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Leveraging Cloud Platform Services for Effective Software Delivery

Chandra Venkatapathy
Sr. Product Manager, Rational

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Performance is based on measurements and projections using standard IBM benchmarks in a controlled environment. The actual throughput or performance that any user will experience will vary depending upon many factors, including considerations such as the amount of multiprogramming in the user's job stream, the I/O configuration, the storage configuration, and the workload processed. Therefore, no assurance can be given that an individual user will achieve results similar to those stated here.

Agenda

- The case for platform services

- SmartCloud Application Services

- Collaborative Lifecycle Management Service

- Demos

- Summary

Design, deployment and management of software platforms are time consuming and costly in today's IT environment

- **High cost** of governing and managing the delivery of enterprise software across global teams
- **Inefficient use of enterprise resources**:
  - Average lead time to get a new application environment up and running is weeks - months
  - Poor utilization rates of application testing infrastructure, typically 10-20%
- **Insufficient collaboration** among Dev/Ops team results in error-prone services
  - 30% of bugs are introduced by inconsistent configurations
- **Limited IT agility** results in business needs not being met
  - Static middleware infrastructure doesn't react well to spikes in demand, jeopardizing SLAs
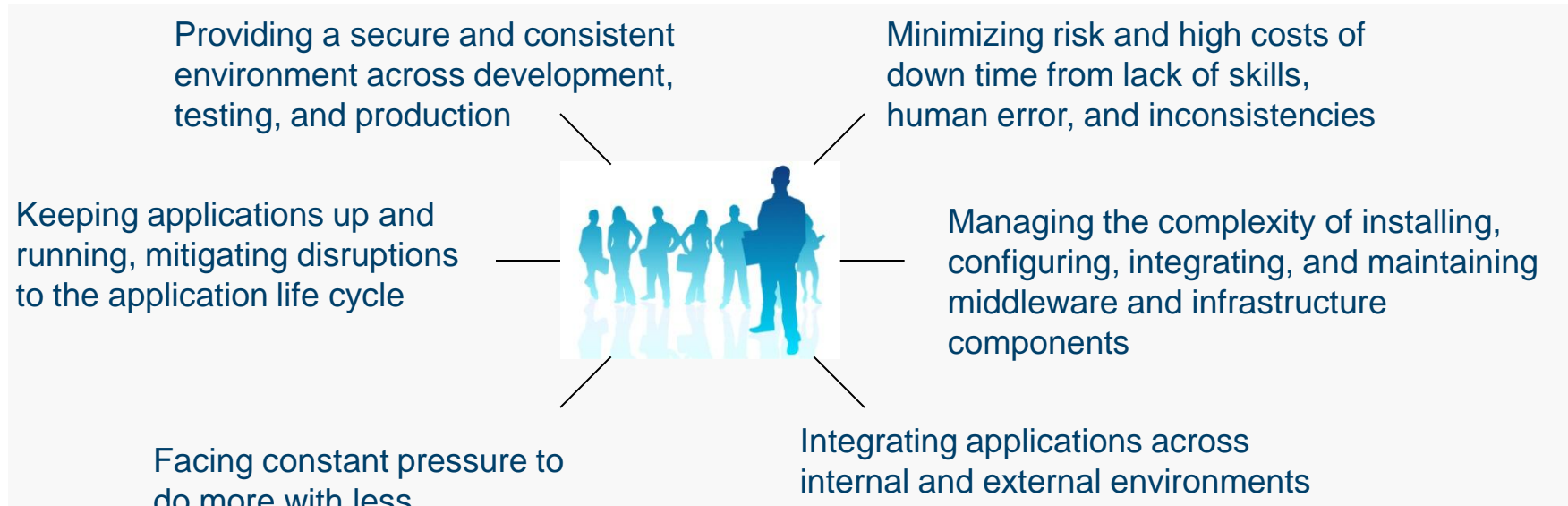 - Long lead time to introduce new services to address growth opportunities

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Organizations looking to optimize across the application lifecycle recognize the need for enhanced innovation and speed to market

Enterprises and ISVs application lifecycles

Project Initiation	Requirement Analysis	Design & Development	Shared Resource Activation	Deployment	Integrate	Production

Applications for internal use or resale

Yet IT resources are focused on covering the basics, leaving fewer resources to support business agility

Providing a secure and consistent environment across development, testing, and production

Minimizing risk and high costs of down time from lack of skills, human error, and inconsistencies

Keeping applications up and running, mitigating disruptions to the application life cycle

Managing the complexity of installing, configuring, integrating, and maintaining middleware and infrastructure components

Facing constant pressure to do more with less

Integrating applications across internal and external environments

The solution? Platform as a Service (PaaS) . . .

Virtual System Pattern Editor

Deploys to ESX hypervisors.   Last updated on Mar 28, 2011 2:10:28 PM | Ordering | Advanced Options

Deployment manager
7.0.0.17

WebSphere Application Server Samples

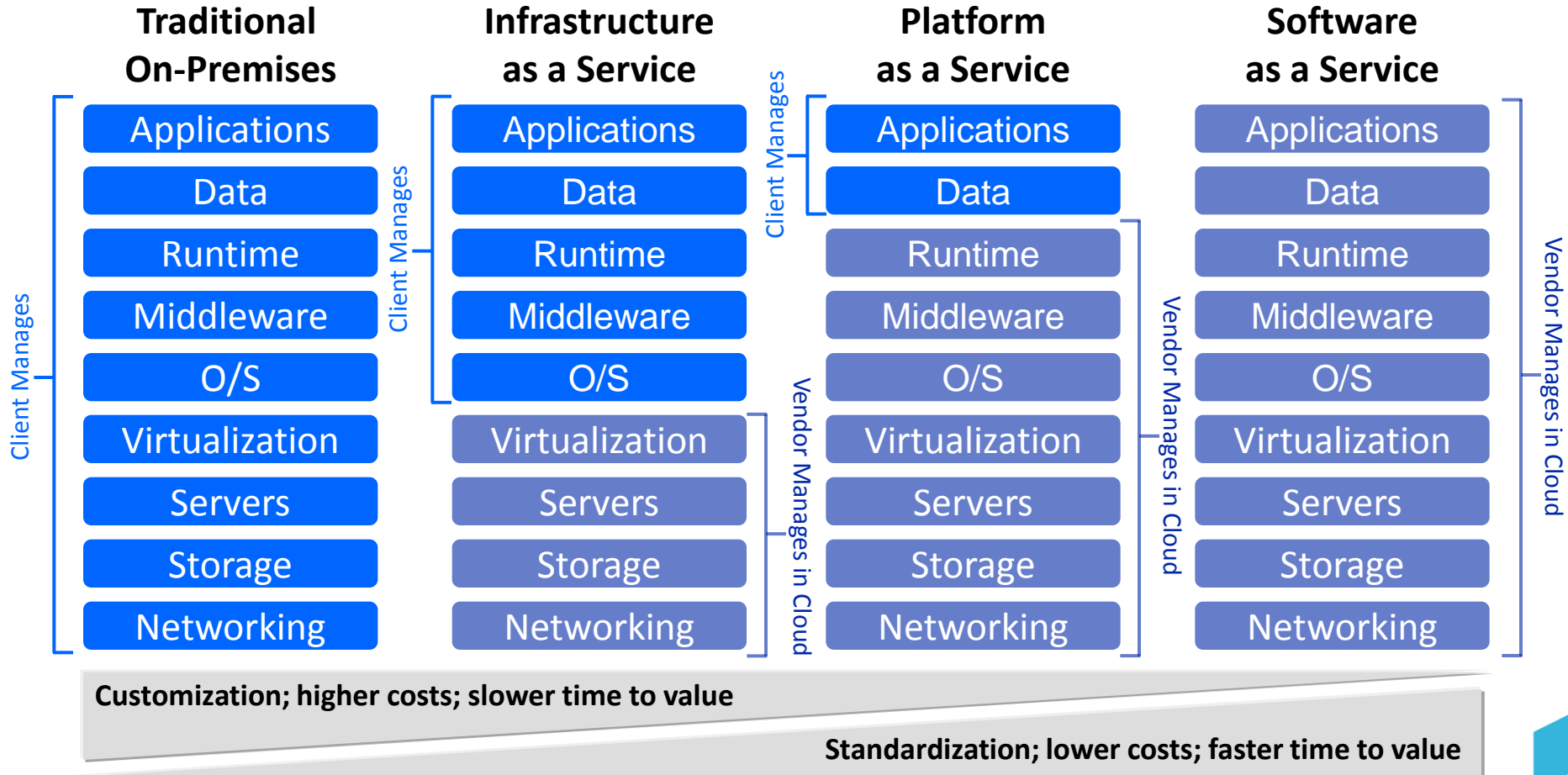4 — Custom nodes
7.0.0.17

2 — On demand routers
7.0.0.17

2 — IBM HTTP servers
7.0.0.17

The following points of customization are exposed:
- Middleware version number
- Initial number of nodes
- Arbitrary script package execution

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PaaS: Cloud services that improve application development and deployment economics and speed, *while maintaining the ability to differentiate at the application layer*

Traditional On-Premises	Infrastructure as a Service	Platform as a Service	Software as a Service
Applications	Applications	Applications	Applications
Data	Data	Data	Data
Runtime	Runtime	Runtime	Runtime
Middleware	Middleware	Middleware	Middleware
O/S	O/S	O/S	O/S
Virtualization	Virtualization	Virtualization	Virtualization
Servers	Servers	Servers	Servers
Storage	Storage	Storage	Storage
Networking	Networking	Networking	Networking

Client Manages (Traditional On-Premises)

Client Manages / *Vendor Manages in Cloud* (Infrastructure as a Service)

Client Manages / *Vendor Manages in Cloud* (Platform as a Service)

Vendor Manages in Cloud (Software as a Service)

Customization; higher costs; slower time to value

Standardization; lower costs; faster time to value

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Say Again - What is PaaS vs. SaaS?

SaaS
Business Apps-aaS

PaaS
Middleware-aaS –
This includes Application Development & Deployment Services

IaaS
SmartCloud Enterprise
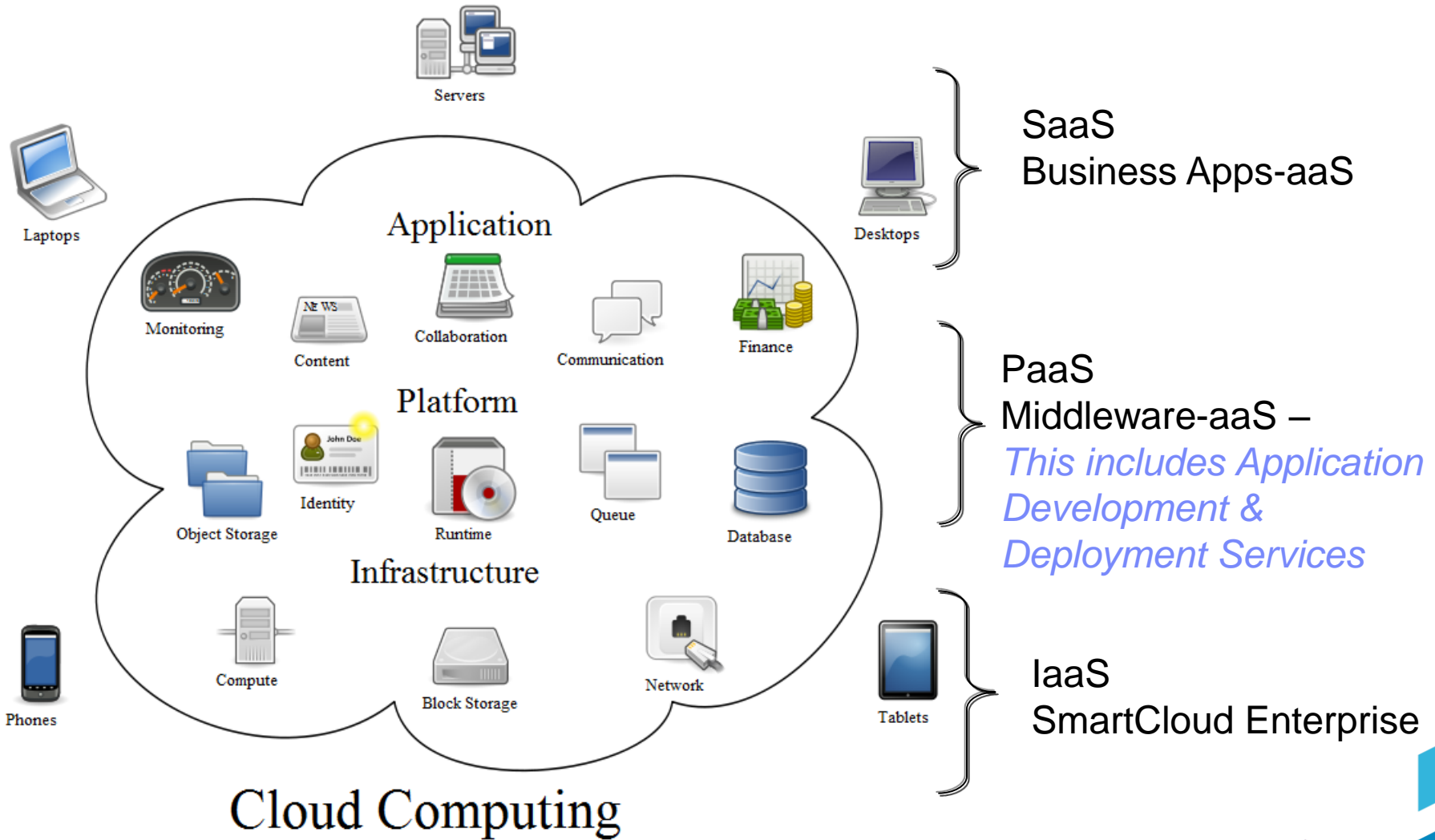
Image from Wikipedia "cloud computing"

IBM SmartCloud Categories
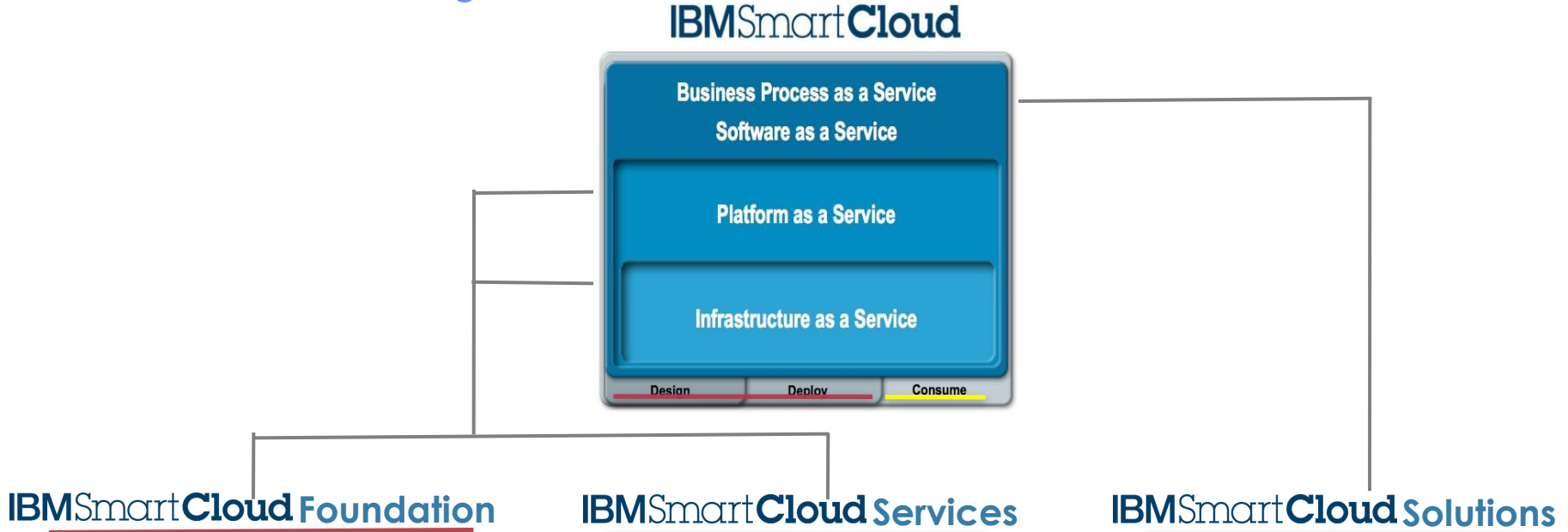
IBMSmart**Cloud**

Business Process as a Service

Software as a Service

Platform as a Service

Infrastructure as a Service

| Design | Deploy | Consume |

IBMSmart**Cloud** Foundation

Platform as a Service Technologies

| Application Lifecycle | Application Resources | Application Environments | Application Management | Integration |

Infrastructure as a Service Technologies

| Infrastructure Platform | Management and Administration | Security and Compliance | Usage and Accounting | Availability and Performance |

An integrated set of private cloud enablement technologies

IBMSmart**Cloud** Services

| Client Defined Services | IBM Services | Partner Services |

Application Services

| Application Lifecycle | Application Resources | Application Environments | Application Management | Integration |

Enterprise   **Enterprise+**

| Infrastructure platform | Management and support | Availability and performance | Security | Payment and billing |

An infrastructure and platform as a service designed for enterprise-class service delivery

IBMSmart**Cloud** Solutions

Business Process as a Service

| Business Analytics and Optimization | Social Business |
| Smarter Commerce | Smarter Cities |

New business and industry software as a service solutions

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9   9

IBM SmartCloud Foundation

An integrated set of technologies for enabling private/hybrid clouds and the virtualization, automation and management of service delivery.

- *Resilient to the velocity of changing business needs*

- *Choice & flexibility in hybrid environments*

- *Enterprise-class, workload-aware*

- *Built-in analytics for improved insight*

IBMSmartCloud Foundation

Platform as a Service Technologies

| Application Lifecycle | Application Resources | Application Environments | Application Management | Integration |

Infrastructure as a Service Technologies

| Infrastructure Platform | Management and Administration | Availability and Performance | Security and Compliance | Usage and Accounting |

❏Virtualized   ❏Standardized   ❏Automated

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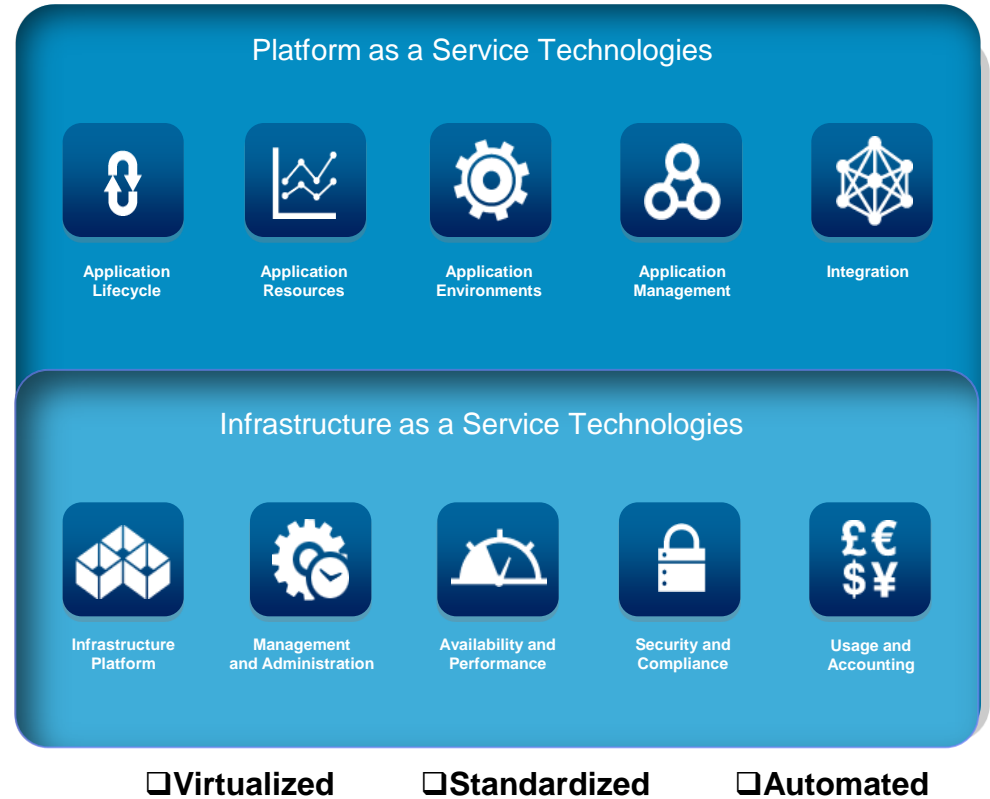
IBM SmartCloud Foundation: Easily build and rapidly scale private cloud environments with unparalleled time-to-market, integration and management

Platform as a Service Technologies

| Application Lifecycle | Application Resources | Application Environments | Application Management | Integration |

Infrastructure as a Service Technologies

| Infrastructure Platform | Management and Administration | Availability and Performance | Security and Compliance | Usage and Accounting |
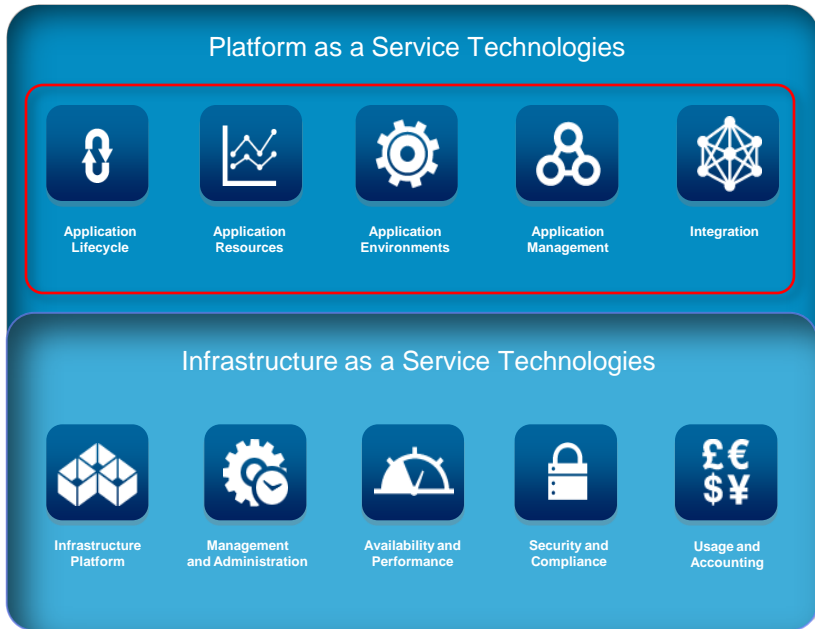
- ***IBM Workload Patterns***
  - *Application Runtimes*
  - *Application Lifecycle*
  - *Hybrid Integration*

- **Resilient** to the velocity of changing business needs

- Choice and **flexibility** in hybrid environments

- Enterprise-class, **workload aware** infrastructures

- **Built-in analytics** for improved insight and decision making

Workload Aware Clouds – Pattern Strategy

- **Workload Awareness**
  - Consistent framework for deploying and managing middleware and applications in cloud environments
    - Standardized patterns capturing best practices
    - Automated, workload aware deployment and management
    - Virtualized middleware content for cloud deployment

- **Deployment Flexibility**
  - Portable across deployment environments
    - Hosted and Managed environments
    - Heterogeneous Enterprise Systems
    - Expert Integrated Systems

Cloud Enabled Middleware

Pattern based deployment and management

Hosted and Managed Environments
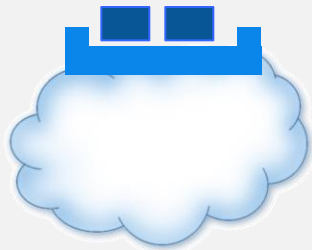
Heterogeneous Enterprise Systems

Expert Integrated Systems

x   p   z

IBM SmartCloud
Application Services
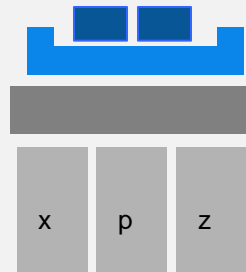
IBM Workload
Deployer
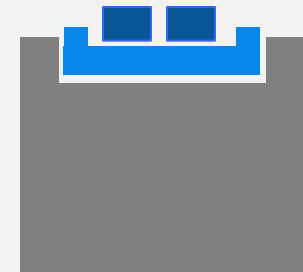
IBM PureApplication
System

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Virtual System Pattern

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Deployment manager
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WebSphere Application Server Samples

→

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←

2 On demand routers
7.0.0.17

↑

2 IBM HTTP servers
7.0.0.17

The following points of customization are exposed:
- Middleware version number
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Diagram | List View | Source

💾 Save | 💾 Save As | ▦ Layout | ↩ Undo | ↪ Redo   ⬓ Hints

Assets

Asset name

▾ **Application Components**

	Additional archive file
	Enterprise Application — WebSphere Application Server
	Existing Web Service Provider Endpoint
	Policy set
	Web Application — WebSphere Application Server

▾ **Database Components**

	Data Studio web console
	Database — DB2
	Existing Database — DB2
	Existing Database — Informix
	Existing Database — Oracle ⚠
	Existing IMS Database

▾ **Messaging Components**

	Existing Messaging Service — WebSphere MQ
	Queue — WebSphere MQ
	Topic — WebSphere MQ

▾ **OSGi Components**

| | Existing OSGi Bundle Repository |
| | OSGi Application — WebSphere Application Server |

▾ **Transaction Processing Components**

| | Existing CICS Transaction Gateway ⚠ |
| | Existing IMS TM |

➕ **Add policy for application**

Enterprise Application

Scaling Policy

Routing Policy

TradeLite

→ **Database**

TradeDB

Enterprise Application
WebSphere Application Server   ?

* Name:

TradeLite
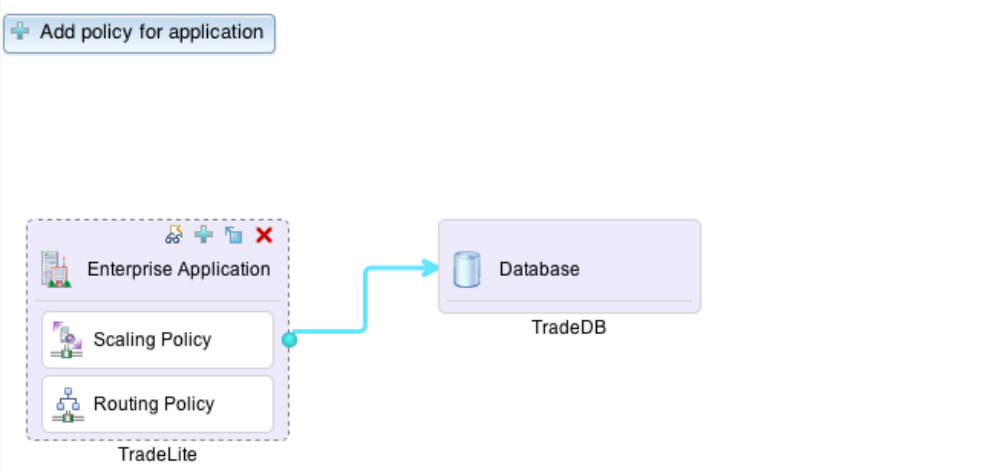
* EAR file:

artifacts/tradelite.ear [Edit] [Delete]

Total transaction lifetime timeout (seconds):

Async response timeout (seconds):

Client inactivity timeout (seconds):

Maximum transaction timeout (seconds):

Interim fixes URL:

Click select button to update

[Select ▾]

Ignore inapplicable ifix updates: ☐

Maximum Session Count:

▾ **Scaling Policy**
Web/Enterprise Application   ?

Enable session caching: ☑

Maximum Session Cache Grid Size:

UNCAPPED ▾

▾ Scaling Type

Response Time Based ▾

Scaling in and out when Web response time is out of threshold range(ms):

0 ─────────── 10000

Range: 1000 - 5000

* Instance number range of scaling in/out:

1 ─────────── 50

Range: 1 - 10

* Minimum time (seconds) to trigger add or remove:

Bringing it all together

Solutions via SaaS & BPaaS

Smarter Planet

Industry Solutions

Workloads

Dev/Test

Commerce

BPM

Analytics

Web Apps

Batch

API

IBM Cloud Solutions
Workload Aware PaaS

API

Public Cloud

x86

System p

Appliances

Hardware Accelerators

System z

Infrastructure aaS
Multi-platform Management & Integration
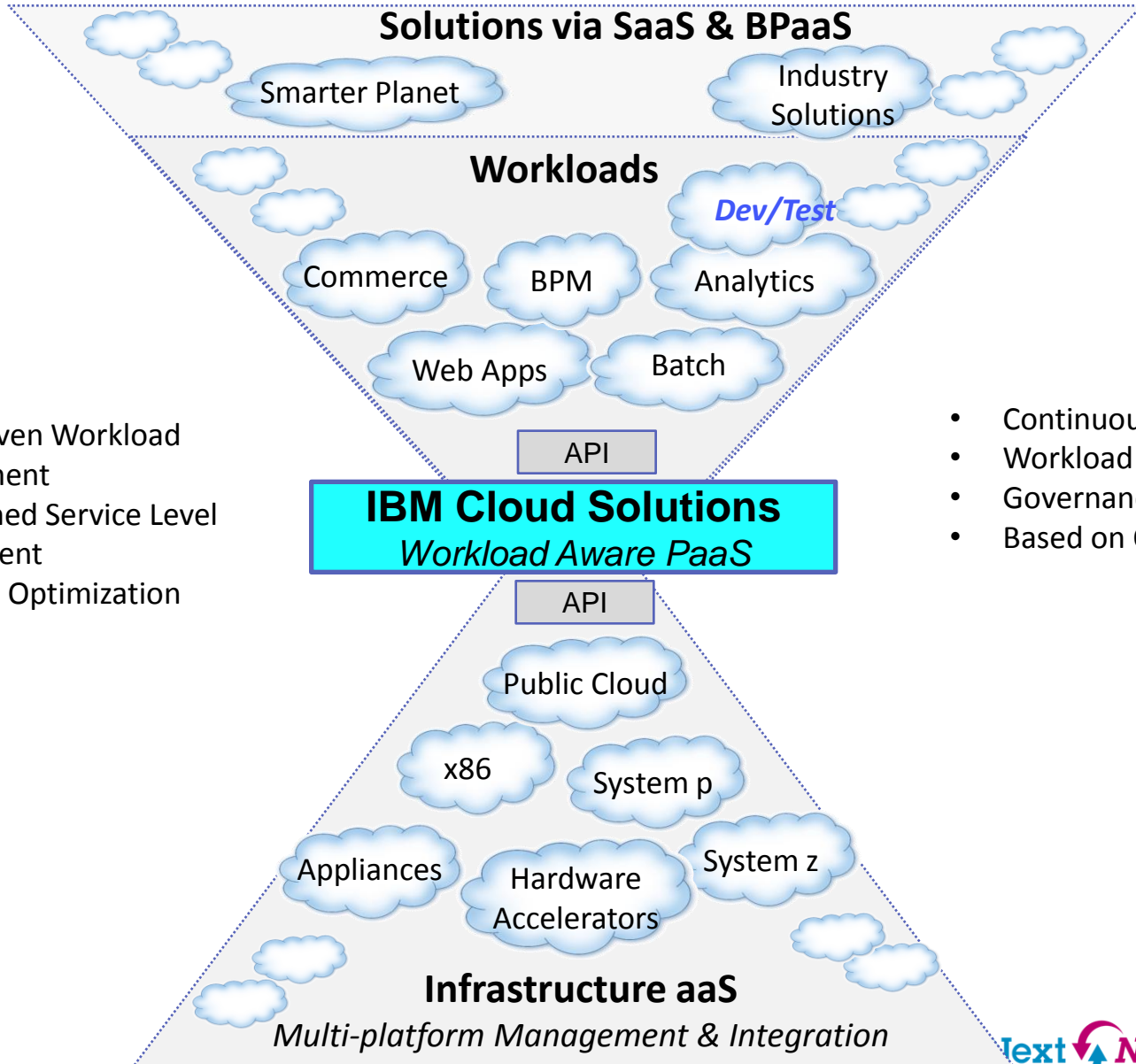
- Policy-driven Workload Management
- Fine-grained Service Level Enforcement
- Workload Optimization

- Continuous Availability
- Workload & Data Mobility
- Governance
- Based on Open Standards

Text NOW!

Clients have tried various approaches to close the gap

	Client-tuned Systems	Appliances	Cloud
Benefits	Flexibility Control	Simplicity Rapid Deployment	Agility Elasticity
Challenges	Time and Expense Required	Single Purpose	Shared Dependence
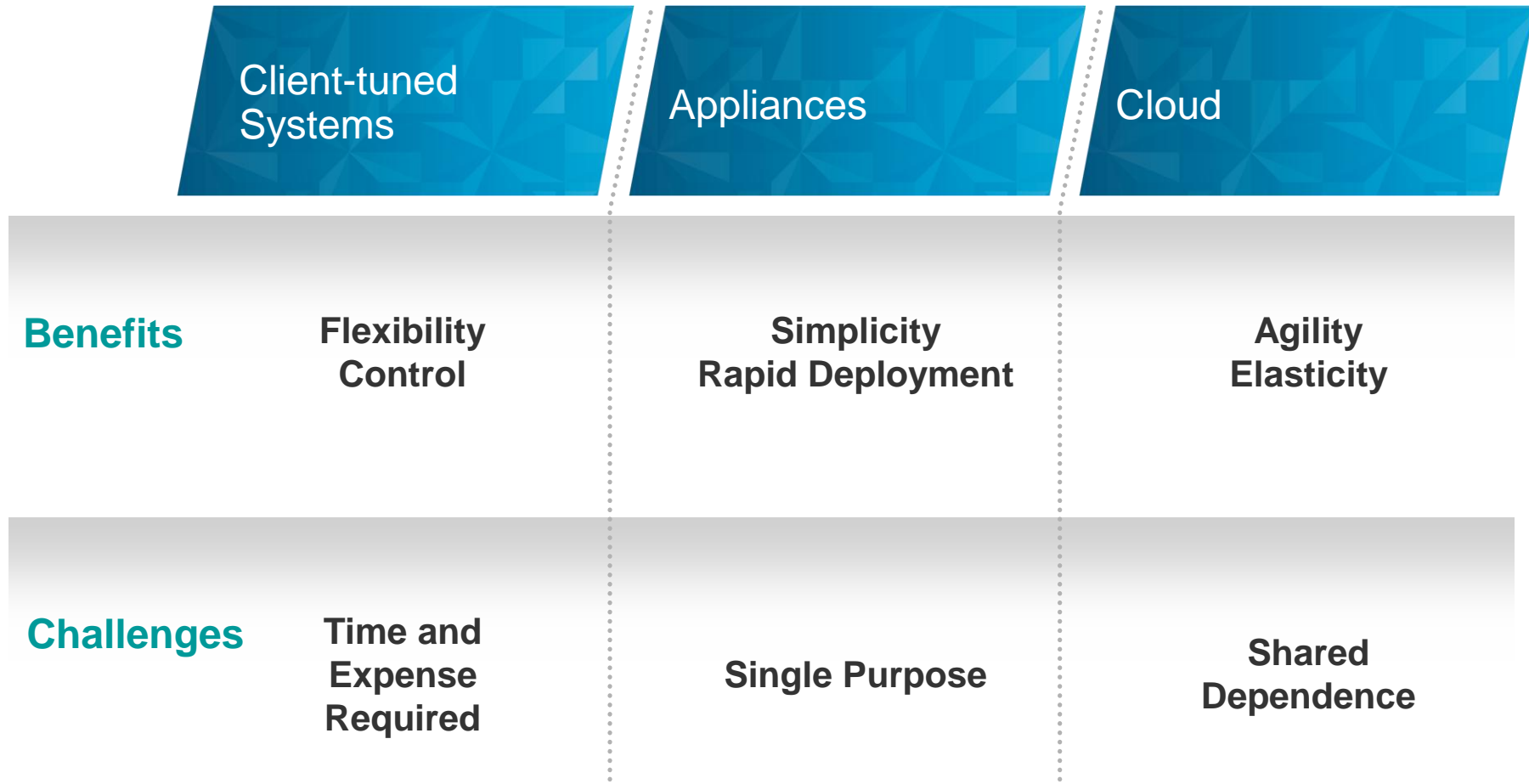
What if you could have the best of all three?

Can Cloud Address the Challenges of ALM Deployments?

Line of Business and Development Challenges

Inability of IT to react quickly to changing business needs

Every new project is a one-of-a-kind. Teams who install, configure and maintain ALM integrations often do so without knowledge of previous implementations.

Need to relearn processes as practitioners move between projects

Issues in providing global access to project resources

Difficult to react quickly to changes and ramp up new projects due to customization time, procurement issues and provisioning
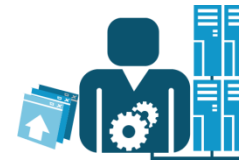
IT Challenges

Costly and complex to install, configure and maintain integrated ALM environments for multiple projects

Difficult to manage patches and licenses for globally distributed teams and projects

Need to ensure security of environments and applications across global dispersed teams, partners and contractors

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The SmartCloud service delivery platform enables you to leverage the Cloud with certainty…

Enterprise class **governance, administration and management** control

Multiple security and isolation options built into the virtual infrastructure and network

Real **business-centric SLAs** that align IBM accountability to your business

Workload portability across different delivery environments

Management support above the operating system including **disaster recover and integrated help desk**
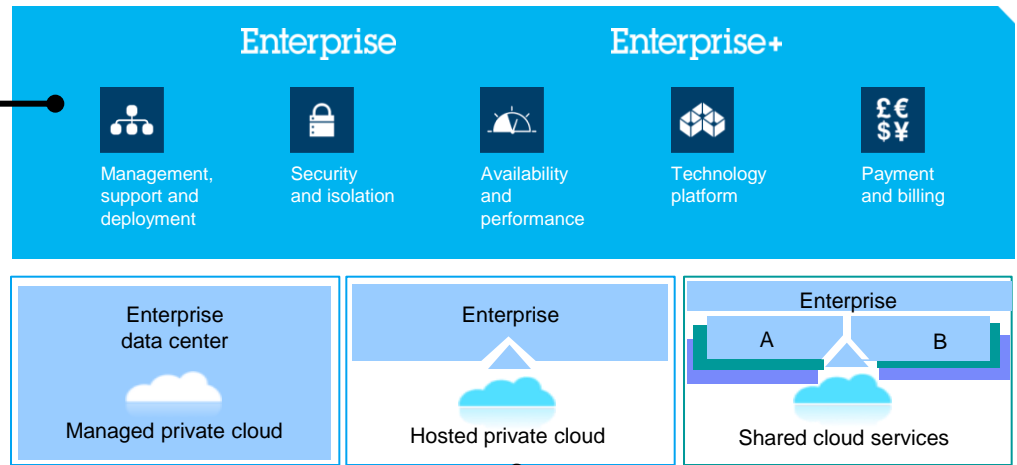
Multiple delivery models allow clients to **optimize against economics, integration, security and control.**

Rapid access to application services to achieve cloud-based economies and speed while maintaining differentiation through application customization

Accelerate and optimize deployment

Easy-to-administer and manage App deployments

Shared services to reduce the cost

Application Lifecycle

Application Resources

Application Environments

Application Management

Integration

SmartCloud Application Services

Ready-to-provision team-based development environments and capabilities

Integrate your cloud-delivered applications with other applications or resources on-premises or in the cloud

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An ALM solution powered by Jazz

Rational solution for Collaborative Lifecycle Management

CREATE SOFTWARE

Real-time Planning, Lifecycle Traceability, Team Collaboration, Development Intelligence, Continuous Improvement

Rational Requirements Composer	Rational Team Concert	Rational Quality Manager
Requirements Management	Planning, Change, Configuration & Build Management	Quality Management

*extensions

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Solution: IBM Rational Collaborative Lifecycle Management – *as a Service*

- Standardized, preconfigured, integrated, team-base agile development capabilities powered by Rational Jazz solutions
- Fully deployed, secure & resilient environment
- Walk-up self-service with rapid activation

SmartCloud Application Services

Collaborative Lifecycle Management Service

Rational Requirements Composer

Rational Team Concert

Rational Quality Manager

IBMSmartCloud Enterprise
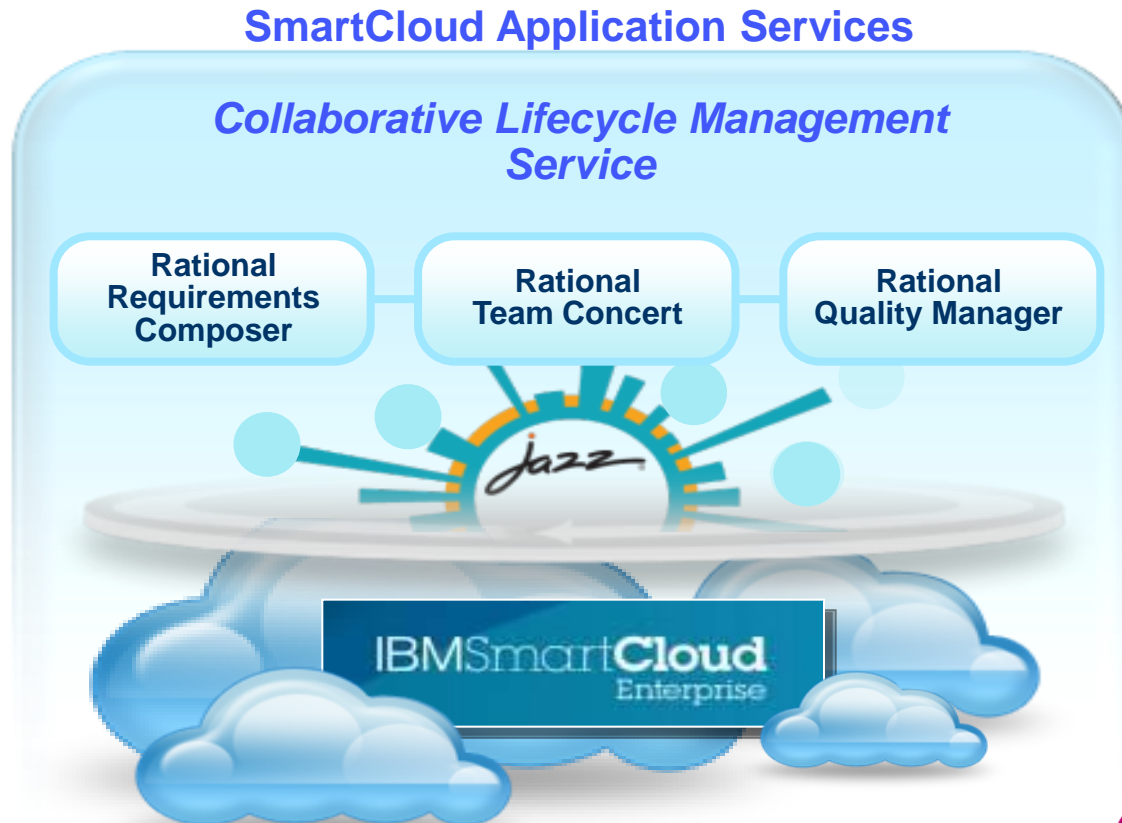
Example: Globally Distributed Development teams

SmartCloud Application Services

Collaborative Lifecycle Management Service

1 Self-provisions the service

Project Lead

2

Creates project, assigns users and roles

CLM Service

Engineers

3 Project members work with CLM using web or rich client interface

Plan
Collaborate
Build
Iterate
Test & Validate
Deliver

Next NOW!
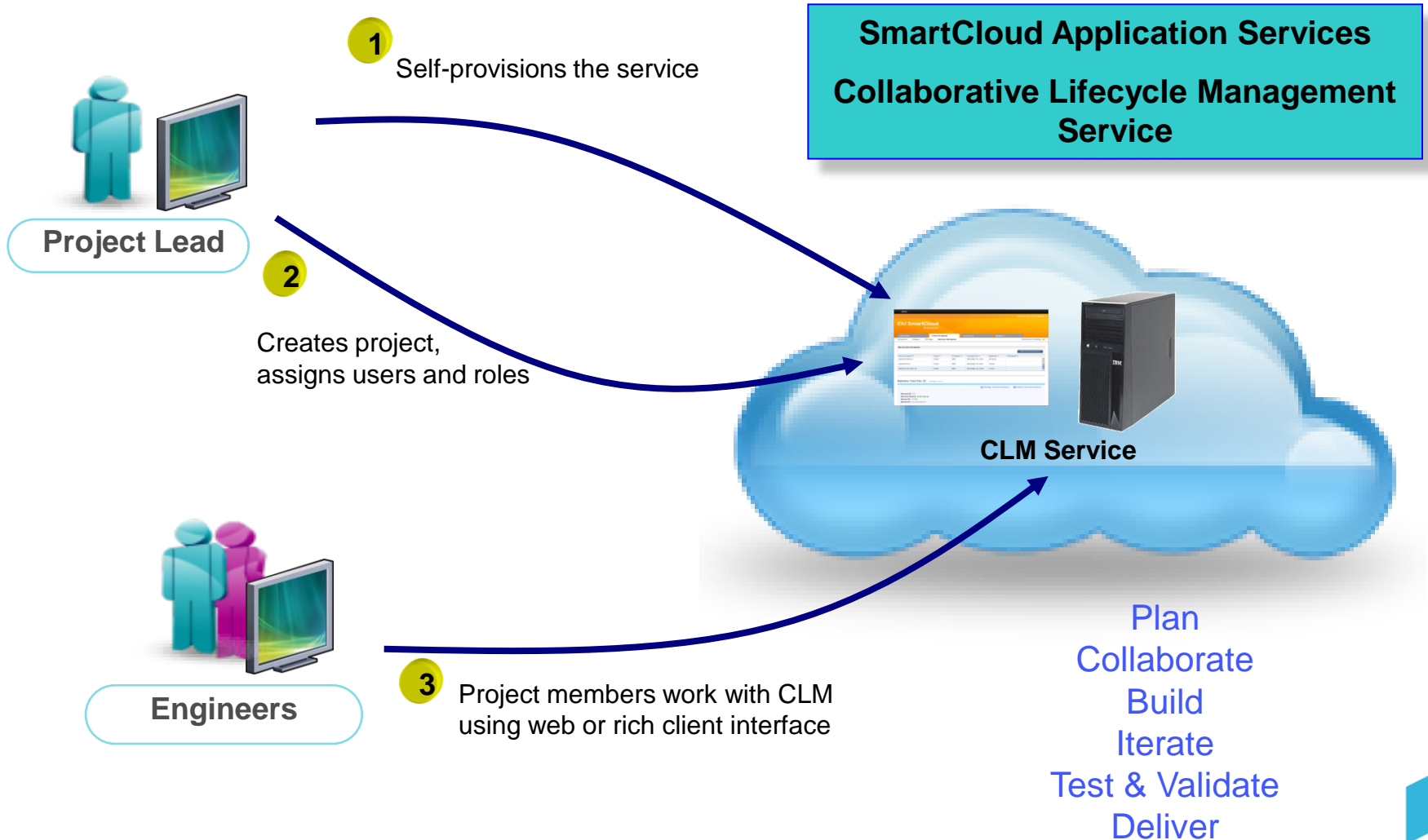
Benefits of CLM Service
Rapidly share, communicate and report - globally

- **Time to value**
  - Self-service model for instant-on productivity
  - Easy access to fully pre-configured solution, ready-to-use, from any site

- **Reduced deployment cost**
  - Eliminate costly on-premise deployments
  - Automated deployment and updates reduce effort

- **Control & Governance**
  - Improved visibility, consistency, and control of projects
  - Easy to manage user access and privileges
  - Software and Service updates deployed when you choose

- **Agility**
  - Usage-based billing
  - Scale up and down with project needs

Logging into SmartCloud Application Lifecycle Management

Choose the instance

Ready to use

IBM provides the platform services for achieving effective software delivery

Application Lifecycle

Rapidly activated, integrated, team-based development environments

Application Resources

Shared services to simplify the development, delivery and administration of cloud applications

Application Environments

Optimize deployment and management of applications based on common patterns

Application Management

Effective deployment and management of third party applications

Integration

Integrate enterprise applications through open, standards based, secure cloud platform

Reduce costs & complexity

Improve responsiveness

Deliver differentiated services

Capture new value
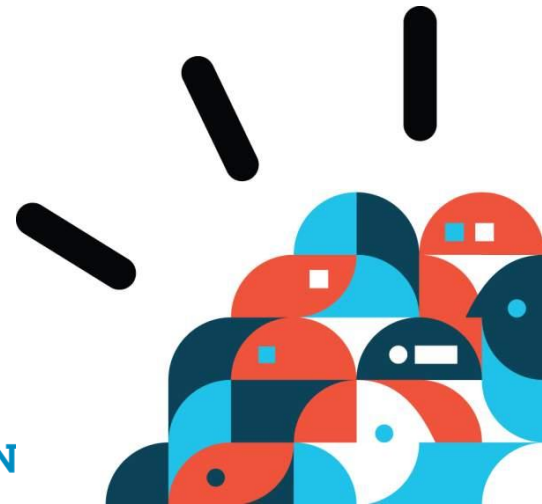
IBM SmartCloud Application Service Pilot Program
Now accepting nominations for this worldwide pilot!

- Pilot includes

- **Application Workload Service** (AWS)

- -Allows you to create and deploy workload patterns in your SCE account.

- **Collaborative Lifecycle Management Service** (CLMS)

- - Enables you to coordinate software development activities throughout the lifecycle including requirements tracking, design, development, build, test and deployment

What are the prerequisites for this pilot?
- •Clients must have an IBM SmartCloud Enterprise Account – clients will access SCAS via the SCE User Interface

What is the cost to participate in the pilot?
- • Clients will pay for the infrastructure used during the pilot (SmartCloud Enterprise); no charge for SCAS services

What types of companies would be interested in the pilot?
- • Enterprises, mid-market customers and ISVs who want to move legacy (cloud-enabled) applications to the cloud or develop "born on the cloud" (cloud-centric) apps.

What types of users would benefit from the pilot?
- • Line of business, IT Operations and Application Developers

http://www.ibm.com/ smartcloud/paas.html

Get a jump on the competition with the SmartCloud Application Services pilot program.
Learn more.

→ Register for the pilot program

PureSystems: No charge 90 day cloud trial for developers

Promo code   INNOVATE INDIA 2012

ibm.com/developerworks/puresystems

ibm.com/developerworks/puresystems/try

Developer centric environment, resources and exchange

Trial, cloud-based development & test lifecycle services

Developer Benefits

IT Developers

developerWorks PureSystems experience

- Video demos
- Expert resources
- Support forums
- Blog

1. PureSystems trial powered by SmartCloud
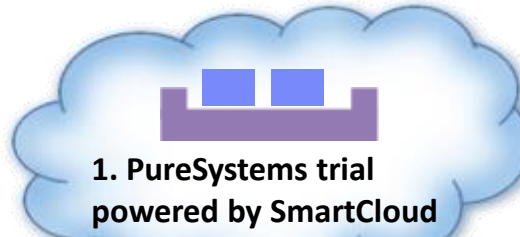
- Collaborative Lifecycle Management
- Virtual Application Patterns

- Get started quickly with minimal resources required
- Experience team based collaboration and development
- Build skills and deploy applications using pattern-based approach in the cloud

Next
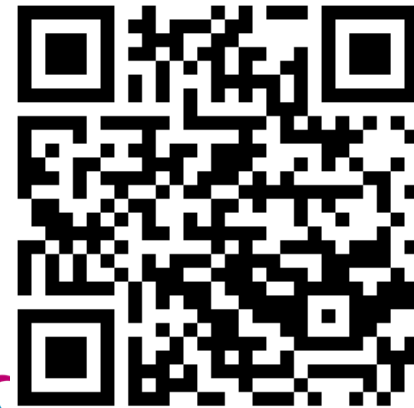
www.ibm.com/software/rational

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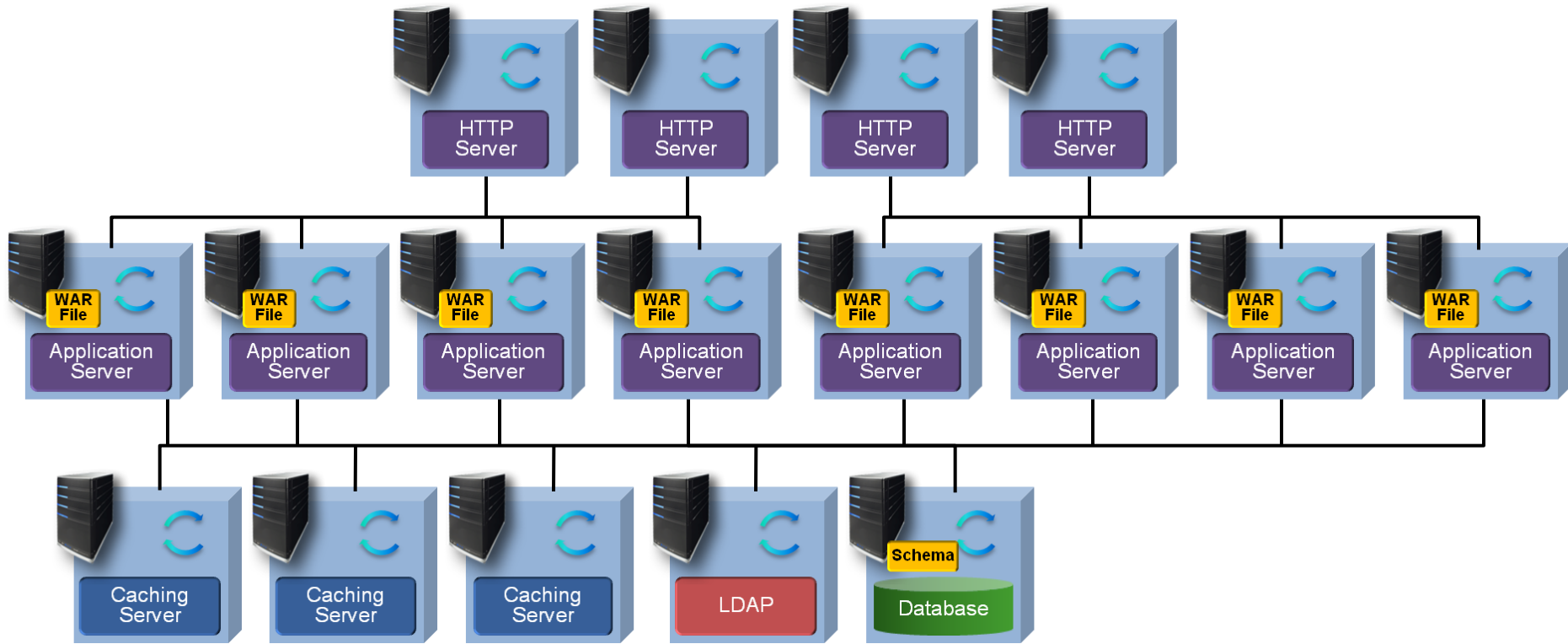**www.ibm.com/software/rational**

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What the business wants…
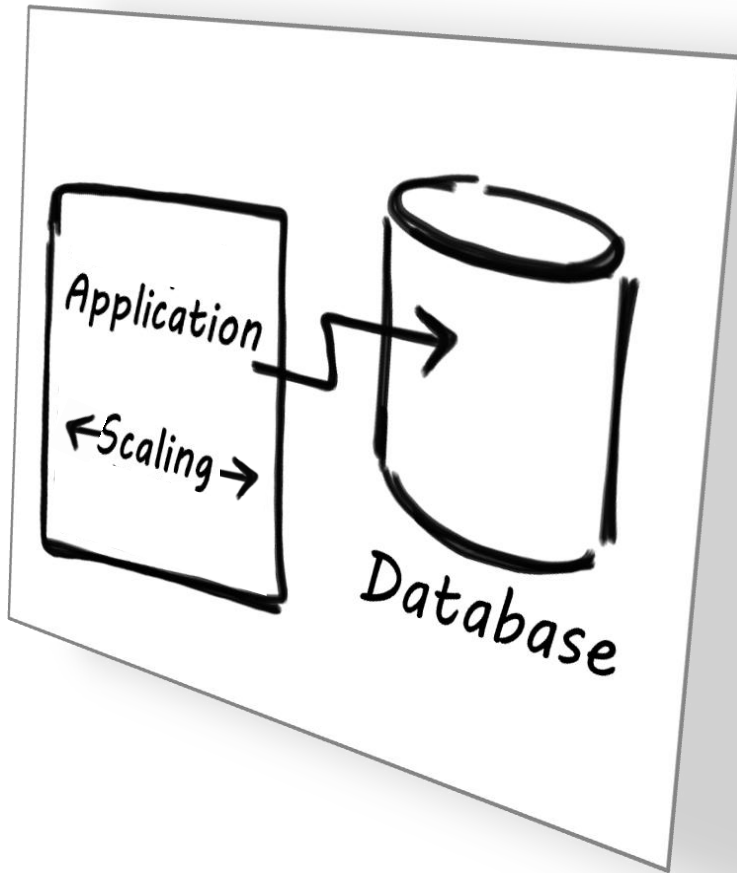
What's required…
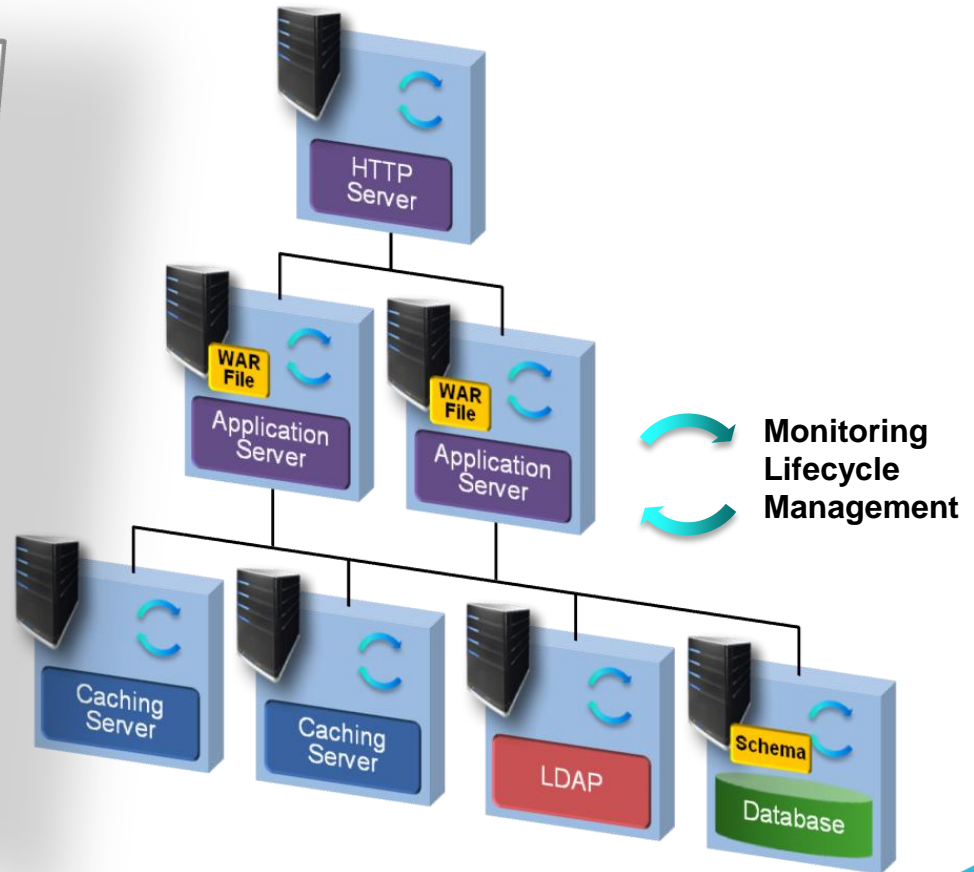
What will be needed tomorrow…


**Monitoring
Lifecycle
Management**

Patterns of Expertise: Proven best practices and expertise for complex tasks learned from decades of client and partner engagements that are captured, lab tested and optimized *into a deployable form*

What is a Pattern?

- The pre-defined architecture of an application
- For each component of the application (i.e. database, web server, etc)
    - Pre-installation on an operating system
    - Pre-integration across components
    - Pre-configured & tuned
    - Pre-configured Monitoring
    - Pre-configured Security
    - Lifecycle Management

- In a **deployable form**, resulting in **repeatable deployment** with **full lifecycle management**

- **Delivering** superior results:
    - **Agility:** Faster time-to-value
    - **Efficiency:** Reduced costs and resources
    - **Simplicity:** Simpler skills requirements
    - **Control:** Lower risk and errors

35
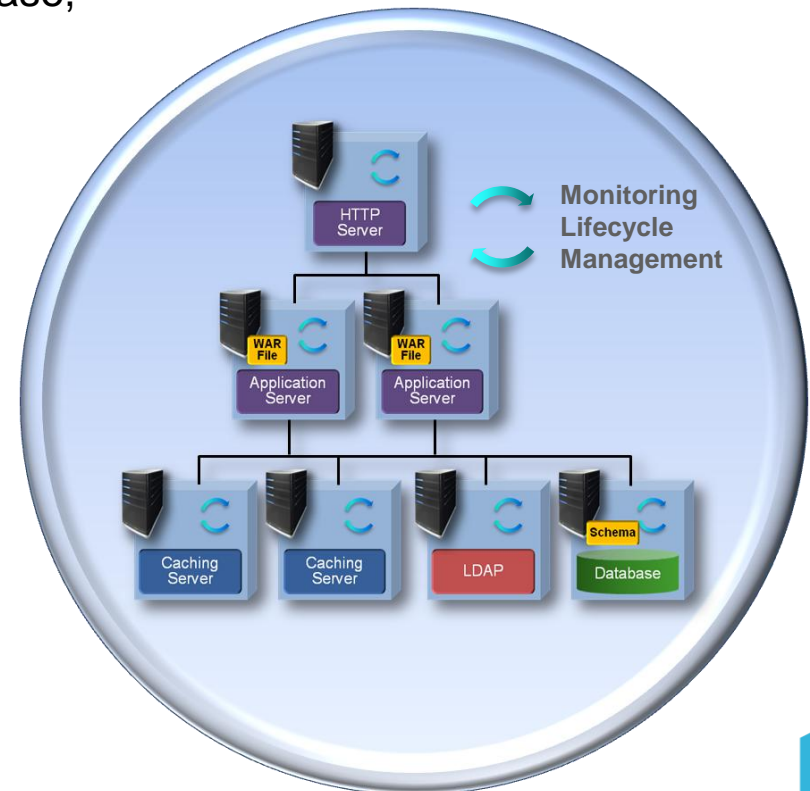
Multiple pattern types to enable open ecosystem
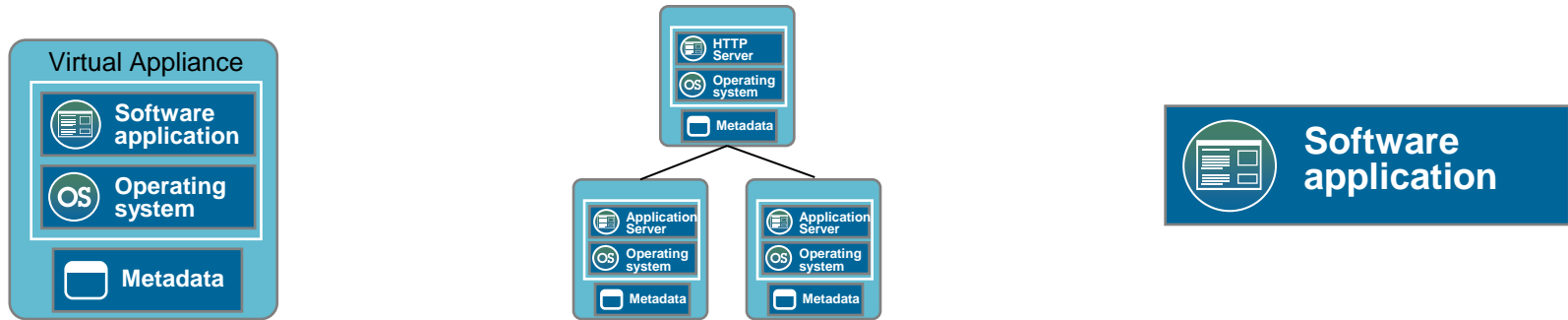
Virtual Appliances

- Standard software installation and configuration on OS
- Images created through extend/capture
- Traditional administration and management model
- Infrastructure driven elasticity

Virtual Appliances

Standard TCO
existing applications

Virtual System Patterns

- Automated deployment of middleware topologies
- Traditional administration and management model
- Application and infrastruture driven elasticity

Virtual System Patterns

Improved TCO
virtualized applications

Virtual Application Patterns

- Highly automated deployments using expert patterns
- Business policy driven elasticity
- Built for the cloud environment
- Leverages elastic workload management services

Virtual Application Patterns

Best TCO
cloud applications

Built-in Web Application Pattern delivers proven expertise

Auto Scaling

Managed environments scale up and down based upon business SLAs you specify

Failover

Failed virtual machines are replaced with new VMs which are configured with the old VM's identity

Load Balancing

Web requests are automatically load balanced across multiple virtual application servers

Security

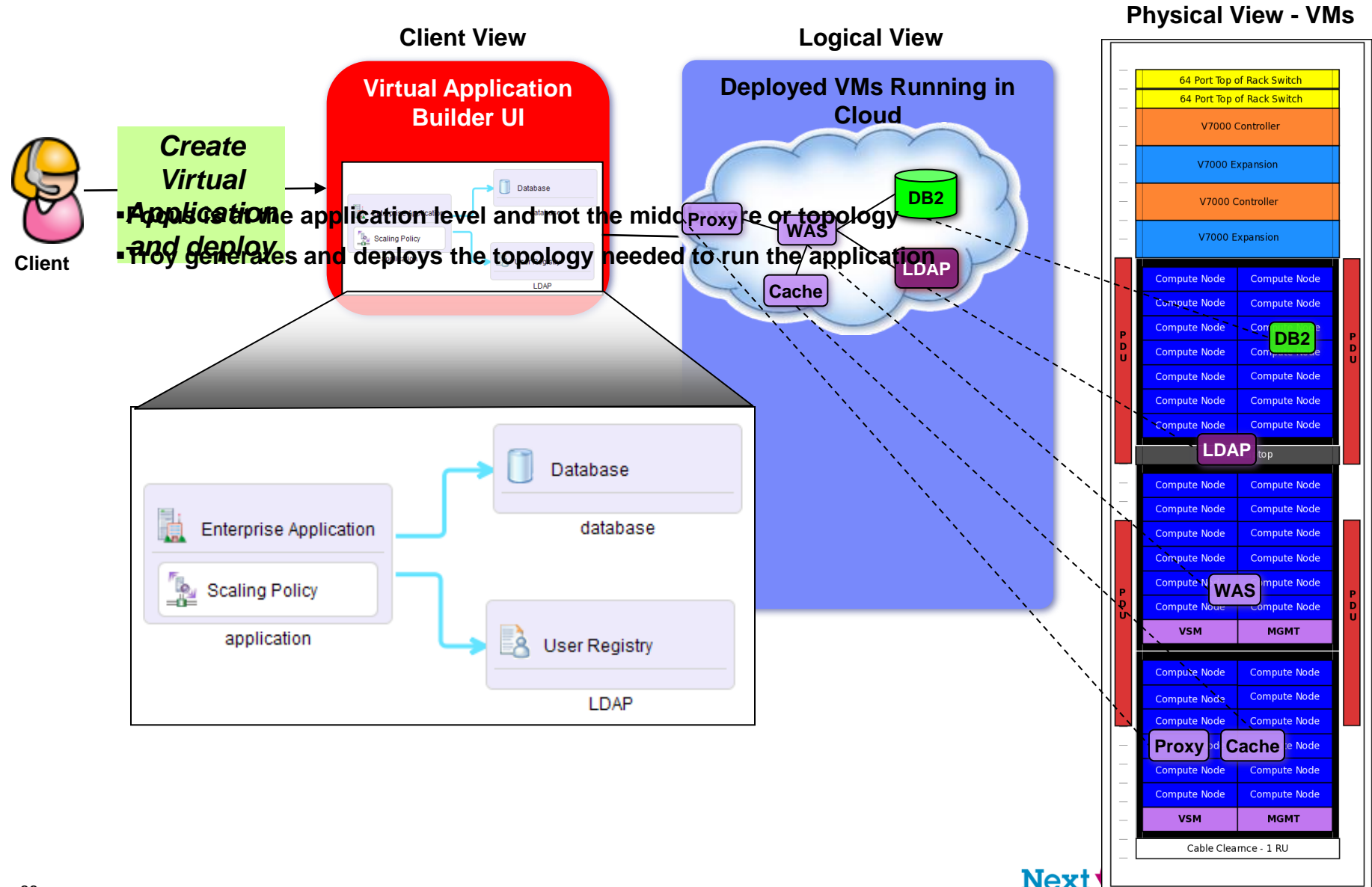ACL's for application sharing and management access, LDAP integration for application security

Monitoring

All components of virtual application environments are monitored by PureApplication System
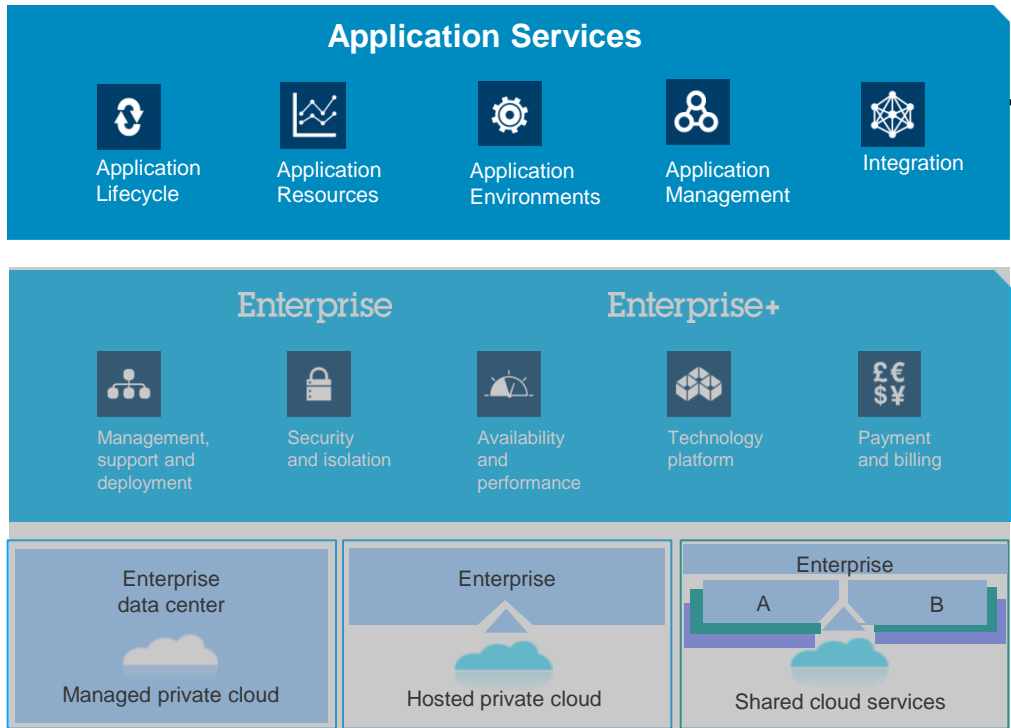
Lifecycle Management

Built-in components are pre-configured, tuned, and tested to enable efficient, minimal click deployment and single point of maintenance

Virtual Application Views

Physical View - VMs

Client View

Logical View

Virtual Application Builder UI

Deployed VMs Running in Cloud

Create Virtual Application and deploy

Client

- Focus is on the application level and not the middleware or topology
- Troy generates and deploys the topology needed to run the application

Next

…translating to a unique set of proven, integrated and automated capabilities.

Application Services

- Application Lifecycle
- Application Resources
- Application Environments
- Application Management
- Integration

Enterprise   Enterprise+

- Management, support and deployment
- Security and isolation
- Availability and performance
- Technology platform
- Payment and billing

Enterprise data center
Managed private cloud

Enterprise
Hosted private cloud

Enterprise
A   B
Shared cloud services

Leverage a public cloud to reduce cost and **shift to opex model for targeted application development activities**

Speed application development through rapid on-boarding to an **integrated and automated application development environment**

Manage enterprise applications and integrate activities more efficiently and effectively through an **open standards** based platform that supports **ease of migration and portability**

"One of the things we've looked at internally is getting out of our normal business load and let the development team just go into the cloud and they can spin things up and down at will. So that is a benefit I can appreciate right away." (CIO, Utilities, US)

August 2011   IBM PaaS Research - Phase II Global Qualitative   IBM Confidential

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Demo – Create and Deploy new Virtual Application Instance

Demo – Add New Policy to Application Pattern