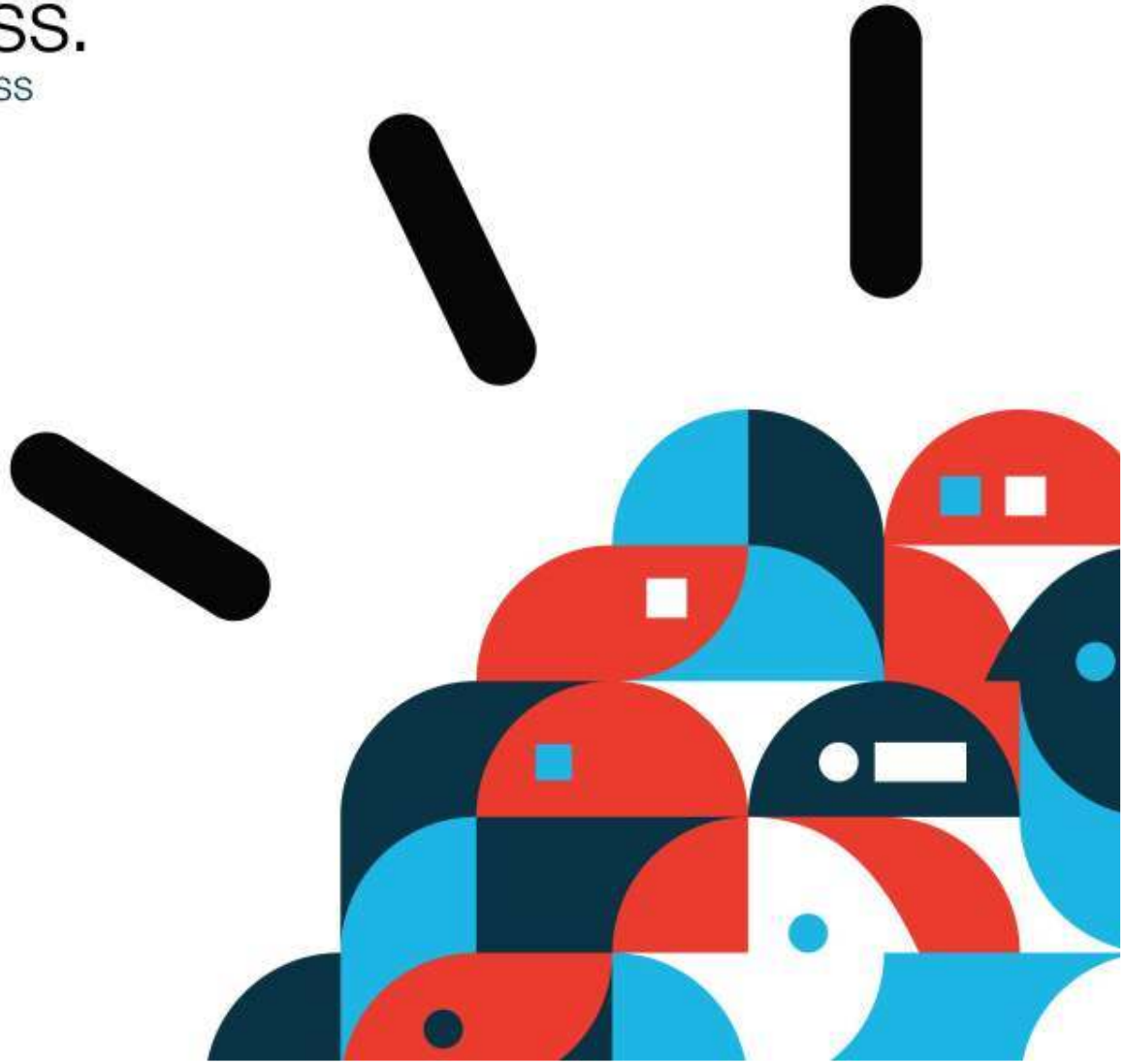
IBM

Rethink IT.
Reinvent Business.
Smart, Secure and Ready for Business

Cloud Management Security Integration



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Cloud Computing – A Business Value

Cloud computing is a model for ***enabling cost effective business outcomes through the use of shared application and computing services***. The value …. if possible …. is better economics in the execution of business processes.

There is a Greater Need for IT to Help Address Business Challenges

Doing more with less

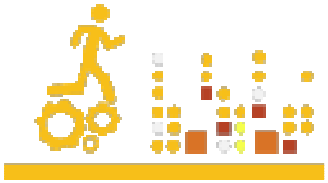
Reduce capital expenditures and operational expenses

Reducing risk

Ensure the right levels of security and resiliency across all business data and processes

Higher quality services

Improve quality of services and deliver new services that help the business grow and reduce costs



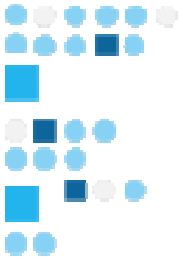
Breakthrough agility

Increase ability to quickly deliver new services to capitalize on opportunities while containing costs and managing risk

Cloud Computing Delivers IT and Business Benefits

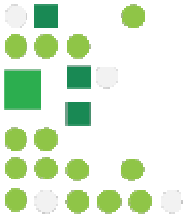
Virtualized

- Higher utilization
- Economy of scale benefits
- Lower capital expense



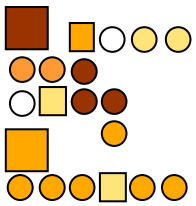
Standardized

- Easier access
- Flexible pricing
- Reuse and share
- Easier to integrate



Automated

- Faster cycle times
- Lower operating expenses
- Optimized utilization
- Improved compliance
- Optimized security
- End user experience



Doing more with less

Higher quality services

Breakthrough agility and reducing risk

Deployment Options for Cloud Computing

Private

IT capabilities are provided “as a service,” over an intranet, within the enterprise and behind the firewall

Public

IT activities / functions are provided “as a service,” over the Internet

Hybrid

Internal and external service delivery methods are integrated

IBM has been innovating in the underpinnings of Cloud for over 45 years

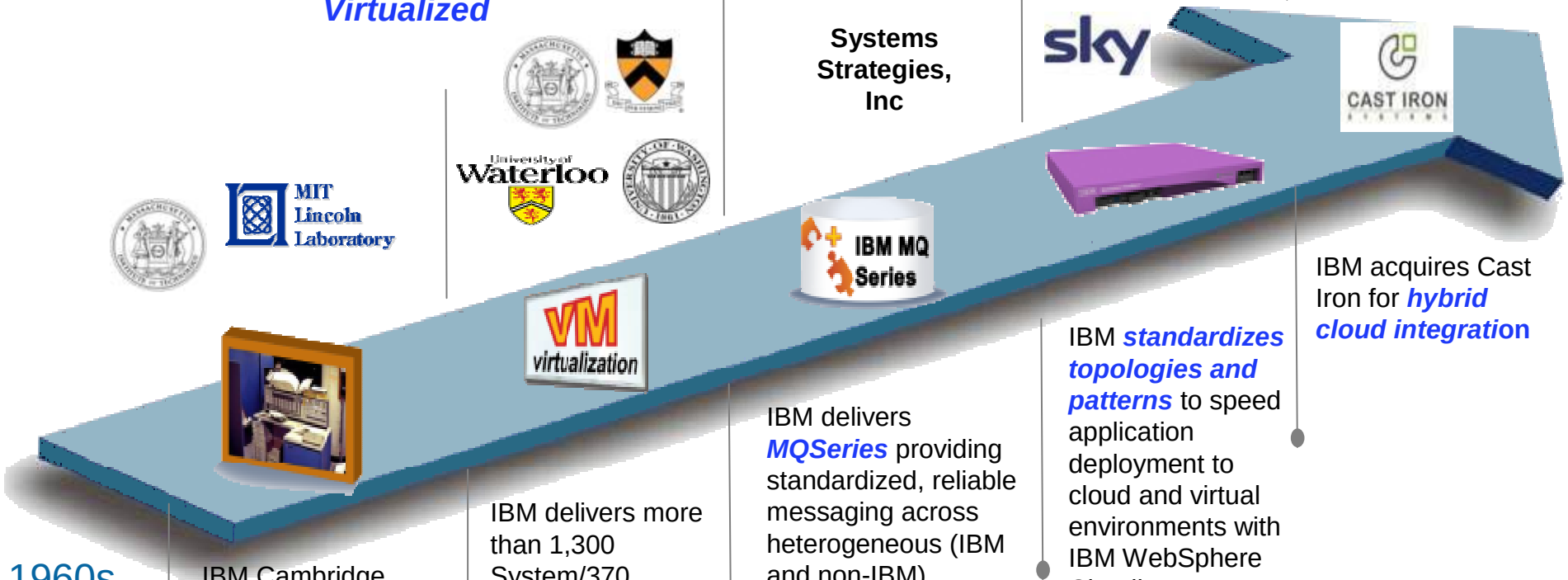
Integrated

Automated

Standardized

Virtualized

Systems Strategies, Inc



1960s

IBM Cambridge Scientific Center begins development of CP-40, first OS that implemented ***complete virtualization***

IBM delivers more than 1,300 System/370 computers worldwide and announces ***VM virtualization***

IBM delivers ***MQSeries*** providing standardized, reliable messaging across heterogeneous (IBM and non-IBM) environments. ***WebSphere MQ*** is a key entry point for SOA

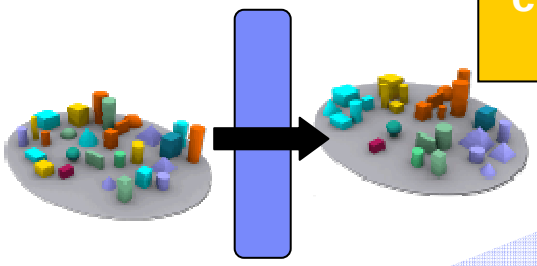
IBM ***standardizes topologies and patterns*** to speed application deployment to cloud and virtual environments with IBM WebSphere Cloudburst

IBM acquires Cast Iron for ***hybrid cloud integration***

Where Are You on the Journey to Cloud

Moving to Cloud will mean moving beyond Virtualization …

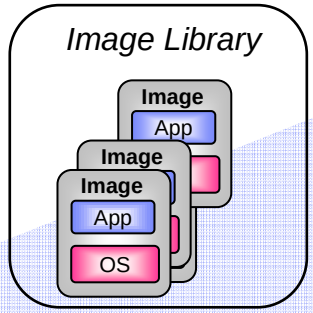
Consolidate and Virtualize



- Automatic discovery of virtualized resources (server, storage and network)
- Dependency and change tracking
- Monitor virtualized environment
- Perform problem identification and isolation of virtualized environment

Most clients are here

Automate and Optimize



- Automated provisioning / de-provisioning
- Pool standardized virtualized building blocks
- Plug-and-play capacity across HW generations
- Capture and catalog virtual images used in the data center
- Management of the virtualized environment

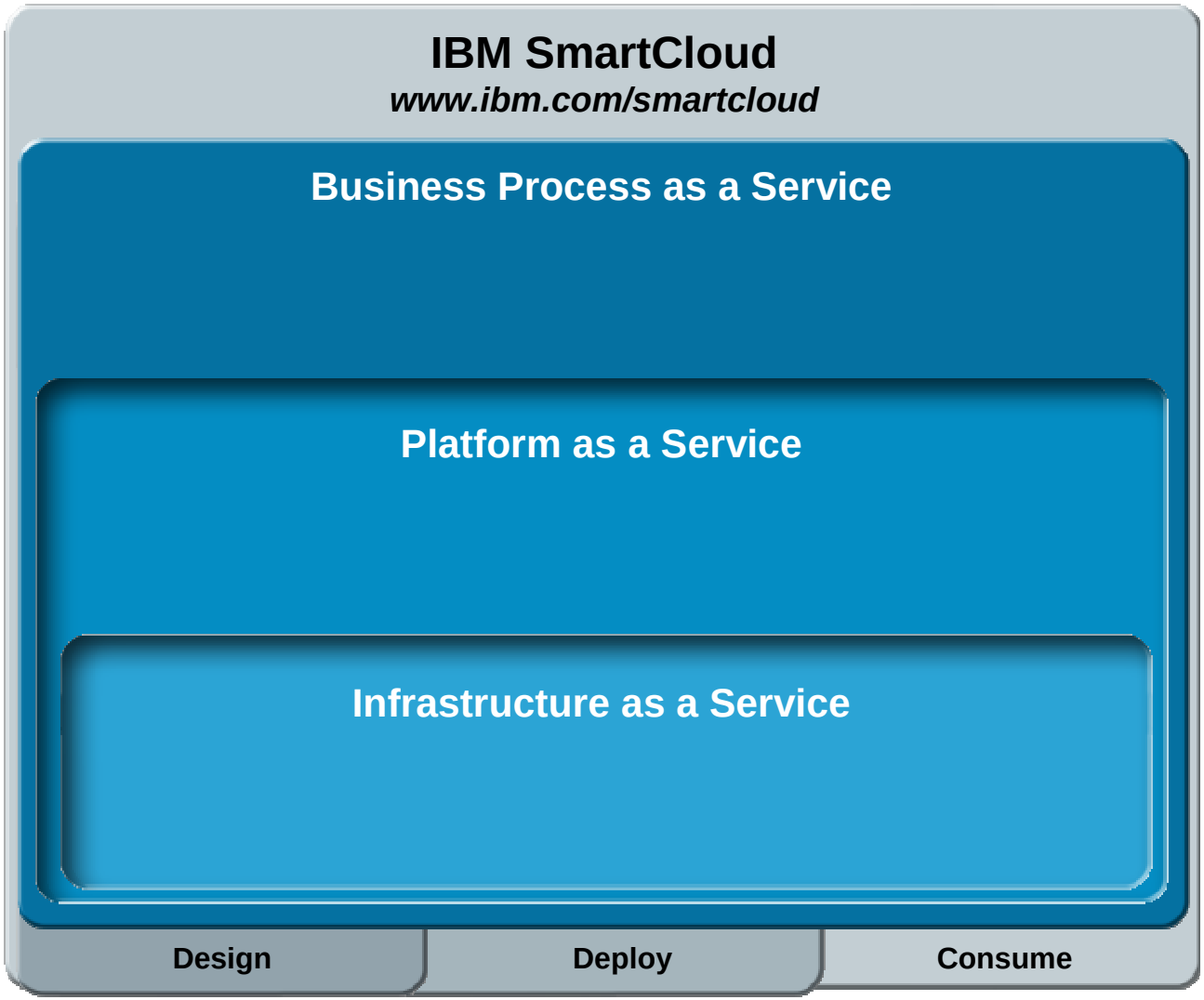
.. and want to end up here within the next 12 months

Cloud-Ready

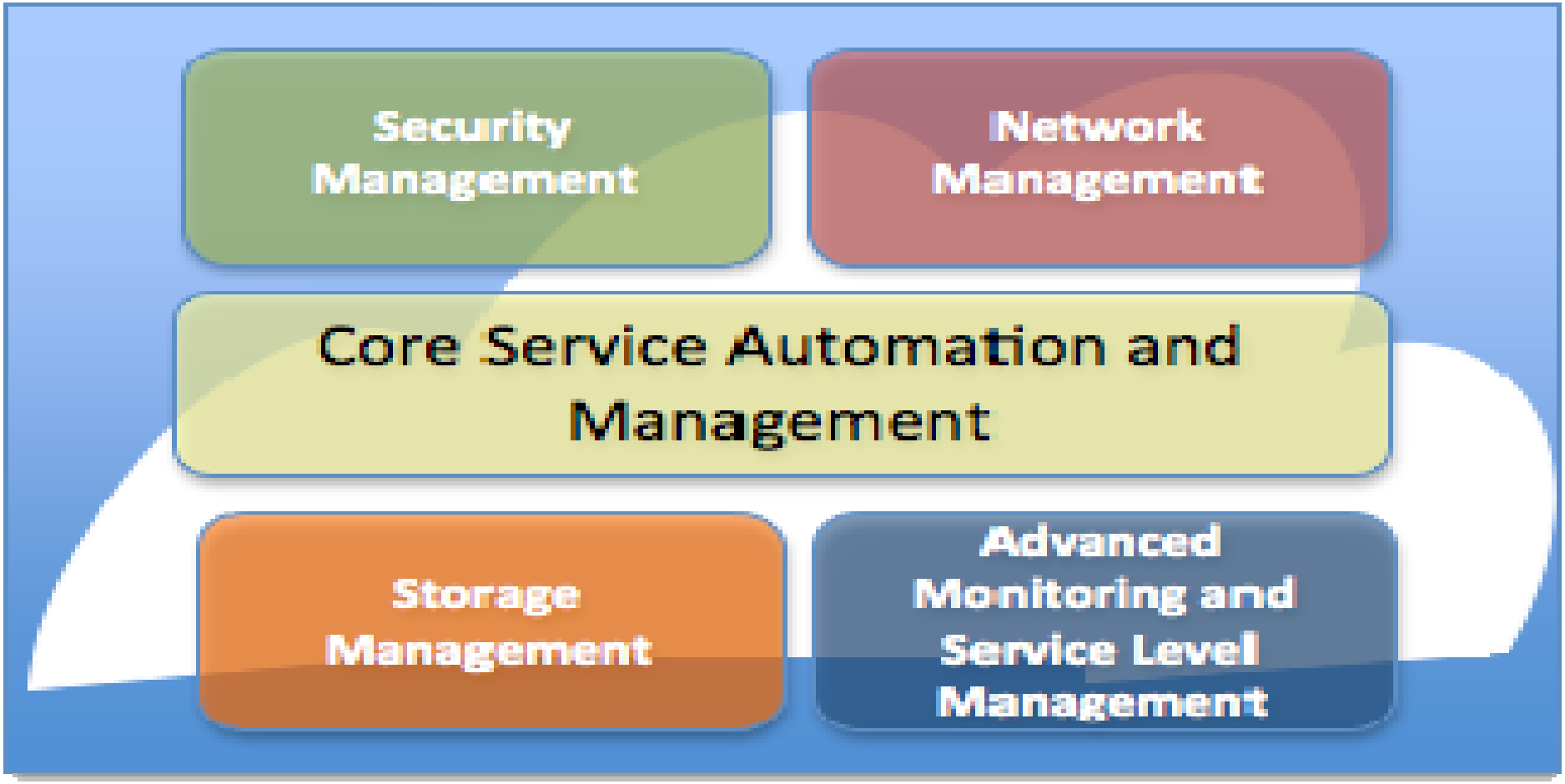
- Integrated virtualization management with IT service delivery processes
- Elastic scaling
- Pay for use
- Self-service provisioning
- Simplified deployment with virtual appliances

… into a fully integrated, automated and dynamic Cloud Infrastructure.

IBM Cloud Capabilities



Integrated Service Management for Cloud



Why Storage Virtualization?

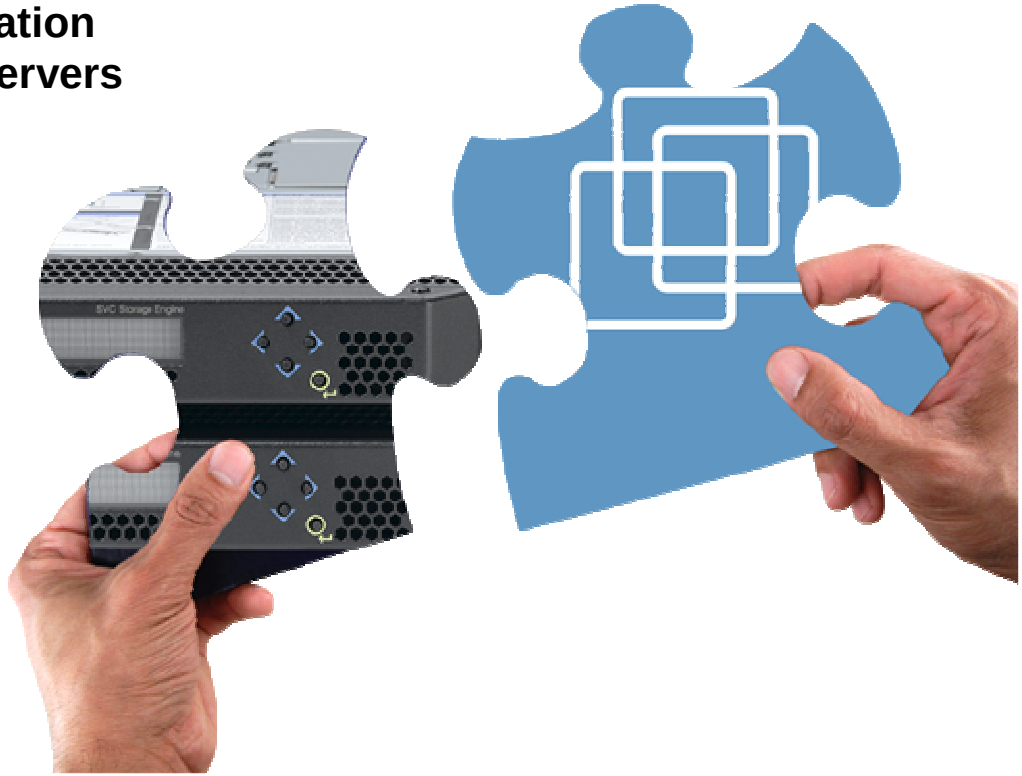
- Not “just another way of helping manage SANs”
- Storage virtualization complements server virtualization
  - Both technologies help increase flexibility and speed responsiveness
- Storage management used to be manually intensive, time-consuming and disruptive to the business
- Storage virtualization with SVC can help change that to automatic, time-saving and non-disruptive to the business
- Radically changes the way you think about and work with storage to make it fundamentally more flexible than just disk boxes alone

IBM Storage Virtualization and VMware

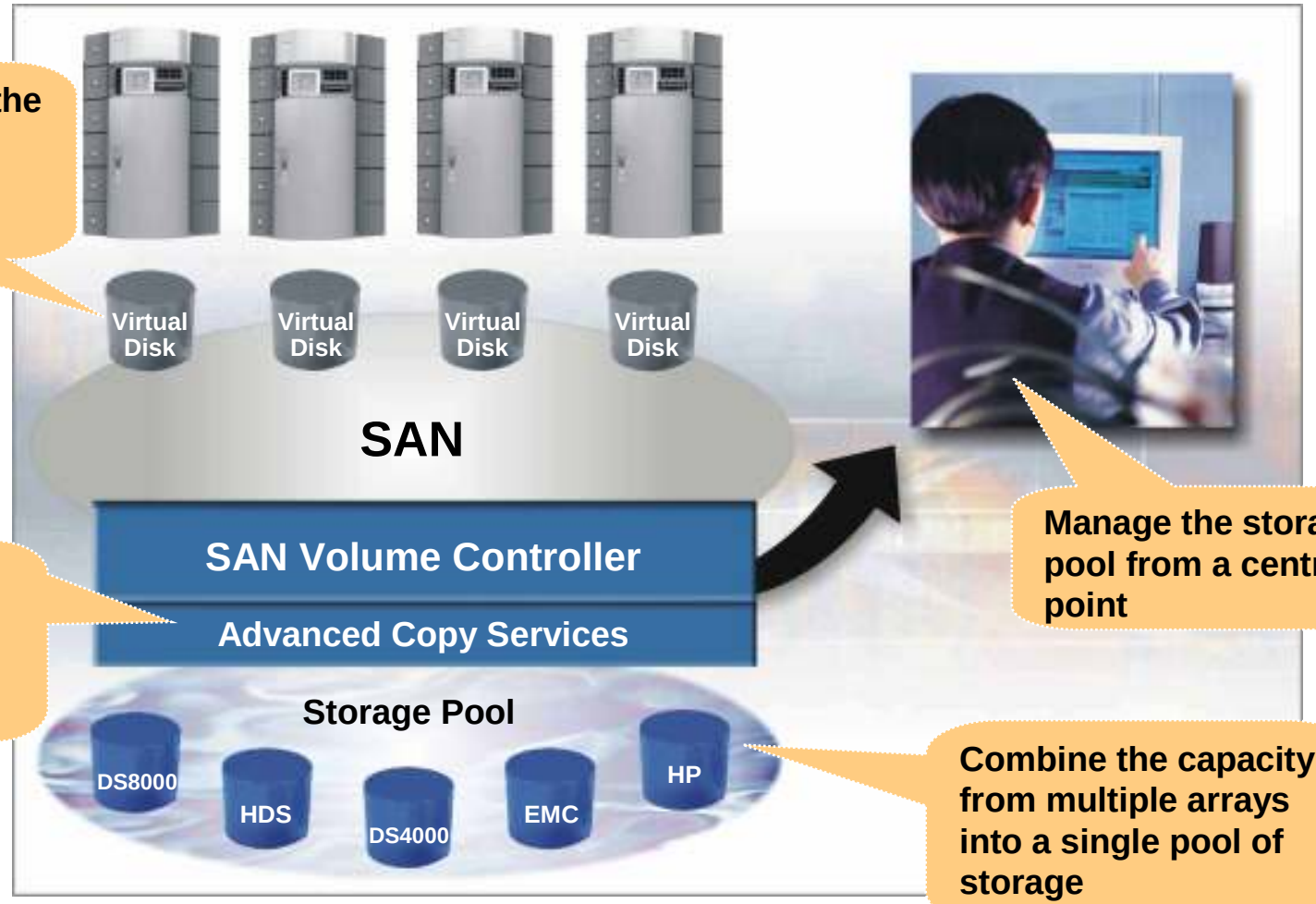
- **VMware and IBM storage virtualization offerings provide complementary benefits**
  - Including improved asset utilization, simplified infrastructure, greater flexibility and responsiveness, easier disaster recovery

- **IBM storage virtualization offerings designed to operate with VMware, other virtualization environments, and non-virtualized servers**
  - Provide integration and single point of control for storage in heterogeneous server environments

- **SAN Volume Controller supported vSphere 4 at GA and supports vCenter Site Recovery Manager with both Metro and Global Mirror**



Flexible Storage Infrastructure with SAN Volume Controller



Cloud security controls across all major IT Domains

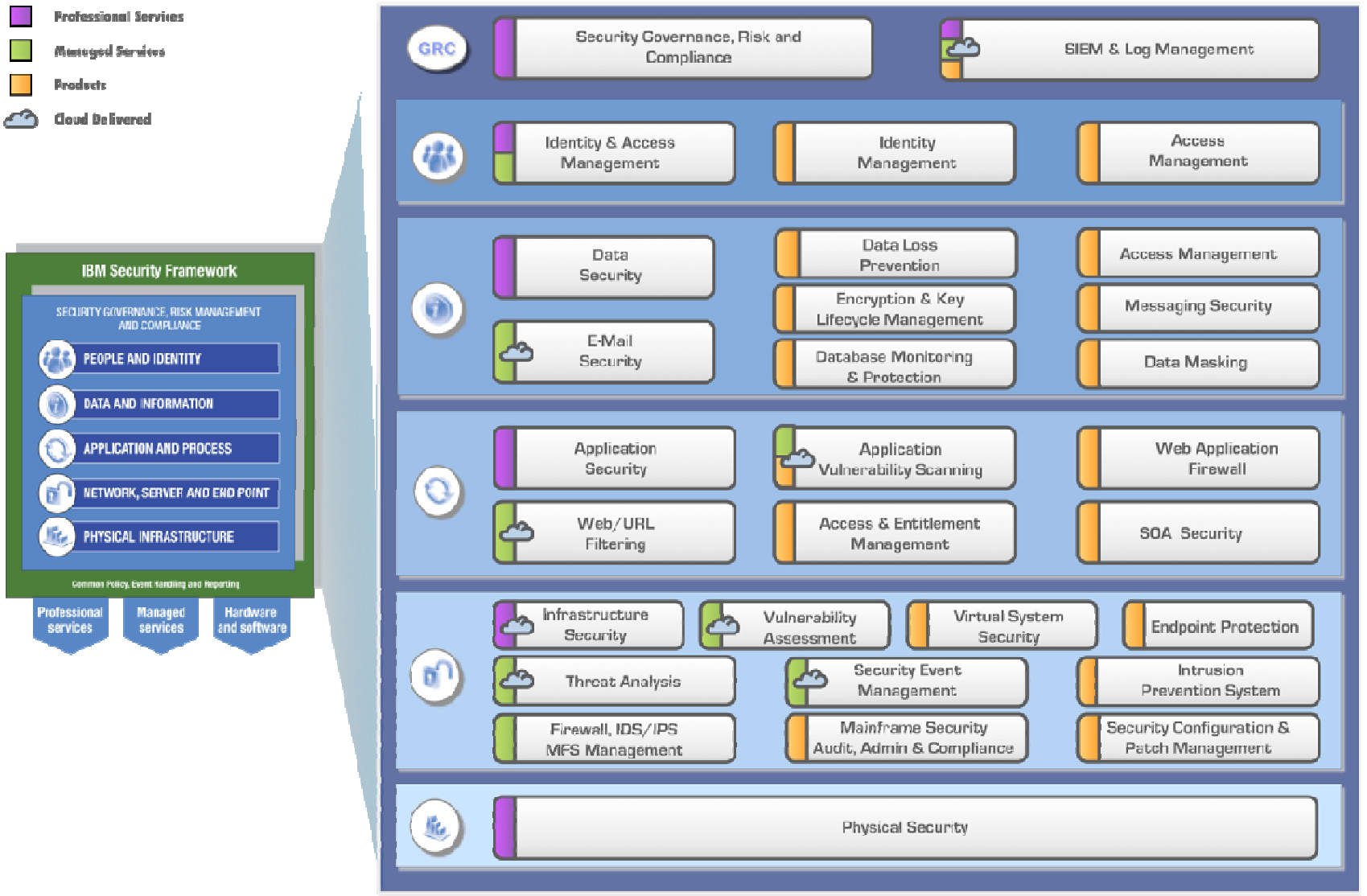
Security

- Security is integrated into the fabric of the cloud
- Workload driven approach
- Applied across people, data, apps, network, and infrastructure

Value Realized

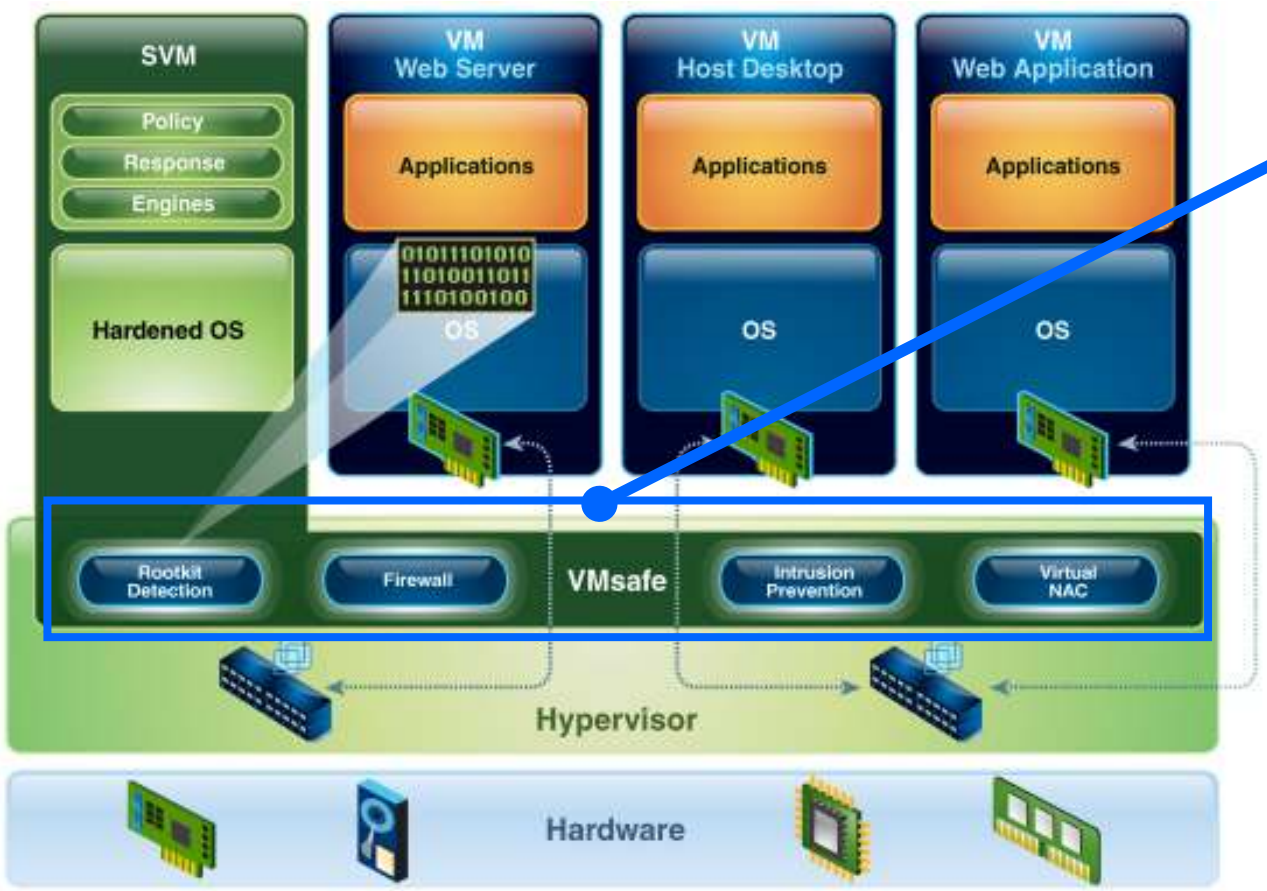
- ***Analyze*** more than ***13B security events*** daily
- ***Block*** more than ***150M attacks*** each day
- Over ***3,000*** highly skilled ***security professionals***

IBM Security Solutions for the Cloud



IBM Virtual Server Security for VMware

Helps customers to be more secure, compliant and cost-effective by delivering integrated and optimized security for virtual data centers.



IBM Virtual Server Security for VMware

- VMsafe Integration
- Firewall and Intrusion Prevention
- Rootkit Detection/Prevention
- Inter-VM Traffic Analysis
- Automated Protection for Mobile VMs (VMotion)
- Virtual Network Segment Protection
- Virtual Network-Level Protection
- Virtual Infrastructure Auditing (Privileged User)
- Virtual Network Access Control

Reduce image sprawl and operational costs with Image Management

Image Management

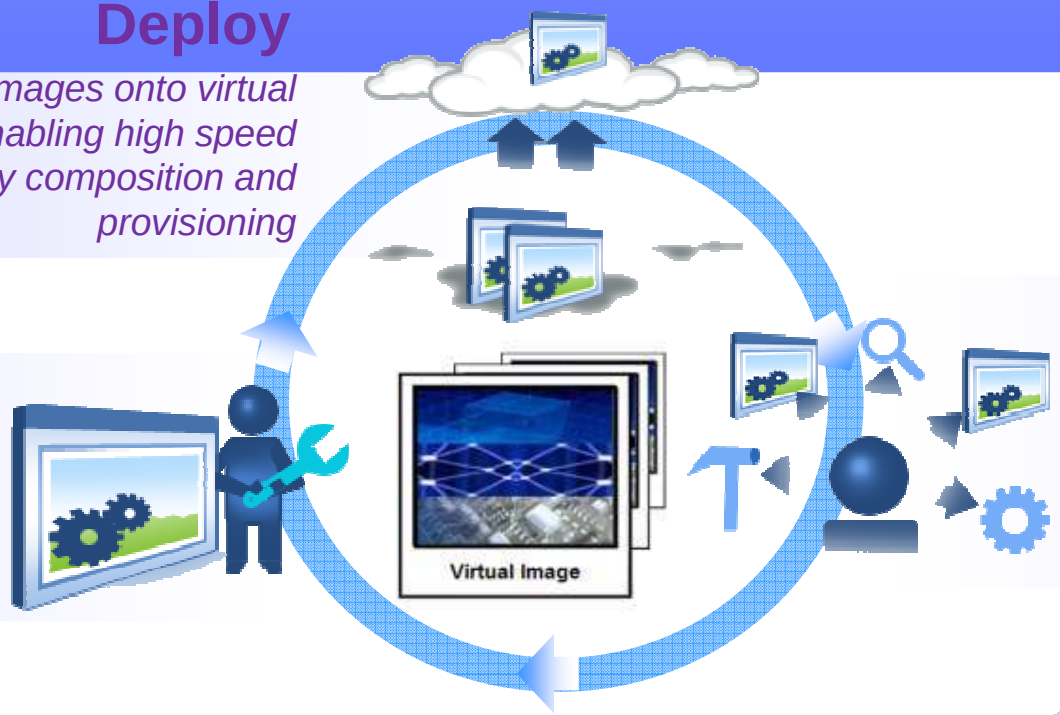
- Build and deploy images from master patterns
- Federate an image inventory across your environment
- Templatize complex app patterns into images
- Shift the management to master images vs instances
- Enable offline analytics and maintenance operations

Value Realized

- Reduce labor costs by ***40% - 80%*** by increasing server image/ admin ratio
- Over ***50%*** lower TCO
- Improve compliance

Deploy

Instantiate images onto virtual servers, enabling high speed topology composition and provisioning



Build

Design and generate semantically rich images

Manage

Versioned image library enabling backup, monitoring, patching, securing and analyzing

IBM Tivoli Provisioning Manager

Enhanced!

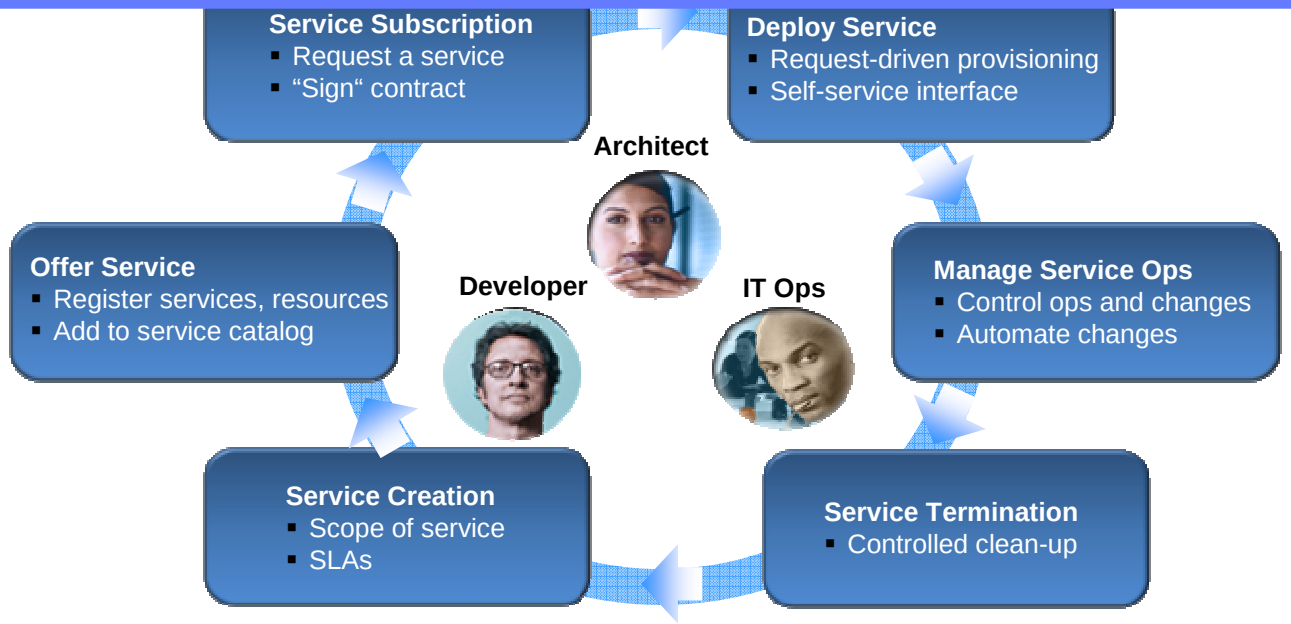
Simplify access and improve management to achieve quicker Service Delivery

Service Automation Management

- Automated provisioning and de-provisioning
- Simplified access to computer, storage, and networking resources
- Standardization and automation for faster dev, test, pre-production, and production systems

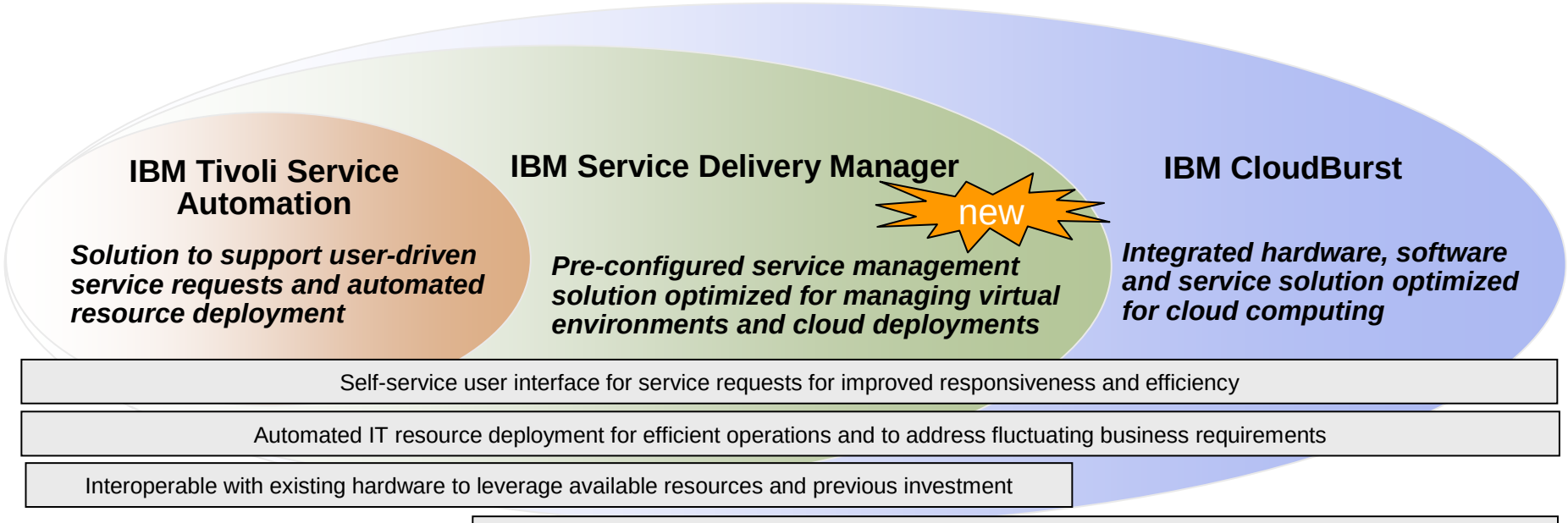
Value Realized

- Wait time for self service reduced by ***98%***
- Build dev / test envts: 1 week to ***1 hour***
- Reduce provisioning time by ***51%***
- Deploy services in ***less than 30 mins***



IBM Tivoli Service Automation Manager

Multiple entry points for automating the management of virtual environments and building a dynamic service delivery model



- Self-service user interface for service requests for improved responsiveness and efficiency
- Automated IT resource deployment for efficient operations and to address fluctuating business requirements
- Interoperable with existing hardware to leverage available resources and previous investment
- Pre-integrated solution, delivered as virtual images for faster installation and time to value
- Performance monitoring for ongoing managing of the service
- Energy Management for tracking and optimizing operational costs
- Usage and accounting tracking for chargeback capabilities
- Managed-to environment ready for high availability
- Managed-from and managed-to environment to accelerate cloud computing pilots
- Bundled with hardware and QuickStart services for rapid time to value

IBM Service Delivery Manager
Integrated Service Management

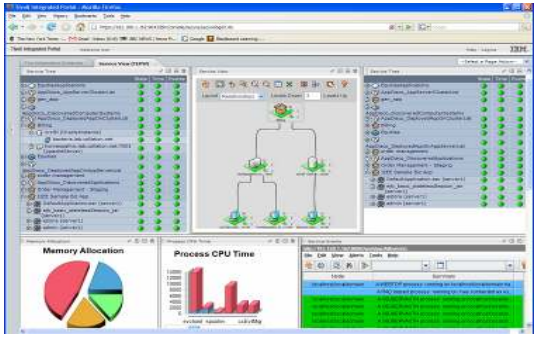
For Locating and Requesting Services

Secure User Centric Self-Service Portal, Automation Engine and Catalog

Deploying Cloud Services

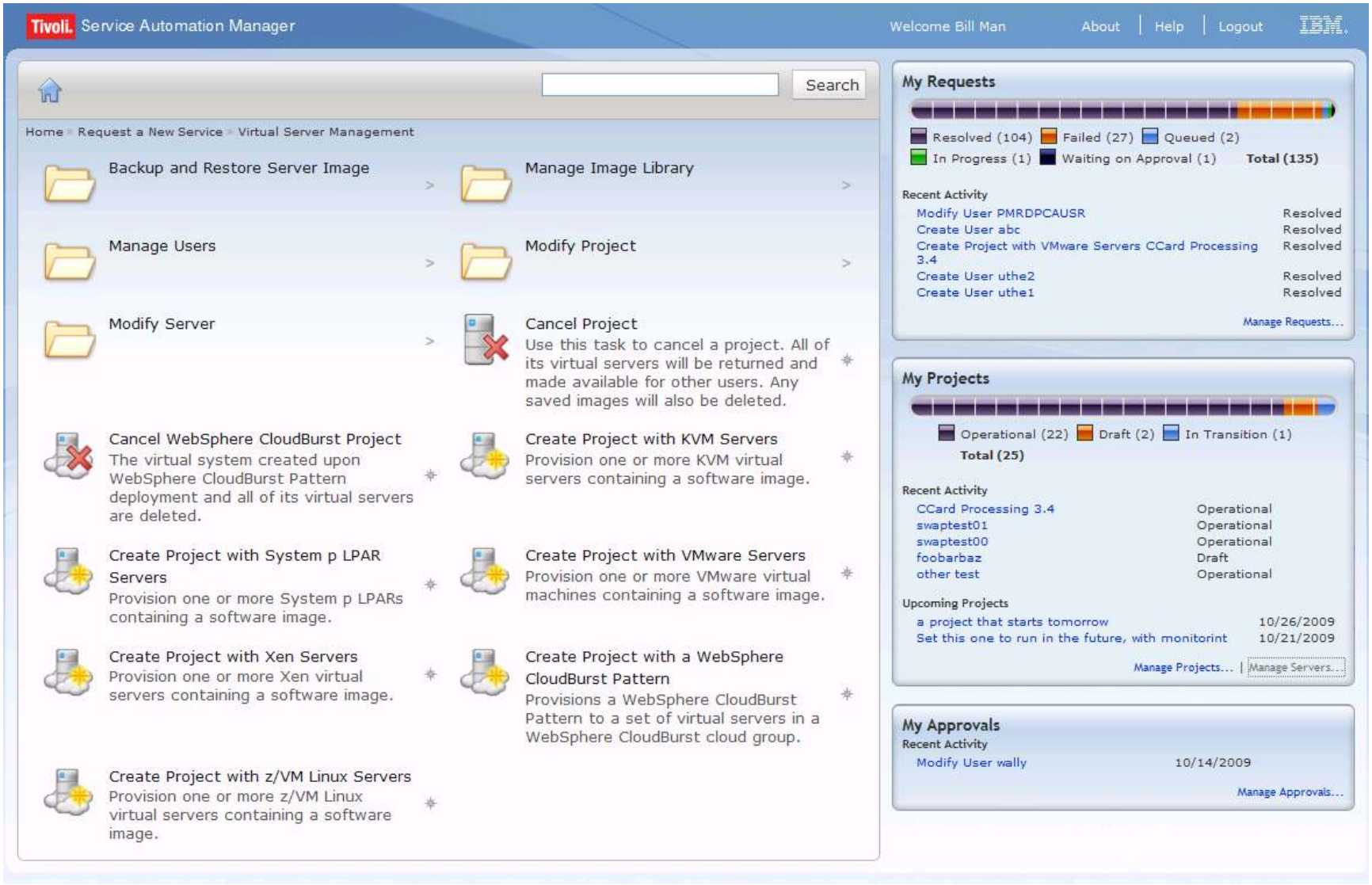
Automated Provisioning and Image Management

Managing Cloud Services



Monitoring and Metering

Cloud Self Service UI

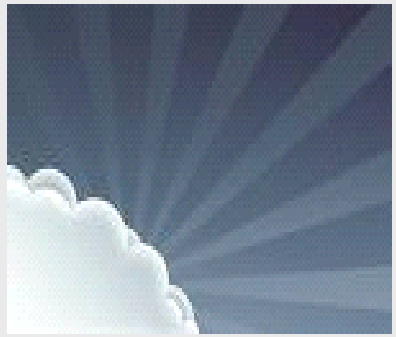


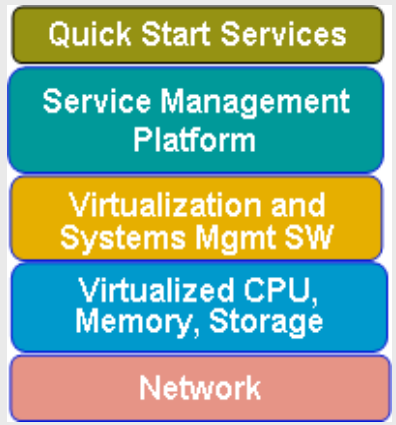
Introducing: IBM CloudBurst

An integrated service management platform with network, servers, storage, Quickstart services that enables the fastest Private Cloud Deployment Today

Customer Benefits

- ✓ **Improved time to value-** Quickly deliver a private cloud using a preloaded and integrated system
- ✓ **Improved innovation-** Dramatically improve business value and IT's effect on time-to-market by delivering services faster via automated service delivery while also lowering operating costs
- ✓ **Decrease IT cost** – Maximize capital usage and reduce need for future capital
- ✓ **Reduce complexity and risk-** With automation and standardization the human error factor is minimized.
- ✓ **Scales to the enterprise** – Able to scale and manage additional Platforms and Workloads (x86, UNIX, System z, …)

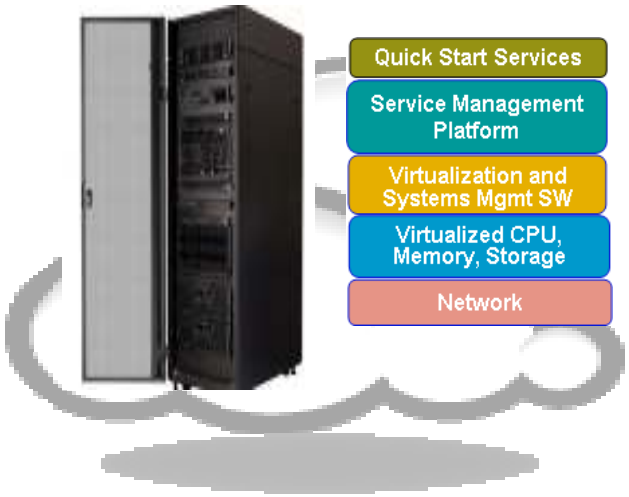




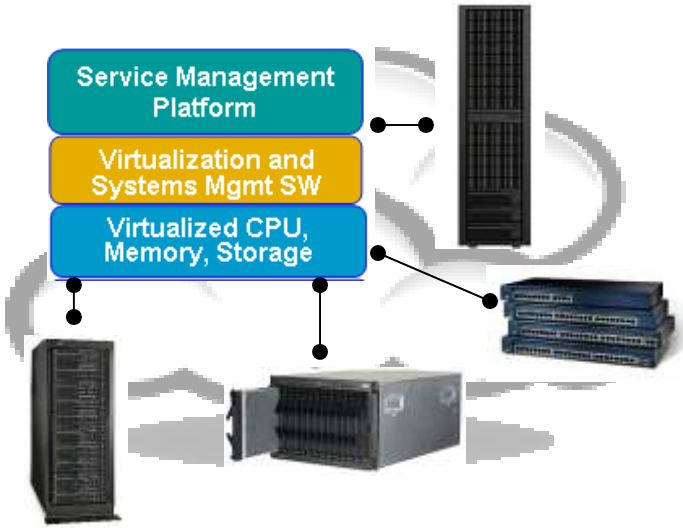
Single product, single delivery, single installation, single invoice, single support structure

Getting Started: Deploying Cloud in the Enterprise

IBM provides options to Customers on how a Cloud Service Delivery infrastructure can be delivered. Which option is right for you?



- Flexibility
- Time to Results
- Install Base
- Workload
- Skillset



CloudBurst Solution

- **Pre-integrated Configurations**
- **Pre-Built at Factory**
- **Integrated Support**
- **5 day installation**
- **Self contained & expandable to heterogeneous infrastructure and custom components**
- **Solution Pricing**

Custom Private Cloud

- **Unlimited Configurations**
- **Custom Build**
- **Product Level Support**
- **Longer installation**
- **Installed to support multiple platforms and custom components**
- **Enterprise Pricing**

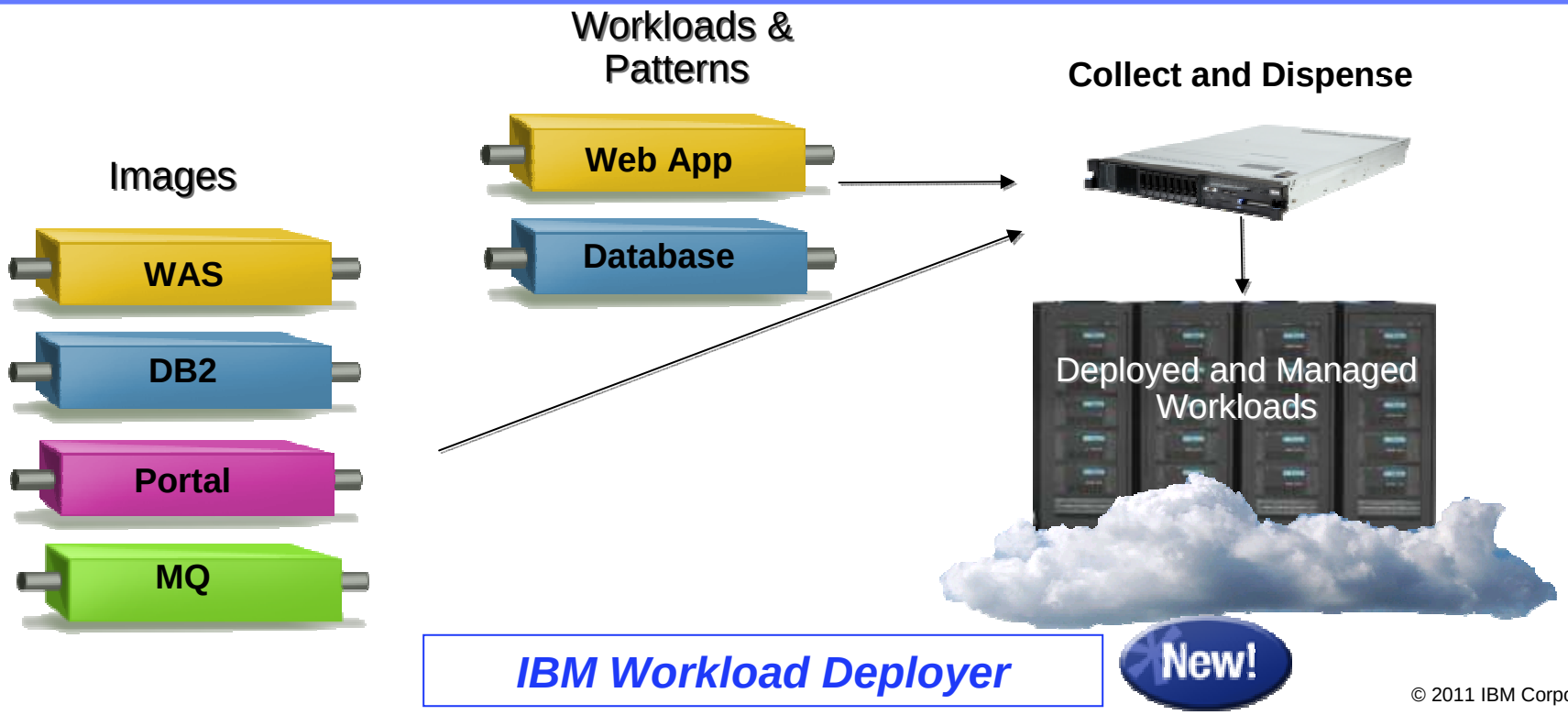
Take advantage of cloud qualities of service when building and deploying applications

Workload and Topology Patterns

- Build and deploy apps that scale
- Machine independent
- Optimized for container managed services

Value Realized

- Reduce set up time for WebSphere environments from ***weeks to minutes***
- ***13x – 15x*** faster time to market



Maximize the value of investments with hybrid cloud integration

Data and Application Integration

- Pre-built templates for most common cloud integration scenarios
- Simple *configuration, not coding* approach
- Deployed as an appliance, virtual appliance, or integration as a service

Value Realized

- Connect ***over 40 SaaS apps*** with each other and with 100's on-premise applications ***in days***
- Gain ***real time visibility*** of business information in the cloud
- Save as ***much as 80%*** vs. custom code

IBM WebSphere Cast Iron Integration

Enhanced!

Cloud computing is delivering real value for clients

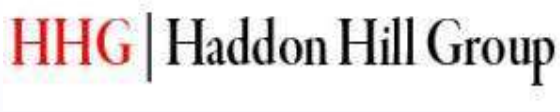
Service Automation Management
Image Management

Dynamically create secure virtual, infrastructures for local businesses ***in hours***

IBM Service Delivery Manager

IBM Bladecenter

Workload and Topology Patterns



Optimized data center, reduced provisioning time for applications

- Reduced provisioning time ***from 3 weeks to 18 hours***
- ***13x-15x*** faster time to market
- ***Save $3M -$4M*** in alternative configuration costs

IBM WebSphere Hypervisor Editions

WebSphere Cloudburst Appliance

Application and Data Integration

Integrated CRM and ERP systems with on-premise solution

- ***50% time savings*** in processing complex orders
- Projected ***370% first year ROI***
- Estimated ***savings of $75M over 5 years***

IBM WebSphere Cast Iron Integration

An evolution of standards for cloud

Cloud Standards Customer Council

New!

On April 7, 2011 industry leaders form ***Cloud Standards Customer Council*** hosted by the Object Management Group (OMG) to deliver on the promise of open cloud computing!

Join today: ***http://www.cloudcustomercouncil.org***

Over 45 companies signed up prior to today's launch – the largest in OMG history!

citigroup

JOHN DEERE

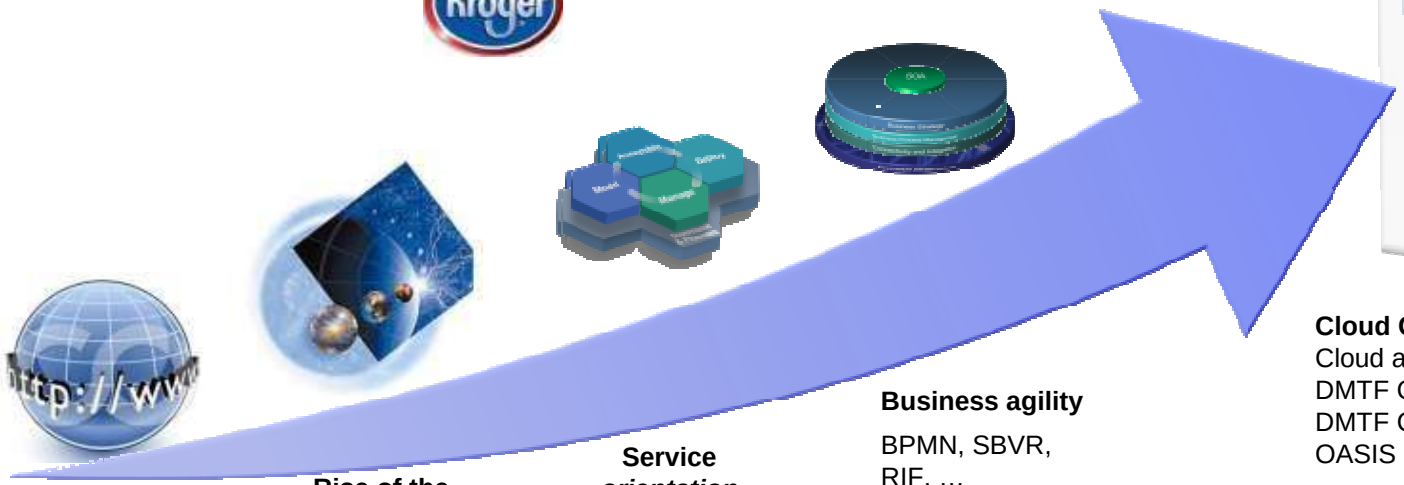
SOGETI

NC STATE UNIVERSITY

LOCKHEED MARTIN

SAPIENS
Experience Insurance Innovation

Kroger



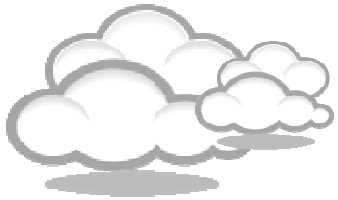
Dawn of the world wide web
HTTP, HTML, WSFL, XLANG, REST…

Rise of the application server
Java, Java EE, XML, XML Schema, SOAP, WSDL, UML, Web2.0, ...

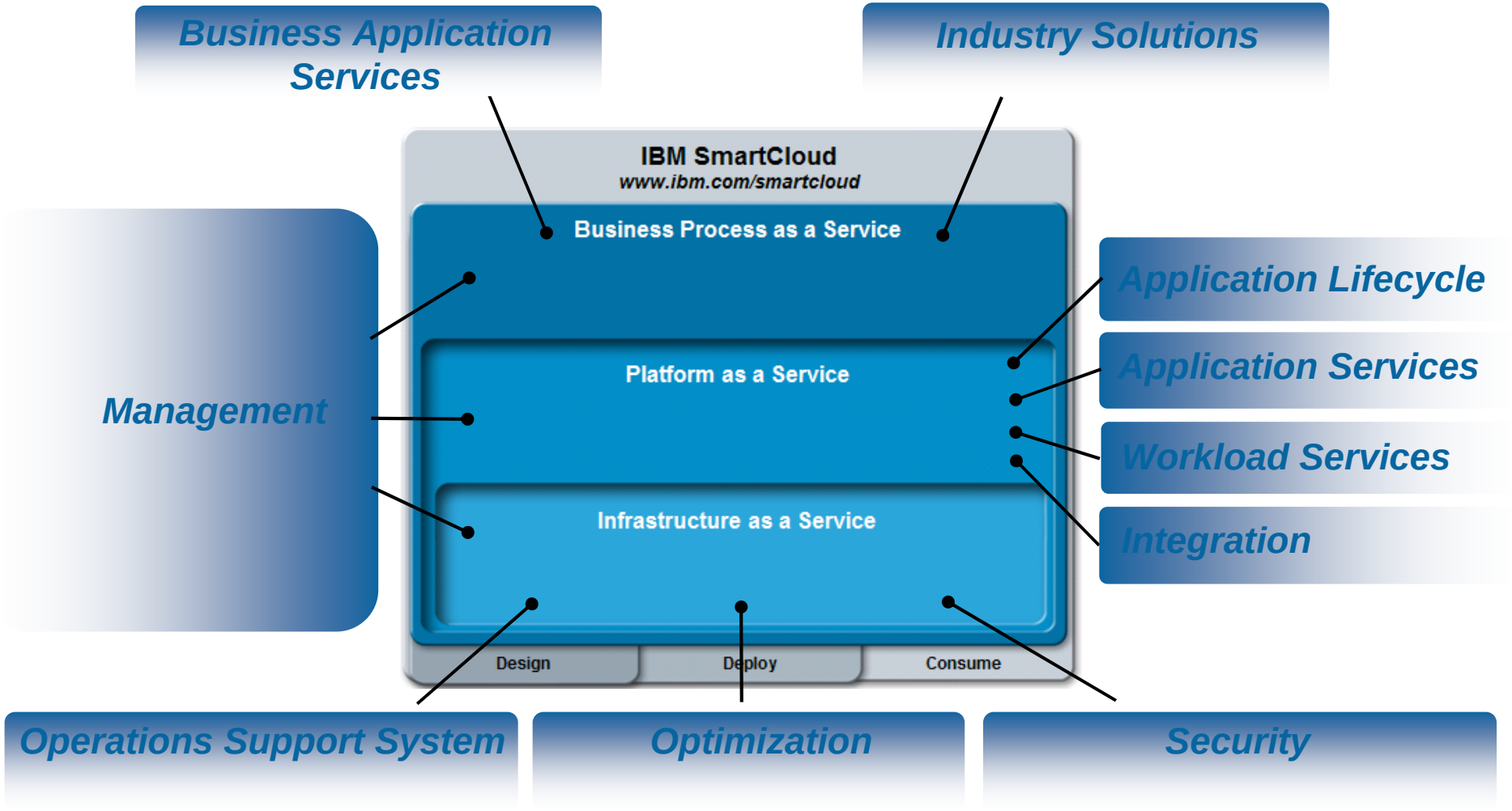
Service *orientation*
WS*, WS-I, SCA, BPEL, SAML, XACML …

Business agility
BPMN, SBVR, RIF, …

Cloud Computing
Cloud architecture at The Open Group (TOG)
DMTF Open Virtualization Format (OVF)
DMTF Cloud Management WG (IAAS APIs)
OASIS Cloud Identity Management TC



Cloud Service Models have foundational components …



… with end to end capabilities to design, deploy, and consume clouds and services