

## IBM Cloud Computing at a Glance

Amid a backdrop of global economic pressures and sweeping mandates for change, many businesses are looking to a new IT service delivery model called "cloud computing," which helps meet the business challenge of "How can I do more with less?"

Decades of technology acquisitions to fuel growing businesses have left enterprises facing a near breaking point in their IT systems. Some systems can't share information and workloads, servers are highly under-utilized and the cost of energy is becoming greater than the value of the systems the energy powers. In some cases, nearly 70 percent of companies' IT budgets can be devoted to managing, maintaining, securing and upgrading systems rather than building new capabilities. Cloud computing has the potential to change these economics dramatically.

IBM believes that most enterprises will begin to explore the cloud model as a means to optimize their own IT infrastructure and to leverage external public cloud services based on the characteristics of their workloads and their business needs. Businesses can leverage the cloud's massive scalability and collaboration capabilities to solve problems in ways that just weren't possible before.

◆ **IBM helps clients build their own cloud environment for internal and external use:** IBM supports the evolution of cloud-delivered technology through numerous hardware, software and services offerings, and continued investments in research and development. IBM helps clients drive new innovations in a safe, scalable and accessible way, keeping in mind best practices in Service-Oriented-Architecture, service management, virtualization, security, information on demand, application services and business process management.

**Cloud computing** is an emerging compute model for delivering IT-related capabilities as a service and promises dramatically better ease of use, economies of scale and much greater flexibility in sourcing and adapting to change. Virtualization, SOA, Software as a Service, request-driven provisioning are technologies that comprise cloud computing.

◆ **IBM delivers cloud services and software to be consumed by clients and partners directly:** IBM delivers an innovative and powerfully intuitive set of cloud-based business services and software designed to meet the essential needs of a business, no matter the size. These services include information protection and storage services, IT platform-as-a-service, IT infrastructure-as-a-service and a set of integrated collaboration services to dramatically simplify and improve the interactions organizations have with their customers and partners.

◆ **IBM has 13 cloud computing competency centers worldwide, to date:** The centers are designed to showcase IBM cloud computing infrastructures, applications and services capabilities through specific competency and training solutions, as well as offer additional services to clients. These centers are located in: Silicon Valley, California; Raleigh, North Carolina; Dublin, Ireland; Beijing, China; Tokyo, Japan; Johannesburg, South Africa; Sao Paulo, Brazil; Bangalore, India; Seoul, South Korea; Hanoi, Vietnam; Netherlands; and Wuxi, China.

◆ **The IBM/Google University Initiative helps boost students' knowledge:** The two companies partnered in 2007 to help university students gain the skills needed to program cloud applications. One of the initiatives main goals is to promote new software development methods, which will help students and researchers address the challenges of internet-scale applications in the future. With their combined resources, the two companies also hope to lower the financial and logistical barriers for the academic community to explore this emerging model of computing.

◆ **Work is already underway:** IBM continues to build an ecosystem of developers, partners, vendors and universities to further cloud computing and standards adoption. IBM also is working with hundreds of clients across industries to help them take advantage of cloud computing. Some examples include:

- Sogeti, a subsidiary of CapGemini, has a hybrid cloud with IBM that they use for cross-company collaboration sessions, called Jams.
- Wang Fu Jing Department Store in China is consuming several key cloud services directly from IBM, including supply chain management software for its vast network of retail store.
- The city of Wuxi, China, turned to IBM to help them deliver cloud computing services to hundreds of developers.
- Dozens of universities around the globe are turning to IBM to leverage cloud computing in many ways: to advance research initiatives; democratize education by offering free, open access to educational materials to

students remotely; and to work with industry professionals on research initiatives that can help solve some of society's biggest problems, including the search for more oil fields and cures for fast-spreading diseases.