Cruise control:
Operational Excellence for Cloud Computing

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Pulse2012

Meet the Experts. Optimise your infrastructure.

May 31 – June1

Sheraton on the Park Hotel, Sydney

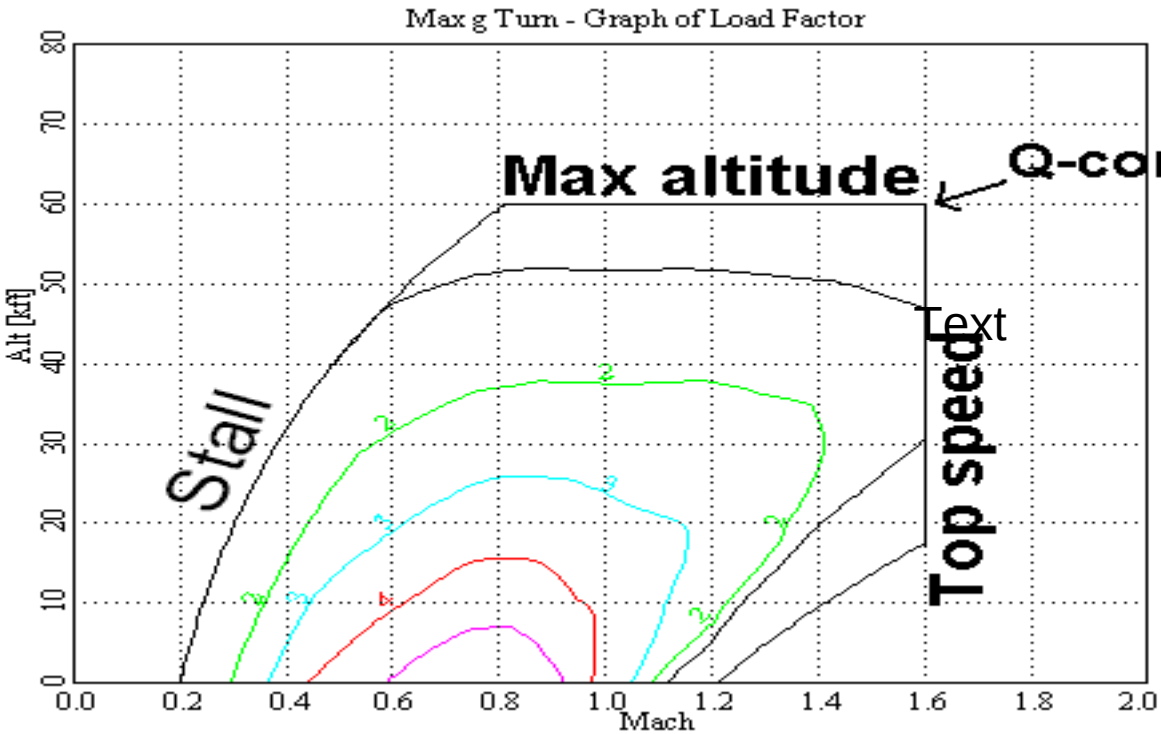
Operational Excellence for Cloud Computing

- Companies that have the most efficient and effective Cloud based services have been maniacally focused on Customer experience. Public, Private, or Hybrid Cloud, your companies reputation is more exposed than ever. So understanding what is important to the business, and building the support into your operational delivery has become the key to exploiting the Cloud.

- This session will describe some of the best practices, tools and technologies needed to drive operational excellence for the implementation of your Cloud Service Delivery Platform.

Coffin corner (aviation),

an unstable combination of speed and altitude



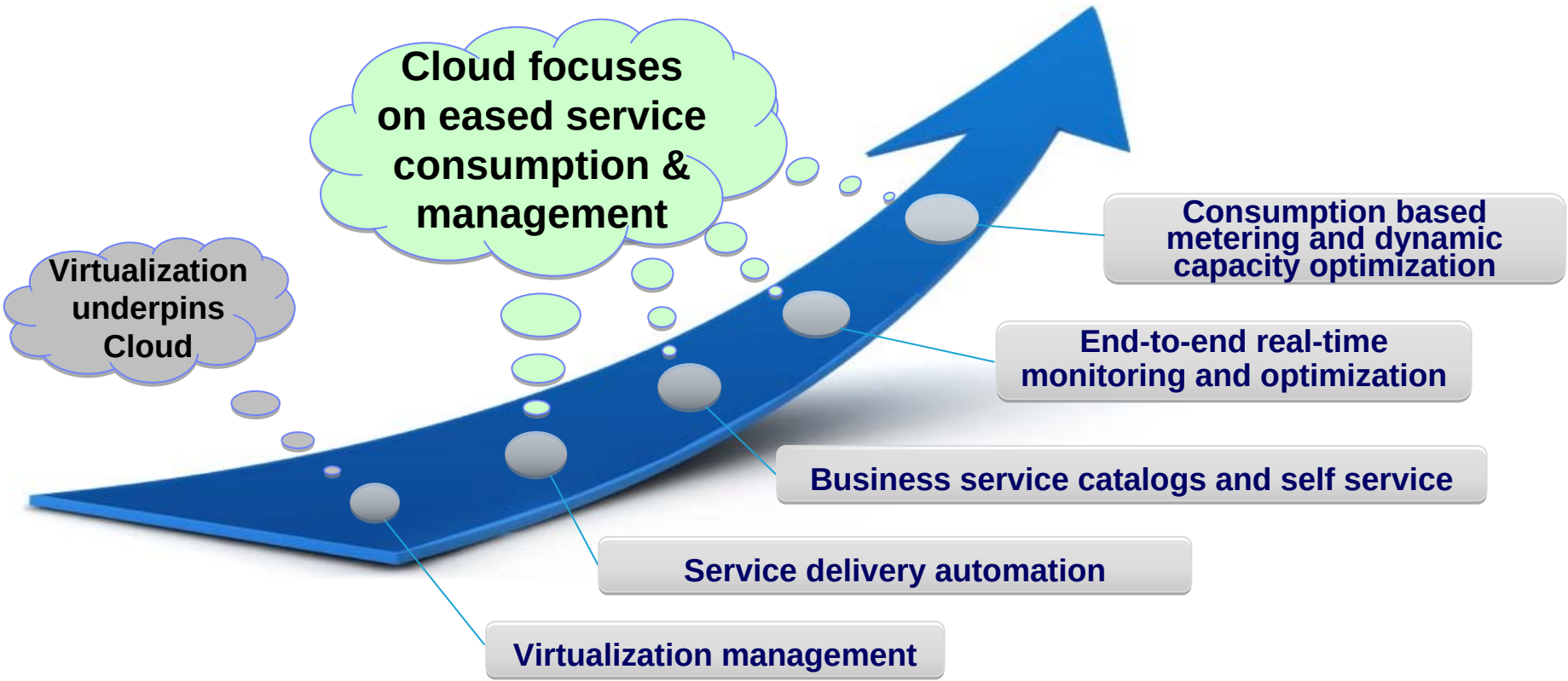
..there is a point where the positively sloping plot of the plane's stall speed crosses the negatively sloping line of its maximum safe speed below the speed of sound (Mach 0.86, in the case of an Airbus 330). The apex where the two lines intersect—where the minimum and maximum safe speeds are the same—is known euphemistically as "coffin corner". At 10,600 metres, a fully loaded Airbus 330 cruises (for reasons of fuel economy) just below this critical point in its flight envelope—with probably no more than 25 knots (46 kph) between stalling (through flying too slow) and breaking up in a shockwave-induced dive (through flying too fast).

The Difference Engine: Wild blue coffin corner: The Economist Mar 25th 2011.

– http://www.economist.com/blogs/babbage/2011/03/aviation_accidents


Cloud computing
changes how we request,
deliver and consume technology

Organizations are now moving beyond virtualization to higher value stages of Cloud



2012 Marketplace Dynamics (Key Drivers)

Eased Delivery

"**21%** [#2 rank] need Cloud to align to the velocity of the business"

CSC

"**43%** want more efficiency in cloud delivery, **25%** developing new Cloud apps"

The 2011 IBM Tech Trends Report

IBM IBV Study

Optimize QoS

"**54%** were unsure of how many cloud services were being used, effecting optimal business operations."

ITBUSINESSEDGE

"Nearly **70%** of active cloud users report little confidence monitoring their cloud services"

ENTERPRISE Networking

"**48%** lack visibility into cloud operations inhibits analysis of compliance, Perform. & ROI"

KPMG

"55% of enterprises are connecting mobile devices to back-end cloud services"

IDC

Control Complexity

IBM IBV Study

"**40%** lose of control & governance is a top concern"

KPMG

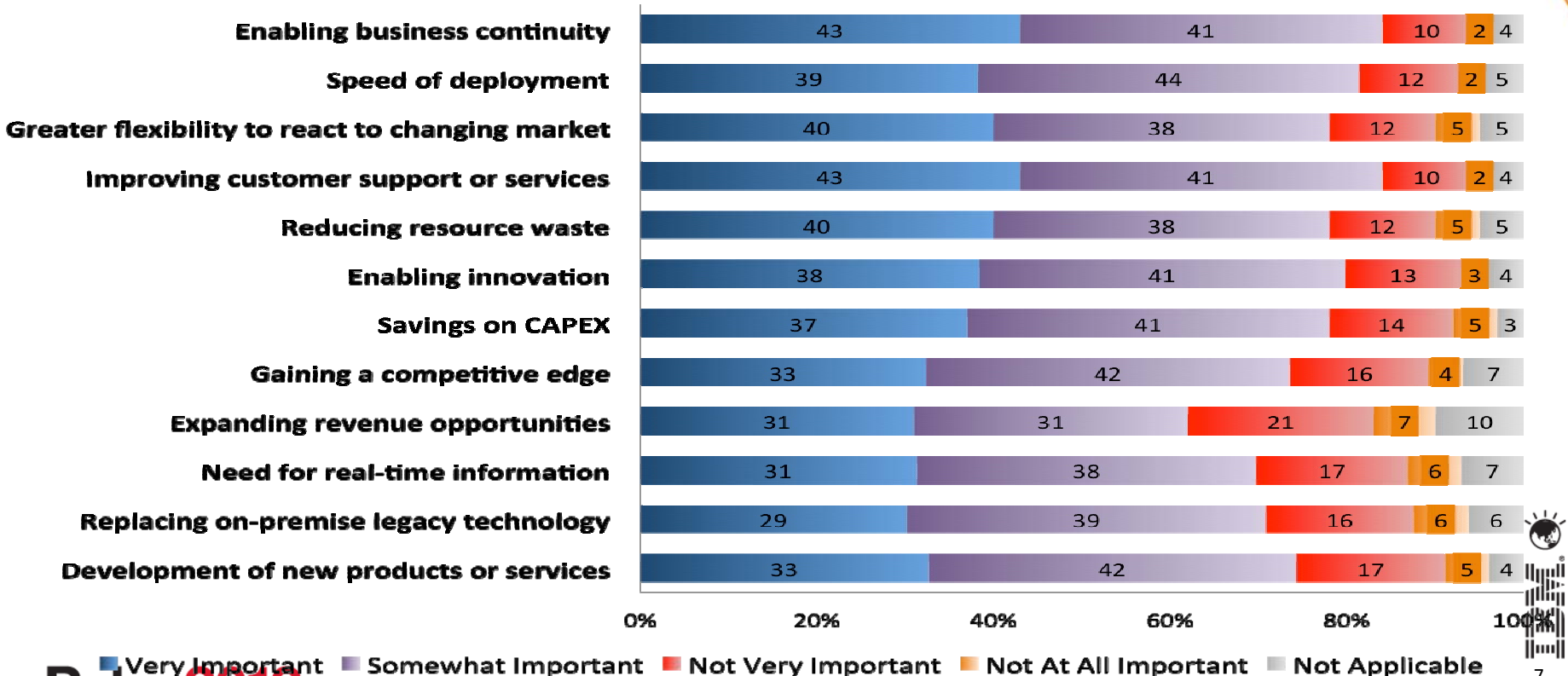
"**80%** focused on Cloud processes and management processes [#1]

Gartner

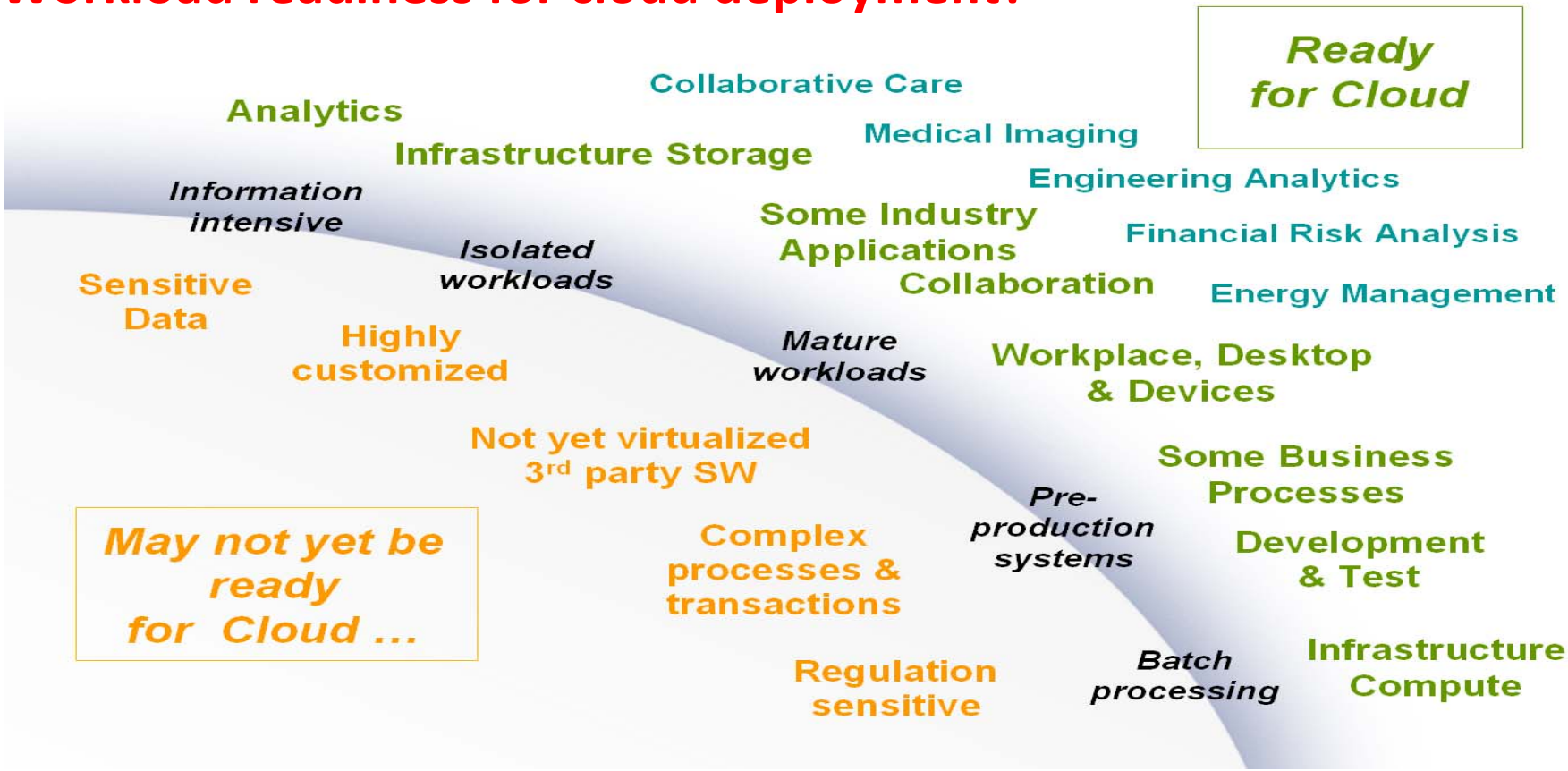
Cloud – Need to speed storage agility

Business continuity and speed of deployment are key drivers

Source: IDC – 2012 Cloud Computing – Key Trends and Future Effects (1682 respondents)



Workload readiness for cloud deployment?



Key Elements of Enterprise Virtualization & Cloud

vLan & Firewall Provisioning

Integrated Metering

Application patterns

Service Catalog

Hybrid Cloud

Storage Provisioning

VM Protection

Virtual & Physical Monitoring

Change & Config management

Automation

DevOps

IBM SmartCloud Foundation

Platform as a Service Technologies

Infrastructure as a Service Technologies

BIGFIX

Automated Patching

Image Management

Capacity Planning

Availability & Performance

Compliance & Resilience

Backup & Restore

High Availability

Infrastructure & Platform Support

Cloud Identity Management

Bare Metal

Operating Systems

Middleware

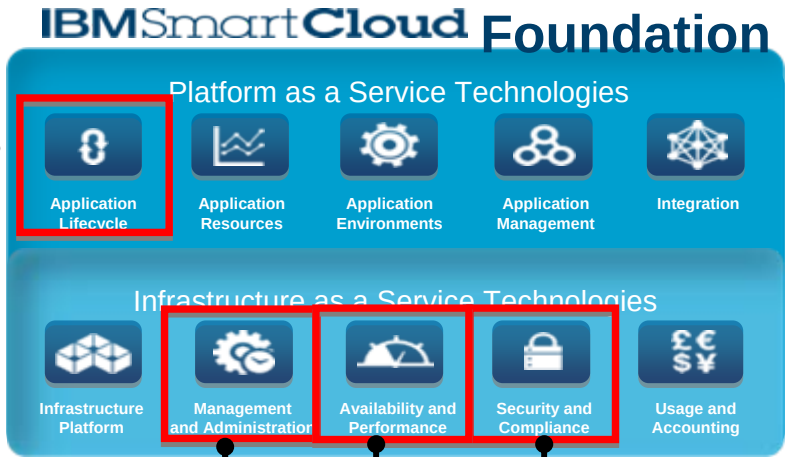
Open Standards

Hypervisors

IBM SmartCloud Foundation

AUTOMATION

- Integrated lifecycle management of cloud services (DevOps)
- Collaborative service development, testing and service provisioning
- Customized workload patterns tied to provisioning engine



NEW!

- IBM SmartCloud Control Desk
- IBM SmartCloud Storage Continuous Delivery
- IBM SmartCloud Virtual Storage Center

Updated

- IBM SmartCloud Provisioning
- IBM SmartCloud Monitoring
- IBM Identity/Access and IBM End Point Manager

CONTROL

- Simplified administration enabling rapid, scalable provisioning while controlling image sprawl
- Reduce service disruptions with integrating service desk, change & maintenance management
- Lower costs and improve overall performance by virtualizing and better controlling storage resources

VISIBILITY

- Improved visibility into the performance of cloud resources and services optimizing usage & QoS
- Health analytics for capacity planning and workload placement improving utilization
- Secure the Cloud by enforcing policy-based access controls, including from mobile devices

IBM SmartCloud Foundation

New! **New Cloud enablement capabilities easing the move beyond virtualization, speeding time-to-value of new services**

Optimize QoS

Control Complexity

Speed Delivery

IBM SmartCloud Monitoring

monitor virtual infrastructures and cloud services to optimize availability, policy-driven placement of workloads and analytics to guide cloud administrators to optimize usage & ROI. Complemented by **IBM Security Identity & Access Assurance** and **IBM EndPoint Manager** which offers policy based identity and access management providing additional security and visibility into accessing devices.

IBM SmartCloud Control Desk

effectively manage change, configurations, support and SLAs across large numbers of dynamically evolving cloud services and assets

IBM SmartCloud Virtual Storage Center

improve the flexibility, cost, and performance of virtualized, cloud-enabled storage with automated administration, management and provisioning controls for more agile cloud storage management

IBM SmartCloud Continuous Delivery

a suite of best practice patterns for enabling integrated lifecycle management of cloud services involving RTC, SmartCloud Provisioning and **Green Hat** testing capabilities

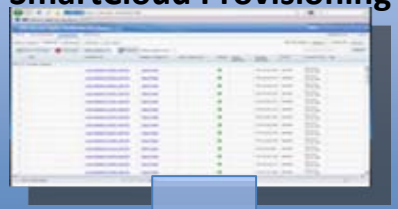
IBM SmartCloud Provisioning

new integrated workload deployment patterns to speed delivery of Cloud services an new health analytics features integrated with IBM SmartCloud Monitoring

Core capabilities of SmartCloud Provisioning (and its components)

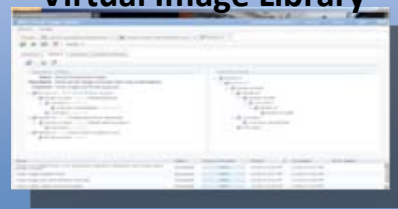
SmartCloud Provisioning

SmartCloud Provisioning



ICON – Image Construction

Virtual Image Library



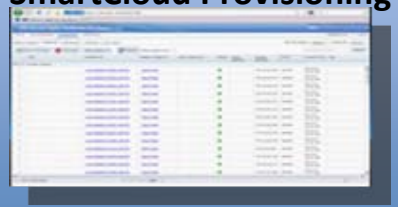
IBM Workload Deployer

- **Distributed architecture** for solution resilience.
- **Rapid scalable deployment** designed to deliver near-instant deployment of 100s of virtual machines in seconds instead of mins or hours.
- **Continuous operations** during upgrades and maintenance resulting in no outages or downtime.
- **Reliable, non-stop cloud** capable of automatically tolerating and recovering from software and hardware failures.
- **Save IT labor resources at scale** by enabling self-service request and highly automated operations
- **Hypervisor & hardware agnostic** enabling choice and avoiding vendor lock-in.
- **Open source**, commodity skills, small footprint.

Core capabilities of SmartCloud Provisioning (and its components)

SmartCloud Provisioning

SmartCloud Provisioning



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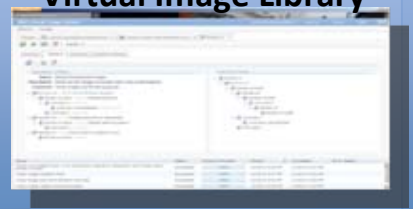


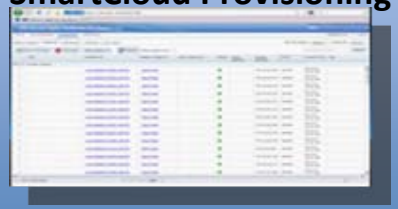
IBM Workload Deployer

- Advanced **Image lifecycle** management & **image composition** tooling.
- Tooling to simplify **migration of workloads** between hypervisors.
- **Hypervisor agnostic** supporting image composition on different platforms.
- Image publishing and **image repository**.
- **Run-time image activation** allowing advanced customization from standardized templates.
- **SmartCloud Enterprise** enabled, supporting integration with IBM's public cloud.

Core capabilities of SmartCloud Provisioning (and its components)

SmartCloud Provisioning

SmartCloud Provisioning



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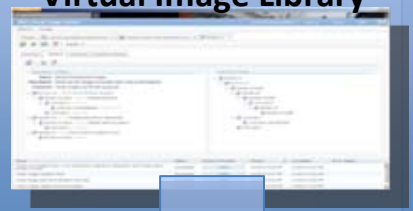


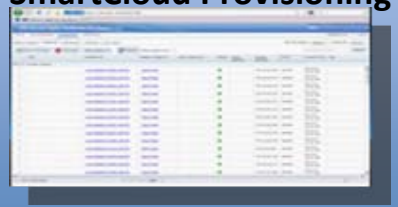
IBM Workload Deployer

- **Discovery of images** across the virtual infrastructure.
- **Automatic indexing** / cataloging of images.
- Image **comparison tooling** to identify changes, and manage change.
- Image **version control** to help standardise images.
- **Supports a wide range** of image and OS types.

Core capabilities of SmartCloud Provisioning (and its components)

SmartCloud Provisioning

SmartCloud Provisioning



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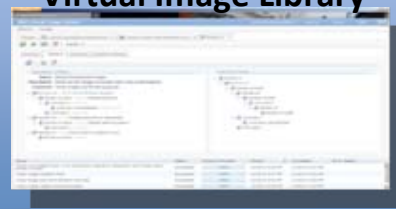


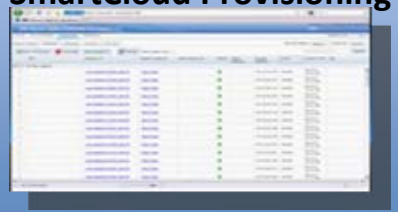
IBM Workload Deployer

- **Advanced PaaS** pattern deployment.
- GUI based pattern creation for multi-tier applications.
- Deployment of IaaS & PaaS to advanced hypervisor managers (eg. VM control)
- Optional and additional **hardware appliance** to add onto SCP.

Extending the Cloud capabilities beyond SmartCloud Provisioning

SmartCloud Provisioning

SmartCloud Provisioning



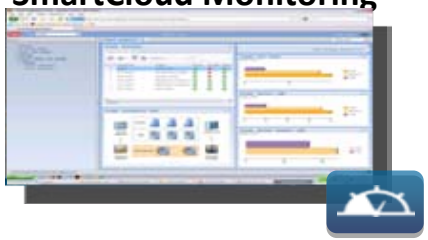
ICON – Image Construction

Virtual Image Library

IBM Workload Deployer

Health Analytics
Host & VM Monitoring
Event Response & Mgt
Capacity Planning
What-if Scenarios?

SmartCloud Monitoring



Availability and Performance

Patch Management
Compliance Reporting
Policy Enforcement

Tivoli Endpoint Manager

Security and Compliance

Centralised Backup
Policy Driven
Data Restore
Image Snapshots

Tivoli Storage Manager fVE

Security and Compliance

Usage Reporting
Cognos Reporting
Accounting & Rating
Invoice Creation

Tivoli Usage & Accounting Mgr

Usage and Accounting

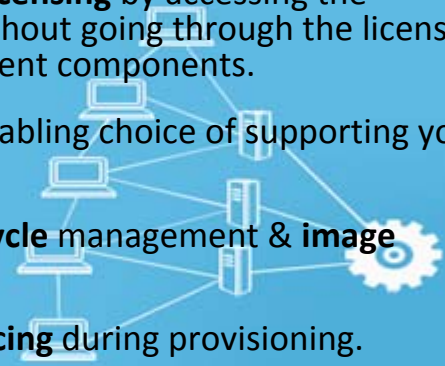
IBM **SmartCloud Provisioning** is a true Infrastructure-as-a-Service cloud, reducing cost and providing a highly scalable, rapid-deployment environment with near-zero downtime and automated recovery across heterogeneous platforms.

Key Benefits:

- **Distributed architecture** for solution resilience.
- **Rapid scalable deployment** designed to deliver near-instant deployment of 100s of virtual machines in seconds instead of mins or hours.
- **Continuous operations** during upgrades and maintenance resulting in no outages or downtime.
- **Reliable, non-stop cloud** capable of automatically tolerating and recovering from software and hardware failures.
- **Save IT labor resources at scale** by enabling self-service request and highly automated operations
- **Reduce complexity** through ease of use and improve time to value.

Key Differentiators:

- **Hypervisor agnostic** supporting KVM, ESX, Xen
- **Reduced hypervisor licensing** by accessing the hypervisor directly without going through the licensed (and costly) management components.
- **Hardware agnostic** enabling choice of supporting your current hardware.
- Advanced **Image lifecycle** management & **image composition** tooling.
- **Intelligent load balancing** during provisioning.
- **Open source based** providing and easy extensible platform utilizing existing.
- **Small footprint** of code with core components for the Cloud management less than 200Mb.



DutchCloud Case Study

http://tinyurl.com/dutchcloudcasestudy

About Dutch Cloud

Dutch Cloud

- Founded in 2009 with HQ in The Netherlands.
- Team with long-term experience on Cloud Computing.
- 100% committed to IBM.
- Delivering “Private Clouds” (from a shared environment).

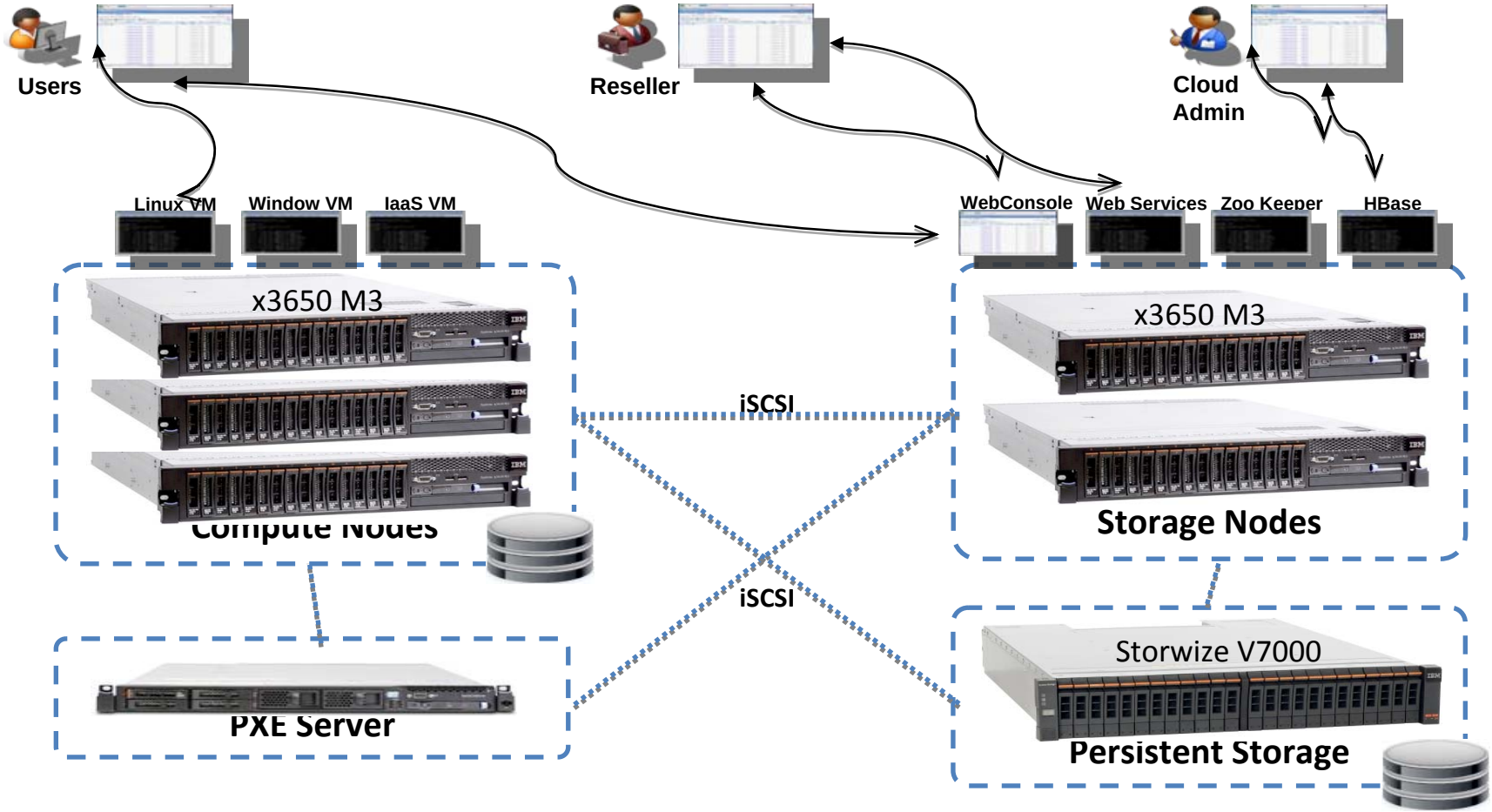
Our Focus on

- IaaS (Infrastructure as a Service).
- the SMB Market in The Netherlands.
- Partner Delivery Model (including Resellers).
- Complex architectures.
- Automation & Standardisation.
- Adding network integration (Dutch Cloud is also ISP).
- Adding simple tools; easy to use and easy to maintain.

Dutch Cloud's requirements

- Rapid service delivery with high degrees of automation.
- Customer isolation for multi-tenancy.
- Customer and management traffic separation.
- Integration with IBM V7000 storwize for non-local storage.
- Easily extensible platform, supporting simple customisation.
- Highly scalable and able to recovery autonomously from failures without interruptions to the service (no outages).
- Ability to "brand" the portal/GUI for specific customers.
- Ability to support a reseller model, and segregate resources.
- It works…consistently, reliably, quickly, and with minimal administration.

Solution Architecture



Customer Deployment Scenarios

Rapid service delivery of IaaS & PaaS **Problem**: Customers want to respond quickly to business events, and need to provision new server resources in a few minutes. **Benef**it: SCP Allows us to provide a new level of responsiveness and agility that customers are finding extremely beneficial to them, and driving more revenue for us. (It's a differentiator)

Disaster Recovery of IaaS & PaaS
Problem: Customer wants DR capability for IaaS for the provision of 200 machines within an SLA of 60 mins. Typically this is done by having dedicated hardware on warm/cold standby.
Benefit: SCP means that we do not need dedicated hardware, but just ensuring we have sufficient total capacity available. This increases our utilisation rates / improves costs.

Development of Sharepoint Services **Problem**: One of customers uses high end laptops for the development of Sharepoint sites for its customers – due to their hardware & storage constrained IT environment. **Benef**it: SCP allow us to offer Sharepoint PaaS images that can not only be provided quickly, but with regular versioning on images for snapshots. This offers a huge cost saving to the customer and improved agility.

Partner Reseller Model **Problem**: Business partners don't want to own idle capacity, but do want to scale up quickly to respond to their customer needs.
Benefit: SCP supports a reseller model where presentation UI can be branded, quotas set for soft limits and dedicated resources can be assigned to support delivery for different partners.

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