



G09 – Cloud Computing – Update and News

April 21, 2010

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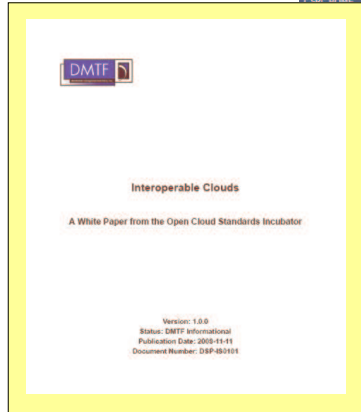
Agenda

- **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'
 - Public Cloud Workload Split with System z
 - LotusLive Public Cloud & System z Linux – Collaboration Workload Sample
 - 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
 - It's More Than Virtualization
 - Details - Self-Service Catalog, Create Project with VMWare Servers
- **IBM Tivoli Service Automation Manager**
 - Components
 - IBM z Solution Edition for Cloud Computing – It's More Than Virtualization
 - Details – Self-Service Catalog, Offering – Register Image and Unregister Image, XML Template File to Configure System z Cloud Management Subsystem

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Cloud Computing – On Its Way to be Standardized ... NIST

<http://csrc.nist.gov/groups/SNS/cloud-computing/>



http://www.dmtf.org/about/cloud-incubator/DSP_IS0101_1.0.0.pdf

Cloud Computing – On Its Way to become a Standard ... DMTF

DMTF- Total 100 member companies



DMTF Board Companies



DMTF Leadership Companies



<http://www.brighttalk.com/webcasts/7078/play>

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

Grid Computing

Utility Computing

Software as a Service

On Demand eBusiness

Cloud Computing

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

The Economist

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Cloud Computing – It’s More Than Virtualization

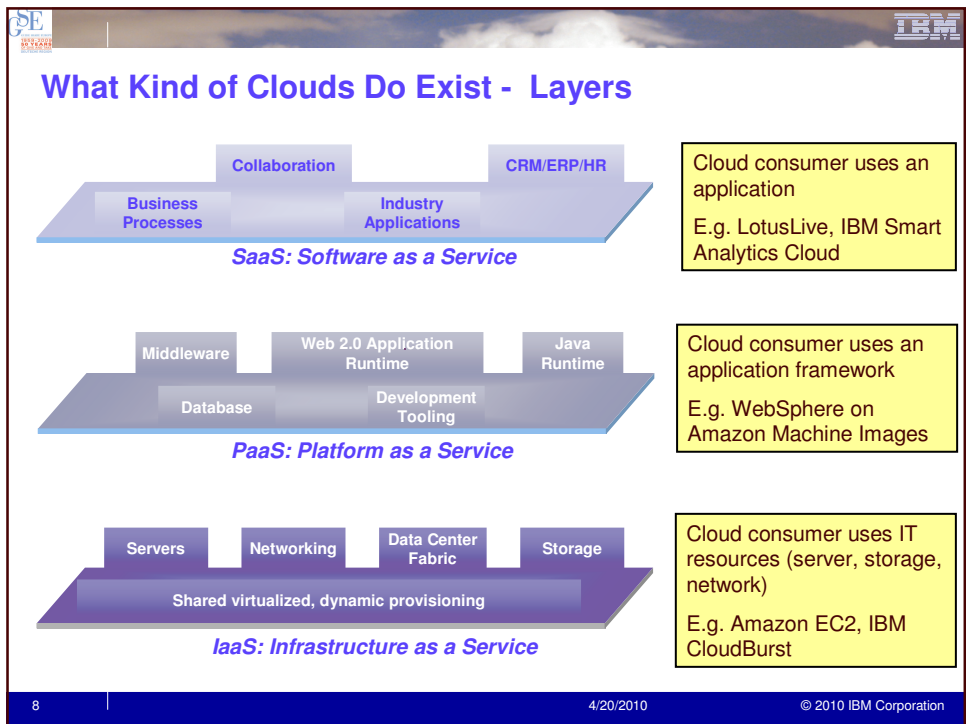
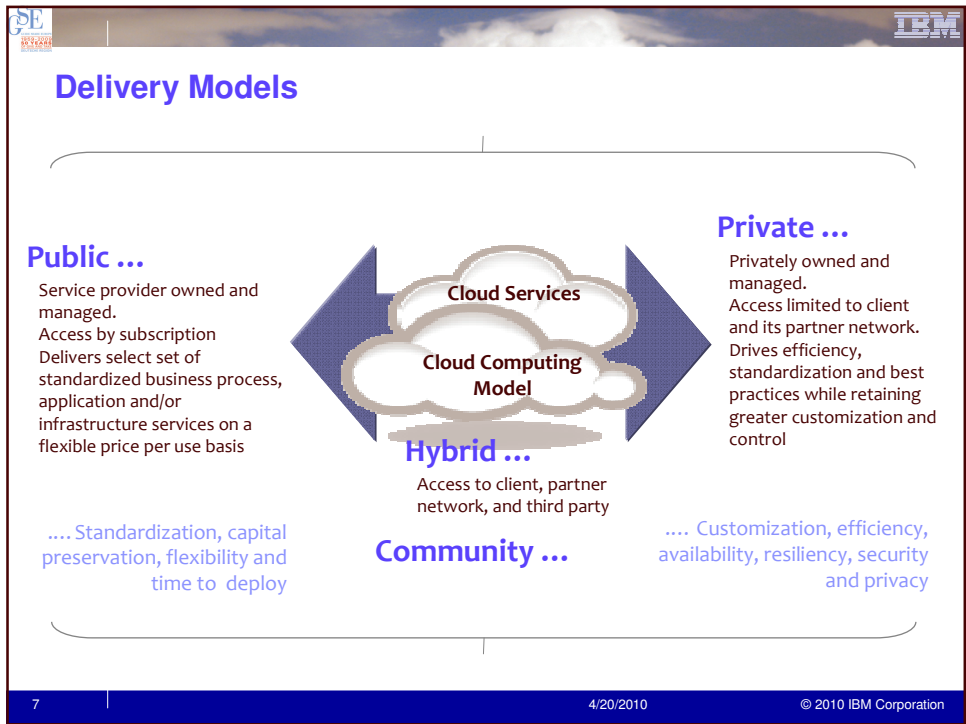
VIRTUALIZATION + STANDARDIZATION + AUTOMATION + SELF SERVICE =


Reduced Cost

OPTIMIZED BUSINESS

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

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Software as a Service

– Sample Public Cloud



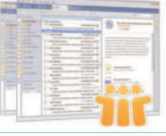
Collaboration
 Business Processes

CRM/ERP/HR
 Industry Applications

LotusLive


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

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


 Web Conferencing	 Collaboration	 eMail
<p>LotusLive Meetings <i>*A full-featured, easy to use Web conferencing service</i> *</p> <p>LotusLive Events <i>Provides tools to create, manage and conduct webinars for up to 999 attendees</i></p>	<p>LotusLive Engage <i>An integrated suite of tools that combines your business network with collaboration and conferencing services</i></p> <p>LotusLive Connections <i>Combines your business network with collaboration services</i></p>	<p>LotusLive Notes <i>An online version of IBM's popular Lotus Notes email and calendaring & scheduling product</i></p> <p>LotusLive iNotes <i>Web-based messaging service for e-mail and personal calendar</i></p>




www.LotusLive.com

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Software as a Service – Public Cloud Workload Split with System z



 Web Conferencing	 Collaboration	 eMail
<p>LotusLive Meetings <i>*A full-featured, easy to use Web conferencing service</i> *</p> <p>LotusLive Events <i>Provides tools to create, manage and conduct webinars for up to 999 attendees</i></p>	<p>LotusLive Engage <i>An integrated suite of tools that combines your business network with collaboration and conferencing services</i></p> <p>LotusLive Connections <i>Combines your business network with collaboration services</i></p>	<p>LotusLive Notes <i>An online version of IBM's popular Lotus Notes email and calendaring & scheduling product</i></p> <p>LotusLive iNotes <i>Web-based messaging service for e-mail and personal calendar</i></p>
Sametime	Connections	Quicker*
Domino		

Collaboration on Linux for System z

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LotusLive Public Cloud & System z Linux – Collaboration Workload Sample

- Sensitive collaboration with Lotus Connections on Linux for System z
- Team collaboration via LotusLive Notes

Lotus Connections on Linux for System z

LotusLive Notes (Quicker) - Keep track of project and teams



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Lotus Connections for Linux for System z

- **Lotus Connections version 2.5** for Linux on System z announcement – January 2010
- http://www-01.ibm.com/common/ssi/cgi-bin/ssialias?subtype=ca&infotype=an&appname=iSource&supplier=897&letternum=ENUS210-009&open&cm_mmc=6216-_-n-_-vrm_newsletter-_-10577_146045&cmibm_em=dm:0:17605098
- SLES 10
- RHEL 5
- **Lotus Connections version 3.0** * (2H 2010)
- Plans to upgrade RHEL 5.4 and SLES11

The information on the new product is intended to outline our general product direction and it should not be relied on in making a purchasing decision. The information on the new product is for informational purposes only and may not be incorporated into any contract. The information on the new product is not a commitment, promise, or legal obligation to deliver any material, code or functionality. The development, release, and timing of any features or functionality described for our products remains at our sole discretion.

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Lotus Quickr for Linux for System z*



- **Lotus Quickr 8.5** (Java services) eGA is targeted for end of Q2
- Linux for System z support targeted within approximately 30 days after eGA (Q3)
- SLES 10 support
- No planned support for RHEL at this time
- Note: Linux for System z is not available in the Beta program

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Lotus Sametime for Linux for System z *

- **Lotus Sametime 8.5.1** for Linux on System z support
- eGA for Sametime 8.5.1 is targeted for Q3, 2010
- Planned platforms
 - RHEL 5.x Server and Advanced Platform (64bit)
 - SLES 10 (SP1 or later SP) (64bit)
- The following Sametime 8.5.1 services are planned for System z:
 - Community Server (IM and presence)
 - Sametime Proxy Server (Web based IM/ presence)
 - Meetings server (not 'classic' meetings eg: Sametime 8.0.2)
 - Sametime System Console (ISC for Sametime services)

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Software as a Service

- Sample Privat Cloud

Business Processes Collaboration Industry Applications CRM/ERP/HR

Smart Analytics Cloud

IBM hardware + IBM software + IBM Services

Cognos 8 BI
A broad range of BI capabilities

Web Mobile Search Office

Reporting Analysis Decision rules

Open, enterprise-class BI platform

IBM System z
Centralize, Virtualize & Simplify the BI infrastructure

- Tivoli Provisioning Manager - Deploy Cognos 8 BI for Linux on System z as a private cloud
- Provide the skills for the on going management & expansion of their BI private cloud deployment

VIRTUALIZATION + STANDARDIZATION + AUTOMATION + SELF SERVICE

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Platform as a Service

- Sample Public Cloud

Middleware Web 2.0 Application Runtime Java Runtime

Database Development Tooling


Amazon EC2 running IBM AMIs (Amazon Machine Images)

The Amazon EC2 running IBM AMIs are ready to run in Amazon EC2 with Novell SuSE Linux and the associated IBM products. The links below will take you directly to the detailed listing in the AMI catalog that include resources like getting started guides and product information.

AMI Name	US East (N. Virginia) AMI ID	EU (Ireland) AMI ID
IBM DB2 Express Edition (32-bit)	ami-74e00d1d	ami-09ffd47d
IBM DB2 Workgroup Edition (64-bit)	ami-fbffd48f	ami-fbffd
IBM Informix Dynamic Server Express (32-bit)	ami-7451b31d	ami-53e2c927
IBM Informix Dynamic Server Workgroup (64-bit)	ami-1051b379	ami-45e2c931
IBM Lotus Forms Turbo (32-bit)	ami-35d3305c	ami-a65f74d2
IBM Lotus Web Content Management Standard Edition 6.5.1 (64-bit)	ami-f9a54a90	ami-04cee670
IBM Mashup Center 2.0 (32-bit)	ami-c9bd96bd	ami-bd0922e9
IBM Tivoli Monitoring on Linux - 50 Virtual Cores (32-bit) NEW!	ami-5048a839	ami-2c745f58
IBM Tivoli Monitoring on Linux - 200 Virtual Cores (32-bit) NEW!	ami-5248a83b	ami-2e745f5a
IBM Tivoli Monitoring on Linux - 600 Virtual Cores (32-bit) NEW!	ami-064cac6f	ami-28745f5c
IBM WebSphere Application Server (32-bit)	ami-1000e279	ami-27123953
IBM WebSphere sMash (32-bit)	ami-6776950e	ami-8c2d06f8
IBM Lotus Web Content Management Standard Edition/IBM WebSphere Portal Server (64-bit)	ami-29a04f40	ami-cbbd96bf
IBM WebSphere eXtreme Scale v7.0 on Linux NEW!	ami-a046a4c9	ami-c3edc6b7
IBM InfoSphere DataStage/QualityStage NEW!	ami-f8ad4091	ami-99e1cae
IBM InfoSphere DataStage/QualityStage Designer Windows Client NEW!	ami-a8e705c1	ami-630b2017

http://aws.amazon.com/ibm/#use_cases

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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.

Pricing for Instances Running IBM Tivoli Monitoring – 50 Virtual Cores

Instance Type	US East (N. Virginia) Region	EU (Ireland) Region
Standard Small (Default)	\$1.09 per hour	\$1.10 per hour
High-CPU Medium	\$1.18 per hour	\$1.20 per hour

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


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Infrastructure as a Service (IaaS)

Servers Networki Data Storage
ng Center Fabric
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 Queue Service (SQS)
 - Messaging in the Cloud
- Simple Storage Service (S3)
 - Starting at \$.15/GB/Month
- Elastic Map Reduce
 - Hosted Hadoop Framework

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Infrastructure as a Service

- Sample Privat Cloud

IBM CloudBurst

- IBM CloudBurst is a pre-packaged private cloud offering
- It brings together hardware, software and services needed to establish a private cloud
- Comprehensive integrated IBM Service Management
- Extension to existing IT infrastructure
- Ideal for software development and test workload

Today: BladeCenter






Roll-out: POWER 7, System z*

Servers Networki Center Storage
ng Fabric


Shared virtualized, dynamic provisioning

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IBM CloudBurst – Components Minimum Configuration


42U Rack



BladeCenter Chassis



X3650 M2 Management Server




HS22 CloudBurst Mgmt Server


Redundant 4G FC, 1 GB Ethernet

Management Stack

Managed Cloud




3X HS22 – Managed Servers

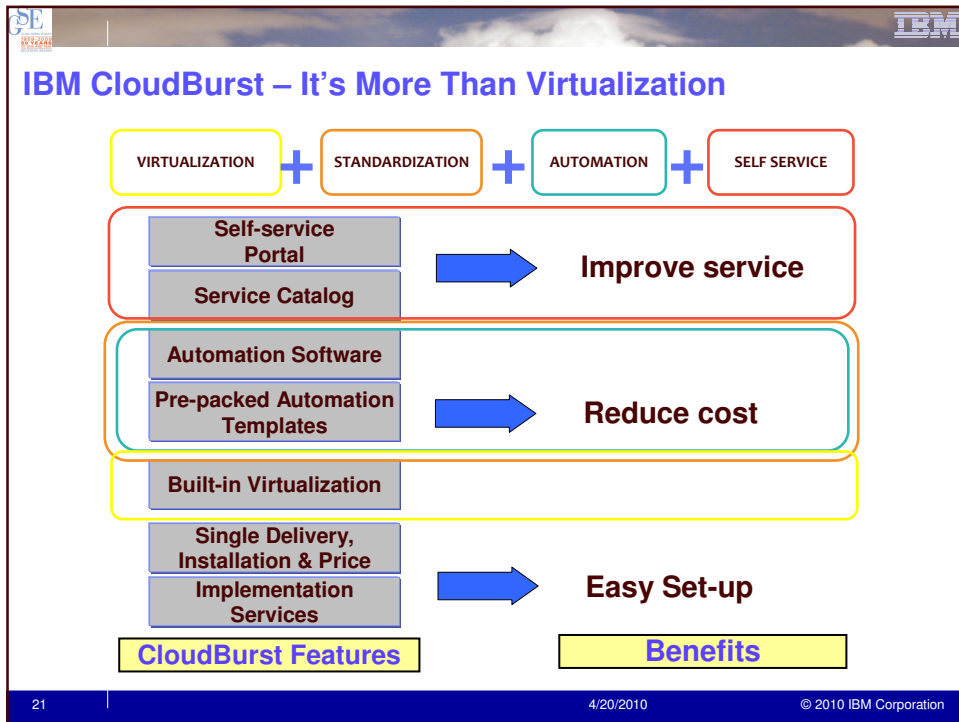


D3400 – Dual Controller

12 x 45GB – 5.4 TB Storage



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-
- Cloudburst – Self Service Catalog**
- Create Project with VMware Servers
 - Create Project with System p LPAR Servers
 - Create Project with Xen Servers
 - Create Project with z/VM Linux Servers
 - Create Project with KVM Servers
 - Add VMware Servers
 - Add System p LPAR Servers
 - Add Xen Servers
 - Add z/VM Linux Servers
 - Add KVM Servers
 - Create Server Image
 - Restore Server From Image
 - Remove Saved Image
 - Remove Server
 - Start Server
 - Stop Server
 - Restart Server
 - Reset Server Password
 - Cancel Project
 - Modify Reservation
 - Register Image
 - Unregister Image
 - Create User
 - Modify User
 - Remove User
 - Create Team
 - Modify Team
 - Remove Team
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Self Service Catalog – Cloud Consumer View

Offerings

Home > Request a New Service > Virtual Server Management > Modify Project

Add VMware Servers
Add one or more VMware virtual machines to the project.

Modify Reservation
This task allows you to modify the start date if the project is not active and the end date of the project.

Status

Welcome tideadmin | About | Help | Logout

My Requests

In Progress (2) | Resolved (5) | Failed (1) | Total (8)

Recent Activity

Modify Reservation Cloudburst for Demo	In Progress
Create User ClaudiaP	Resolved
Create User Claudia	Resolved
Create Project with VMware Servers Cloudburst for Demo	Resolved
Create Project with VMware Servers CB for 01/20/09 - Part2	In Progress

[Manage Requests...](#)

My Projects

Operational (3) | In Transition (1) | Total (4)

Recent Activity for Demo

Cloudburst for Demo	Operational
CB for 01/20/09 - Part2	In Transition
Application Development	Operational
Regression Test	Operational

Upcoming Projects
No upcoming projects

[Manage Projects...](#) | [Manage Servers...](#)

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Offering – Create Project with VMware Server

Login via TivSAM

Home > Request a New Service > Virtual Server Management

Backup and Restore Server Image

Manage Image Library

Manage Users

Modify Project

Modify Server

Cancel Project
Use this task to cancel a project. All of its virtual servers will be returned and made available for other users. Any saved images will also be deleted.

Create Project with VMware Servers
Provision one or more VMware virtual machines containing a software image.

Select

General

*Project Name: MY TEAM

*Team to Grant Access: MY TEAM

Project Description:

Start Date: 1/27/2008 | End Date: until this date

End Date: 10/26/2009

Assigned Image: VMware System

Monitoring Agent to be installed:

*Image to be Deployed:

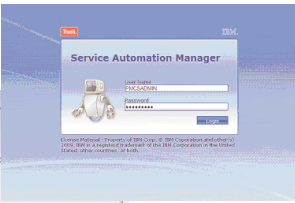
Select	Name	OS	Hypervisor	CPU	Memory	Storage
<input type="checkbox"/>	SSS	unknown	VMware	1	4096 MB	20 GB
<input checked="" type="checkbox"/>	winbase_2008-04	unknown	VMware	1	819 MB	20 GB
<input type="checkbox"/>	winbase_2008-04	unknown	VMware	1	512 MB	8 GB

Resources
To adjust the settings of the requested resources, press the setting button. After making the necessary adjustment, press the setting button to save the configuration.

Servers
Number of Servers to be Provisioned: 1

CPU | Memory | Disk

OK | Cancel



Specify:

- Project Name
- Team to Grant access
- Time frame
- Image
- Number of servers needed

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Create Project with VMWare Servers

Add VMware Servers
Add one or more VMware virtual machines to the project.

*Project Name: CB

Project Details

Project Name	CB
Project Description	Cloudburst
Project Type	RDP
Start Date	11/23/2009
End Date	11/23/2009
Team Access	TIDETEAM

Requested Image

Resource Group Used to Reserve Resources: VMware System x Monitoring Agent to be Installed

*Image to be Deployed:

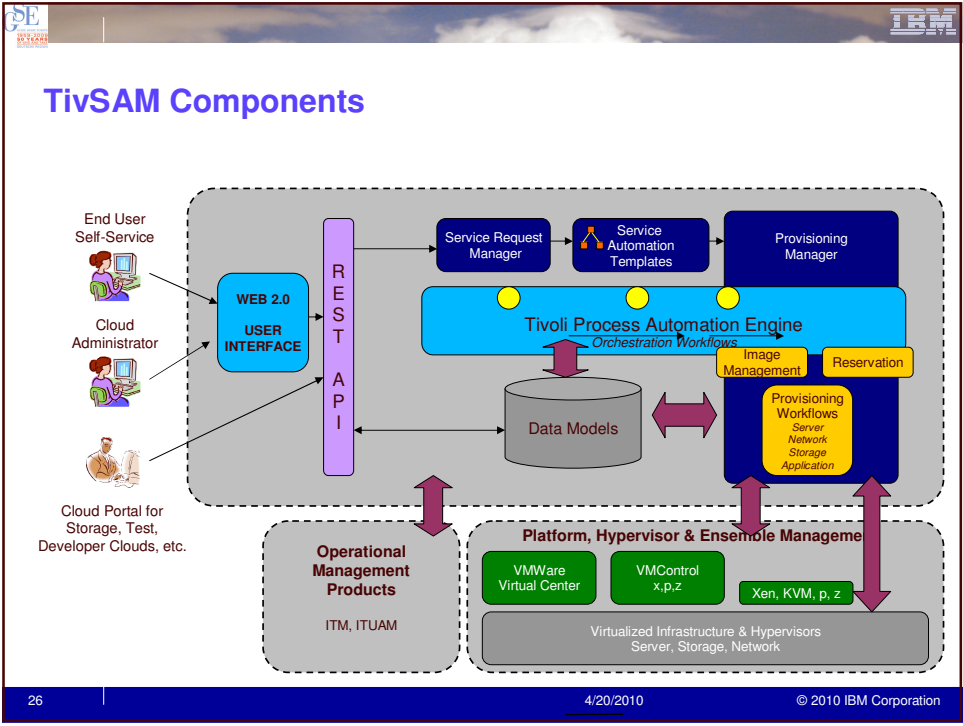
Select	Name	Hypervisor	CPUs	Memory	Storage
<input checked="" type="radio"/>	VSI_SLES10	VMware	1	0.5 GB	4 GB
<input type="radio"/>	VSI_RHEL53	VMware	1	0.5 GB	4 GB

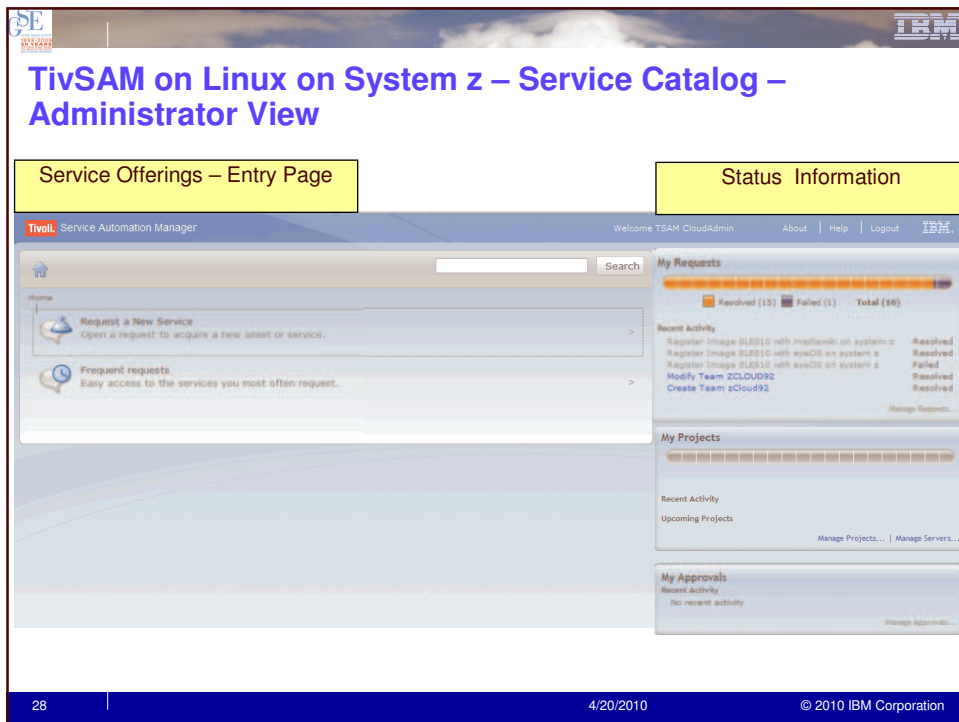
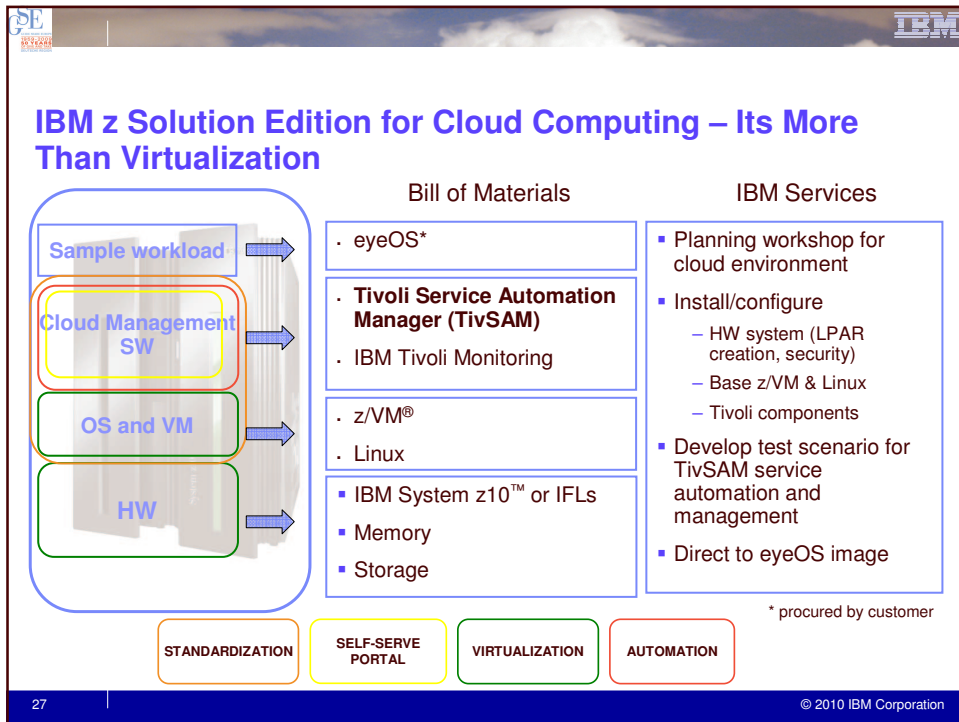
Resources

To adjust the settings of the requested resources, press the setting button. After making the necessary adjustment, press the setting button to save the configuration.

Servers	CPU	Memory	Disk
*Number of Servers to be Provisioned: 1	Virtual: 1	Min: 0.5 GB	Max: 4 GB
*Available at above configuration and schedule:	Physical: 0.5	Swap: 0.0 GB	

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Offering – Register Image and Unregister Image

Register Image
Register a new server image in the Image Library.

General

*Name of Virtual Server Image
SLES10 with eyeOS on system z

Description of Virtual Server Image
SLES10 with eyeOS on system z

*Resource Pool
System z pool

*Discovered Image
None

Resources

	Minimum	Recommended
*Number of Virtual CPUs	1	1
*Amount of Physical CPUs	1.0	1.0
*Amount of Memory (in GBs)	1.000	1.000
*Disk Space Size (in GBs)	1	1

OK Cancel

Definition of Resource Pool

No images discovered yet

Perform Configuration to set up Cloud Management Subsystem

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Configuration to Set Up Cloud Management Subsystem

Set up the Tivoli Service Automation Manager Cloud Management Subsystem to enable provisioning of Linux guests on z/VM:

- Resource pool 'System z pool'

Add the following lines to /etc/cloud/vrpool.properties:

```
5.tpmHPTType=zVM
5.maxVCPU=4
5.name=System z TMCC16 pool
5.order=6
5.PtoVCPUfactor=1.0
5.tpmPool=TMCC16 z pool
```

- Customize XML template files to import following data into the Tivoli Provisioning Manager (TPM) Data Center Model:
 - Network components
 - Host platforms
 - Virtual Server templates
 - Boot servers
 - Software definitions

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XML Template File to Configure System z Cloud Management Subsystem

```

<!-- Define all involved virtual server templates in the following section -->
<virtual-server-template name="TMCC default VST - 1NIC (QDIO) - 2IPL - 1GB storage - 1 MDISK">
</virtual-server-template>
<virtual-server-template name="TMCC test VST - 2NIC (QDIO) - 2IPL - 1GB storage - 2 MDISK">
</virtual-server-template>
<!-- Define all involved boot servers in the following section -->
<boot-server name="TMCC16-bootserver" locale="en_US" is-device-model="zVM BootServer" type="zVM" failed="false">
</boot-server>
<!-- Define all involved zLinux software images -->
<!-- software stack is a software module containing software module(s) or images -->
<!-- Name is a description for the software stack -->
<software-stack name="SLES10 GM OS with eyeOS" locale="en_US" is-device-model="Cloud Suse Linux Operating System" version="N/A" stack-type="Declared">
</software-stack>
<software-stack name="SLES10 GM OS with mediawiki" locale="en_US" is-device-model="Cloud Suse Linux Operating System" version="N/A" stack-type="Declared">
</software-stack>
<software-stack name="SLES10 GM OS with wordpress" locale="en_US" is-device-model="Cloud Suse Linux Operating System" version="N/A" stack-type="Declared">
</software-stack>
<software-stack name="SLES10 GM OS with opensource apps" locale="en_US" is-device-model="Cloud Suse Linux Operating System" version="N/A" stack-type="Declared">
</software-stack>
<software-stack name="RHEL GM OS dedicated" locale="en_US" is-device-model="Cloud Redhat Linux Operating System" version="N/A" stack-type="Declared">
</software-stack>
<image name="SLES SP2 with eyeOS on system z" image-type="Golden Master" description="Prepared for TSAM" locale="en_US" version="1.0" boot-server="TMCC16-bootserver"
status="tested" is-device-model="SDonRAMPImage" software-module="SLES10.3 GM" priority="1">
<!-- ... -->
<image name="SLES SP2 with mediawiki on system z" locale="en_US" version="1.0" description="Prepared for TSAM" boot-server="TMCC16-bootserver" image-type=
"Golden Master" status="tested" software-module="SLES10.3 GM" priority="2" is-device-model="SDonRAMPImage">
<!-- ... -->
<image name="SLES SP2 with wordpress on system z" locale="en_US" version="1.0" description="Prepared for TSAM" boot-server="TMCC16-bootserver" image-type=
"Golden Master" status="tested" software-module="SLES10.3 GM" priority="3" is-device-model="SDonRAMPImage">
<!-- ... -->
<image name="SLES SP2 with opensource apps on system z" locale="en_US" version="1.0" description="Prepared for TSAM" boot-server="TMCC16-bootserver" image-type=
"Golden Master" status="tested" software-module="SLES10.3 GM" priority="4" is-device-model="SDonRAMPImage">
<!-- ... -->
<image name="RHEL 5.4 with dedicated disk" locale="en_US" version="1.0" description="Prepared for TSAM" boot-server="TMCC16-bootserver" image-type="Golden Master"
status="tested" software-module="RHEL5.4 GM" priority="1" is-device-model="SDonRAMPImage">
<!-- ... -->
<!-- Define all involved HostPlatforms -->
<apare-pool name="TMCC16 z pool">
<server name="mappr16" locale="en_US" is-device-model="SDonRAMP_HostPlatform" ignored-by-resource-broker="false" failed="false" pool="TMCC16 z pool">
<property component="ZANABA" name="Cloud" value="true"/>
<property component="ZANABA" name="Cloud.Subnetwork" value="Cloud Management LAN"/>
</apare-pool>
<!-- ... -->

```

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TivSAM Offering – System z Resource Pool Configured

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TivSAM Offering – Linux System z Images Configured

Register Image

Register a new server image in the Image Library.

General

*Name of Virtual Server Image
SLES10 with wordpress on system z

Description of Virtual Server Image
SLES10 with wordpress on system z

*Resource Pool
System z TMCC16 pool

*Discovered Image
SLES10 GM OS with wordpress

Available Images

- SLES10 GM OS with wordpress
- SLES10 GM OS with opensource apps
- RHEL GM OS dedicated

	Minimum	Recommended
*Number of Virtual CPUs	1	1
*Amount of Physical CPUs	1.0	1.0
*Amount of Memory (in GBs)	1.000	1.000
*Disk Space Size (in GBs)	1	1

OK Cancel

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

Thank You



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