opportunities and their drivers are listed in Table 2. An obvious sweet spot for SPs is the enormous potential of messaging and communications, as this aligns well with their core business.

Table 2.   SaaS Opportunities and Their Main Drivers

| Workload Type	Current Challenges	Advantage of SaaS
CRM and Commodity ERP (HR, Payroll, etc.)	• Considered commodity transactions, without significant value add	Standardization on SaaS platform can significantly reduce costs
Email, Collaboration, and Unified Communications	• Considered too complex to run in-house • Better for running on standardized platform, outside firewalls	Standardization on SaaS platform can significantly reduce costs
Web Serving / Streaming	• Unpredictable demand • Scale considered main driver of cost efficiency • Quality peering points needed	Using external platforms will drive scale efficiencies and improve website performance
Desktop Virtualization	• Business case for in-house desktop virtualization often is hindered by up-front server investment cost • Standardized desktop management can reduce complexity and increase security	Cloud-based desktop virtualization will reduce cost and increase security

Source: Cisco IBSG, 2010

Vertical Opportunities: Requirements and Applications in Specific Industry Verticals

For the purpose of this study, Cisco IBSG focused on enterprises primarily because of their share of IT spending, including the vertical segments of manufacturing, public sector (local, state, and federal government), healthcare, professional services, financial services, and retail. The study found that the reasons for migrating to cloud (as well as migration percentages) are significantly different among the individual verticals. In aggregate, the study identifies manufacturing, public sector, and professional services as the priority verticals for public cloud providers. This is based on the size of the cloud opportunity for each vertical[1] as well as the size of their IT applications' infrastructure. In this paper, Cisco IBSG illustrates two of the priority verticals: manufacturing and public sector.

---

[1] The size of the cloud opportunity for each vertical is a function of expected migration to the cloud, as indicated by cloud decision makers responding to the Cisco IBSG survey.

Figure 9.   Workload Shift by 2013 (by Vertical)
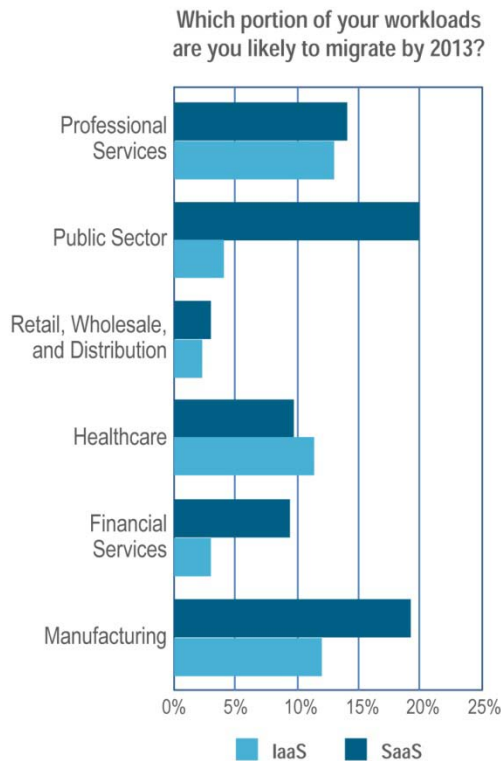
Source: Cisco IBSG, 2010

Manufacturing. The manufacturing sector is composed of diverse subverticals ranging from automotive, to discrete manufacturing companies, to the consumer packaged goods (CPG) industry. The attitude of manufacturing companies toward cloud migration runs the gamut from conservative to bullish. For example, CPG companies expressed a natural inclination to cloud services, given their experience in outsourcing their infrastructures. On the other hand, a multinational auto supplier told Cisco IBSG that it will not use a public-cloud provider as a matter of policy.

Fundamentally, the macroeconomic environment and the resultant structural changes are forcing manufacturing industries to evaluate alternatives to the status quo. Standardization and cost-reduction initiatives are well under way in this vertical. While one can argue that this trend cuts across verticals, some subverticals (such as automotive) are seeing these initiatives gain significant momentum.

Several manufacturing companies have supply chains and internal operations that span multiple geographies. As a result, multipartner collaboration among suppliers, manufacturers, and customers provides a significant cloud impetus.

Cisco IBSG also sees a potential ecosystem strategy for public-cloud providers in manufacturing. Becoming the provider of choice to key players in the manufacturing ecosystem will enable cloud providers to win a substantial share of business.

Cloud-based applications in the manufacturing vertical include:

- **Horizontal IaaS Applications:** grid computing (for crash testing, finite element analysis, simulations, and so forth), decision-support systems, enterprise resource planning (ERP), finance, disaster recovery, unstructured data, and desktop
- **SaaS Applications:** UC, collaboration, email, and CRM. UC / collaboration applications are important, given the distributed nature of the supply chain.
- **Product-Data Management (PDM):** a key cloud application due to multiparty and multigeography data access, collaboration, latency, and variable requirements. There is potential for SaaS when applications can be standardized, and for IaaS when customized.
- **IaaS-Type Service:** IT executives also expressed the need for this to run manufacturing-planning processes more frequently and on demand. Increased frequency of running EMI / MRP / demand planning using IaaS can reduce costs, make the supply chain more efficient, and increase customer satisfaction.

Public Sector. Cisco IBSG interviewed state, local, and federal government institutions for this study. Limited IT skills (especially at the local level) make cloud an attractive opportunity here because of challenges with hiring and retaining IT staff. Tighter budgets force all levels of government to examine alternatives such as cloud. Governments are attracted to the idea of PaaS or tools to customize standard application development.

Local governments are the most likely to adopt cloud services, but the sales process must take the dual approach of including elected officials with IT decision makers. Few applications are regarded as off-limits (in other words, those that must remain within the agency's firewall and not migrate to the cloud), with the notable exception of public-safety applications such as 911. County CIOs are attracted to the notion of on-demand IT provisioning. One county CIO demonstrated the general enthusiasm for cloud by stating, "I can see a statewide cloud, where data does not need to be reentered at every level."

State governments also show a propensity to adopt cloud, mainly focused on SaaS. One of the main motivations is the desire to move from capital expenses to operating expenses, enabling government to establish budgets without going through the state legislature. In cases where the state has contracted with an outsourced IT service, the cloud enables governments to regain control over a process that may be seen as expensive and slow. Cost-effective provisioning for seasonal loads is a major draw for departments such as education, which experiences peaks at the start of the school year, then drops down to business as usual.

Federal agencies are heterogeneous, with each focused on a few key processes. As a result, the factors influencing movement to the cloud are different from those of state and local governments. For example, seasonal peaks are a key impetus to the cloud for the U.S. Internal Revenue Service at tax time, while the U.S. Department of Housing and Urban Development would prefer to migrate stable workloads to the cloud. The U.S. federal government has been encouraging cloud computing, and has issued a data call to agencies to assess projects for cross-agency use in the cloud. Legacy architectures, however, are a key inhibitor for federal agencies. Unlike local government, the CIO is the primary buyer at the federal level; elected officials rarely figure in the purchasing process.
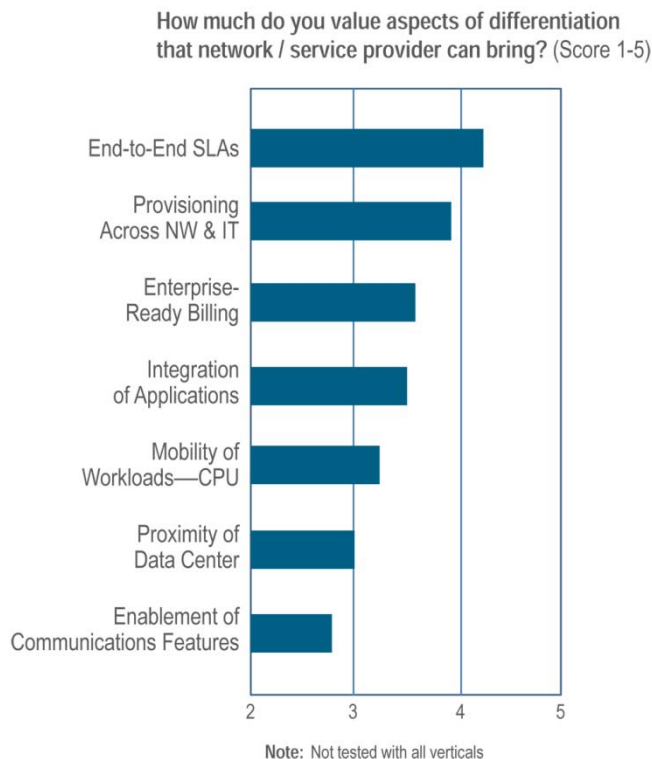
Cloud applications in the public sector include a wide range of solutions:

- Backup and disaster recovery as an IaaS solution, as CIOs in the public sector strongly feel they are paying too much for current solutions.
- Business intelligence/decision-support systems, unstructured data, and grid computing are other IaaS applications of interest.
- Key SaaS applications include UC/collaboration, ERP, human resources, ERP finance, and desktop virtualization.
- Government organizations maintain many citizen-facing portals, which are most active during events such as disasters, political campaigns, tax season, and so forth. The demand for these portals can vary unpredictably, making them attractive candidates for migration.

Service Provider Differentiation: Enabling the Network

After establishing that the potential for enterprise cloud computing is real, Cisco IBSG wanted to find out if traditional NSPs have assets or capabilities that can give them a sustainable edge in this market. To do this, we tested seven "levers of differentiation" shown in Figure 10.

Figure 10. Service Providers Have Opportunity To Differentiate Through End-to-End Network and IT

How much do you value aspects of differentiation that network / service provider can bring? (Score 1-5)

Note: Not tested with all verticals

Source: Cisco IBSG, 2010

Offering End-to-End SLAs: This was rated as the most valuable differentiating factor. SLAs about uptime and performance are regarded as the most crucial. For IaaS, SLAs are expected to be based on typical IT and network key performance indicators (KPIs) such as

service availability, transaction-response time, and incident response and resolution time. For SaaS, the SLAs are expected to relate to the actual business-process performance of the application.

Enterprises want to see penalty clauses applied in the event of an SLA breach, with penalties proportional to the business impact of the failure. For example, the SLA currently provided by Amazon Web Services is regarded as insufficient; in case of SLA breach, Amazon offers the customer service credits, regardless of the money lost in the process.

The end-to-end nature of the SLA, promising KPIs across the data center, the network, and onto the customer premise, is important: customers want SLAs to reflect the entire business process with a single point of accountability ("One throat to choke," as one respondent phrased it).

Enterprises perceive that SLA delivery is a strength of NSPs, as opposed to other types of cloud providers (over-the-top[2] providers such as Google, and systems integrators and server vendors such as Hewlett-Packard).

On-Demand Provisioning of Infrastructure and Policies Across the Network and IT: This concept was well-received for three different reasons:

1. It can decrease end-to-end deployment time for new services, enhancing agility. Professional services companies, especially those in business process outsourcing, found this appealing.

"When customers buy a service, they want it to be activated now—not next week. Provisioning the end-to-end infrastructure environment in a flexible way can contribute greatly to customer satisfaction."

> CIO
> Large Professional Services Company

---

2. Customers want the ability to monitor application performance across the data center, network, and onto their premises. They highly value an integrated tool that can follow the data flows and identify bottlenecks across the delivery chain.

3. Enterprises see value in "bandwidth-on-demand": the potential to increase network capacity in case of demand spikes. Public-network spikes are expected to happen in the case of public events, disasters, or campaigns. Private-network spikes are likely in the case of internal multimedia events, seasonal application loads, and large file transfers. Still, the executives we interviewed were confused about how such a model could be implemented profitably since bandwidth is constrained by the local gateway.

---

[2] An over-the-top player is a nontraditional, online provider of communications and IT services such as Google.

"What's the point of on-demand IT if you cannot turn up the network as well?"

VP of Infrastructure and Telecommunications
Large Manufacturer

Enterprise-Ready Billing: Rated third as a differentiator, enterprise-ready billing provides transparency, granularity, and accuracy of billing. NSPs are perceived as experts in this area. If integrated correctly, their BSS / OSS systems and experience can give them a valuable edge over other types of cloud providers. As IT departments within enterprises gear toward using public clouds, they will need to monitor and document usage, and then cross-charge costs to other business units. Moreover, many IT executives understand that the future of cloud will be not only about infrastructure and software, but increasingly about automating transactions. Billing granularity needed to automate transactions can be a sweet spot for NSPs.

SPs as Cloud Providers: Vendor Perception

The competitive dynamic in the cloud market squeezes SPs on two fronts. On one front are over-the-top players such as Amazon and Google, which take advantage of their scale and experience in managing large web applications to offer low-cost cloud services, with the network as a "dumb pipe" model. On the other front, SPs are squeezed by systems integrators and server vendors such as HP / EDS and IBM, which use systems-integration capabilities and advisory relationships developed while working with IT organizations.

"There is no simple answer . . . . Until six months ago, startups were the only active players. Now everybody is getting into this (HP, IBM, Verizon). It is very confusing . . . . Potentially, we will use different providers for different needs."

CTO
Large U.S. State

Service providers are at an inflection point today. This study confirmed that SPs have an opportunity to differentiate themselves through the network assets they own and control. As a part of the study, Cisco IBSG tested the vendor of choice for these services, and whether the decision makers' perceptions matched the capabilities they indicated as most desirable. Four broad vendor classes were tested:

1. SPs with hosting background, such as Savvis or Terremark
2. Traditional NSPs, such as AT&T, BT, Verizon, or FT
3. Systems integrators and server vendors, such as IBM, HP / EDS, or Accenture
4. Over-the-top players, such as Google or Amazon

Service Providers with Hosting Background: These SPs are viewed by IT executives as being different from traditional NSPs. Hosting background is viewed as a natural adjacency

to cloud. They are believed to have a good mix of IT experience and flexibility. While IT executives believed that SPs' background and agility are advantages, they expressed some concerns about their financial staying power and a platform lock-in with a smaller company.

Traditional NSPs: Traditional NSPs' advantages are their ability to integrate network and IT services, and their experience in delivering SLAs. Their staying power and financial strength are definitely in their favor. Concerns were expressed, however, regarding their agility and flexibility as vendors. While there is confidence in NSPs' ability to deliver services at scale, IT executives question their understanding of enterprise applications.

"Telcos are in a key position to play; they group IT and communications services. I think some players will come quickly into this race."

> CIO
> Global SI / BPO

Systems Integrators and Server Vendors: Systems integrators enjoy the advantages of IT incumbency, having delivered enterprise-ready IT solutions for some time. They will potentially play multiple roles, from influencer to vendor. Many are already developing cloud-migration offerings to their clientele. They are considered expensive, however, and enterprises have expressed the fear of being locked into a server vendor's architecture.

"One application at a time . . . . IBM is our IT incumbent."

> MD of Operations and Technology
> Large Financial Services Institution

Over-the-Top Players: Providers such as Amazon are considered to be ahead of the curve in cloud technology, although not enterprise-ready. Cost efficiency is perceived as a major strength. They have the buzz in the industry, and enterprises have expressed general willingness to experiment with them. There are concerns, however, about security, availability, performance, and the ability to offer SLAs.

"Not sure of security from Amazon."

> Executive of Large Global Auto Company

"OTTs are sexy. They will start conversations."

> Executive of Large Retail Bank

Conclusion

Cloud computing is poised to be a $43 billion market. This alone should prompt NSPs to consider how best to begin transitioning to cloud providers, especially in today's climate of diminishing margins on traditional services.

Customers are making decisions about cloud migration on an application basis. This means that NSPs should develop and market cloud propositions relevant for specific applications. We listed a number of specific horizontal applications that can be targeted across many industry verticals. Moreover, NSPs can target "communities of interest" with vertical-specific applications. NSPs that lack application expertise should consider partnerships or acquisitions to fill these gaps.

More important, NSPs have an opportunity to gain share and differentiate in the cloud market with their networks. On-demand provisioning of IT and network resources and end-to-end SLAs are the key features that enterprises value—and NSPs are in the best position to deliver them. NSPs' customers are predisposed to view them as qualified to provide cloud services (excepting application expertise, but this can be remedied through partnerships).

As illustrated through our research, perception gaps remain for NSPs in a market with different types of players. NSPs must rise to the occasion and alter these perceptions by focusing on the flexibility of their offers and go-to-market models, and by stressing their ability to deliver end-to-end network and IT services and SLAs.

Within enterprises, purchasing and architectural decision making are converging across networking and IT. NSPs should target decision makers / influencers across network and IT, simultaneously elevating messaging to span both organizations.

For more information about the role of service providers in cloud computing, please contact:

Wouter Belmans, Solutions Manager
Service Provider Practice
Cisco Internet Business Solutions Group
Phone: +352 26 43 3375
Email: wbelmans@ciso.com

Sailesh Yellumahanti, Director
Service Provider Practice
Cisco Internet Business Solutions Group
Phone: +1 678 352 2942
Email: syelluma@cisco.com

More Information

Cisco Internet Business Solutions Group (IBSG), the company's global consultancy, helps CXOs from the world's largest public and private organizations solve critical business challenges. By connecting strategy, process, and technology, Cisco IBSG industry experts enable customers to turn visionary ideas into value.

For further information about IBSG, visit http://www.cisco.com/go/ibsg.

CISCO