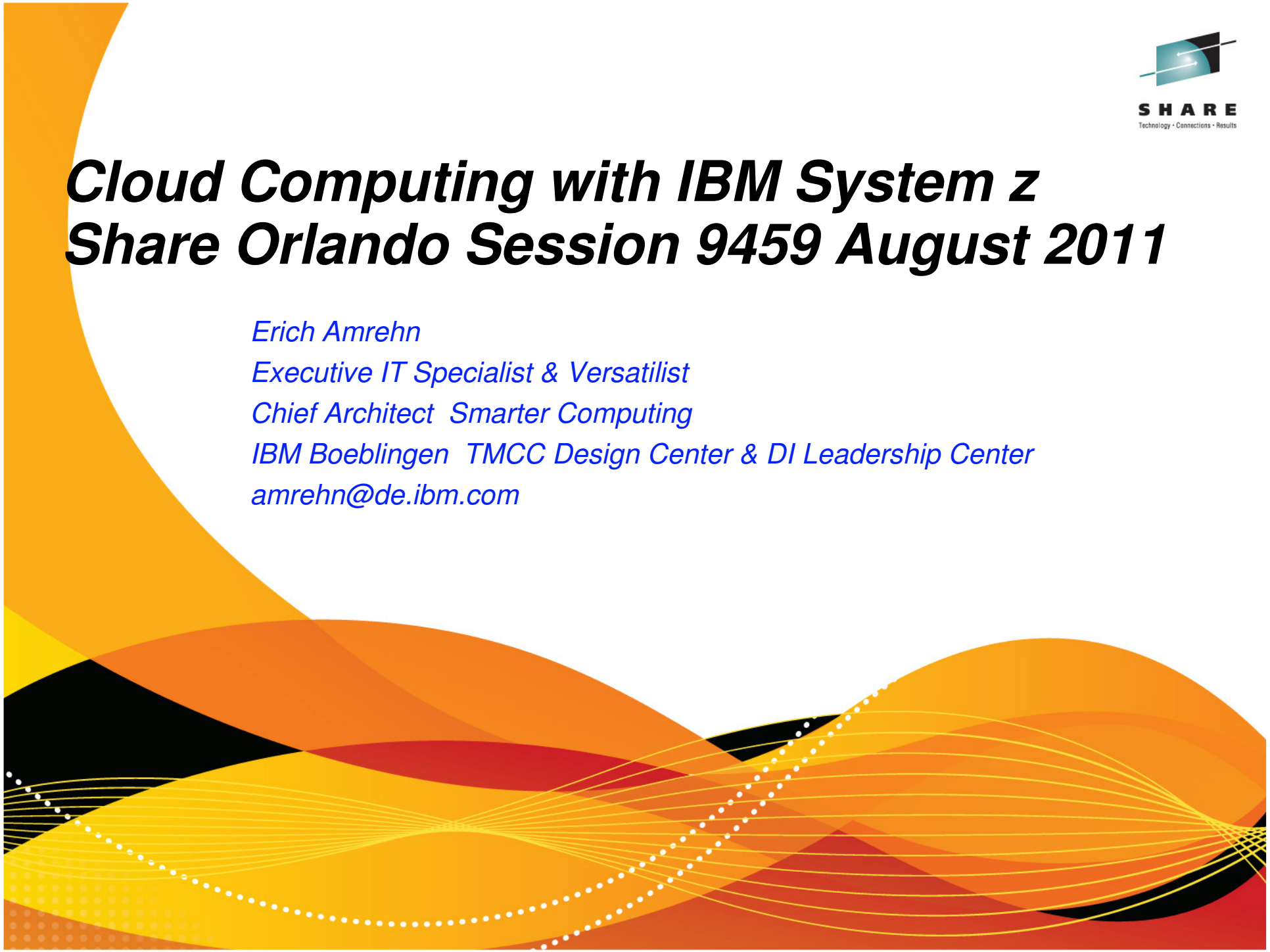

Cloud Computing with IBM System z
Share Orlando Session 9459 August 2011

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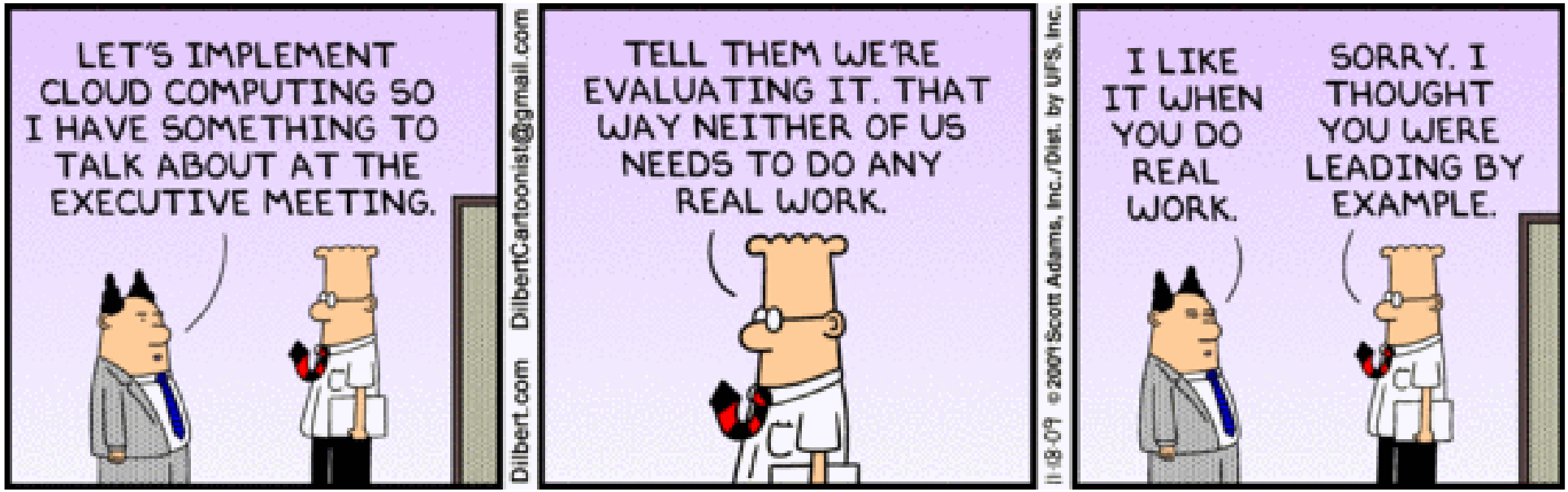

LET'S IMPLEMENT CLOUD COMPUTING SO I HAVE SOMETHING TO TALK ABOUT AT THE EXECUTIVE MEETING.
DilbertCartoonist@gmail.com
Dilbert.com
TELL THEM WE'RE EVALUATING IT. THAT WAY NEITHER OF US NEEDS TO DO ANY REAL WORK.
11-08-09 © 2001 Scott Adams, Inc./Dist. by UFS, Inc.
I LIKE IT WHEN YOU DO REAL WORK.
SORRY. I THOUGHT YOU WERE LEADING BY EXAMPLE.

Disclaimer

- This document represents the author‘s views and opinions.

It does not necessarily represent IBM‘s position or strategies

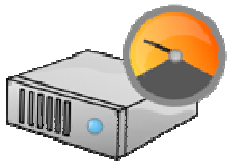
Thanks to the following people for there contribution

-Dr. Kristof Kloeckner, Gerd Breiter, Michael Behrendt, Dr. Michael Waidner, Claudia Prawirakusuma, Elisabeth Puritscher, Frank DeGilio, Fank Heimes

Agenda

- **Cloud Computing Introduction**
  - On it‘s Way to Become a Standard ... NIST and DMTF
  - An Evolution from Known Technologies It‘s More than Virtualization
  - Delivery Models – Private -> Public Clouds
- **IBM System z Cloud Option‘s/Solution‘s**
  - A World Wide Federated Cloud project on IBM System z
  - Boeblingen Tivoli Service Automation Manager setup and example
  - A walk to Tivoli Service Automation Manager setup after installation
  - Solution Edition for Cloud Computing and Data Cloud
- **Summary & Discussion**

Today's Challenges



85% idle

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

70¢ per $1

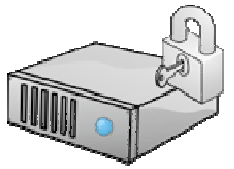
70% on average is spent on maintaining current IT infrastructures versus adding new capabilities.

1.5x

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

$40 billion

Consumer product and retail industries lose about $40 billion annually, or 3.5 percent of their sales, due to supply chain inefficiencies.



33%

33% of consumers notified of a security breach will terminate their relationship with the company they perceive as responsible.

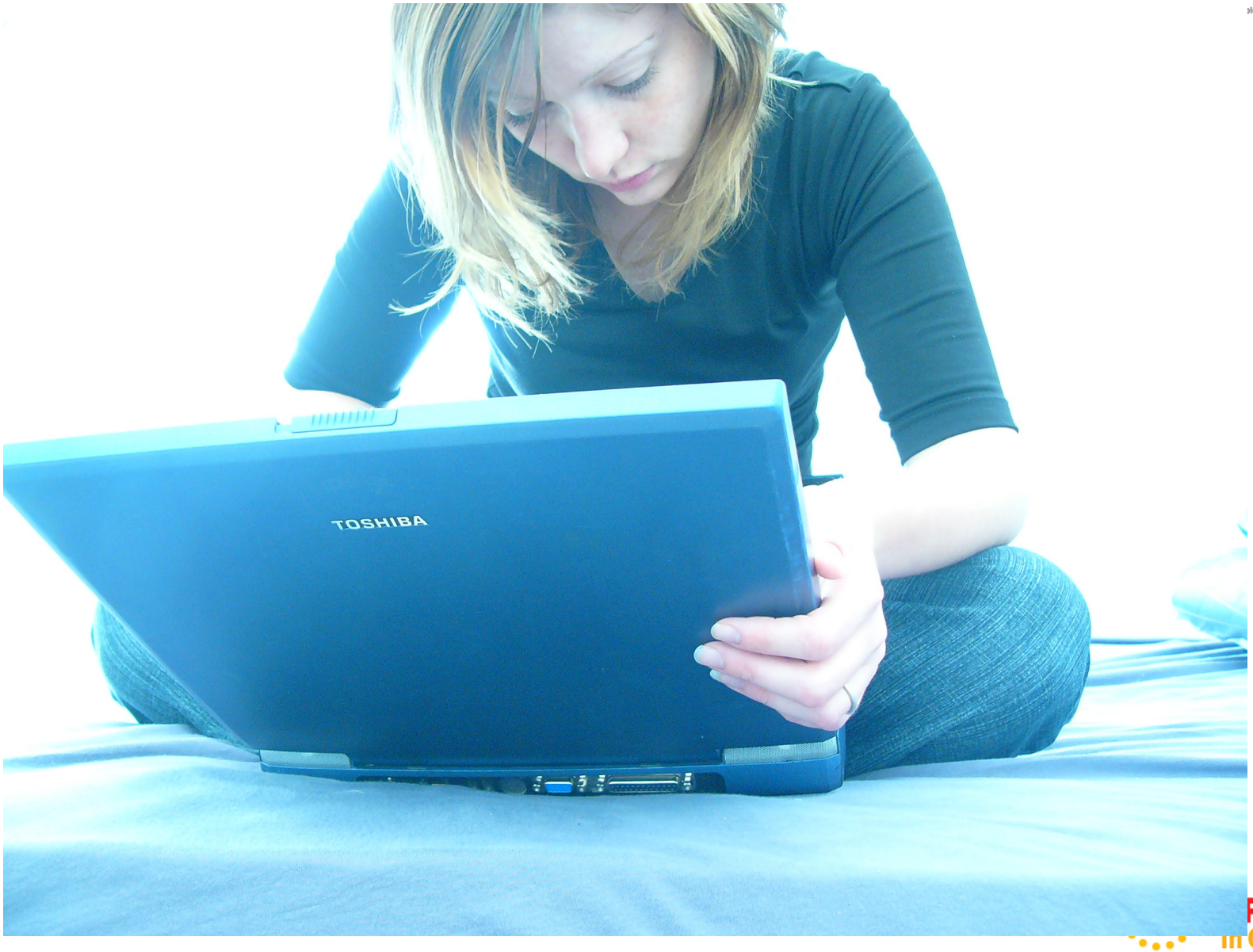
It's time to start thinking

Differently

about infrastructure


CLOUD CAFE
COFFEE
SODA
JUICE
SANDWICHE
SNACKS
BEER
COFFEE
SANDWICHES
SODA
ICE CREAM
CHIPS
BEER

A User Experience



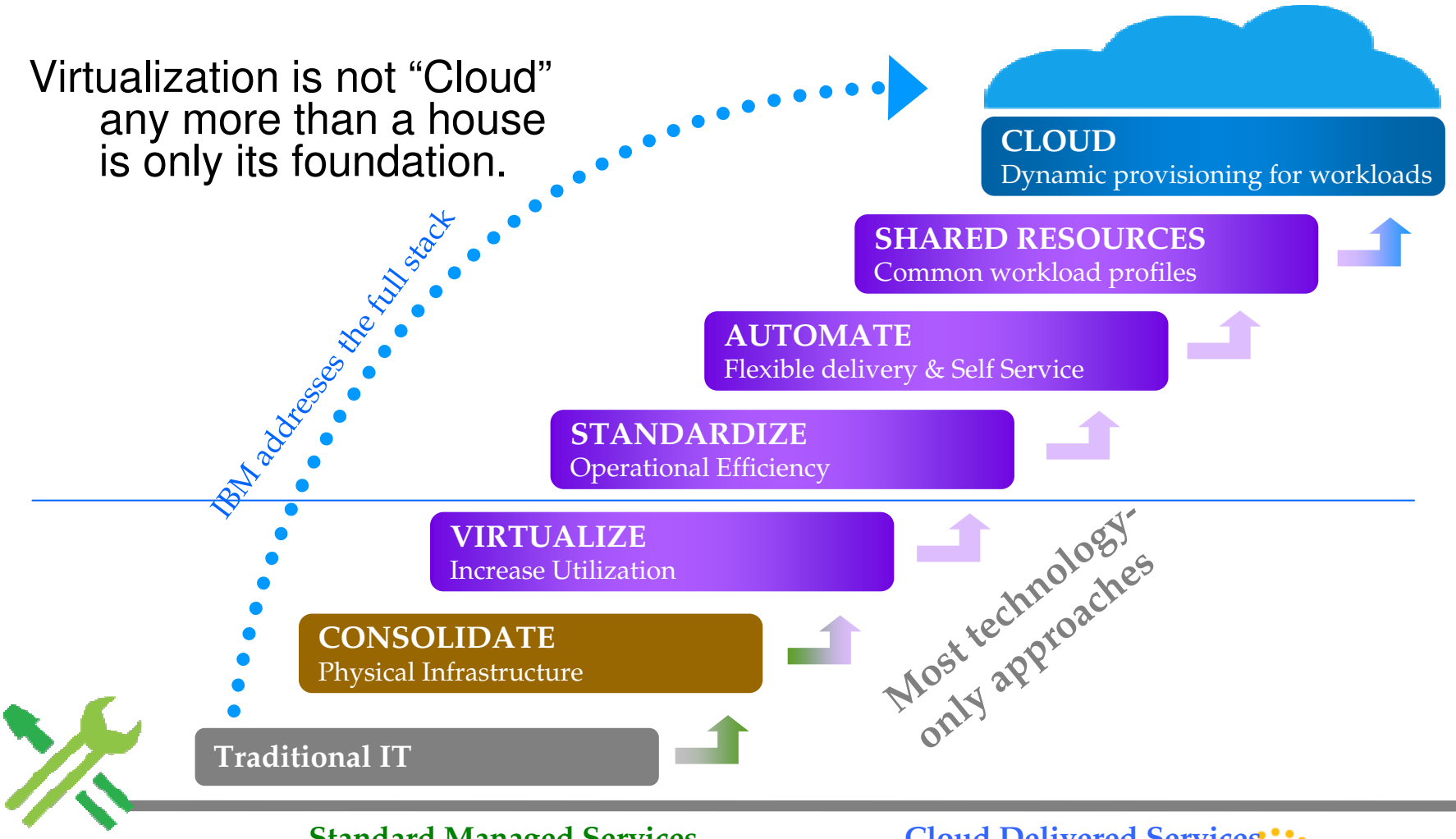
A Deployment Model

A Deployment Model

Business Model

This is a Natural Progression

Virtualization is not “Cloud” any more than a house is only its foundation.



Cloud Computing: The next step in the evolution of IT

1. Centralized Computing: 1960 –

- Optimized for sharing, industrial strength, systems management, …
- Managed by central IT organization
- Back office applications involving transactions, shared data bases, …
- Mainframes, supercomputers, minicomputers, …

2. Client/Server: 1985 –

- Optimized for low costs, simplicity, flexibility, …
- Distributed management across multiple departments and organizations
- Large numbers of PC-based applications
- PC-based clients and servers, Unix, Linux, ...

3. Cloud Computing: 2010 –

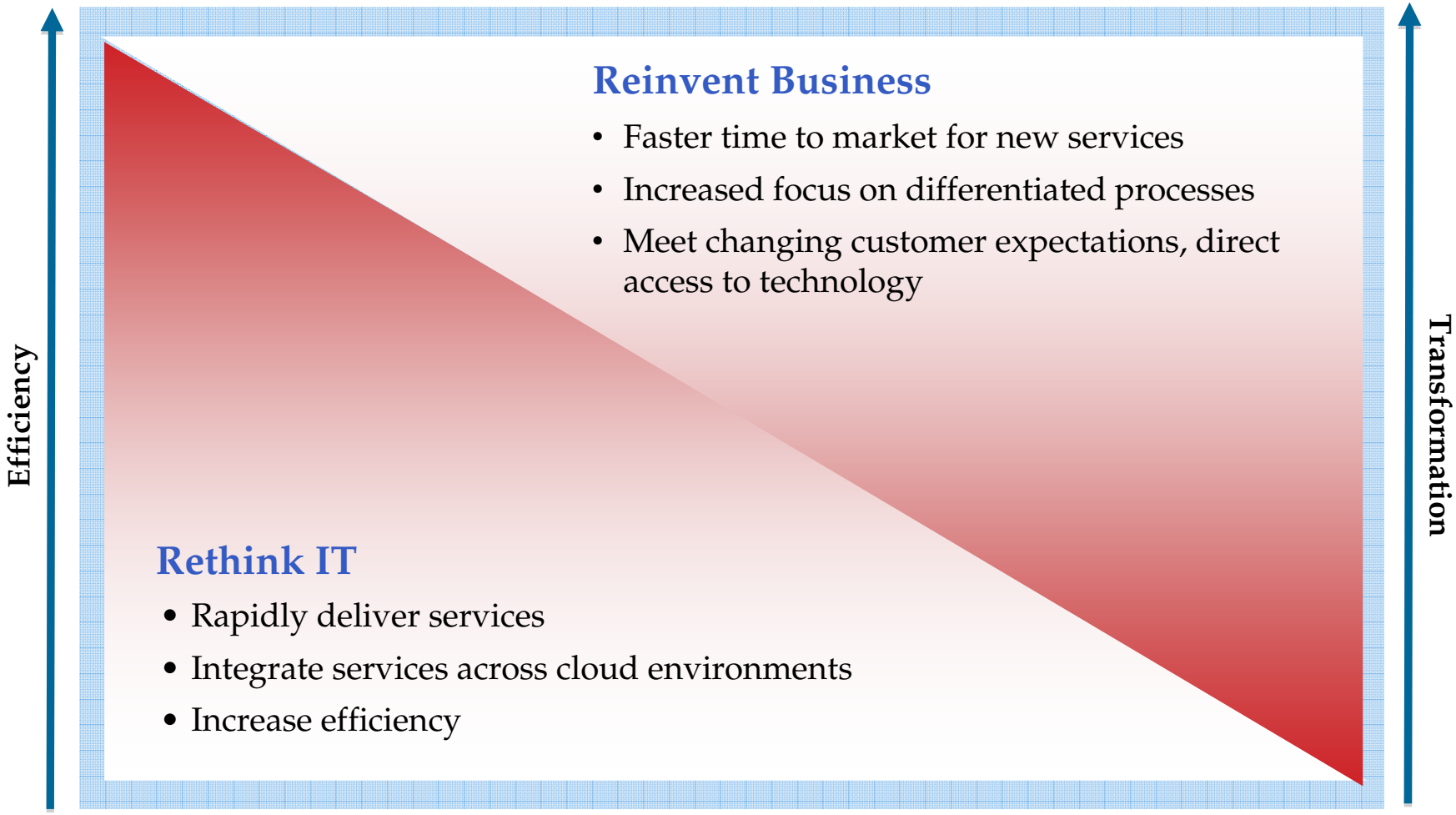
- **New consumption and delivery model**
- Optimized for massive scalability, delivery of services, …
- Centralized model, hybrid service acquisition models
- Supports huge numbers of mobile devices and sensors
- Internet technology-based architecture

Just like introducing the Client/Server model impacted almost everything we did in IT (operation IT, developing applications, …), Cloud computing has severe impact on the IT industry

IBM Premise: Cloud Computing Must Have

Common Attribute	Details
Flexible pricing	*Utility pricing, variable payments, pay-by-consumption and subscription models make pricing of IT services more flexible*
Elastic scaling	*Resources scale up and down by large factors as the demand changes*
Rapid provisioning	*IT and network capacity and capabilities are – ideally automatically – rapidly provisioned using Internet standards without transferring ownership of resources*
Advanced virtualization	*IT resources from servers to storage, network and applications are pooled and virtualized to provide an implementation independent, efficient infrastructure*
Standardized offerings	*Uniform offerings readily available from a services catalog on a metered basis*

Cloud computing allows companies to rethink IT and reinvent the way they do business



Economics of Computing are Changing

The Harsh Reality of Cloud Computing

Lines of business are leveraging public clouds today

"Submarine Projects" are currently underway in your business

IT has been here before

Remember when those pesky Windows based Web Servers did this?

Users views IT as a commodity.

The CSI effect.

Users think Cloud can do Everything.

Who needs traditional IT?

Lines of business are focusing on short term cost.

Eroding good name of the company.

Enterprises desire the benefits of cloud – but are not willing to compromise on their requirements

Availability and performance tuned to workloads

Technology platform choices built on standards

Flexible payment and billing options

Varying degrees of Security and Isolation

From self service to fully managed environments

44%

are concerned with the lack of or limited ability for customization of public clouds

50%

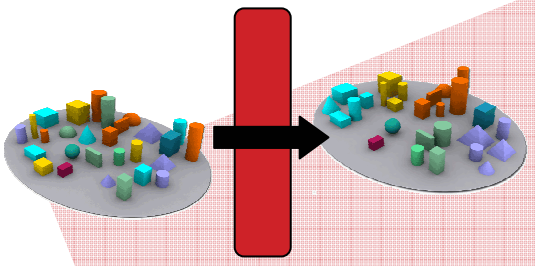
concerned about the loss of control over IT activities/ business processes

56%

believe that service level agreements are not detailed enough

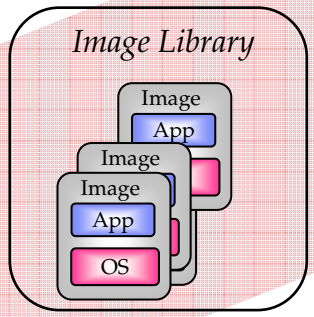
Building a Cloud Foundation

Consolidate and Virtualize



- Virtualization must become strategic across all platforms – servers and storage
- Monitor the virtualized environment
- Discovery, dependency and change tracking

Automate and Manage



- Automated provisioning / de-provisioning
- Pool standardized virtualized building blocks
- Capture and catalog virtual images used in the data center
- Management of the virtualized environment

Optimize Cloud Ready

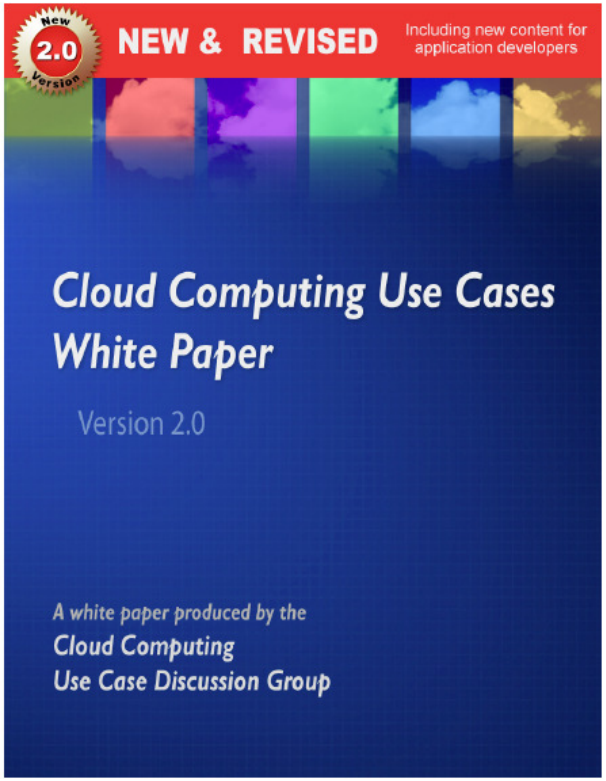
- Integrated virtualization management with IT service delivery processes
- Elastic scaling
- Pay for use
- Self-service provisioning
- Simplified deployment with virtual appliances

STANDARDIZATION

LIFE CYCLE MANAGEMENT

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

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



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 Inspire the Next, IBM, Intel, Microsoft, Novell, Oracle, Sun microsystems, VMware

DMTF Leadership Companies

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

OpenGridForum – Open Forum | Open Standards
tmforum
OMG – Object Management Group
CSA – cloud security alliance
SNIA
The Open Group – Making standards work

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

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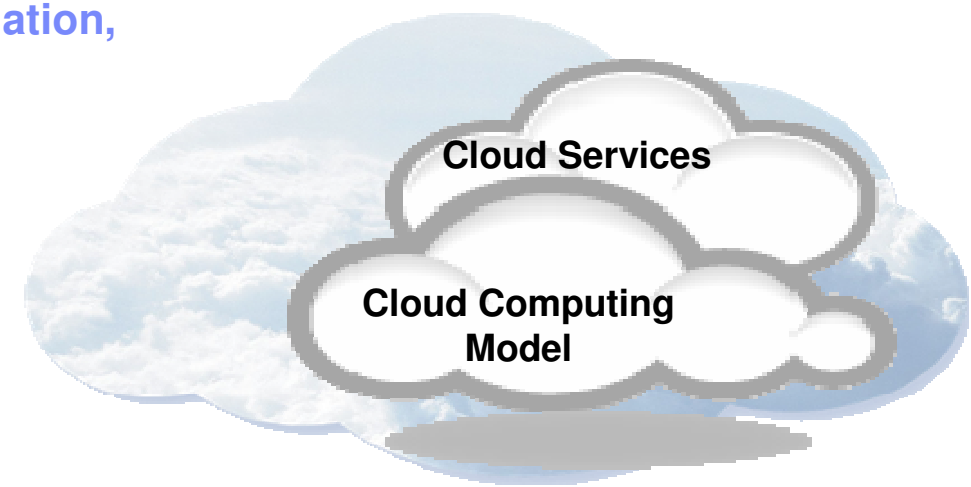
Cloud:
Consumption & Delivery Models Optimized by Workload

"Cloud" is a new consumption and delivery model inspired by consumer Internet services.

Enabled by Virtualization, (Service) Automation, Standardization

Cloud enables:

- Self-service
- Sourcing options
- Economies-of-scale



"Cloud" represents:

- The **Industrialization** of **Delivery** for IT supported **Services**

Multiple Types of Clouds will co-exist:

- **Private, Public** and Hybrid
- **Workload** and / or **Programming Model** Specific

Security Is Limited By The Weakest Link

Security Remains the Top Concern for Cloud Adoption

80%

Of enterprises consider security the #1 inhibitor to cloud adoptions

*"**How can we be assured that our data will not be leaked** and that the vendors have the technology and the governance to **control its employees from stealing** data?"*

48%

Of enterprises are concerned about the reliability of clouds

much about the other "-ities" – reliability, availability, etc."

33%

Of respondents are concerned with cloud interfering with their ability to comply with regulations

*"**I prefer internal cloud to IaaS. When the service is kept internally**, I am more comfortable with the security that it offers."*

Source: Driving Profitable Growth Through Cloud Computing, IBM Study (conducted by Oliver Wyman)

Cloud Data Integrity is Critical

October 11, 2009: Microsoft Cloud Loses T-Mobile customer data

October 2nd, 2007: Amazon EC2 Outage Wipes Out Data

Piecing together islands of data from multiple locations involves synchronization and is not simply a data restore

Specific Customer Concerns Related to Security

Protection of intellectual property and data	30%
Ability to enforce regulatory or contractual obligations	21%
Unauthorized use of data	15%
Confidentiality of data	12%
Availability of data	9%
Integrity of data	8%
Ability to test or audit a provider's environment	6%
Other	3%

Source: Deloitte Enterprise@Risk: Privacy and Data Protection Survey

Top Security Threats and Risks

Gartner: Top Risks (2008)

- Privileged user access
- Regulatory compliance
- Data location
- Data segregation
- Recovery
- Investigative support
- Long-term viability

[Heiser 09]

ENISA: Top Security Risks (2009)

- Loss of governance
- Lock-in
- Isolation failure
- Compliance risks
- Management interface compromise
- Data protection
- Insecure or incomplete data deletion
- Malicious insider

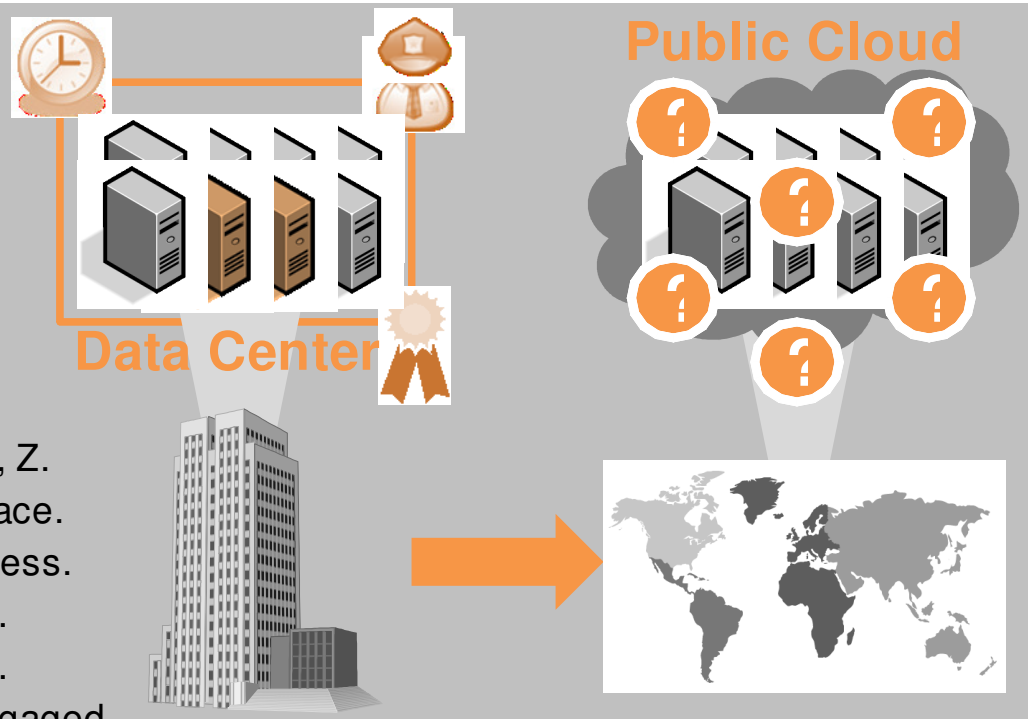
[ENISA 09/a]

CSA: Top Threats (2010)

- Abuse and nefarious use of cloud
- Insecure interfaces and APIs
- Malicious insiders
- Shared technology issues
- Data loss or leakage
- Account or service hijacking
- Unknown risk profile

[CSA 10]

Why is Cloud Security Perceived as Such a Big Problem?



We Have Control

It's located at X.
It's stored in server's Y, Z.
We have backups in place.
Our admins control access.
Our uptime is sufficient.
The auditors are happy.
Our security team is engaged.

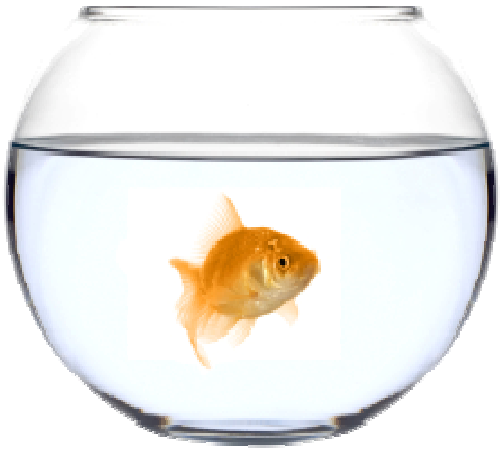
Who Has Control?

Where is it located?
Where is it stored?
Who backs it up?
Who has access?
How resilient is it?
How do auditors observe?
How does our security team engage?

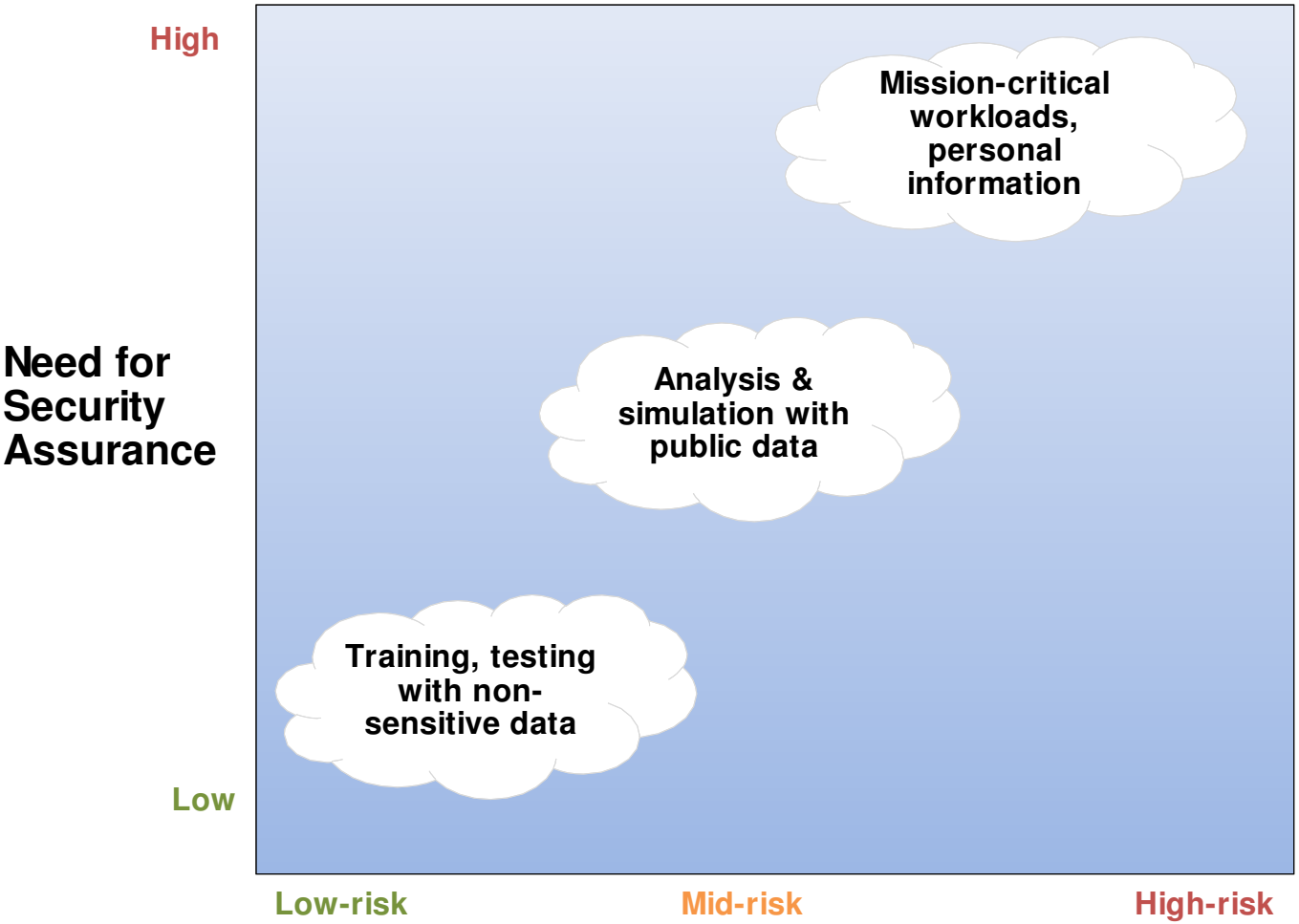
- Loss of control, perceived or real
- Lack of experience
- No established standards
- Uncertainty on how to interpret regulations and practices

- Effects
  - Public clouds rarely used for mission critical workloads
  - Preference for application-as-a-service
  - Preference for private and hybrid cloud

One Size Does Not Fit All

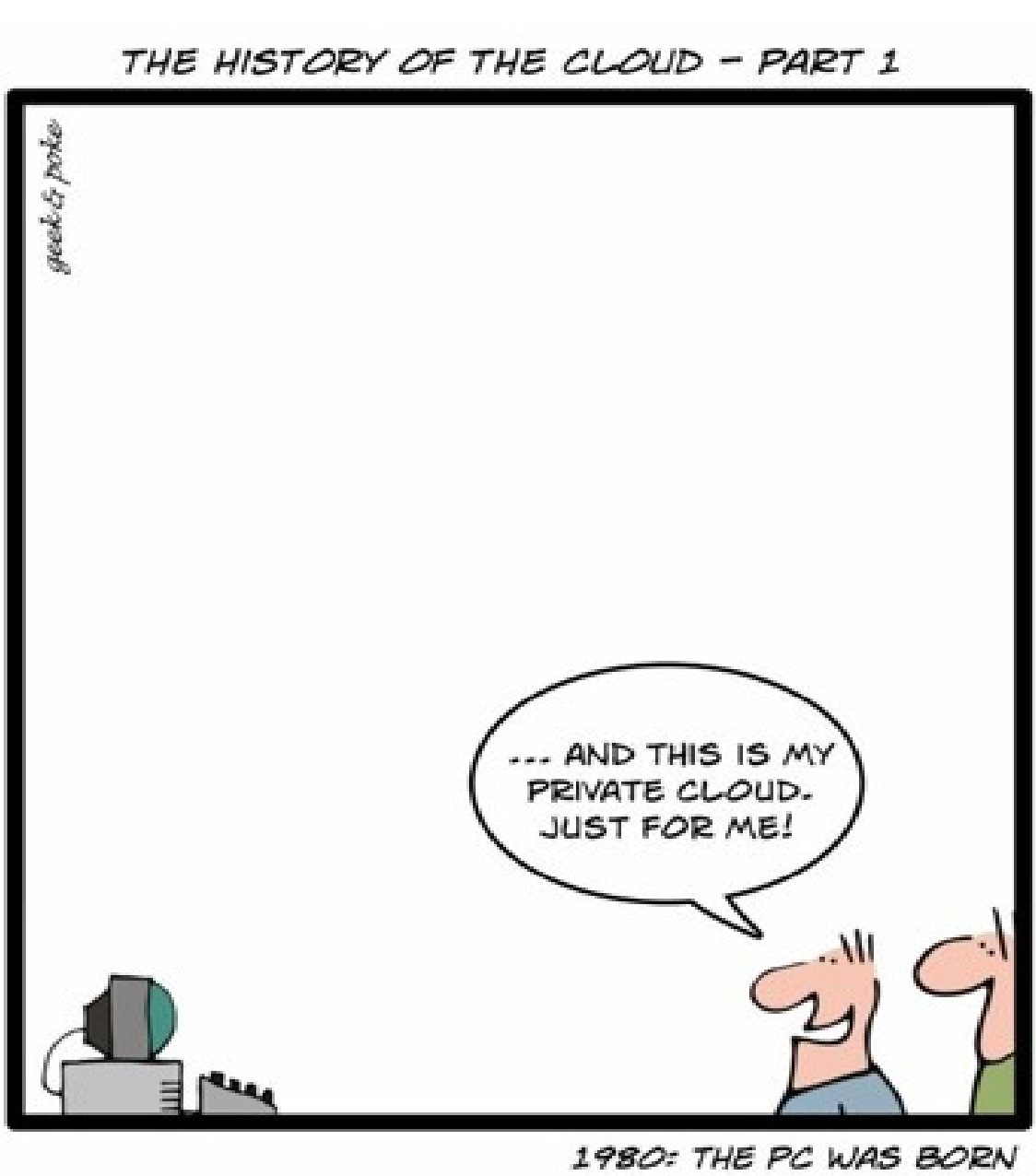


One-size does not fit-all:
Different cloud workloads have different risk profiles



Tomorrow's high value / high risk workloads need:
- Quality of protection adapted to risk
- Direct visibility and control
- Significant level of assurance

Today's clouds are primarily here:
- Lower risk workloads
- One-size-fits-all approach to data protection
- No significant assurance
- Price is key

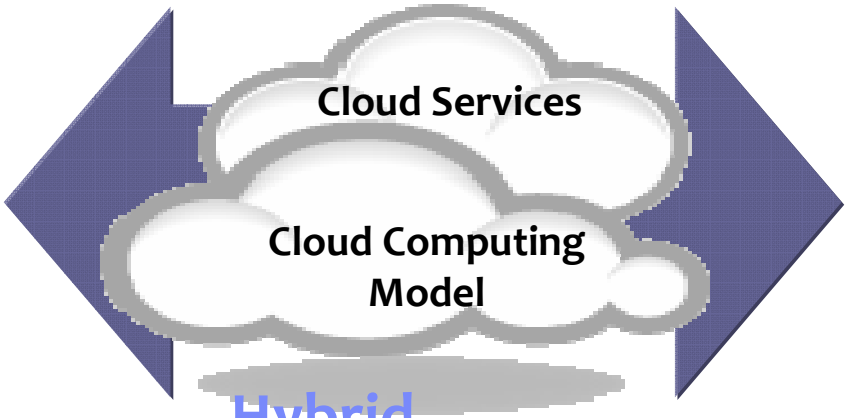


Cloud Computing Delivery Models

Flexible Delivery Models

Public …

Service provider owned and managed.
Access by subscription



Private …

Privately owned and managed.
Access limited to client and its partner network.

Hybrid …

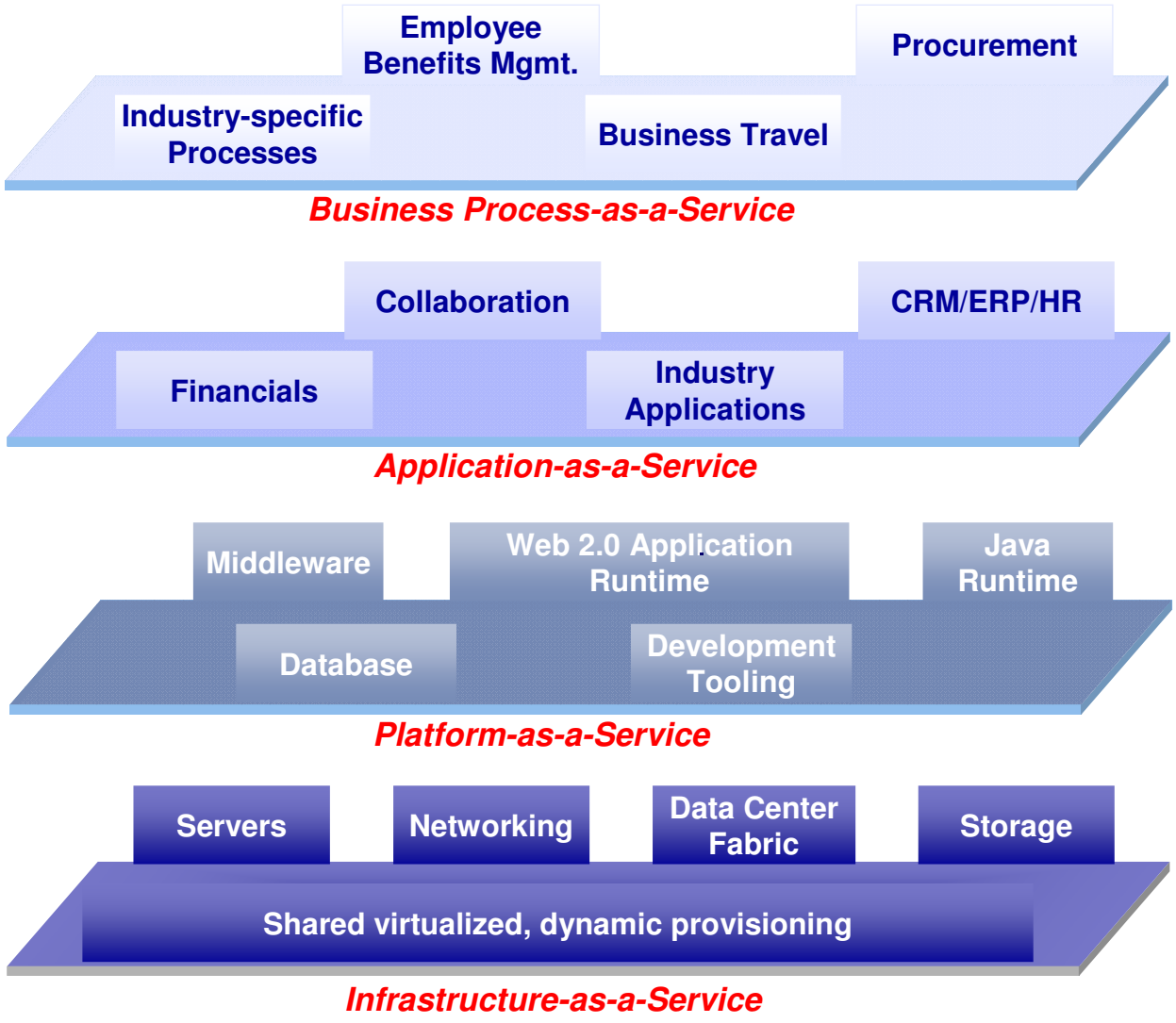
Access to client, partner network, and third party

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

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

ORGANIZATION → CULTURE → GOVERNANCE

Cloud Computing Layers



Examples

Fidelity.com

Salesforce

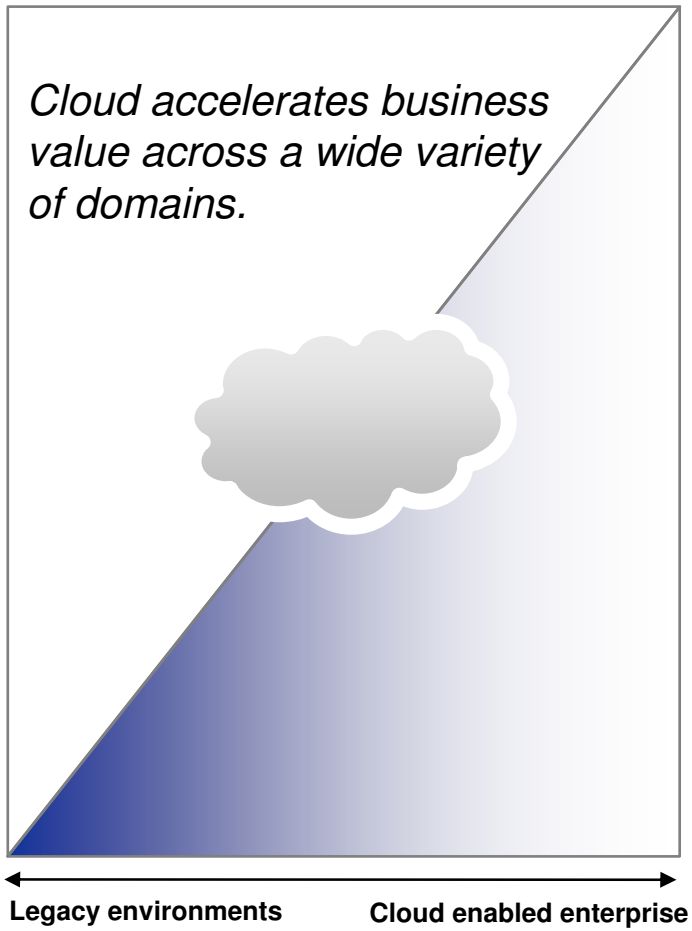
Google Code

amazon web services

Enterprises Have Achieved Significant Benefits through Cloud Computing

Most of the financial benefits are due to standardization and service management automation

Capability	From	To
Server/Storage Utilization	10-20%	70-90%
Self service	None	Unlimited
Test Provisioning	Weeks	Minutes
Change Management	Months	Days/Hours
Release Management	Weeks	Minutes
Metering/Billing	Fixed cost model	Granular
Standardization	Complex	Self-Service
Payback period for new services	Years	Months



What questions to ask to determine if Cloud is a good fit?

Key Pain Points

- Lost business opportunity because IT too slow to react. Lack of agility.
- Long deployment timelines for new systems (weeks/months+).
- Many people involved in the process, high cost & complexity.
- Many steps are manual and prone to error.
- Huge up front investment for new infrastructure when I want to start small.
- Server Sprawl
- Low Utilization
- Compliance, auditing, and security patching costly.
- Don't know what compute resources are used or how much they cost?

Key Questions to ask?

- How quickly can you react to deliver a new IT service?
- How many steps are in the provisioning process?
- What is the ratio of system admins to servers?
- Have you experienced outages due to human error ?
- How are systems sized and scaled quickly (peak usage, CUOD)?
- How many images per user?
- Am I sized for min, mean, or peak ?
- How many different configurations used?
- What level of metering and method of charging used? How do we manage license compliance ?

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)

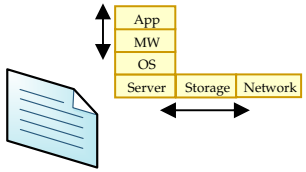
Workloads Not Yet Moving to Public Clouds

- 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)
- 3rd 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)

12 steps towards creating a cloud service

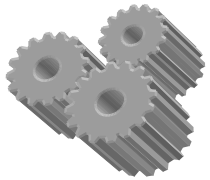
SHARE
Technology · Connections · Results

1. Specify cloud service description



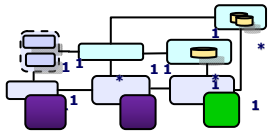
Describe function, price , SLA of cloud service, incl. management scope

2. Implement runtime functionality



Examples: Select off-the-shelf hypervisor (VMaaS), implement custom app (e.g. LotusLive)

3. Define unit of delivery & rating



Examples: VM, file system, distributed app, virtual IP address, queue, web conference, RDBMS, 3-tier business app, etc.

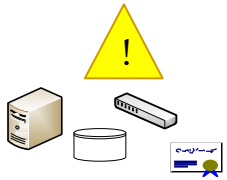
4. Implement self-service delivery & management functionality

Examples: "Create VM, add more nodes to WAS cluster, change max # of seats for LotusLive web conf

5. Implement monitoring metrics & event correlation rules

Select existing agent / implement new agent for monitoring JVM heapsize, hypervisor swap file size, # of processes, etc.

6. Implement incident, problem and asset mgmt processes

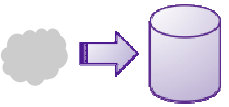


Incident, problem & asset mgmt process is specific to cloud service → customization needed

7. Implement resiliency SLA

Examples: HA for management system, delivered WAS cluster must be highly available

8. Implement backup approach

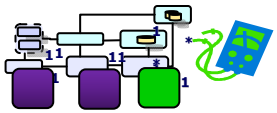


Examples: Backup all VMs, backup DB of LotusLive application

9. Implement security functions

Implement authentication, auditing, data protection, governance & audit

10. Implement cloud service specific billing metrics



Examples: CPU/hour, # of DB transactions, GB/month, # of users/webconf/hour, etc.

11. Implement rates for charging cloud service consumption

Examples: $0.11/VMhour; $0.19/MBsTransferred; $0.02/webconference; $0.05/fraudAnalysis

12. Register cloud service to service catalog

A cloud service must be registered to the service catalog to be externally accessible, entitlements need to be configured,

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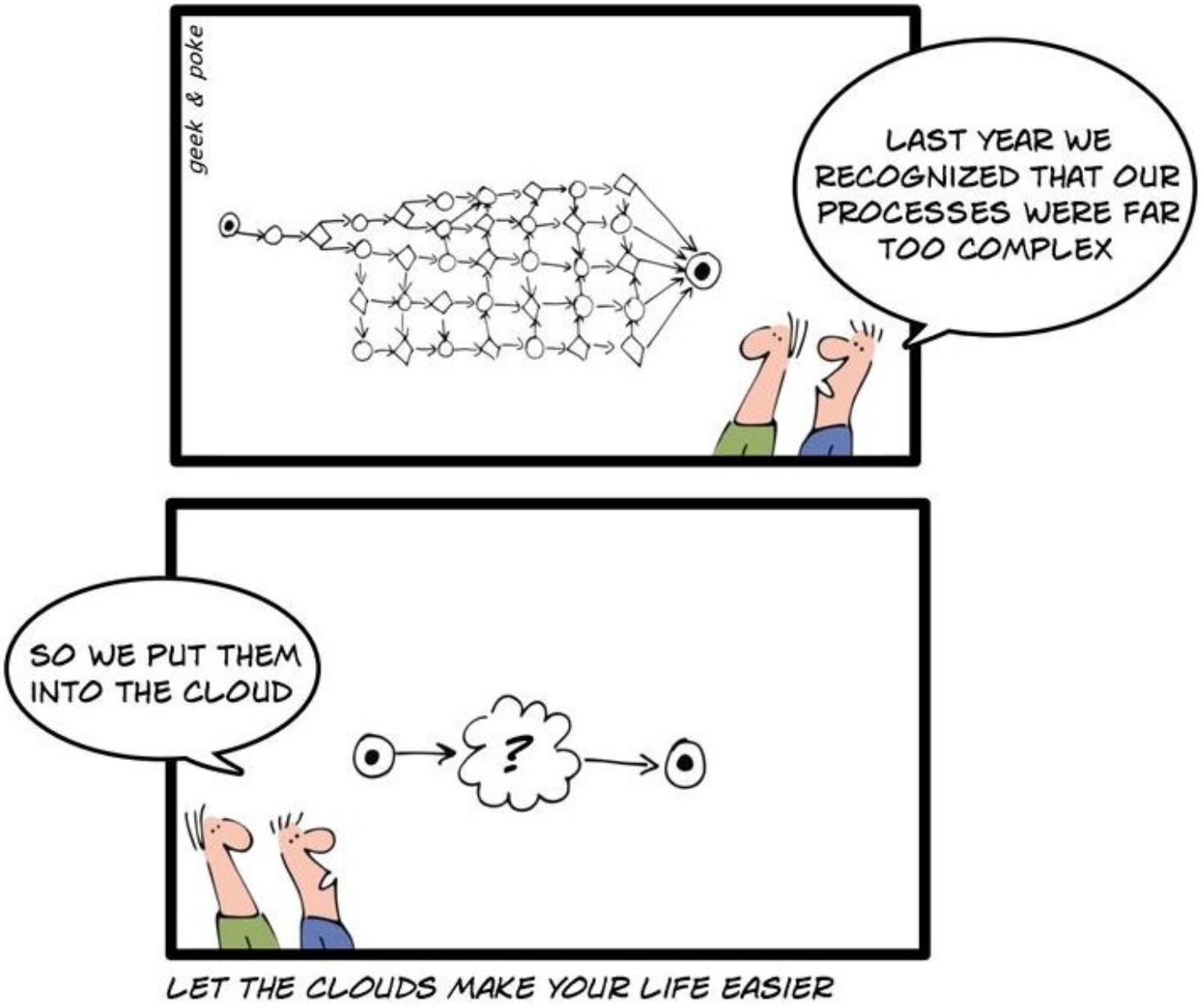
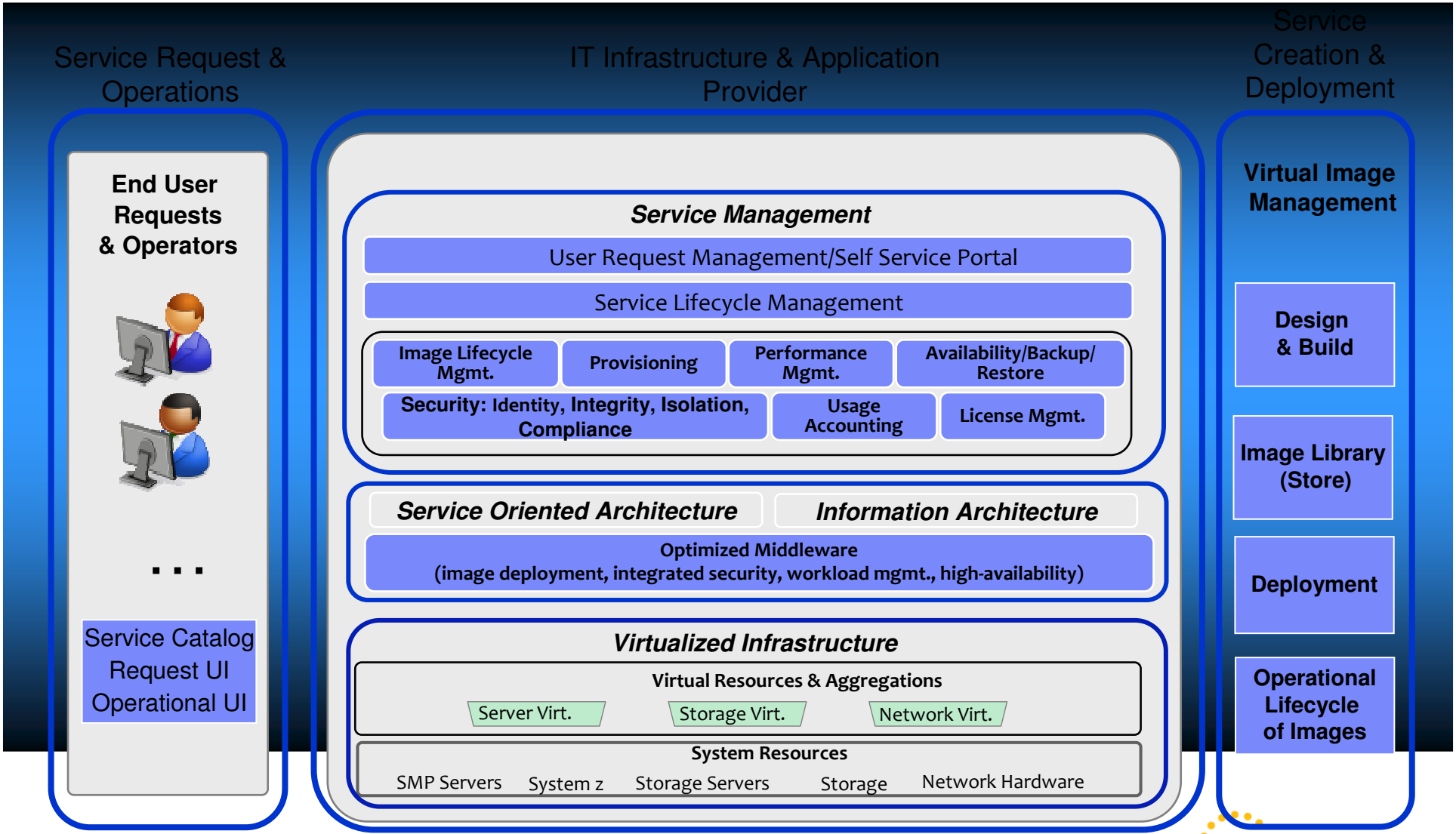
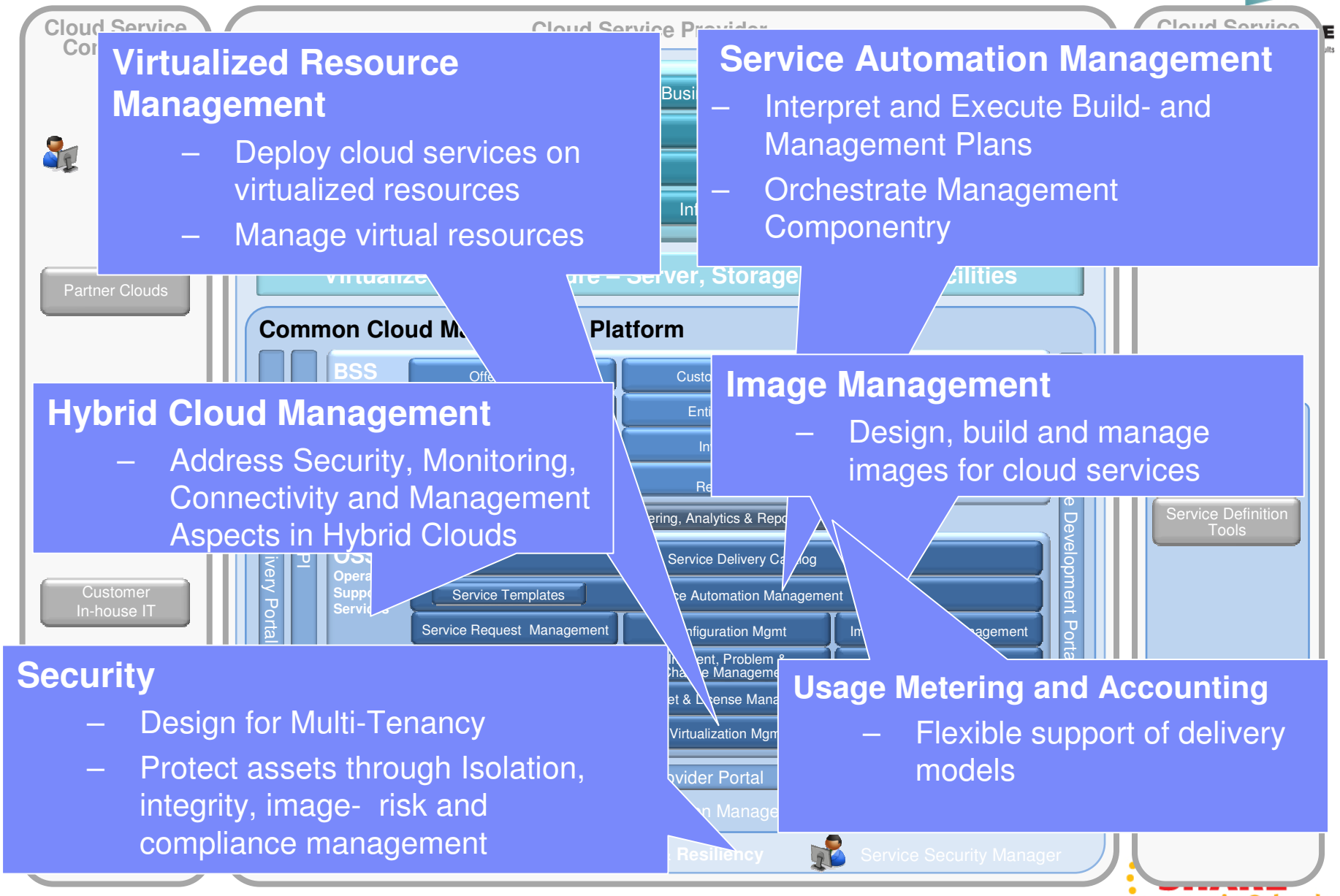
Does Cloud Computing solve problems ?



An Architectural Model for Cloud Computing



Cloud Management Platform – Management Problems



Virtualized Resource Management

- Deploy cloud services on virtualized resources
- Manage virtual resources

Service Automation Management

- Interpret and Execute Build- and Management Plans
- Orchestrate Management Componentry

Hybrid Cloud Management

- Address Security, Monitoring, Connectivity and Management Aspects in Hybrid Clouds

Image Management

- Design, build and manage images for cloud services

Security

- Design for Multi-Tenancy
- Protect assets through Isolation, integrity, image- risk and compliance management

Usage Metering and Accounting

- Flexible support of delivery models

Cloud Service Lifecycle Management

Deploy Service
- Request Driven Provisioning
- Management Agents and Best Practices
- Application / Service On Boarding
- Self-service interface

Subscribe to Service
- Request a service
- "Sign" Contract

Manage Operation of Service
- Visualize all aggregated information about situations and affected services
- Control operations and changes
- Event handling
- Automate activities to execute changes
- Include charge-back

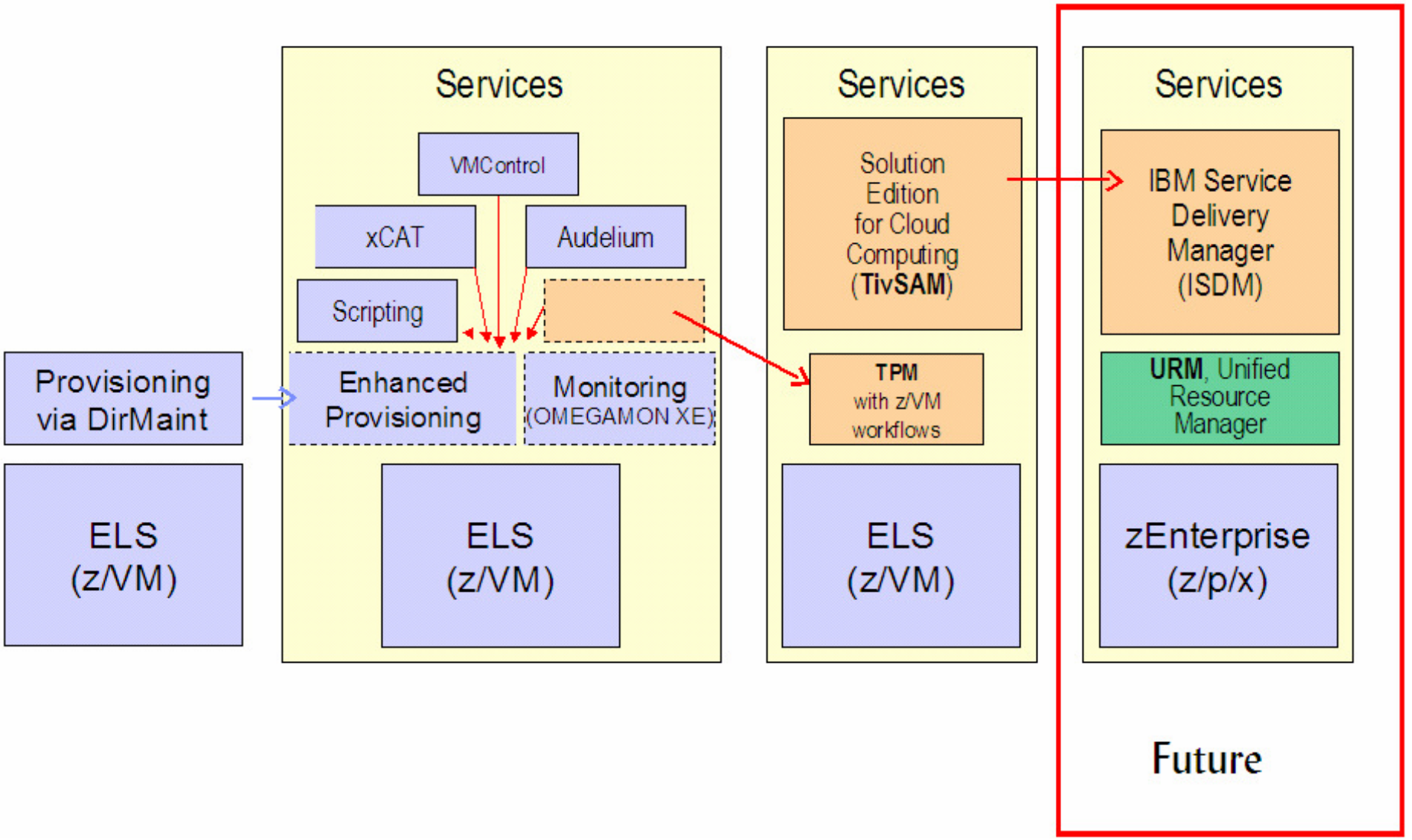
Offer Service
- Register Services and Resources
- Add to Service Catalog

Service Creation
- Scope of Service
- SLAs
- Topologies, Best Practices Management Templates

Terminate Service
- Controlled Clean-up

6 Components of Cloud

Cloud on System z and zEnterprise Offerings/Options Perspective



What is IBM Systems Director VMControl?

VMControl encompasses virtual server lifecycle management, image management and resource pool management as an extension to IBM Systems Director.

IBM System x

Power Systems

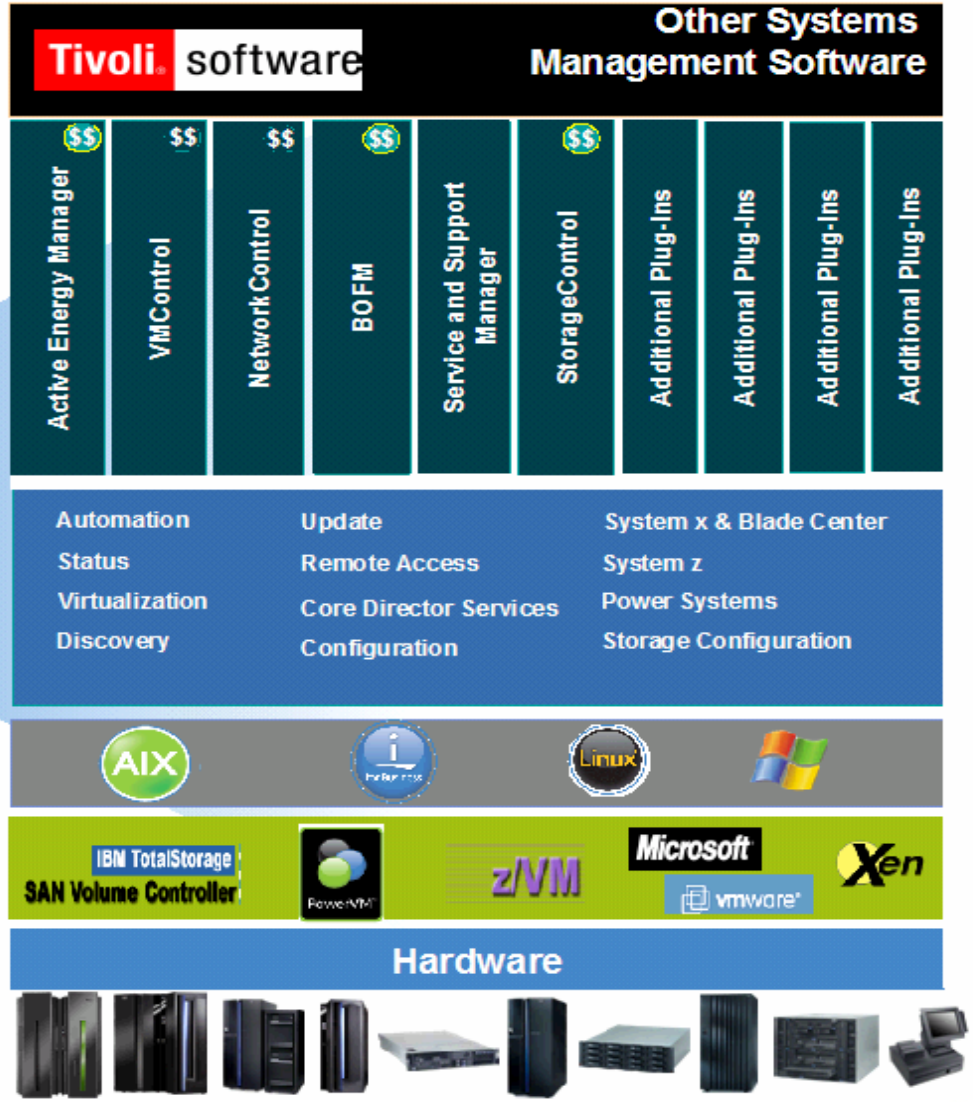
System z

VMControl features:

- Discover virtual resources
- Display inventory and topology
- Monitor virtual resource health
- Relocate virtual resources
- Create and manage virtual servers
- Deploy and manage workloads
- Provision and manage virtual images
- Manage virtual resource pools

Using VMControl as an extension of IBM Systems Director it is possible to combine management of physical and virtual resources in one management tool

IBM Systems Director



Enterprise Service Management

Advanced Managers & Priced Plug-Ins

Base Systems Director Managers & Hardware Platform Managers

Resource Management

Managed virtual and physical environments

IBM and non-IBM hardware

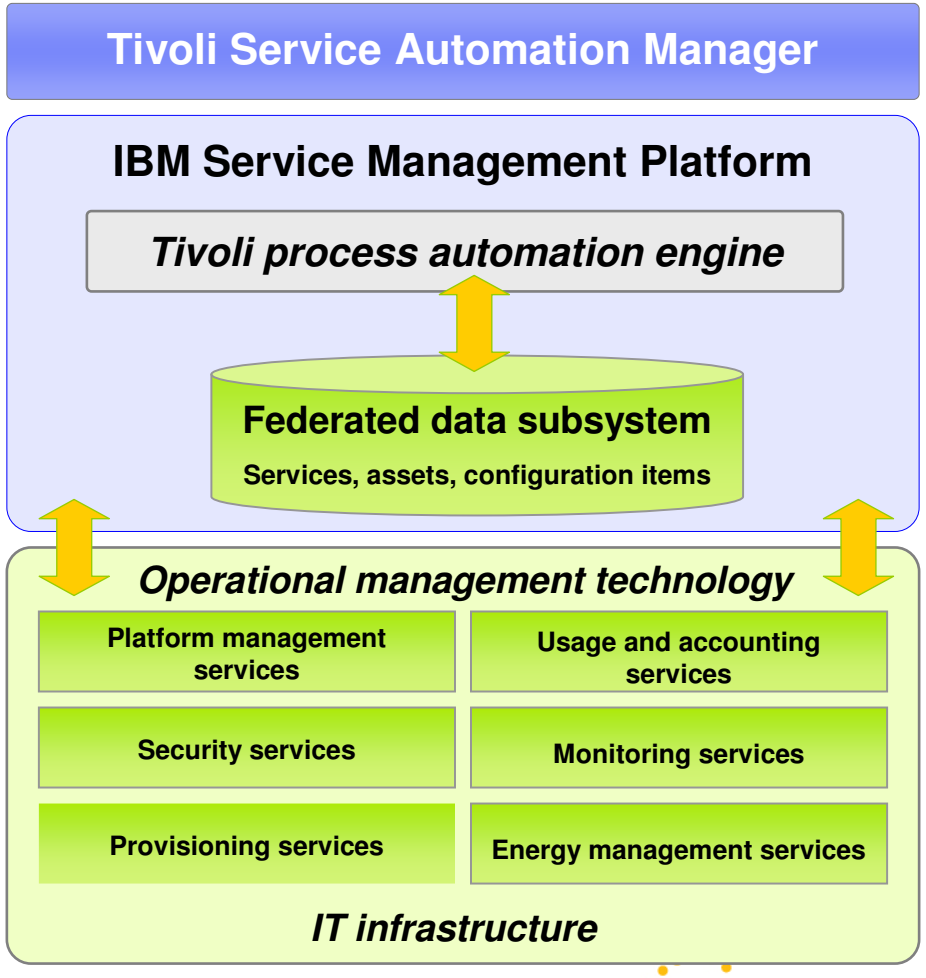
SHARE in Orlando 2011

IBM Tivoli Service Automation Manager

Aggregated capabilities for managing your cloud environment

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



Typical Cloud Management Platform Middleware Stack

Workloads

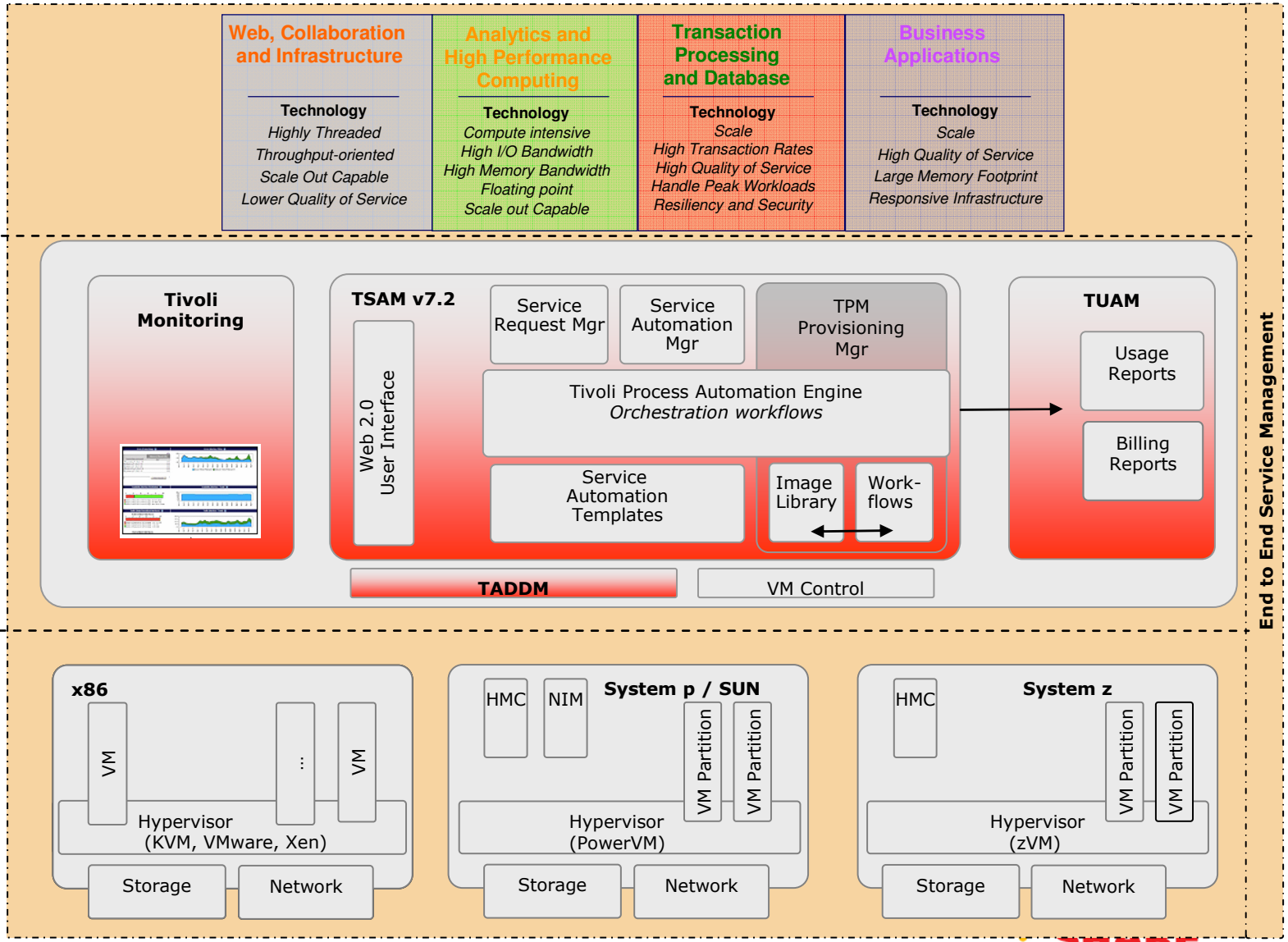
- Service measurement
- Service reporting
- Usage accounting
- Auditing and controls

Tivoli Service Automation Layer

- Automate process of instantiating and managing a distributed IT environment.

Virtualized Infrastructure Layer

- Virtualized resources
- Virtualized aggregation
- Physical infrastructure



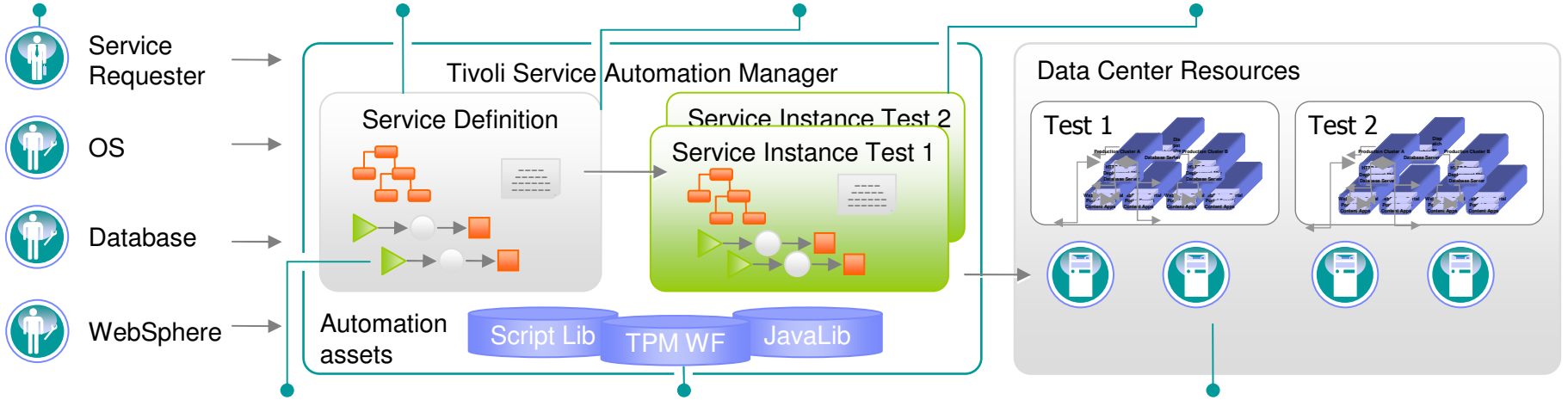
Tivoli Service Automation Manager Concepts

Roles and Responsibilities
- Open concept of user and roles
- Different views on the service based on roles

Service Definition (Template)
- Open Cardinalities
- Variants
- No assignment of components

Topology
- Template of best practices
- Topology Node represents one or more IT resources which can be provisioned and managed

Service Instance
- Represents concrete instance of an IT service
- Instantiated from a Service Definition
- Parameterized and customized



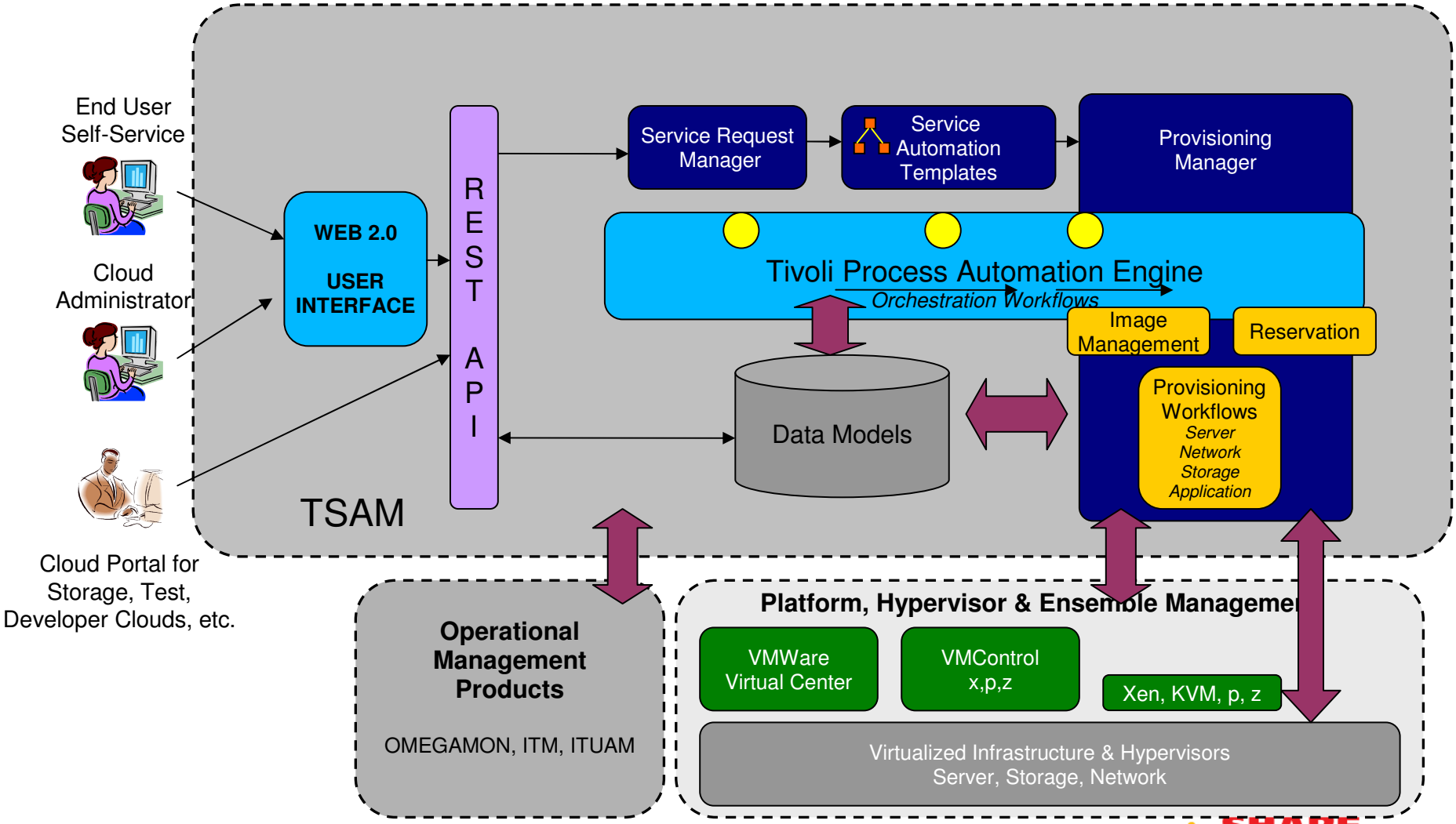
Management Plans
- Process model for building and operating a service
- Mapping of input and output data for single tasks
- Adapts to variants of service

Task Automation Assets
- Automation assets for Mgmt. Plan tasks
- Integration of TPAe internal (e.g. TPM) or external OMPs
- Integration of custom scripts

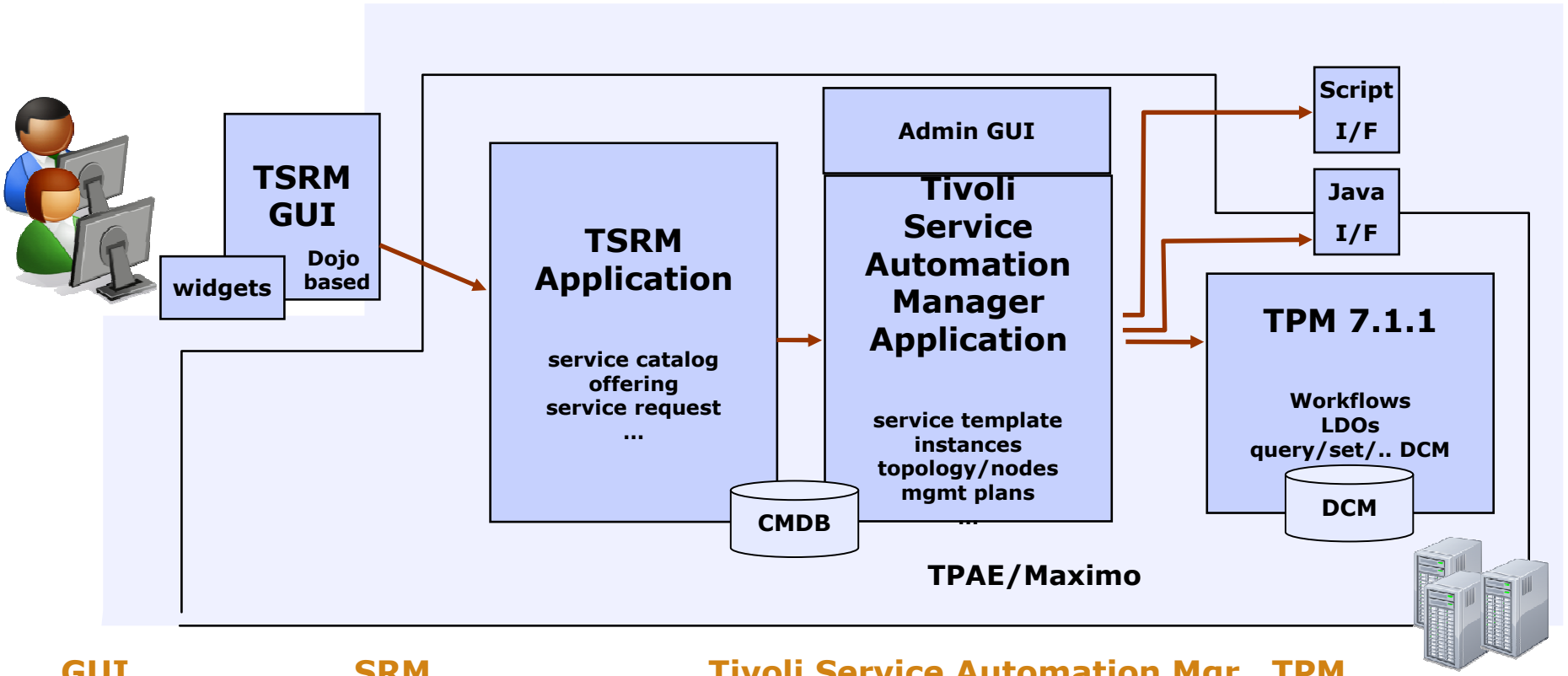
Deployed IT Service Environments
- Automated deployment and operation of IT service environments represented by Tivoli Service Automation Manager Service Instances

The management services from Tivoli

Converged service delivery platform for cloud computing



IBM Tivoli Service Automation Manager 7.2 – Components



GUI

- Interaction with end user
- Collect parameters for management plans

SRM

- Prepare service request from given input parameters
- Perform reservation of resources
- Approval and notifications on business level

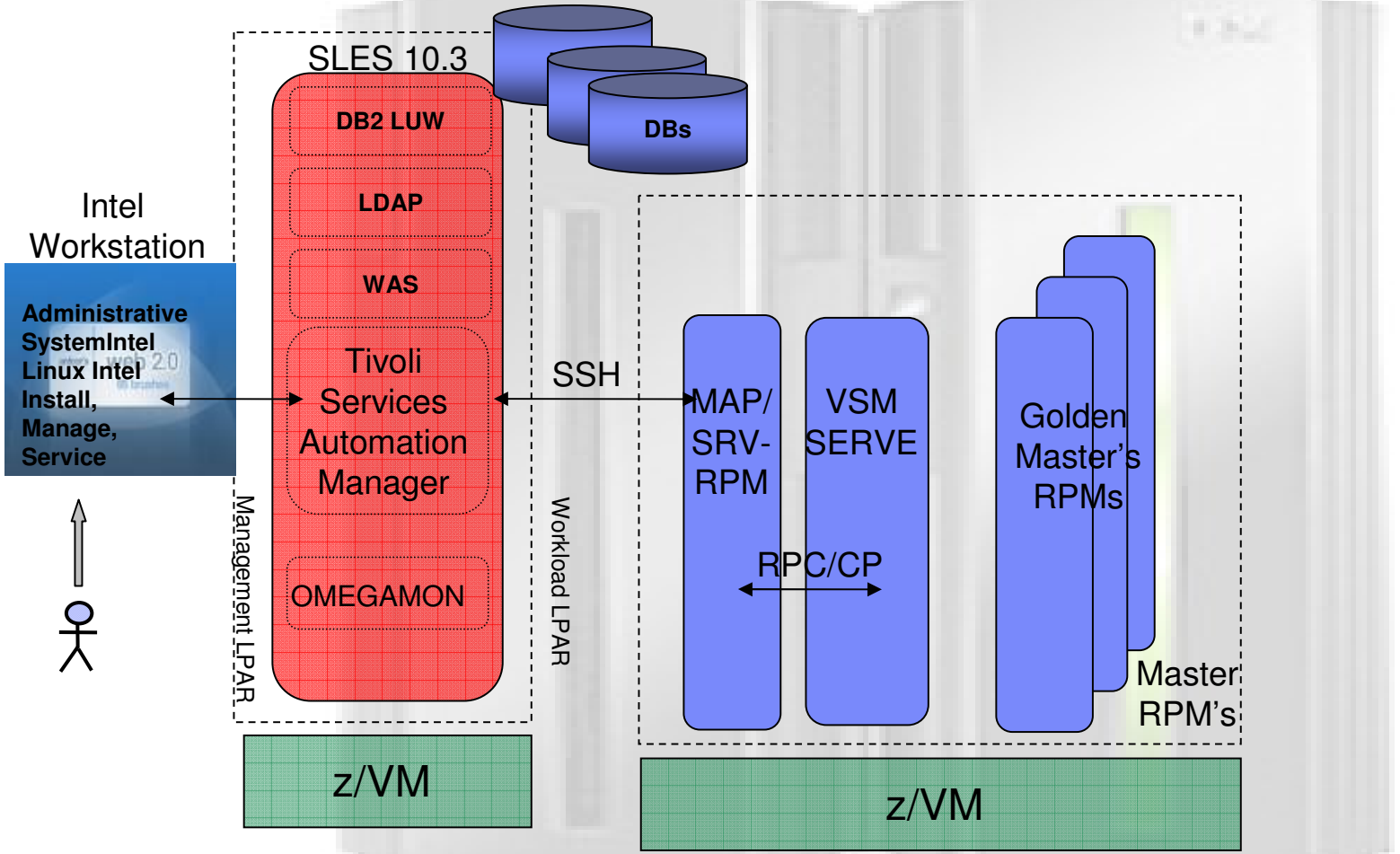
Tivoli Service Automation Mgr

- Topology definition
- Orchestration by management plans
- Management plan definition
- Management plan execution
  - push down on eg. TPM (or Script)
- Approval and notifications on technical level (admin)
- Situation governance
  incl. error handling by admin
- Work assignments on admin level (“inbox”)

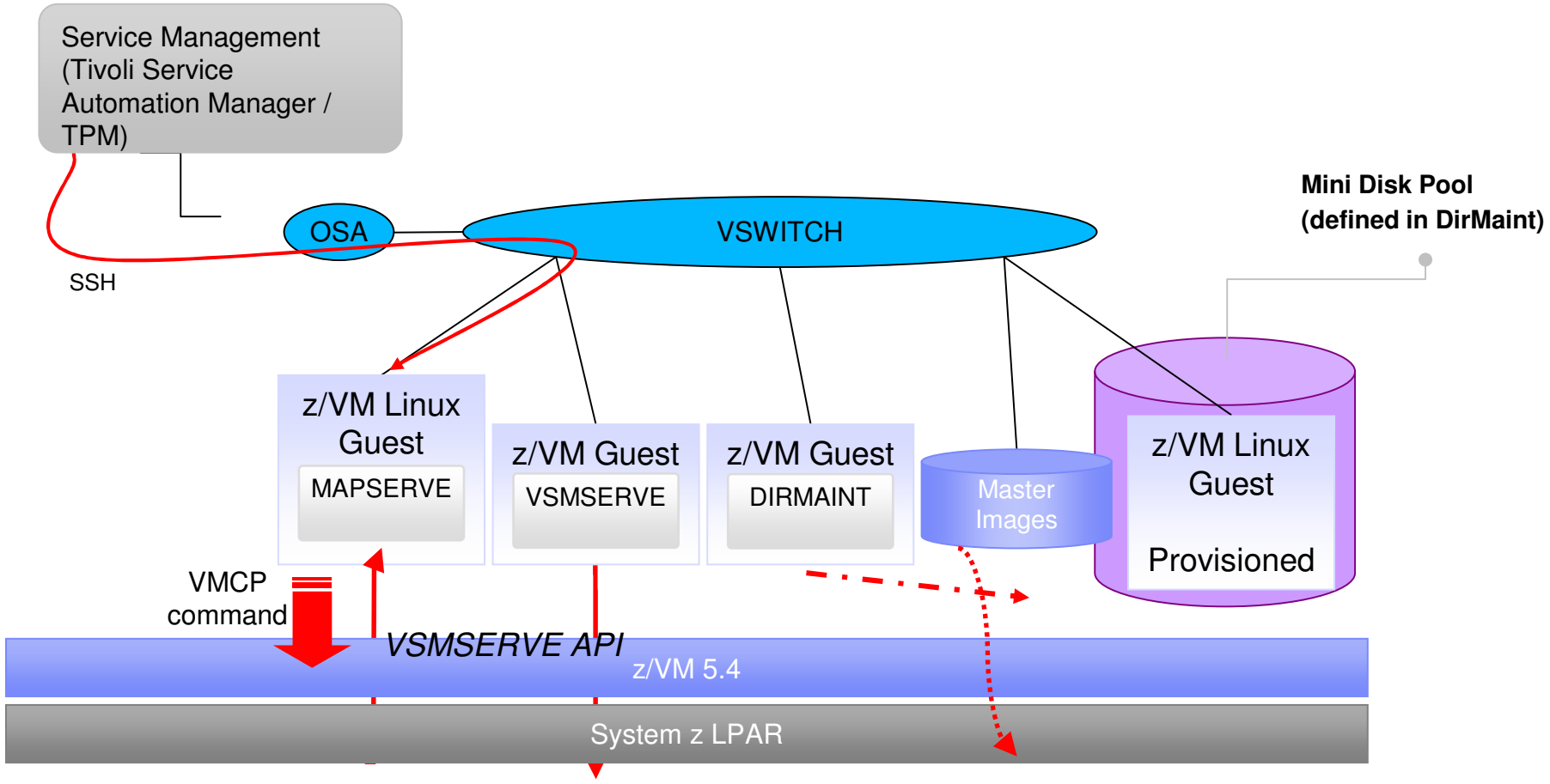
TPM

- Management plan fulfillment by executing TPM workflows/LDOs
  … or native scripts
  … or Java based actions
  … or manual tasks
- Change resource state

Tivoli Service Automation Manager Boeblingen Setup



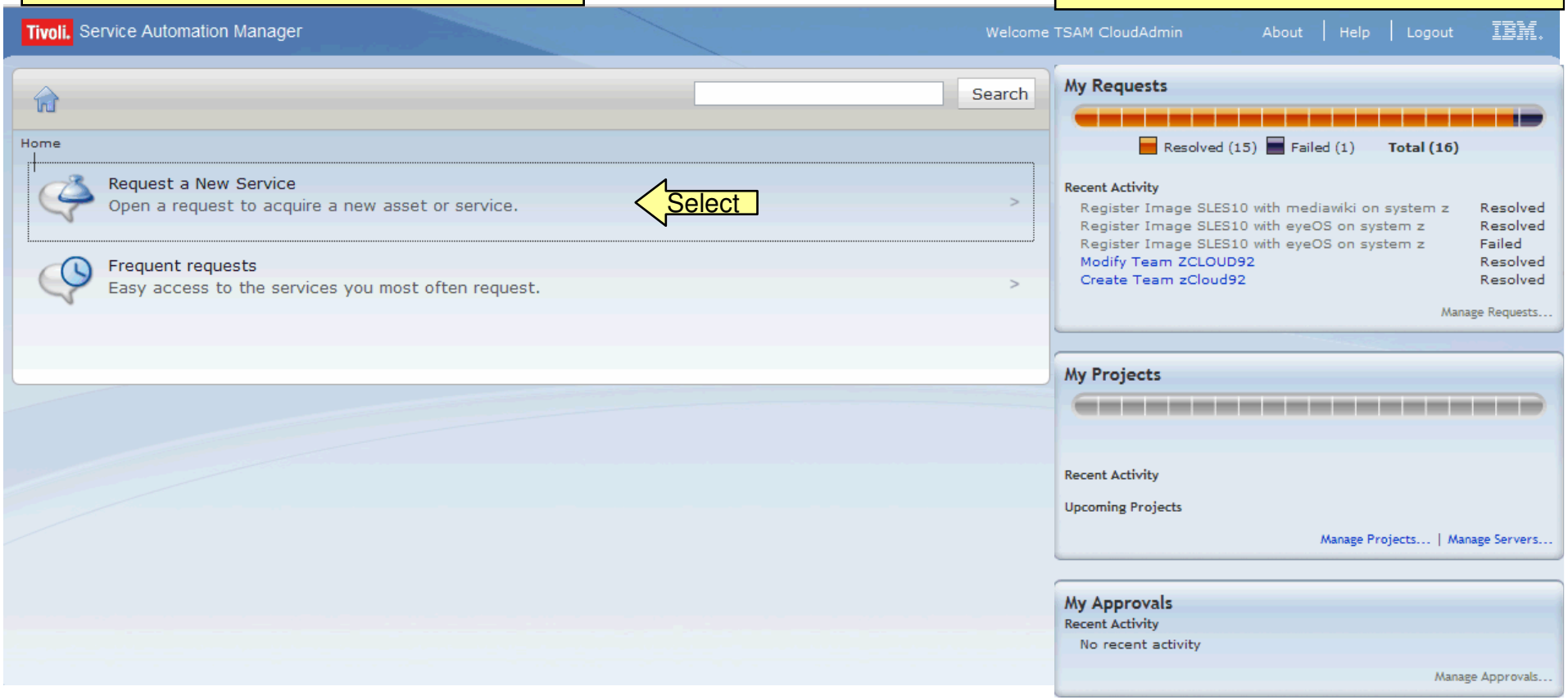
z/VM Configuration Provisioning Details



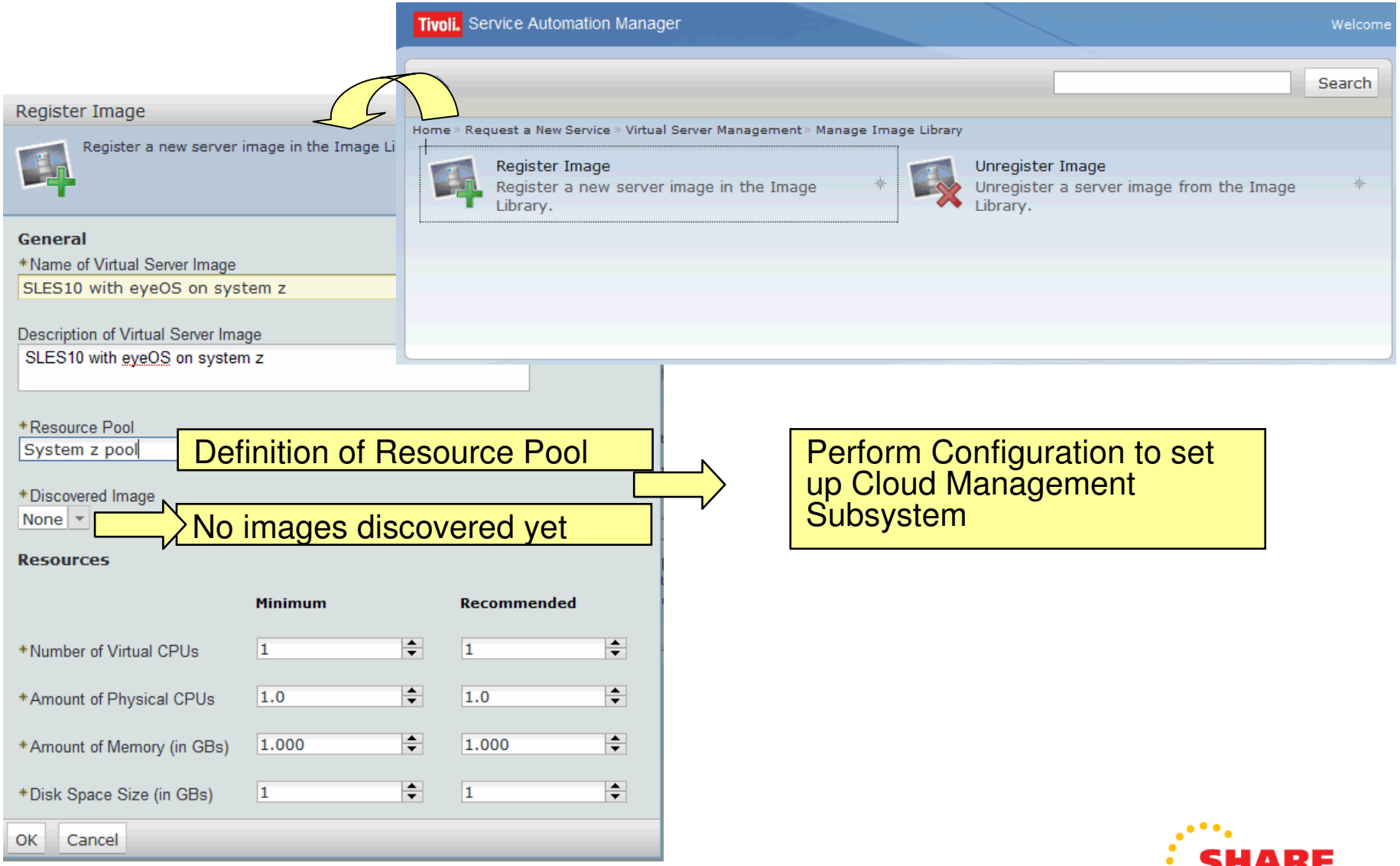
Tivoli Service Automation Manager on Linux on System z – Service Catalog after

Service Offerings – Entry Page

Status Information



Offering – Register Image and Unregister Image



Perform Configuration to set up Cloud Management Subsystem

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 Linux 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=
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<!-- ... -->
<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" is-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>
<!-- ... -->
```
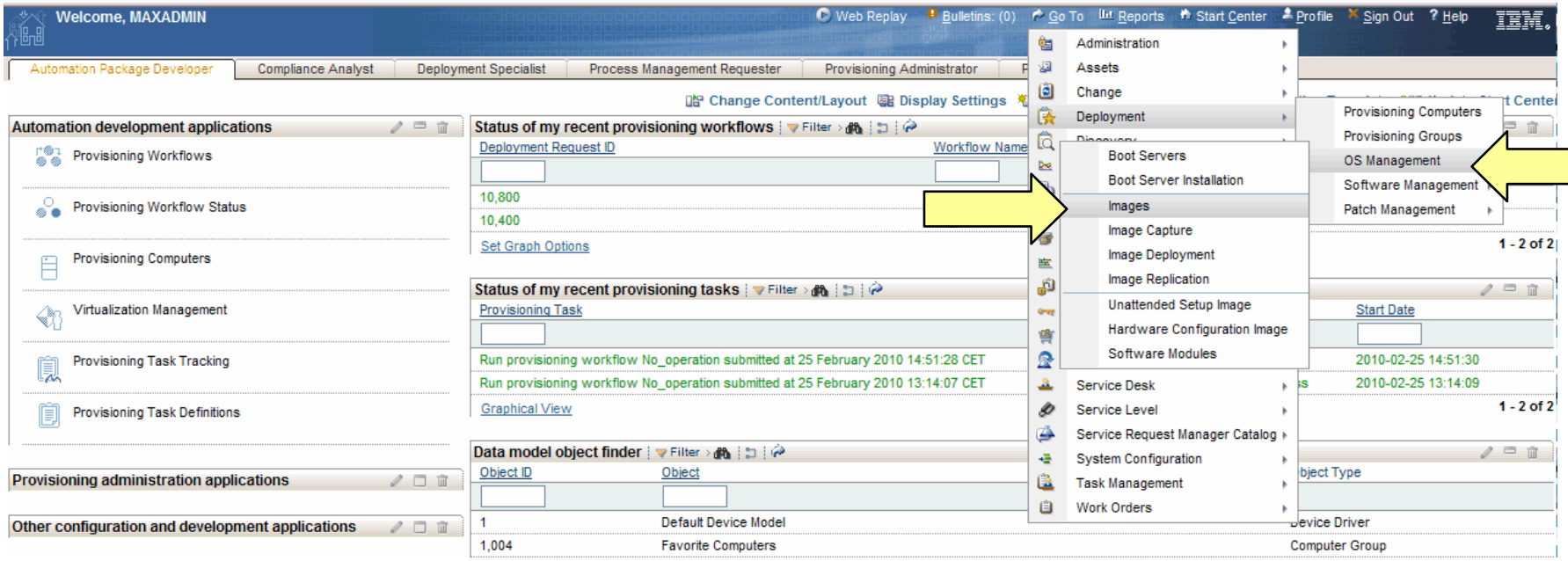
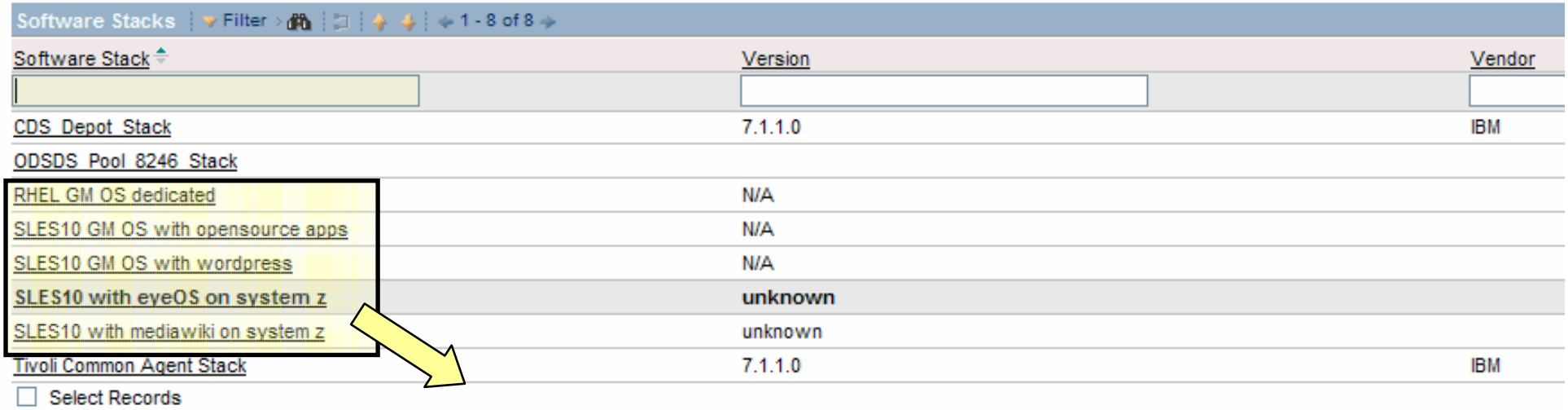

Administration Console – Manage Cloud Subsystem

Manage Software Stack and Image Library



Software Stacks – IBM Delivered and XML Template Configured



Software Stacks | Filter | 1 - 8 of 8

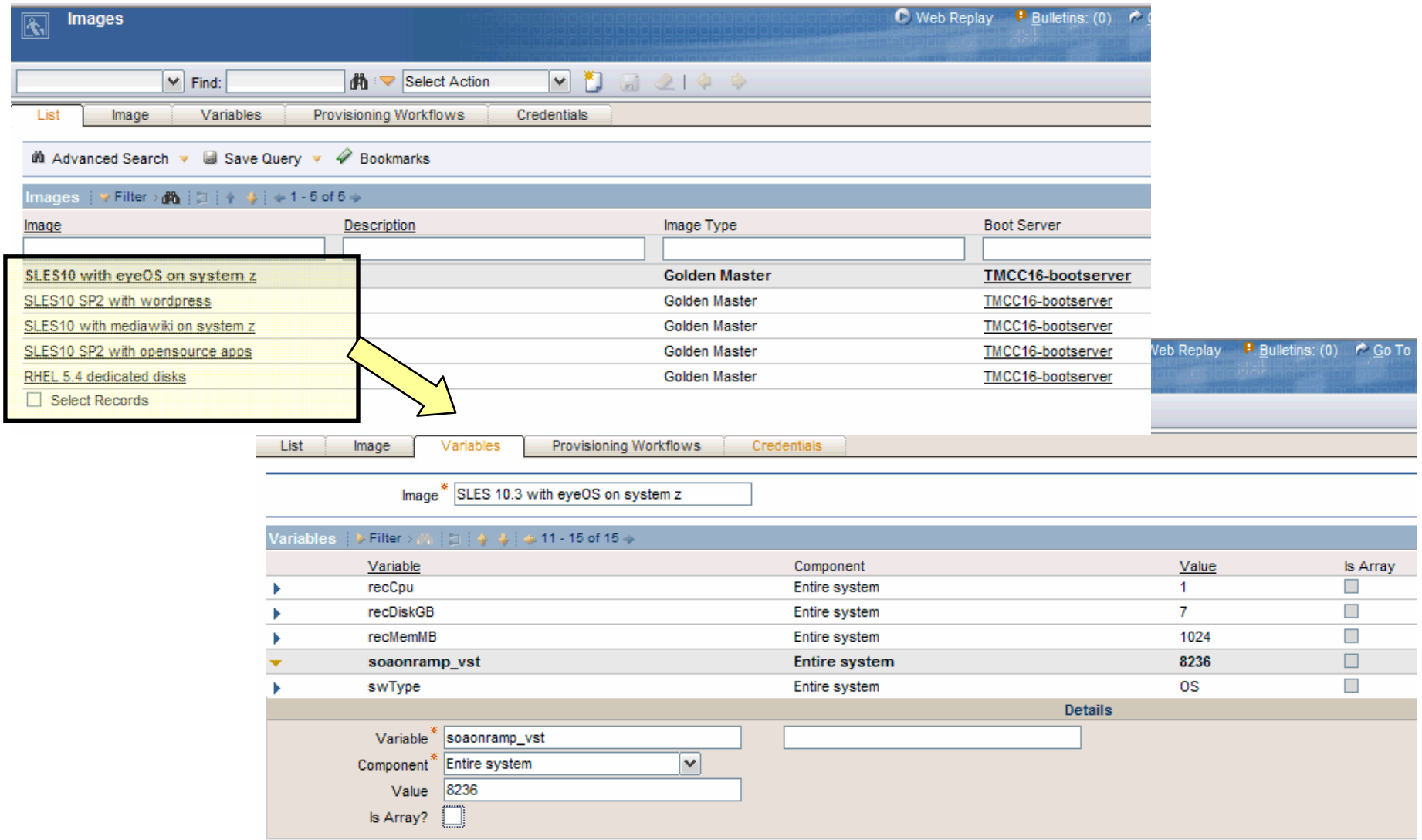
Software Stack	Version	Vendor
CDS_Depot_Stack	7.1.1.0	IBM
ODSDS_Pool_8246_Stack		
RHEL GM OS dedicated	N/A	
SLES10 GM OS with opensource apps	N/A	
SLES10 GM OS with wordpress	N/A	
SLES10 with eyeOS on system z	**unknown**	
SLES10 with mediawiki on system z	unknown	
Tivoli Common Agent Stack	7.1.1.0	IBM

Select Records

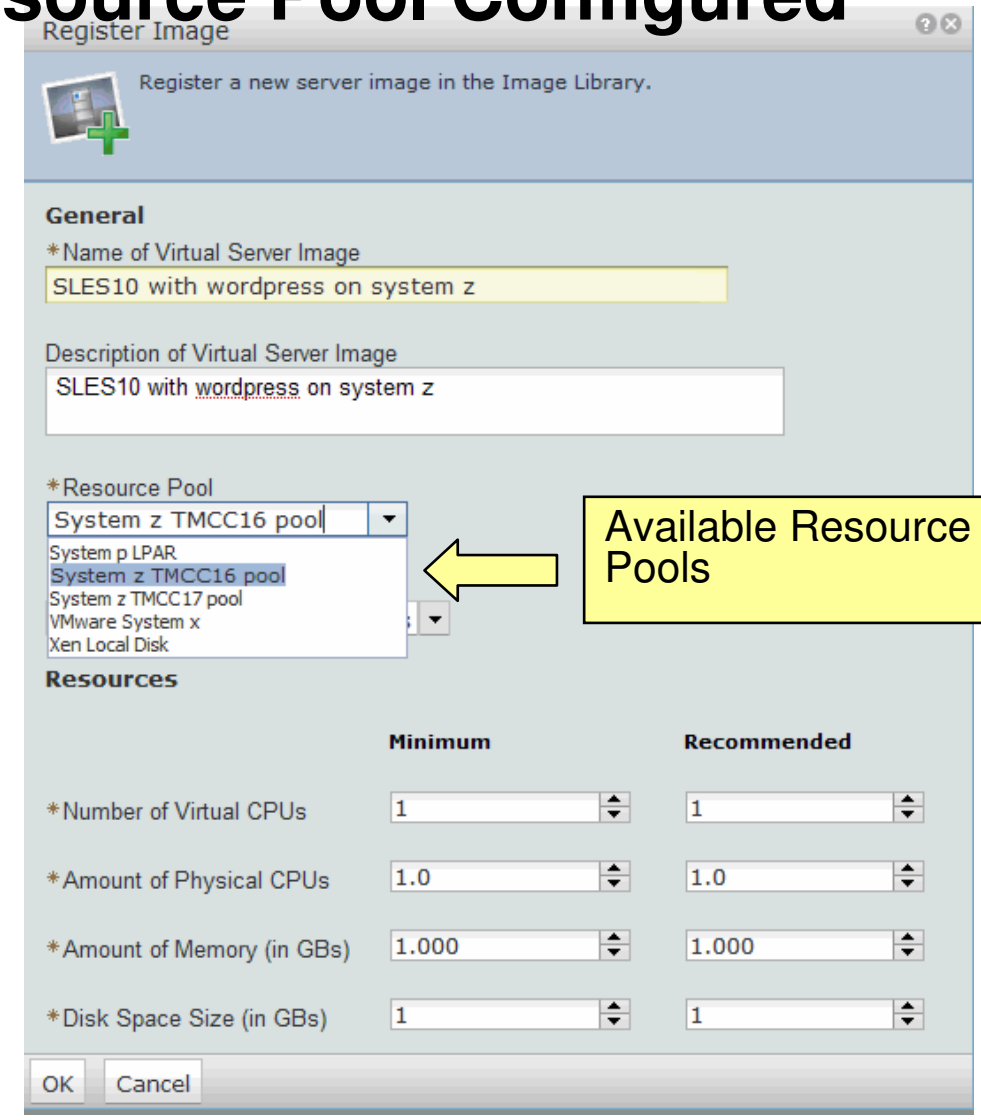
Capabilities | Filter | 1 - 5 of 5

Capability	Capability Type	Capability Value
os.family	**OS**	Linux
os.distribution	OS	SLES10 s390x
os.name	OS	SLES10 for IBM S/390 and IBM zSeries
os.version	OS	10
os.servicepack	OS	SP2

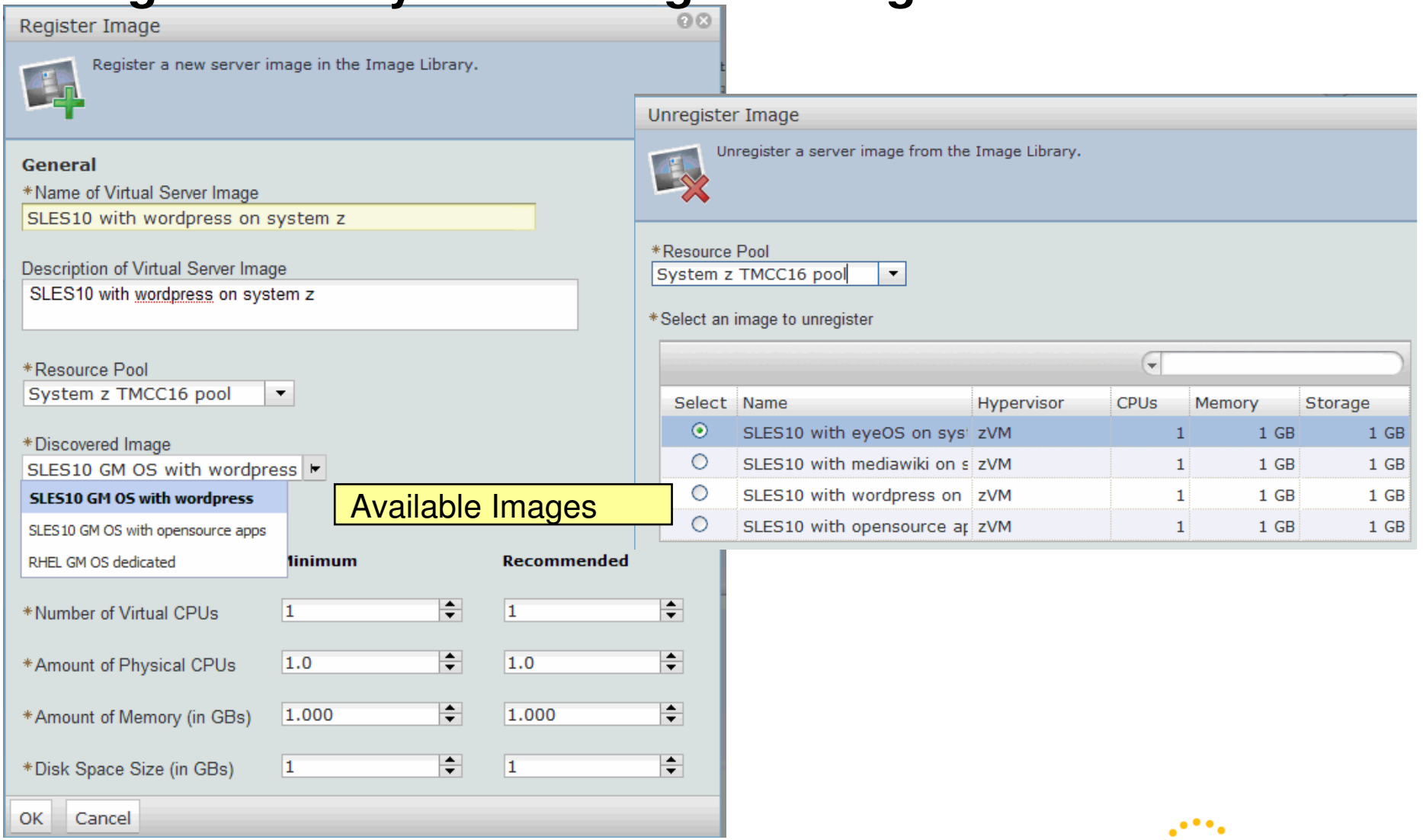
Image Library – XML Template Configured Images



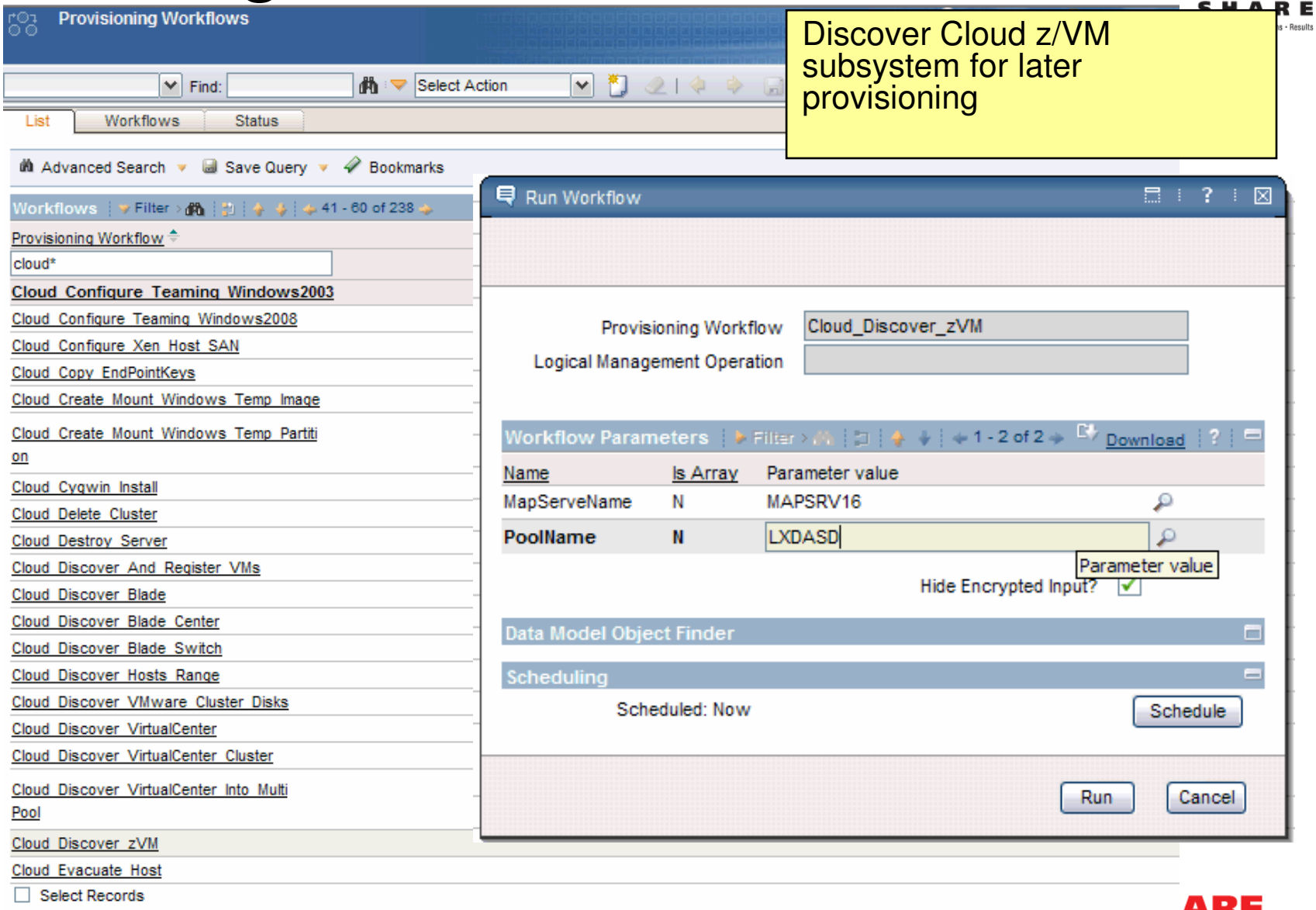
Tivoli Service Automation Manager Offering – System z Resource Pool Configured



Tivoli Service Automation Manager Offering – Linux System z Images Configured

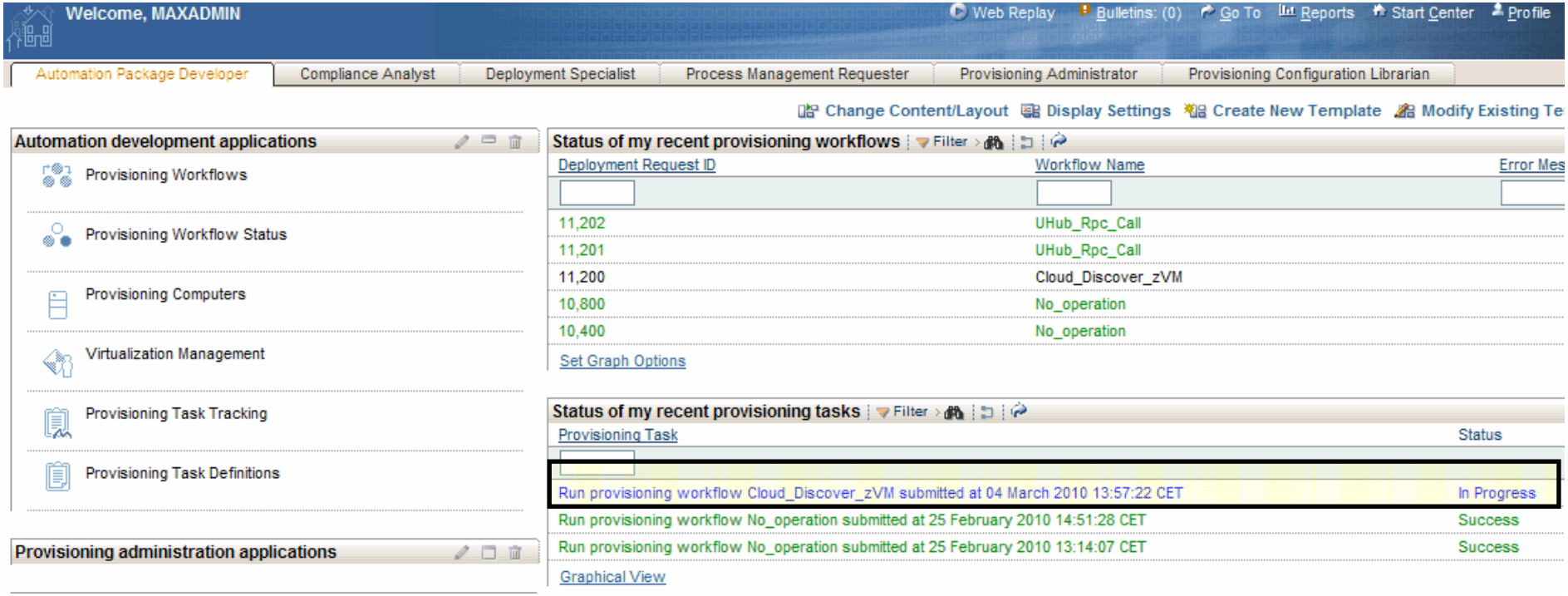


Provisioning Workflows



Discover Cloud z/VM subsystem for later provisioning

Administration Console – Workflow ‘Discover z/VM‘ Status



IBM System z Solution Edition for Cloud Computing

	Creates…	That delivers …
Solution Edition for Cloud Computing	An infrastructure solution for cloud computing built on Tivoli & System z	The framework to migrate workloads for rapid adoption of cloud computing benefits

The solution components…

IBM Software

Tivoli. software


Visibility


Control


Automation

IBM Hardware

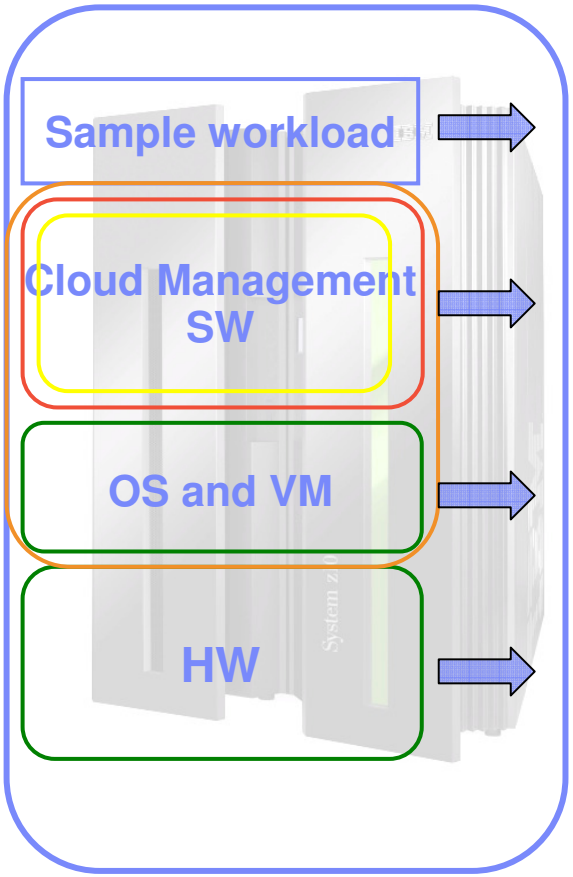
Centralize, Virtualize, and Simplify

IBM Services

- Phase 1: Create cloud computing use cases within the enterprise
- Phase 2: Implement the service automation and management tooling to support cloud workloads
- Phase 3: Educate the client on cloud computing for on-going success and provide a sample workload

Learn more at: http://www.ibm.com/systems/z/solutions/editions/cloud/index.html

Solution Edition for System z Cloud Computing - Components



Bill of Materials

- eyeOS*, wordpress
- Tivoli Service Automation Manager incl. TPM, TSRM
- IBM Tivoli Monitoring: Omegamon XE
- z/VM®
- Linux
- IBM System z10™ or IFLs
- Memory
- Storage

* procured by customer

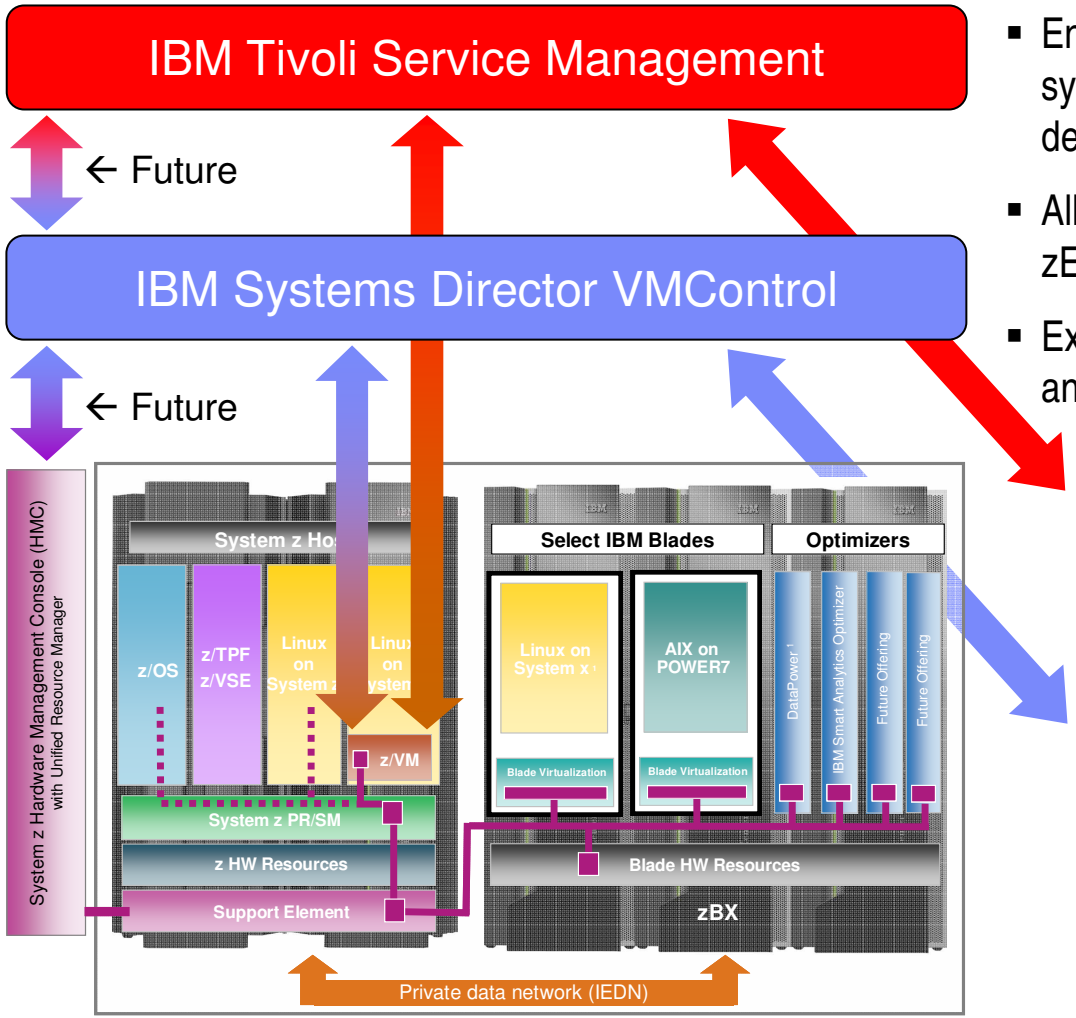
IBM Services

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

STANDARDIZATION | SELF-SERVE PORTAL | VIRTUALIZATION | AUTOMATION

Multi-System Cloud Management on IBM zEnterprise

The Big Picture Going Forward



- Enables optimal workload placement in a multi-system cloud infrastructure: spend less *and* deliver higher qualities of service
- Allows clients to manage all the hypervisors in a zEnterprise system with consistency
- Extends same management capabilities to Power and System x servers elsewhere in the enterprise

Note: All statements regarding IBM's plans, directions, and intent are subject to change or withdrawal without notice, and represent goals and objectives only.

Summary

- Enterprises need to consider cloud deployments as part of their IT roadmaps
- Enterprise adoption is driven by workload considerations and will happen across a spectrum of deployment options
- Governance and architecture are critical for success – introducing cloud computing is transformational
- There will be many clouds and many enterprise deployments will be hybrid
- IBM is investing in enabling deployment choices and offering services ‘on the IBM cloud’
- We would like to stay engaged with you as you develop your cloud strategy

Questions?

Cloud Computing is real -- It's not just another hype

There's real technology available today to build clouds

Thank You

For more information, please visit:

ibm.com/cloud

Or contact me at:

amrehn@de.ibm.com

SHARE in Orlando 2011

Additional Resources

- IBM Tivoli Service Automation Manager:
  - http://www-01.ibm.com/software/tivoli/products/tsam-facts.html
- Solution Edition for Cloud Computing:
  - http://www.ibm.com/systems/z/solutions/editions/cloud/index.html
- Provisioning Linux on System z Redpaper:
  - http://www.redbooks.ibm.com/abstracts/redp4663.html?Open
- IBM WebSphere Cloudburst Appliance (WAC):
  - http://www-01.ibm.com/software/webservers/cloudburst/features/?S_CMP=wspace
  - http://www.youtube.com/websphereclouds#p/search/3/yya-gvCMiwQ
- Linux Distributions Supported by each System z Platform:
  - http://www-03.ibm.com/systems/z/os/linux/support_testedplatforms.html
- IBM Software available for Linux on System z:
- http://www-1.ibm.com/servers/eserver/zseries/os/linux/software.html
- Destination z
  - http://www-03.ibm.com/systems/z/destinationz/

TRANSZAP Mainframes for SW As a Service

Leading SaaS provider of ePayable, digital data, and spend analysis solutions

- 44,000+ users
- 4,200 companies
- $80 B in transaction detail, processed

• Available • Secure • Elastic

Traditional Lintel shop

- Challenge to scale, manage, secure
- Complex configurations
- Linear costs for growth

New z9 Business Class shop

- 100% YTY growth-plan to production
- Flexible capacity on demand
- Centrally managed & secured
- Manageable cost of incremental growth

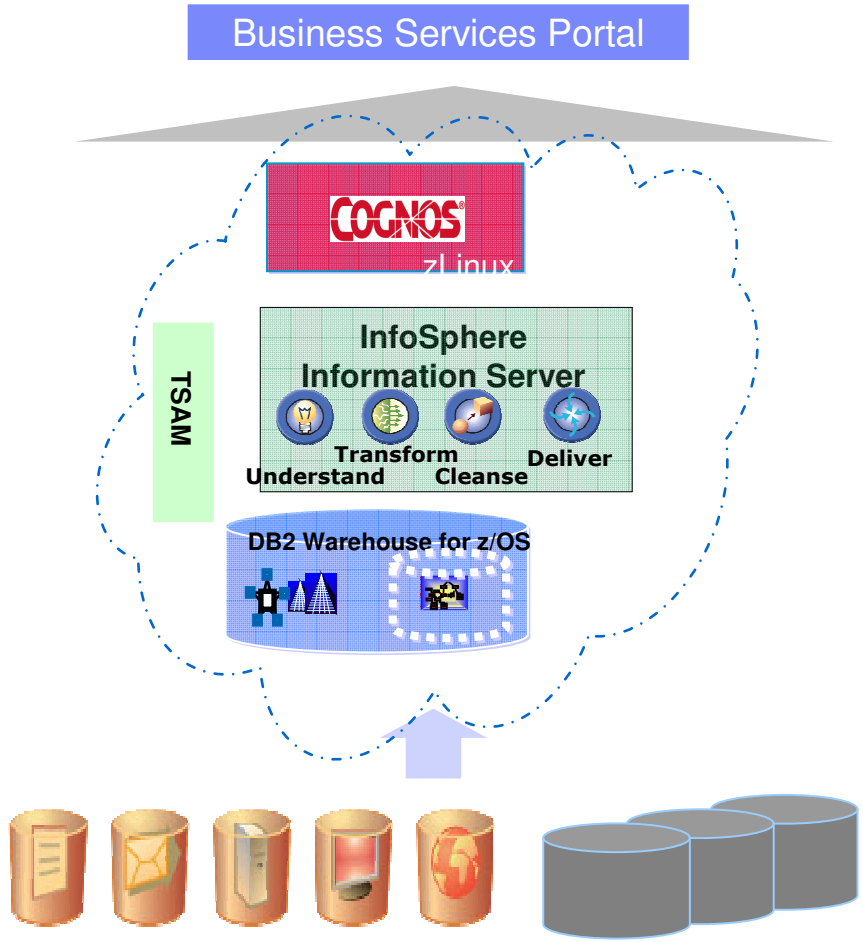
"The IBM z9 provides the stability and scalability needed to accommodate Transzap's triple digit volume growth in a SaaS environment."

– Peter Flanagan, President

System z Data Cloud allows customers to bring BI services with less cost and higher qualities of availability and security.

What is a Data Cloud?

- Centralize BI for optimization using Cognos on z/Linux
- Take Data from anywhere: structured, unstructured, applications, mainframe, or distributed
- Deliver consumer driven services to a broad set of users / lines of business
- Automate delivery of services



Leverage the data centric strengths of z: allows for multi-tenant data support, Sysplex enablement and massive consolidation at the application layer

Why z for data clouds?

- Save costs with operational efficiencies of z and virtualization
- Deliver qualities of service: availability, security, recoverability
- Allow for elastic growth in tenants and data
- Prevent unforeseen operations costs that occurs with a patchwork IT investment pattern