



## GS10 – Cloud Computing

*28. October 2009*

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# TMCC Boeblingen – New Design Center since July 22nd, 2009

## Customized client solutions by design

IBM Worldwide Design Center expands to meet client needs

Whether it is a brainstorming session about solution options or creating a high level design or assessing the clients' own design, the IBM Worldwide Design Center is here to help IBM clients.

Call upon the [IBM Worldwide Design Center](#) to help clients simplify their infrastructure, share more and more resources and move into a totally [dynamic infrastructure](#) that is well aligned with today's very dynamic nature of the business. The Center's team can also help win business with clients by offering tailored advice that will enable clients to provide seamless services internally and externally through [cloud computing](#).



[Melinda Miller](#)

Manager, WW Design Centers, IBM Systems & Technology Group, Mktg, Comm & Sales Spt



[Isabelle Maudru](#)

European Design Center & zTEC & BCoE manager, IBM Sales & Distribution, STG Sales



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[Oliver Gahr](#)

Manager Market Planning, Program Manager Dynamic Infrastructure, IBM Systems & Technology Group, Systems Software Development

Clients come to IBM for industry-leading expertise, and the IBM Worldwide Design Center has demonstrated our dedication to every client's success for ten years. This team of IBMers brings our company's solutions to life with its holistic approach to infrastructure modernization – servers, software, networking and applications to help clients optimize their IT environments.

## Hello Boeblingen

With three locations around the world in Poughkeepsie, Montpellier and Makuhari, the Design Center recently expanded its operations to meet more clients' needs with a center in Boeblingen, Germany. As one of the major IBM technology centers in Europe, the Boeblingen Lab is known for having the necessary skills to help IBM clients in Europe,

[http://w3.ibm.com/news/w3news/top\\_stories/2009/07/stg\\_swg\\_ww\\_design\\_center.html](http://w3.ibm.com/news/w3news/top_stories/2009/07/stg_swg_ww_design_center.html)

# Agenda

- **Cloud Computing Introduction**

- An Evolution from Known Technologies
- It's More than Virtualization
- Delivery Models – Private -> Public Clouds
- What Kind of Clouds Do Exist – Layers
- Software as a Service (SaaS) – Samples 'IBM LotusLive', 'IBM Smart Analytics Cloud'
- Platform as a Service (PaaS) – Sample 'WebSphere on Amazon Machine Images'
- Infrastructure as a Service (IaaS) – Samples 'Amazon EC2', 'IBM CloudBurst'

- **IBM CloudBurst**

- Minimum Configuration Components
- Further Configuration Options
- It's More Than Virtualization
- Details - Self-Service Catalog, Standardisation – Image Catalogue plus Automation, Reporting, further Functions + IBM Services
- Flexible Choices – Build-up Your Cloud Development & Test Environment
- Roadmap

- **IBM Tivoli Service Automation Manager**

- **Development & Test Cloud – IBM Boeblingen R & D – TSAM Based**

National Institute of Standards and Technology (NIST) – August 5, 2009

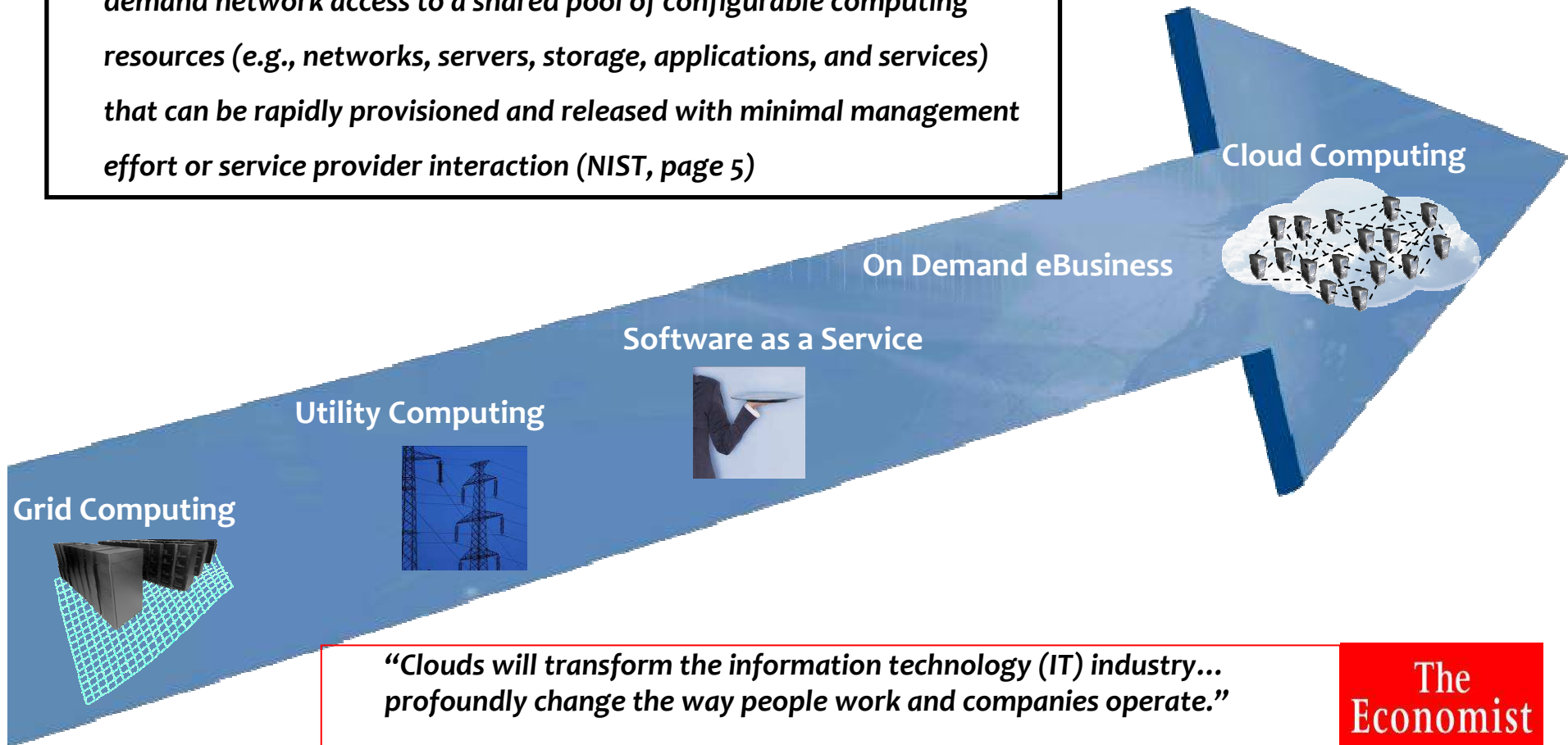
**Cloud Computing Use Cases**  
**White Paper**

Version 1.0

<http://groups.google.com/group/cloud-computing-use-cases>

# Cloud Computing – An Evolution From Known Technologies

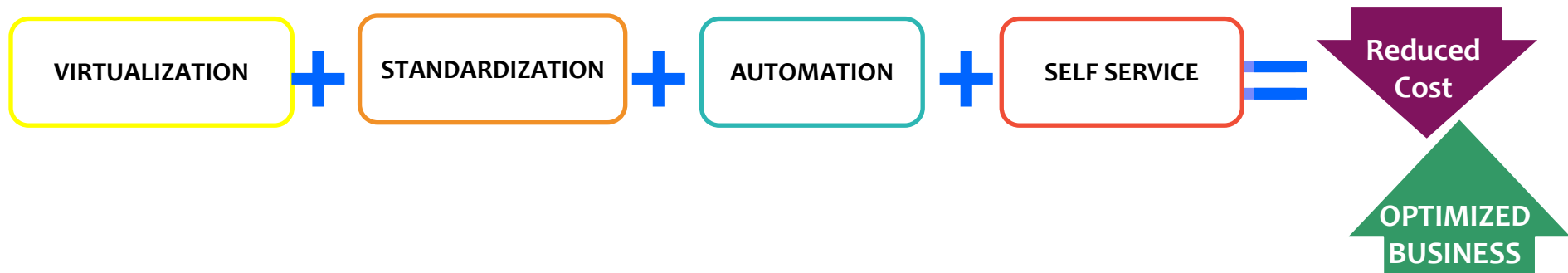
**Cloud Computing:** Cloud computing is a model for enabling convenient, on-demand network access to a shared pool of configurable computing resources (e.g., networks, servers, storage, applications, and services) that can be rapidly provisioned and released with minimal management effort or service provider interaction (NIST, page 5)



**“Clouds will transform the information technology (IT) industry... profoundly change the way people work and companies operate.”**

**The Economist**

## Cloud Computing – It's More Than Virtualization



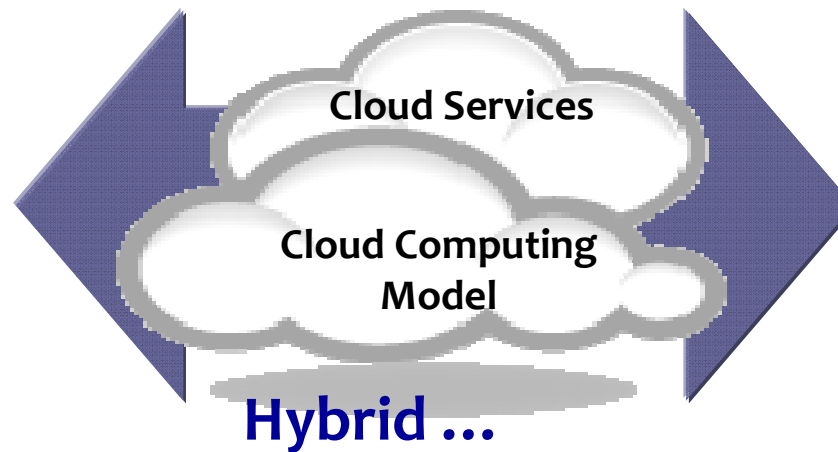
... leverages virtualization, automation, standardization and self service to free up operational budget for new investment

# Delivery Models – NIST Page 6

## Public ...

Service provider owned and managed.  
 Access by subscription  
 Delivers select set of standardized business process, application and/or infrastructure services on a flexible price per use basis

.... Standardization, capital preservation, flexibility and time to deploy



Access to client, partner network, and third party

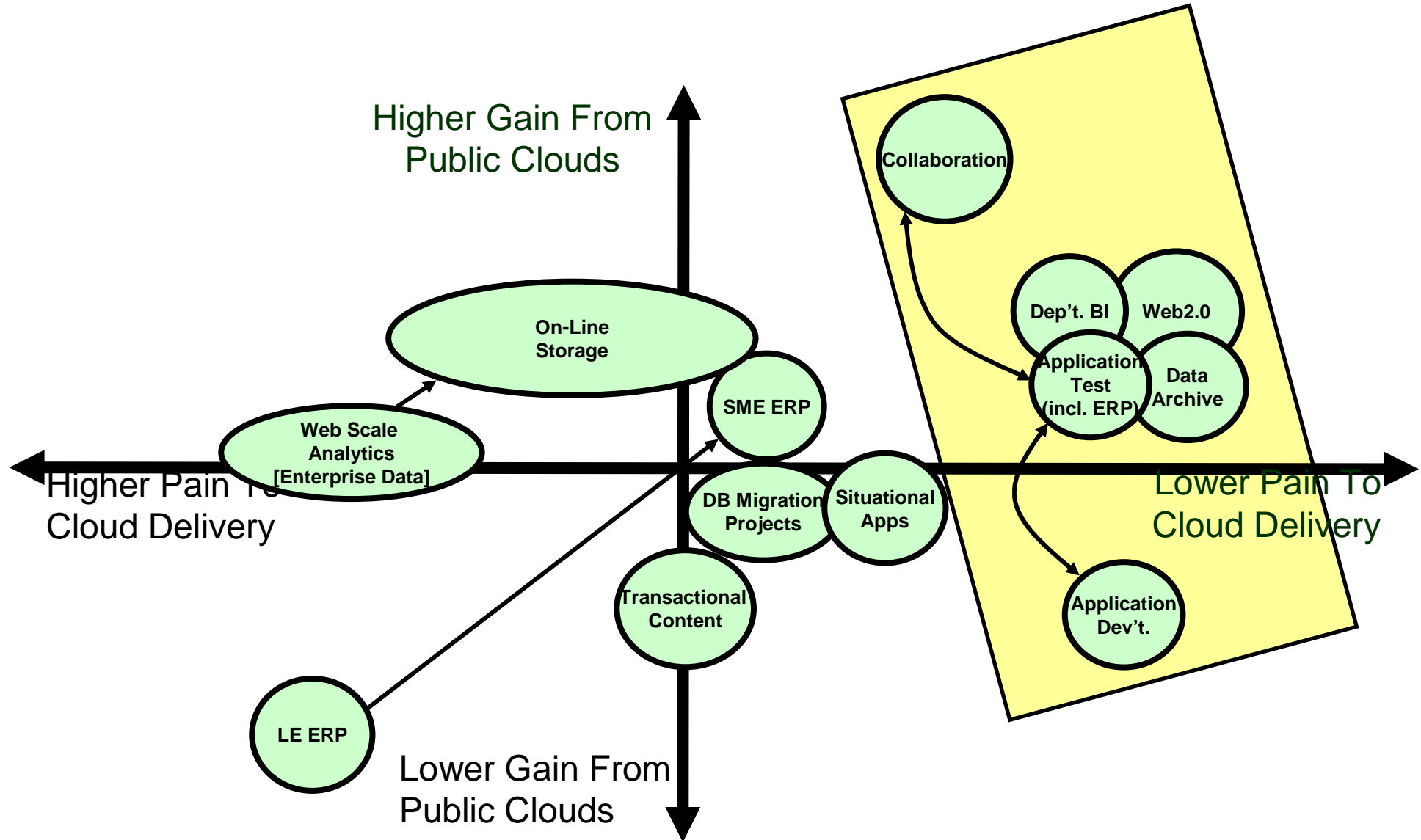
## Community ...

## Private ...

Privately owned and managed.  
 Access limited to client and its partner network.  
 Drives efficiency, standardization and best practices while retaining greater customization and control

.... Customization, efficiency, availability, resiliency, security and privacy

# Workload Fit – Where Does it Fit And Where Does it Not?





# Workload Fit for Public Clouds

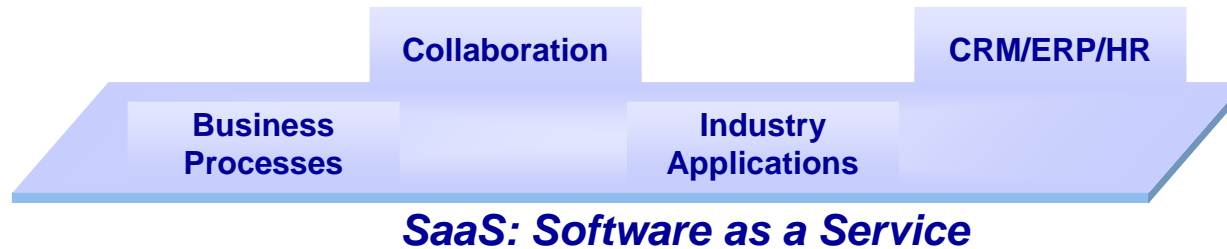
## Workloads Moving to Public Clouds

- **Test** and Pre-production systems
- Non-business critical application domains, like **e-mail and collaboration** (e.g. LotusLive)
- Software **development environments**
- **Batch processing jobs** with limited security requirements (e.g. HPC)
- Isolated workloads where latency between components is not an issue
- **Storage** Solutions/Storage as a Service
- **Backup** Solutions/Backup & Restore as a Service
- **Data intensive** workloads if the provider has storage capabilities tied to the cloud compute offering
- **Purposed and Pre-Integrated** SW/HW solutions (virtual appliances)

## Workloads Not Yet Moving to Public Clouds

- Highly **sensitive data** workloads (e.g. employee and health care records)
- Multiple, co-dependent services (e.g. **high throughput online transaction processing**)
- Workloads requiring a high level of **auditability, accountability** (e.g. those subject to Sarbanes-Oxley)
- 3<sup>rd</sup> party software which **does not have a virtualization or cloud aware licensing** strategy
- Workloads requiring **detailed chargeback or utilization measurement** (e.g. capacity planning, dept. level billing)

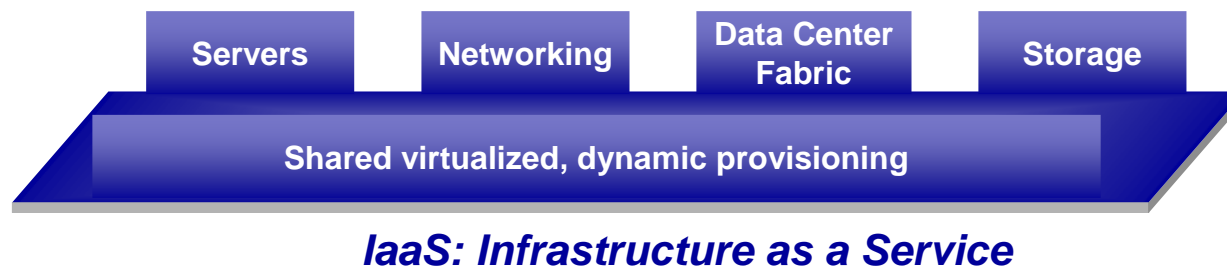
# What Kind of Clouds Do Exist - Layers – NIST Page 5



Cloud consumer uses an application  
 E.g. LotusLive, IBM Smart Analytics Cloud



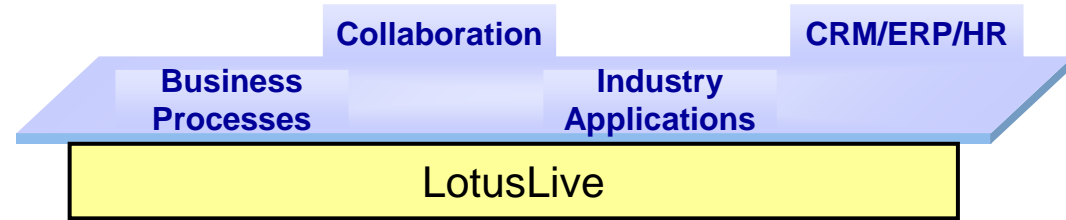
Cloud consumer uses an application framework  
 E.g. WebSphere on Amazon Machine Images



Cloud consumer uses IT resources (server, storage, network)  
 E.g. Amazon EC2, IBM CloudBurst

# Software as a Service

## – Sample Public Cloud



Delivery of application functionality via **subscription** model over Internet.

Consumer does not own the application, but **rents** a total solution



**Web Conferencing**

- **LotusLive Meetings**  
• A full-featured, easy to use Web conferencing service
- 


**LotusLive Events**  
Provides tools to create, manage and conduct webinars for up to 999 attendees



**Collaboration**

**LotusLive Engage**  
An integrated suite of tools that combines your business network with collaboration and conferencing services

**LotusLive Connections** Combines your business network with collaboration services



**eMail**

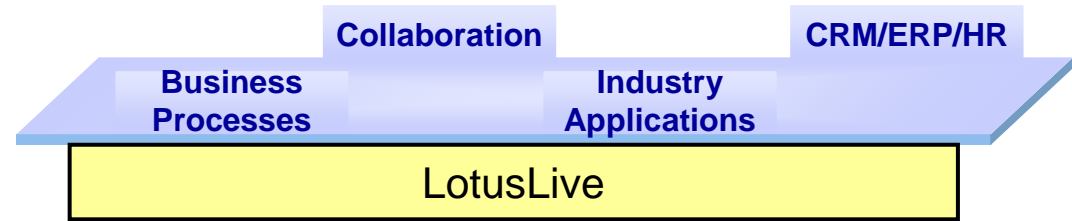
**LotusLive Notes**  
An online version of IBM's popular Lotus Notes email and calendaring & scheduling product

**LotusLive iNotes**  
Web-based messaging service for e-mail and personal calendar

[www.LotusLive.com](http://www.LotusLive.com)

# Software as a Service

## - Sample Hybrid Cloud



- **Benefits**
- Allows for advanced customization to meet customer needs
- Managed by IT dept
- All data resides local and inside the firewall

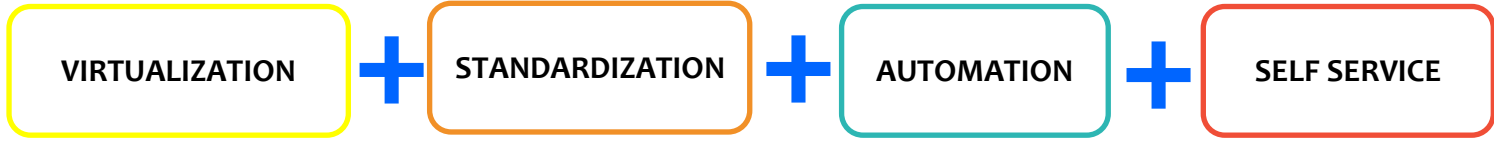
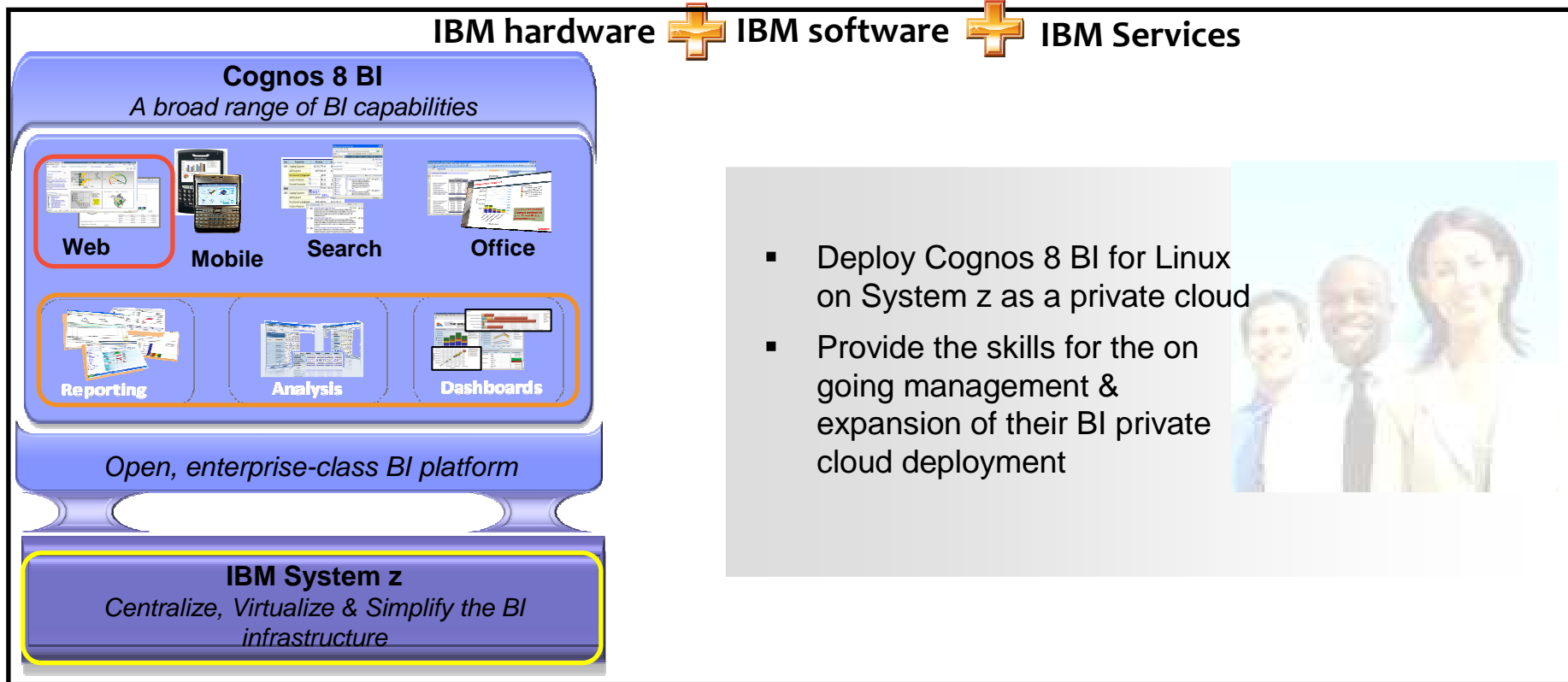
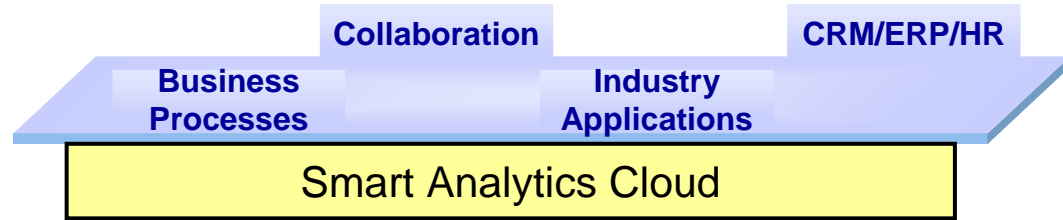
- **Benefits**
- Easy to install/maintain
- Managed by customer or partner
- Toolkits available for customization by partner or customer
- All data inside your firewall

- **Benefits**
- Negotiated SLAs
- Monthly Pricing available for hosting
- Can leverage toolkits available for customization
- Updates are applied transparently

- **Benefits**
- Low cost of entry
- Zero Infrastructure – Reduced Overhead
- Risk Mitigation
- Flexible contracts
- Scales to meet customer demand
- Immediate access to the latest innovations

No cost trials available at [www.lotuslive.com](http://www.lotuslive.com)

# Software as a Service - Sample Privat Cloud



# Platform as a Service

## – Sample Public Cloud



Amazon Machine Images (AMIs) are available for the following IBM products:

**Information Management Software**  
Enterprise content and data integration

Product
DB2 Express-C 9.7 (32- and 64-bit) <span>UPDATED</span>
DB2 Express Edition 9.5 (32-bit)
DB2 Workgroup Server Edition 9.5 (64-bit)
Informix Dynamic Server Developer Edition 11.5
Informix Dynamic Server Express Edition 11.5
Informix Dynamic Server Workgroup Edition 11.5

**Lotus software**  
Collaboration and human productivity

Product
IBM Mashup Center <span>UPDATED</span>
Lotus Forms Turbo V3.5 <span>UPDATED</span>
Lotus Web Content Management Standard Edition V6.1
WebSphere Portal Server V6.1 and Lotus Web Content Management Standard Edition V6.1
WebSphere Portal and Lotus Web Content Management Open Beta

**WebSphere software**  
Integration and application infrastructure

Product
WebSphere Application Server V7
WebSphere eXtreme Scale V7 <span>NEW</span>
WebSphere sMash V1.1

## IBM Software on Amazon Machine Images

[http://www.ibm.com/developmentworks/downloads/cloud.html?ca=dth-cloud&S\\_TACT=105AGX01&S\\_CMP=LP](http://www.ibm.com/developmentworks/downloads/cloud.html?ca=dth-cloud&S_TACT=105AGX01&S_CMP=LP)

# Platform as a Service (PaaS)



## - Sample

Cloud Computing Central	IBM Software on Amazon Web Services	IBM Cloud for developers	IBM Smart Business	Cloud Events	Software as a Service
<b>Information Management</b>		<b>Lotus</b> software		<b>WebSphere</b> software	
<b>DB2</b>  DB2Express-C · DB2 production ready AMIs: DB2 Express (32-bit) and DB2 Workgroup (64-bit) AMIs are available to use on Amazon EC2 at an hourly rate		<b>Portal &amp; WCM</b>  · WebSphere Portal Server and Lotus Web Content Management Standard Edition: Combine personalized powerful websites with your own business applications and external web services to deliver an exceptional web experience		<b>Application Server</b> <b>WebSphere</b> software  · WebSphere Application Server (WAS): As the foundation of the IBM WebSphere software platform, WAS delivers a secure, scalable, resilient application infrastructure	
<b>Informix Dynamic Server</b>  · Informix Dynamic Server Express Edition 11.5: Use Informix Dynamic Server Express Edition Amazon Machine Image (AMI) at an hourly rate		<b>Mashup Center</b>  · Mashup Center AMI: Develop your applications using IBM Mashup Center, software that supports quick assembly of dynamic situational applications		<b>WebSphere sMash</b> <b>WebSphere</b> sMash · WebSphere sMash: WebSphere sMash enables developers to quickly build and execute agile, Web 2.0-based applications	
		<b>Lotus Forms Turbo</b> Flexible, scalable eForms to speed process automation  · Lotus Forms Turbo AMIs: Independent Software Vendors (ISVs) can develop applications on Amazon EC2 using the Lotus Forms Turbo development Amazon Machine Image (AMI)			

[www.ibm.com/developerworks/spaces/cloud?pageid=757&S\\_TACT=105AGX01&S\\_CMP=LP](http://www.ibm.com/developerworks/spaces/cloud?pageid=757&S_TACT=105AGX01&S_CMP=LP)

## What is IBM offering on Amazon Web Services?

1. Hourly priced, full production environments of leading IBM software products.
  - ▶ Prices start at \$0.38c an hour and includes IBM software, Novell SuSe Linux and underlying Amazon Elastic Compute Cloud (EC2) charges.
  - ▶ No commitments, contracts or minimums. Pay as you go.
2. BYOL - Bring your own licenses
  - ▶ Customers can deploy their purchased IBM software on AWS using an easy conversion table.
3. ISV Development Environment
  - ▶ For ISVs and other companies developing commercially available applications, IBM, Novell and AWS provide no-charge development environments.
  - ▶ Get started in minutes, just pay for the EC2 charges starting at \$0.10c an hour.

<http://aws.amazon.com/ibm/>



# Infrastructure as a Service (IaaS)

Servers

Network  
ing

Data  
Center  
Fabric

Storage

Shared virtualized, dynamic provisioning

## - Sample Public Cloud



On-demand compute and storage infrastructure for hosting IT solutions

- Elastic Compute Cloud (EC2)
  - Starting at \$.10/Hr
- Simple Storage Service (S3)
  - Starting at \$.15/GB/Month
- Simple Queue Service (SQS)
  - Messaging in the Cloud
- Elastic Map Reduce
  - Hosted Hadoop Framework

# Infrastructure as a Service



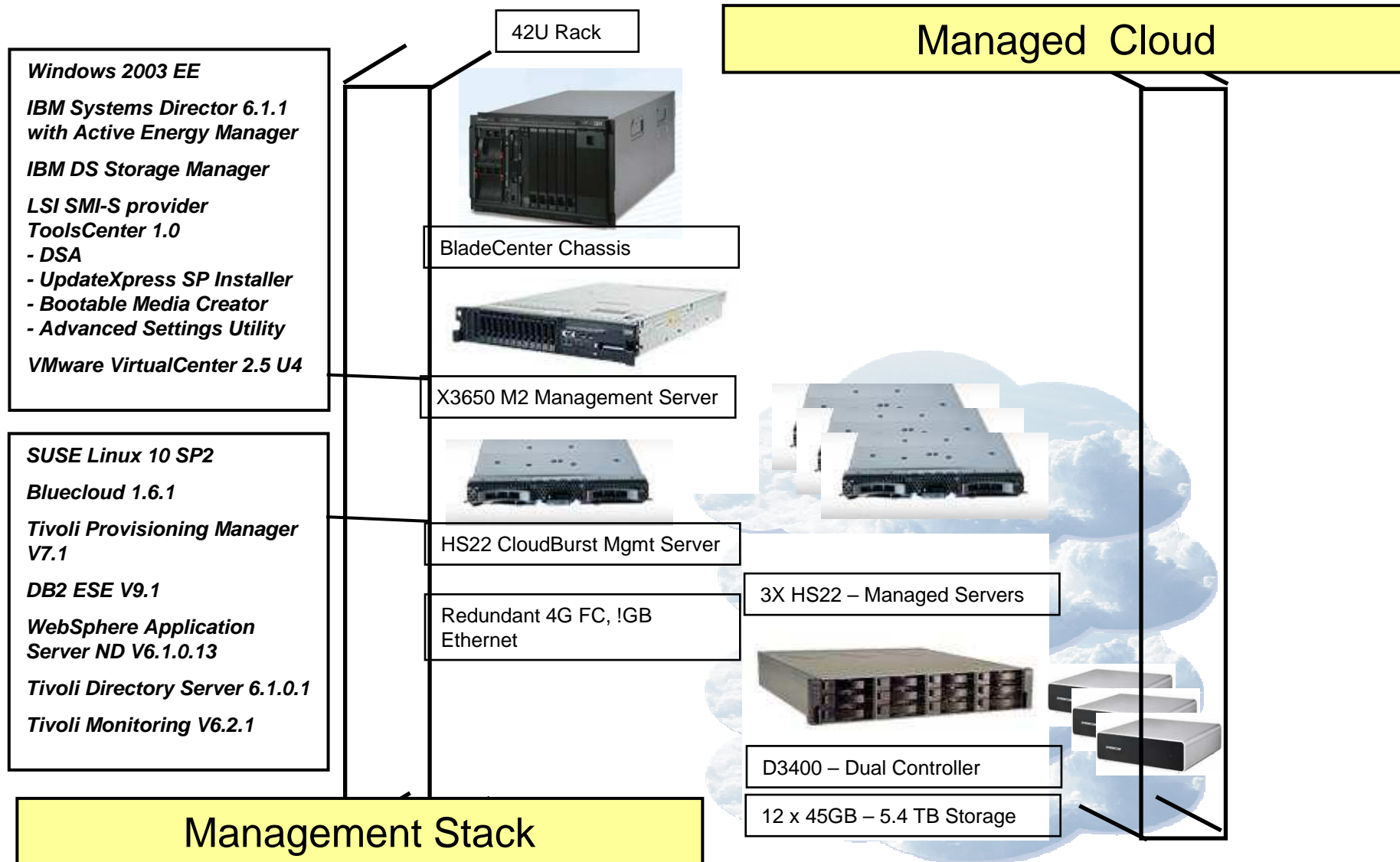
## - Sample Privat Cloud

NIST Page 8 - **Cloud bursting:** Cloud bursting is a technique used by hybrid clouds to provide additional resources to private clouds on an as-needed basis. If the private cloud has the processing power to handle its workloads, the hybrid cloud is not used. When workloads exceed the private cloud's capacity, the hybrid cloud automatically allocates additional resources to the private cloud.

### IBM CloudBurst

- IBM CloudBurst is a pre-packaged private cloud offering that brings together the hardware, software and services needed to establish a private cloud.
- This offering takes the guesswork out of establishing a private cloud by pre-installing and configuring the necessary software on the hardware and leveraging services for customization to your environment.

# IBM CloudBurst – Components Minimum Configuration



# CloudBurst – Further Configuration Options

Entry	Small	Medium	Large
<ul style="list-style-type: none"> <li>One 42U Rack</li> <li>One BladeCenter Chassis</li> <li>One 3650M2 Mgmt Server</li> <li><b>Four HS22 Blades</b></li> <li>Redundant <b>1G Ethernet Networking</b> – Bigbird HSSM</li> <li>Redundant 4G FC Network - Qlogic FC SM</li> <li>Redundant 1G Ethernet Networking</li> <li>One DS3400 - 2 Controllers each</li> <li>Storage Capacity = 12 450GB SAS (5.4TB raw)</li> </ul>	<ul style="list-style-type: none"> <li>One 42U Rack</li> <li>One BladeCenter Chassis</li> <li>One 3650M2 Mgmt Server</li> <li>Four HS22 Blades</li> <li>Redundant <b>10G Ethernet Networking</b> – Bigbird HSSM</li> <li>Redundant 4G FC Network - Qlogic FC SM</li> <li>Redundant <b>10G Ethernet Networking</b></li> <li>One DS3400 - 2 Controllers each</li> <li>Storage Capacity = 12 450GB SAS (5.4TB raw)</li> </ul>	<ul style="list-style-type: none"> <li>One 42U Rack</li> <li>One BladeCenter Chassis</li> <li>One 3650M2 Mgmt Server</li> <li><b>14 HS22 Blades</b></li> <li>Redundant 10G Ethernet Networking – Bigbird HSSM</li> <li>Redundant 4G FC Network - Qlogic FC SM</li> <li>Redundant 10G Ethernet Networking</li> <li>One DS3400 - 2 Controllers each</li> <li><b>Up to 3 EXP3000</b></li> <li>Storage Capacity = 12 – 48 450GB SAS (5.4 – 21.6TB raw)</li> </ul>	<ul style="list-style-type: none"> <li>One 42U Rack</li> <li><b>Two BladeCenter Chassis</b></li> <li>One 3650M2 Mgmt Server</li> <li><b>28 HS22 Blades</b></li> <li>Redundant 10G Ethernet Networking – Bigbird HSSM</li> <li>Redundant 4G FC Network - Qlogic FC SM</li> <li>Redundant 10G Ethernet Networking</li> <li><b>Two DS3400</b> - 2 Controllers each</li> <li><b>Up to 6 EXP3000</b></li> <li>Storage Capacity = 48 – 96 450GB SAS (21.6 – 43.2TB raw)</li> </ul>

## GTS QuickStart Services:

### Installation and configuration

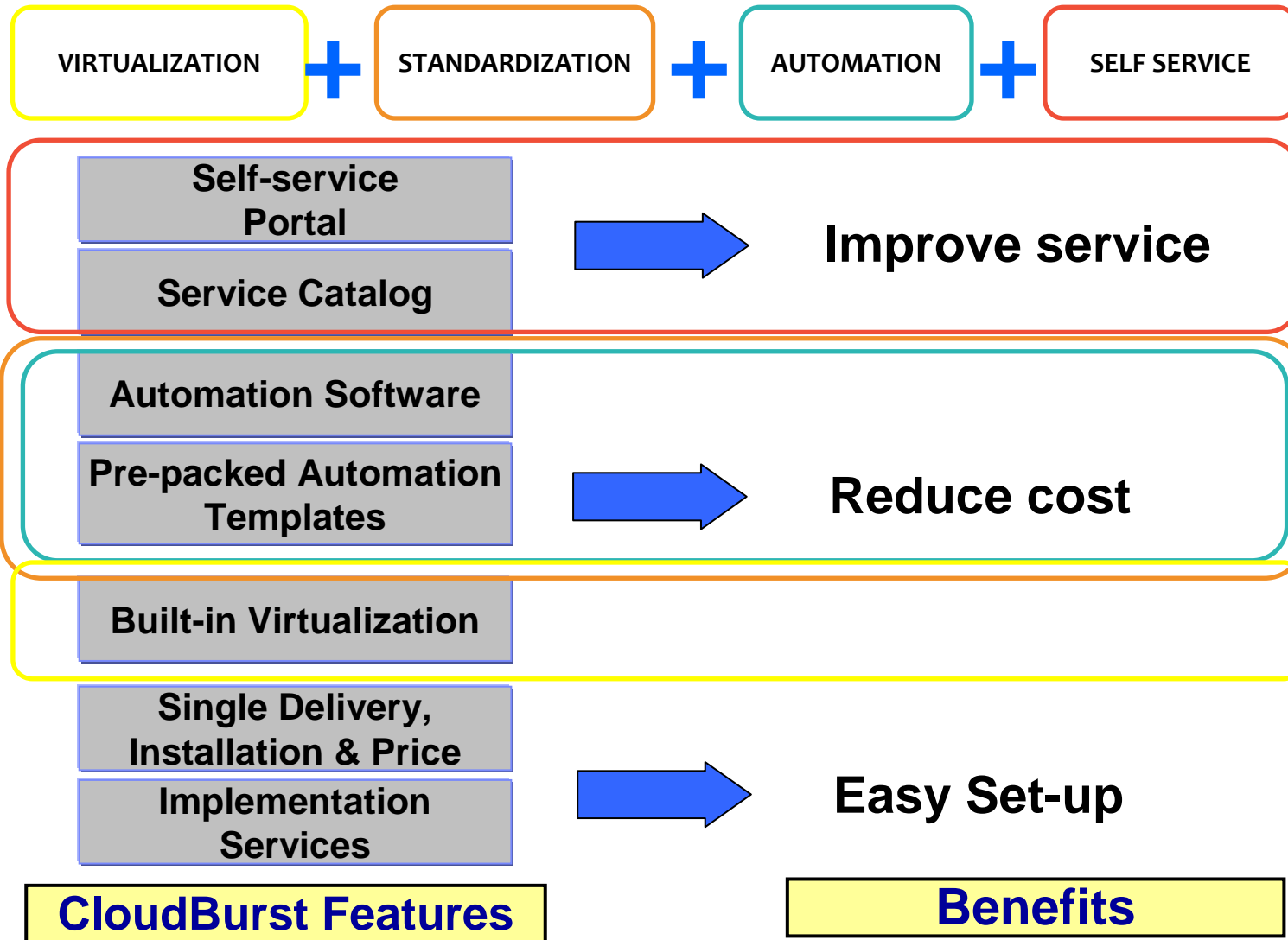
- Deploy and integrate BladeCenter hardware in customer data center and network
- Configure local storage area network
- Configure users and security profiles
- Setup and discovery of virtualized compute, network and storage resources
- Configure self- service portal
- Platform verification

### On-Site introductory training (hands-on)

- BladeCenter, local SAN and network switch management
- Administrator and user level training



# IBM CloudBurst – It's More Than Virtualization



# Self-Service Catalog

**Available Cloud resources. ...**

**Request New Cloud Project**

1. Browse available infrastructure and choose dates      2. Select servers and configure software

**Select Reservation Dates**

Start Date: 06/11/2009    End Date: 06/25/2009    Duration: 14 days

**Available Resources**

**VMware System x Cloud Resources**

Resource	Available/Total	Max for single VM
CPU	20.6 / 23.8	4
Memory	55.99GB / 63.99GB	8GB
Disk	817GB / 897GB	299GB

**... Dependent on selected time frame**

<http://depot.tivlab.raleigh.ibm.com/DemoLib.nsf/Demos/E66CC1F6C5F5CF96852575D30071D05A?OpenDocument>

# Standardization – Image Catalog

## plus Automation

Start Date **06/11/2009** End Date **07/01/2009** Duration **20 days**

### Complete New Project Details

#### Select and Configure your Virtual Machines

Project Name:

##### 1. Choose a Virtual Resource Cloud

**See Roadmap (25) for future support**

##### 2. Choose an Image

Select an image...  
 Select an image...  
 Microsoft Windows Server 2003 SP2  
 VMware Red Hat Linux 5.3

**Offered Images**

#### Select and Configure your Virtual Machines

#### Needed Resources

##### 1. Choose a Virtual Resource Cloud

##### 2. Choose an Image




##### Image Details

##### Operating System

##### Recommended Resources

CPU Units: 0.4  
 Mem: 1024MB  
 Disk: 10GB

##### 3. Choose resources for your virtual machine(s)

	 CPU	 Memory	 Disk
<b>Absolute Max</b>	4	8192 MB	299 GB
<b>Relative Max</b>	4	8192 MB	299 GB
<b>Chosen</b>	<input type="text" value="0.4"/>	<input type="text" value="1024"/> MB	<input type="text" value="10"/> GB
<b>Min</b>	0.2	512 MB	5 GB
Number of Virtual CPUs (1 recommended)			<input type="text" value="1"/>
Amount of disk to use for swap partition ( 1.50GB recommended, 5GB max )			<input type="text" value="1.50"/> GB

Number of VMs:  (maximum 51)

[next step >](#)

# Controlled Process Management

**3. Choose resources for your virtual machine(s)**

4 x	CPU	Memory	Disk
	0.2	1024 MB	20 GB
Swap partition size: 1.50 GB			

**4. Choose any software or additional options ( \* = required )**

Enable Monitoring (installs agent)	<input checked="" type="checkbox"/>
------------------------------------	-------------------------------------

< previous step Add VMs to project

**Submit** →

Rechecking resource availability...	done
Creating project...	done
Reserving infrastructure...	done
Scheduling resources...	done
Request Completed Successfully!	OK

**Admin Approval requested**

**My Projects**

<b>Front Office Web App v3.1</b>	Integration Testing	0 active servers (4 requested)	6/11/09 to 7/1/09	<b>Pending Approval...</b>	<b>New</b>
<b>Mobile Calendar v2.0</b>	Development	2 active servers (2 requested)	6/10/09 to 7/11/09	Approved	<b>Active</b> ● (Dates Changed)
<b>Mobile Calendar v1.5</b>	Performance Testing	3 active servers (3 requested)	6/10/09 to 7/15/09	Approved	<b>Active</b> ●



# Reporting

Project Approved

After project approval ...

... requested VMs are provisioned

## Project Infrastructure

Name	Hardware Configuration	Base Image	Status
VMware System x VM	0.2CPU (1 vcpu) - 1024MB Memory - 20GB Disk (incl. 1536MB swap)	VMware Red Hat Linux 5.3	Provisioning...
VMware System x VM	0.2CPU (1 vcpu) - 1024MB Memory - 20GB Disk (incl. 1536MB swap)	VMware Red Hat Linux 5.3	Provisioning...
VMware System x VM	0.2CPU (1 vcpu) - 1024MB Memory - 20GB Disk (incl. 1536MB swap)	VMware Red Hat Linux 5.3	Provisioning...
VMware System x VM	0.2CPU (1 vcpu) - 1024MB Memory - 20GB Disk (incl. 1536MB swap)	VMware Red Hat Linux 5.3	Provisioning...

## Project Report

Reports by team

Choose a team: All Teams

Team	Project Name	Server Name	Server IP	Start Date	Duration	Software List
Development	Mobile Calendar v2.0	10-180-0-1	10.180.0.1	Jun 10, 2009 9:41:32 PM	3 hrs	VMware Red Hat Linux 5.3_5.3   IBM Tivoli Monitoring Agent_6.2.1
Development	Mobile Calendar v2.0	10-180-0-2	10.180.0.2	Jun 10, 2009 9:41:32 PM	3 hrs	VMware Red Hat Linux 5.3_5.3   IBM Tivoli Monitoring Agent_6.2.1
Performance Testing	Mobile Calendar v1.5	10-180-0-5	10.180.0.5	Jun 10, 2009 9:43:01 PM	3 hrs	VMware Red Hat Linux 5.3_5.3   IBM Tivoli Monitoring Agent_6.2.1
Performance Testing	Mobile Calendar v1.5	10-180-0-4	10.180.0.4	Jun 10, 2009 9:43:01 PM	3 hrs	VMware Red Hat Linux 5.3_5.3   IBM Tivoli Monitoring Agent_6.2.1
Performance Testing	Mobile Calendar v1.5	10-180-0-3	10.180.0.3	Jun 10, 2009 9:43:01 PM	3 hrs	VMware Red Hat Linux 5.3_5.3   IBM Tivoli Monitoring Agent_6.2.1
Function Testing	Back Office Web App v4.0	10-180-0-8	10.180.0.8	Jun 10, 2009 9:54:15 PM	3 hrs	VMware Red Hat Linux 5.3_5.3   IBM Tivoli Monitoring Agent_6.2.1
Function Testing	Back Office Web App v4.0	10-180-0-6	10.180.0.6	Jun 10, 2009 9:54:15 PM	3 hrs	VMware Red Hat Linux 5.3_5.3   IBM Tivoli Monitoring Agent_6.2.1
Function Testing	Back Office Web App v4.0	10-180-0-7	10.180.0.7	Jun 10, 2009 9:54:15 PM	3 hrs	VMware Red Hat Linux 5.3_5.3   IBM Tivoli Monitoring Agent_6.2.1

## Further Functions + IBM Services

### Further functions

#### Project Infrastructure

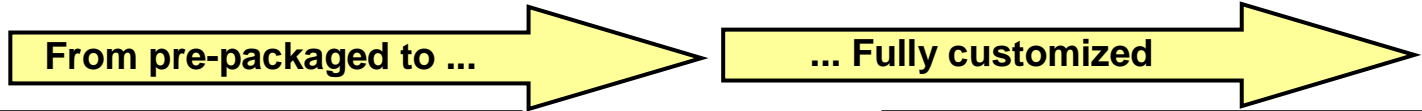
Name	Hardware Configuration	Base Image	Status																														
10-180-0-3	0.4CPU (1 vcpu) - 1024MB Memory - 10GB Disk (incl. 1536MB swap)	VMware Red Hat Linux 5.3	Active																														
<table border="1"> <thead> <tr> <th></th> <th>System Info</th> <th>Additional Software</th> <th>Real Time Monitoring</th> <th>Remote Control</th> </tr> </thead> <tbody> <tr> <td>IP</td> <td>10.180.0.3</td> <td>IBM Tivoli Monitoring Agent</td> <td>CPU Usage <span style="color: green;">3 %</span></td> <td>Power On</td> </tr> <tr> <td>OS Type</td> <td>VMware Red Hat Linux 5.3</td> <td></td> <td>Memory Free <span style="color: red;">22 MB</span></td> <td>Power Off</td> </tr> <tr> <td>Pool / Type</td> <td>VMware System x (Esx)</td> <td></td> <td>Disk Free <span style="color: green;">5.56 GB</span></td> <td>Restart</td> </tr> <tr> <td>Admin Password</td> <td>4Juusj9W</td> <td></td> <td></td> <td>Reset Password</td> </tr> <tr> <td>Mgmt Name/IP</td> <td>10-160-9-2 / 10.160.9.2</td> <td></td> <td></td> <td>Backup</td> </tr> </tbody> </table>					System Info	Additional Software	Real Time Monitoring	Remote Control	IP	10.180.0.3	IBM Tivoli Monitoring Agent	CPU Usage <span style="color: green;">3 %</span>	Power On	OS Type	VMware Red Hat Linux 5.3		Memory Free <span style="color: red;">22 MB</span>	Power Off	Pool / Type	VMware System x (Esx)		Disk Free <span style="color: green;">5.56 GB</span>	Restart	Admin Password	4Juusj9W			Reset Password	Mgmt Name/IP	10-160-9-2 / 10.160.9.2			Backup
	System Info	Additional Software	Real Time Monitoring	Remote Control																													
IP	10.180.0.3	IBM Tivoli Monitoring Agent	CPU Usage <span style="color: green;">3 %</span>	Power On																													
OS Type	VMware Red Hat Linux 5.3		Memory Free <span style="color: red;">22 MB</span>	Power Off																													
Pool / Type	VMware System x (Esx)		Disk Free <span style="color: green;">5.56 GB</span>	Restart																													
Admin Password	4Juusj9W			Reset Password																													
Mgmt Name/IP	10-160-9-2 / 10.160.9.2			Backup																													

**Integrated IBM Global Technology Services QuickStart service** - Integrate IBM CloudBurst in data center and network, configure local storage, set up users and security profiles, configure virtualization resources and self-serve portal

### Hands-on Training

**Add-On: IBM Smart Business Test Cloud services** - support of IBM CloudBurst to also leverage **existing IT infrastructure** (systems and storage) for a cloud solution with full customization and integration support.

# Flexible Choices – Build-up Your Cloud Development & Test Environment



For those customers who wish to rapidly deploy a **pre-packaged test environment** with little to no customization

**IBM CloudBurst**  
**(May 2009)**

A purpose built service delivery platform that leverages the same software components as TSAM as well as integrated purpose built workflows

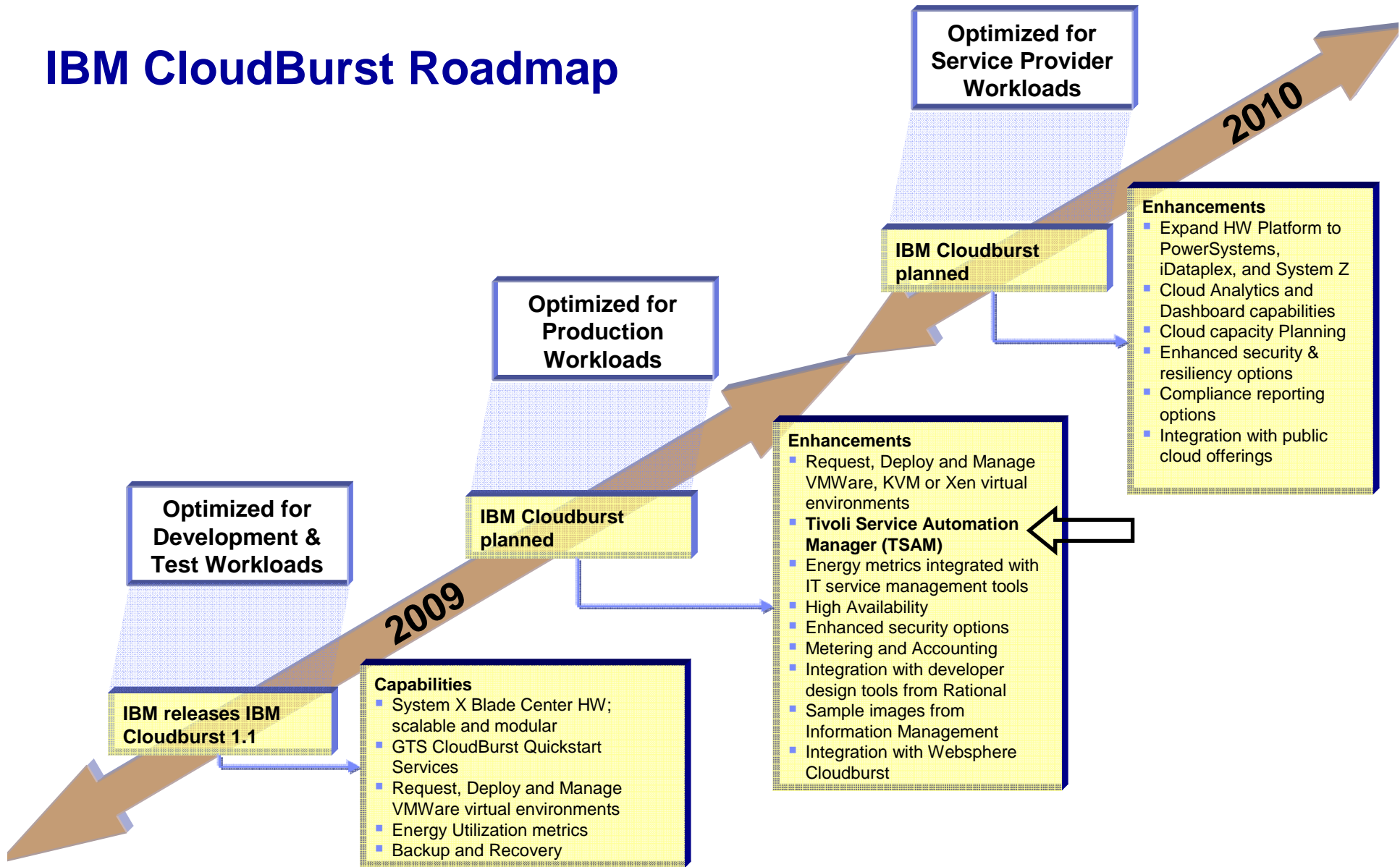
**Add-On: IBM Smart Business Test Cloud services**

For those customers who wish to leverage **existing hardware** investments and build a customized solution

**Tivoli Service Automation Manager (TSAM)**  
**(November 2008)**

Powered by Tivoli process automation engine (Tivoli Provisioning Manager) and associated products. Services for customization are also available upon request

# IBM CloudBurst Roadmap

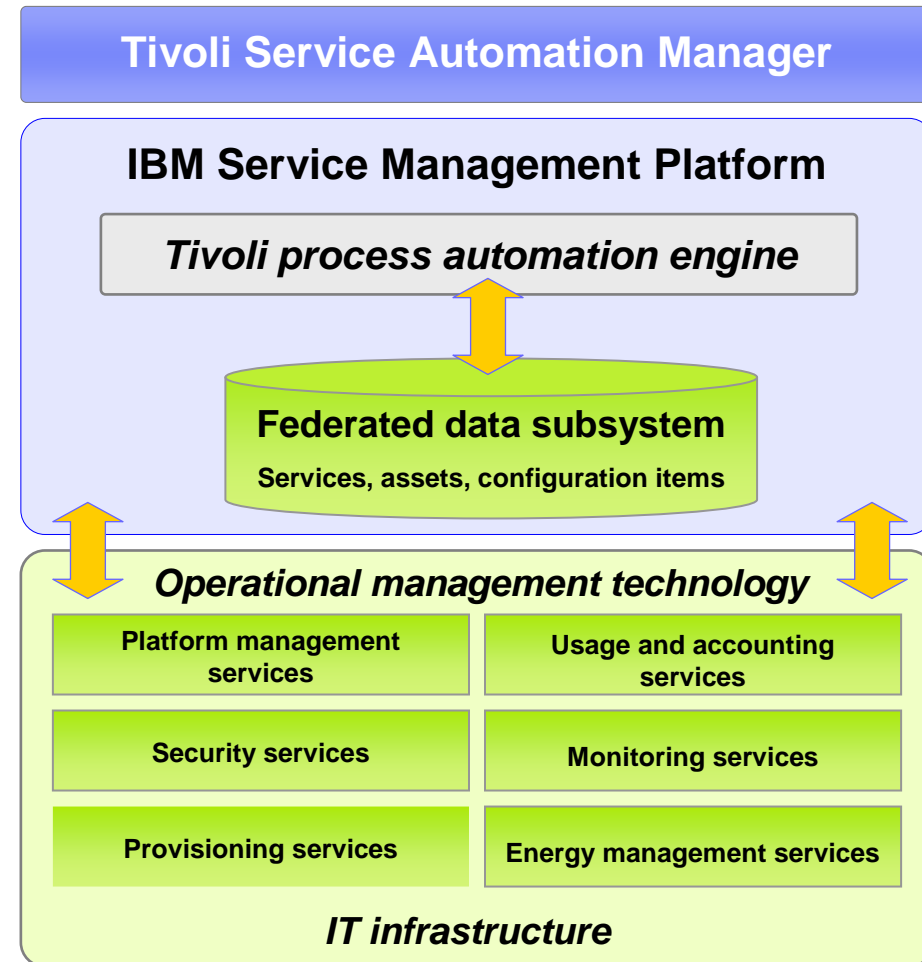


# IBM Tivoli Service Automation Manager

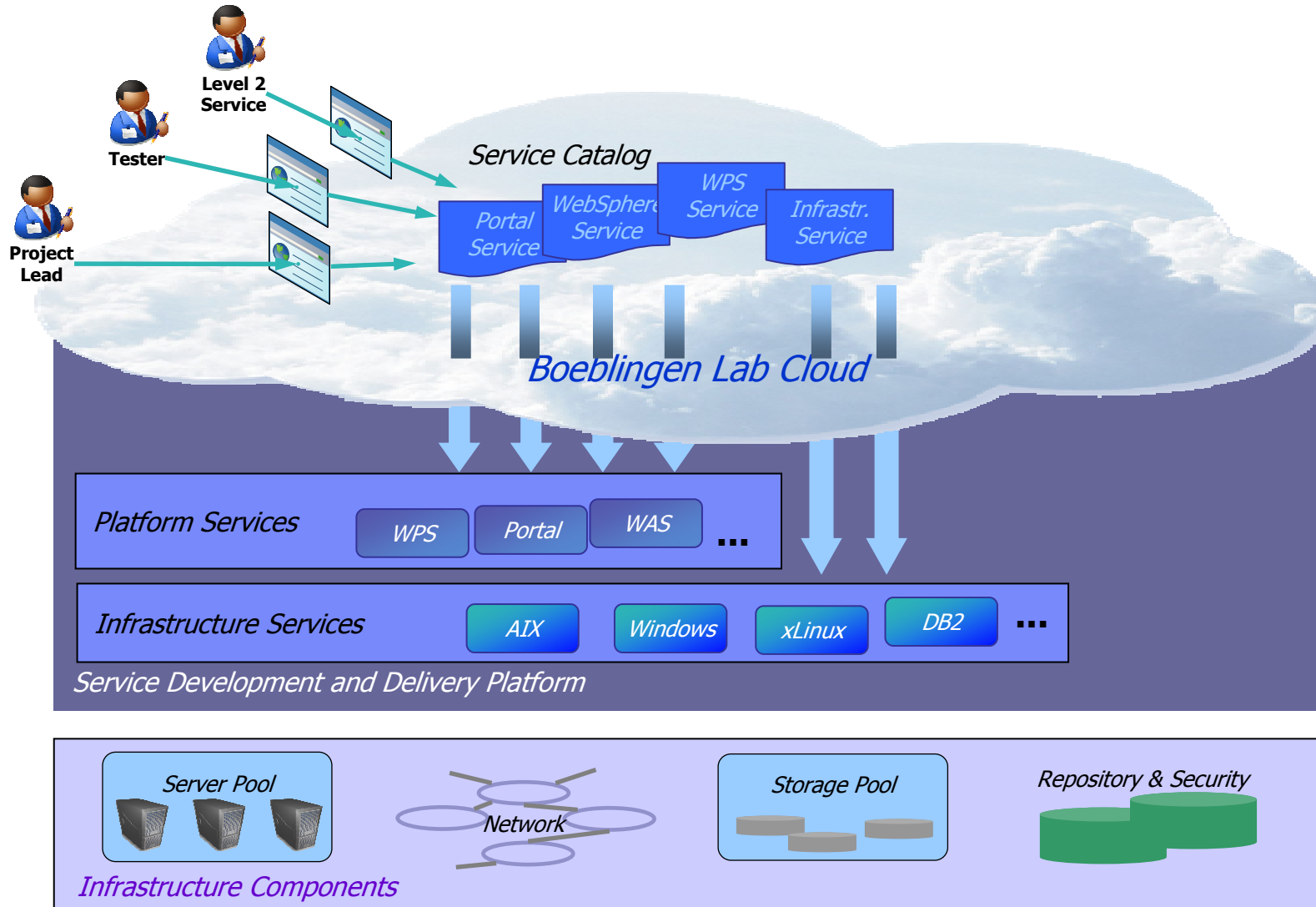
## IBM Tivoli Service Automation Manager

- Built on top of the IBM Service Management Platform
- Orchestrates technology, processes, people and data to provide cloud computing services and service management of cloud computing
- Provides rapid provisioning of physical and virtual resources

[http://www-142.ibm.com/software/dre/ecatalog/detail.wss?locale=en\\_US&synkey=R915766U47567F18](http://www-142.ibm.com/software/dre/ecatalog/detail.wss?locale=en_US&synkey=R915766U47567F18)



# Development & Test Cloud – IBM Boeblingen R & D –TSAM Based



## Services Offered within a Cloud

Request No.	Request Name
RQ ISS 01	Create Virtual Server
RQ ISS 02	Delete Virtual Server
RQ ISS 03	Provide LDAP Server for applications
RQ ISS 04	Provide Database Server for applications
RQ ISS 05	Stop Server
RQ ISS 06	Start Server
RQ ISS 07	System Snapshot RQ ISS 07.1 Restore RQ ISS 07.2 Reinstall
RQ ISS 08	Data Backup RQ ISS08.1 Restore
RQ ISS 09	Cloning / Create a template from a given server

# Task Flow to Create Virtual Server within a Cloud

RQ ISS 01	Create Virtual Server	Creation of a new virtual server and grant user access
	Service	Infrastructure Service
	Description	This request creates a new virtual server with installed operating system.
	Actor	R4 CC Client User
	Assumptions	Customer Container activated, user assigned to a CC
	<u>Input-Paramter</u>	CCID, Image Name, ....
	Task flow	<ol style="list-style-type: none"> <li>1. TK ISS01-01 Get OS and Application Licences</li> <li>2. TK ISS01-02 Get IP Address and <u>Hostname</u></li> <li>3. TK ISS01-03 Get Host</li> <li>4. TK ISS01-04 Get Storage Space</li> <li>5. TK ISS01-05 Create/Start Virtual Server</li> <li>6. TK ISS01-06 Create SCC Document</li> <li>7. TK ISS01-07 Update Server</li> <li>8. TK ISS01-08 Set ITCS 104 compliance on Server</li> <li>9. TK ISS01-09 Administrate Server according to Security Guidelines</li> <li>10. TK ISS01-10 Add User to System</li> <li>11. TK ISS01-11 Change Firewall Rules</li> <li>12. TK ISS01-12 Configuration Management</li> <li>13. TK ISS01-13 Set up Monitoring</li> </ol>



**Cloud Computing**  
– It's not just another hype  
- There's real technology to build up clouds

Thank You

