

Cloud Computing – Hype oder Realität



Perception of Cloud Computing

The “next big thing” or “another fad”?



March 26, 2009

The Internet Industry is on a Cloud – Whatever That May Mean

“I have no idea what anyone is talking about. It’s really just complete gibberish. When is this idiocy going to stop?”

Larry Ellison, early 2009

Oracle’s upcoming software described as “Cloud Ready”

Larry Ellison, mid March 2009

A crisis of complexity. The need for progress is clear.



1.5x

Explosion of information driving 54 % growth in storage shipments every year.

70¢ per \$1

70 % on average is spent on maintaining current IT infrastructures versus adding new capabilities.

85 % idle

In distributed computing environments, up to 85 % of computing capacity sits idle.

Cloud Computing



Cloud computing is an emerging style of standardized, elastic, scalable, commodity based IT capability delivered dynamically as a service



*Smart service
delivery model*

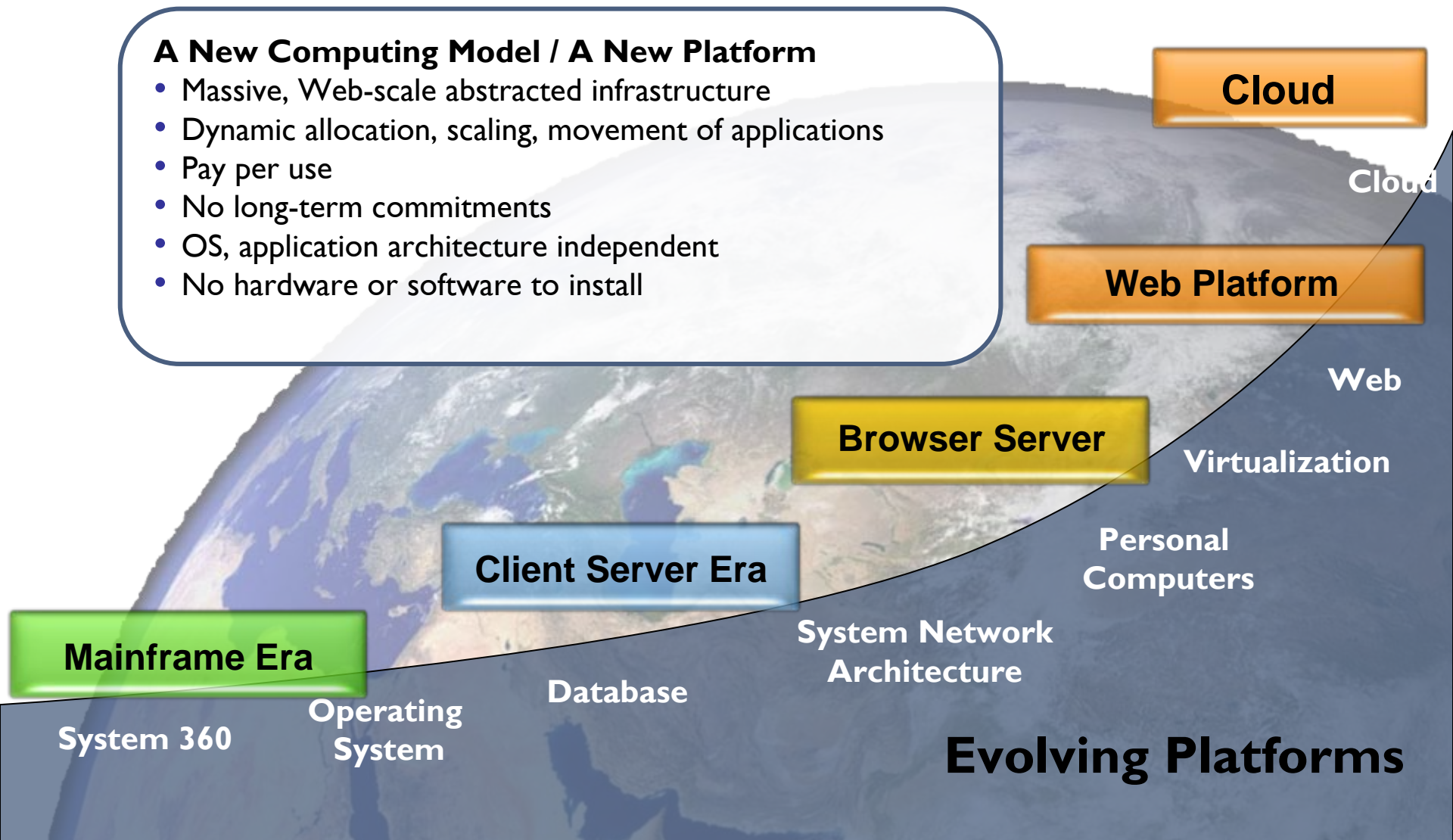
- **Access anywhere**
- **Always available**
- **Automatically scalable to demand**
- **Customer self service**



What is Cloud Computing?

A New Computing Model / A New Platform

- Massive, Web-scale abstracted infrastructure
- Dynamic allocation, scaling, movement of applications
- Pay per use
- No long-term commitments
- OS, application architecture independent
- No hardware or software to install



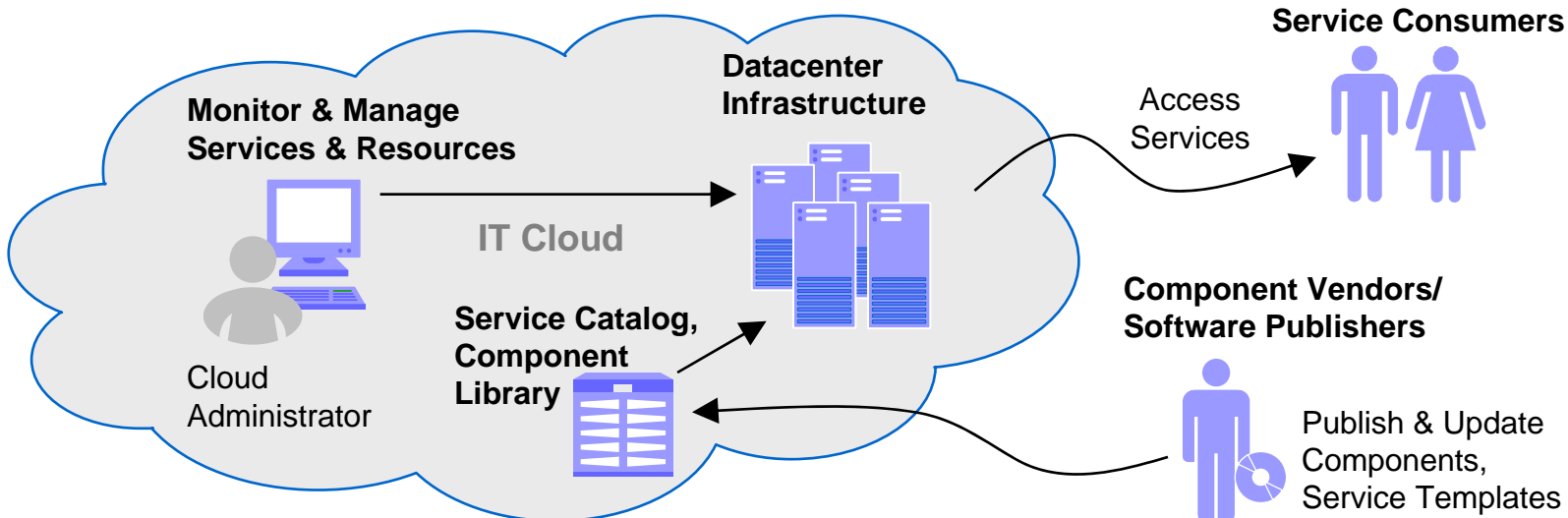
What is Cloud Computing?

A user experience and a business model

- Cloud computing is an emerging style of IT delivery in which applications, data, and IT resources are **rapidly provisioned** and provided as **standardized offerings** to users over the web in a **flexible pricing model**.

An infrastructure management and services delivery methodology

- Cloud computing is a way of **managing** large numbers of highly **virtualized resources** such that, from a management perspective, they resemble a single large resource. This can then be used to deliver services with **elastic scaling**.



Private Cloud Implementation Services

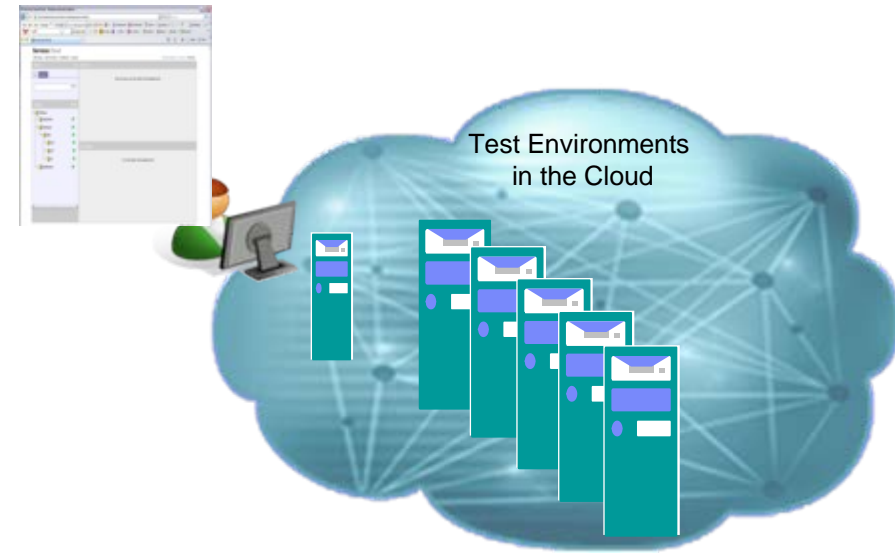
Current typical test environment with large number of test servers, little virtualization, and primarily manual allocation and configuration of individual test environments

Current

To Be



Service Request Portal

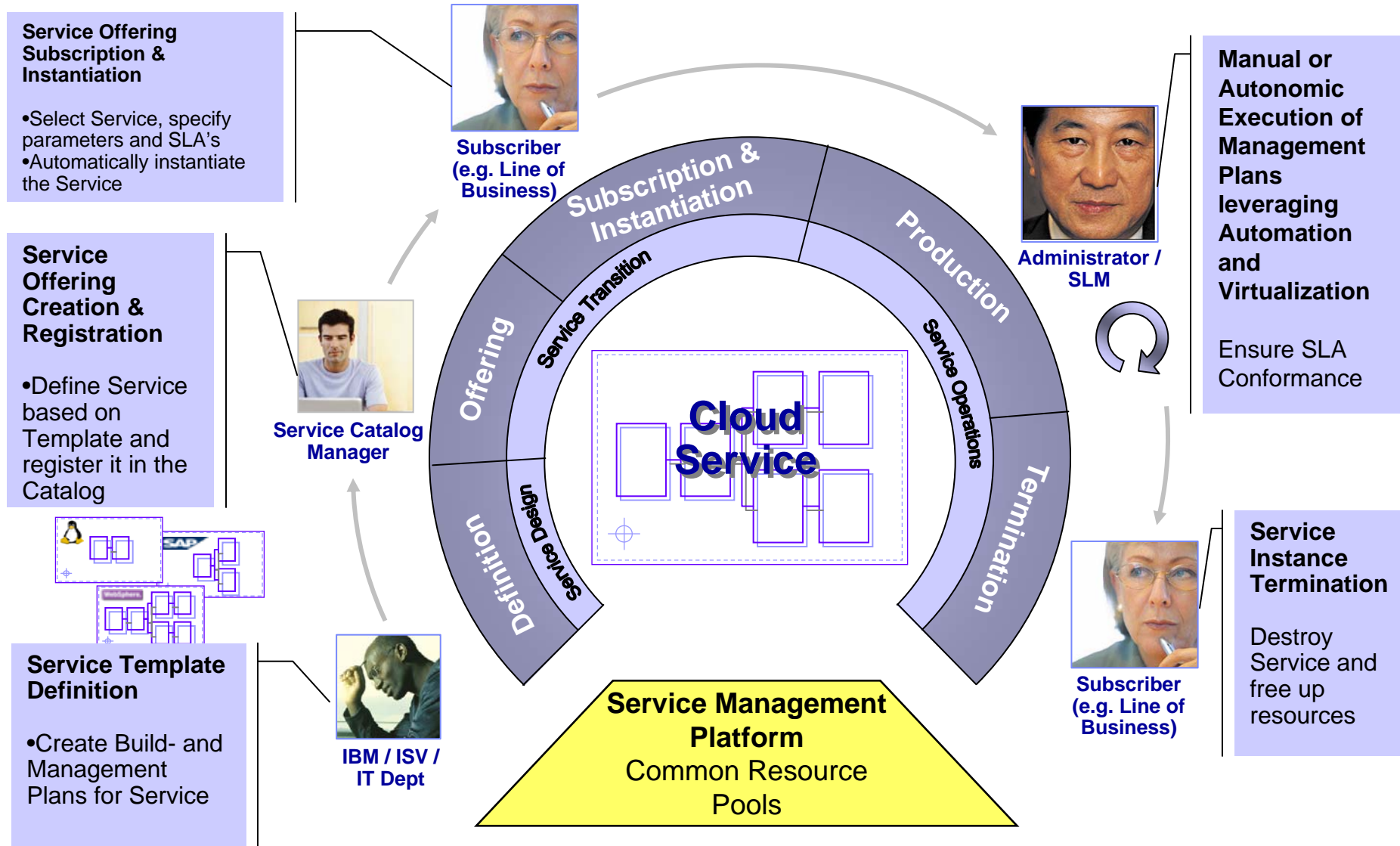


*Manual Scheduling,
Provisioning & Configuration*

*Automated Request Driven Scheduling,
Provisioning & Configuration of HW, OS, Middleware and Apps
Automated Tracking, Monitoring and De-provisioning*

Capital & Operational Expense Reduction, Defect Reduction, Increased Productivity & Innovation

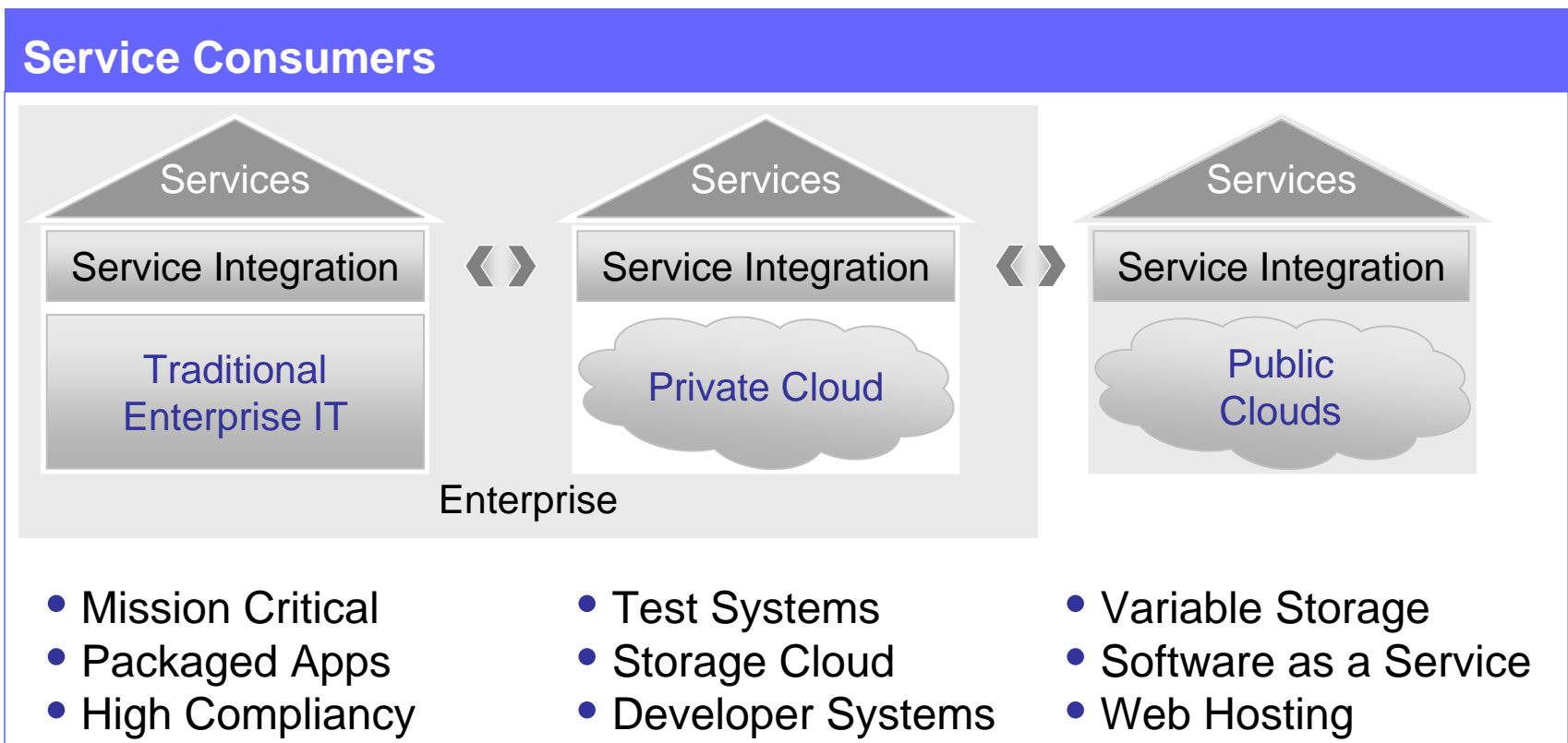
Lifecycle of a Cloud Service



The future: Three co-existing delivery models

Over time, IT workloads will move to Cloud delivery models as applicable for the client.

Examples:



A practical approach to cloud computing



Plan & Prepare

Condition your existing infrastructure for cloud

- Virtualize and automate existing systems
- Add service management, service catalog

Define cloud strategy & roadmap

- Assess cloud deployment models, service options and workloads
- Plan cloud strategy and roadmap
 - Choose initial project

Start with an isolated cloud deployment

- Choose low-risk workload such as test and development
 - Standardize applications and systems
 - Deploy self-service portal



Test & Deploy

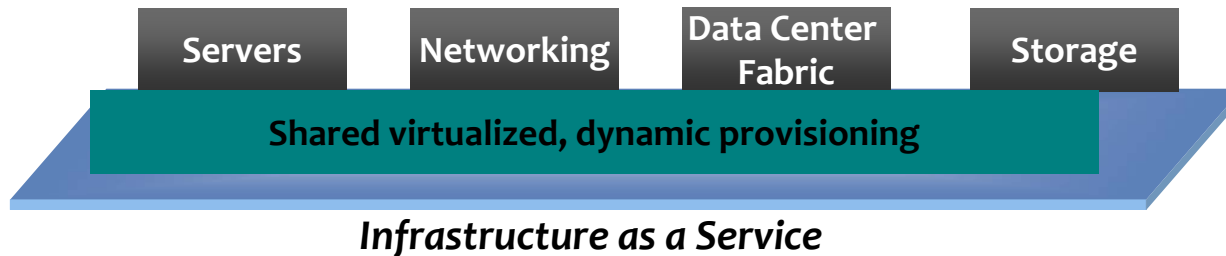
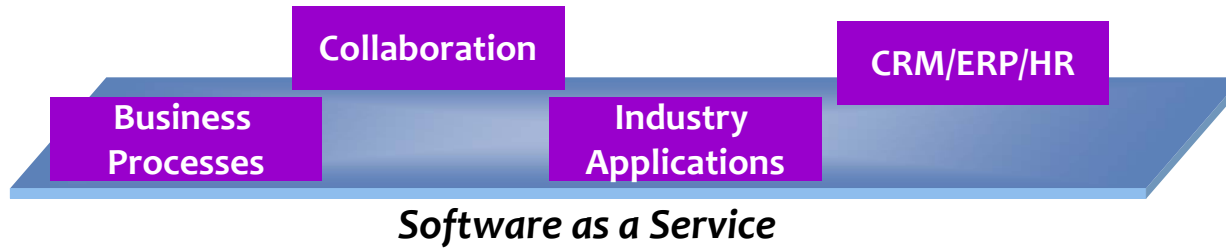


Extend & Evolve

Use trusted cloud services to supplement data center capabilities for:

- Infrastructure as a Service (IaaS)
 - Platform as a Service (PaaS)
 - Software as a Service (SaaS)

The layers of IT-as-a-Service



What workloads are we seeing move to Cloud delivery?

- 1 Single virtual appliance workloads**
- 2 Test and Pre-production systems**
- 3 Mature packaged offerings, like e-mail and collaboration**
(see <http://www.lotuslive.com>)
- 4 Software development environments**
- 5 Batch processing jobs with limited security requirements**
- 6 Isolated workloads where latency between components is not an issue**
- 7 Storage Solutions/Storage as a Service**
- 8 Backup Solutions/Backup & Restore as a Service**
- 9 Some data intensive workloads if the provider has a cloud storage offering tied to the cloud compute offering**

What workloads may not be ready for Cloud delivery today?

1 Workloads which depend on sensitive data normally restricted to the Enterprise

- Employee Information - Most companies are not ready to move their LDAP server into a public cloud because of the sensitivity of the data
- Health Care Records - May not be ready to move until the security of the cloud provider is well established

2 Workloads composed of multiple, co-dependent services

- High throughput online transaction processing

3 Workloads requiring a high level of auditability, accountability

- Workloads subject to Sarbanes-Oxley, for example

4 Workloads based on 3rd party software which does not have a virtualization or cloud aware licensing strategy

5 Workloads requiring detailed chargeback or utilization measurement as required for capacity planning or departmental level billing

6 Workloads requiring customization (e.g. customized SaaS)

IBM Research Computing Cloud (RC2)

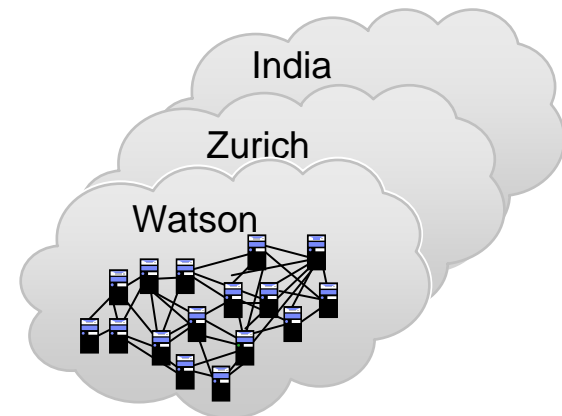
A living lab to advance Research strategies

1 Provides self service “on demand” delivery solution for research computing resources

2 Zero touch support for the full life cycle of service delivery

- Order creation
- Approval process
- E-mail notification
- Automated provisioning
- Monitoring

Research Compute Cloud (RC2)



Research Compute Cloud (RC2) interface showing a selection screen for server configurations. The user is logged in as aashai@us.ibm.com.

OS	Type	No. of CPUs	Memory(GB)	CPU Speed(MHz)	Storage(GB)	Quantity	Available	
<input type="radio"/> Windows	<input type="text" value="Xen-VM"/>	<input type="text" value="2"/>	<input type="text" value="2"/>	3200	<input type="text" value="20"/>	<input type="text" value="1"/>	19	Add to Cart
<input type="radio"/> AIX	LPAR	<input type="text" value="2"/>	<input type="text" value="2"/>	2100	<input type="text" value="20"/>	<input type="text" value="1"/>	41	Add to Cart
<input checked="" type="radio"/> Linux	Xen-VM	<input type="text" value="2"/>	<input type="text" value="2"/>	3200	<input type="text" value="20"/>	<input type="text" value="1"/>	19	Add to Cart
<input type="radio"/> LAMP	Xen-VM	<input type="text" value="2"/>	<input type="text" value="2"/>	3200	<input type="text" value="20"/>	<input type="text" value="1"/>	19	Add to Cart

Navigation buttons: [Prev](#) [Cancel](#) [Next](#)

IBM Technology Adoption Program (TAP) Cloud Deployment

Internal Deployment Example

What is TAP?

- IBM's new model for managing technology to drive innovation for our internal transformation & growth

Pain Points:

- Responding to rapidly changing business needs is difficult
- Deployment of infrastructures is mostly manual, slow, tedious, labor intensive, and error prone
- Servers are not available quickly and cost effectively for innovation

Solution:

Tivoli Provisioning Manager:

- Automated provisioning of Servers, Operating Systems and Middleware and Storage.

IBM Tivoli Monitoring:

- Integrated monitoring of performance and availability

WebSphere Portal and Process Server:

- Centralized, standard, and reliable interface



90.000 participants, 70 active innovations, 6 month graduation, 27 % became sold products,

The approach of IBM is based on its real world experience

IBM IT Transformation

- The IT transformation of IBM continues: our own IT investments over the past 5 years have delivered a cumulative benefit yield of \$ 4.1B

	1997	Today
CIOs	128	1
Host data centers	155	7
Web hosting centers	80	5
Network	31	1
Applications	15,000	4,700

Cloud delivered solution

- Save over \$ 3M annually through cloud, including TAP and RC2
- Self-service for 3,000 IBM researchers across 8 countries
- Internal cloud networks serving more than 100,000 professionals
- Relies on industry leading service management software
- Everything we do feeds into our strategies for our other Strategic Outsourcing accounts



Data Center Efficiencies

- Consolidation and virtualization - thousands of servers onto approximately 30 IBM System z™ mainframes
- Additional virtualization leveraging System p, System x and storage across enterprise
- Substantial savings being achieved in multiple dimensions: energy, software and system support costs



IBM Cloud Labs Mission & Customers

Drive leadership of IBM in cloud computing and act as core engine for all cloud activities



More than 200 ISVs use IBM to provide cloud services

China Cloud Center for Software Development and Test Customer Deployment Example

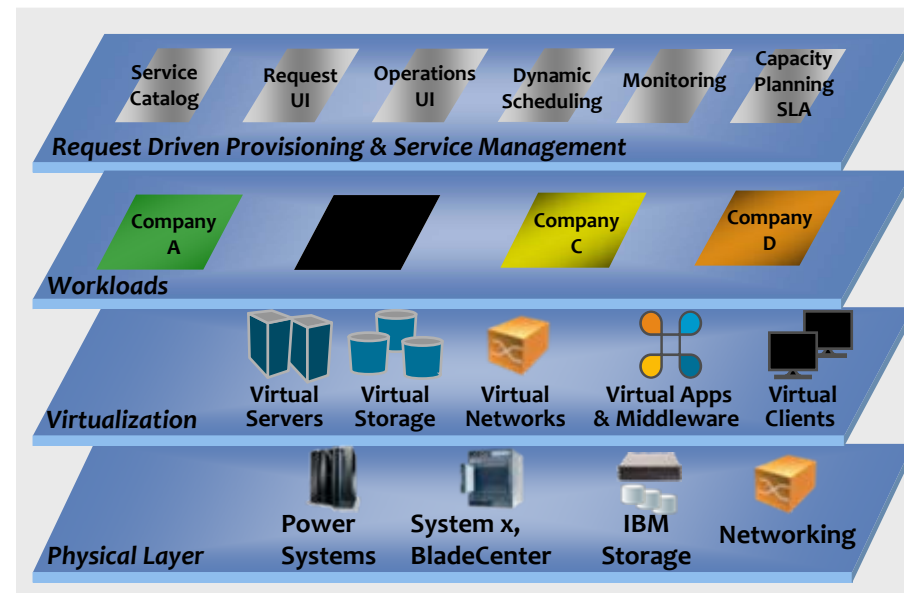


China Cloud Computing Center

- Built by IBM for municipal government of Wuxi, China
- Eleven parks to be created across China for software development
- Startups do not need to invest in own infrastructure to create innovations

Enabling Features

- Public cloud: Access through internet or secure connection
- Promotes software start-up company growth
- Accelerates development and test cycles through quick resource on-boarding
- Offers secure, network isolated environments (in minutes vs. weeks)
- Delivers backup/restore capabilities to protect customer assets



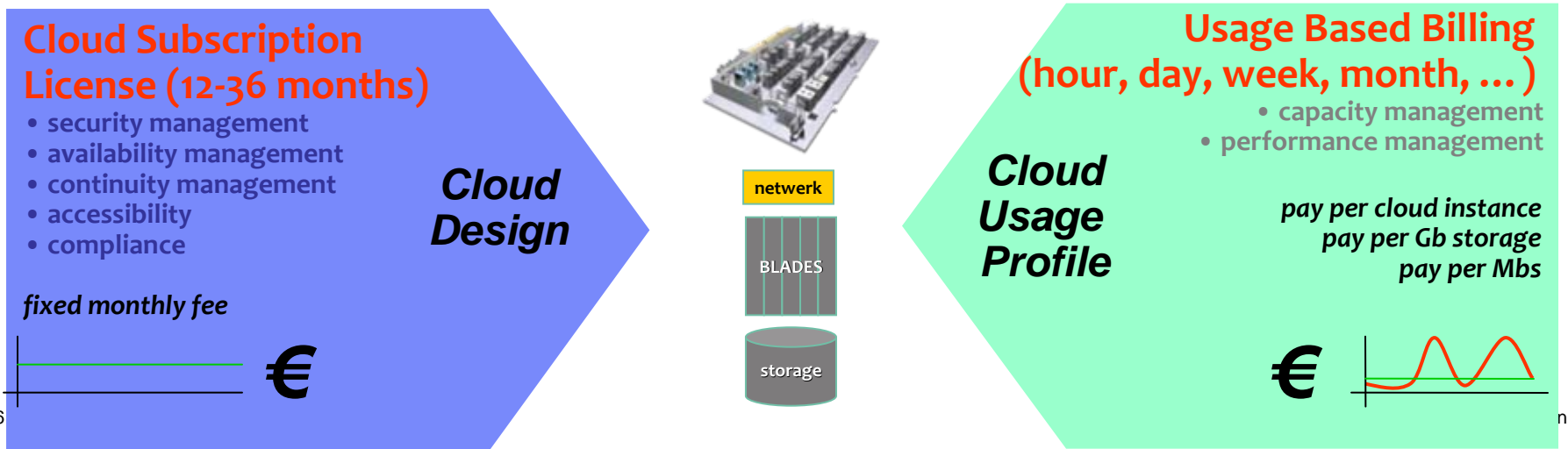
iTricity - Cloud Computing Centers

“IT as electricity”



Highlights

- Started in 2003 with Cloud Computing. Moved early 2008 to the IBM Blue Cloud
- See → http://www.itricity.nl/persberichten/ibm_white_paper.pdf
- Supported from IBM Cloud Labs in Dublin and USA
- First commercial Cloud Center in Benelux Region
- Focused on Public, Private, Hybrid and Compliant Cloud Computing
- Delivering **Infrastructure as a Service** to Enterprise Customers
- Offering services on Subscription and Usage based billing



Amazon/IBM Partnership (for EC2)

What we've announced: A partnership between IBM and Amazon Web Services that allows you to develop and deliver your applications in the cloud



Why it matters:

Easy to use. Start developing your applications on IBM software on Amazon Web Services in minutes.

No barriers. IBM is providing no charge development software on Amazon Web Services. Pay only infrastructure charges – as little as 10c a hour.

Pay as you go. Run production versions of leading IBM software products including WebSphere Portal and DB2 and pay hourly only for what you need, when you need it. Coming soon.

Portability. Use your existing IBM licenses for most IBM software products in the cloud or on premise—it's now your choice.

Looking Ahead

IBM is focussing on cloud computing

- **Solutions & services to reduce risk, improve services and lower cost**
 - ... enabling public, private and hybrid clouds;
requires new models for delivering and managing systems as pools of resources & a process management platform for cloud computing.
- **New & improved platforms & services for cloud**
 - ... enabling platform choice and service delivery flexibility ;
requires security, availability and scalability.
- **Driving open standards for cloud computing**
 - ... enables interoperability and federation among providers;
requires leadership and presence.
- **Working across the industry**
 - ... enables flexibility and choice for customers;
enabling more services to be delivered through public clouds, remote management of cloud services, federation of clouds

open cloud manifesto

dedicated to the belief that all clouds should be open



OVF

Cloud Standards Incubator



Investigating technologies for advanced cloud computing

IBM is delivering an ever-expanding portfolio of cloud consulting, cloud products & cloud deliver services, lowering cost for customers today and building platforms for tomorrow.

IBM Cloud Computing Services Offerings

A portfolio of leadership products and services for optimizing with cloud computing that continues to grow to support customers with cloud building and cloud delivered offerings.

Cloud Consulting



- Infrastructure Consulting Services for Cloud Computing
- Business Cloud Consulting Services
- Security and Resiliency Consulting Services for Cloud
- Resiliency Certification for Cloud Computing

Cloud Implementation



- Service Management for Cloud Computing
- Test and Developer Cloud Services
- Managed Security Services for Cloud Computing
- End User Cloud Services
- Scale out File Services

Cloud Delivered



- LotusLive
- Computing on Demand
- Information Protection Services
- Managed Data Protection for desktops and laptops
- DeveloperWorks on Amazon EC2

IBM is introducing 3 new choices to deploy workloads that matter to you for greater efficiency, productivity and control.

Smart Business Services – cloud services delivered.

- 1. Standardized services on the IBM cloud.**
- 2. Private cloud services, behind your firewall, built and/or run by IBM.**

Smart Business Systems – purpose-built infrastructure.

3. Integrated Service Delivery Platform



Analytics



Collaboration



Development
and Test



Desktop and
Devices



Infrastructure



Business
Services

IBM Portfolio - New Deployment Choices

	Analytics	Collaboration	Development and Test	Desktop and Devices	Infrastructure (compute / storage)	Business Services
Smart Business on the IBM Cloud Standardized services on the IBM Cloud		Lotus Live	Smart Business Development & Test on the IBM Cloud	Smart Business Desktop on the IBM Cloud; Smart Business Self Enablement Portal	Information Protection Services; Computing on Demand	BPM Blueworks Design tools; GER from MBPS
Smart Business Cloud Private cloud services, behind your firewall, built and/or managed by IBM	Smart Analytics Accelerator Powered by InfoSphere		Smart Business Test Cloud	Smart Business Desktop Cloud	Scale out File Services	
Smart Business Systems Pre-integrated, workload optimized systems	Smart Analytics System Powered by InfoSphere		IBM CloudBurst		IBM CloudBurst	Smart Business for SMB (backed by the IBM cloud)

Available Future

In summary...

- Cloud computing is a disruptive change to the way IT services are delivered
- IBM has a rich and solid Cloud Computing portfolio today
- With a strategy, Cloud computing is a huge opportunity for the CIO
 - Lower cost of delivery for some workloads
 - More responsive IT
 - Ability to optimize delivery using traditional, private cloud, and public cloud
 - Greater range of available services, applications, and capabilities
- Enterprises need a cloud strategy
 - IT Transformation Roadmap
 - Architecture and Governance
 - Selection of Workloads for Affinity for Cloud Computing
 - Mix of Delivery Models – private, public, hybrid
 - Choice of implementation partners
- The benefits of cloud computing are real
- IBM can help



Thank you!

**For more information, please visit:
ibm.com/cloud**