Creating Your Cloud Strategy *OCT 2013*

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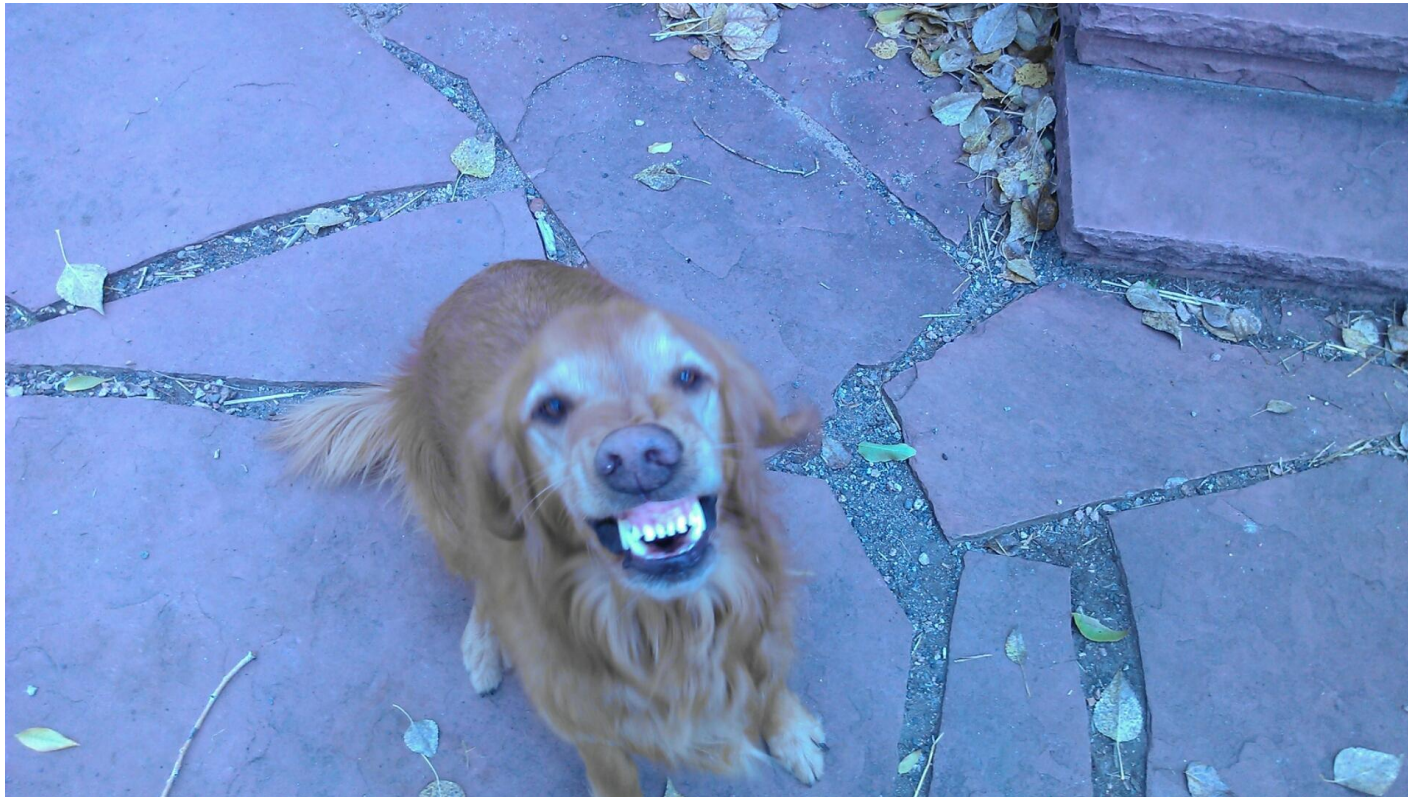msorency@us.ibm.com

Redbooks.

IBM RedBooks Thought Leader

"*Today I will work my mind and body, so tomorrow I can contribute to the world with my positive influence and energy.*"
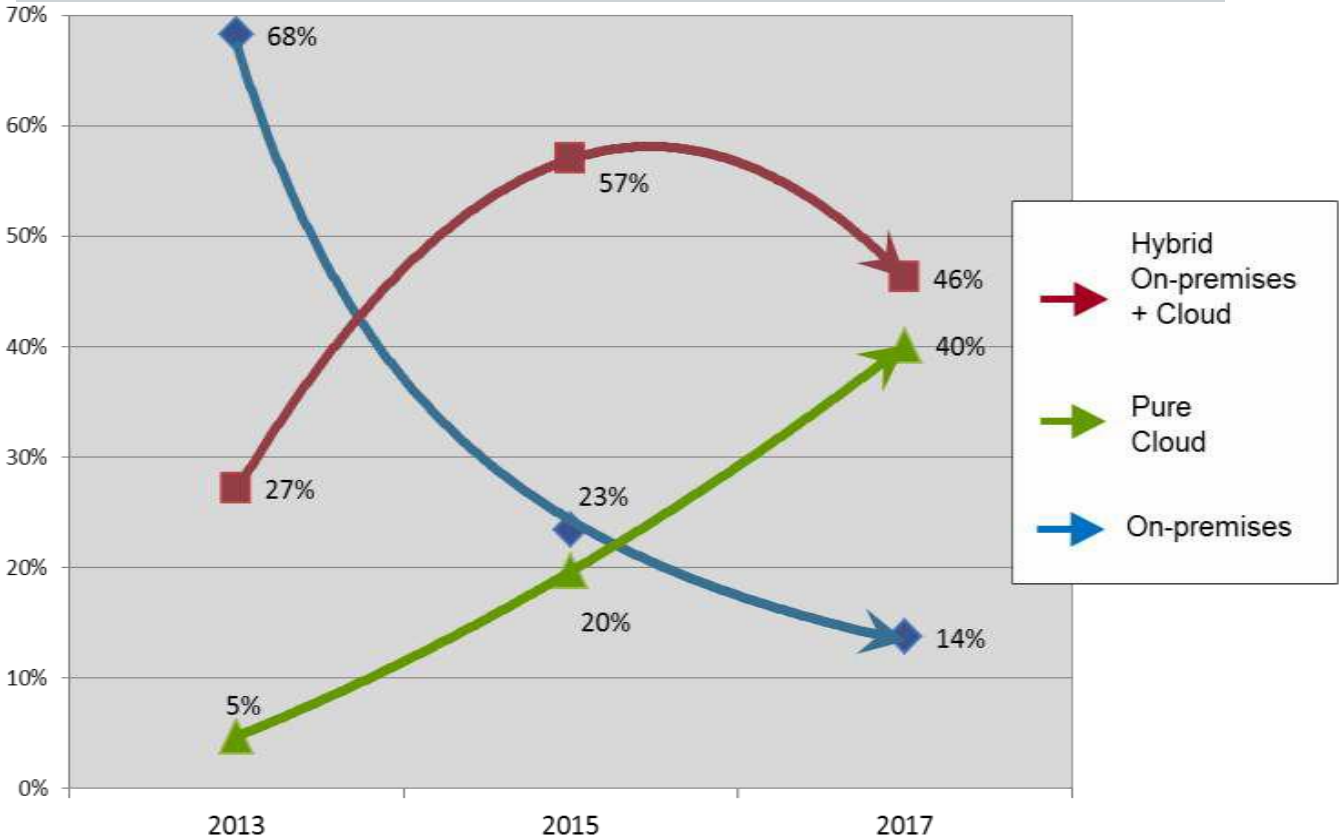
Good Morning! From Bob Barker

1+3=1 ?

Business Software Deployment Preferences Over Time

Survey question: For the following years, my company's preference for deploying new business software will be:

Notes on the Data

- The emphasis on new Hybrid deployments is likely to decline; the presence of Hybrid deployments overall is unlikely to decline.

- The data suggest rapid, substantial growth in demand for all Cloud infrastructure services.

- The term "Hybrid" was defined simply as "On-premises + Cloud."

Source: Saugatuck Technology Inc. 2013 global survey; n = 218

Saugatuck Insight: Patterns from previous Saugatuck surveys are repeated here. This suggests continuation and increase of Cloud adoption plans, a massive-but-restrained increase in Cloud adoption scale, or most likely both. Respondents likely believe that Cloud overall is "good enough" to make near-term plans.

Doc #: 1258SSR
Date: 29Aug13

SAUGATUCK
TECHNOLOGY

IBM Confidential

4

Organizations must balance optimization with innovation to enable new product and service models

Optimization

Innovation

Next Generation of Hybrid Architectures

Innovation drives need for continuous IT optimization

New economics of IT fuels investments in innovation

Why?

Cloud to enable new business strategies.

Leader in Worldwide Cloud Professional Services

IDC Cloud Professional Services MarketScape 2013

Cloud to speed the delivery of new products and services.

Leader in Application Lifecycle Management Platforms

Forrester Wave Application Lifecycle Management 2012

Gartner Market Share Analysis, Application Integration Management Software

Cloud to strategically reinvent customer relationships.

Leader in Customer Analytics Solutions

Forrester Wave on Customer Analytics Solutions 2012

Forrester Wave Big Data Predictive Analytics Solutions 2013

Cloud to share expertise among customers, employees and partners.

Leader in Worldwide Enterprise Social Software

IDC Enterprise Social Software Vendor Shares 2012

Gartner Magic Quadrant for Social Software in the Workplace 2012

Cloud to access new services that improve business processes.

Leader in BPO

Gartner Magic Quadrant for CMCC BPO WW 2012

Gartner Magic Quadrant for Finance and Accounting BPO 2013

IDC Comprehensive HR BPO MarketScape 2012

Cloud to transform responsiveness of IT infrastructure.

Leader in Data Center Outsourcing and Infrastructure Utility Services

Gartner DCO and IUS Magic Quadrant, 2013 (Leader in 3 separate geographies—NA, EU and APAC)

Leader in automated, highly standardized infrastructure services, provisioned on demand

Gartner Magic Quadrant for Cloud Infrastructure Services 2013

Can you Innovate and Change Behavior?

Cloud computing is delivering measurable results

Capability attributes	From	To
Server/storage utilization	10-20%	70-90%
Test provisioning	Weeks	Minutes
Change management	Months	Days/hours
Release management	Weeks	Minutes
Metering and billing	Fixed cost	Variable cost
Service catalog ordering	Months	Days/hours
Service access	Administered	Self service
Payback period for new services	Years	Months

Virtualization

**Standardization**

Automation

Journey to cloud

SOURCE: Based on IBM and client experience.

Nine steps to successful adoption of cloud computing

Practical Guide for Cloud Computing – published October 2011

- Assemble your (cloud consumer) decision team

- Develop Business Case and an Enterprise Cloud Strategy

- Select Cloud Deployment model(s)

- Select Cloud Service model(s)

- Determine who will Develop, Test and Deploy the Cloud Services

- Develop a Proof-of-Concept before Moving to Production

- Integrate (Cloud Solution(s)) with Existing Enterprise Services

- Develop and Manage Service Level Agreements (SLA)

- Manage the Cloud Environment
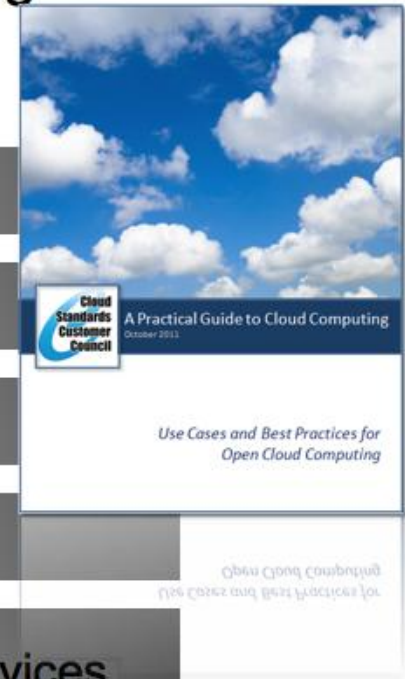
A Practical Guide to Cloud Computing
October 2011

Use Cases and Best Practices for
Open Cloud Computing

Cloud Computing Defined

Business requirements generate workloads to be delivered on the cloud

Business Requirements

Cloud Workloads

Figure 1 - Cloud Workload Types (Resource: www.cloudbook.net)

Drive
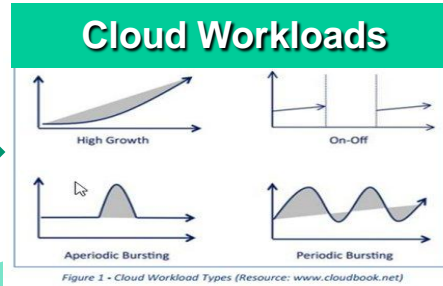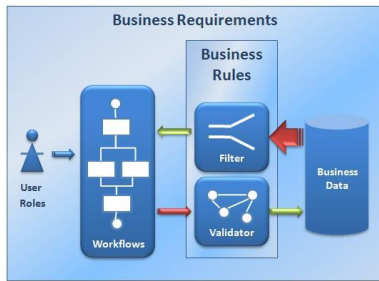
Essential characteristics:

1. On-demand self-service
2. Broad network access
3. Location independent resource pooling
4. Rapid elasticity
5. Measured Service

Delivered by the ideal…

Cloud Service Models

IaaS	PaaS	SaaS
Infrastructure as a Service	**Platform as a Service**	**Software as a Service**
Servers, Storage, Systems and Services Mgmt, Networking	*Middleware, Runtimes, Development Tools, Integration*	*Applications, Business Processes, Services*

Cloud Deployment Models

Traditional IT	Private Cloud	Managed Private Cloud	Hosted Private Cloud	Shared Private Cloud	Public Cloud
Enterprise Data Center	Enterprise Data Center	Enterprise Data Center	Enterprise	Enterprises	Users
		IBM operated	IBM hosted & operated		

Hybrid Cloud

What is a Workload?

Businesses are using cloud to rethink IT and reinvent business

Traditional on-premises	Infrastructure as a Service	Platform as a Service	Software as a Service
Application	Application	Application	Application
(Meta) Data	(Meta) Data	(Meta) Data	(Meta) Data
Runtime	Runtime	Runtime	Runtime
Middleware	Middleware	Middleware	Middleware
Operating system	Operating system	Operating system	Operating system
Virtualization	Virtualization	Virtualization	Virtualization
Servers	Servers	Servers	Servers
Storage	Storage	Storage	Storage
Networking	Networking	Networking	Networking

Customization; higher costs; slower time to value

Standardization; lower costs; faster time to value

Customer Workload xxx

Which cloud deployment model would you be most likely to employ as a <u>first step</u> for Workload xxx?

(Please select one)

Enterprise data center **Traditional**	Enterprise data center **Private cloud**	Enterprise data center **Managed private cloud**	Enterprise **Hosted private cloud**	Enterprise A B **Shared cloud services**	Users A B **Public cloud services**
◎	◎	◎	◎	◎	◎

What are the motivations for considering Cloud for Workload xxx?

Please allocate a total of seven (7) points across the motivators that apply to this workload)

Decrease Capex	Decrease Opex	Decrease TCO	Disaster Recovery	Faster Deployment	Improve availability	Improve Security	Improve Utilization	Increase Flexibility	Simplify Management
☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

Which of the following represent the greatest barrier to adoption of cloud for Workload xxx in your organisation?

(Please allocate a total of seven (7) points across the barriers that apply to this workload)

Cost prohibitive	Cultural Impact	Difficult to Integrate	Doubt ROI	Immature Technology	Inability to Meet SLAs	Lack of Skills	Less Availability	Security	Vendor Lock-in
☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

Generally speaking are you using in-house or external providers to deliver these services today?

(Please select one)

In-house	External vendors	Combination of both
◎	◎	◎

1

Target workloads ...

Focus on workloads ready for cloud

DevOps

Disaster Recovery

Archive

Database Workloads

Collaboration

Ready for Cloud

Risk & Compliance

Web Applications

Mature workloads

Isolated workloads

Big Data & Analytics

e-Commerce

Customer Service

Mobile

Applications with Sensitive Data

May be ready for Cloud

Front Office / Desktop

Social Business

3rd Party Applications

Development & Test Workloads

ERP / CRM

Applications with complex processes & transactions

Regulation Intensive Applications

High Performance Computing

Compute Workloads

Not Ready for Cloud

Highly customized applications

Information Intensive Applications

Business Processes (e.g. Expense Reporting) Storage Workloads

Not yet virtualized applications

Batch processing
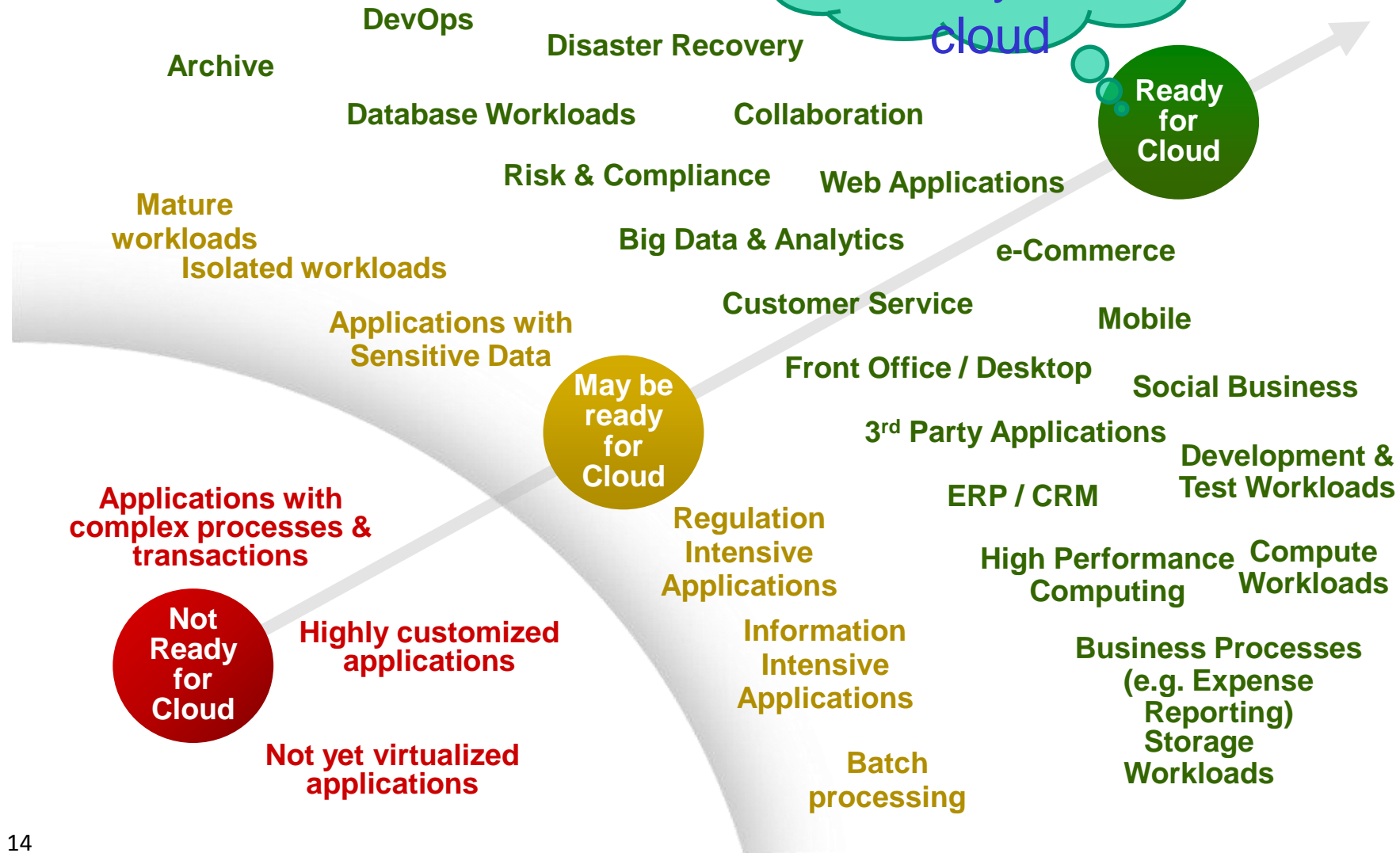
Heat map assessment of capabilities -- Sample

Advanced IaaS services integrated with ITIL processes

| Problem & Incident Management | IT Asset Management | License Management | Change & Configuration Management | Service Desk | Release Management |

④

Advanced IaaS Services

| Storage Provisioning & Automation Management | Network Provisioning & Automation Management | Services Orchestration | Hybrid Cloud Integration | Advanced security (identity and access, security information and events mgmt) |

③

Cloud Governance

| Virtualised Infrastructure Monitoring | Capacity Management and Planning | Event Management | Patch Management | Endpoint Compliance & Management | Backup & Restore |

②

Simple IaaS Services (VMs)

| VM provisioning & On-boarding | Cloud Management | Role & Authentication Management | VM Image Construction | Image Management | Usage metering, accounting & chargeback |

①

Increasing Capability

■ Absent capability ■ Basic capability ■ Managed capability ■ N/A capability
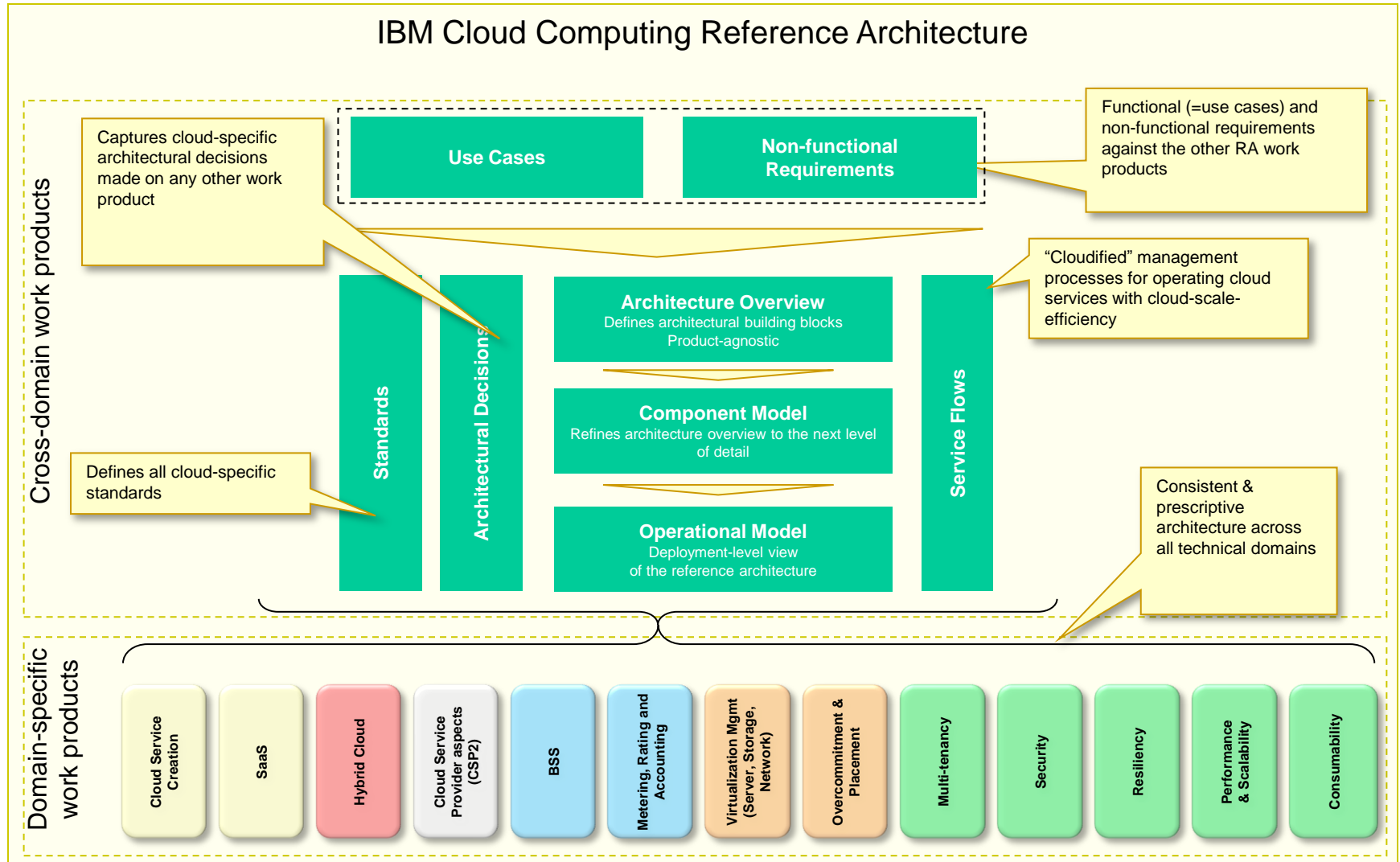
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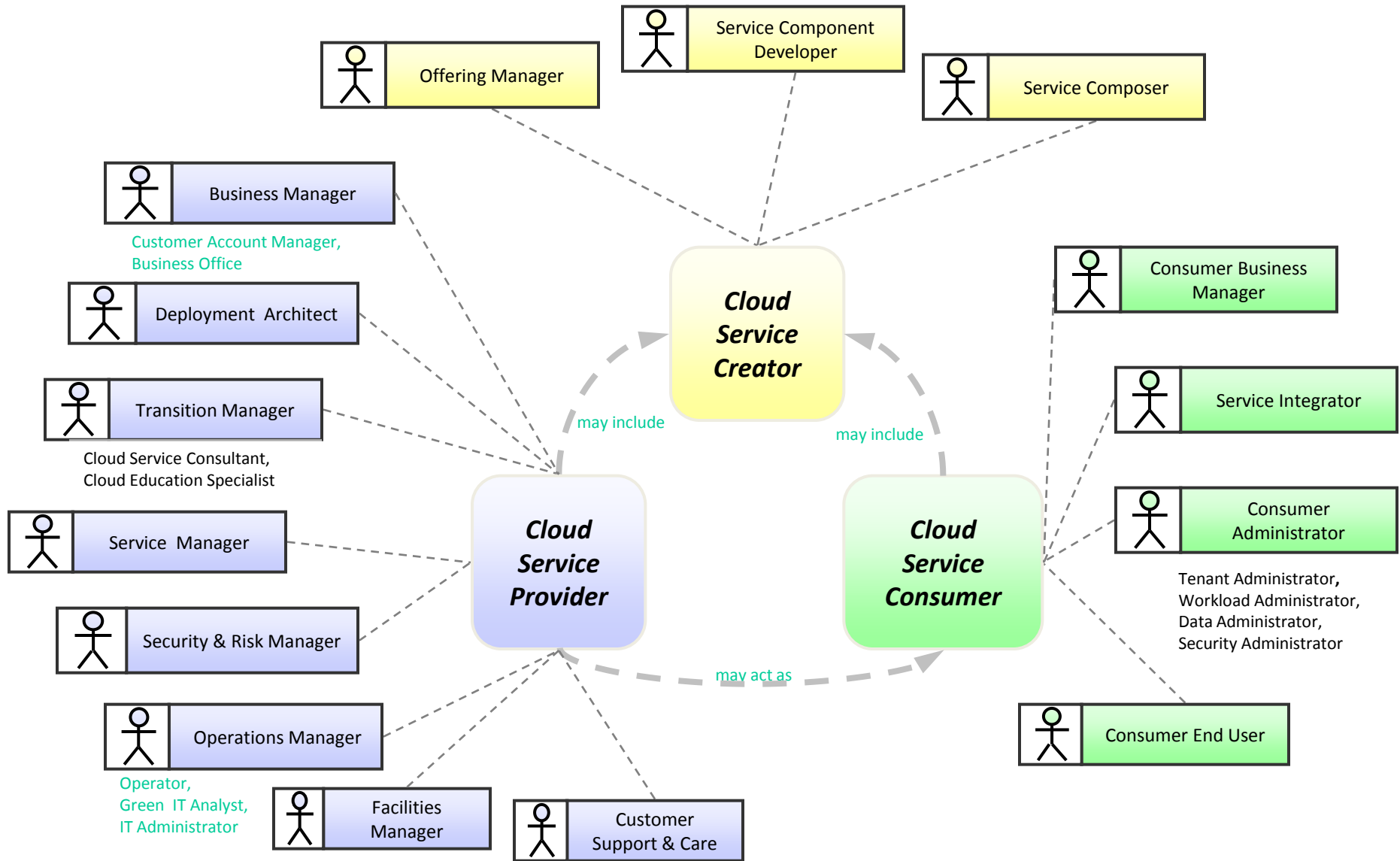# *Considerations For Selecting Deployment Options*

- How self-contained is the workload

- How stable is the workload usage

- How standardized can the underlying infrastructure be

- How standardized is the workload itself

- How differentiated is the workload (is it a source of competitive advantage?)

- Is the workload currently available as an application or business process on the cloud

- Was the workload designed for the cloud (standardized and virtualized environment)

- What are the data transfer requirements for the workload

- How large is the benefit of data pooling or ecosystem for this workload

- What are the security and data restrictions for this workload (that may prevent use of public cloud)

IBM Cloud Computing Reference Architecture (CCRA) to Build Best Practice Cloud Solutions
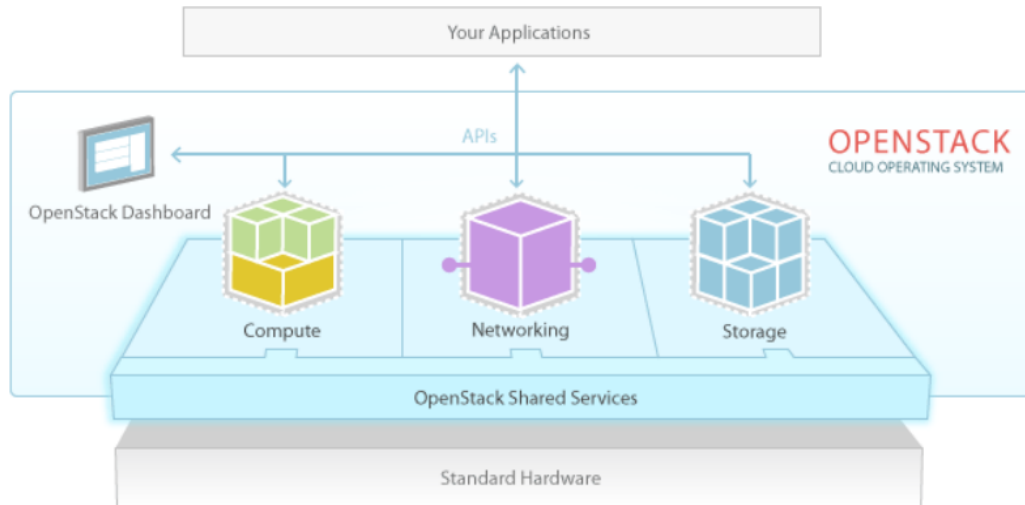
Cloud Roles provides the basis for functional requirements

Service Component Developer

Offering Manager

Service Composer

Business Manager

Customer Account Manager, Business Office

Deployment Architect

Transition Manager

Cloud Service Consultant, Cloud Education Specialist

Service Manager

Security & Risk Manager

Operations Manager

Operator, Green IT Analyst, IT Administrator

Facilities Manager

Customer Support & Care

Cloud Service Creator

Cloud Service Provider

Cloud Service Consumer

may include

may include

may act as

Consumer Business Manager

Service Integrator

Consumer Administrator

Tenant Administrator, Workload Administrator, Data Administrator, Security Administrator

Consumer End User

OpenStack provides Standardized Infrastructure Services

OpenStack is a global collaboration of developers & cloud computing technologists working to produce an ubiquitous Infrastructure as a Service (IaaS) open source cloud computing platform for public & private clouds.
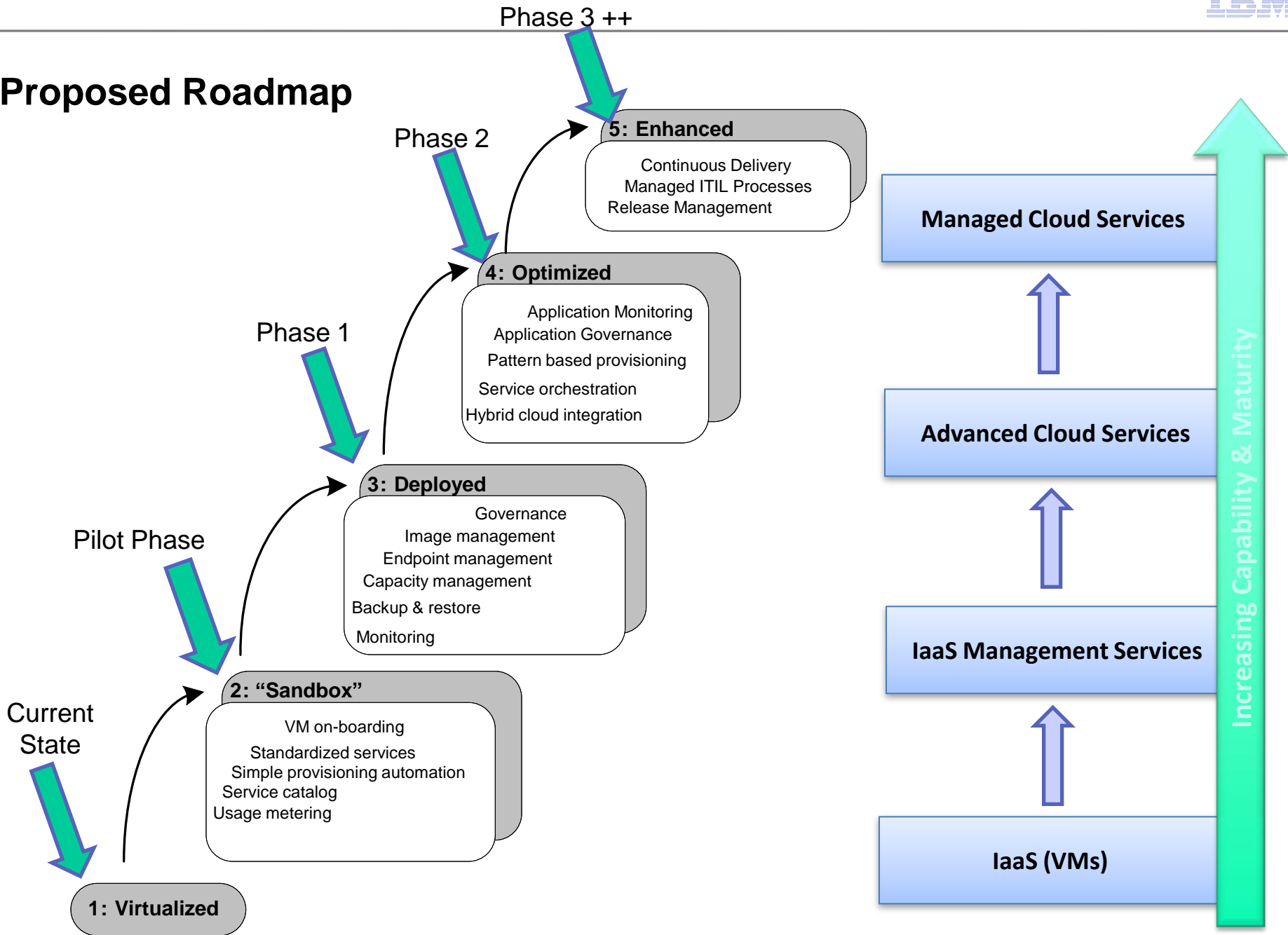
openstack™

Your Applications

APIs

OPENSTACK
CLOUD OPERATING SYSTEM

OpenStack Dashboard

Compute   Networking   Storage

OpenStack Shared Services

Standard Hardware

Platinum Sponsors

nebula
rackspace
suse   IBM   hp   at&t   ubuntu
AT&T   redhat

Gold Sponsors

CISCO   YAHOO!   DreamHost
NetApp
MIRANTIS   MORPHLABS   vmware
NEC   cloudscaling
intel   DELL

Exponential growth in participation

As of APR 2012   150 Contributors   739 Contributors   As of Feb 2013

2600 Individuals   6967+ Individuals

OpenStack Compute (core)
Provision and manage large networks of virtual machines

OpenStack Object Store (core)
Create petabytes of secure, reliable storage using standard HW

OpenStack Dashboard (core)
Enables administrators and users to access & provision cloud-based resources through a self-service portal.

OpenStack Image Service (shared service)
Catalog and manage massive libraries of server images

OpenStack Identity (shared service)
Unified authentication across all OpenStack projects and integrates with existing authentication systems.

Code available under Apache 2.0 license. Design tenets – scale & elasticity, share nothing & distribute everything
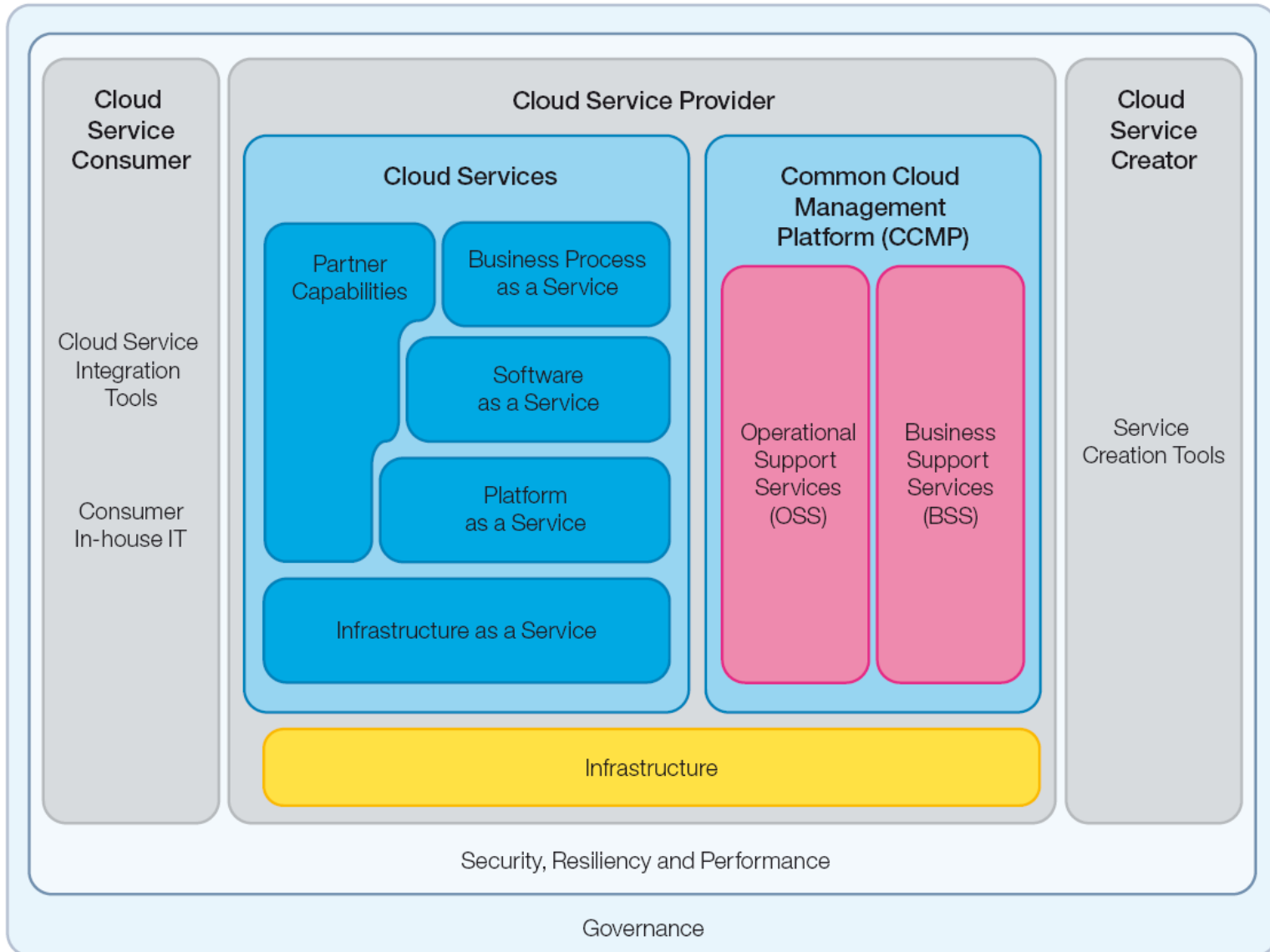
http://openstack.org

Proposed Roadmap

Phase 3 ++

5: Enhanced

Continuous Delivery
Managed ITIL Processes
Release Management

Phase 2

4: Optimized

Application Monitoring
Application Governance
Pattern based provisioning
Service orchestration
Hybrid cloud integration

Phase 1

3: Deployed

Governance
Image management
Endpoint management
Capacity management
Backup & restore
Monitoring

Pilot Phase

2: "Sandbox"

VM on-boarding
Standardized services
Simple provisioning automation
Service catalog
Usage metering

Current State

1: Virtualized

Managed Cloud Services

Advanced Cloud Services

IaaS Management Services

IaaS (VMs)

Increasing Capability & Maturity

Fred and Martha

Backup

Cloud capabilities to support requirements

Cloud Service Consumer
- Cloud Service Integration Tools
- Consumer In-house IT

Cloud Service Provider

Cloud Services
- Partner Capabilities
- Business Process as a Service
- Software as a Service
- Platform as a Service
- Infrastructure as a Service

Common Cloud Management Platform (CCMP)
- Operational Support Services (OSS)
- Business Support Services (BSS)

Infrastructure

Cloud Service Creator
- Service Creation Tools

Security, Resiliency and Performance

Governance

Workload Definitions

What are the top challenges in moving to cloud?

Lowest Weight

1. Doubt the savings/projected ROI numbers
2. Vendor lock-in
3. Ability to meet SLAs
4. IT organization is not structured to change processes and policies
5. Lack of staff skill sets
6. Issues with downtime/availability
7. Difficult to integrate with already installed technology
8. Cost prohibitive/price
9. Technology is immature at this time
10. Security concerns
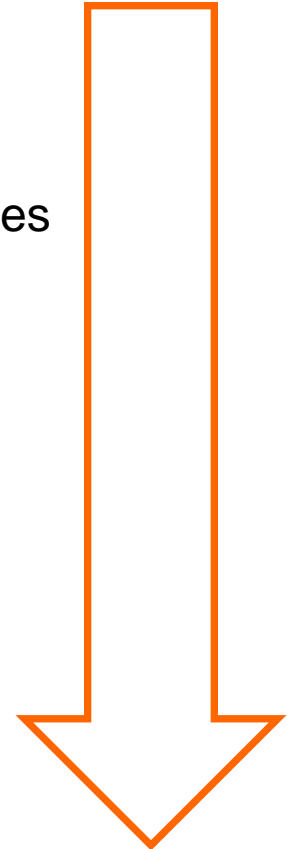
Prioritization for Customer?

Highest Weight

Source for list of motivators and barriers: IDC, Cloud Computing Attitudes

Analytics

Workload Definition

- Analysis of massive data sets in near real-time or batch mode

- Synthesising and generating new information and intelligence about the business

- Iterative exploration and investigation of past business performance to gain insight and drive business planning

Triggers prompting consideration of cloud delivery

- New analytical application initiatives

- Mergers & Acquisitions

- Not happy with the price / performance of the current BI solution

- Entire BI stack is being evaluated / standardized

Benefits of analytics through cloud delivery

- Drastically reduces the number of departmental solutions to a single BI environment capable of supporting vast numbers of users across the lines of business .

- Introduces a single point of control for meeting departmental business processes

- Corporate security and compliance standards for easier enforcement of standardization

- More effectively uses skilled BI resources to support a common BI delivery tool which can be made available across the enterprise

- Reduces the capital and operating expenses needed to support enterprise wide BI services

IBM Smart Analytics System
What's in the system?

Deeply optimized by IBM experts
Flexible growth to meet changing business needs

Analytics Software Options
- ☑ Business Intelligence capabilities
- ☑ Cubing Services
- ☑ Text Analytics & Data Mining
- ☑ . . . more to come

Powerful Data Warehouse
- ☑ Warehousing Platform
- ☑ Advanced Workload Management
- ☑ System Automation

Hardware & Services
- ☑ Server Platform
- ☑ Storage capacity
- ☑ Build, Deploy, Health Check & Premium Support Services

Delivering results in days instead of months!

Collaboration

Workload Definition

A set of online collaboration tools provided to organizations often via a web browser.

- The tools include but are not limited to:

  • E-mail,

  • Collaboration,

  • Presence and instant messaging,

  • Web conferences,

  • File sharing,

  • Enterprise social networking.

Triggers prompting consideration of cloud delivery

- Complexities, high cost of enforcing compliance with standard desktop environment

- Mobile and/or geographically distributed workforce

Benefits of collaboration through cloud delivery

- Work beyond the boundaries of a single company & outside firewalls

- Share information more easily with customers, suppliers and business partners

- Securely connect from anywhere, anytime via a Web browser and internet connection

- Affordable and accessible

- Lower upfront investment

- No IT staff required for implementation

- Extremely easy to acquire

- Work-ready integrated business applications

Analytics | Collaboration | Development and Test | Desktop and Devices | Infrastructure Compute | Infrastructure Storage

Collaboration Services

Web Conferencing	Collaboration	eMail
LotusLive Meetings *A full-featured, easy to use Web conferencing service*	**LotusLive Engage** *An integrated suite of tools that combines your business network with collaboration and conferencing services*	**LotusLive Notes** *IBM's flagship Lotus Notes email, calendar, contact management and instant messaging, hosted.*
LotusLive Events *Provides tools to create, manage and conduct webinars for up to 999 attendees*	**LotusLive Connections** *Combines your business network with collaboration services*	**LotusLive iNotes** *Web-based e-mail, personal calendar and contact management*

Development and Test
DR/QA

Analytics | Collaboration | Development and Test | Desktop and Devices | Infrastructure Compute | Infrastructure Storage
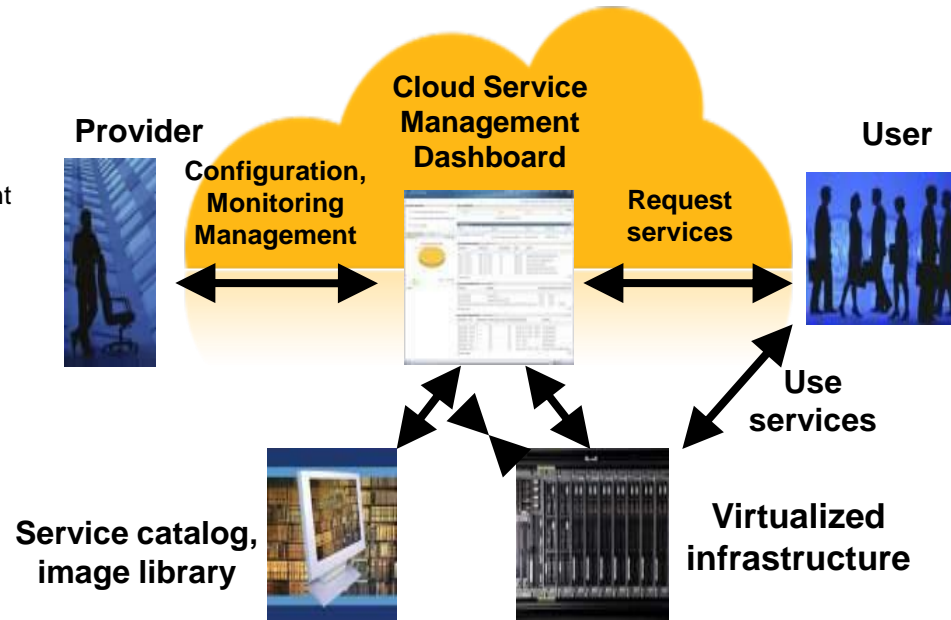
Workload Definition

- Project environments that are used for all phases of the Software Development Life Cycle (SDLC) except production

- Development environments are used to conduct activities to design and build applications

- Test environments are used for various testing levels, including system integration, security, high availability, and user acceptance

- Development and Test environments generally occupy 30-80% of the entire data centre infrastructure. They are volatile and subject to frequent changes hence require very high level of service management.

Triggers prompting consideration of cloud delivery

- Poor utilization of existing assets as well as an increase in hardware expenses and software license costs

- High cost of labor for configuration, operations, management, and monitoring

- Long testing cycles make it difficult to be competitive in tough economic times

- Configuration errors lower overall solution quality

- Increasing testing complexity

Benefits of development and test delivery via the cloud

- Reduce IT labor cost by 50% - reduce labor for configuration, operations, management, and monitoring of the environment

- 75% + Capital utilization improvement; Significant license cost reduction

- Reduce provisioning cycle times from weeks to minutes

- Reduce risk and improve quality- eliminate 30% + of all defects that come from faulty configurations

Provider

Cloud Service Management Dashboard

Configuration, Monitoring Management

Request services

User

Use services

Service catalog, image library

Virtualized infrastructure

Desktop and Devices

Analytics   Collaboration   Development and Test   Desktop and Devices   Infrastructure Compute   Infrastructure Storage
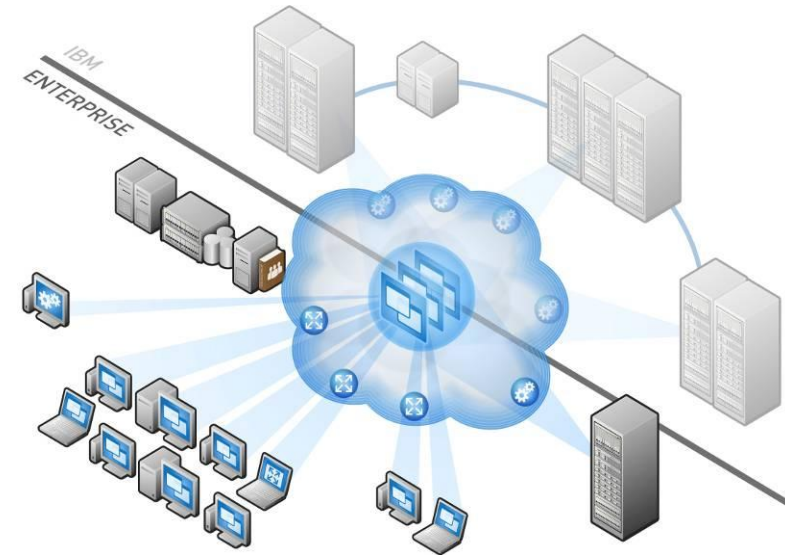
Workload Definition

- The system and application software that runs in a desktop or laptop computer or pervasive devices such as mobile phones, organiser etc.
- Typical examples are:
    - word processors,
    - spreadsheets,
    - media players,
    - database applications,
    - industry and/or organisation specific applications designed to be executed on the desktop or laptop (thick client applications).

Triggers prompting consideration of cloud delivery

- Complexities and high cost of enforcing compliance with standard desktop environment
- Mobile and/or geographically distributed workforce
- Extending refresh cycle

Benefits of desktop and devices through cloud delivery

- Improve end-user productivity
- Reduce end-user support complexity and costs
- New green/ energy savings
- Little to no capital or one-time expense
- Highly secure hosting model
- Fast provisioning

Compute - Production

Analytics **Collaboration** **Development and Test** **Desktop and Devices** **Infrastructure Compute** **Infrastructure Storage**

Workload Definition

- A business computing model that allows companies to obtain access to computing resources as they become necessary.

- Provides packaging of computing resources, such as computation and storage, as a metered service similar to a traditional public utility (such as electricity, water, natural gas, or telephone network).

Triggers prompting consideration of cloud delivery

- Required variable & dedicated server capacity for a limited period of time

Benefits of compute capacity through cloud delivery

- Resources provisioned in minutes versus days

- Dynamic response to resource demand with elastic scalability

- Consumption based usage charges

Infrastructure Compute

Service A   Service B

E.g. Development / test cloud, Compute cloud