



Transforming Data Center to Cloud

How to reach the Stratosphere from where you stand today

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IBM Software

PCTY2010

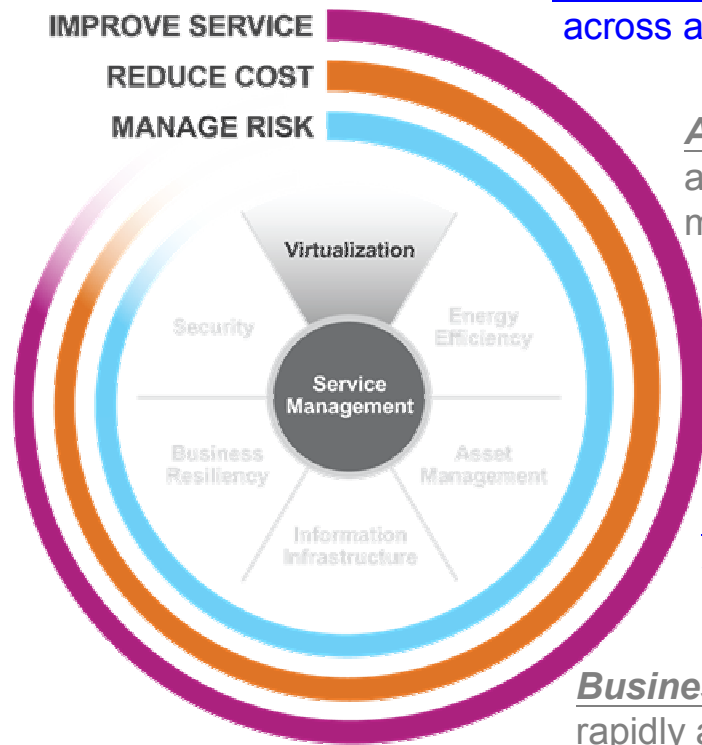
Pulse Comes to You



Optimizing the World's Infrastructure
6th July, New Delhi

Dynamic Infrastructure

Delivering superior business and IT services with agility and speed



Service Management – Provide visibility, control and automation across all the business and IT assets to deliver higher value services.

Asset Management – Maximizing the value of critical business and IT assets over their lifecycle with industry tailored asset management solutions.

Energy Efficiency – Address energy, environment, and sustainability challenges and opportunities across your infrastructure.

Virtualization – Leadership virtualization and consolidation solutions that reduce cost, improve asset utilization, and speed provisioning of new services.

Business Resiliency – Maintaining continuous business operations while rapidly adapting and responding to risks and opportunities.

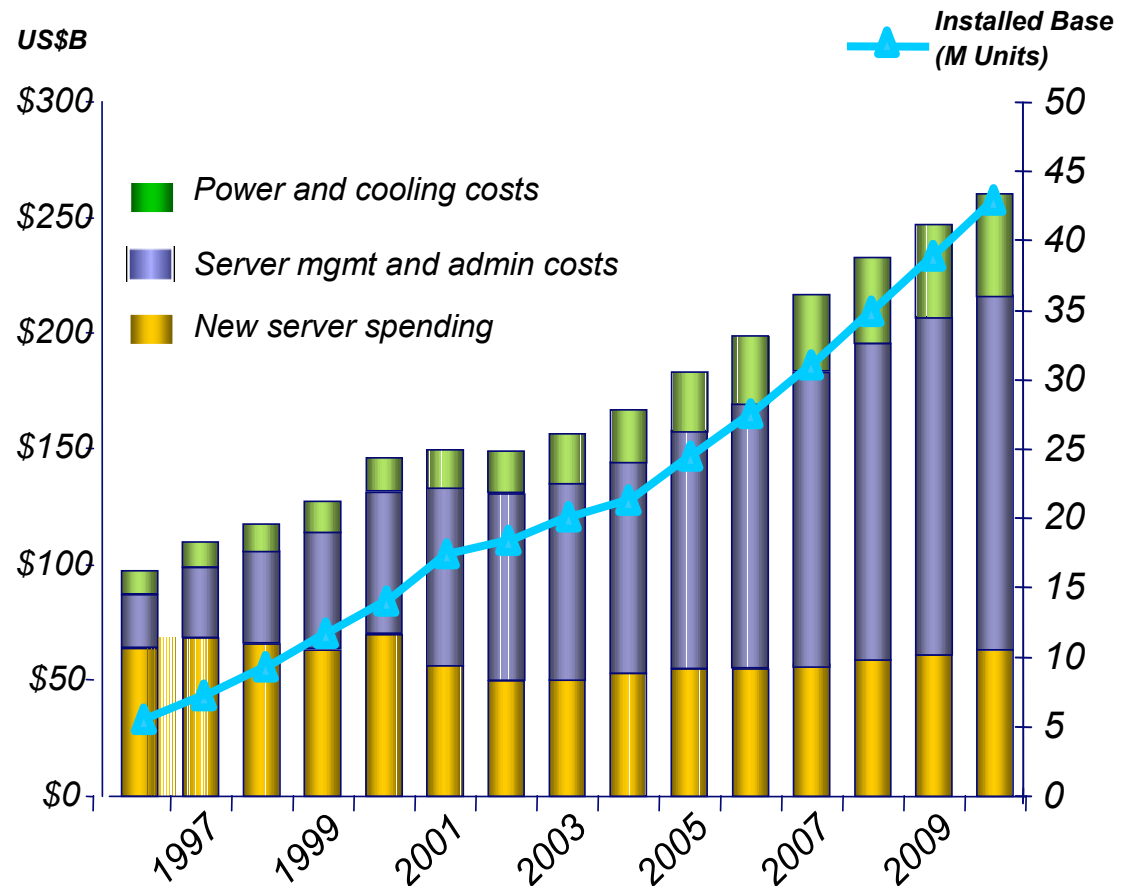
Security – End to end industry customized governance, risk management and compliance solutions.

Information Infrastructure – Helping businesses achieve information compliance, availability, retention, and security objectives.



Backdrop: Rapidly Increasing IT Costs And Demands

- Costs to manage systems has doubled since 2000
- Costs to power and cool systems has doubled since 2000
- Devices accessing data over networks doubling every 2.5 years
- Bandwidth consumed doubling every 1.5 years
- Data Doubling every 18 months¹
- Server processing capacity doubling every 3 years²
- 10G Ethernet ports tripling over the next 5 years



Source: IDC, 2008

¹WW TB Capacity Shipped on Enterprise Disk Storage Systems

²Server processing consumption doubles every 3 years



Value Progression from Virtualization to Cloud

A Dynamic Infrastructure can also provide a great foundation to construct a more efficient platform for delivering cloud based services

Virtualization



- Improve utilization
- Reduce costs
- Increase flexibility

Automation



- Standardize application configuration
- Reduce deployment time

Service Management



- Discover, monitor, meter, secure and automate deployment of virtualized resources
- Assure SLA achievement
- Integrated virtualization management with IT processes

Cloud



- Always available
- Elastic scaling
- Pay for use
- Automated provisioning
- Simplified user interface



Customer Value – Virtualization to Cloud

Key Customer Pain Points

- Lost business opportunity because IT too slow to react. Lack of agility.
- Long deployment timelines for new systems (weeks/months+).
- Operations that cross functional IT groups are slow and inefficient
- Many steps are manual and prone to error
- Huge up-front infrastructure investment for small projects or infrequent peaks
- Server sprawl with low server/resource utilization
- Compliance, auditing, and security patching costly
- Don't know what compute resources are used and what they cost

How Cloud Delivers Value

- Ability to dynamically scale IT services to meet business demands in real time
- Automate the provisioning and deployment of new systems
- Standardize and automate both requests and fulfilment across IT silos
- Utilizes repeatable, standardized and automated procedure to reduce errors
- Abstracts IT services from IT resources facilitating reuse & overflow pooling
- Leverage dynamic allocation linked to a reservation system for higher utilization
- Standardize and reduce number of configurations used
- Integrated, usage-based metering, billing and license compliance



Virtualization

Virtualization



- Virtual Server/
Hypervisor
- Virtual Storage &
Network
- Image Management

Automation



Service Management

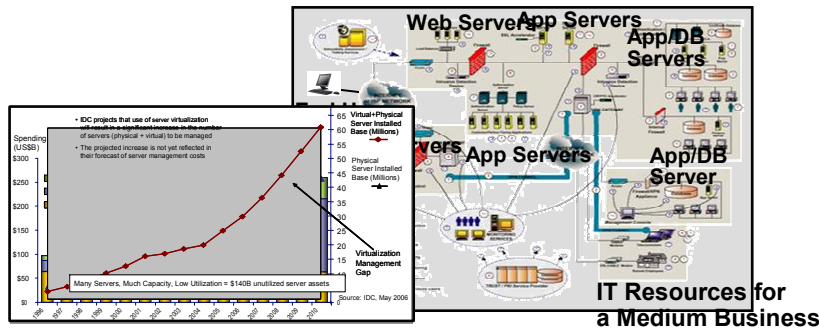


Cloud



Virtualization Poses Challenges And Opportunity

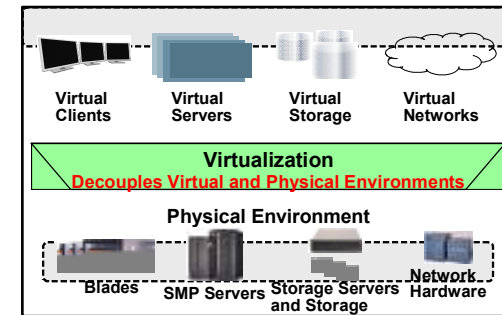
Virtualization Challenge (Uphill)



- Virtualization results in huge volume and change increases and can lead to VM sprawl
- Represents another layer of complexity on top of complex physical environment
- Made more difficult by the pursuit of multiple virtualization technologies



Virtualization Opportunity (Downhill)



- Virtual resources are easier to deploy, grow, move
- Virtual resources and their configurations are decoupled and insulated from physical environment
- Virtualization exploitation can directly improve utilization, space, and energy, agility, and TCO



“Virtualization without good management is more dangerous than not using virtualization in the first place,” –Gartner*

*Source: <http://www.gartner.com/it/page.jsp?id=505040>



Virtualization Increases Performance Divide

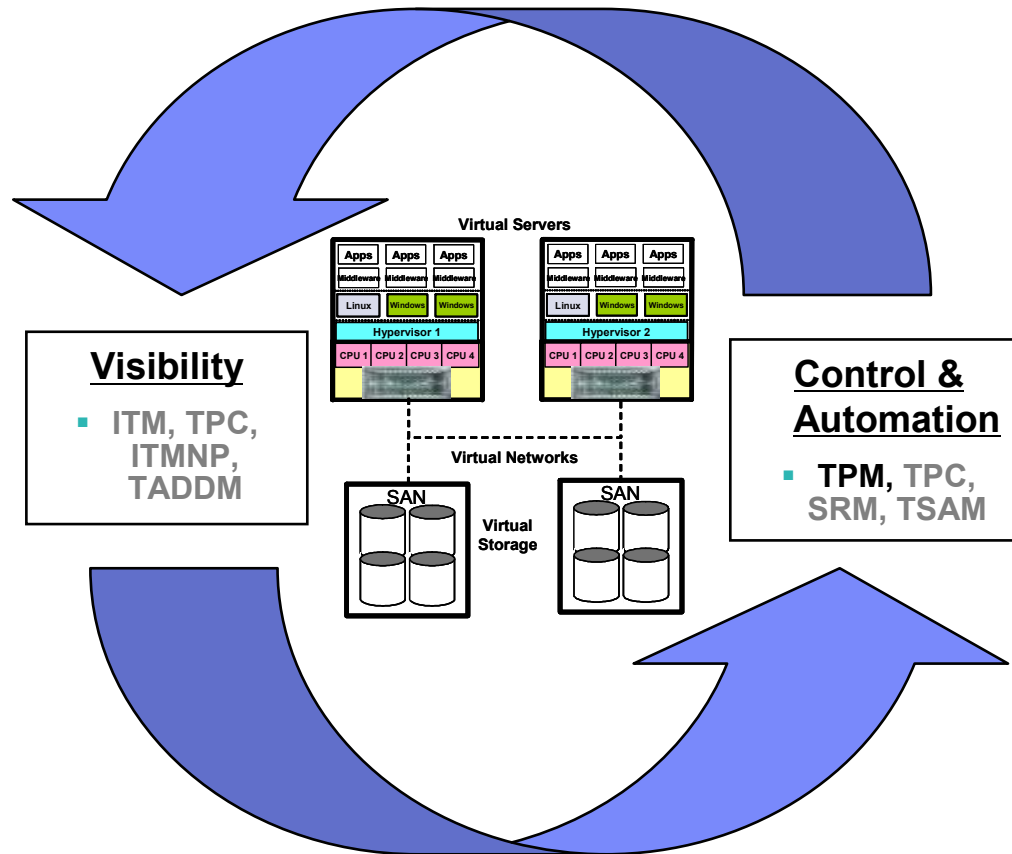
Metric	Poor Performers	Average Performers	Top Performers
Admin to VM Ratio	18	77	150
Cost per VM	\$3,770	\$881	\$45
Server Reduction	-10%	-17%	-35%
Utilization (CPU)	<40%	40-50%	>70%
VM Deployment Time	4 hrs.	2 hrs.	30 mins.
New App Deployment Time	24 hrs.	5- hrs.	30 mins.

Tools Correlated with Top Performance:
Capacity Planning, OS and Application Provisioning, Patch Distribution, and IT Process Automation

Sources: EMA, IBM



Virtualization Management



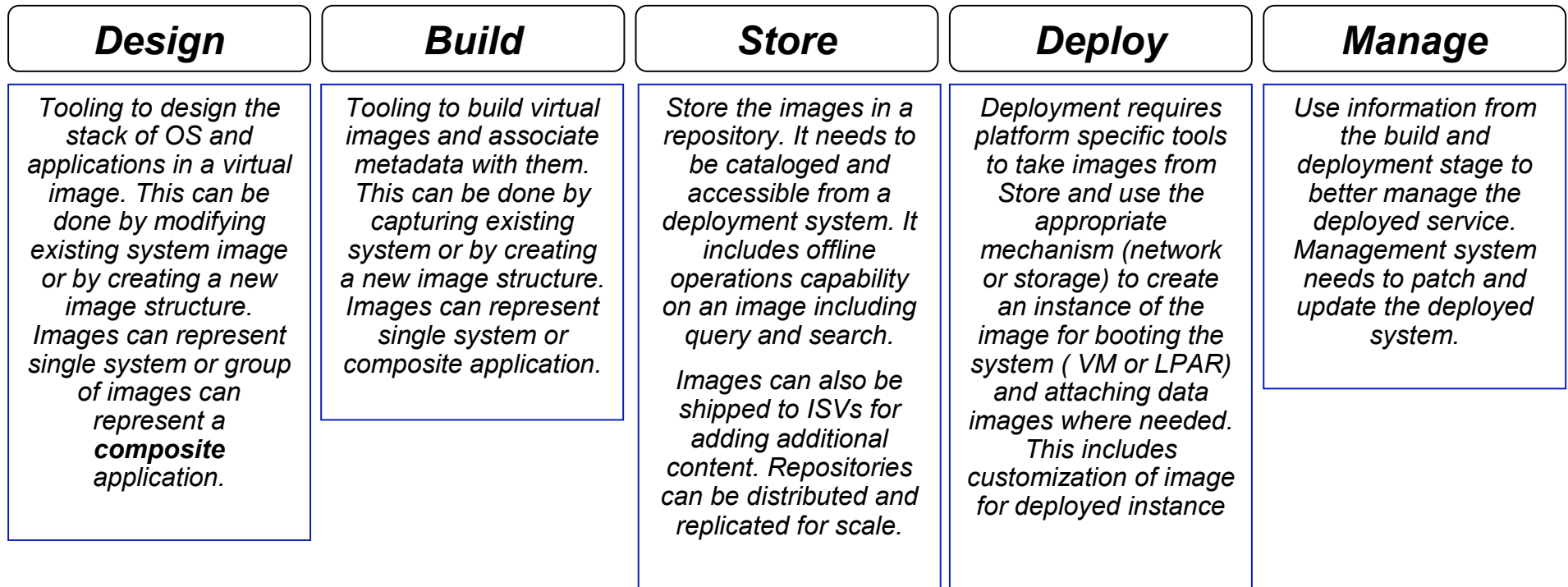
TPM Virtualization Management

- Provision, Move, Change, Configure Virtual Servers
- Heterogeneous support across hypervisors and platforms
- AIX/LPARS, VMWare, Solaris Zones, zVM
- Configure associated resources – virtual network and virtual storage (via TPC)

Customer Benefits

- Ability to coordinate and manage virtual resource provisioning from a centralized manager
- Manage in the context of a solution (e.g., Green, Applications, Test Center Provisioning, etc.)
- Increased IT flexibility to allocate resources to meet business demands
- Increased HW utilization and decreased energy consumption

Lifecycle Of A Virtual Image



- Cross-cutting concerns
 - Standards : Open Virtualization Format Specification (OVF)
 - Platform coverage: (x86, POWER, System z)
 - Governance : Control of images across the lifecycle steps
 - Storage media : Impact of Storage hardware on Image Management
 - *Security (including integrity, signing and access control) of images (other data management issues)



Tivoli Provisioning Manager for Images and OS Deployment

Integration

TPMImages includes TPMfOSD and is available as a fully integrated chargeable component to TPM

Discovery

Discover infrastructure information, including virtual system images from x86 hypervisor or physical machine images (VMware, KVM. In November add: XEN, Hyper-V, XVM)

Image Conversion

- Physical to virtual
- Virtual to virtual
- Virtual to physical

Automated OS Deployment

- Native installation
- Cloning
- Driver injection
- Configure OS parameters

Server Consolidation

Automate server consolidation using physical to virtual image migration

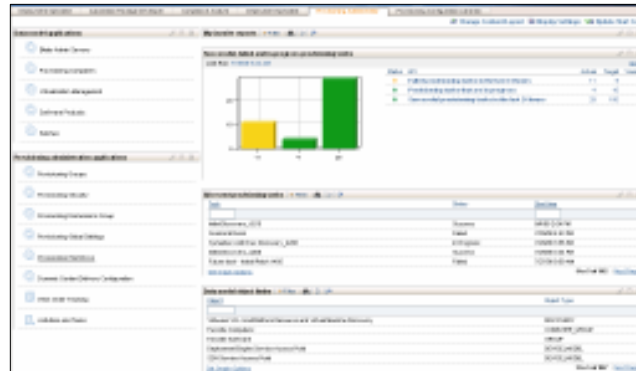


Image Deployment

Deploy physical and virtual images in a consistent manner using a tuneable infrastructure
Separate applications and settings from OS image. Single instance storage for easier management.
Deploy from image library, CD, DVD, or USB.

Compliance Management

Federal Information Processing Standard 140-2 compliance
Federal Desktop Core Configuration compliance for Windows XP and Vista

Manage "Image Sprawl"

Discover, capture, store, manage and deploy virtual and physical images from a single repository

Avoid Vendor Lock-in

Virtual-to-virtual image migration across hypervisors

Remote Deployment

Automate remote deployment of operating systems to eliminate costly on-site support



Automation

Virtualization

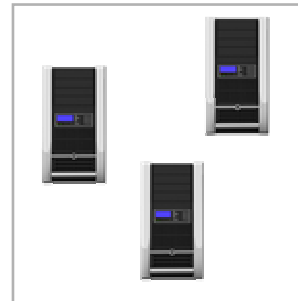


Automation



- Automate manual tasks
- Leverage speed of virtualization
- Integrate into automated solutions

Service Management

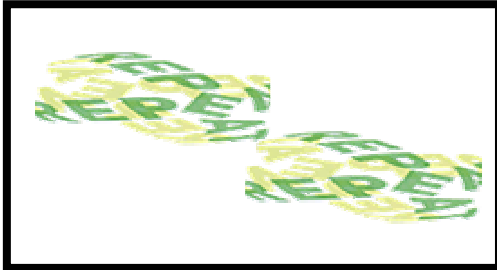


Cloud

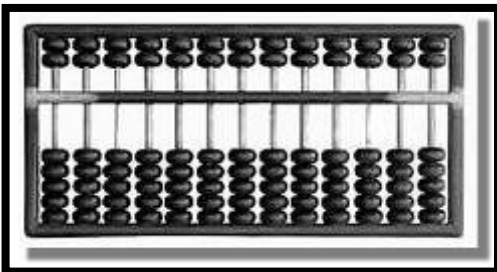


Automation: Exploiting Computer Strengths

Since the inception of computers they have been recognized to provide the following value over manual processes:



- Good for performing repetitive tasks



- More accurate and precise



- Just Faster



Automation - Tivoli Provisioning Manager

Process Integration

Use TPM to provide seamless infrastructure provisioning steps in higher-level Change, Release, and SRM process flows

Resources

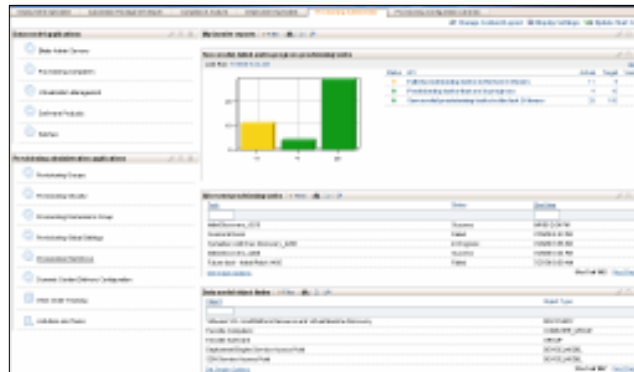
Use the same tool to provision physical servers, virtual servers, storage, and network devices

Discovery

Discover or import IT infrastructure information from multiple sources

Compliance Management

Check to ensure resources are configured correctly



OS Provisioning

Deploy initial OS's and/or server images across multiple systems using single methodology and infrastructure

Desired State Management

Act on deltas between desired and actual states to automatically keep resources configured correctly

Software Deployment

Deploy applications, patches and/or images in a consistent manner using a tune-able infrastructure

Inventory

Keep track of hardware and software making up IT infrastructure



Service Management

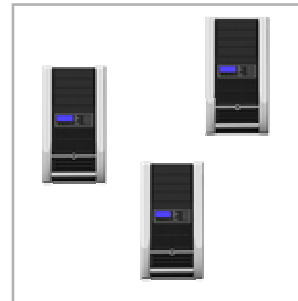
Virtualization



Automation



Service Management



- Integrated ITIL-based management
- Incorporate full systems management infrastructure

Cloud



IBM Service Management Reference Model

Deployment Types



Traditional
(in-house)



Managed
Services



Appliances



SaaS



Cloud
(Public/Private)

Consume Services

Self-Service Portal

Dashboard

Consolidated
Reporting

Service Catalog

Request
Management

Ordering & Billing

Provide Services

Integrated Service Management

Service Desk

Incident &
Problem

Change &
Release

Configuration
Management
System

Federation
Reconciliation
Discovery

Service Asset
Management

Availability,
Capacity,
Performance

Business
Continuity

Fault & Event

Operational
Security

Dynamic
Provisioning

Workload
Management

Usage &
Accounting

Energy
Efficiency

Software Pkg
& Distribution

Backup &
Recovery

Server Mgmt

Storage Mgmt

Network Mgmt

Application
Mgmt

Automated Operational Management

Design & Activate Services

Service Planning

Solution Design

Workflow Modeling

Data Modeling

Tool
Configuration

Develop & Test

Assets and Infrastructure

Diverse Assets



Production



Distribution



Transportation



People



Facilities

Virtualized & Heterogeneous Infrastructure



Remote



Applications



Information



System



Storage



Network



Voice



Security



Cloud Computing

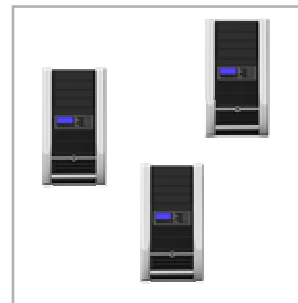
Virtualization



Automation



Service Management



Cloud

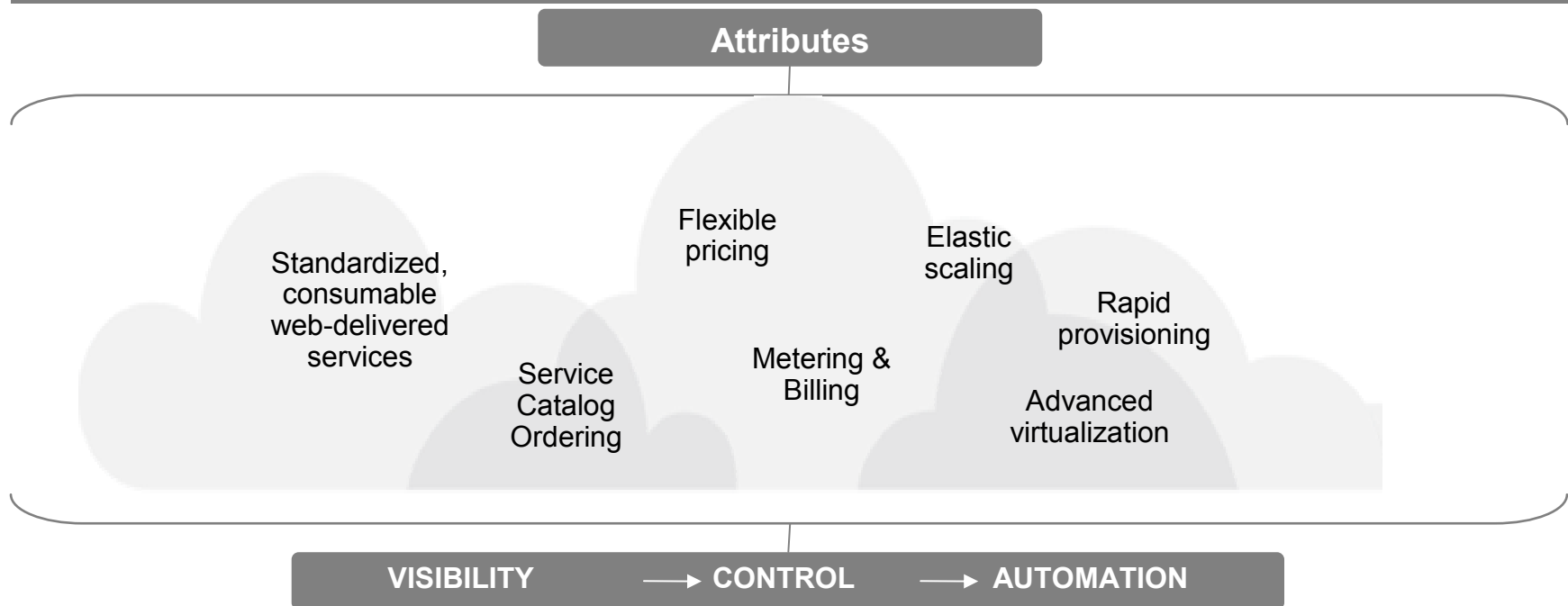


- Leverage underlying Virtualization, Automation and Service Management
- Deliver IT services from an end-user perspective
- Enable new models for capital and operating expense



Cloud Computing ...

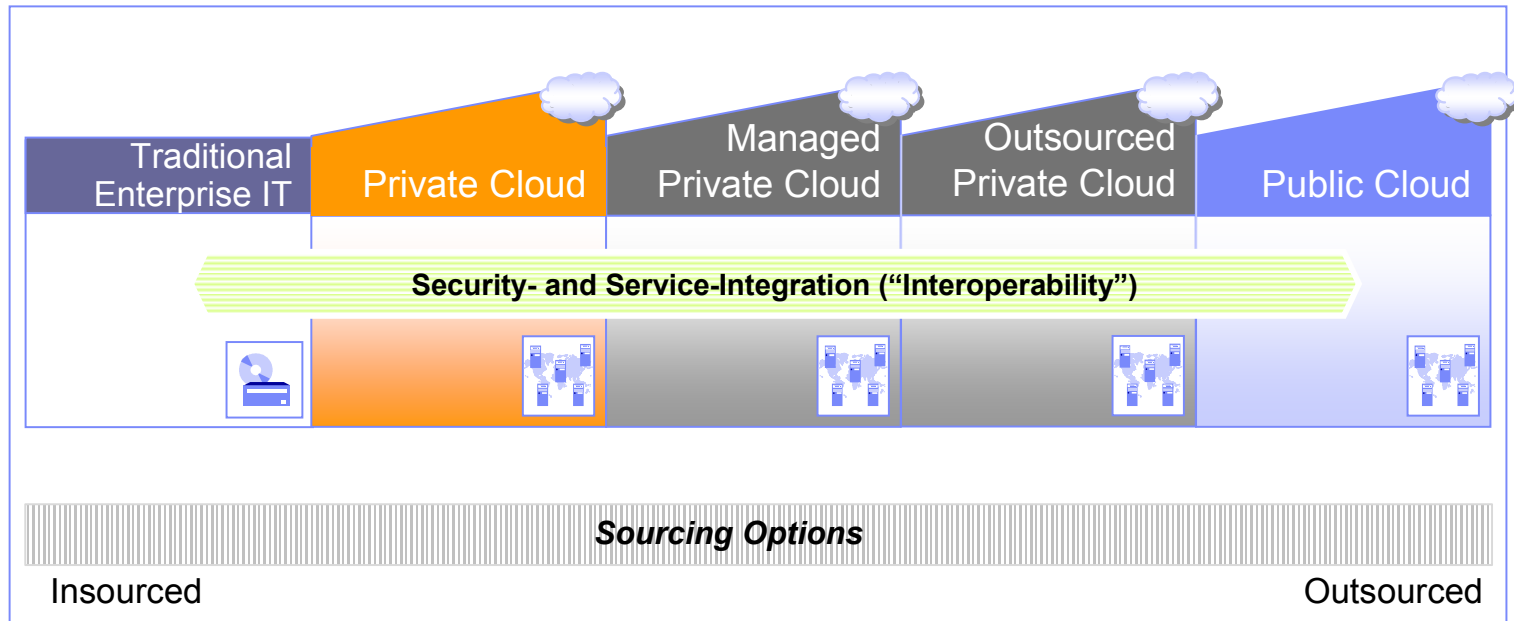
“**Cloud**” is an emerging consumption and delivery model for many IT-based services, in which the user sees only the service, and has no need to know anything about the technology or implementation



....service oriented and service managed



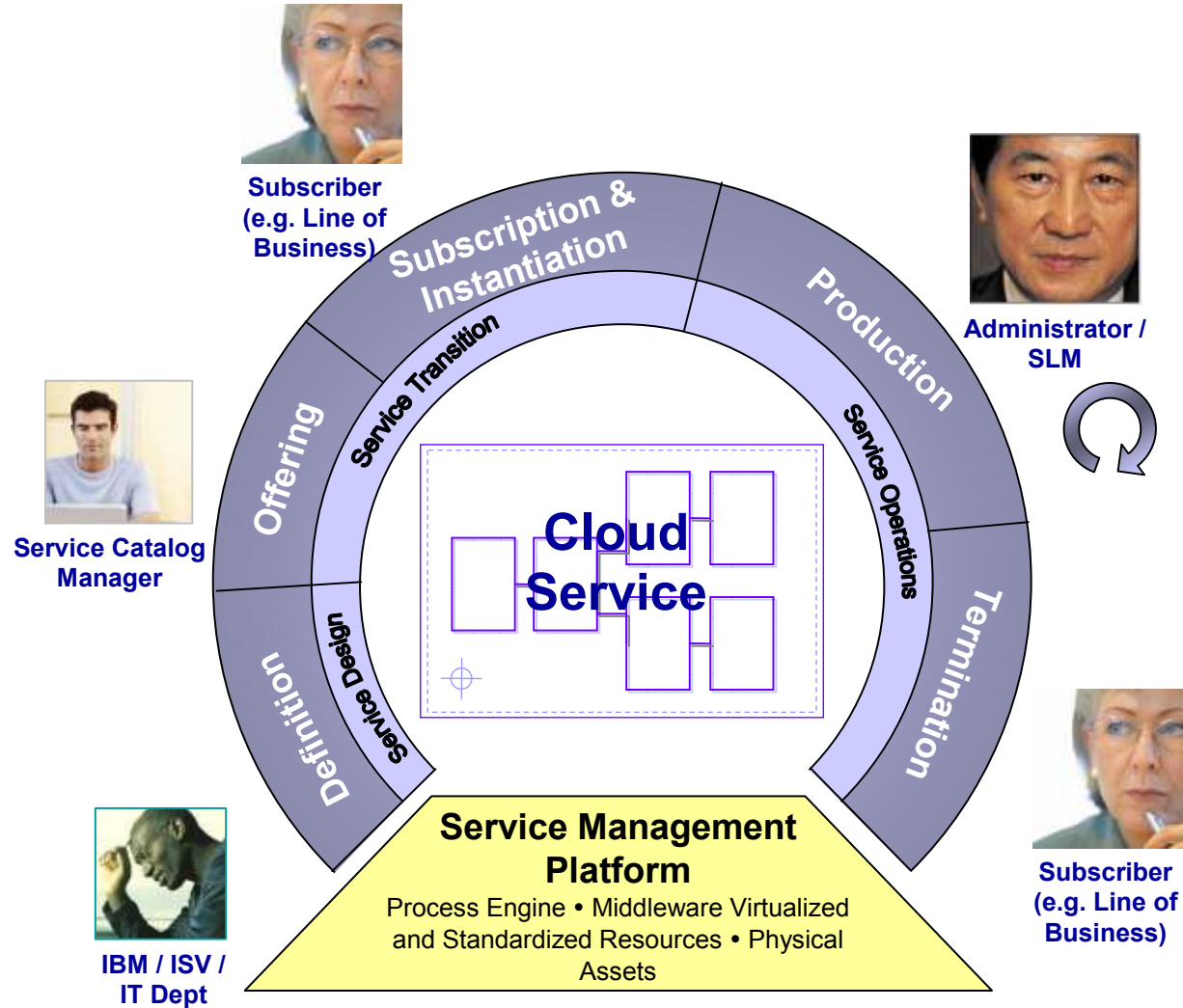
Cloud Has Multiple Sourcing Options



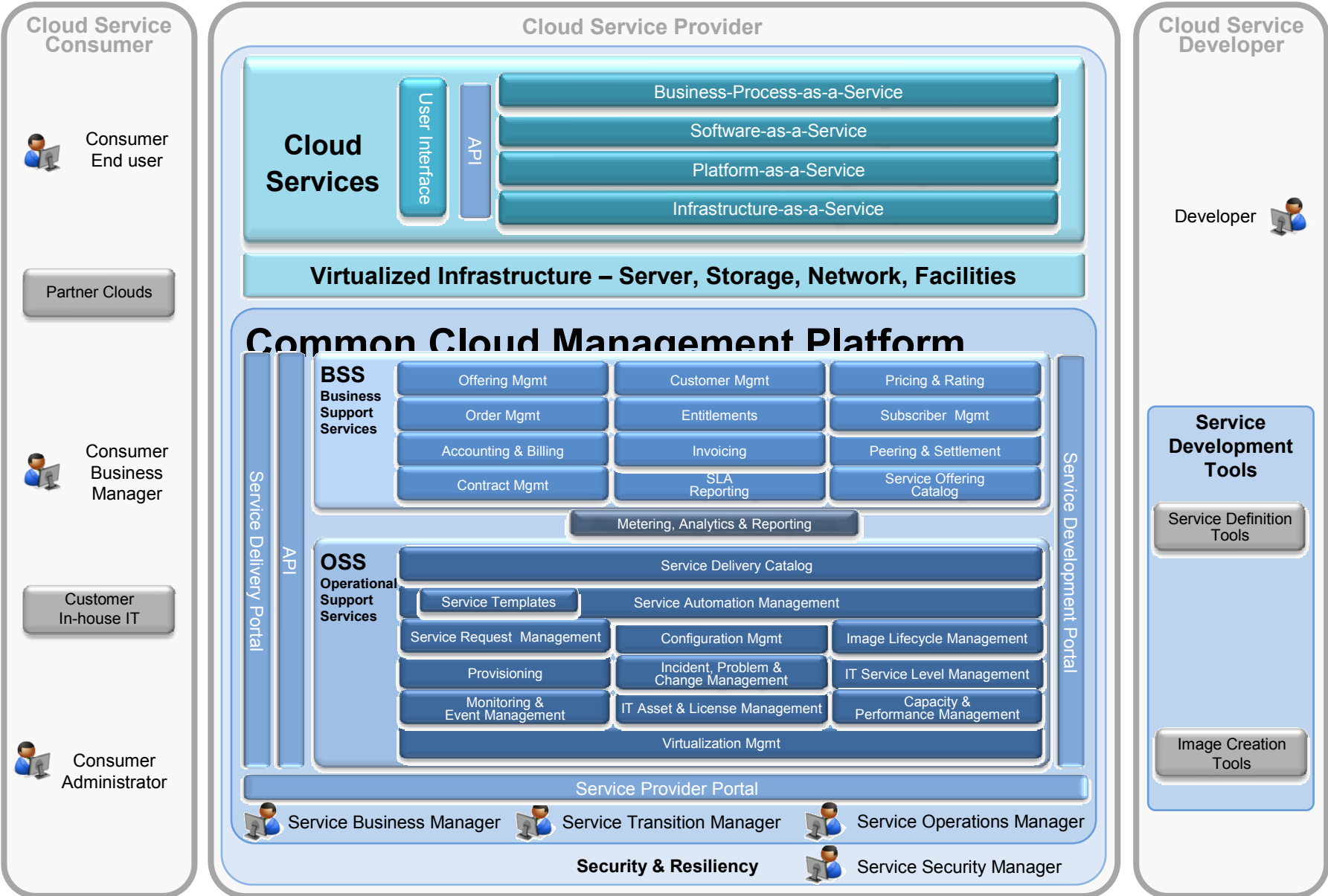
Cloud Computing allows you to develop the right strategy to rapidly and dynamically deliver business and IT services at lower cost and foster innovation



Service Lifecycle Management And Automation



Functional Cloud Management Platform Reference Architecture



Tivoli Service Automation Manager (TSAM)

- **Central Unit for deploying & managing Cloud Services in a datacenter environment**
 - Dynamic instantiation and management of Cloud Services along their entire lifecycle
 - Automation based on build- & management plans including humans and management components
- **Raises the level of abstraction for Service Management in data centers from single LPARs, storage volumes, SW installations to services as the units of management**
- **Integrated Management Solution**
 - Based on strategic Tivoli Process Automation Engine (TPAE)

**The holistic view
of a service...**



...is more than the sum of its
individual parts



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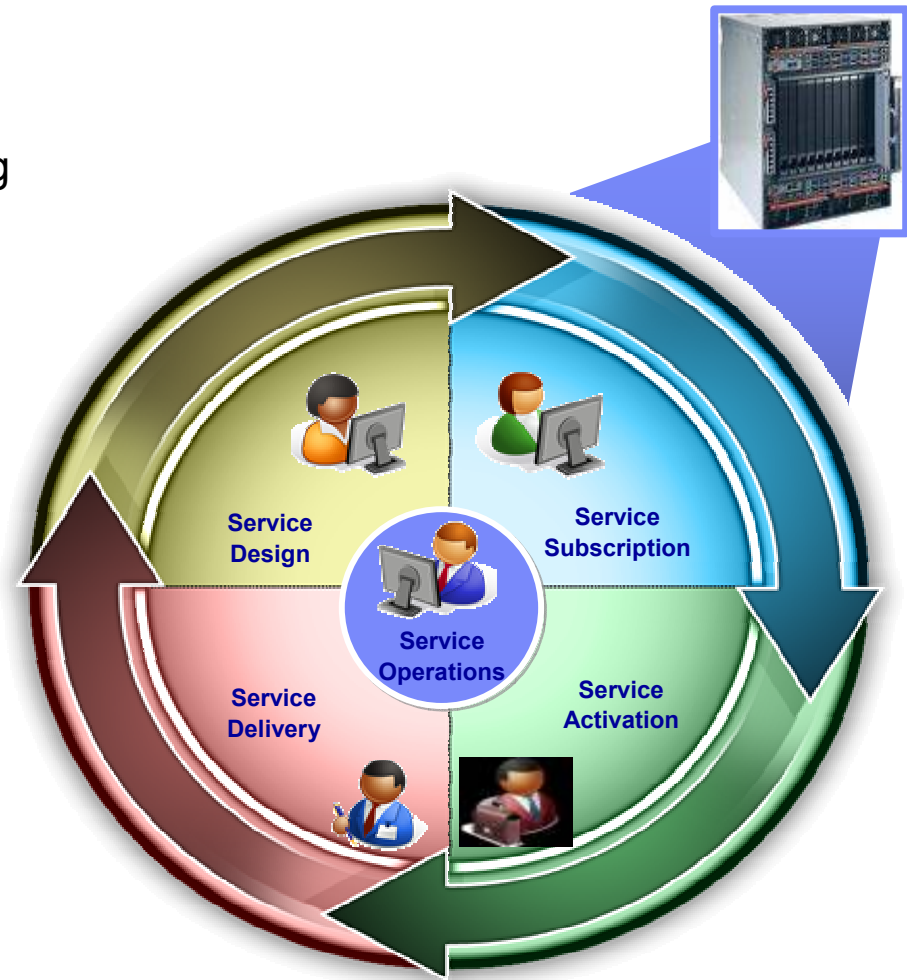
Introducing IBM cloudburst

Integrated Smart Business Systems Purpose-Built Solution

- Integrates the service management software system with network, servers, storage, “quickstart” services, and financing as an integrated offering to deliver an internal private cloud

Customer Benefits?

- ✓ **Improved innovation** - Dramatically improve business value and IT’s effect on time-to-market by enabling the business workloads to rapidly and accurately be deployed when and where they are needed.
- ✓ **Decrease operational expenses** – Gain productivity increases in IT labor costs through automation. Maximize capital usage and reduce added capital expense.
- ✓ **Reduce complexity and risk** - With automation and standardization the human error factor is minimized.



Based on 100+ client engagements



IBM CloudBurst: What we deliver

- A **service delivery platform** that is pre-integrated at the factory
- **Built-for-purpose** based on the architectural requirement of specific workloads
- Delivered and supported as a **single product**
- **Prepackaged, pre-configured** servers, storage, networking, software and installation services needed to start up a **private cloud**

Services

Software

Hardware

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

Configuration and discovery of virtualized compute, network and storage resources

Configure self- service portal

On-Site introductory Training

Overview and hands-on platform training including topics like:

BladeCenter, local SAN and network switch management

Administrator and user level training

Cloud Software Configuration:

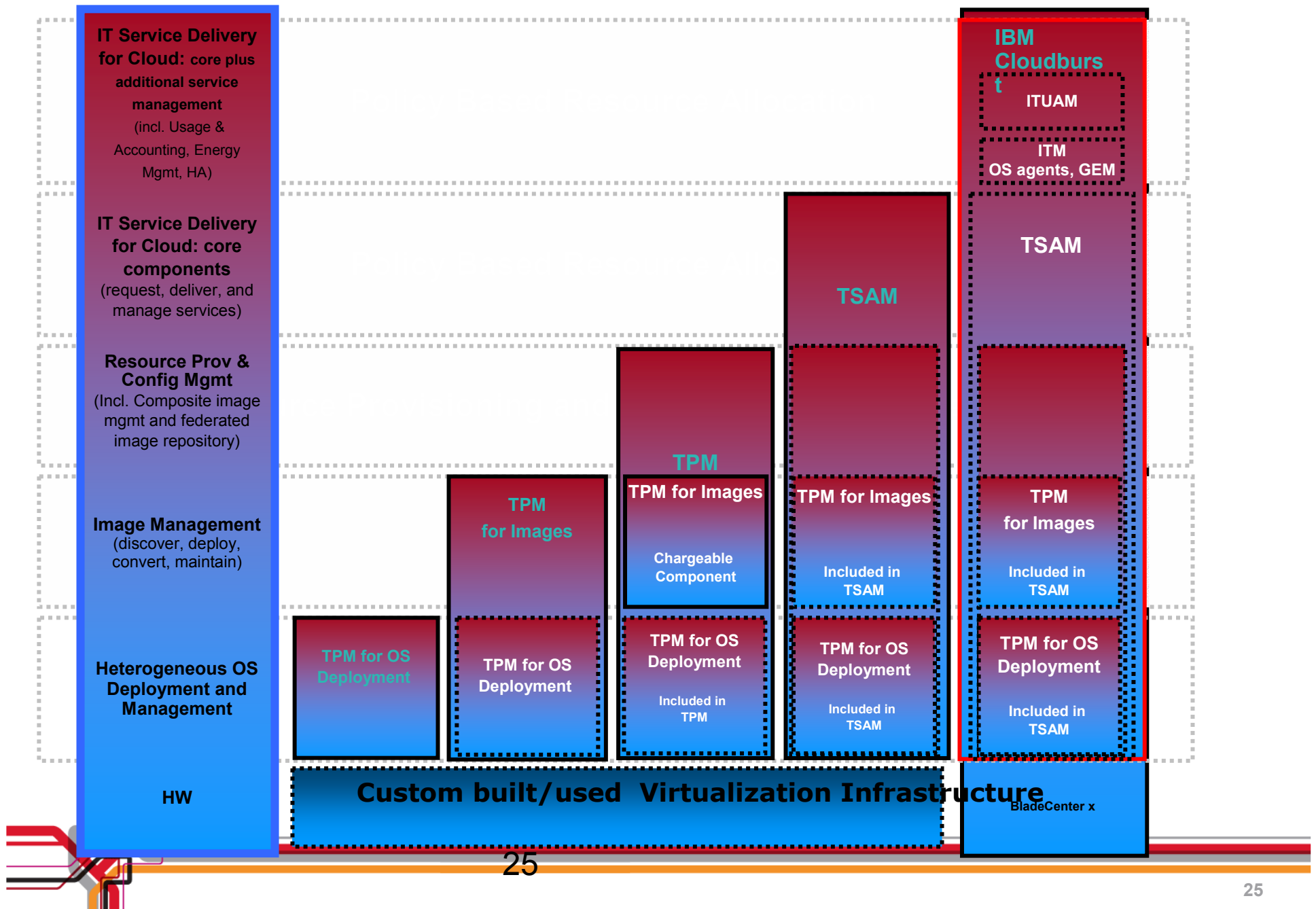
- Systems Director 6.1.1 with BOFM, AEM; ToolsCenter 1.0; DS Storage Manager for DS4000 v10.36; VMware VirtualCenter 2.5 U4; LSI SMI-S provider for DS3400
- VMware ESXi 3.5 U4 hypervisor on all blades
- Tivoli Provisioning Manager v7.1
 - DB2 ESE 9.1; WAS ND 6.1.0.13; TDS 6.1.0.1
 - Special purpose customized portal and appliance wizard that enables client portal interaction
- Tivoli Monitoring v6.2.1
 - OS pack

Base Hardware Configuration*:

- 1 42U rack
- 1 3650M2 Systems Management Server
- 1 HS22 cloud management blade
- 1 BladeCenter H chassis with redundant Ethernet and Fibre Channel switch modules
- 3 managed HS22 blades
- DS3400 FC attached storage



Product Delivery and Packaging for Cloud Solutions



Examples of Client Innovation



iTricity opened a highly advanced Computing Center for Continental Europe.

"Customer demands for flexible computing resources are rapidly increasing. Hosting services should also be reliable, fully resilient across multiple centers and compliant to business rules and regulations,"



Rome Tivoli Lab adopted TSAM for a private cloud in early 2009 for the development and test environment. Use request-driven provisioning to request servers, OS and storage on demand. Allow developers/testers to create, share, and manage their images.

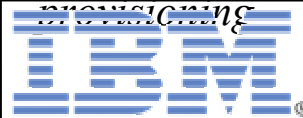
*Deployment time reduced from 4 days to 45 min for Windows box with WAS and DB2.
Increased capital utilization across teams.*

Financial Services Company

We struggled with the long time to reclaim test server deployments – typically two years. In addition, the process to request and provision servers was manual, cumbersome and error prone.



We deployed IBM Cloud SW to implement an end user, self-service provisioning private cloud to expedite the process to reclaim compute systems and streamline provisioning



Tornado is an internal IBM cloud solution for automated deployment and management of test and development systems. The challenges are long times to approve, deploy and implement test environments in IBM labs.

Deployed in Toronto, Hursley and Silicon Valley labs reducing a 25 step process down to 5 steps – resulting in a labor savings of over 9 person years and a 305% ROI





Thank You

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