G09 – Cloud Computing – Update and News

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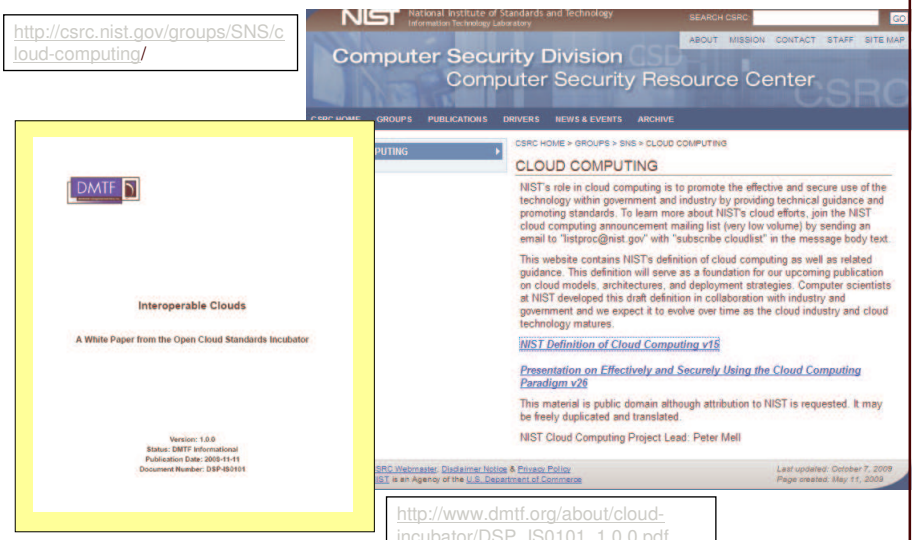
Agenda

- **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

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

AMD, Broadcom, CA, Citrix, Dell, EMC, Fujitsu, HP, Hitachi, IBM, Intel, Microsoft, Novell, Oracle, Sun, VMware

DMTF Leadership Companies

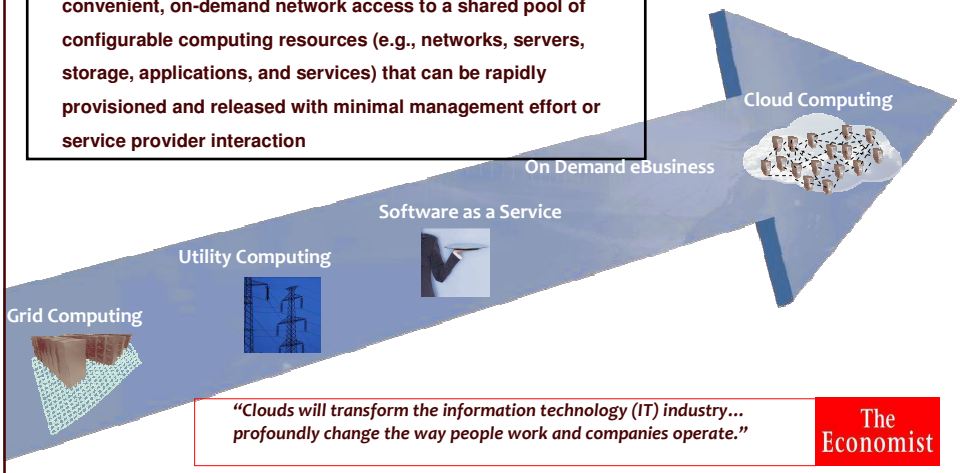
BMC Software
Brocade Communications
Cisco
ETRI
Lenovo
Rackspace
Red Hat
Savvis
SunGard
WBEM Solutions
Yahoo, Inc.

OpenGridForum, tmforum, OMG, CSA cloud security alliance, SNIA, The Open Group

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

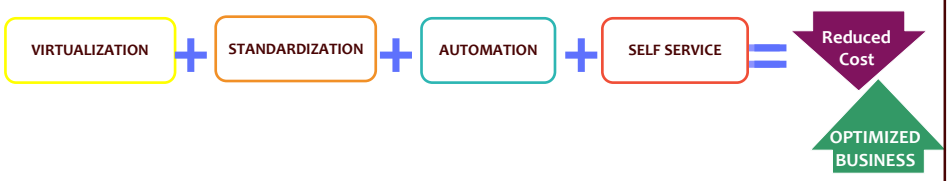
Cloud Computing – An Evolution From Known Technologies

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



"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

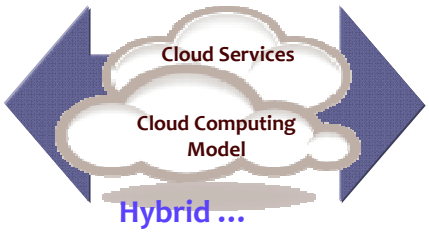


… leverages virtualization, automation, standardization and self service to free up operational budget for new investment

Delivery Models

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



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

Hybrid ...

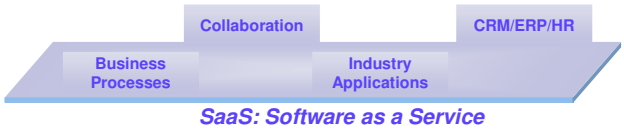
Access to client, partner network, and third party

Community ...

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

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

What Kind of Clouds Do Exist - Layers



SaaS: Software as a Service

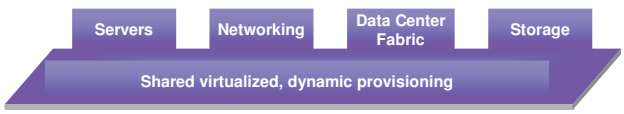
Cloud consumer uses an application

E.g. LotusLive, IBM Smart Analytics Cloud

PaaS: Platform as a Service

Cloud consumer uses an application framework

E.g. WebSphere on Amazon Machine Images



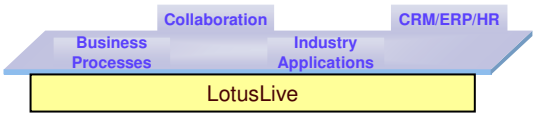
IaaS: Infrastructure as a Service

Cloud consumer uses IT resources (server, storage, network)

E.g. Amazon EC2, IBM CloudBurst

Software as a Service

– Sample Public Cloud

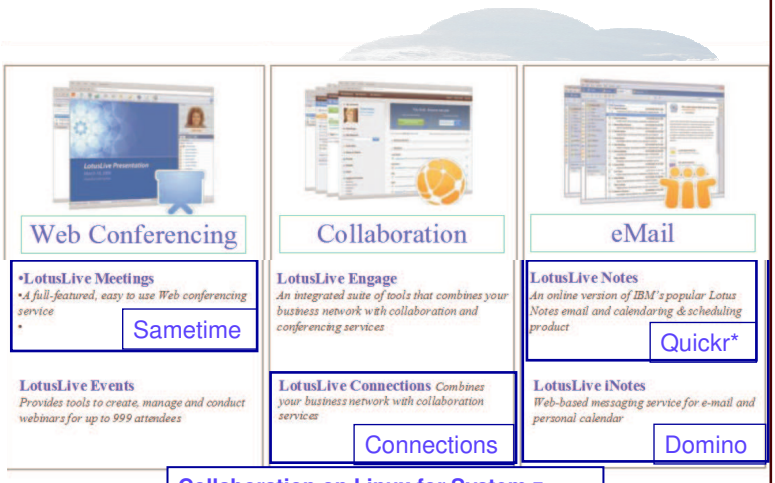


Delivery of application functionality via **subscription** model over Internet.

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

www.LotusLive.com

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

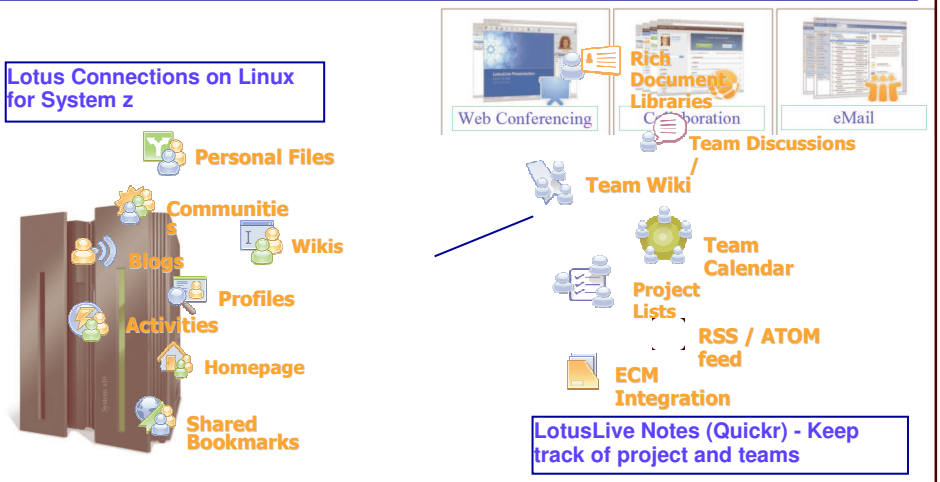


Collaboration on Linux for System z

 * Subject to change

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 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

* Subject to change

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

* Subject to change

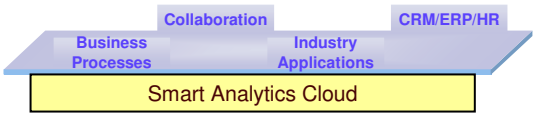
Lotus Sametime for Linux for System z *

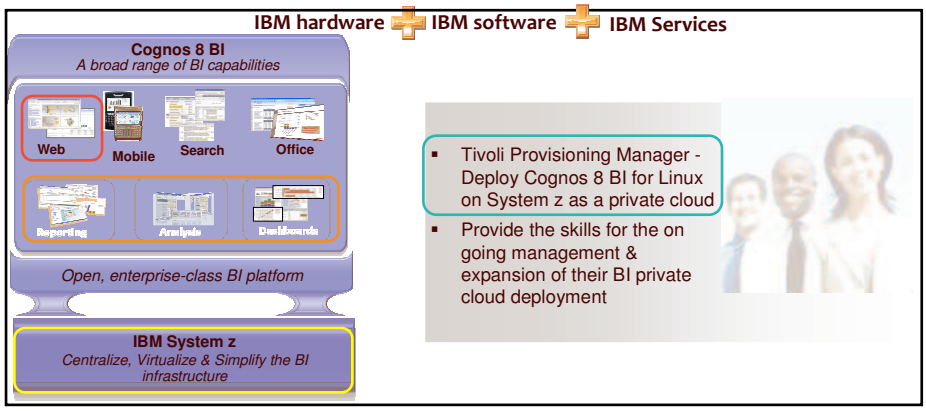
- **Lotus Sametime 8.5.1** for Linux on System z support
- eGA for Sametime 8.5.1 is targeted for Q3, 2010
- Planned platforms
  - RHEL 5.x Server and Advanced Platform (64bit)
  - SLES 10 (SP1 or later SP) (64bit)
- The following Sametime 8.5.1 services are planned for System z:
  - Community Server (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)

* Subject to change

Software as a Service

– Sample Privat Cloud





- 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

Platform as a Service

– Sample Public Cloud

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-bd0922c9
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-99e1caed
IBM InfoSphere DataStage/QualityStage Designer Windows Client NEW!	ami-a8e705c1	ami-630b2017

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

What is IBM offering on Amazon Web Services?

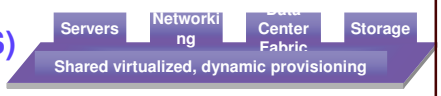
1. Hourly priced, full production environments of leading IBM software products.
   - Prices start at $0.38c an hour and includes IBM software, Novell SuSe Linux and underlying Amazon Elastic Compute Cloud (EC2) charges.
   - No commitments, contracts or minimums. Pay as you go.
2. BYOL - Bring your 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/

Infrastructure as a Service (IaaS)



- Sample Public Cloud

amazon web services™

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

Servers | Networking | Data Center Fabric | Storage

Shared virtualized, dynamic provisioning

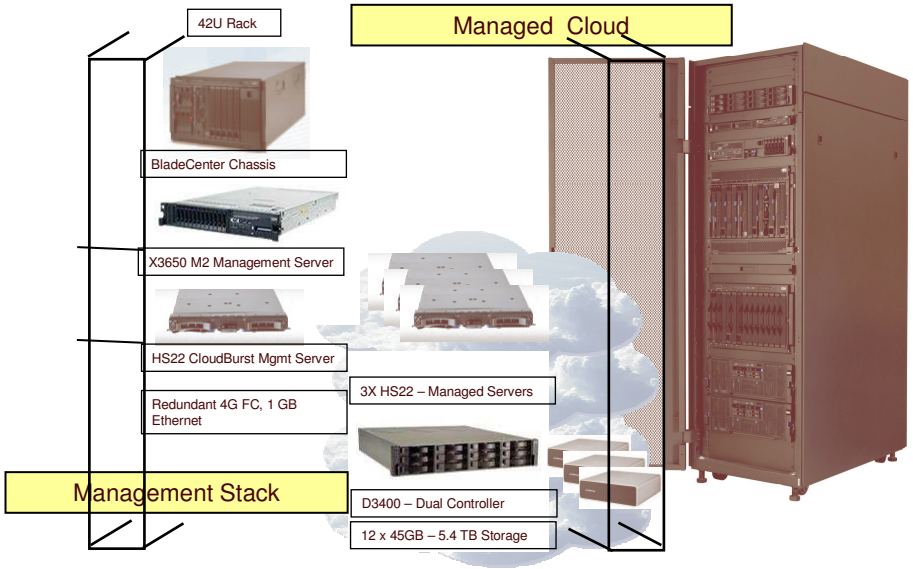
Today: BladeCenter

IBM CloudBurst

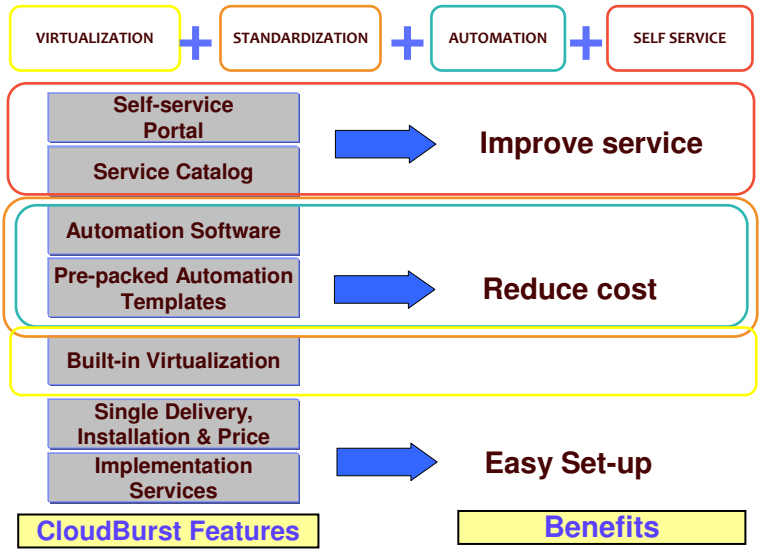
- IBM CloudBurst is a pre-packaged private cloud offering
- It brings together hardware, software and services needed to establish a private cloud
- Comprehensive integrated IBM Service Management
- Extension to existing IT infrastructure
- Ideal for software development and test workload

Roll-out: POWER 7, System z*

IBM CloudBurst – Components Minimum Configuration



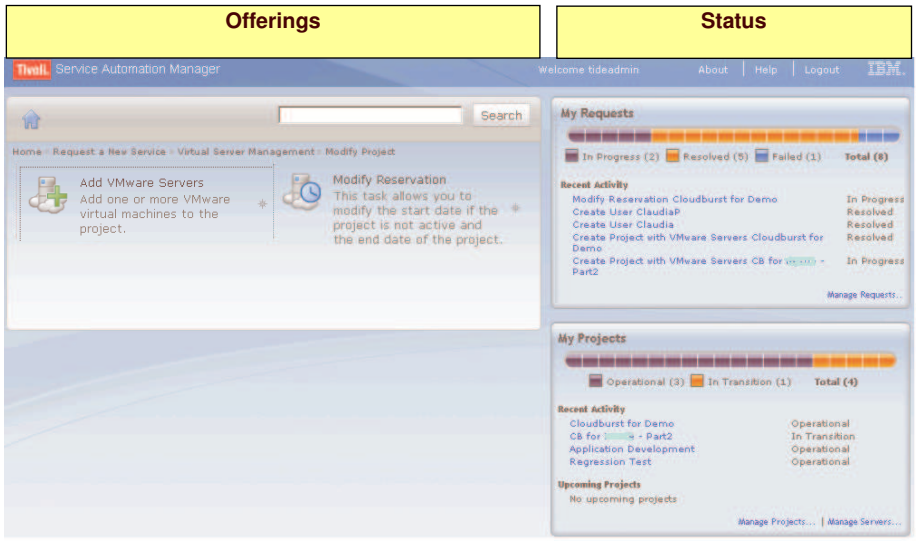
IBM CloudBurst – It's More Than Virtualization



Cloudburst – Self Service Catalog

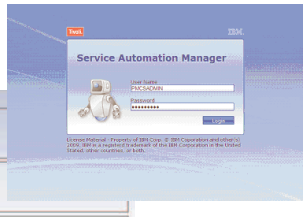
- Create Project with VMware Servers
- Create Project with System p LPAR Servers
- Create Project with Xen Servers
- Create Project with z/VM Linux Servers
- Create Project with KVM Servers
- Add VMware Servers
- Add System p LPAR Servers
- Add Xen Servers
- Add z/VM Linux Servers
- Add KVM Servers
- 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

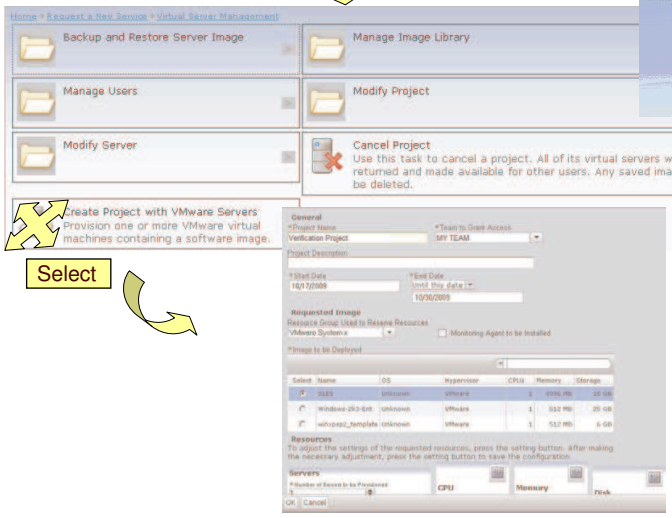
Self Service Catalog – Cloud Consumer View



Offering – Create Project with VMware Server

Login via TivSAM



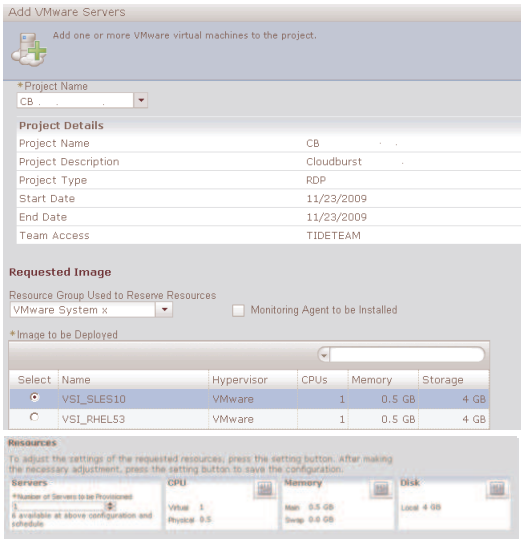


Select

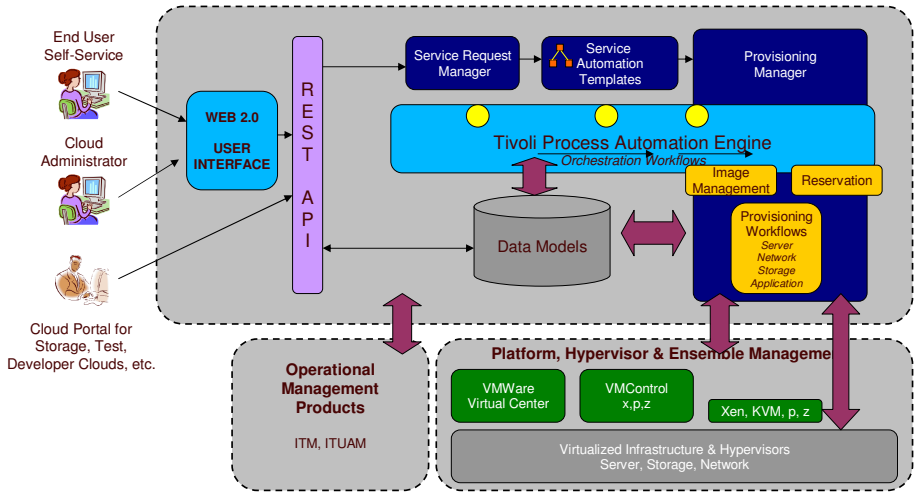
Specify:

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

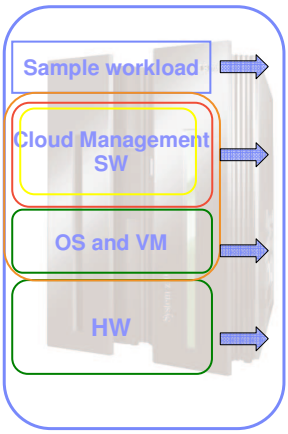
Create Project with VMWare Servers



TivSAM Components



IBM z Solution Edition for Cloud Computing – Its More Than Virtualization



Bill of Materials

- eyeOS*
- **Tivoli Service Automation Manager (TivSAM)**
- IBM Tivoli Monitoring
- z/VM®
- Linux
- IBM System z10™ or IFLs
- Memory
- Storage

IBM Services

- Planning workshop for cloud environment
- Install/configure
  - HW system (LPAR creation, security)
  - Base z/VM & Linux
  - Tivoli components
- Develop test scenario for TivSAM service automation and management
- Direct to eyeOS image

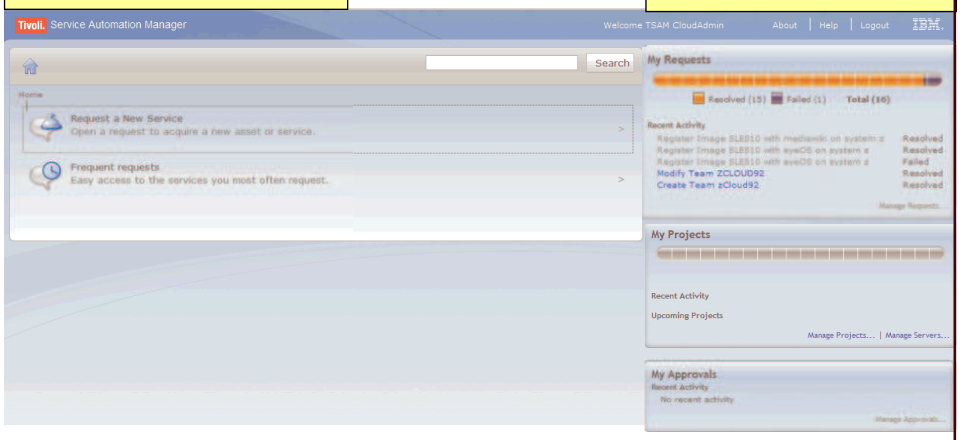
* procured by customer

STANDARDIZATION | SELF-SERVE PORTAL | VIRTUALIZATION | AUTOMATION

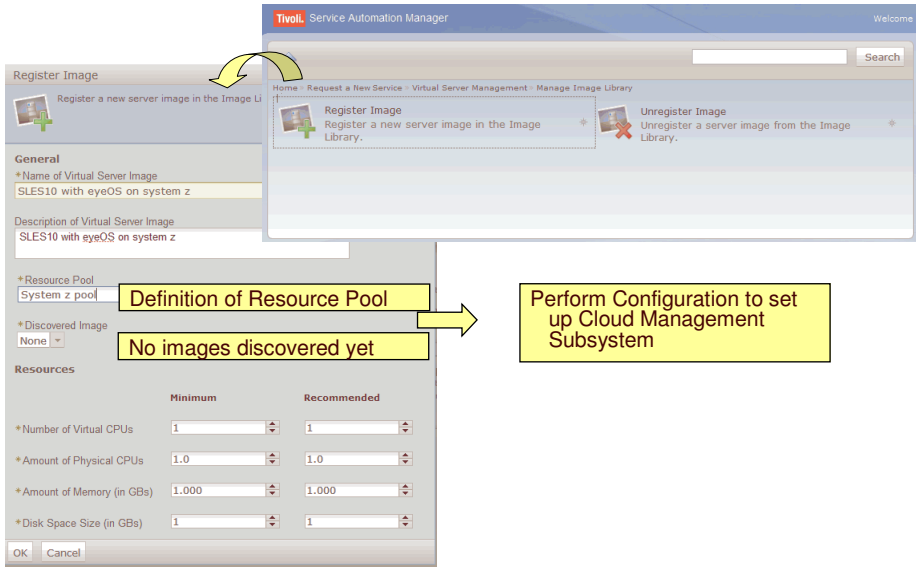
TivSAM on Linux on System z – Service Catalog – Administrator View

Service Offerings – Entry Page

Status Information



Offering – Register Image and Unregister Image



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:

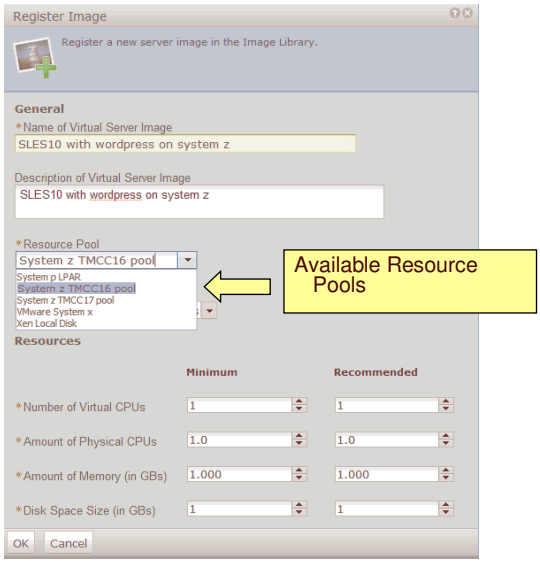
```
5.tpmHPType=zVM
5.maxVCPU=4
5.name=System z TMCC16 pool
5.order=6
5.PtoVCPUfactor=1.0
5.tpmPool=TMCC16 z pool
```

- 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

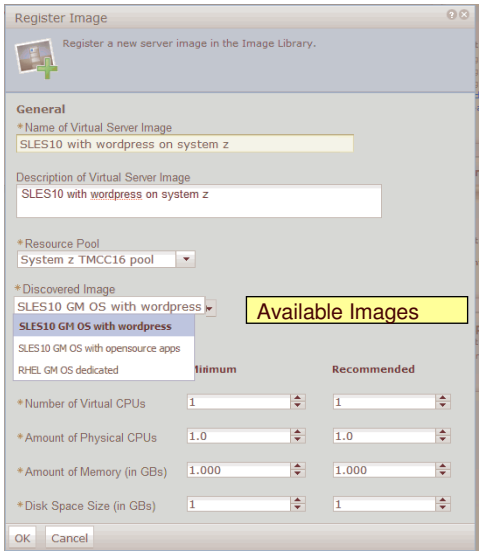
XML Template File to Configure System z Cloud Management Subsystem

```
<!-- Define all involved virtual server templates in the following section -->
<virtual-server-template name="TMCC default VST - 1NIC (QDIO) - 2IFL - 1GB storage - 1 MDISK">
<virtual-server-template name="TMCC test VST - 2NIC (QDIO) - 2IFL - 1GB storage - 2 MDISK">
<virtual-server-template name="TMCC test VST - 2NIC (QDIO) - 2IFL - 1GB storage - dedicated DISK">
    <!-- 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">
<!-- 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 x Operating System" version="N/A" stack-type="Declared">
<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 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 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 name="RHEL GM OS dedicated" locale="en_US" is-device-model="Cloud RedHat Linux Operating System" version="N/A" stack-type="Declared">
<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="SOAonRAMPimage" 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="SOAonRAMPimage">
 <!-- ... -->
<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="SOAonRAMPimage">
 <!-- ... -->
<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="SOAonRAMPimage">
 <!-- ... -->
<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="SOAonRAMPimage">
 <!-- ... -->
<!-- Define all involved Hostplatforms -->
<spare-pool name="TMCC16 z pool">
    <server name="mapsrv16" locale="en_US" -device-model="SOAonRAMP_HostPlatform" ignored-by-resource-broker="false" failed="false" pool="TMCC16 z pool">
        <property component="KANAHA" name="cloud" value="true"/>
        <property component="KANAHA" name="Cloud.Subnetwork" value="Cloud Management LAN"/>
</spare-pool>
<!-- ... -->
```


TivSAM Offering – System z Resource Pool Configured



TivSAM Offering – Linux System z Images Configured



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

Thank You