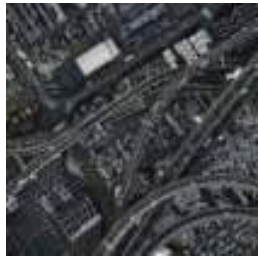# Cloud Computing and the Enterprise:
What does Cloud have to do with me?

Walter Falk

IBM, Executive Director
Cloud Business Development
wfalk@us.ibm.com

The world is getting smarter – more instrumented, interconnected, intelligent.

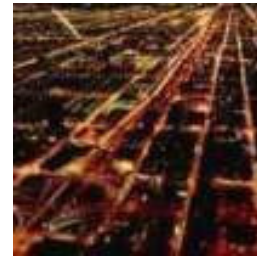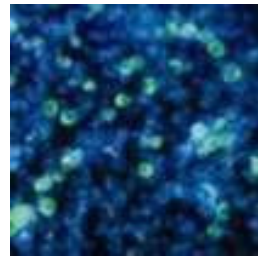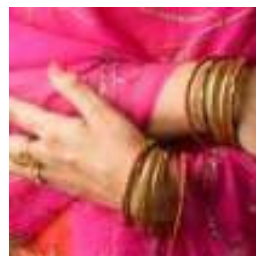|					
Smart traffic systems	Intelligent oil field technologies	Smart food systems	Smart healthcare	Smart energy grids	Smart retail
Smart water mgmt	Smart supply chains	Smart countries	Smart weather	Smart regions	Smart cities

2
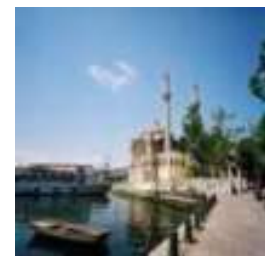
As the planet gets smarter the information explosion and rapid change create new challenges

10x

Digital data is projected to grow tenfold from 2007 to 2011

550 Million

Individuals in Social Networks today and by 2012… 1 out 2 people connected to the web

1 trillion

Number of devices will be connected to the Internet by 2011

83%

Percentage of CIOs who expect to face substantial change over the next three years

Standardization and Automation have changed many other industries become more efficient.

Telcos automate traffic through switches to assure service and lower cost.

Manufacturers use robotics to improve quality and lower cost.

Banks use automated teller machines to improve service and lower cost.

… breakthroughs like these are enabled by service management systems.

There are three ways to deliver IT capabilities
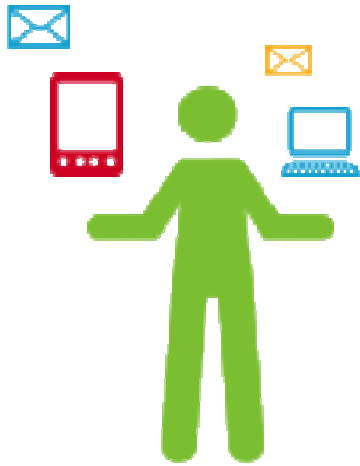
Custom build it – proprietary configuration, software, hardware and services

Build it with standard parts -- Pre-integrated systems and appliances

Provided as services…

…including cloud computing, a new model for delivering and consuming IT capabilities

Management and Energy Costs are out of control – A New Paradigm in IT is Needed……..it's called Cloud Computing

Voracious

Worldwide spending, $bn, on:

- Power and cooling
- Server management and administration
- New servers

Servers, installed base, m
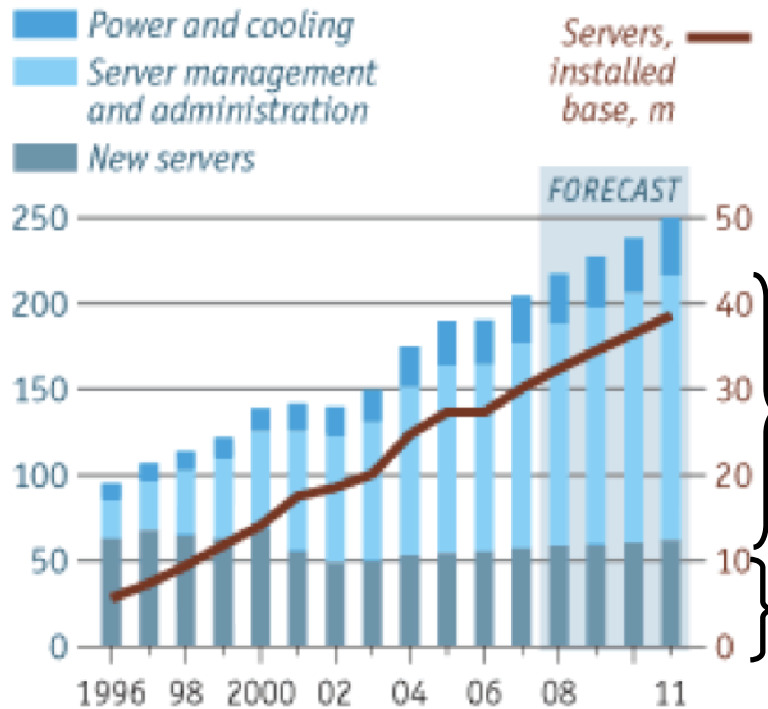
Global Annual IT Spending
Estimated US$B 1996-2010

Uncontrolled Management & Energy Costs

Steady CAPEX Spend
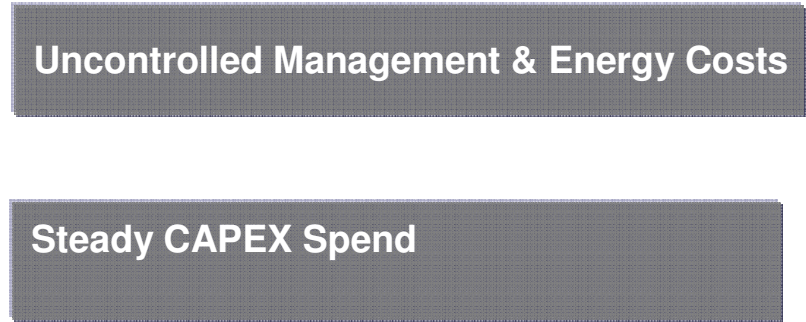
Source: The Economist, 10-23-2008

What is different about cloud computing?

Without cloud computing

Workload A
- Software
- Hardware
- Storage
- Networking

Service management

Workload A
- Software
- Hardware
- Storage
- Networking

Service management

With cloud computing

Workload A **Workload B** **Workload C**

- Software
- Hardware
- Storage
- Networking
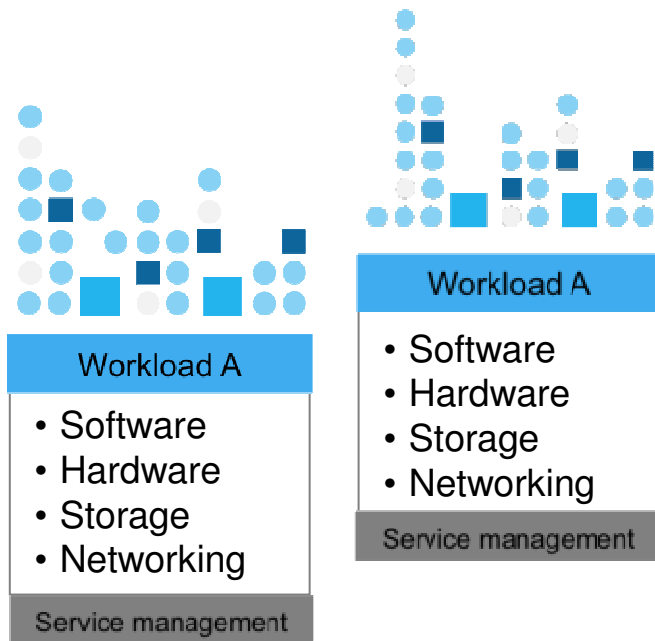
Service management
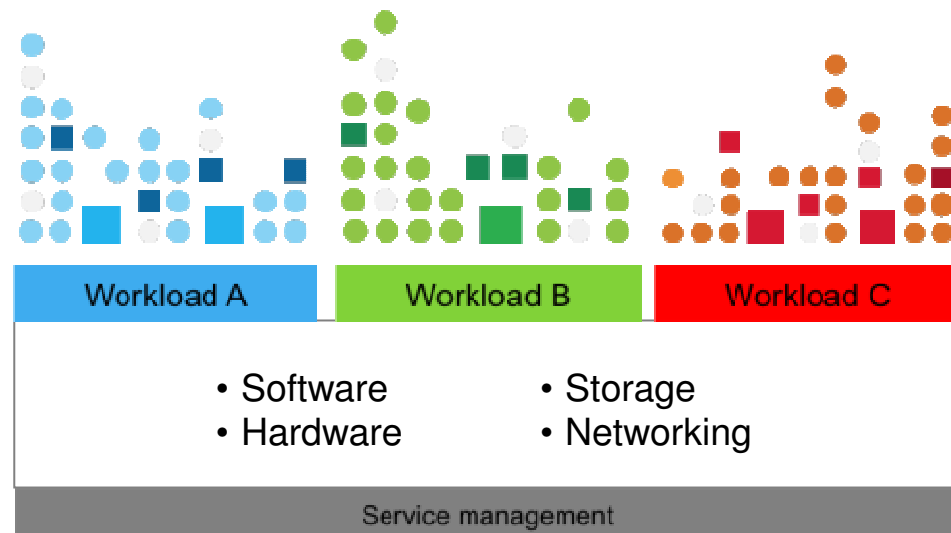
- Virtualized resources
- Automated service management
- Standardized services
- Location independent
- Rapid scalability
- Self-service

Gartner's Latest Take on Cloud

Figure 1. Hype Cycle for Cloud Computing, 2010
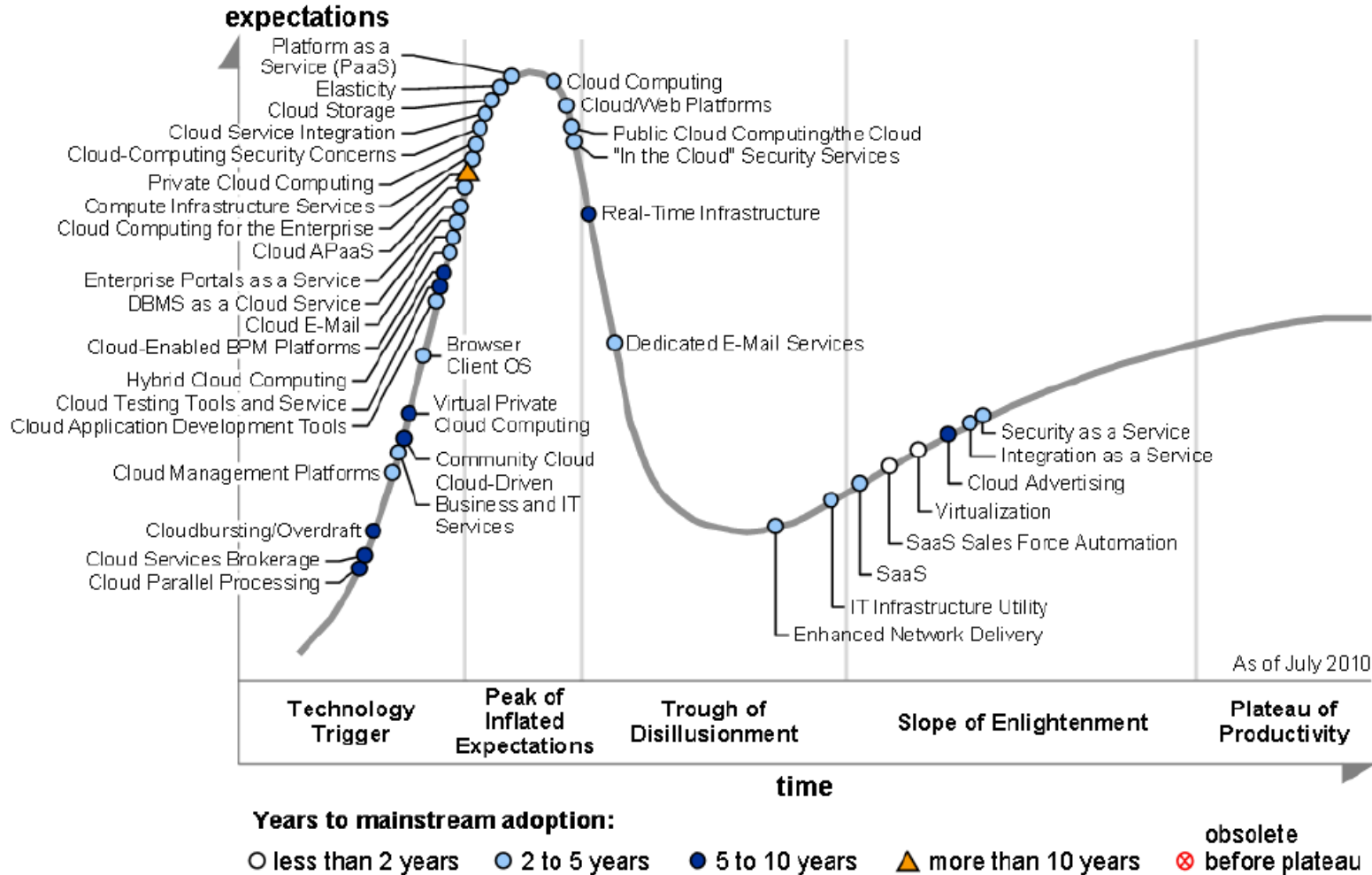
Source: Gartner (July 2010)

8

IT benefits from cloud computing are real

Results from IBM cloud computing engagements

Increasing speed and flexibility	Test provisioning	Weeks	Minutes
	Change management	Months	Days/hours
	Release management	Weeks	Minutes
	Service access	Administered	Self-service
	Standardization	Complex	Reuse/share
	Metering/billing	Fixed cost	Variable cost
Reducing costs	Server/storage utilization	10–20%	70–90%
	Payback period	Years	Months

SOURCE: Based on IBM and client experience.

Businesses that implement cloud computing are seeing significant business results

Reduced IT labor cost by 50 percent in configuration, operations, management and monitoring

Improved capital utilization by 75 percent, significantly reducing license costs

Reduced provisioning cycle times from weeks to minutes

Improved quality, eliminating 30 percent of software defects

Reduced end user IT support costs by up to 40 percent

Simplified security management

Companies have different motivations for leveraging cloud

Risk & Compliance	Employee Productivity	Time to Value	Analytics & Security
Bank of Tokyo-Mitsubishi deploys IBM private cloud to centralize desktop management via enterprise class data center. Greater remote flexibility without sacrificing control.	Enable collaboration among worldwide employees, network of customers, partners and suppliers. IBM LotusLive has 18 million users in 99 countries.	Creates ecosystem for PayPal third-party developers. Reduces developer effort to deploy a work environment with seamless PayPal Test Sandbox access.	Design and demonstrate secure cloud infrastructure for defense and intelligence networks; insights about cyber attacks, network, system or application failures, while automatically preventing disruptions.

Cloud Computing and Open Standards

Standards Taxonomy: *Types of Standards*

Cross - Cloud

SaaS   PaaS   IaaS

Across Vendors within a cloud

Cloud to Enterprise

Enterprise

Within an Enterprise
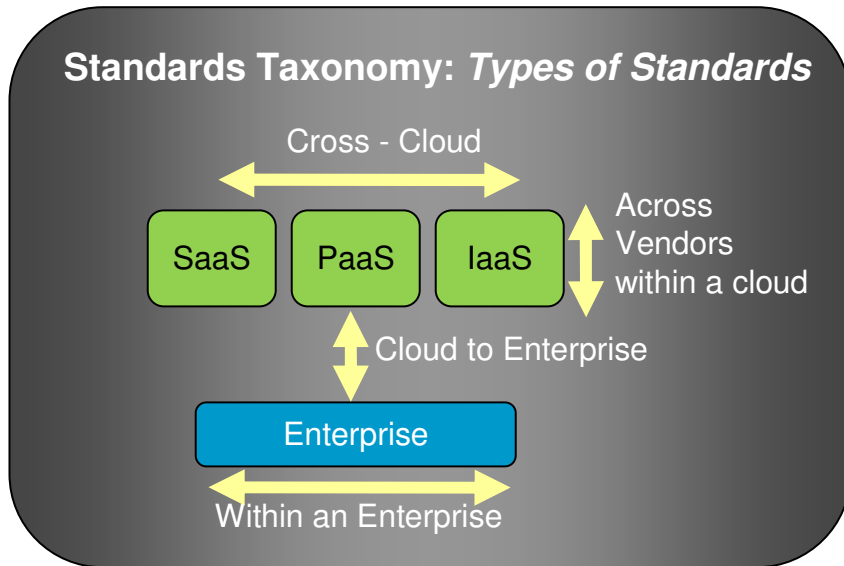
Source: Cloud Computing Use Case Group, www.cloudusecases.org

- Standards address inhibitors to cloud adoption including security, vendor lock-in and portability.

- In most cases, existing IT and SOA standards apply to the cloud and should be reused.

- Recognize that cloud standards are an emerging space requiring attention to lead, monitor or disrupt appropriately.

Management

Virtualization

API

SLM\SLA

Network

Storage

Security

Industry Verticals

IBM Cloud Evolution

1Q 2009

- LotusLive.com collaboration services
- Test Cloud and cloud consulting
- Established SaaS partner program for IBM Software
- IBM client survey and proof-of-concepts validate "private cloud" requirement

June 2009

- **IBM "Smart Business"** portfolio based on workloads and delivery choices (incl. desktop and development and test)

Oct. 2009

- Analytics, storage and e-mail offerings
- New Cloud consulting services
- Open beta for Development and Test on the IBM cloud

1 Q 2010

- LotusLive with "Click to Cloud"
- Academic Skills Cloud
- **Smart Business Dev/Test on IBM Cloud.**
- Drive ecosystem of partners, ISVs, and VCs to IBM Cloud

2H 2010

- Increase number offerings on the "IBM Cloud" for enterprise workloads
- Advance capabilities for managing hybrid service delivery environments
- Expand HW Platform Cloud support
- Enhanced security & resiliency options
- Compliance reporting options & Capacity planning
- Analytics and Industry Cloud Services

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IBM Cloud Strategy, Platform, and Deployments

IBM Cloud Computing Strategy is focused on;

- Workload-optimized offerings & components
- Unified service management across deployment options
- Infrastructure & platform services to differentiate IBM in the enterprise market segment
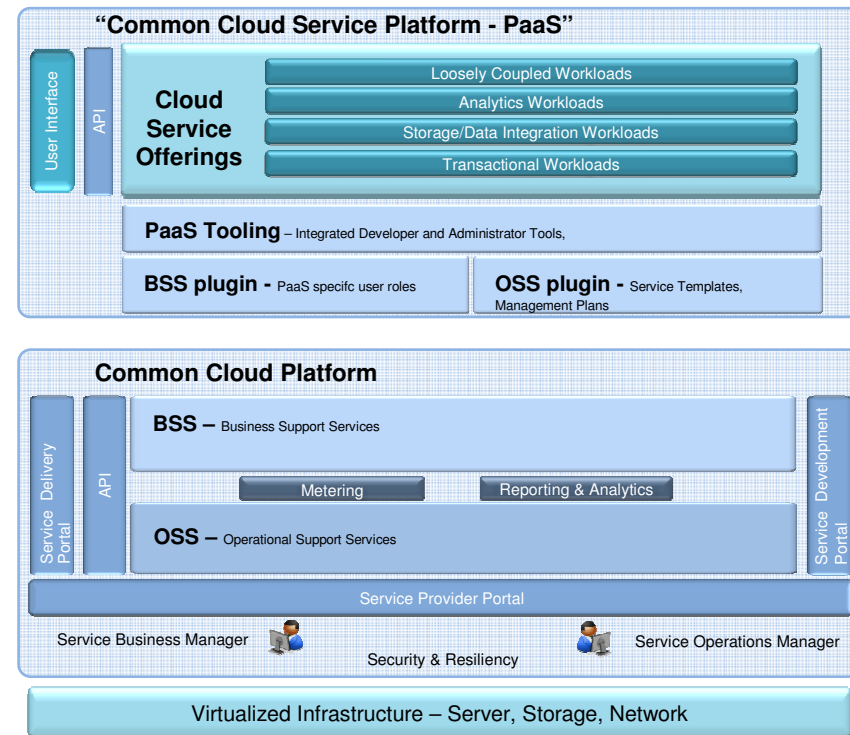- Optimized Analytics solutions
- Industry vertical services together with ISVs and BPs
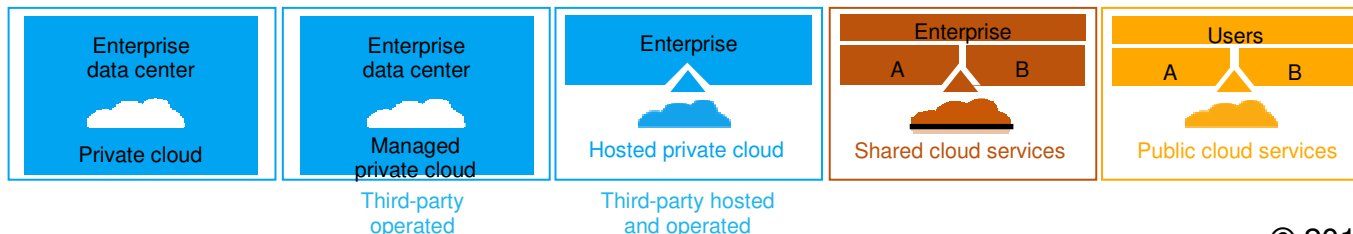- Business applications suite primarily via Lotus

Four Categories of Offerings from across the Brands:

- IBM Smart Business on the IBM Cloud (Public Cloud Services)
- IBM Smart Business Cloud (Private Cloud Services)
- IBM Business and Technology Consulting Services
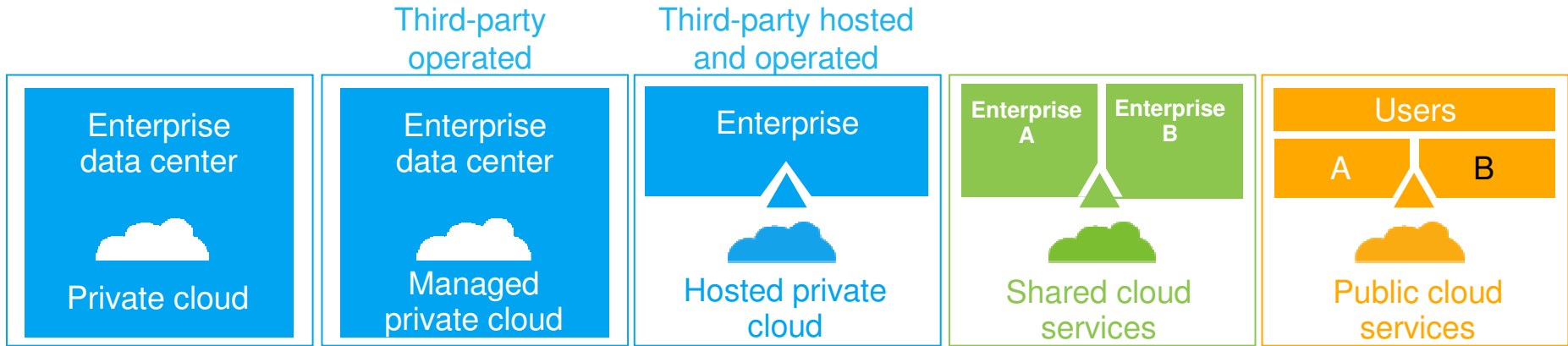- IBM Software and Hardware Technologies

IBM Cloud Platform

"Common Cloud Service Platform - PaaS"

User Interface | API

Cloud Service Offerings
- Loosely Coupled Workloads
- Analytics Workloads
- Storage/Data Integration Workloads
- Transactional Workloads

PaaS Tooling – Integrated Developer and Administrator Tools,

BSS plugin - PaaS specifc user roles

OSS plugin - Service Templates, Management Plans

Common Cloud Platform

Service Delivery Portal | API | Service Development Portal

BSS — Business Support Services

Metering | Reporting & Analytics

OSS — Operational Support Services

Service Provider Portal

Service Business Manager | Service Operations Manager

Security & Resiliency

Virtualized Infrastructure – Server, Storage, Network

Available in delivery models optimized to client and/or industry requirements

Enterprise data center	Enterprise data center	Enterprise	Enterprise	Users
			A B	A B
Private cloud	Managed private cloud	Hosted private cloud	Shared cloud services	Public cloud services
	Third-party operated	Third-party hosted and operated		

There is a spectrum of deployment options for cloud computing

	Third-party operated	Third-party hosted and operated		
Enterprise data center ☁ Private cloud	**Enterprise data center** ☁ Managed private cloud	**Enterprise** ☁ Hosted private cloud	**Enterprise A** / **Enterprise B** ☁ Shared cloud services	**Users** / **A** **B** ☁ Public cloud services

◀ **Private**
IT capabilities are provided "as a service," over an intranet, within the enterprise and behind the firewall

Hybrid
Internal and external service delivery methods are integrated

Public ▶
IT activities / functions are provided "as a service," over the Internet

Workloads ready for cloud computing

Analytics
- Data mining, text mining or other analytics
- Data warehouses or data marts
- Transactional databases

Business services
- Customer relationship management (CRM) or sales force automation
- E-mail
- Enterprise resource planning (ERP) applications
- Industry-specific applications

Collaboration
- Audio/video/Web conferencing
- Unified communications
- VoIP infrastructure

Desktop and devices
- Desktop
- Service/help desk

Development and test
- Development environment
- Test environment

Infrastructure
- Application servers
- Application streaming
- Business continuity/ disaster recovery
- Data archiving
- Data backup
- Data center network capacity
- Security
- Servers
- Storage
- Training infrastructure
- Wide area network (WAN) capacity

Source: IBM Market Insights, *Cloud Computing Research*, July 2009.

Public and Private Clouds are preferred for different workloads

Top private workloads

- Data mining, text mining,
- Analytic workloads in general
- Data warehouses or data marts
- Transactional databases
- Industry-specific applications
- ERP applications
- Test loads for proprietary configurations

Top public workloads

- Development and Test
- Infrastructure for training and demonstration
- Desktop
- Audio/video/Web conferencing
- Service help desk
- Storage
- Infrastructure as a Service

Database and proprietary workloads emerge as most appropriate

Infrastructure workloads emerge as most appropriate

Source: IBM Market Insights, *Cloud Computing Research*, July 2009. n=1,090

IBM

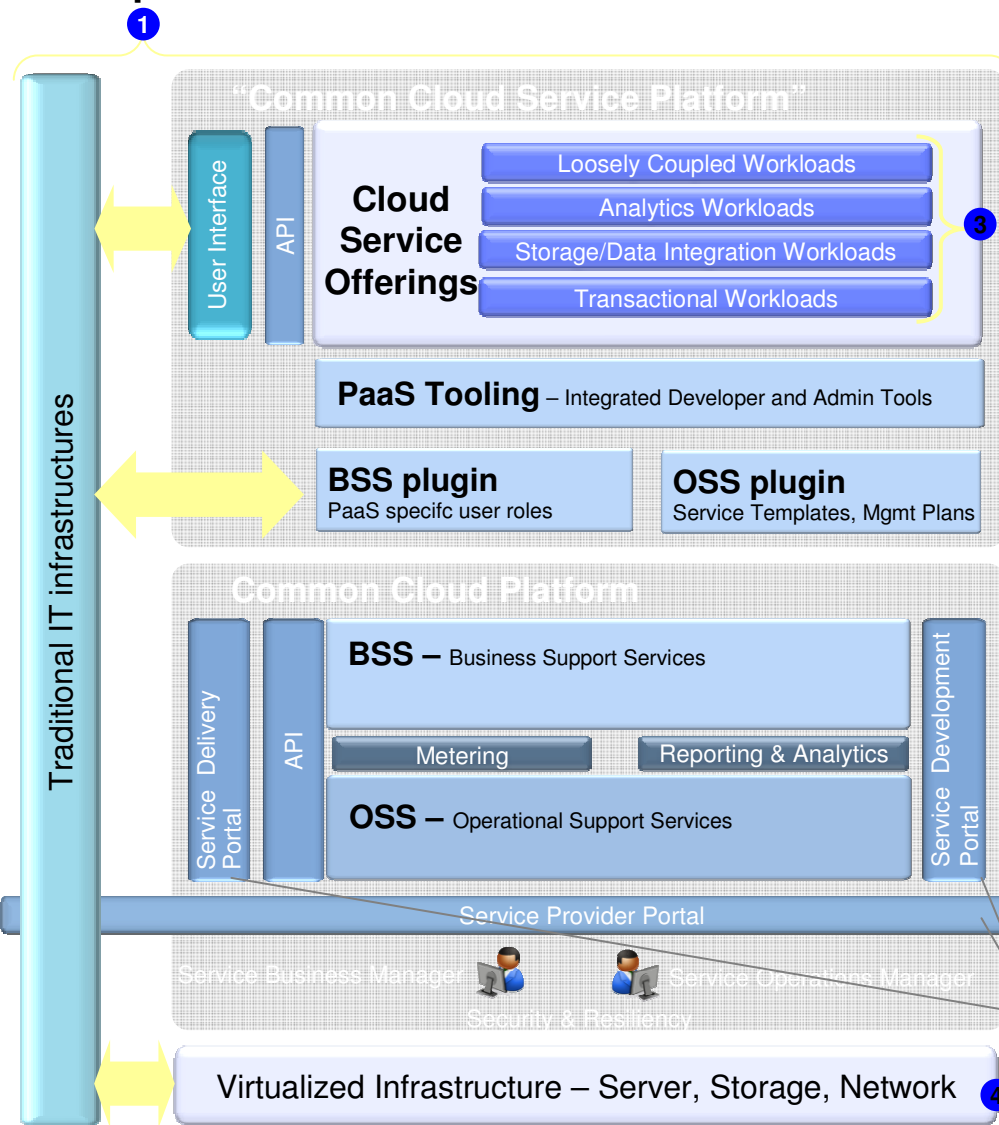# A Common Cloud Platform from IBM across deployment options
Based on Business & Tech Requirements

Business Requirements drive Service Offering Patterns

- Customers using cloud computing to supplement traditional IT
- Need consistent capability to monitor and control heterogeneous components across traditional IT and cloud
- Loosely coupled workloads emerging
- Analytics, app. dev, collab/e-mail are among the largest workloads

Technical Requirements drive IT Management Patterns

- Trust, security, availability, SLAs top adoption factors for cloud
- Internal/external cloud interoperability a major concern for enterprises
- Self service paradigm to manage clouds using a portal requires robust and easy to use service management solution

①

"Common Cloud Service Platform"

User Interface | API

Cloud Service Offerings

- Loosely Coupled Workloads
- Analytics Workloads
- Storage/Data Integration Workloads
- Transactional Workloads

③

PaaS Tooling – Integrated Developer and Admin Tools

BSS plugin
PaaS specifc user roles

OSS plugin
Service Templates, Mgmt Plans

Common Cloud Platform

Traditional IT infrastructures

Service Delivery Portal | API

BSS – Business Support Services

Metering | Reporting & Analytics

OSS – Operational Support Services

Service Development Portal

Service Provider Portal

Service Business Manager | Service Operations Manager

Security & Resiliency

Virtualized Infrastructure – Server, Storage, Network **④**

① **Most enterprises will have hybrid environments**
- Licensing and security will need to span traditional IT, private and public clouds

② **Portal is key to access catalog of services and to manage security/ access services**

③ **Workloads based framework to define cloud service offerings**
- Identify workloads to optimize through pilots to evaluate for business value and differentiation

④ **HW, SW and Services to set up virtualized infrastructures – a component supply opportunity**

②

IBM

IBM Cloud Portfolio
Software and Hardware Technologies for Cloud Computing

Business Process-as-a-Service

Software-as-a-Service

Middleware
- WebSphere Application Server Hypervisor Edition
- WebSphere Cloudburst Appliance
- CastIron Appliance
- DB2
- Informix Enterprise Server
- System Z Solution Edition for Cloud Computing

Analytics
- Cognos 8 Business Intelligence

Service Management & Security
- Tivoli Service Automation Manager
- Virtual Server Security for VMWare
- Rational Quality Manager
- Rational AppScan

Development Tooling
- Rational Software Delivery Services
- Rational Asset Manager
- Rational System Architect
- Rational Requirements Composer
- Rational Project Conductor

Platform-as-a-Service

Server & Storage Systems
- System x with new ex5 technology
- Power Systems with POWER7
- System z
- Scale out NAS Storage Systems

Workload Optimized Systems
- IBM Cloudburst
- Smart Analytics System
- Information Archive

Infrastructure-as-a-Service

IBM

IBM Cloud Portfolio
Public and Private Cloud Services

Workload → *Deployment ↓*	Development & Test	Infrastructure Compute & Platform	Infrastructure Storage	Desktop & Devices	Analytics	Collaboration	Business Services
Smart Business on the IBM Cloud *Standardized services on the IBM Cloud*	**Smart Business Development and Test on the IBM Cloud**	**Smart Business Compute on the IBM Cloud** **Managed Security Services** **Tivoli Live**	Information Protection Services	**Smart Business Desktop on the IBM Cloud**		LotusLive LotusLive iNotes LotusLive Notes	BPM Blueworks **Smart Business Expense Reporting (GERS)**
	IBM Software on the IBM Cloud WebSphere Application Server, WebSphere sMash, WebSphere Portal, DB2, Informix Dynamic Server, Lotus Domino, Lotus Web Content Mgmt			**Smart Business End User Support**			
Smart Business Cloud *Private cloud services built and/or managed by IBM*	**Smart Business Development and Test Cloud**	Cast Iron	**Smart Business Storage Cloud**	**Smart Business Desktop Cloud**	**Smart Analytics Cloud**		

20

Business and Technology Consulting Services for Cloud Computing

Plan

- **Strategy and Change Services for Cloud Adoption***

- **Strategy and Change Services for Cloud Providers***

- **Cloud Rapid Assessment Tool** (no charge – online)

- **Cloud Exploration Workshop** (no charge)

- **Infrastructure Strategy and Design Services for Cloud Computing**

- **Resiliency Consulting Services**

- **Data Center and Facilities Strategy Services**

- **Data Center Family™ Solutions – Design Services**

- **Networking Strategy and Optimization**

Build

- **Testing Services for Cloud***

- **Implementation Services for Cloud Computing**

- **Security Consulting Services in Support of Cloud Computing**

- **Express Managed e-Mail Security and Express Managed Web Security**

Deliver

- **Resiliency Validation for Cloud Computing**

- **Virtualization Security Solutions** (from IBM Internet Security Systems)

- **Software Support Services – Enhanced Technical Support**

- **Managed Support Services – Managed Technical Support**

- **Software Support Services**

- **Hardware Maintenance Services**

- **Information Protection Services**

GBS Services
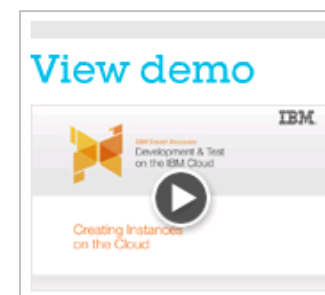
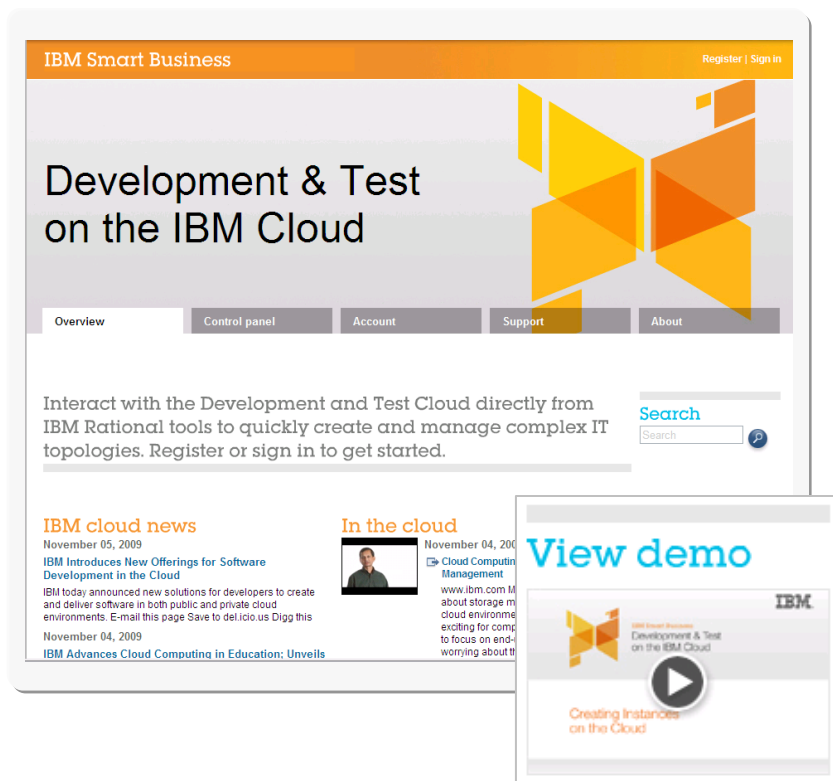# Smart Business Development & Test on the IBM Cloud

IBM's Public Cloud
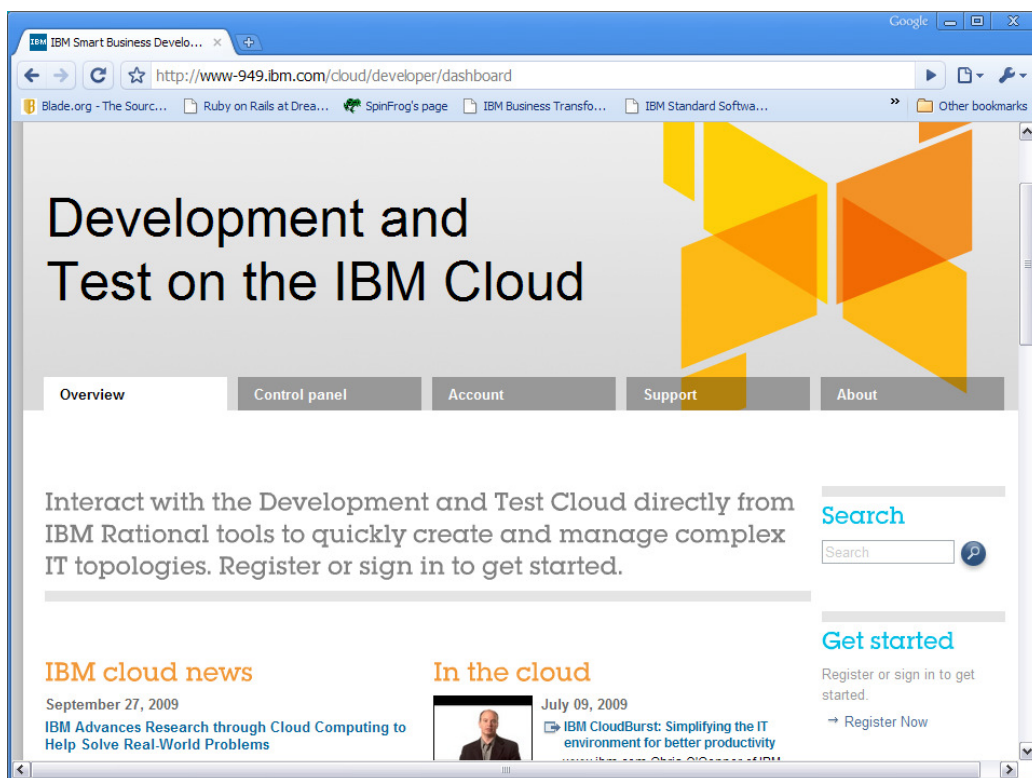
- **GA on May 25 in US**

- **Europe GA in 3Q**

Http://www.ibm.com/cloud

http://www.ibm.com/cloud/developer

IBM Smart Business Development and Test on the IBM Cloud provides you with an enterprise-class cloud environment

Our solution provides the following:

- Choice of seven virtual server configurations
- Choice of pre-configured software images
  - Linux® operating systems; Red Hat and Novell SUSE
  - IBM Lotus®, WebSphere®, DB2® and Informix® stacks
  - IBM Rational® Application Lifecycle Management software
- Option to add persistent storage (charged for per gigabyte [GB] per month)
- Support options including a Web-based forum for users to submit requests

Payment options:

- Pay-as-you-go option (per virtual machine hour usage charge)
- Reserved capacity package options
  - Reserve a pool of resources in units of 64 base processors for 6 or 12 months
  - Monthly fee plus discounted usage rates
- Network bandwidth charged for per GB transmitted. IP addresses per hour.

© 2010 IBM Corporation

Deploy a Service with a few mouse clicks

Your Development environment ready in a only minutes…

Step 1 Click the Add Instances button and select an Image

Step 2 View Image details and customize to your needs

Step 3 Watch your Instances provision and start managing

http://www.ibm.com/cloud/developer

Development and Test on the IBM Cloud

| Overview | Control panel | Account | Support | About |

Instances   Images

View Asset Catalog →

Find instance by tag name: [Tag name]

➕ Add instance

Name	▲	Ip Address	Host Name	Created on	Running	Status
db2dima		129.33.194.45	vm035.developer.ihost.com	Oct 3, 2009	4 Days	Active
dima-rsa		129.33.194.195	vm128.developer.ihost.com	Oct 3, 2009	4 Days	Active

db2dima [Change name]

Expires on 10/9/09 **2 Days** [Extend]

🔄 Reboot instance   ⊖ Delete instance   ⊕ Create image

25

Packages for the IBM Cloud

Option 1: Pay-as-you-go (VM/hour)

VM Component	32-bit Configuration			64-bit Configuration			
	Bronze	Silver	Gold	Bronze	Silver	Gold	Platinum
Virtual CPU @ 1.25GHz	1	2	4	2	4	8	16
Virtual Memory (GB)	2	4	4	4	8	16	16
Instance Storage (GB)	175	350	350	850	1024	1024	2048

Option 2: Reservation Bundles (OTC + Discounted VM/hour)

	6 month	12 month
Small (64 CPUs)		
Medium (512 CPUs)		
Large (1,920 CPUs)		

Cloud integration made easy with IBM Cast Iron

Complete Flexibility

Cast Iron Cloud2™

Physical Appliances

Virtual Appliances

Total Connectivity

Complete Reusability

TIP Exchange

TIP Development Kit

TIP Community

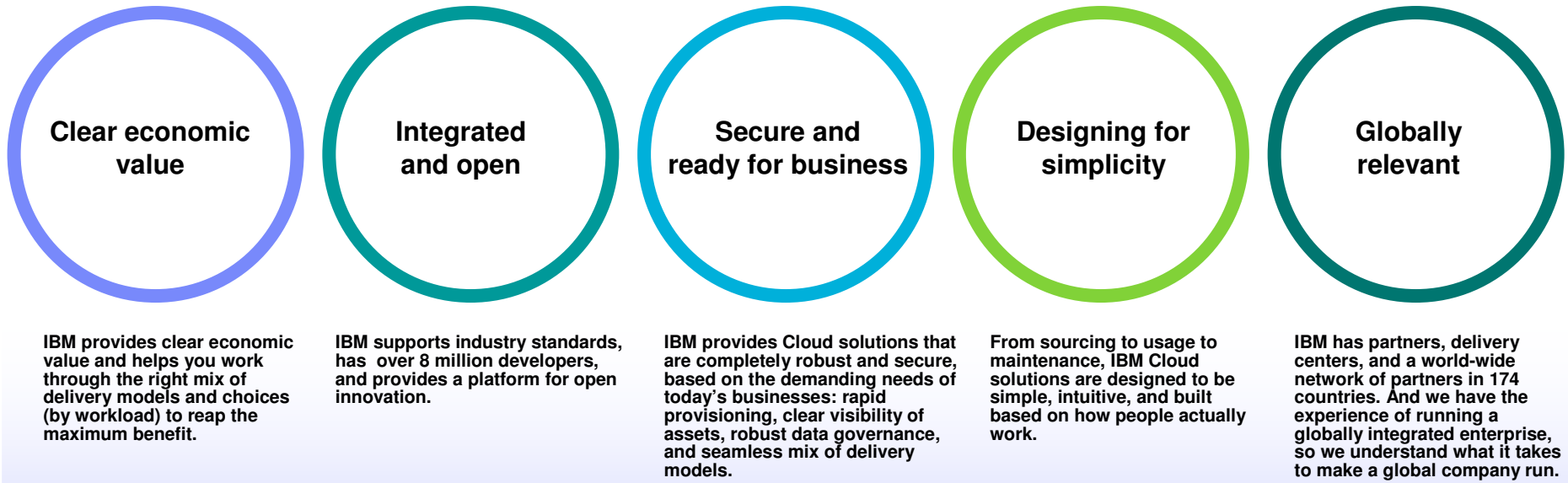## For All Types of Projects

UI Mashups

Process Integration

Data Migration

©2010 Cast Iron Systems, an IBM Company

© 2010 IBM Corporation

An ecosystem of IBM Business Partners is our way to provide additional client value

How we will differentiate IBM Cloud Computing

Clear economic value

Integrated and open

Secure and ready for business

Designing for simplicity

Globally relevant

IBM provides clear economic value and helps you work through the right mix of delivery models and choices (by workload) to reap the maximum benefit.

IBM supports industry standards, has over 8 million developers, and provides a platform for open innovation.

IBM provides Cloud solutions that are completely robust and secure, based on the demanding needs of today's businesses: rapid provisioning, clear visibility of assets, robust data governance, and seamless mix of delivery models.

From sourcing to usage to maintenance, IBM Cloud solutions are designed to be simple, intuitive, and built based on how people actually work.

IBM has partners, delivery centers, and a world-wide network of partners in 174 countries. And we have the experience of running a globally integrated enterprise, so we understand what it takes to make a global company run.

IBM Cloud Partner Ecosystem

Thank you!

For more information, please visit:

http://www.ibm.com/cloud

wfalk@us.ibm.com

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