Dispelling the vapor around cloud computing in the financial services industry

Executive summary

- There are marked differences between the workloads that the financial services industry considers suitable for private and public cloud deployments.

- Financial services firms are more likely than firms in other industries to view the adoption of cloud technology as a means of creating new revenue streams.

- IBM has identified workloads that will most likely pose the lowest risk and offer the highest potential return as cloud projects for financial services firms.

- With a six-step strategic cloud adoption plan, IBM can help financial services firms achieve rapid ROI from their cloud projects while minimizing risk.

Introduction

This paper presents the results of a recent IBM survey[1] which shows that financial services firms are adopting cloud technologies faster than organizations in other industries. Almost half of respondents from the financial sector indicated that they are already using private clouds to deliver ERP software and virtual desktops, and more than half are considering public clouds for these functions and for help desks, data analytics and unified communications. What's particularly interesting is that cloud is not seen simply as a new IT delivery method, but as a key enabler for business model innovation: one third of financial services respondents said that a driver for cloud adoption was the creation of new revenue streams.

Tower Group expects that the financial services industry will increase its investment in cloud computing from $4.0 billion (or 1 percent of IT spend) in 2010 to $21.9 billion (or 5 percent) by the end of 2012[2]. Cloud computing is particularly attractive to organizations looking to speed service delivery and increase IT efficiencies while supporting information management, service management and service-oriented architecture (SOA) initiatives. While cloud computing offers distinct advantages, it is not a one-size-fits-all solution: organizations must carefully consider delivery models, workloads and infrastructure readiness.

Cloud computing is both a user experience and a business model in which applications, data and IT resources are provided to users as services delivered over the network. It enables self-service, economies of scale and flexible sourcing options. In addition, cloud computing is an infrastructure management methodology—a way of managing large numbers of resources, which can reside in multiple locations, so that they resemble a single large virtualized resource. Additionally, there are multiple cloud delivery models available—some are internal (private), some external (public), and some are a combination of both (hybrid).

To better understand the current rate of adoption, as well as drivers, barriers, and considerations that are influencing the adoption of cloud computing, IBM conducted a survey of 1,090 IT and line-of-business decision makers around the world, including participants from 161 financial institutions. This white paper contains the findings of the survey, and provides a perspective for the financial services industry regarding key steps and considerations for the adoption of cloud computing. The findings validate that many organizations are now considering cloud computing—with most of the financial services sector respondents currently favoring a private cloud delivery model.

Survey scope and definitions

Those surveyed included IT and line-of-business decision makers across the U.S., Canada, France, Italy, Germany, the UK, Japan, China and India. In addition to the financial services industry, respondents represented a variety of other industries, including public sector, communications and distribution. The survey addressed three aspects of cloud computing:

- Sourcing choices: adoption or consideration of cloud delivery models, plus drivers behind and barriers to adoption
- Workload considerations: public and private cloud preferences categorized by the key types of computing required
- Service delivery: considerations for the provisioning, consumption, maintenance and measurement of cloud computing resources.

Survey definitions

Three types of cloud were defined: public (or external), private (or internal) and hybrid.

Public clouds—IT and information resources are provided as a service over the Internet, which allows access to technology-enabled services without knowledge of, expertise with, or control over the technology infrastructure that supports them. Financial services has a rapidly growing appetite for computing resources that can more flexibly and efficiently deliver services such as conferencing, VoIP, desktop service/help desk WAN capacity and storage. Using a public cloud is the ideal solution for such requirements, where the emphasis is on achieving high utilization (and therefore low costs).

Private clouds—IT and information resources are provided as a service over a company's intranet. Private clouds are built by an organization for its own users, and everything is delivered within the organization's firewall. The private cloud owner does not share resources with other entities, so sharing the same physical hardware (known as multi-tenancy) is not a concern. Private clouds are better suited to analytical and transactional workloads such as data warehouses, data mining, business continuity/data recovery, and industry-specific applications, where the emphasis is on performance and where data security is an important issue.

Hybrid clouds—the external and internal service delivery methods are integrated. Rules and policies are established by the organization based on factors such as security needs, criticality and underlying architecture, so that activities and tasks are allocated to external or internal resources as appropriate. The use of hybrid clouds enables the balance between cost, security and performance to be optimized.

While 73 percent of financial services respondents said they were already familiar with the internal and external (private and public cloud) delivery models described in the survey, there was a broad spread of terms that respondents associated with these delivery methods. 29 percent of financial services respondents selected "cloud computing" as the term that best described the delivery models, with 23 percent opting for "hosting." Other choices included "software as a service" (20 percent), virtualization/consolidation (20 percent) and utility computing (5 percent).

As part of the study, respondents were asked to rate IT workloads they would consider most appropriate for deployment in a public or private cloud environment.

The full list of 25 workloads included in the survey is shown in Table 1, opposite. This table indicates which workloads the financial services respondents preferred for public or private cloud solutions (either currently using or planning to use the features in the next 12 months).

Workload type	Workload	Public cloud Preference	Private cloud Preference
Analytics	Data mining, text mining, or other analytics	9%	52%
	Data warehouses or data marts	21%	44%
	Transactional databases	11%	45%
Business Services	CRM or sales force automation	30%	43%
	E-mail	21%	48%
	ERP applications	25%	55%
	Industry-specific applications	21%	49%
Collaboration	Audio/video/Web conferencing	41%	34%
	Unified communications	26%	50%
	VoIP infrastructure	14%	49%
Desktop and Devices	Desktop	17%	55%
Development and Test	Development environment	20%	40%
	Test environment	16%	42%
Infrastructure	Application servers	17%	47%
	Application streaming	24%	37%
	Business continuity/disaster recovery	24%	40%
	Data archiving	22%	46%
	Data backup	18%	48%
	Data center network capacity	14%	46%
	Security	17%	46%
	Servers	15%	50%
	Service/Help Desk	17%	54%
	Storage	18%	50%
	Training infrastructure	15%	47%
	WAN capacity	29%	43%

Table 1: Workloads – financial services respondents' preference for public or private cloud solutions. The study asked respondents to rate 25 different workloads they had already deployed or would consider deploying in a public or private cloud.

In some areas, attitudes toward cloud computing in the financial services industry were similar to those in other industries:

- Private cloud is seen to be a supplement (rather than an alternative) to traditional outsourcing of computing capacity by 48 percent of financial services respondents, the same percentage as for cross-industry respondents. Some 39 percent of financial services respondents see private cloud as an alternative option, versus a mean of 36 percent across all sectors.
- Financial services firms are more likely to agree that the primary barrier to public cloud adoption is data security/privacy (75 percent of financial services respondents versus mean of 69 percent across all sectors).

The financial services industry differed from other industries in several areas, for example:

- Respondents in the financial services industry are somewhat less likely to utilize external help for building/implementing private cloud solutions (59 percent for financial services versus 63 percent for cross-industry), while financial services industry respondents are clearly more likely to use outside help for assessment and planning (62 percent versus 51 percent)
- Financial sector decision makers are more likely to see virtualization as a strategic objective for their business (26 percent of respondents versus mean of 14 percent across all sectors).

Cloud computing adoption and consideration factors
Cloud computing has the ability to accelerate service delivery and to increase service and infrastructure availability while creating elasticity that allows services to be expanded—or contracted—as demand changes. And because organizations can leverage economies of scale through a cloud environment, they can also reap a higher ROI via greater staff efficiency and optimization of IT resources. Cloud computing supports efforts to establish a service-oriented architecture and to enhance information management and service management. With all these benefits to offer, cloud computing can help IT become much more flexible and responsive to business needs.

The study found that decision makers express openness to both public and private cloud, although the consideration and adoption rates for the private cloud delivery model were higher (as noted in Table 1). Of the financial services firms surveyed, 68 percent rated private cloud delivery "very appealing or appealing," compared to approximately 42 percent for hybrid cloud and 32 percent for public cloud.

Cost savings and time-to-value are the leading drivers
The survey results for all industries reveal the primary drivers for cloud adoption in general, and public cloud adoption in particular, are cost savings and faster time-to-value. In IBM's experience, actual savings can reach 20 to 29 percent.[3] However, the level of savings achievable depends on many factors, including the types of workloads concerned, the delivery method selected and the efficiency of the current infrastructure under consideration to be supplemented or replaced by cloud.

In the financial services industry, decision makers at banks indicated that their top two drivers for adopting cloud were lower labor costs and improved systems reliability/availability. Other important drivers were: paying only for what is used, software license savings, reduced IT support needs and rapid deployment. Financial services firms selected creating new revenue streams at a substantial higher rate compared to all the other industries, 33 percent against an average of 23 percent.

For further information, please see Table 2, opposite.

Inducements to acquiring public cloud Percentage of respondents selecting	Financial services respondents (sample size 161)	Total across all respondents (sample size 1090)	Difference in percentage points, financial services versus all respondents	Category (see key below)
Lower labor costs	54%	44%	**+10**	R
Improve system reliability and availability	54%	50%	+4	I
Pay only for what we use	53%	50%	+3	R
Hardware savings	51%	47%	+4	R
Software license savings	47%	46%	+1	R
Able to focus on core competencies	44%	38%	+6	O
Rapid deployment	43%	39%	+4	S
Take advantage of improved economies of scale	43%	37%	+6	R
Able to scale IT resources to meet needs	41%	39%	+2	S
Reduce IT support needs	40%	40%	0	R
Relieve pressure on internal resources	37%	39%	-2	S
Increase budget flexibility by transforming capex into opex	36%	29%	+7	O
Able to take advantage of latest functionality	36%	40%	-4	S
Reduce infrastructure management needs	34%	37%	-3	R
Lower outside maintenance costs	34%	42%	-8	R
Create new revenue streams	33%	23%	**+10**	O
Resolve problems related to updating/upgrading	31%	39%	-8	S
Reduce space required to house/maintain infrastructure	30%	26%	+4	R
Lower energy costs	26%	29%	-3	R

Table 2: Inducements to acquiring public cloud.

Category key
R = reduce costs
I = improve reliability
S = speed time-to-value
O = other

Data security concerns: a barrier to public cloud adoption
Some 75 percent of financial services respondents said that concerns about data security and privacy were their primary barrier to public cloud adoption, 58 percent cited concerns about service quality and performance, 51 percent expressed concerns about loss of control over IT resources, and 51 percent also cited insufficient responsiveness over the network as a potential hindrance to public cloud adoption. The workloads that were favored the least for public cloud, by far, were those related to security and databases. Despite those concerns, public cloud adoption is expected to gain momentum in coming years. Though private cloud is most favored now, adoption of public clouds across all industry sectors is expected to grow by 26 percent CAGR between now and 2013.

Workload preferences for private and public cloud
Since workload characteristics vary according to platform requirements, complexity, business criticality and data sensitivity, some are ideal for a public cloud, while others are more suitable for deployment in a private cloud. For this reason, an analytical approach to cloud computing is essential in determining which delivery model is best for that workload—public, private or hybrid—and in understanding which workloads can realize the greatest benefits in a cloud environment.

In addition, some workloads, due to their characteristics (low risk and high potential for ROI) are better candidates to consider as pilot projects for cloud. One example would be an environment for provisioning test and development resources, a type of IT infrastructure workload in which virtualized IT resources are created and deployed for use by software development teams, in a protected environment so that production activities are not at risk.

In this survey, IBM found that workload types favored for public and private cloud deployment varied widely. Across all industries, conferencing and CRM/sales force automation ranked among the highest for usage consideration in public cloud, while they were among the lowest for private cloud.

Within public cloud rankings, there was a spread of more than 20 percentage points between the highest and lowest ranked workloads. For private cloud, consideration rates were much more consistent, varying by less than 10 percentage points for the top 15 workloads. For financial services respondents, the results were broadly similar, however there was much stronger interest in putting business continuity and disaster recovery in the public cloud.

Workload preferences for private cloud
Database and application-oriented workloads emerged as most appropriate for potential private cloud adopters. However, private cloud consideration was high across all workloads. As shown in Table 1 for financial services, the top six considered workloads included: ERP applications (by 55 percent of respondents), desktop (55 percent), service/help desk (54 percent), data mining, text mining, or other analytics (52 percent); and unified communications, servers and storage (all three at 50 percent).

Moreover, actual implementation rates for private cloud among financial services organizations were high across most workloads. Some 45 percent have implemented service/helpdesk. Other workloads that nearly half of financial services respondents said they had already implemented in a private cloud include ERP (44 percent), desktop (43 percent), and e-mail and application server workloads (both 41 percent).

Workload preferences for public cloud
As shown in Table 1, the top five favored workloads in the financial services industry for public cloud deployment, were: audio/video/Web conferencing (by 41 percent of respondents); CRM or sales force automation (30 percent); WAN capacity (29 percent); unified communication (26 percent); and application streaming (24 percent). CRM and conferencing are already popular software as a service (SaaS) workloads, which makes them logical selections for public cloud implementation.

Respondents from financial services organizations did clearly indicate their position that not all workloads are currently considered to be good candidates for migration to a public cloud environment. Some examples include:

- Highly sensitive data workloads (e.g. employee records)
- Multiple, co-dependent services (e.g. high-throughput online transaction processing)
- Workloads requiring a high level of auditability and accountability (e.g. those subject to Sarbanes-Oxley)
- Third-party software that does not have a virtualization or cloud-aware licensing strategy
- Workloads requiring detailed chargeback or utilization measurement (e.g. capacity planning and department-level billing)
- Workloads requiring customization (e.g. customized ERP applications).

Push factors versus barriers
As part of the survey, respondents were asked to identify the factors that would influence their deployment choices for each workload—either for or against public or private cloud adoption. Across all industry sectors, "fluctuating demand" and "unacceptably high costs for traditional IT delivery" emerged as "push" factors for both public and private cloud. Factors that correlated strongly with the decision to put a workload in a public cloud (and not in a private cloud) were whether or not the workloads are highly standardized, modular and independent. Conversely, concerns about data privacy, compliance with regulatory requirements and being able to maintain a high level of control over the environment were correlated with a higher propensity to choose private over public cloud models.

IBM derived a public cloud adoption index and a private cloud adoption index for each workload by analyzing:

- The implementation rankings for public versus private clouds
- The barriers against, and push factors in favor of, private and public cloud adoption
- The relative budget expenditure.

The self-reported consideration rate for private cloud workloads was consistent, with between 40 and 50 percent reporting current or planned private cloud implementation across all workloads. However, a different picture emerged with the adoption index analysis, where there was seen to be a wider spread between the workloads with the highest push/lowest barrier factors and those with the lowest push/highest barrier profile. For private clouds among financial services respondents, data mining, security and transactional databases are among the high push/low barrier workloads, while conferencing, voice-over-IP infrastructure and WAN capacity are among the workloads that are high push/low barrier for public cloud adoption.

Workload recommendations
Based on analysis of the adoption index and on IBM's own cloud implementation experience, IBM has identified the workloads that offer the most favorable entry points for both public and private cloud delivery models. For financial services organizations interested in piloting a public cloud service, the infrastructure workloads listed in Table 3 will most likely be the projects that will pose the lowest risk and offer highest potential return. The same holds true for the workloads listed as top candidates for private cloud implementation.

Note that data mining, data center network and storage appear in both lists. This is because these are relatively low-risk workloads in terms of the business transactions and the overall IT operation. In addition, these workloads have the potential for large ROI through gains in speed and cost reduction. Therefore, IBM recommends that these workloads should be considered as strong candidates for a pilot cloud project in either delivery model.

Financial services - public cloud

Low	• Infrastructure capacity for training • Servers • Application servers • Application streaming	• Conferencing • VOIP infrastructure • WAN capacity • Storage • Service/help desk • Desktop • Data center network • Data mining
Barriers	• CRM/Sales force • Unified communications • Test environment infrastructure • Industry-specific applications • Data warehouses • Development environment tools • Data archiving • Transactional databases • Security	• ERP applications • Email • Data backup • Continuity/DR
High		

Lower   Higher
Push factors

Financial services - private cloud

Low	• Application servers • WAN capacity • Infrastructure capacity for training • Service/help desk	• **Data mining** • Security • Transactional databases • Continuity/DR • Data archiving • **Data center network** • **Storage** • Unified communications
Barriers	• CRM/Sales force • Servers • Email • Test environment infrastructure • Application streaming • Development environment tools • Conferencing • VOIP infrastructure • Desktop	• ERP applications • Industry-specific applications • Data warehouses • Data backup
High		

Lower   Higher
Push factors

Table 3: Workload recommendations. Based on the analysis of study data and experience with actual cloud implementations, IBM has identified workloads that will most likely pose the lowest risk and offer the highest potential return as cloud projects for financial services organizations. Equally, IBM Research has developed a workload analysis tool that can help characterize and prioritize candidate workloads for delivery from the cloud.

Service management process criticality
The study also explored certain readiness factors for cloud implementation. Respondents were asked to rank 18 service management processes and functions based on how critical each is to the organization. The ranking was on a scale from 1 to 5, where "1" was "not critical at all" and "5" was "extremely critical." Figure 5 shows the percentage of respondents who rated each function either a 4 or 5: "very critical" or "extremely critical."

The majority of respondents from financial services and other industries said they were focused on the traditional disciplines of systems management: security, networks, servers and applications. However, 57 percent of financial services decision makers also included availability as a critical factor, compared to the all-industry figure of 47 percent—a notable spread of 10 percentage points.

For successful service delivery in a private cloud, IBM recommends putting in place the following service management processes (or, in the case of a public cloud, ensuring that the service provider puts them in place):

Service catalog—Self-service is a key defining capability for cloud. The service catalog represents the offerings that allow users/customers to select, size and order the services they want.

Governance—Governance is the discipline that helps minimize risk, maximize value and align IT and business objectives.

Provisioning logic—The provisioning function works with the service catalog by translating the user's request for a service—for example, a test environment with "x, y and z" characteristics—into a specific infrastructure configuration. Most important, this provisioning must take place automatically, without any hands-on intervention by the IT staff.

Usage/accounting—Also known as "metering and billing," this function tracks actual usage according to defined metrics and translates them into either an internal charge-back transaction or a bill for the public cloud customer.

Key success factors

Just as service management considerations are critical to realizing the benefits of a cloud computing environment, so is establishing a dynamic infrastructure, with capabilities for resource virtualization, service standardization and automated provisioning of IT resources (which delivers the greatest potential for cost savings).

Specifically, an infrastructure that is "cloud-ready" will have the following characteristics and capabilities:

• Open-standards-based and service-oriented
• Advanced virtualization and automated management
• Common components and processes
• Advanced security and resiliency.

In addition to the gap in service-management readiness, the survey also revealed that few respondents outside of the financial services industry have a mature virtualization strategy, with only 18 percent indicating that virtualization is considered a strategic objective or a transformative technology. Among financial services organizations, a higher adoption rate was evident, with 30 percent of respondents considering themselves to be in one of the top two maturity categories for virtualization.

The steps toward cloud computing

With an IT strategy that embraces cloud computing, CIOs can better satisfy their customers through improved visibility of IT resource use, better responsiveness, simplification and cost-effective service delivery. Properly implemented, cloud computing can help lower costs, increase IT responsiveness and optimize service delivery. Cloud computing can also increase the range of an organization's services, applications and capabilities available to customers.

Defining a cloud adoption strategy and following the correct pathway to adoption are essential to success. This can be the most challenging phase of the adoption process, and it is the stage at which most survey respondents said they would be likely to request outside assistance. IBM has developed an approach, detailed in a paper entitled "Defining a framework for cloud adoption"[4]. This paper describes the cloud Computing Adoption Framework developed by IBM, and establishes common definitions for cloud computing delivery models and services. It is designed to help organizations formalize their approach to cloud computing and build an effective strategic vision.

Beyond the strategic vision, successful deployment of cloud technology will require a pragmatic, evolutionary approach—one that IBM has developed through its many cloud engagements with customers around the world—as well as the many cloud projects within IBM. Today, IBM is helping organizations get started on the journey toward cloud computing by following six strategic steps to cloud adoption.

1. Create the IT strategy and roadmap
Begin by determining the goals for the organization regarding cloud service delivery, and the platform requirements and complexity associated with each. Goals can include:

• Centralization to reduce costs and number of data centers
• Consolidation of servers and storage to reduce capital costs, operational costs, software license fees and the carbon footprint
• Virtualization to increase hardware utilization and standardize virtual images
• Automation of service management processes and application migration
• Optimization of resources and dynamic provisioning of services.

2. Assess and select workloads for cloud
Identifying and prioritizing workloads that are candidates for cloud delivery is the next step. Workloads that are amenable to standardization, that are self-contained applications or that have a service-oriented architecture will potentially be easier to move into a cloud environment. Conversely, workloads that will be more difficult, risky and costly to migrate to a cloud environment are typically highly complex, require high amounts of data transfer, involve a high degree of customization or are legacy systems that would require significant redesign to conform to cloud architecture.

3. Determine the cloud delivery model
Once you have identified candidate workloads, you can then establish which are best suited for delivery via a public cloud, a private cloud, or a hybrid of both. As seen earlier in this paper, the IBM cloud adoption index for financial services firms suggest that data mining, security and transactional databases are the workloads with the highest push factors and lowest barriers for delivery in a private cloud. For public cloud delivery, the IBM index suggests that conferencing, voice-over-IP infrastructure and WAN capacity have the highest push factors and lowest barriers for financial services firms.

4. Determine the value
Examine the ROI that cloud computing can bring, including time required for initial payback as well as projected ROI. In determining ROI, start by calculating the absolute savings that will be realized from all elements of IT operations related to the workload in question—including, for example, hardware costs, software licenses and upgrades, system administration, system support, end-user support and provisioning. ROI calculations can also include business-related measures, such as increases in user productivity and resource utilization; avoidance of capital expense; and reduction of risk due to higher availability.

In addition to looking at first-year savings, IBM recommends that clients project operating costs of both the legacy IT environment and the cloud environment over three years to calculate ROI over a longer term. Our research has shown that while all IT costs may increase over time, typically cloud computing costs will increase at a lower rate—resulting in increasing value.

5. Establish the architecture
The final step prior to implementation is to establish the architecture that will support your cloud initiatives, both public and private. A cloud architecture should address three "domains:"

• What are the services you will deliver or acquire? These include infrastructure as a service ("raw" computing capacity); platform as a service (computing capacity plus network services and data management services); or software as a service (computing capacity plus network/data management services plus applications).
• How will you create and deliver the services? This includes the tools, procedures and governance required to plan, define, catalog, configure, deliver, monitor, measure, bill and report on cloud-delivered services.
• How will users access the services? A service catalog that enables end-users to select, order and configure cloud-delivered services is an essential component of a cloud architecture. In addition, for private clouds, the architecture should provide an operational console for service delivery and operational managers.

Underlying all three domains is the cloud platform—the architecture layer that defines the dynamic infrastructure for cloud delivery, as well as the service management disciplines that enable service delivery and end-user access.

6. Implement the IT strategy, roadmap and cloud services
A key step in preparing for cloud is conditioning your infrastructure for cloud delivery. This may include virtualizing and automating existing systems, adding the service management capabilities that are required for cloud computing.

The roadmap for cloud implementation defines a pilot project or projects that will enable the IT organization to gain experience with cloud computing delivery while end-users gain experience of working with standardized applications and services delivered over the network. This pilot could be delivered from a private cloud platform, or it could be a pilot using trusted public cloud services. Either way, the pilot should deliver an isolated, low-risk workload.

Building on lessons learned, the next steps in the roadmap will be to enable additional workloads and extend cloud services to new users. A well-designed cloud environment will typically aim to meet end-user needs through a single portal, using a catalog of services that can be automatically provisioned in many cases.

The IBM cloud experience

In addition to numerous customer engagements, IBM has put cloud computing into practice in its own data centers around the world, and is able to draw on best practices to share in customer implementations. Here are some examples:

- Analytics—109,000 users, growing to 200,000. Announced as the world's largest private cloud environment for business analytics, Blue Insight is the basis for the IBM Smart Business Analytics cloud offering, and provides information on demand and analytics as a service to IBM employees. The solution:
    – Enhances organizational performance by applying advanced mathematical modeling, deep computing, simulation, data analytics and optimization techniques
    – Enables detailed analysis of business performance
    – Accelerates the deployment of analytic applications and industry-specific business solutions
    – Enables continuous analysis of massive volumes of data in motion
    – Consolidates information from nearly 100 different information warehouses and data stores; projected to achieve tens of millions of dollars of savings over five years

- Collaboration/LotusLive—75 percent of IBM web conferencing. IBM adopted LotusLive Meeting in 2009 as its primary web-conferencing technology for meetings between IBMers, clients and Business Partners. In 2009, more than 200 million minutes of meetings were handled by the solution. IBM is also piloting LotusLive Engage, enabling 8,000 registered users to share files both internally and with clients.

- CIO Dev/Test cloud—Time to build dev/test environment reduced from one week to around one hour. The second generation of the IBM CIO Development/Test cloud went into service in April 2010, reducing environment provisioning times from five days (previous best case) to just over an hour. Continuing deployment in 2010 will expand coverage to 80 percent of IBM Development/Test activity.

- Desktop/Workplace cloud—1,200 users in China Development Lab pilots, with 1,000 additional users in the pipeline. An initial migration of IBM Call Center team roles to the IBM Smart Business Desktop cloud is now expanding to cover additional groups via role-based segmentation. Estimated savings range from 20 to 30 percent of the current client provisioning costs, with additional security benefits and improved systems management.

- Storage cloud—Up to 40 percent savings in storage costs. IBM faces year-on-year growth rates of approximately 25 percent in file and block storage, similar to its clients across all industries. The deployment of a storage cloud serving multiple teams of users is estimated to yield savings of 30 to 40 percent across capital costs, hosting costs, and provisioning labor costs, with improved redundancy. Additionally, provisioning time will be reduced from days to hours.

- Production cloud—1,000 applications identified for migration. This hybrid cloud will support IBM's internal production applications and leverage both a private cloud instance and the architecture of the IBM Smart Business cloud (public cloud) with appropriate enterprise-level security mechanisms. IBM is examining its production application portfolio for applications that can best take advantage of the unique value proposition of cloud. The benefit of this cloud will be realized through improvements in infrastructure utilization, reduced support costs via increased automation, and workload standardization.

Conclusion

With its ability to accelerate service delivery and reduce IT operational costs, cloud computing is attracting interest across all industry sectors. For financial services firms in particular, cloud is also seen as a key enabler for business model innovation - cited by one third of respondents in this IBM survey. As the financial services industry faces up to increased competition in both existing and entirely new markets, the ability to innovate rapidly and at low cost will make cloud computing a vital element in the future IT delivery model.

Successfully adopting cloud computing will typically require a significant shift in IT planning and methodology. It will therefore be critical for financial services firms to carefully consider which of their workloads will benefit most from cloud delivery, and which of the three cloud delivery models—public, private, hybrid—will be the most appropriate in each case.

To assist you in defining your cloud adoption strategy, IBM has developed a cloud Computing Adoption Framework that will help you formalize your approach and create an effective strategic vision. IBM can also assist you in putting your plans into action, drawing on our significant experience of building cloud computing environments both for our own operations and for clients.

For more information contact the authors

Anthony Lipp
Global Strategy Leader, Banking & Financial Markets
anthony.lipp@us.ibm.com

Shanker Ramamurthy
General Manager, Global Banking & Financial Markets
shanker.ramamurthy@us.ibm.com

Jim Brill
Program Director, Global Financial Services Sector Marketing
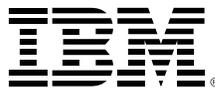jimbrill@us.ibm.com

Rich Esposito
Vice President, Workplace Services, IT Strategy Services
raespos@us.ibm.com

KC Goodman
Distinguished Engineer; CTO, IT Strategy & Architecture
kgoodman@us.ibm.com

To learn more about cloud computing at IBM, please visit the following Web site: **ibm.com/**cloud

References:

[1] IBM Global CIO Study 2009

[2] Source: Global Spending on cloud Computing: An Evolutionary Road Map for Financial Services", Tower Group, May 2, 2010

[3] IBM estimates based on field deployments

[4] The paper "Defining a framework for cloud adoption" is available to download at
ftp://public.dhe.ibm.com/common/ssi/ecm/en/ciw03067usen/CIW03067USEN.PDF

BZW03002-USEN-00