Agenda

10:00 – 10:15	**Welcome** **Nicola Craig UK Tivoli Software Marketing Manager**
10:15 – 11:00	**Independent view of cloud** **Neil Ward Dutton, Research Director, MWD Advisors**
11:00 – 12:00	**IBM Key note - Cloud as an evolution of Virtualisation** **Nick Drabble, Cloud Leader, IBM Tivoli Software**
12:00 – 12:45	*Lunch*
12:45 – 14:30	**Delivering a "Cloud" is real today - see how in action** **Stuart Holliday – Introduction (Service Management),** **Alan Prudden (Automation), David Tyrrell (Security),** **Ian Hancock (Storage)**
14:30 – 15:00	**What else to consider when deploying Cloud in your organisation?** **Sam Garforth Software IT Architect**
15:00 – 15:30	**Q&A: Host - Nicola Craig, Panel - Neil Ward Dutton, Stuart Holliday,** **David Tyrrell, Sam Garforth**
15:30	*Coffee and networking*

Cloud as an evolution of Virtualisation

Nick Drabble – Tivoli UKI Cloud Leader

IBM Software

PCTY2011

Pulse Comes to You

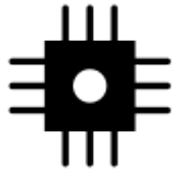**Optimising the World's Infrastructure**
17 February 2011, IBM Bedfont Lakes

Agenda

- A Smarter Planet
- Cloud Attributes
- Roadmap to Cloud
- Cloud Reference Architecture
- Automating and Managing Cloud Service Delivery
- Rapid deployment options
- Client examples
- Summary

Consider how our world is changing:
Our world is becoming smarter and more…

INSTRUMENTED

- **30 billion** embedded RFID tags by 2010
- **1/2 of all sensors** in transportation, facilities & production equipment are smart sensors

INTERCONNECTED

- **1/3 of the world's population** on the Web by 2011
- **4B mobile subscribers** globally at the end of 2008
- **37K cyber attacks** in the US in 2007; 158% increase since 2006

INTELLIGENT

- **15 petabytes of new information** generated every day (8x more than the information in all U.S. libraries)
- **64B** credit card transactions/annum; **up 35%**

As the world gets smarter, demands on the infrastructure will grow

Smart traffic systems

Intelligent oil field technologies

Smart food systems

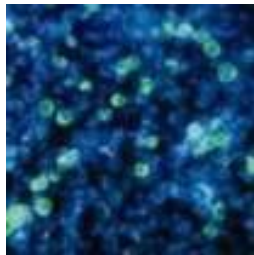Smart healthcare

Smart energy grids

Smart retail

Smart water management

Smart supply chains

Smart countries

Smart weather

Smart regions

Smart cities

IT needs to be service-driven and highly efficient

… about delivering "services" and service management

… about optimising workloads

… about deployment choices

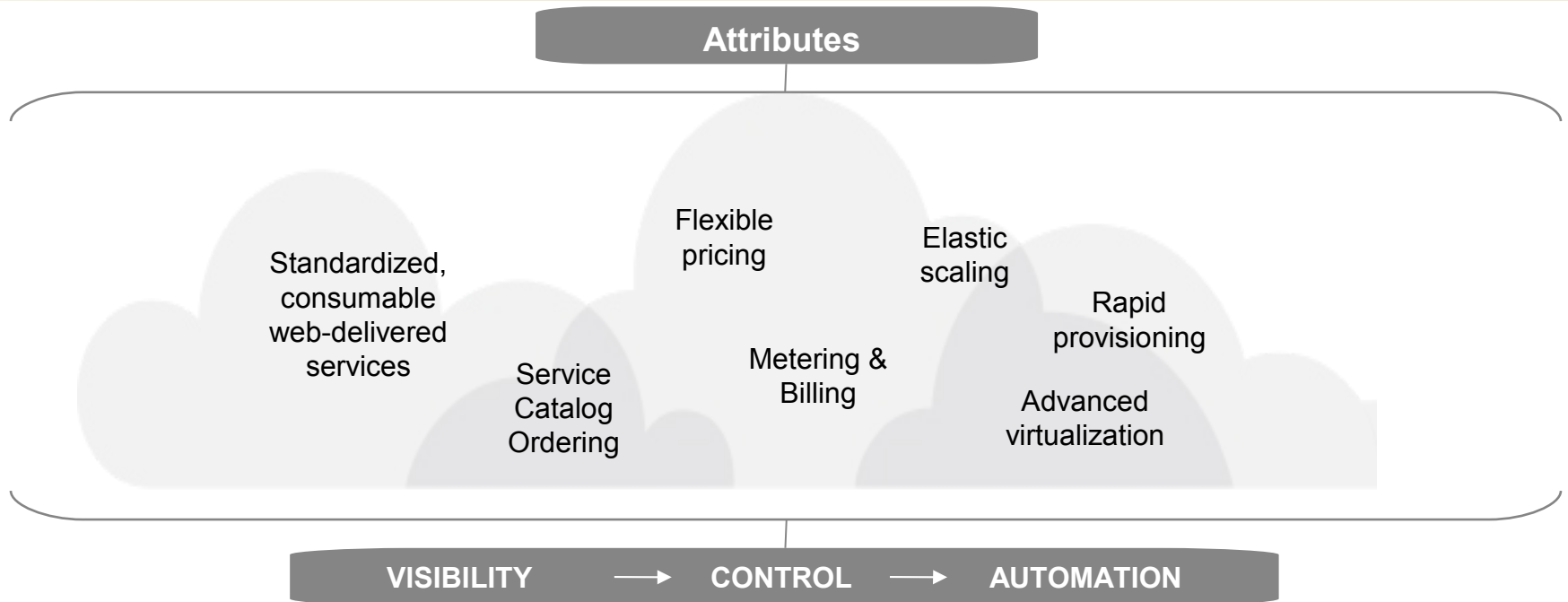| Analytics | Collaboration | Development and Test | Desktop and Devices | Infrastructure | Business Services |

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

Attributes

Standardized, consumable web-delivered services

Service Catalog Ordering

Flexible pricing

Metering & Billing

Elastic scaling

Rapid provisioning

Advanced virtualization

VISIBILITY ⟶ **CONTROL** ⟶ **AUTOMATION**

....service oriented and service managed

Cloud Computing Infrastructure:

Is optimized to achieve more with less….

CLOUD COMPUTING

Private   **Hybrid**   **Public**

VIRTUALIZATION	**+**	ENERGY EFFICIENCY	**+**	STANDARDIZATION	**+**	AUTOMATION	**=**	Reduced Cost
BUSINESS AGILITY	**+**	BUSINESS & IT ALIGNMENT	**+**	INDUSTRY STANDARDS	**+**	SERVICE FLEXIBILITY	**=**	OPTIMIZED BUSINESS
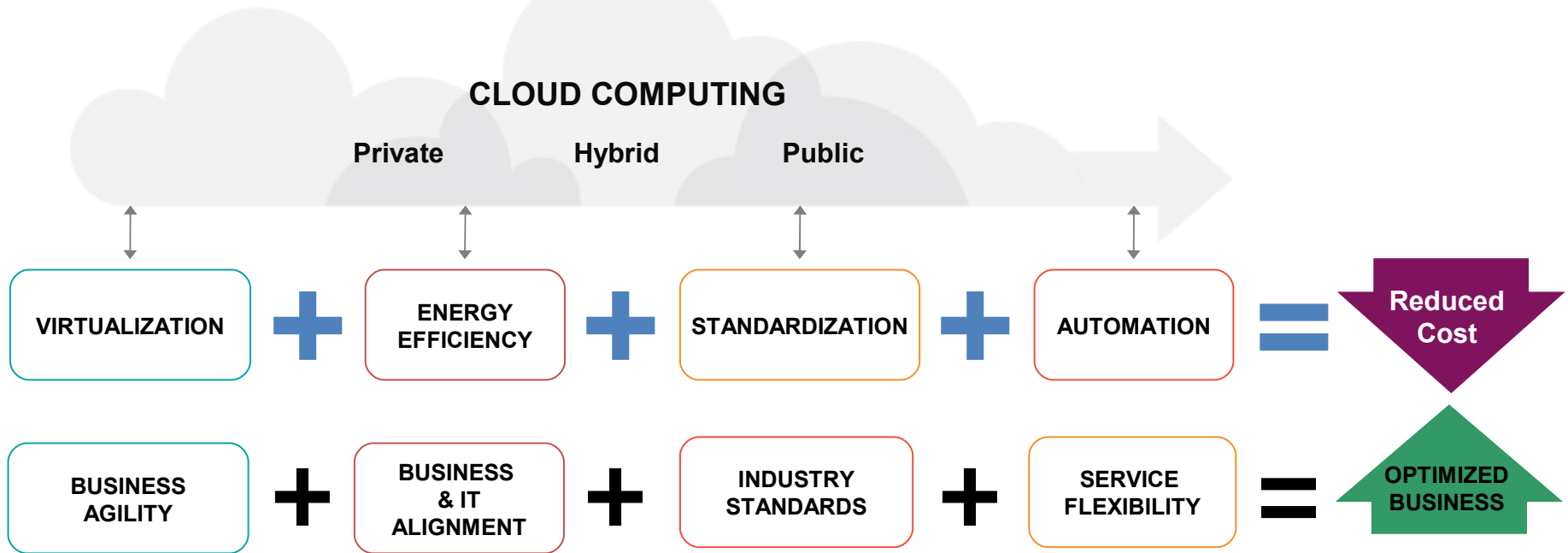
…leveraging virtualization, energy efficiency, standardization and automation to free up operational budget for new investment.

Effectively we are entering a new phase of "IT Industrialisation" to improve efficiency, responsiveness, lower cost and manage risk

Transformation Roadmap for virtualized environments

Physical Consolidation

- Improve utilization
- Reduce costs
- Lower power usage

Improve capacity utilization by as much as 60%, while reducing the power and cooling costs

Advanced Virtual Resource Pools

- Decouple complexity from scale
- Share resources optimally
- Automate workload management
- Incorporate HA & DR

Hands-free operation, eliminate mundane tasks and manual processes and deploy workloads in minutes

Fully virtualized IT with integrated Service Management

- Sense and respond to workload requirements
- Dynamically move workloads to best-fit infrastructures
- Integrated virtualization management with IT processes

Save time and reduce skill level required for workload provisioning through pre-packaged automation templates

Cloud
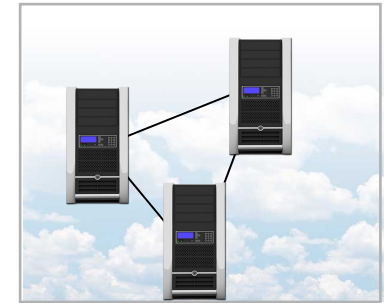
- Low cost through economies of scale
- Fully virtualised
- Globally available
- Elastic scaling
- Automated service management
- Pay for use
- Self-service with rapid provisioning
- Service catalog

Give users the flexibility to request and pay for services they want without the complexities of establishing an IT infrastructure
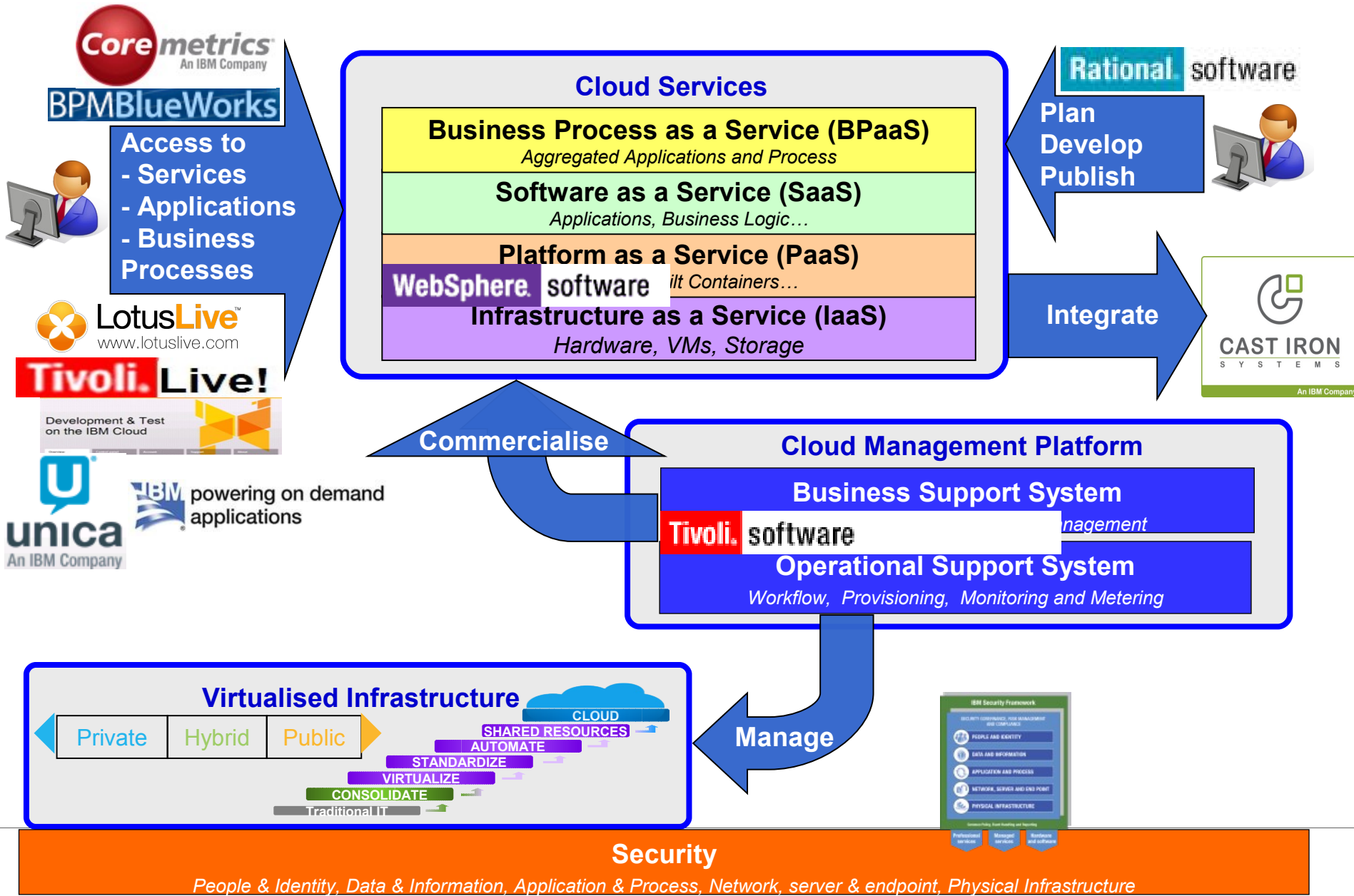
From Virtualisation to the Cloud Value Stack

Coremetrics — An IBM Company

BPMBlueWorks

Access to
- Services
- Applications
- Business Processes

LotusLive
www.lotuslive.com

Tivoli. Live!
Development & Test on the IBM Cloud

unica — An IBM Company

IBM powering on demand applications

Rational software

Plan Develop Publish

Cloud Services

Business Process as a Service (BPaaS)
Aggregated Applications and Process

Software as a Service (SaaS)
Applications, Business Logic…

Platform as a Service (PaaS)
lt Containers…

WebSphere software

Infrastructure as a Service (IaaS)
Hardware, VMs, Storage

Integrate

CAST IRON SYSTEMS — An IBM Company

Commercialise

Cloud Management Platform

Business Support System
anagement

Tivoli software

Operational Support System
Workflow, Provisioning, Monitoring and Metering

Manage

Virtualised Infrastructure

CLOUD

Private | Hybrid | Public

SHARED RESOURCES
AUTOMATE
STANDARDIZE
VIRTUALIZE
CONSOLIDATE
Traditional IT

IBM Security Framework

Security
People & Identity, Data & Information, Application & Process, Network, server & endpoint, Physical Infrastructure

The Cloud Value Stack

Coremetrics — An IBM Company

BPMBlueWorks

Access to
- Services
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- Business Processes

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Virtualised Infrastructure

| Private | Hybrid | Public |

CLOUD
SHARED RESOURCES
AUTOMATE
STANDARDIZE
VIRTUALIZE
CONSOLIDATE
Traditional IT

Manage

IBM Security Framework

SECURITY GOVERNANCE, RISK MANAGEMENT AND COMPLIANCE

PEOPLE AND IDENTITY
DATA AND INFORMATION
APPLICATION AND PROCESS
NETWORK, SERVER AND END POINT
PHYSICAL INFRASTRUCTURE
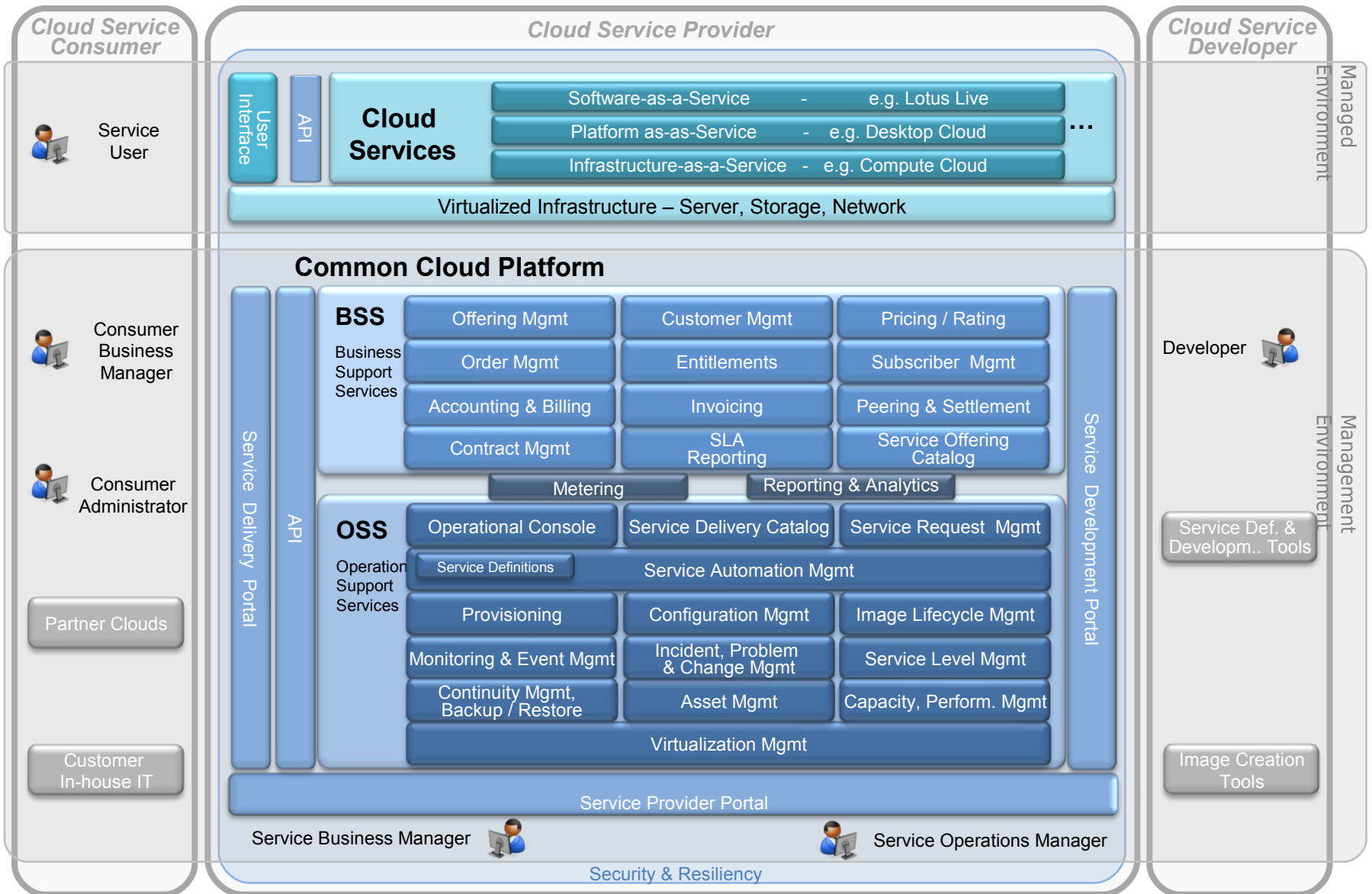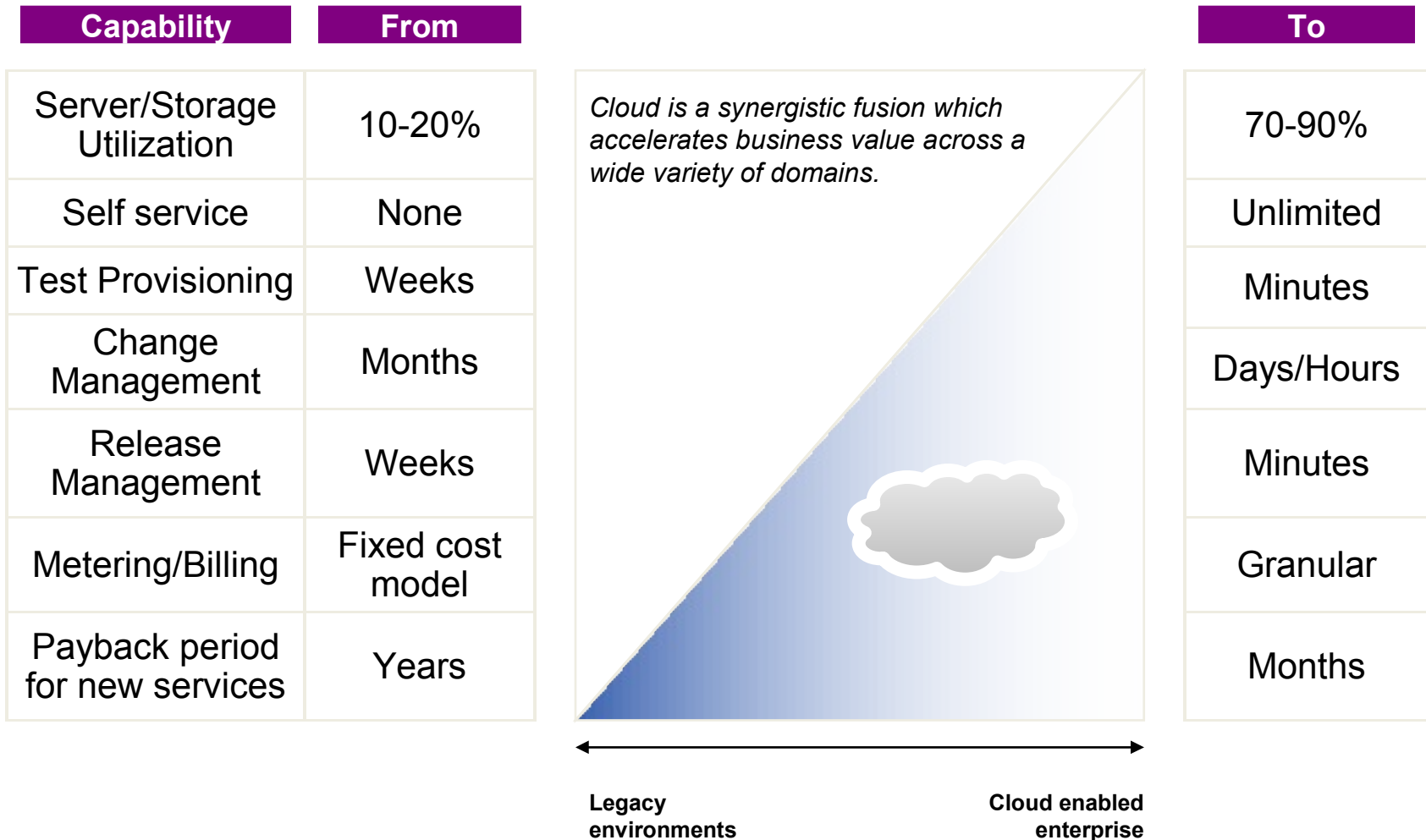
Security
People & Identity, Data & Information, Application & Process, Network, server & endpoint, Physical Infrastructure

Introducing Cloud Reference Architecture

Cloud Service Providers

Cloud Service Consumers

Service Users

Consumer End User

Consumer Business Manager

Consumer Administrator

Standards Based Interfaces

Cloud Services

Business Process as a Service (BPaaS)
Aggregated Applications and Process
Software as a Service (SaaS)
Applications, Business Logic…
Platform as a Service (PaaS)
APIs, Pre-Built Containers…
Infrastructure as a Service (IaaS)
Hardware, VMs, Storage

Cloud Management Platform

Business Support System
Financial, Customer & Contract Management

Operational Support System
Workflow, Provisioning, Monitoring and Metering

Standards Based Interfaces

Virtualised Infrastructure

Private | Hybrid | Public

CLOUD
SHARED RESOURCES
AUTOMATE
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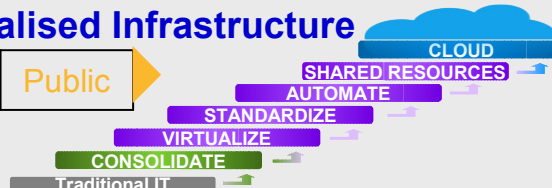
Service Planning

Planner

Developer

Publisher

Cloud Service Creators

Security
People & Identity, Data & Information, Application & Process, Network, server & endpoint, Physical Infrastructure

Reference architectural model for cloud computing

So what's different about Cloud?

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 is a synergistic fusion which accelerates business value across a wide variety of domains.

Legacy environments

Cloud enabled enterprise

IBM Service Management Delivers…

- ## Visibility
  - The ability to see everything that's going on across the infrastructure

- ## Control
  - The ability to keep the infrastructure in its desired state by enforcing policies

- ## Automation
  - The ability to manage huge and growing infrastructures while controlling cost and quality.

Visibility - *See Your Business*

Challenge

– Business and IT audiences lack the visibility and insight needed to directly support and deliver against business objectives

Solution - Real-time Visualisation

– **Dashboards** at each stage of the service lifecycle leverage existing assets and provide the real-time insight to help manage against business objectives

– **Discovery and Application Mapping** via automated tools to control governance, manage change and populate business service views

Industry, LoB, & Executive Dashboards

Risk, Security, & Compliance Dashboards

Portfolio and Project Management Dashboards

Dependencies, Change, BSM, Compliance, Audit

IBM Service Management Dashboards across the service lifecycle

Control - *Manage your Business*

Applications - Service Desk   Service Catalogue   Asset Management   Process Management

Process Runtime - Collaboration   Workflow   Escalation   Reporting   Security   Export

Processes	Common Data Subsystem and Process Automation Platform	Processes
Service Level Mgmt		Contract Management
Incident Management	**IT Assets** / **Non-IT Assets**	Financial Management
Problem Management		Work Management
Configuration Mgmt	Datacentres, Offices, Networks / Plant, Fleet, Property	Inventory Management
Change Management		Safety Management
Release Management		Materials Management

Reconciliation   Synchronisation   Federation

Monitor	Modify	Metering	Provisioning	Discovery	Scheduling
Event Management *Event Correlation* *Performance Mgmt* *Impact Assessment* *Service Level*	*Configure* *Password Reset* *Remote Control* *Imaging* *Update / Patch*	*Usage* *Performance* *License Compliance* *Lifecycle*	*Software Distribution* *User Accounts* *Access Control* *Service Subscription* *Online Commercial* *Services*	*Inventory* *Configuration* *Network Topology* *Physical Topology* *Application Topology*	*Workload Scheduling* *Load Leveling* *Batch Processing*

Automation - *Optimise Your Business*

"Cloud Buyer"
Clients who want the simplicity and flexibility of delivering their services on a cloud-based platform, without regard to the underlying infrastructure

Service Automation
- Targeted across entire Enterprise
- Requires Task and Process Automation capabilities
- Automates IT Service Delivery to LOB
- Designed to automate end to end service lifecycles
- Segment: Global 500 Customers

Service Management Center for Cloud

Process Automation
- Targeted across Departments
- Requires Task Automation capabilities
- Automates and Standardizes end to end processes
- Designed to drive ITIL process efficiency
- Segment: Global 2500 Customers

Configuration	Release
Incident	Compliance

"Point Solution Buyer"
Clients looking to drive component efficiency, resiliency, and responsiveness of their infrastructures.

Task and Resource Automation
- Targeted for IT Operations teams
- Typically sold as point solutions
- Domain specific automation – monitoring, etc.
- Designed to drive task efficiency
- Segment: Global 10,000 Customers

Asset Mgmt.	Perf. Mgmt.	Monitoring
Provisioning	Service Requests	Security
Financial Mgmt.	Storage	Networking

Management Concerns in Cloud Computing

Service Automation Management
- – Interpret and Execute Build - Management Plans
- – Service Class Compliant
- – Orchestrate Management Componentry

Usage Metering and Accounting
- – Flexible support of delivery models
- – By user, department, business service with chargeback option

Virtualized Resource Management
- – Deploy cloud services on virtualized resources
- – Manage virtual resources through service life-cycle
- – Visibility and end user experience

Maintaining integrity
- – Discovery and Mapping
- – Change, Remediation

Image Management
- – Design, build, manage and terminate images for cloud services

Service Provisioning
- – Server, Storage, Network, Security
- – Process & Compliance

Management Platform
Operational Support System

Performance and Availability
- – End used experience
- – Route cause analysis
- – Service trends

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

Heat and Power Management
- – Control Energy Consumption

Service Delivery Catalog

Service Automation Management

e Templates

Service Automation Management

quest Management

Configuration Mgmt

Image Lifecycle Management

Provisioning

Incident, Problem, Change Management

IT Service Level Management

Monitoring & Event Management

IT Asset & License Management

Capacity & Performance Management
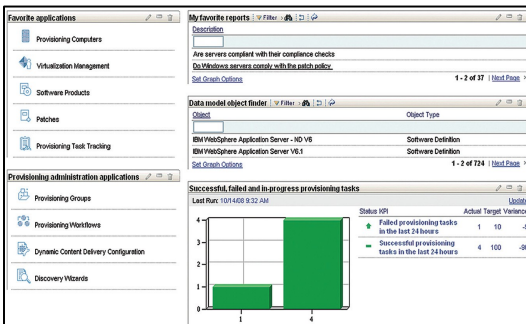
Virtualization Mgmt

Security and Resiliency

Core Components of Service Managed Clouds

Required for Service Management in the Data Center, IT Service Management and Integrated Service Management

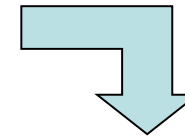## For Locating and Requesting Services

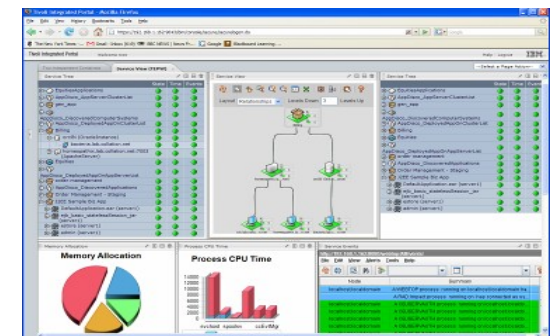Secure User Centric Self-Service Portal, Automation engine and Catalog
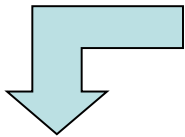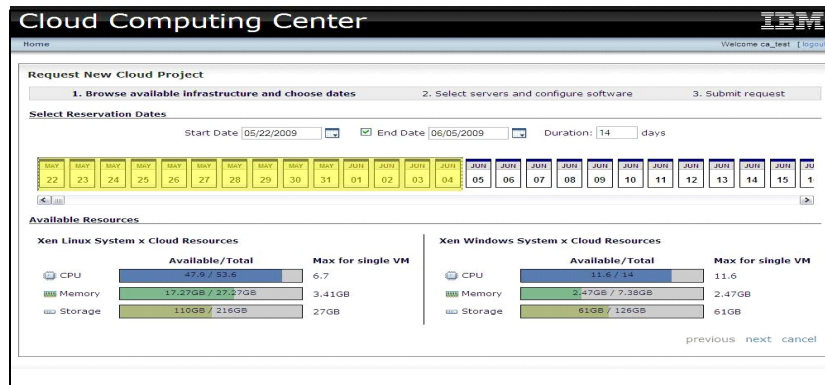
Deploying Cloud Services

Automated Provisioning and Image Management

Managing Cloud Services

Monitoring, Security and Metering

IBM Service Delivery Manager

"Manage From" Environment

"Managed To" Environment

ISDM Management Server

ISDM - TSA
ISDM - ITM
ISDM - TUAM
ISDM - TSAM

Virtual Machine

Hypervisor :
VMWare or PowerVM

Physical Server:
System X or Power

Service Automation Manager
- Orchestration of cloud Operations
- Automated provisioning of virtual systems from self service catalogue

Monitoring
- Automatic monitoring of provisioned environment

Usage and Accounting
- Metering and accounting for cloud services
- Enable integration to billing systems

High Availability
- Ensure management server is highly available

ISDM: delivered as pre-integrated virtual images

"Manage From" Environment

"Managed To" Environment

ISDM Management Server

ISDM - TSA
ISDM - ITM
ISDM - TUAM
ISDM - TSAM

Virtual Machine

Hypervisor :
VMWare or PowerVM

Physical Server:
System X or Power

Virtual Machines Provisioned in the Cloud

Hypervisor :
VMWare, KVM, Xen – PowerVM, VMControl - zVM

Physical Server:
System X, Power, or Z
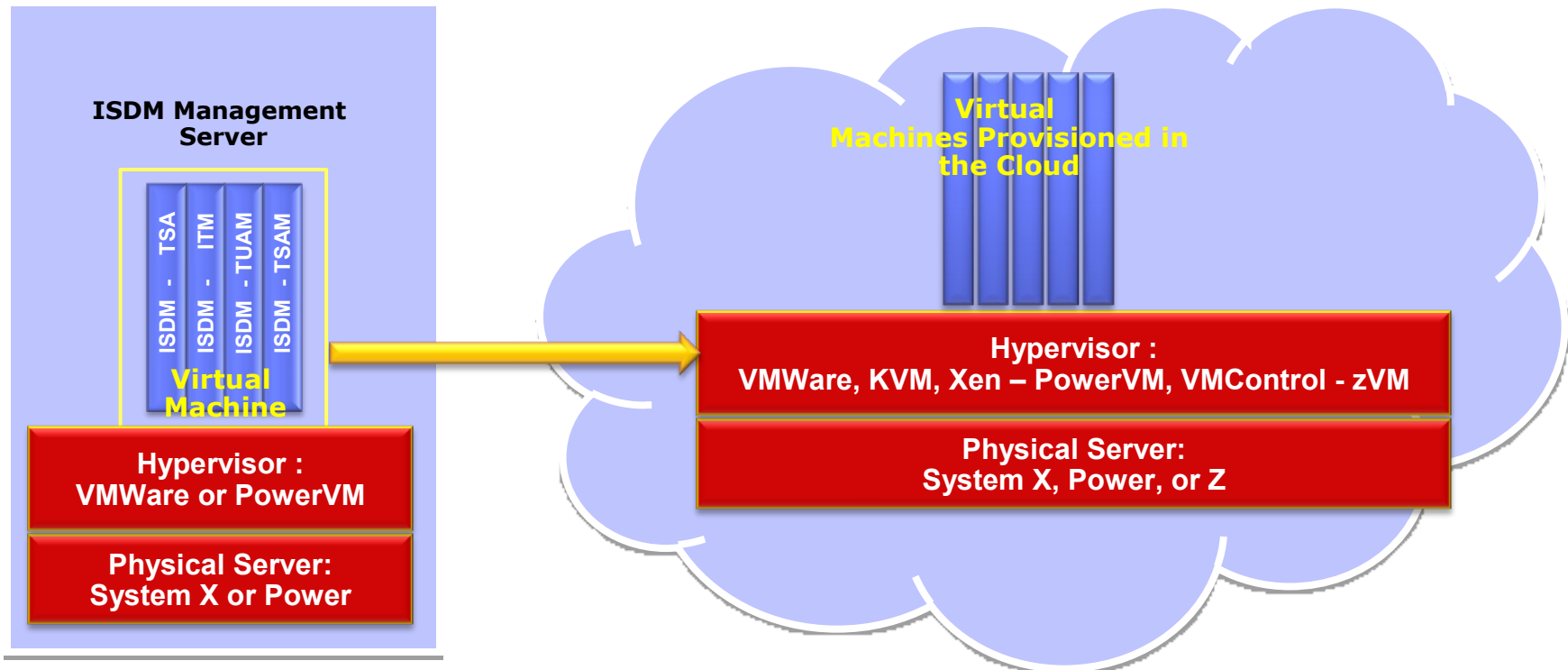
IBM Cloud Service Provider Platform

… includes an Integrated Service Management solution for that provides a complete solution for managing virtualized compute, storage and network resources in a secure multi-customer, highly-scalable, carrier-grade environment

Network Management

- Network performance
- Network traffic analysis
- Network configuration management

Storage Management

- Backup and restore
- Storage configuration
- Storage management

- Service automation
- Monitoring
- Resource usage accounting
- Self-service portal

Core Service Automation and Management

- Service provisioning
- Service catalogue with pre-packaged templates and workflows
- Multi-customer management and isolation

Security Management

- Identity and access management
- Network security
- Data synchronization
- Real-time database activity monitoring
- Automated compliance auditing

Advanced Monitoring and Service Level Management

- Event and alert management
- Incident and problem management
- Automated network operations management
- Application monitoring and management
- Real-time service visibility, dashboards

Client Examples

CLS Group

Handles $5.4trillion transactions daily

Eliminates settlement risk across multiple time zones

Provides a streamlined, resilient service, processing more than 50% of global foreign exchange transactions

A real-time, secure, flexible global system

Handled growth from 45k to 1.5M transactions daily

" It would have been difficult to have established and extended this resilient settlement system for one of the world's major financial markets without the commitment, skills and capabilities of IBM,"

— Rob Close, Chief Executive Officer of CLS Group and President and CEO of CLS Bank.

SK telecom

Development Platform-as-a-Service offering allowing Business Partners to quickly test, develop, and publish new end-user focused WAP services

Service Management-enabled Cloud Delivery platform to run new WAP services in a workload optimized fashion.

"Our efforts to develop services with IBM and other partners reflect the latest trends in Web 2.0, which will ultimately enhance our customers' experience. Together with venture capital firms our aim is to create new business opportunities by rapidly commercializing the ideas of content developers, further advancing the development of the Information and Communication Technology industry."

- Jong-tae Ihm, Senior Vice President and Head of SK Telecom's Data Network Office

NEDBANK

*Developers and testers are able to request their resources through **easy to use self service portals***
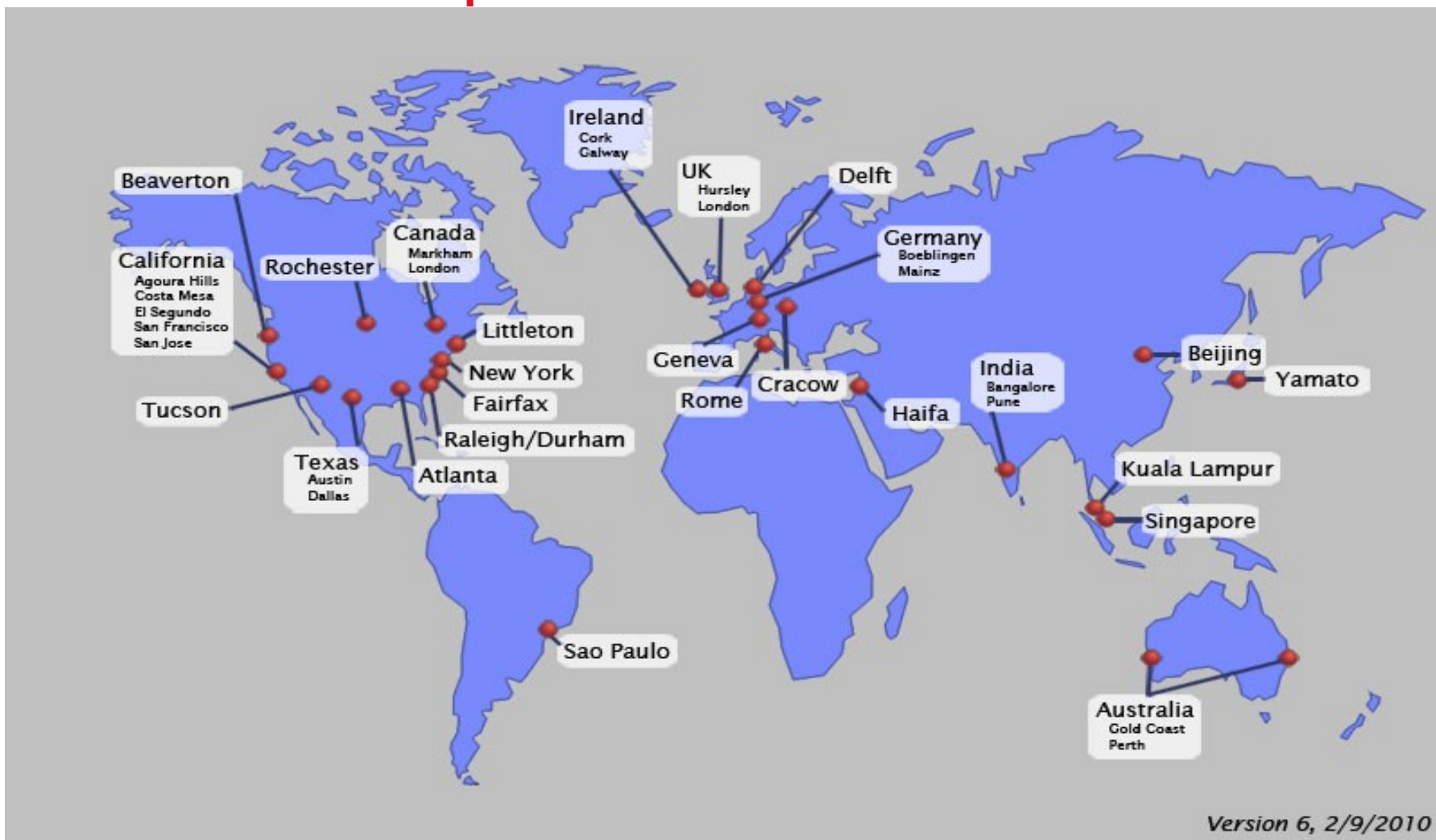
*Test environments are **provisioned in minutes** instead of weeks*

*Software configurations are **consistently deployed every time** using stored workflows*

"Within my team we're running anywhere between 10 and 25 projects at a time … every time we have to provision a new environment we take the time away from the project, and we have to go in and build a DR environment … the projects are suffering."
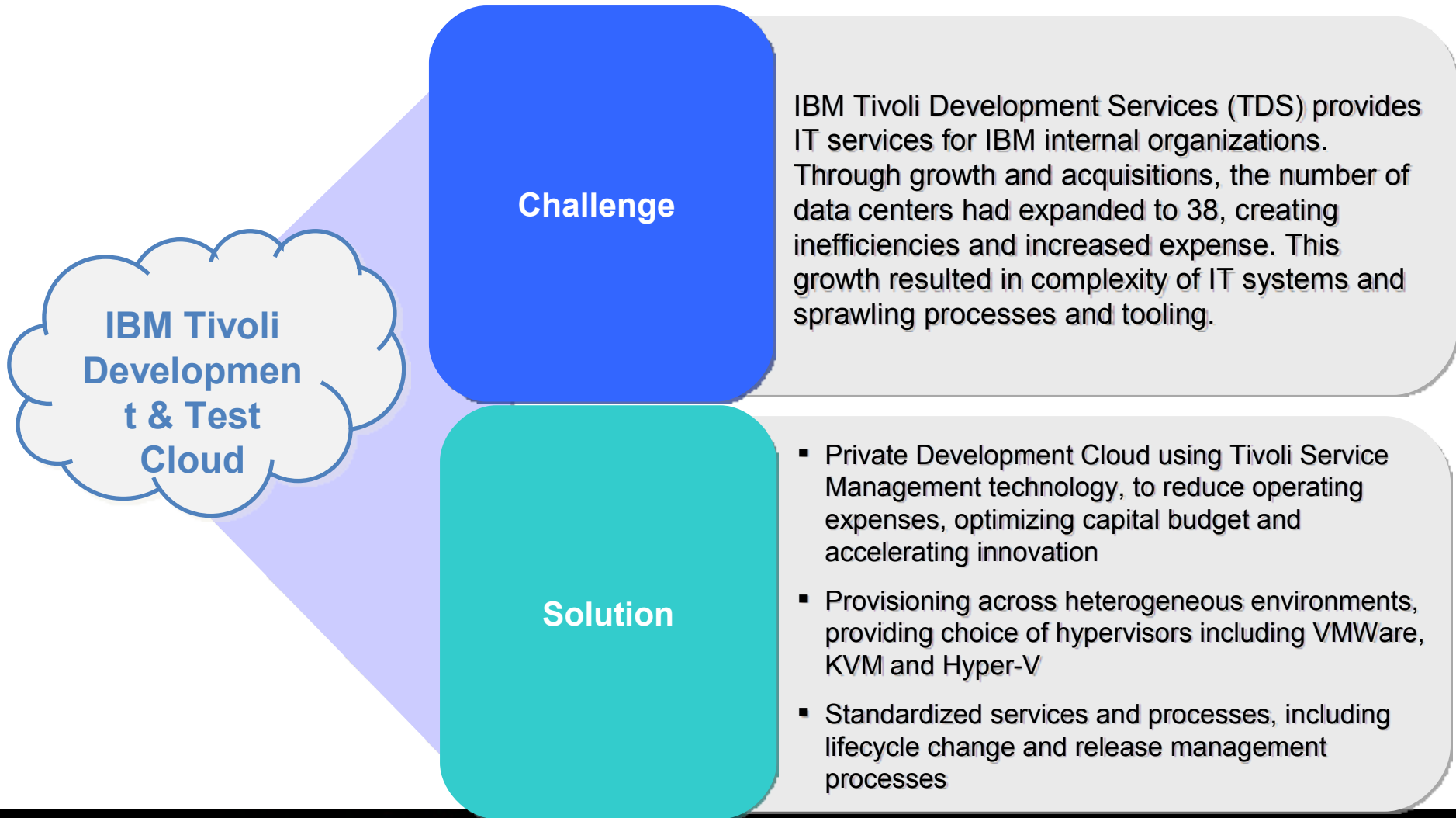
— Nicholas Parry, Enterprise Architecture and Design team, Nedbank

IBM Tivoli Development Cloud Case Study

- Business Use Case: Tivoli Development & Test Cloud
  - Overview and Business Results
  - How IBM Technology Drives Savings
  - Unique Value of IBM Cloud Solutions
- What differentiates IBM?

Tivoli Test & Development

Version 6, 2/9/2010

✳ Geographically dispersed team of ~6000 team members

IBM Tivoli Development & Test Cloud Overview

IBM Tivoli Development & Test Cloud

Challenge

IBM Tivoli Development Services (TDS) provides IT services for IBM internal organizations. Through growth and acquisitions, the number of data centers had expanded to 38, creating inefficiencies and increased expense. This growth resulted in complexity of IT systems and sprawling processes and tooling.

Solution

- Private Development Cloud using Tivoli Service Management technology, to reduce operating expenses, optimizing capital budget and accelerating innovation

- Provisioning across heterogeneous environments, providing choice of hypervisors including VMWare, KVM and Hyper-V

- Standardized services and processes, including lifecycle change and release management processes

IBM Tivoli Development & Test Cloud Business Results

IBM Tivoli Development & Test Cloud

Results

- **Lowered Costs** - Avoided $8.9M in capital expense and $9.7M in operational expense in 2009 and 2010 through cloud technologies

- **Reduced Real Estate** - Reduced physical space by 15% while building capacity for 5500 virtual machines

- **Improved Efficiency** - Automated self service provisioning, reduced time to ~15mins

- **Accelerated Innovation** - Transformed the role of IT staff to shift focus from administration to providing additional value to it's customers

- **Boosted Productivity** - Ability to capture and rapidly share environments during development & testing phases in days/hours rather than months

Private Cloud implementation reduced operating expenses, optimised capital budget and accelerated innovation

Savings by Category
After Cloud Transformation

Energy Savings 1%

Security Compliance 5%

Provisioning Savings 48%

Capital Avoidance 46%
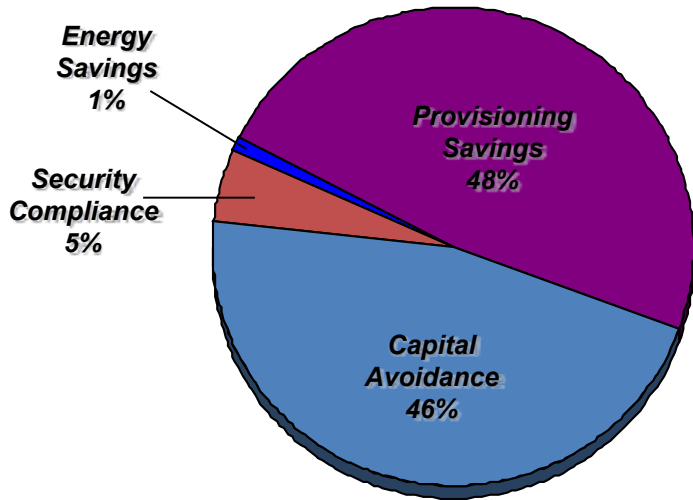
- Improved utilization from 5-9% on stand-alone HW to 60-70% on virtualized HW
- Reduced annual labor spend on security compliance by 86%
- Reduced power consumption by 77%
- Reduced provisioning time by 97.5%, improved time to configure and deploy environment into production from months to days/hours

Payback on investment achieved within the first quarter of deployment of a cloud infrastructure

How were these savings achieved?

- Virtualized IBM server and storage hardware

- Centrally managed infrastructure

- Common self service user interface to deliver request driven provisioning of standardized images (TSAM)

- Fully integrated usage and accounting solution (TUAM)

- Standardized service catalog of compliant images (ISDM, VMware Server Protection, and Intrusion Prevention Service)

- Improved lifecycle management (TSRM)

- Energy management capability (IBM Director's Active Energy Management)

Tivoli Global Cloud Infrastructure

Tivoli Development Realised Unique Value from IBM Cloud Solution

In the Tivoli Development & Test Cloud Solution, IBM uniquely provided:

- *Request driven provisioning with integrated monitoring and chargeback*

- *Use of the service catalog to provision a master image that meets compliance*

- *Automation of complex tasks in the Cloud with a single workflow engine*

- *Self-service UI for provisioning of applications as well as infrastructure*

- *Integrated change management systems with TSRM*

- *Active Energy Management for monitoring energy consumption and moving virtual servers as part of the automated provisioning process*

- *Chargeback of resources and applications, and integration with billing systems*

- *Superior time to value with a cloud management solution offering a virtual appliance (ISDM)*

- *Integration (within ISDM) across provisioning, request management, monitoring, and chargeback*
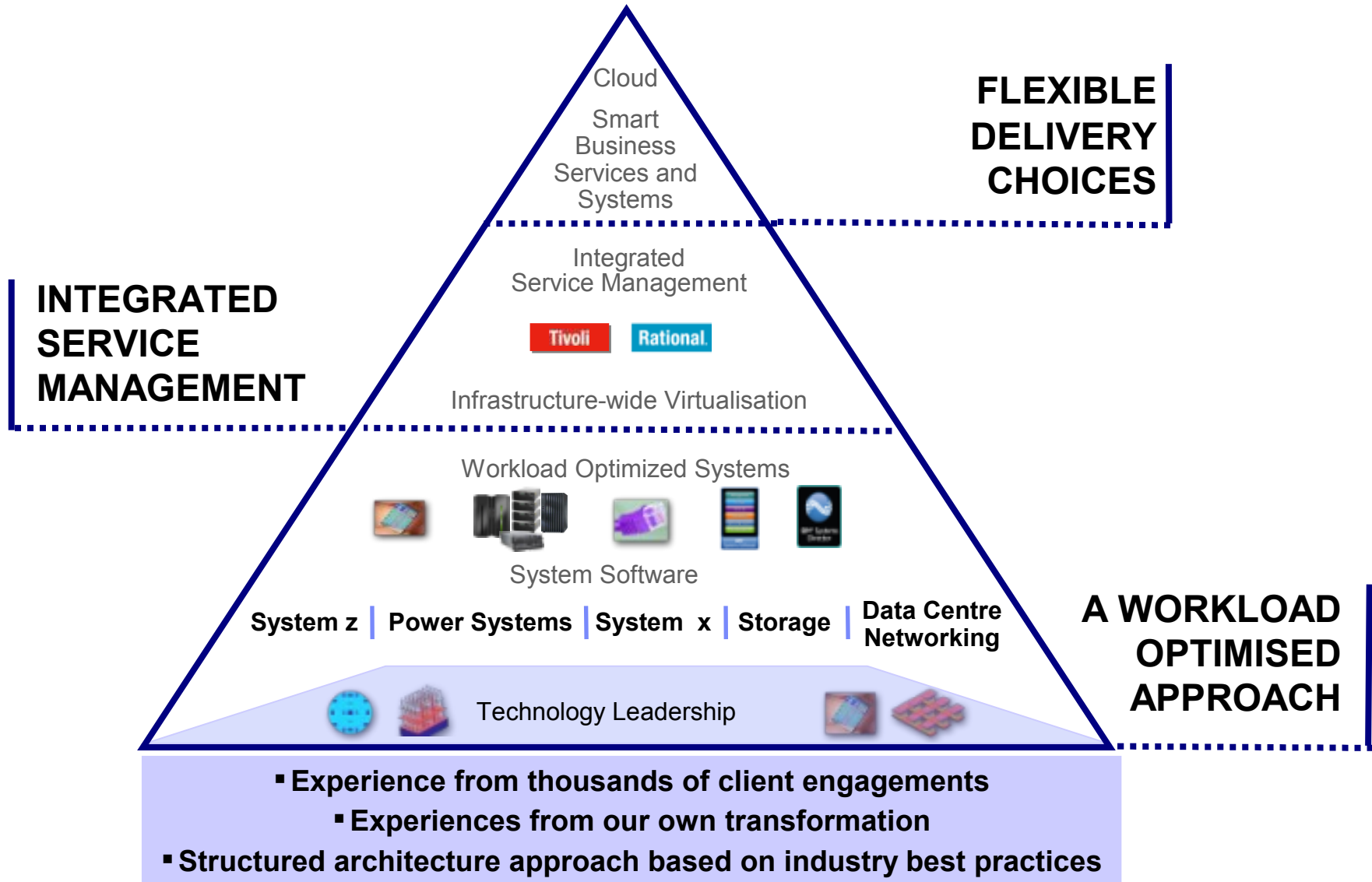
What Differentiates IBM?

➤ **Service Catalog & Workflow Automation**

➤ **Change Management & Chargeback of Cloud resources and services**

➤ **Security**

➤ **Total Time to Value & Payback**

➤ **Managing Heterogeneous Environments**

➤ **Unprecedented Scalability**

➤ **High Availability and Resiliency**

➤ **Integration to Service Management**

IBM Strength: **Fully integrated solution with high degrees of automation, high availability, redundancy, extensibility, experience and choice.**

Why IBM as Cloud Computing Partner?

FLEXIBLE DELIVERY CHOICES

Cloud

Smart Business Services and Systems

INTEGRATED SERVICE MANAGEMENT

Integrated Service Management

Tivoli   Rational.

Infrastructure-wide Virtualisation

Workload Optimized Systems

System Software

A WORKLOAD OPTIMISED APPROACH

System z | Power Systems | System x | Storage | Data Centre Networking

Technology Leadership

- **Experience from thousands of client engagements**
- **Experiences from our own transformation**
- **Structured architecture approach based on industry best practices**

IBM Software

PCTY2011

Pulse Comes to You

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

Or contact nick_drabble@uk.ibm.com