



Taking Advantage of Cloud Computing to Meet Today's Business Needs

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Highlights

Cloud computing offers reduced capital and operational expenses and delivers benefits in the following areas:

- ▶ A path to higher efficiency
- ▶ Agility in innovation and response
- ▶ Quality and dependability
- ▶ Increased security
- ▶ Efficiency in governance and standardization
- ▶ Time-to-value in delivery, consumption, and operation of IT services
- ▶ Transparency for clientele
- ▶ New opportunities for growth

The challenges of adopting cloud computing

Companies today deal with a high degree of uncertainty, expanded regulation, rapid technology innovation, shorter product cycles, and global competition. To remain competitive, businesses must drive more value from assets, improve decision making under volatile conditions, and increase agility to react rapidly to changes and to reconfigure their business.

These demands have forced enterprises to find new approaches to help maximize profitability and returns. *Cloud computing* can provide an enterprise with a way to manage costs and streamline operations with increased flexibility.

Although cloud computing might seem to be revolutionary, it is in fact based on the concepts of standardization, virtualization, and automation. Cloud computing is made up of the foundational infrastructure and can encompass all of the layers in the IT stack, including middleware and applications. These core building blocks and the concept of cloud computing are being embraced by enterprises regardless of their size, industry, or geographic affinities. Many enterprises that are adopting cloud computing are trying to understand how to benefit from this technology while addressing the following challenges:

- ▶ How do we align business and IT processes and standards, while when keeping in mind security and regulatory standards?
- ▶ How do we provide governance and organizational models that are defined in terms of developing, delivering, and managing enterprise services rather than managing devices?
- ▶ How do we complete a rapid and cost-effective analysis of our current physical environment and application portfolio? And then how do we develop a tactical and strategic roadmap for our transition to an enterprise delivery model that takes advantage of cloud computing?
- ▶ How do we migrate our current workloads into the cloud or transform them to take advantage of the capabilities of cloud?

As with any new technology, the biggest impact comes from the opportunity for growth. Cloud computing promises a path to higher efficiency, agility, quality, security, governance, standardization, and time-to-value in the delivery, consumption, and operation of IT services, all at reduced capital and operational expense. The potential of cloud computing is, however, easily matched by the challenge and the effort to transform traditional IT to a cloud model. IBM SmartCloud solutions can help you meet the challenges of adopting cloud computing within your enterprise.



Making cloud computing beneficial for your enterprise

When considering cloud computing as a differentiator for your enterprise, focus on the key strategy, planning, and deployment solutions that are listed in Table 1.

Table 1 Possible cloud-computing solutions

Issue	Possible solution
Ensure that IT responds rapidly to support business innovations.	Develop modularized cloud applications that enable control of core capabilities and that procure commodity capabilities from external providers.
Expose the capabilities of the enterprise to a larger clientele.	Develop cloud services for external clients and users; incorporate a cloud-based charge-back function and processing.
Contain the cost of building, testing, and provisioning applications.	Provide self-service capabilities, speed of automated provisioning in the cloud model, and application virtualization for testing.
Use existing capabilities that are still a commodity.	Develop modularized cloud applications that procure commodity capabilities from external providers.
Ensure that current IT skills, budget, and resources match the need with the new business models.	Provide pay-for-use, speed of provisioning, elasticity, and sharing of resources through multitenancy.
Address periods of low resource usage that are related to high seasonal demand for IT computing resources by the business.	Provide rapid provisioning that is enabled by the cloud model, pay-for-use (or internal utility model), and application virtualization.
Provide large compute demand for business needs.	Develop the application smarts to take advantage of the inherent scalability of cloud.

Successful cloud-computing implementations

The economy is shifting, customers are changing, and expectations on your business can seem to be a moving target. To keep up with this constant current of change, understanding service is key.

Although several of the initial successes with cloud computing included the optimization of the infrastructure, many enterprises are extending this optimization to deliver new business models. These new models include creating services that are delivered through the cloud. By deploying technology as services, you have the flexibility to use only those resources that are needed for a particular task, which prevents the need to own idle computing resources.

In 2012, the IBM Academy of Technology Cloud Conference presented and discussed 50 cloud-computing implementation case studies, which included the following successful samples of providing cloud technologies as services:

- ▶ When looking for a private cloud for deployment, an IBM client in a service provider industry wanted a cloud service provider vendor and framework that would enable them to provide the following services:
 - Partner-enabled cloud services that harness the power of the ecosystem to differentiate their brand and that drive profitable growth
 - Cloud services that are managed and delivered in a highly secure and automated way with an operation that scales while maintaining a low-cost structure
 - Monetizes networks, systems, and other resources that offer a diverse and compelling portfolio of attractively priced cloud services that are easy for clients to find, buy, and manage
 - Cloud services that are brought to market quickly and cost-effectively
 - A cloud service management solution that meets the performance, reliability, and scalability that is needed

The solution was delivered by using the Cloud Computing Reference Architecture (CCRA) and IBM SmartCloud™ Managed Backup assets of IBM Smart Private Cloud. By implementing this IBM solution, the client can provision 1000 virtual machines (VMs), which are single core VMs, that can be scaled up to 300 TB of provisional storage. The client can also start a differentiated, pay-as-you-go model, with virtual systems serviced at a data center in India that is based on IBM's best-in-class, rapid provisioning, automated, self-service cloud platform.

- ▶ An IBM cloud solution was deployed to enable a development and test system in IBM India Software Labs by using IBM Service Delivery Manager. The IBM India Software Lab consists of over 4,500 developers and more than 300 projects that are spread across 10 locations in India. Functional

requirements included virtualizing and enabling 80 percent of the existing server pool for rapid provisioning with an enhanced service catalog.

This implementation offered the following key benefits:

- Optimal utilization of the existing infrastructure
 - Elimination of existing business continuity issues
 - Automation of approval processes, saving time of multiple people
 - No initial investment cost
 - The introduction of a pay-per-allocation method
- IBM SmartCloud Enterprise Plus (SCE+) is a service offering that provides a scalable, secure, and resilient infrastructure. It integrates IBM hardware, software, and tools so that infrastructure resources can be rapidly provisioned when needed. Using resources on the shared SCE+ hosted cloud means minimal or no infrastructure to deploy, so that you can avoid up-front capital expenses and reduce overall operating costs.

SCE+ offers the following key business and technical benefits:

- Cost reduction
- Fast provisioning
- Service management
- Service execution

For more information about the SCE+ service offering, go to:

<http://www.ibm.com/services/us/en/cloud-enterprise/>

Cloud computing can enable new services and business models that provide opportunity for growth.

What's next: How IBM can help

IBM has one of the most complete portfolios of cloud offerings in the industry. Our full range of offerings span the continuum from designing and deploying to using cloud services. We offer infrastructure, platform, software, and business process as a service. IBM SmartCloud offerings and capabilities address private, public, and hybrid cloud delivery models, as illustrated in Figure 1.

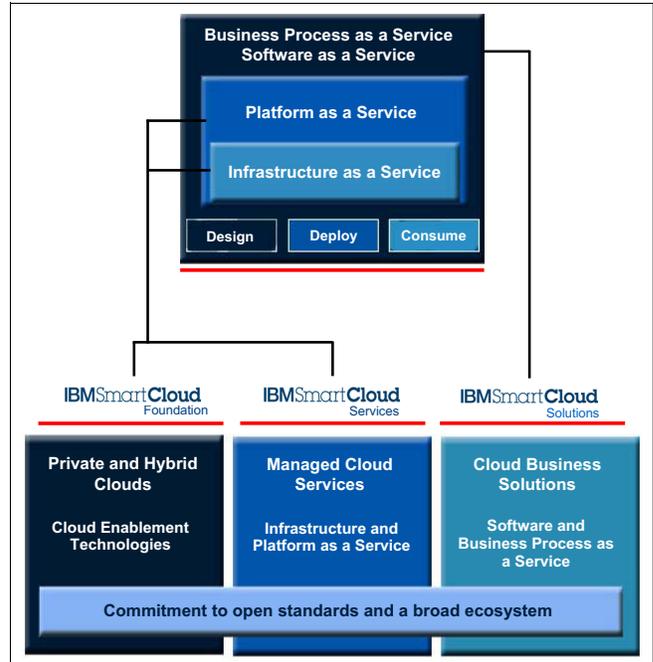


Figure 1 IBM SmartCloud offerings portfolio

The following IBM SmartCloud solutions can help you meet the challenges of adopting cloud computing within your enterprise:

- By using IBM SmartCloud Foundation offerings, you can align processes and standards and play for the transition to the cloud by providing an architecture for private and hybrid cloud development and deployment.
- With IBM SmartCloud Services, you can use cloud computing as a service for IT, providing service-oriented governance and organization models that are defined in terms of managing services rather than devices.
- IBM SmartCloud solutions, such as IBM SmartCloud for Social Business and IBM Smarter Cities®, IBM Smarter Commerce™, and Smarter Analytics family of offerings, provide software as a service (SaaS) solutions. IBM SmartCloud solutions provide increasingly flexible license models and business flexibility that increase growth and that you can use to adopt solutions quickly and efficiently.
- You can use the IBM Cloud Computing Reference Architecture to help you assemble and integrate products and services to develop and deliver workloads into the cloud.

Supporting the entire cloud portfolio is the IBM Cloud Computing Reference Architecture (CCRA), shown in Figure 2. CCRA provides a detailed blueprint of the architectural components of a cloud, including how to realize each component for cloud-scale efficiencies. This core intellectual asset helps both IBM and client teams assemble and integrate IBM products and services to develop and deliver cloud services.

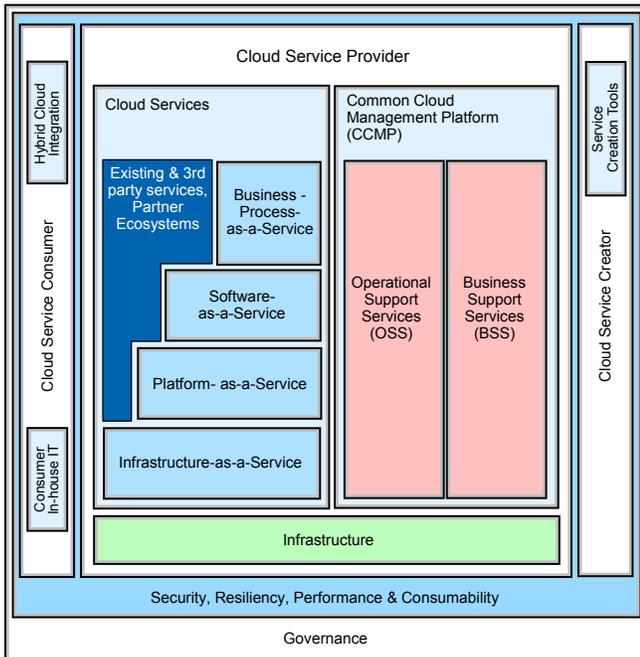


Figure 2 Cloud Computing Reference Architecture

The successful adoption of cloud computing by businesses is ultimately measured by the value that is enabled by the cloud rather than by the cost savings that is enabled by moving to the cloud. By employing IBM SmartCloud solutions, you can make a real, tangible impact on costs while improving flexibility.

As you consider your cloud-computing alternatives, IBM's available technology in cloud computing, its experience in deploying various types of clouds for customers, and its leadership in being a cloud service provider can provide a valuable asset to you.

Resources for more information

For more information about the concepts that are highlighted in the paper, see the following resources:

- ▶ IBM SmartCloud
<http://www.ibm.com/cloud>
- ▶ *Defining a framework for cloud adoption*
<ftp://public.dhe.ibm.com/common/ssi/ecm/en/ciw03067usen/CIW03067USEN.PDF>
- ▶ *Get started with cloud through the right business-based IT strategy*
<http://public.dhe.ibm.com/common/ssi/ecm/en/gbs03048usen/GBS03048USEN.PDF>
- ▶ *Getting cloud computing right*
<http://www.ibm.com/de/cloud/pdf/Gettingcloudcomputingright.pdf>
- ▶ Cloud Computing Central on IBM developerWorks®
<https://www.ibm.com/developerworks/mydeveloperworks/groups/service/html/communityview?communityUuid=c2028fdc-41fe-4493-8257-33a59069fa04>
- ▶ Frost and Sullivan: *All Clouds are Not Created Equal: A Logical Approach to Cloud Adoption in Your Company*
http://www.ibm.com/services/be/en/attachments/pdf/SmartCloud_Enterprise_-_IBM_-_Frost_and_Sullivan_Whitepaper.pdf

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