Products and Solutions Support Center of Montpellier

Cloud Computing – What's behind the cloud ?

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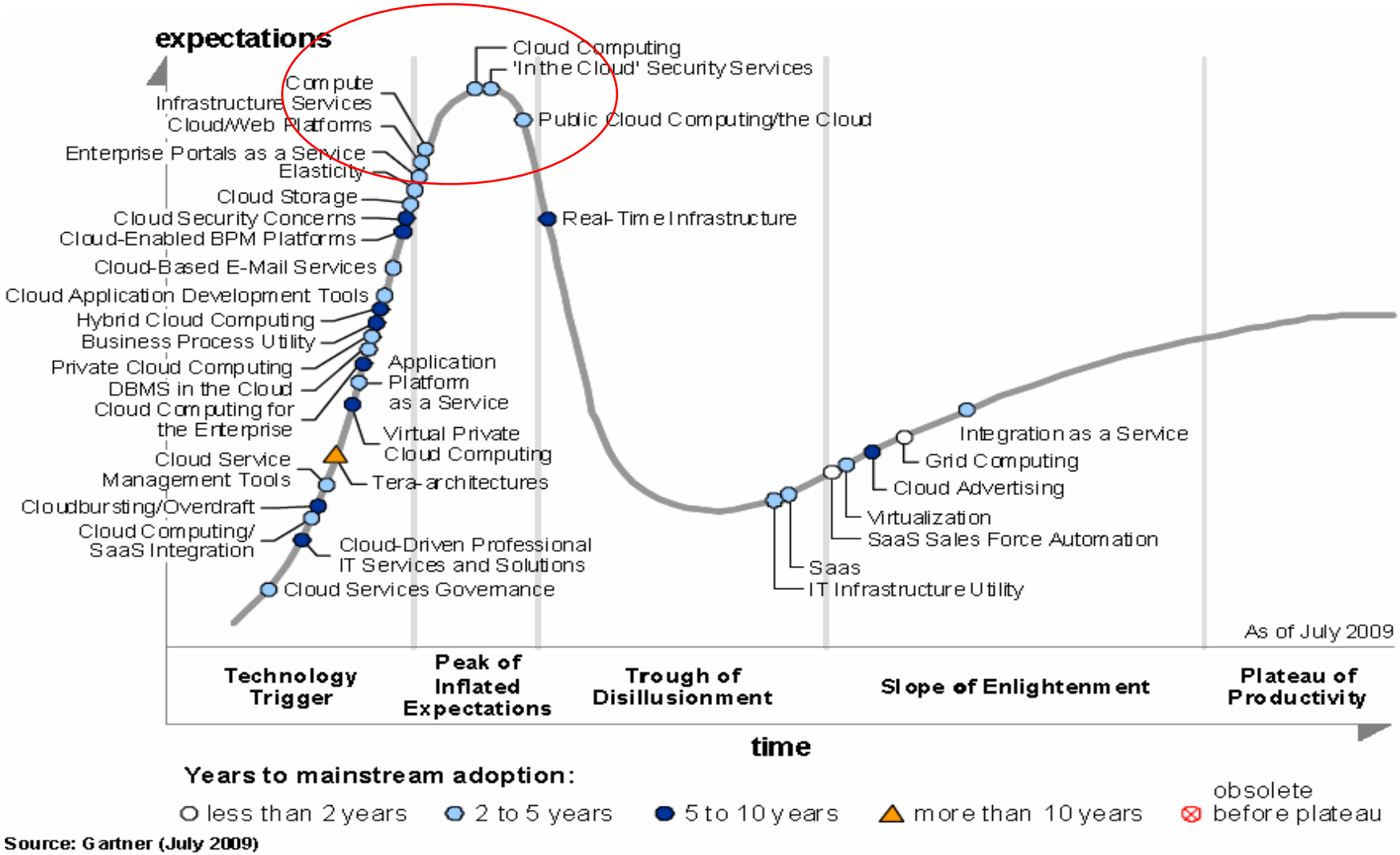
Customers' expectations today and in perspective ?



Source: Gartner (July 2009)

Defining Cloud Computing

Cloud Computing **is the provision of dynamically scalable and often virtualized resources as a service**

Business Perspective

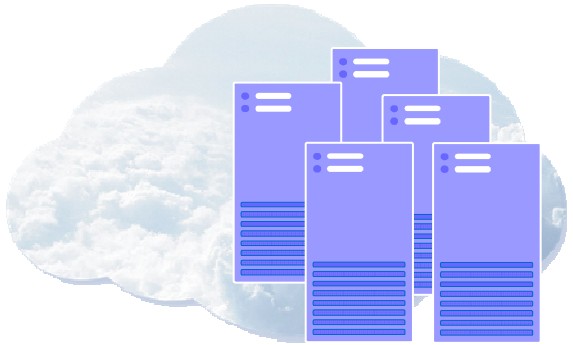
A user experience & business model

- *Transparent infrastructure*
- *Massively scalable*
- *Dynamically delivered*
- *Standardised, self served*
- *Utility Pricing Model*

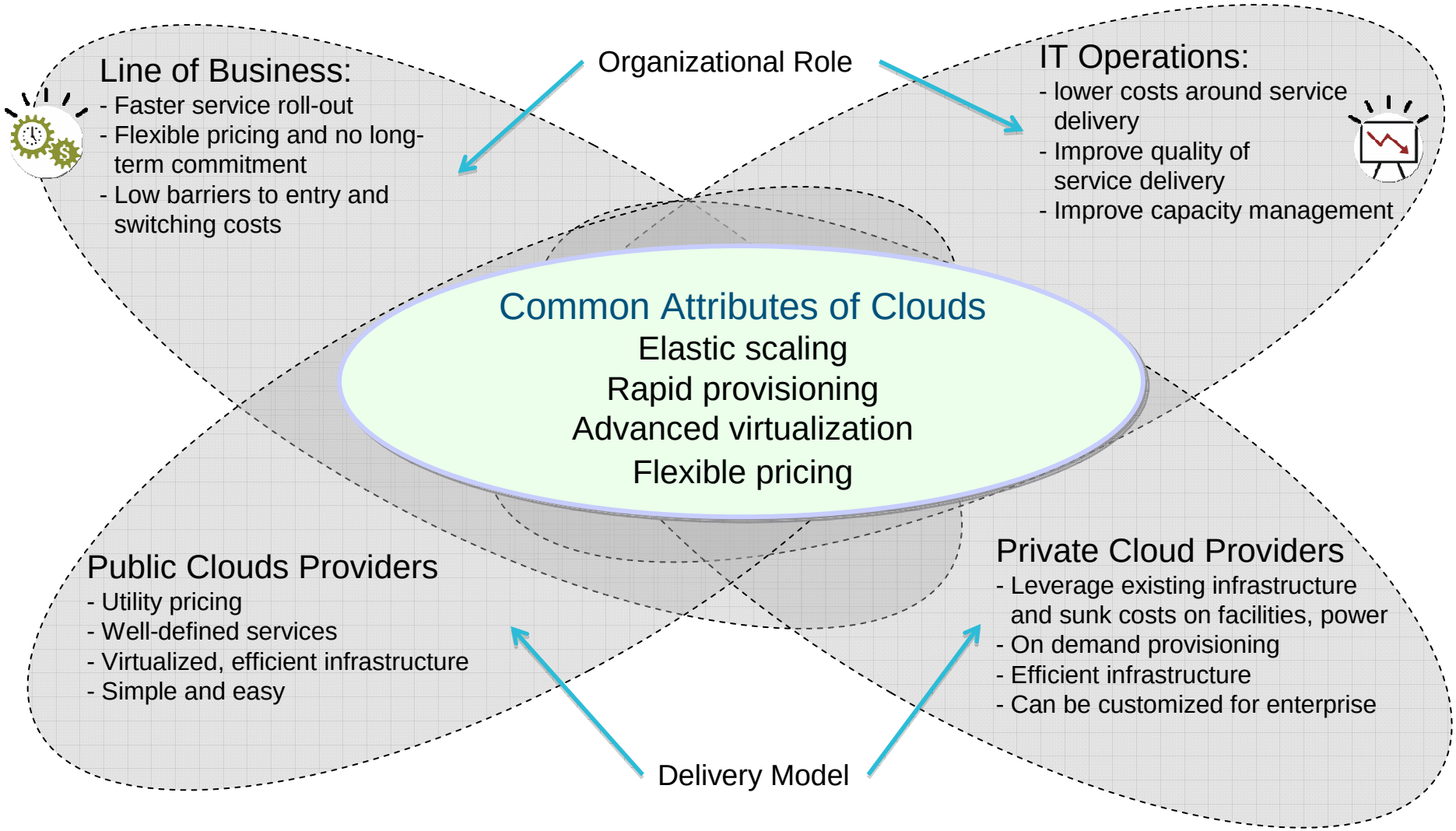
IT Perspective

An infrastructure management and services delivery method

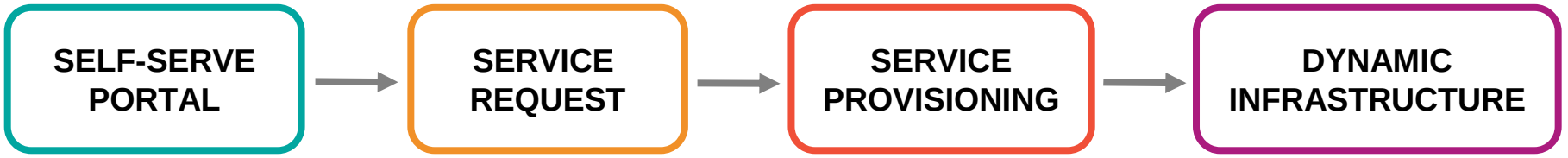
- *Secure & Resilient*
- *Automated*
- *Public and Private*
- *Enterprise class*
- *Virtualized*
- *Easily managed*



Who Cares about Clouds? How are they Delivered?



“Self-service” plus standardization drives lower costs and unlocks productivity for delivering workloads more effectively

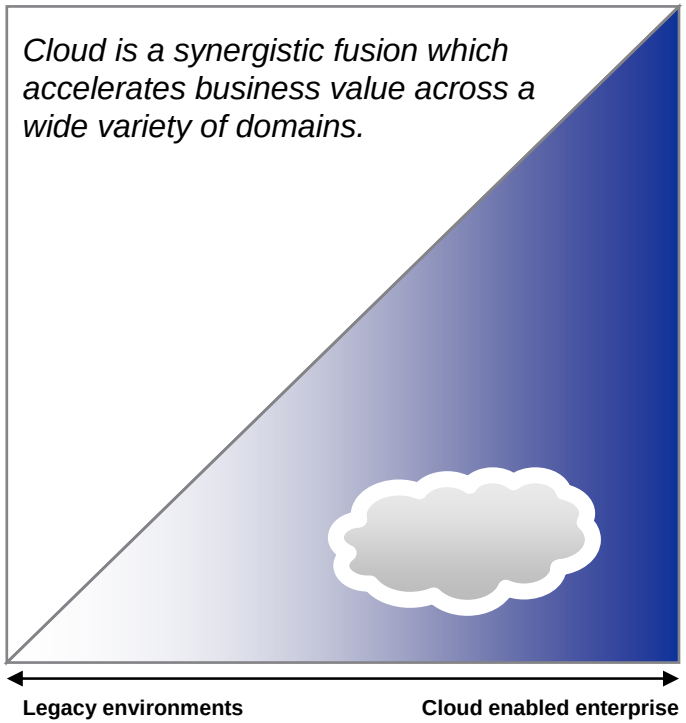


Cloud computing has immediate cost savings, capital reductions and improved operating efficiencies

VIRTUALIZATION + ENERGY EFFICIENCY + STANDARDIZATION + AUTOMATION = Reduced Cost

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

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
Payback period for new services	Years	Months

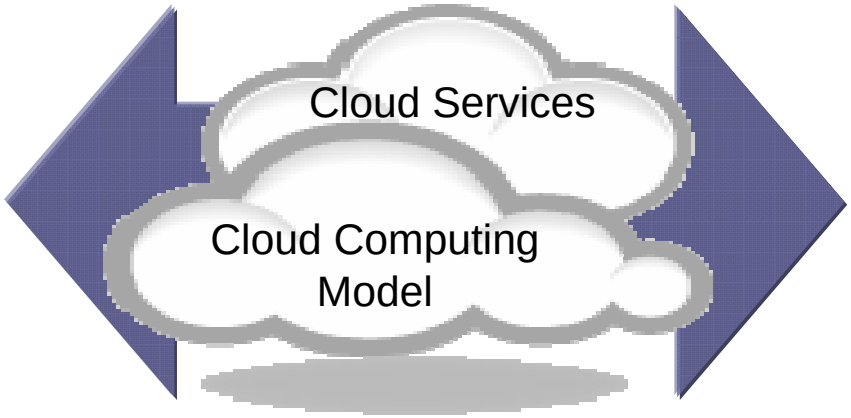


Cloud Computing Delivery Models

Flexible Delivery Models

Public …

Access by Service provider owned and managed.
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 resources

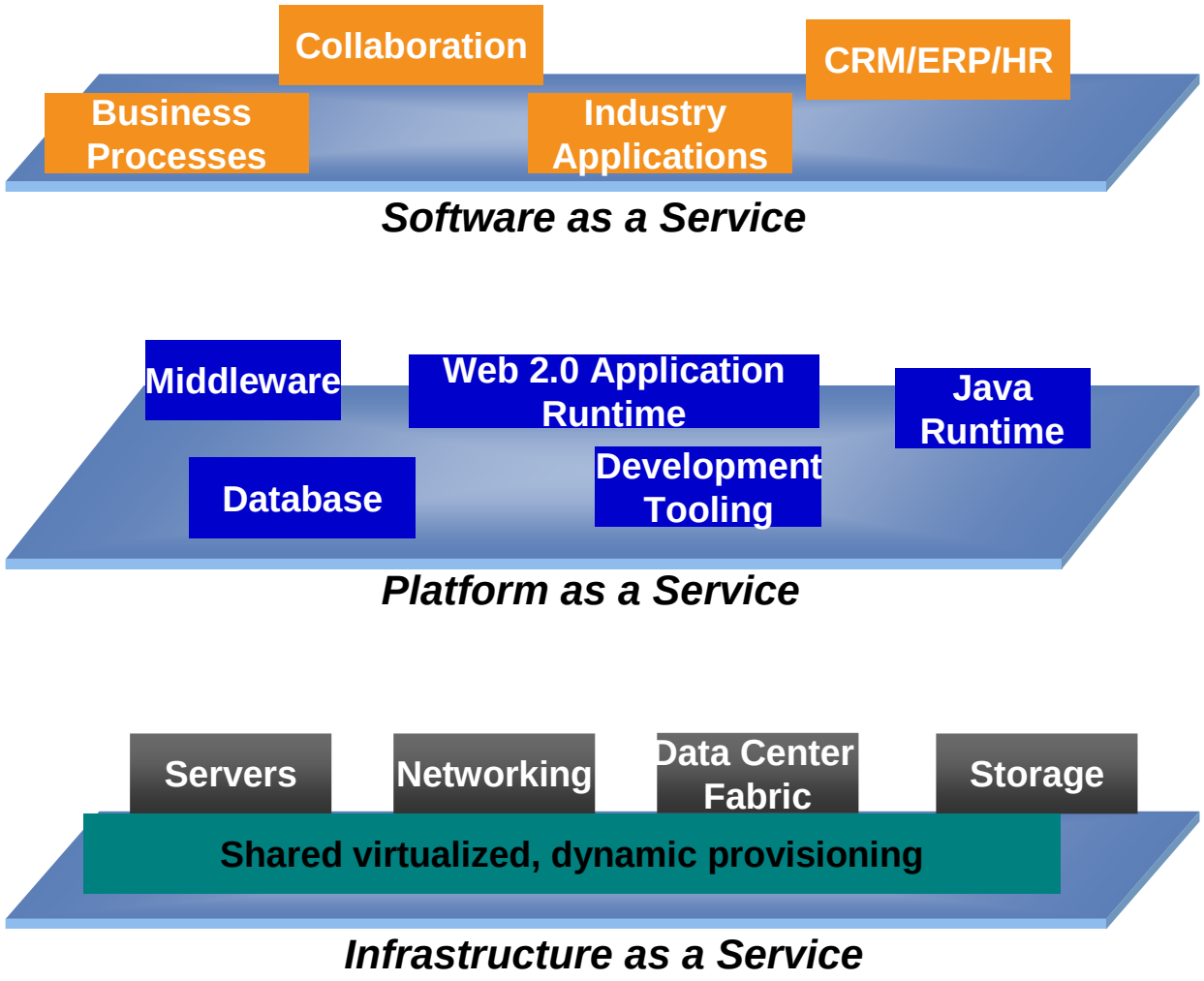
….Standardization, capital preservation, flexibility and time to deploy

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

ORGANIZATION → CULTURE → GOVERNANCE

...service sourcing and service value

Services can be segmented in three layers where infrastructure, platforms or software is being provisioned



High-level cloud security concerns

Loss of Control

Many companies and governments are **uncomfortable** with the idea of their information located on **systems they do not control**. Providers must offer a high degree of security transparency to help put customers at ease.

Data Security

Migrating workloads to a **shared** network and compute **infrastructure** increases the potential for **unauthorized exposure**. Authentication and access technologies become increasingly important.

Reliability

High availability will be a key concern. IT departments will worry about a **loss of service** should outages occur. Mission critical applications may not run in the cloud without strong availability guarantees.

Compliance

Complying with SOX, HIPPA and other **regulations may prohibit** the use of clouds for some applications. Comprehensive auditing capabilities are essential.

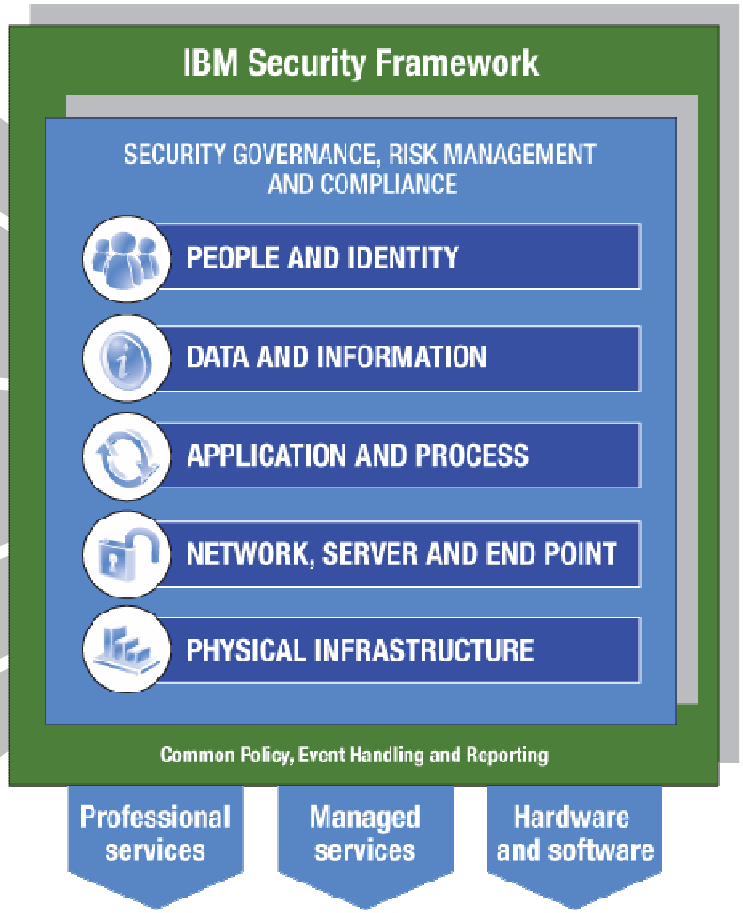
Security Management

Providers must supply easy, visual controls to **manage firewall and security settings** for applications and runtime environments in the cloud.

Gartner reports on 7 security risks of cloud computing

…that map directly to the IBM Security Framework.

- Privileged User Access
- Data Segregation
- Data Recovery
- Investigative Support
- Regulatory Compliance
- Data Location
- Disaster Recovery



Gartner: Assessing the Security Risks of Cloud Computing, June 2008

Cloud computing also provides the opportunity to simplify security controls and defenses

People and Identity	▪ **Centralized** Identity and Access Control policies ▪ **Well-defined** set of input/output **interfaces**
Information and Data	▪ Computing services running in **isolated domains** as defined in **service catalogs** ▪ **Default encryption** of data in motion & at rest ▪ Virtualized storage providing better **inventory, control, and tracking of master data**
Process & Application	▪ **Autonomous** security policies and procedures ▪ Personnel and tools with **specialized knowledge** of the cloud ecosystem ▪ **SLA-backed** availability and confidentiality
Network Server and Endpoint	▪ **Automated** provisioning and reclamation of **hardened** runtime images ▪ **Dynamic allocation** of pooled resources to mission-oriented resources ▪ **Simplified**, **built-in** security controls
Physical infrastructure	▪ **Closer coupling of systems** for management of physical and logical identity/access ▪ Strong platform of compute resources with **integrated workload-balancing and resiliency** ▪ **Highly-fortified** physical data centers

IBM approach to Cloud Computing...

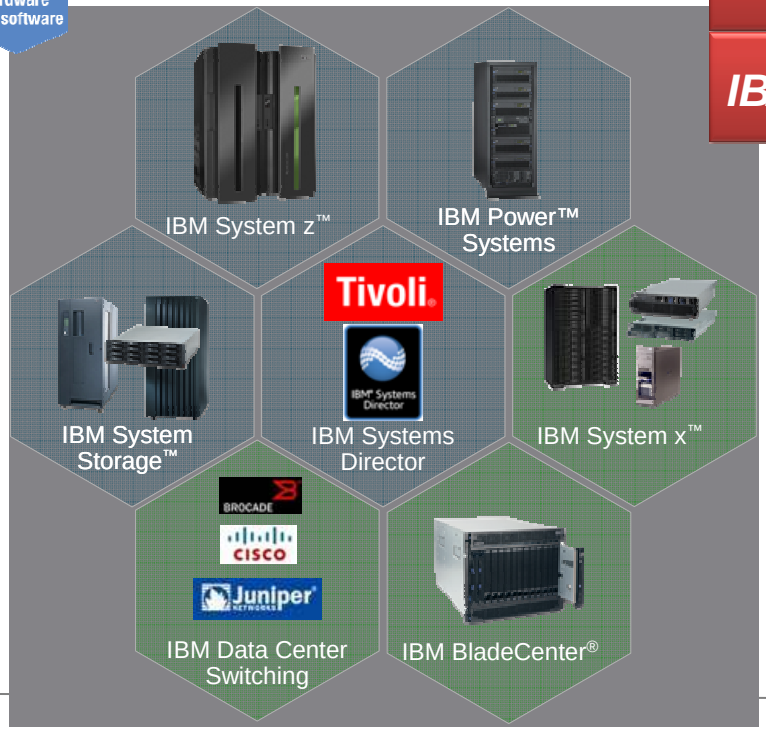
IBM Cloud differentiators

- **Workloads optimized** for specific tasks, or services in ways that deliver orders of magnitude better performance, scale and efficiency.

- **Service Management** to provide ***visibility***, ***control*** *and* ***automation*** across IT and business services to ensure consistent delivery.

- **Flexible delivery choices** IBM works with clients to select the right delivery option, including Cloud computing, to fit their business.

IBM provides the technology and solutions for cloud computing



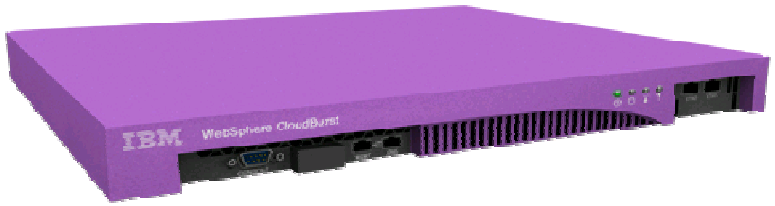
IBM Tivoli Service Automation Manager

IBM Tivoli Provisioning Manager

IBM Tivoli Monitoring

IBM Tivoli Composite Application Manager

IBM Tivoli Usage and Accounting Manager



Operations have industrialized to become smarter

Telcos automate traffic through switches to assure service and lower cost

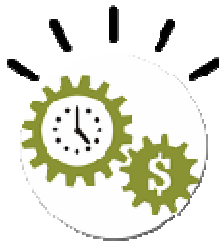
Manufacturers use robotics to improve quality and lower cost

Banks use automated teller machines to improve service and lower cost

…Breakthroughs like these are enabled by service management systems

Dynamic Infrastructure imperatives across initiatives and stages of adoption

IMPROVE ***SERVICE***

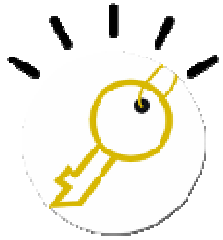


Achieve superior service delivery and align all assets to business goals with a **business-driven service model** to **respond with agility and speed** to changing business imperatives.

REDUCE ***COST***

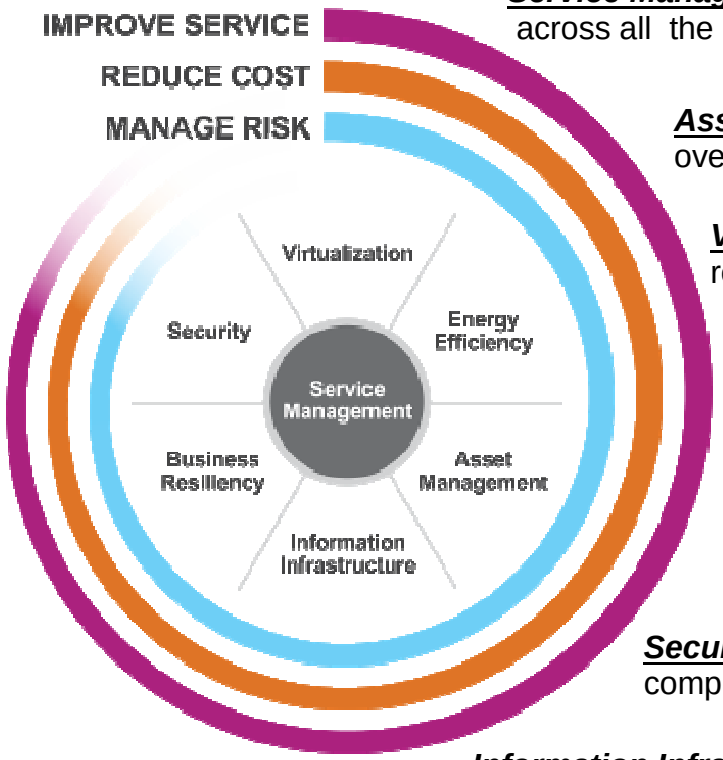
Implement a **cost-efficient infrastructure** that balances mounting budget pressures with rising customer demands, service delivery expectations, and adoption of emerging technologies.

MANAGE ***RISK***



Instill trust with key constituents that all business and IT infrastructure is **secure and resilient**, including “smart” and mobile devices, external networks, and supply chains.

Building a dynamic infrastructure.



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.

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

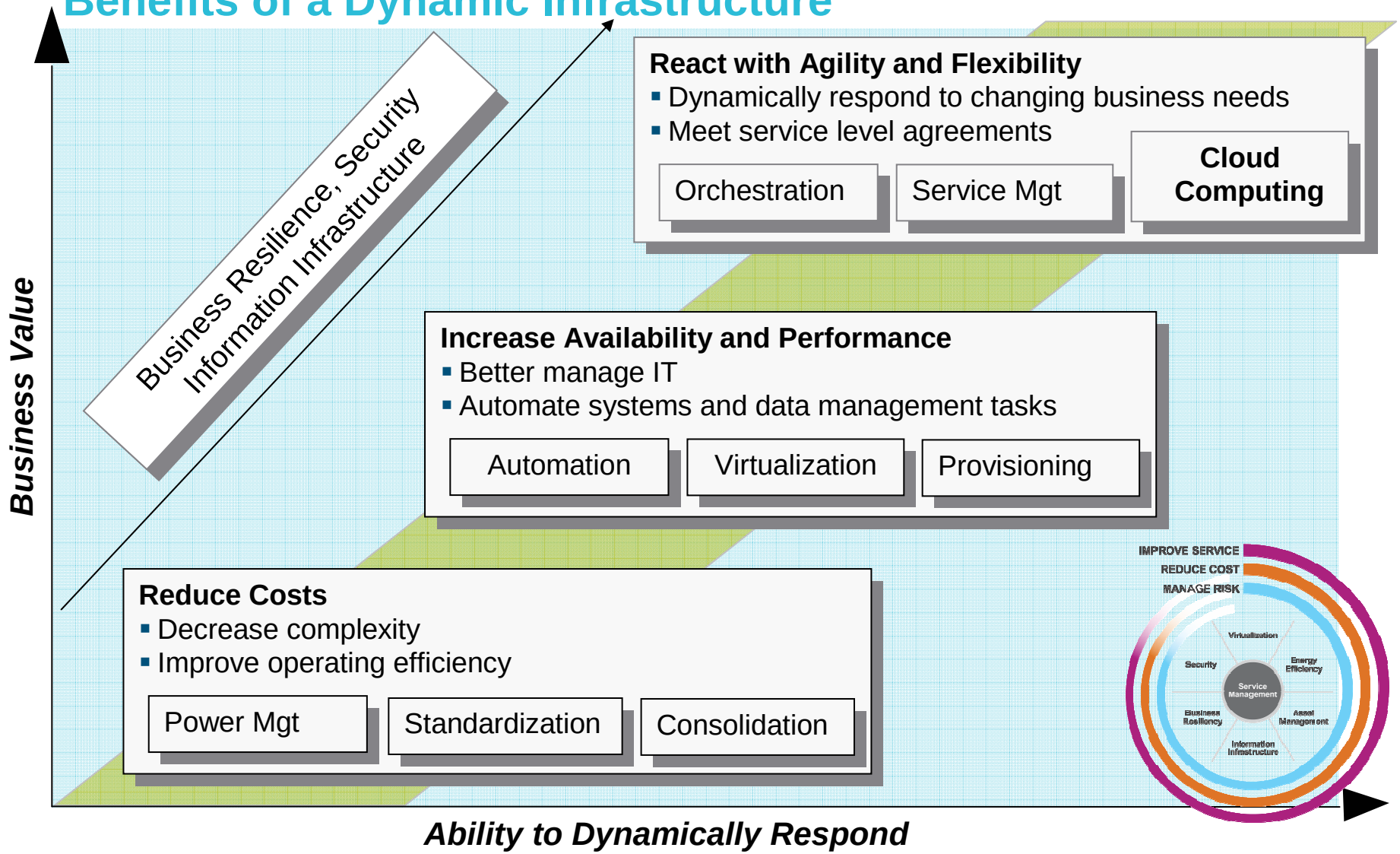
Energy Efficiency – Address energy, environment, and sustainability challenges and opportunities across your infrastructure.

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

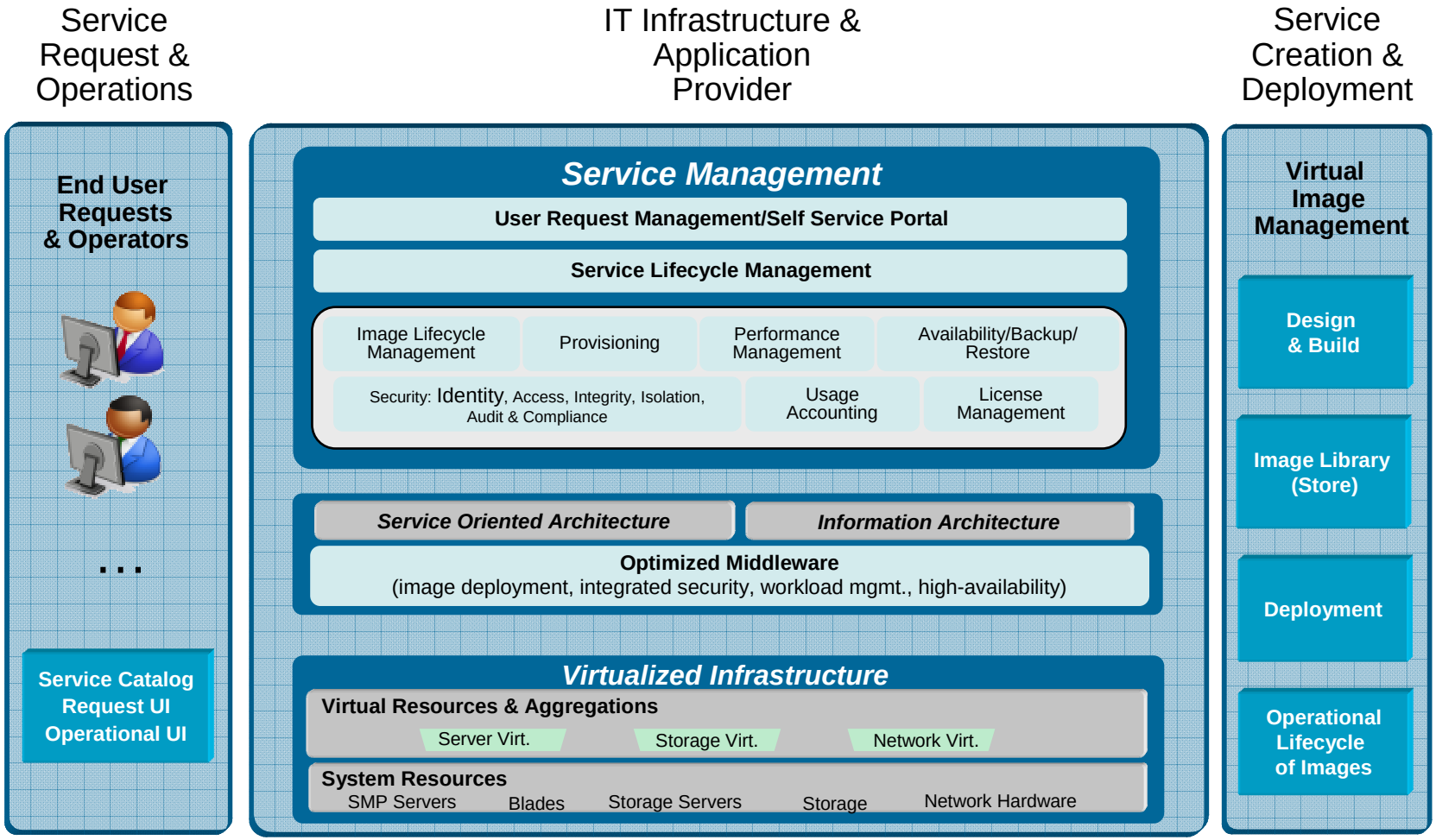
Security – End to end industry customized governance, risk management and compliance solutions.

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

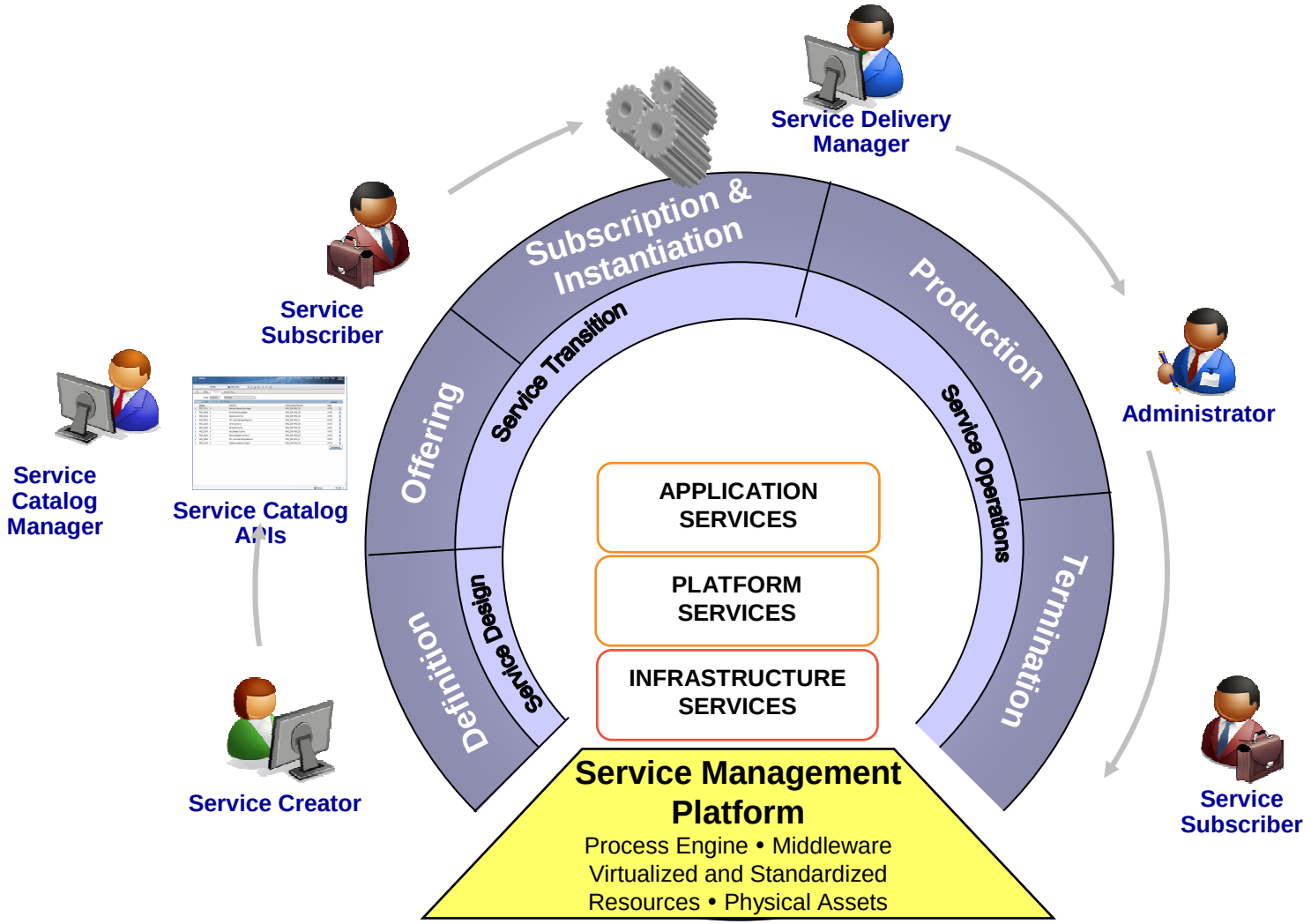
Building Private Clouds - The Stages of Adoption and Benefits of a Dynamic Infrastructure



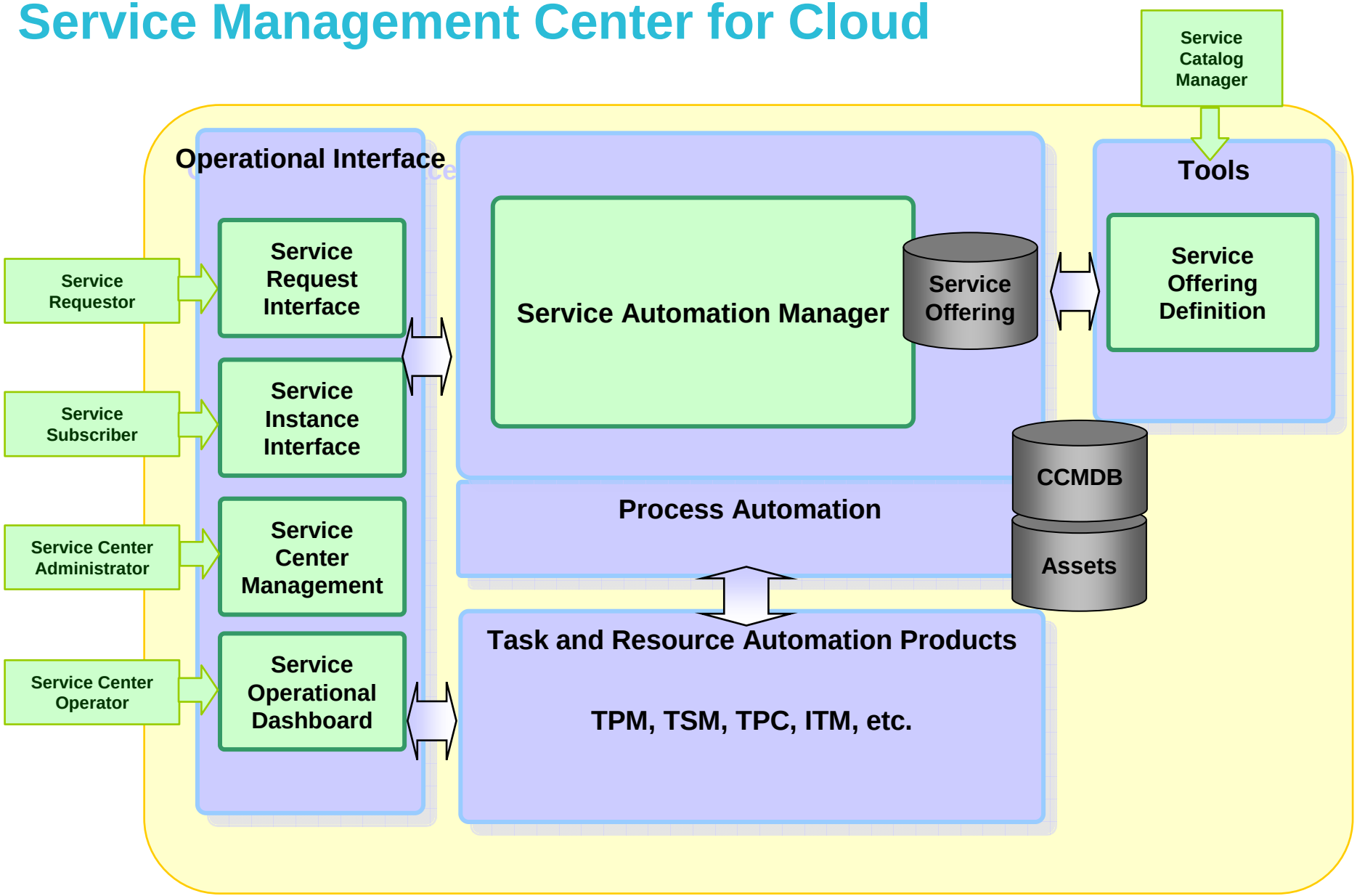
Architectural Model for Cloud Computing



The cloud service lifecycle



Service Management Center for Cloud

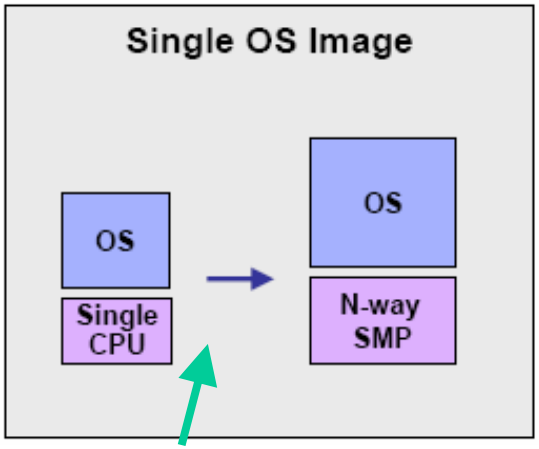


Vision for Server Virtualization Evolution: Systems Pools (a.k.a Ensemble Technology)

Goal is to limit effects of complexity increasing with the number of managed virtualized systems

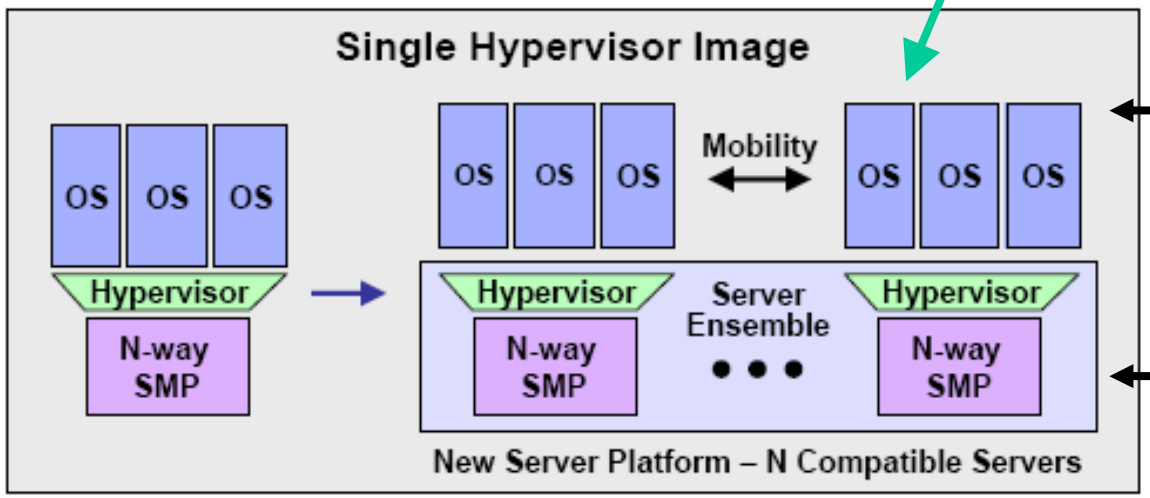
An Ensemble is a pool of like systems that are managed as a single system on which workloads are deployed

- Scale from a few to many thousands of virtual or physical nodes
- Reduce management complexity with integrated virtualization, systems management and service management software
- Allow workload optimization for maximum performance and efficiency



Analogy with SMP systems: OS multi-threading and scheduling hide complexity from administrator & end-user

Virtualization mobility and provisioning enabled



Ensemble Service Management

- Service Level Management
- Monitoring and Workload Management
- Mobility Provisioning

Ensemble Platform Management

- Virtualized Platform Management
- Parallel Management

Cloud Computing Addresses Key Challenges

Achieving changes in orders of magnitude in various areas

From state		To state
Better		
Every system is unique, few common configurations.	**Standardised delivery models** utilise service catalog of standard components.	Template and catalog based configurations
Many configurations, difficult to manage.	**Consistency of configuration** driving compliance, easier support & auditing, consistent security.	Few configurations, reduced compliance.
Faster		
Weeks or months to provision new systems	**Deploy new systems faster** shorter leads times, quicker to market, agility, competitive advantage	Hours or minutes to provision new system
Complex, slow process, low perceived business value	**User/IT self service** improving customer satisfaction and responsiveness	Responsive, user in control, value recognised.
Cheaper		
10's servers per administrator	**Improve server/admin ratio** E2E service management, drive down operational costs	100's or 1000's of servers per administrator
<10% average CPU / server utilisation. PUE metric > 2	**Improve server & power utilisation** cost avoidance on new hardware, energy & cooling costs.	>60-80% CPU / server utilisation. PUE metric < 1.5
Many roles & resources involved in new deployments	**Low or No touch deployment** drive down operational costs and manage thru full life-cycle	Minimised human intervention to deploy systems

IBM introduced 3 new choices to deploy workloads that matter to you for greater efficiency, productivity and control.

Smart Business Services – cloud services delivered.

1. *Standardized services on the IBM cloud.*
2. *Private cloud services*, *behind your firewall,* built and/or run by IBM.

Smart Business Systems – purpose-built infrastructure.

3. *Integrated Service Delivery Platform*

Analytics

Collaboration

Development and Test

Desktop and Devices

Infrastructure

Business Services

Smart Business Offerings for Cloud Computing

GTS Consulting Services supporting Cloud Computing

Infrastructure Strategy and Planning for Cloud Computing (SPL1)
Networking Strategy and Optimization - for Cloud computing (SPL4)







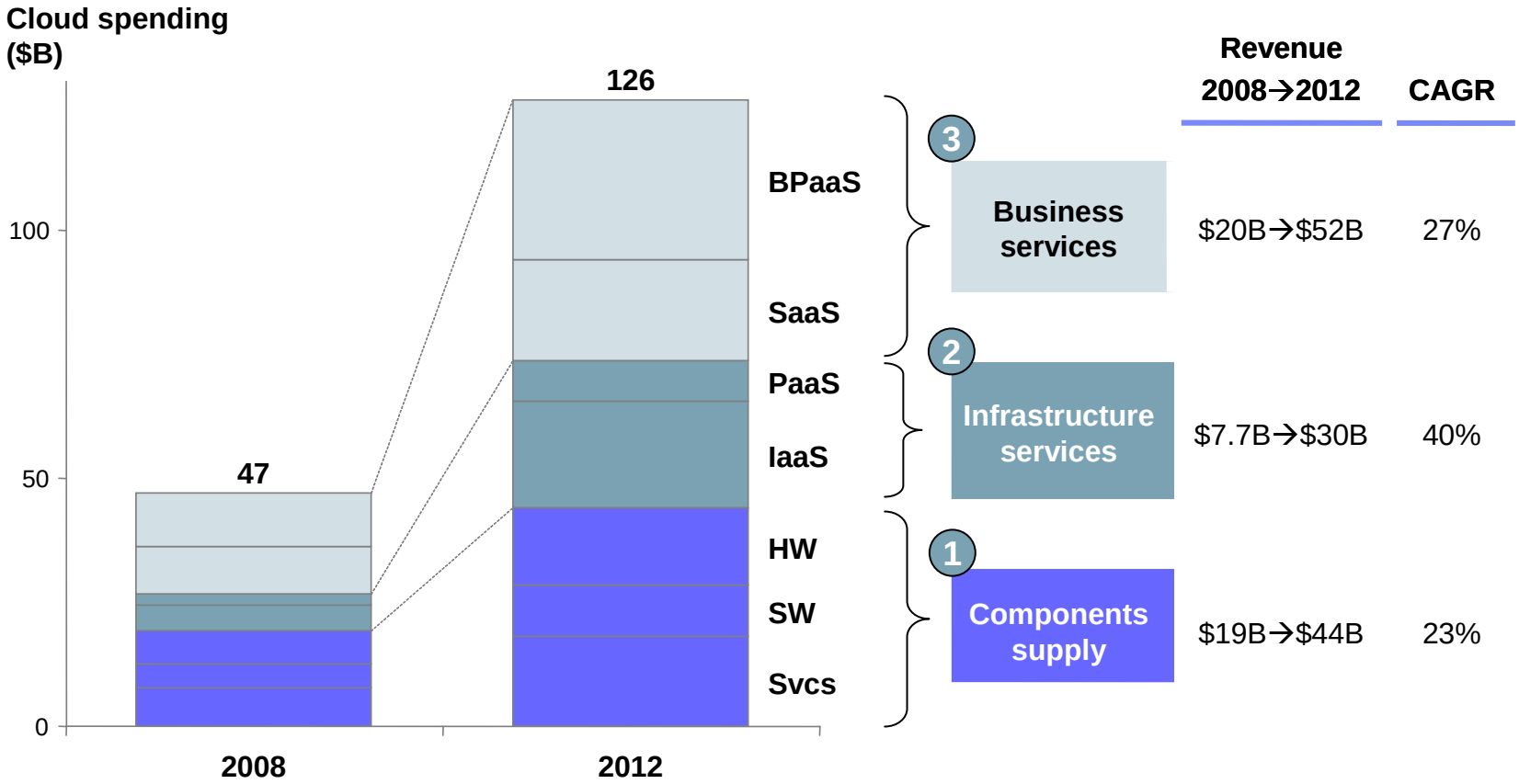
	Analytics	Collaboration	Development and Test	Desktop and Devices	Infrastructure Compute	Infrastructure Storage	Business Services
Smart Business on the IBM cloud Standardized services on the IBM cloud		IBM Lotus Live NEW - IBM Lotus® iNotes® (SWG)	Smart Business Development and Test on the IBM Cloud (beta) (SPL2)	Smart Business Desktop Cloud (SPL3) Smart Business End User Support – Service Assist (SPL3)	Computing on Demand (STG)	Information Protection Services (SPL5) Smart Business Storage on the Cloud (SPL9)	BPM BlueWorks (design tools) (SWG) Smart Business Expense Reporting on the IBM Cloud (GTS-MBPS)
IBM Smart Business Services Private c*loud services*, *behind your firewall,* built and/or managed by IBM	Smart Analytics Cloud (STG)		Smart Business Test Cloud (SPL2)	Smart Business Desktop Cloud (SPL3)		Smart Business Storage Cloud (SPL9)	
IBM Smart Business Systems Preintegrated, workload-optimized systems	Smart Analytics System (SWG)		CloudBurst™ family (SPL2)			Information Archive (STG)	Smart Business for Small or Midsize Business (backed by the IBM cloud) (SWG)

Existing New in October New in December

The cloud market is expected to grow strongly

$47B market in 2008 growing at 28% CAGR will reach $126B in 2012

Cloud Spending By Sub-Market



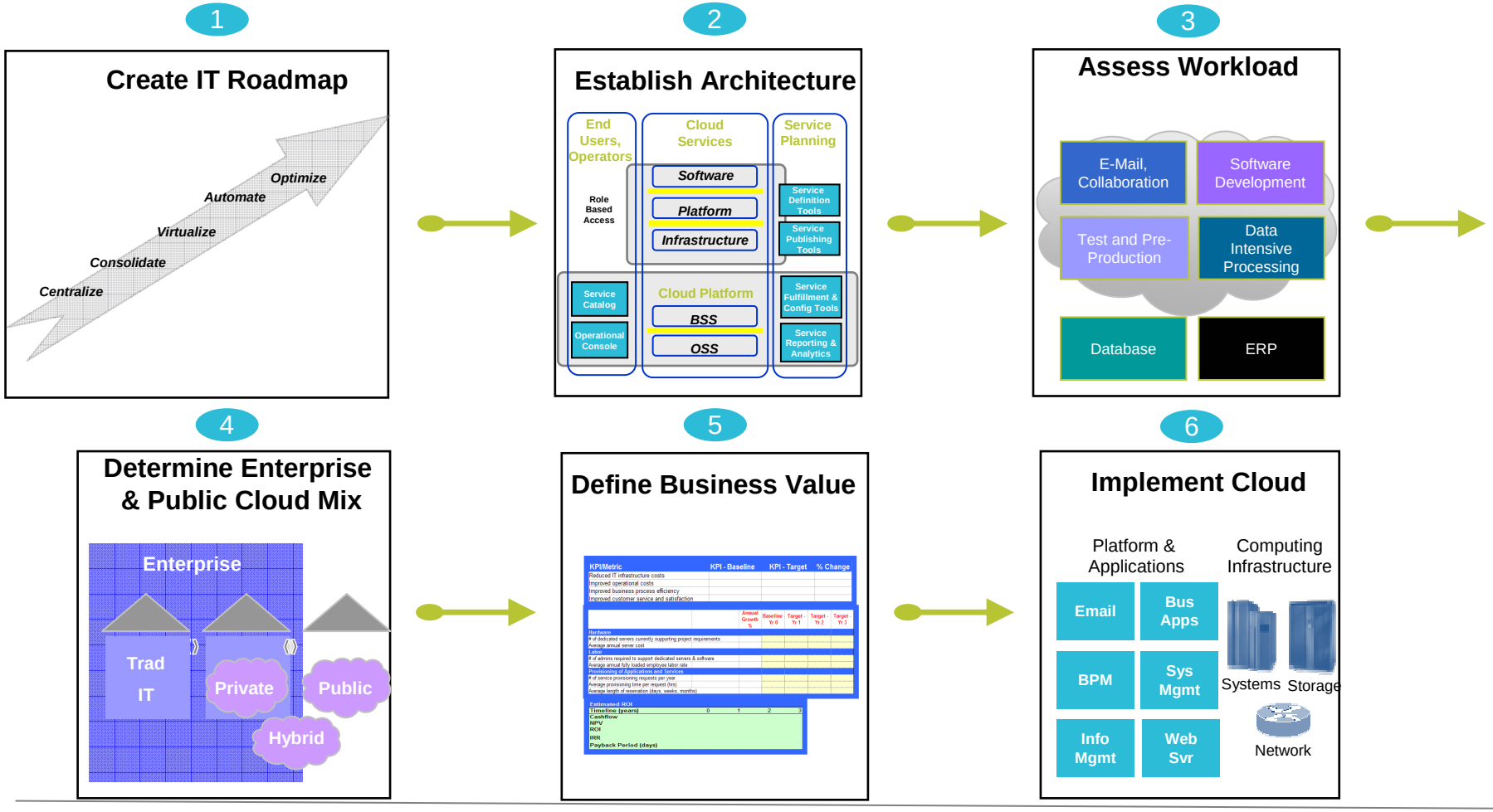
- Includes both direct providers of cloud services and components suppliers
- Data represents a worldwide view across both LE and SMB

Source: IBM (MI), IDC, CIO magazine, BCG analysis

20 cloud computing centers and more than 100 projects

Six strategic steps must be taken

Developing your cloud strategy and plan is critical



Cloud Computing enables a Dynamic Infrastructure for IBM Systems Benchmarks & Education Classes

Delivering performance testing and course platforms as a service through the network

IBM Systems Centers " Light Benchmark " Offering

Booking for infrastructure building blocks to run tests, receiving VPN connections by mail within hours

Benefits

- ✓Reduced cost by sharing HW and shrinking setup time
- ✓Affordability of benchmarking for IBM to win more server business

Management Services

Reservation Portal

Availability | **Security** | **Optimization** | **Provisioning**

Automated Infrastructure Orchestration

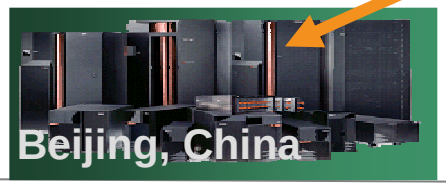
Infrastructure Services

Virtualization

Building Block Standardization

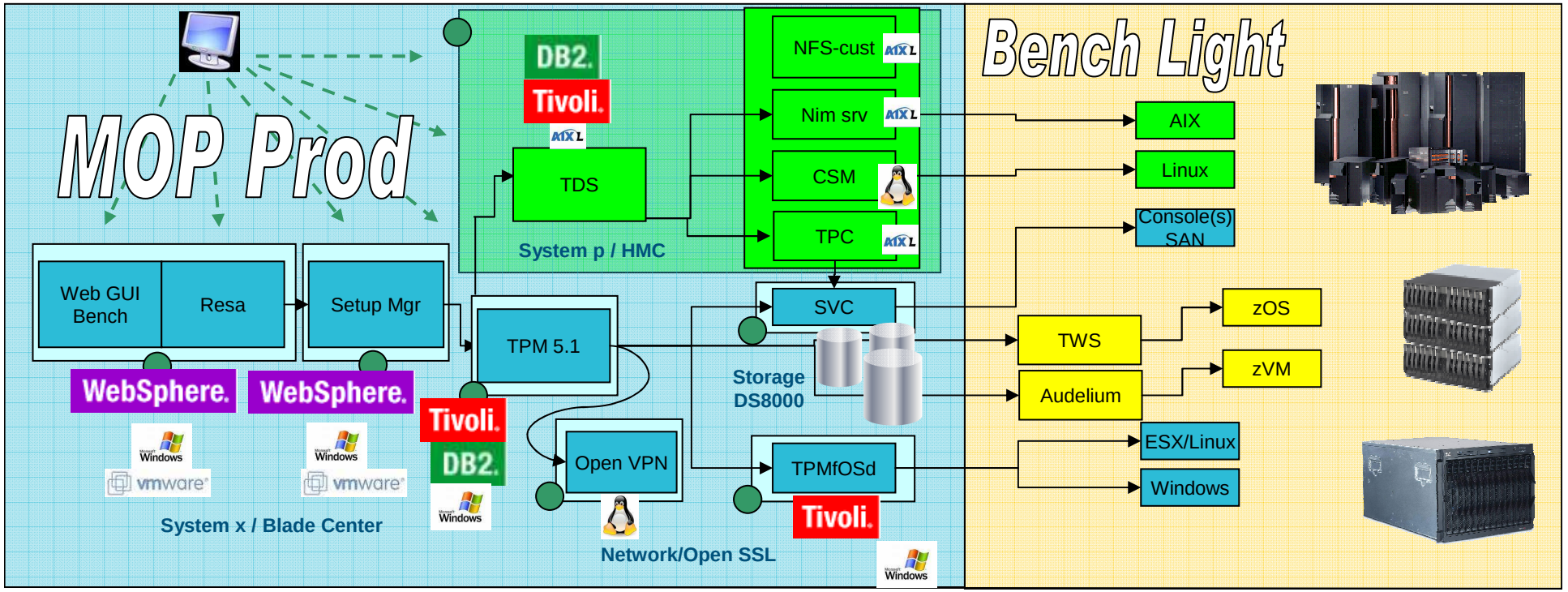
Benchmark Center Cloud Management

Benchmark Centers Resource Pools



Architecture Operational Model

System p
System x / Blade
System z
HA Phase 3 Ready
(HA on hardware components)



Odina Production Activities

- Monitoring
- Level 1 & 2 support (french working days) on new Incident tracking Tool
- Backups/Restores
- Desk Support Procedures
- Problem Matrix / Known Errors
- SLA

Booking ***Provisioning*** ***Running***

Cloud Computing enables a Dynamic Infrastructure for IBM Systems Benchmarks & Education Classes

Delivering performance testing and course platforms as a service through the network

IBM Systems Centers " Light Benchmark " Offering

Booking for infrastructure building blocks to run tests, receiving VPN connections by mail within hours

IBM Systems Education " Central Location " Program

Booking for a given class code at a given date, receiving VPN connections by mail the day before the class

Benefits

- ✓Reduced cost by sharing HW and shrinking setup time
- ✓Affordability of benchmarking for IBM to win more server business

Management Services

Reservation Portal

Availability | **Security** | **Optimization** | **Provisioning**

Automated Infrastructure Orchestration

Infrastructure Services

Virtualization

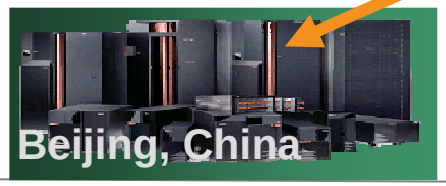
Building Block Standardization

Benefits

- ✓Reduced cost by maximizing HW usage and streamlining operations
- ✓Enablement of homogeneous education business across countries

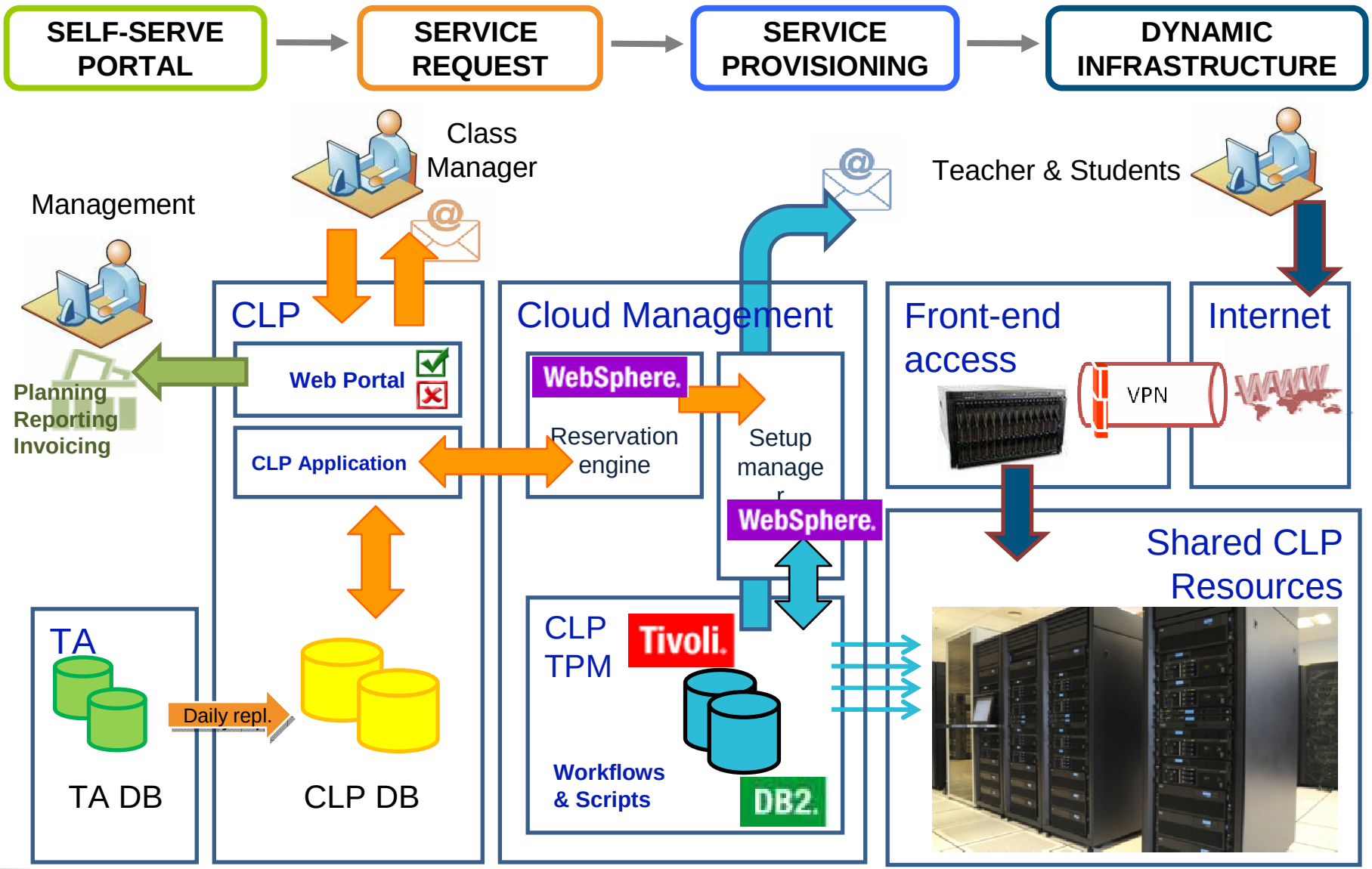
Benchmark Center Cloud Management

Benchmark Centers Resource Pools

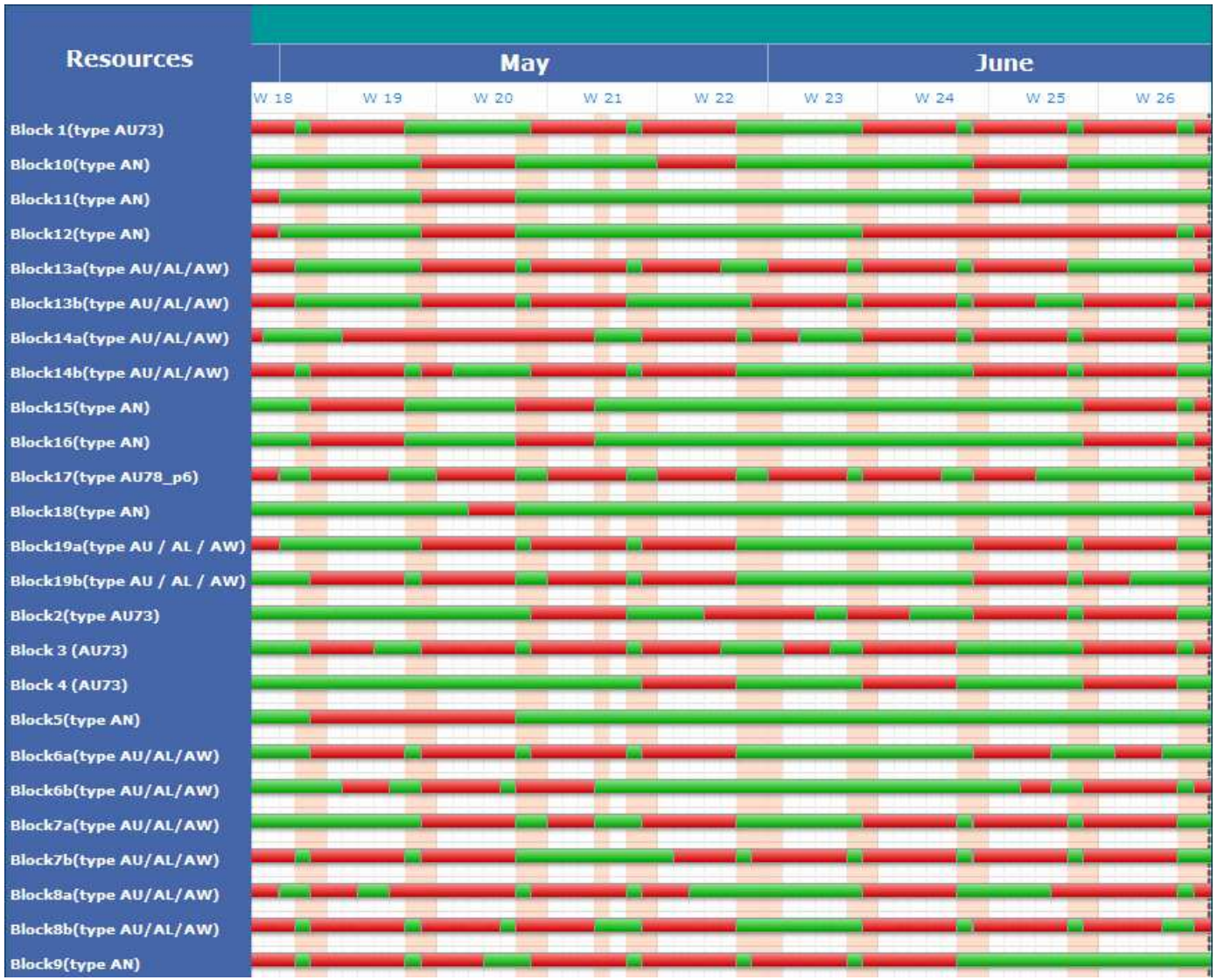


Central Location for IBM Systems education labs

Central Lab Platform Cloud Architecture



Central Lab Platform – Hardware optimization



Automated Provisioning Using TPM to maximize Hardware utilization

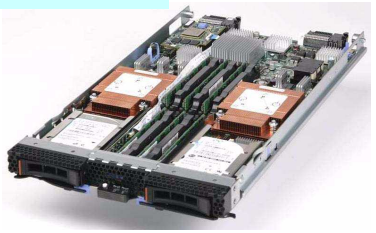
Introducing IBM CloudBurst

Designed from client implementations to jumpstart private test Cloud adoption

- For IT executives seeking a breakthrough in:
  - delivery of service
  - reduction in cost
  - transformation of the data center into a Dynamic Infrastructure
- A product that integrates service management software with servers, storage, and Quickstart services to enable a private cloud
- “Fit for purpose” based on architectures required by specific workloads
- Available with several attractive financing options

IBM x3650M2

IBM S2 42U

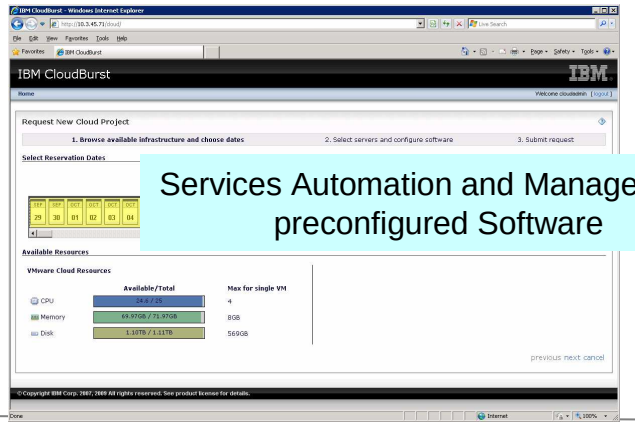


IBM BladeCenter HS22

IBM System Storage DS3400

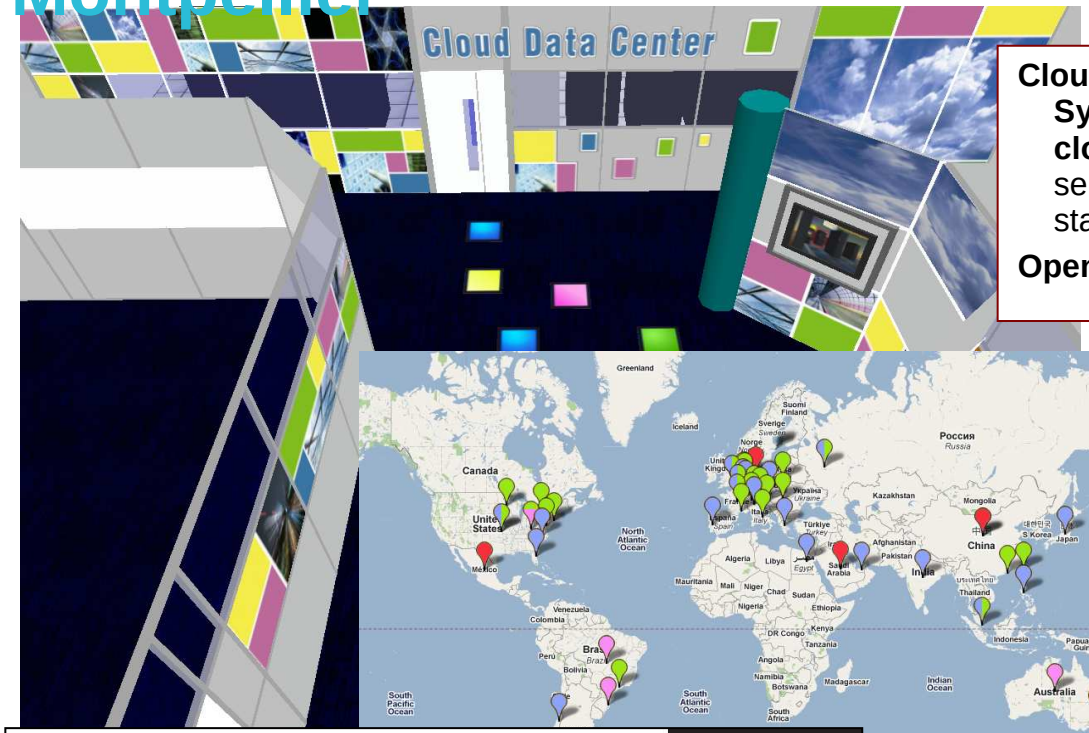
IBM BladeCenter H Chassis

vmware



Services Automation and Management preconfigured Software

Localizing the Cloud - Cloud Data Center Showcase in Montpellier



Cloud Data Center <u>Showcase</u> featuring **Training for Systems Cloud** allowing customers to "**sense" the cloud effect** and **understand IBM** technology and services **value and differentiation** to help them get started on their private cloud journey

Opened October 6th, 2009 in Montpellier

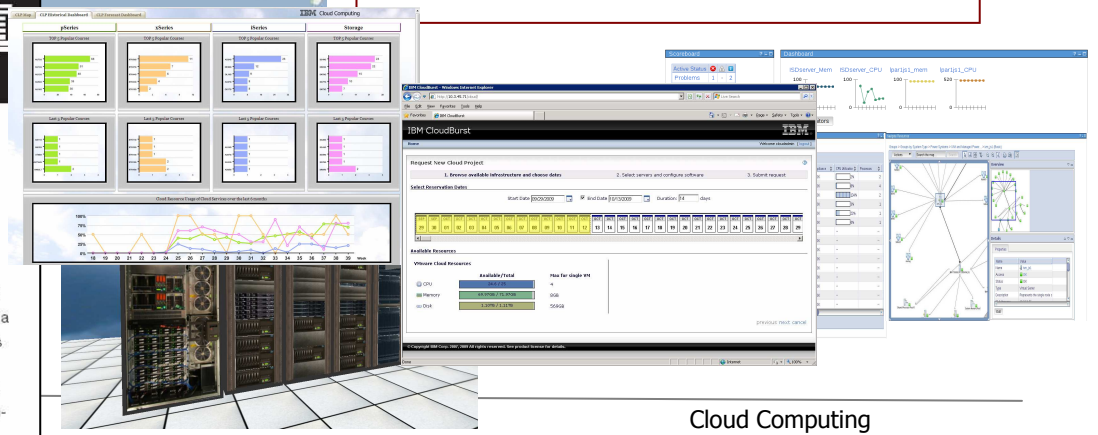
Showcase over a real Cloud production infrastructure

- **Service Orientation**
  - Dashboard of services running in the Cloud
- **Service Management**
  - Service catalog and booking
  - Service Provisioning
- **Dynamic Infrastructure for Cloud**
  - Cloud resources optimization

IBM Case Study

Cloud computing in Montpellier doubles learning power at IBM

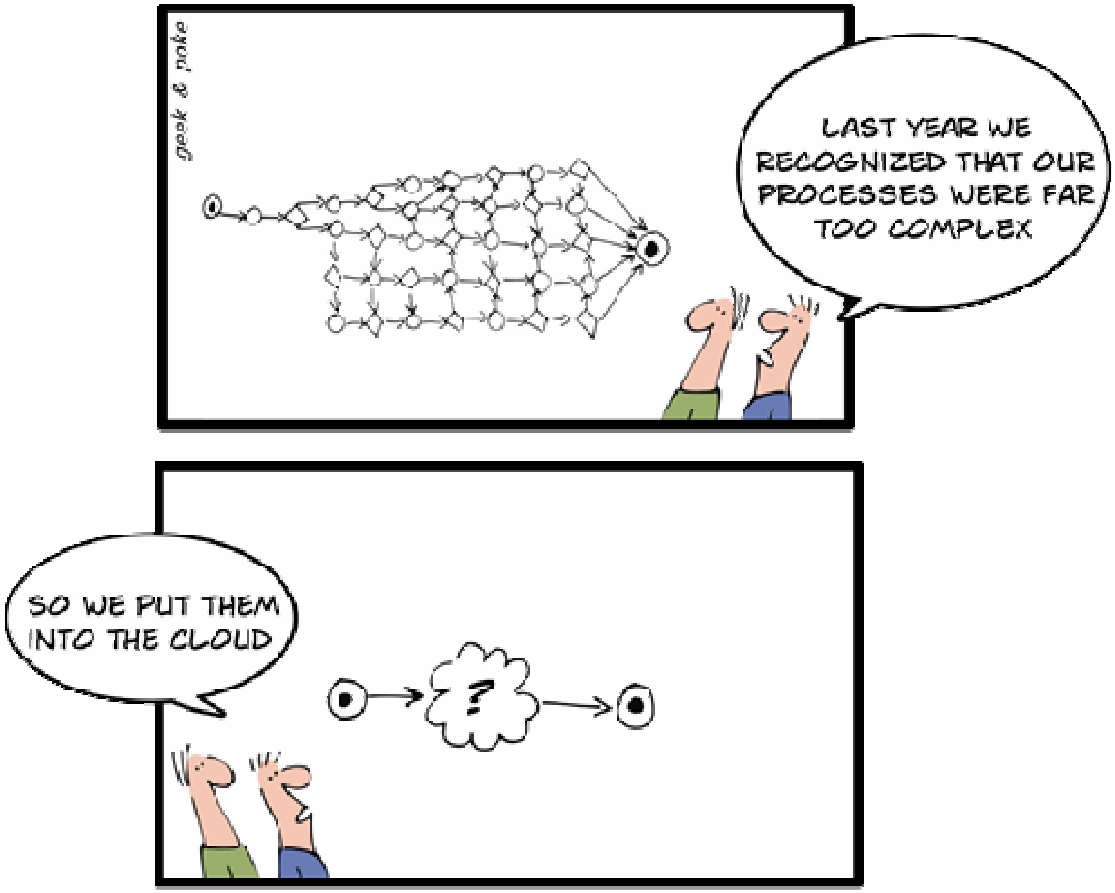
The IBM Systems and Technology Group Product and Solutions Support Center (PSSC) in Montpellier provides a vast range of pre-sales and post-sales support activities, requiring a large physical infrastructure. This infrastructure enables the PSSC to offer demonstrations, prototyping, benchmarking,



Cloud Computing

THANK YOU !

For more information, please visit:
ibm.com/cloud



Or contact me at:
llaurency@fr.ibm.com