

# IBM Business Connect

Business Without Limits.

July 23 | Vineyard Hotel and Spa, Cape Town

## Expert Integrated Systems

**Andrew Hoyt**

Program Director, PureApplication  
System Development



<https://www.facebook.com/IBMSouthAfrica/events>



#IBMBC2013



## Businesses are witnessing a new wave of interactions and transactions

**74%** of consumers rely on social networks to make purchasing decisions.

**70%** of businesses actively outsource one or more strategic activities

**\$7 billion** worth of items have been sold utilizing Ebay's API's



**6 billion** mobile transactions will occur this year

Today there are **300 million** Android devices with **450,000 apps**

Clients need to address critical imperatives in this environment

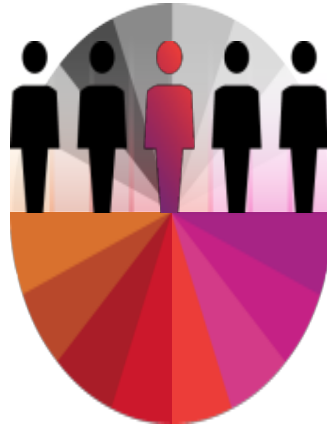
## Accelerate new applications, big data and analytics



**34% of new IT Projects**  
deploy late

From a commissioned study conducted by Forrester Consulting on behalf of IBM

## Improve IT efficiency by simplifying the IT lifecycle



**Only 1 in 5**  
Can allocate 50% or more of their IT budget to new projects<sup>1</sup>

IBM, Data center operational efficiency best practices, April 2012.




## Simplify cloud application platforms and infrastructure



**90% plan to implement cloud**  
by 2015

\* IBM GBS 2011 IBV Study, "The power of cloud: driving business model innovation"

## PureSystems: Simplifying cloud, big data & analytics – tailored for your business

<h3>PureFlex</h3>  <p>New Models</p> <p>Flex System</p> <p>Infrastructure</p> <p><i>Delivering Cloud Infrastructure Services</i></p>	<h3>PureApplication</h3>  <p>New Models</p> <p>Application Platform</p> <p><i>Delivering Cloud Application Platform Services</i></p>	<h3>PureData</h3>  <p>New Analytics Model</p> <p>Data Platform</p> <p><i>Delivering Big Data Platform Services</i></p>
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# Open flexibility is required in cloud delivery, integration, and use



← Workload Portability →

 **Common Cloud Management Services → open standards reference model**

**IBM Business Connect**

Business Without Limits.



## Building Custom Cloud Is Not Simple

Virtualized workloads

### Application Deployment & Management

- Application high availability
- Complex disaster recovery setup
- Custom application monitoring solution
- Disparate systems for overall troubleshooting

### Cloud Orchestration

- Virtual system deployment
- Automation & self-service
  - Usage metering
  - License management
  - Security & Governance
- Maintenance across multi-vendor solution

### Infrastructure

- Separately purchased components
- Client integrated and configured server, storage, and network
- Client installed virtualization software

• High Opex spend on application and system lifecycle management

• Reduced flexibility with multi-vendor closed solutions

**Client Starting Point** →



## IBM PureSystems Family Simplifies the Entry Point into Cloud

Client Starting Point →

Virtualized workloads

IBM & Partner Patterns

### Application Platform (PureApplication)

- Middleware integration & optimization
  - App aware mgmt & provisioning
    - Automation & self-service
    - Caching and elasticity
      - Usage metering
- Advanced License management
  - Application Security
    - Monitoring
- IT lifecycle mgmt & maintenance
  - Platform patterns

### Infrastructure (PureFlex)

- Integrated server, storage, network
  - Power management
- Storage and VM Optimization
  - Provisioning
- Infrastructure Security
  - System design
- Infrastructure patterns
  - ...and more

- Built in expertise
- Platform management, monitoring, and virtualization



## PureSystems: Simplifying cloud, big data & analytics – tailored for your business

### PureFlex



New Models

Flex System

Infrastructure

---

*Delivering Cloud Infrastructure Services*

### PureApplication



New Models

Application Platform

---

*Delivering Cloud Application Platform Services*

### PureData



New Analytics Model

Data Platform

---

*Delivering Big Data Platform Services*



## IBM PureFlex System: the ideal cloud infrastructure system

# PureFlex

### Expert Integrated System:

- Integration by design
  - Compute, storage, networking, management
  - Advanced **Flex System** technology
- Built-in expertise
  - Infrastructure patterns
- Simplified experience
  - Rapid deployment
  - Single point of management



### Cloud Infrastructure (IaaS)

- ✓ Supports large number of applications
- ✓ Self-service to multi-tenant compute, storage, and networking resource pools
- ✓ Virtual machine mobility and management
- ✓ Image catalog and lifecycle management
- ✓ Self-service resource provisioning
- ✓ Advanced, platform based security

## IBM PureFlex System: Integrated Infrastructure

### Expert integrated:

- Flexible infrastructure
  - Compute (x86 & POWER)
  - Storage
  - Networking
  - Advanced **Flex System** technology
- Unified infrastructure management
- Built-in expertise - Infrastructure patterns

# PureFlex



## Infrastructure

*Delivering Infrastructure Services*

**200% increase**  
in performance of critical applications

**66% faster**  
setup time

**Days to minutes** for  
virtual machine deployment time

**72% lower**  
systems costs over  
3 years

## IBM PureFlex System: Integrated Infrastructure



<ul style="list-style-type: none"> <li>Compute</li> <li>Storage</li> <li>Network</li> <li>Virtualization</li> </ul>	<b>Management</b> 	<ul style="list-style-type: none"> <li>• Single point of control</li> <li>• Support for MS System Center &amp; VMware vCenter</li> </ul>
<ul style="list-style-type: none"> <li>x86</li> <li>Power</li> </ul>	<b>Compute</b> 	<ul style="list-style-type: none"> <li>• Power and Intel Architectures</li> <li>• 10,000 applications</li> </ul>
<ul style="list-style-type: none"> <li>IBM</li> <li>EMC</li> <li>NetApp</li> <li>HP</li> </ul>	<b>Storage</b> 	<ul style="list-style-type: none"> <li>• IBM Storwize / XIV / DS8000 &amp; more</li> <li>• Support for EMC, NetApp, HP, Hitachi</li> </ul>
<ul style="list-style-type: none"> <li>IBM</li> <li>Juniper</li> <li>Cisco</li> <li>Brocade</li> </ul>	<b>Network</b> 	<ul style="list-style-type: none"> <li>• IBM Ethernet, FCoE, Infiniband, and Fibre Channel</li> <li>• Support for Cisco, Brocade, Juniper</li> </ul>
<ul style="list-style-type: none"> <li>Windows</li> <li>AIX</li> <li>IBM i</li> <li>Linux</li> </ul>	<b>OS</b> 	<ul style="list-style-type: none"> <li>• Tested and qualified on multiple OS: AIX, Linux, IBM i, and Windows</li> </ul>
<ul style="list-style-type: none"> <li>PowerVM</li> <li>Hyper-V</li> <li>KVM</li> <li>VMware</li> </ul>	<b>Virtualization</b> 	<ul style="list-style-type: none"> <li>• SmartCloud Entry for cloud service delivery</li> <li>• PowerVM, KVM, VMware, MS Hyper-V</li> </ul>

## Simplified management experience with advanced automation



System infrastructure

### Management



Management



Networking



Storage



Virtualization



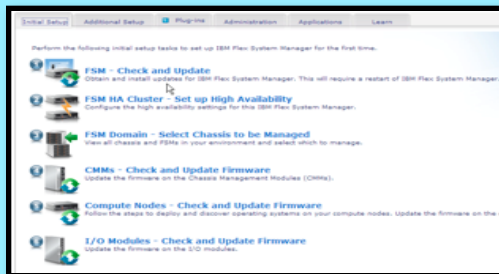
Compute



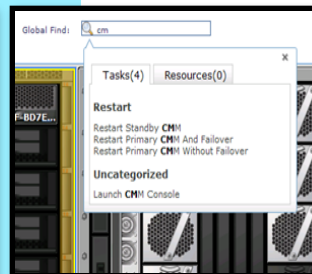
### IBM Flex System Manager

- New user interface and configuration automation brings new components online faster
- Cross-resource integration and automation enables transformation from managing resources to managing applications, services and workloads
- Works with the management you have - other IBM platform tools, Tivoli and third party enterprise management (e.g., CA, BMC, HP, etc.)
- Easier monitoring, alerts and problem management through automated resolution processes with integrated expertise

### Setup Wizards



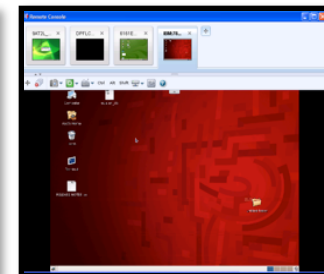
### Global Find



### Chassis Map

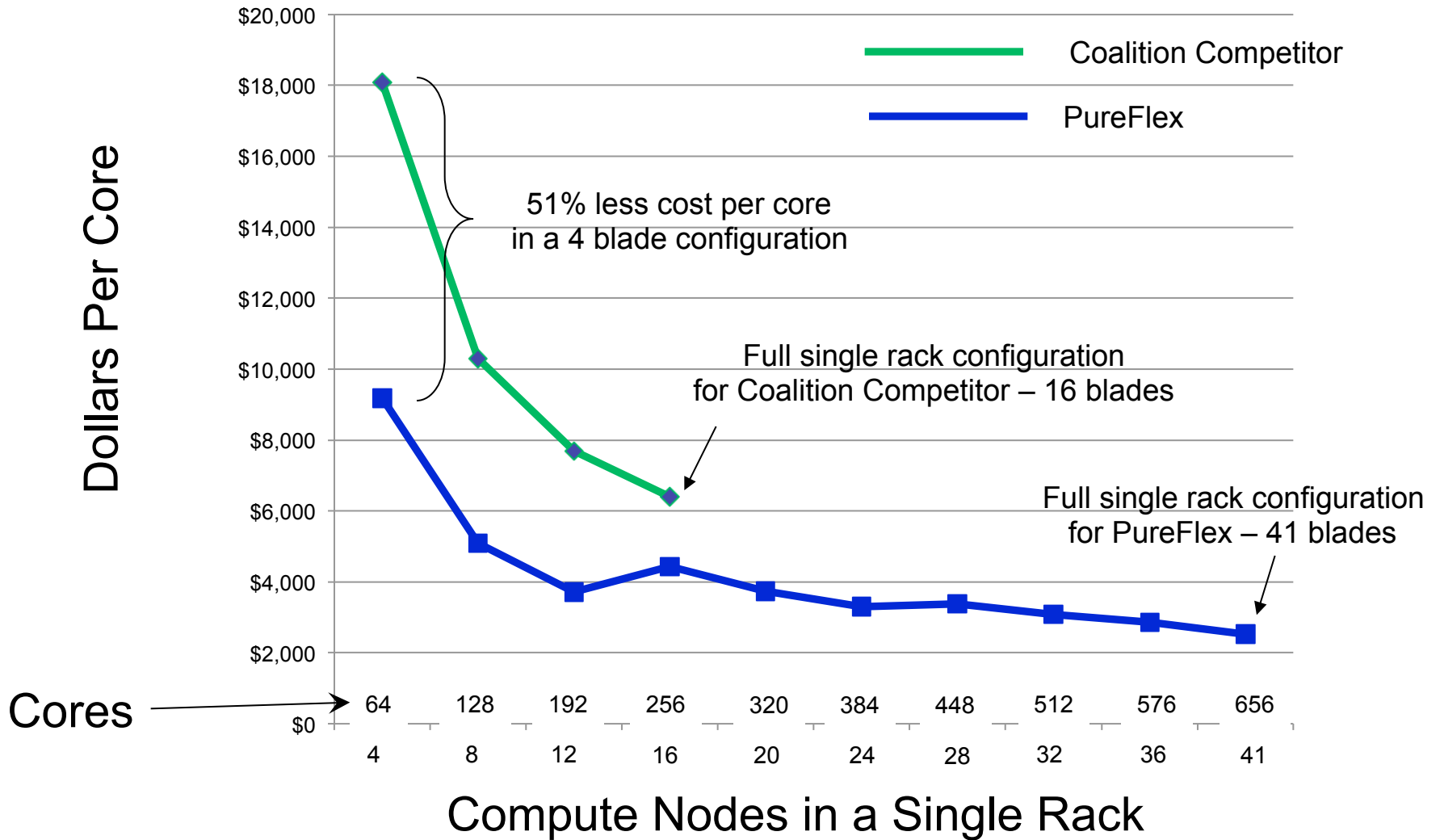


### Remote Presence



# PureFlex FSM Demo

# PureFlex Hardware – More Intel For Your Money



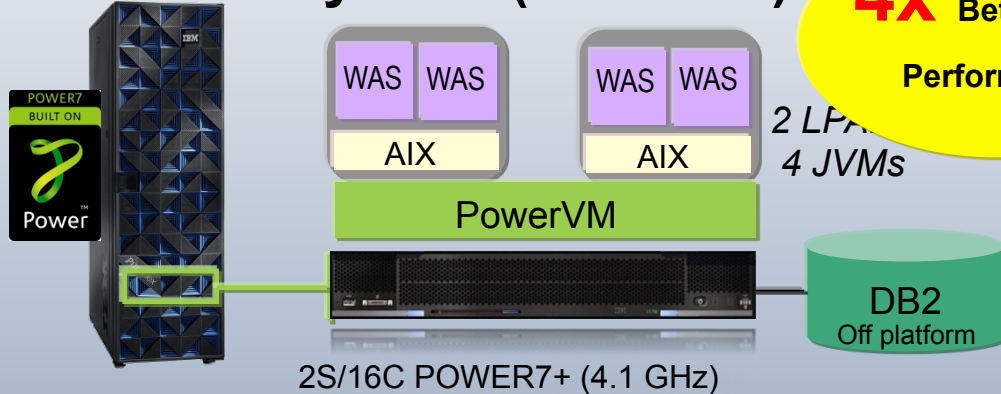
Pricing includes HW / System SW / Storage / Services. For Coalition Competitor, an estimated services cost for a 4 blade system is used across all configurations.



## PureFlex POWER7+ Extends Web Application Performance Advantage

(On-line Banking Workload)

### PureFlex System (Power7+)



**4x** Better Price/  
Performance

**64,192**

User interactions per sec

**4,012**

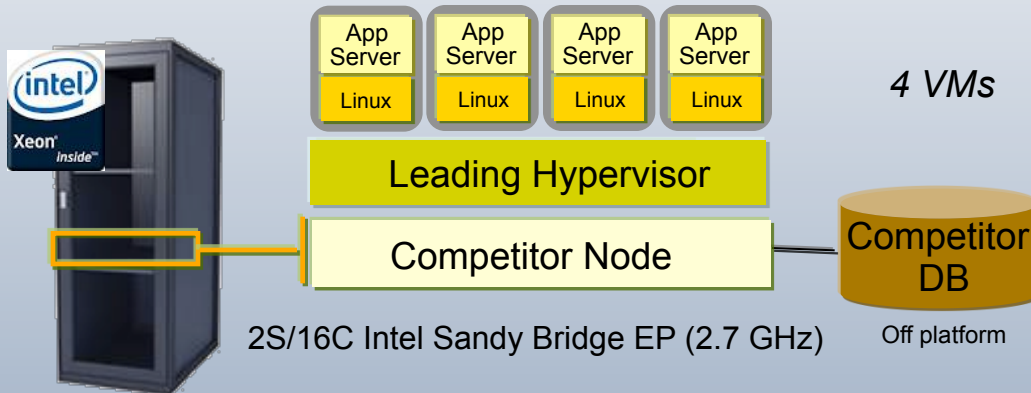
User interactions per sec per core

**\$4.8**

Per user interaction per sec

WAS on platform  
Database off platform

### Coalition Competitor (Intel)



**21,416**

User interactions per sec

**1,339**

User interactions per sec per core

**\$19**

Per User interaction per sec

App Server on platform  
Database off platform

This is an IBM internal study of PureFlex System solution designed to replicate a typical IBM customer workload usage in the marketplace. The results were obtained under laboratory conditions, and not in an actual customer environment. IBM's internal workload studies are not benchmark applications, nor are they based on any benchmark standard. As such, customer applications, differences in the stack deployed, and other systems variations or testing conditions may produce different results and may vary based on actual configuration, applications, specific queries and other variables in a production environment. Prices, where applicable, are based on published US list prices for both IBM and competitor, and the cost calculation

PureSystems: Simplifying cloud, big data & analytics – tailored for your business

# PureFlex



New Models

Flex System



Infrastructure

*Delivering Cloud Infrastructure Services*

# PureApplication



New Models

Application Platform

*Delivering Cloud Application Platform Services*

# PureData



New Analytics Model

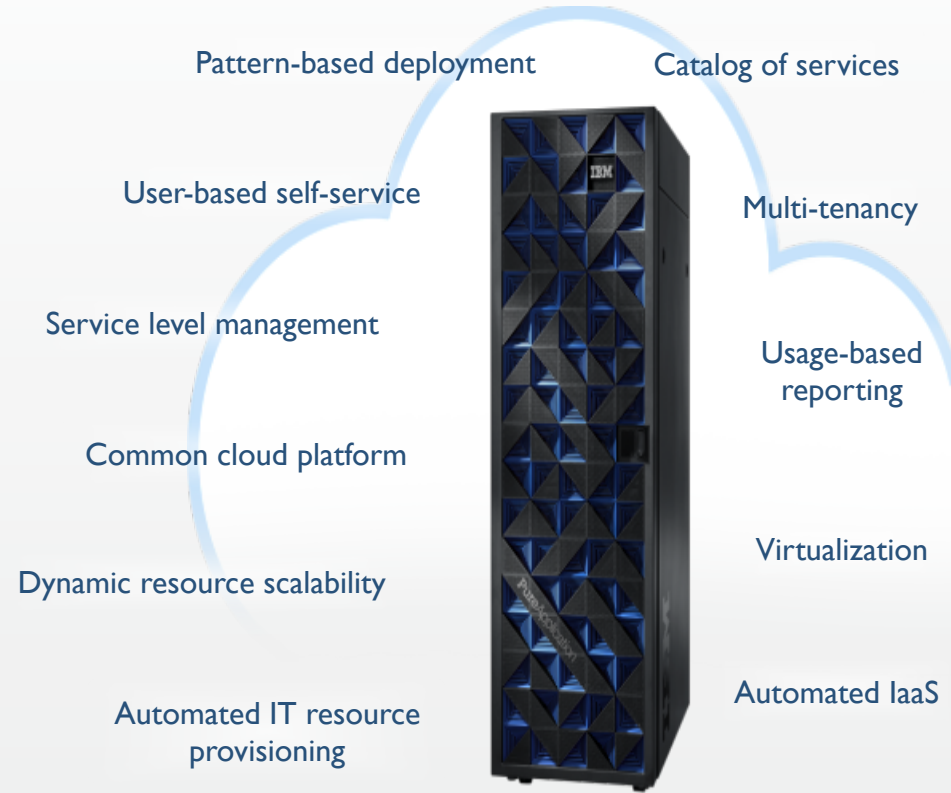
Data Platform

*Delivering Big Data Platform Services*

# IBM PureApplication System: the ideal cloud application platform

## Expert integrated:

- Platform for applications
  - Application server
  - Database services
  - Compute (x86 or POWER)
  - Storage
  - Networking
- Platform management
- Built-in expertise – Infrastructure, platform, and application patterns



*Built-for-cloud platform system simplifying lifecycle deployment and management of applications*

**PureApplication**  
**Cloud Application Platform**  
(PaaS)

## IBM PureApplication System

### ▪ Expert Integrated Platform for Applications

- Compute, Storage, Networking
- Integrated application server & database middleware services
- Integrated management, monitoring & maintenance

### ▪ Built-in Expertise

- Infrastructure, platform, and application patterns
- Fault tolerant design
- Automated elasticity

### ▪ Flexibility & Growth Options

- Right-size and upgrade as business expands
- **NEW!** 32 & 64 core
- Lower environmental (size, single-phase power, cooling) ideal for Growth Markets, departmental, partners & development & test



**PureApplication**

New Models

**Application Platform**

*Delivering Platform Services*

### Install, Config, Tune:

Up and running in **less than 4 hours**<sup>1</sup>

### Deploy:

Deploy a 3-tier web application in under **15 minutes**<sup>2</sup> and automatically scale in **minutes**<sup>3</sup>

### Manage:

Concurrent management of **1000+ VM's** on a single W1500-384 system<sup>4</sup>

### Optimize:

Up to **60% better price/performance**<sup>5</sup> running typical web and DB applications (over a competitor's configuration)

Automatic throughput improvement of **up to 2.3X** for data intensive applications<sup>6</sup>

## What is PureApplication System for Africa?

### Same Design Principles & Value in a Smaller Footprint

#### IBM PureApplication System W1500, x86 32 core

- A smaller footprint for your business with the same built-in expertise, simplified experience, fault tolerant enterprise design of the larger configurations
- Enterprise ready: Redundant compute, storage, networking, management and power
  - Includes Microsoft SQL and/or Sharepoint Patterns
- Are ideal for: emerging markets, medium-sized businesses, application development/test, regional datacenters, departmental use and initial cloud projects

### PureApplication “mini”



**W1500-32**

**32 Cores  
0.5 TB RAM**

**2.4 TB SSD  
24 TB HDD**

**Microsoft SQL  
and Sharepoint  
Patterns**

*\*for base offering, does not include pricing for Microsoft application software*

*\*\*GTS RDS offering*



## The optimal cloud platform for enterprise applications *IBM PureApplication™ System v1.1*

### Changing the Experience and Economics of IT!

- Increased flexibility with the first pre-integrated **application platform** for **Windows and Linux**
- Lower TCO through the **high performance** hypervisor in PowerVM-based system
- Ease of use with **cross-site disaster recovery** for applications setup **in 5 clicks**<sup>1</sup>
- Improved **application security** with integrated encryption support
- **Faster response times** during usage spikes
- **Improved governance** through new license tracking and reporting and OS maintenance
- Investment protection through **broad ecosystem** of **optimized application patterns**

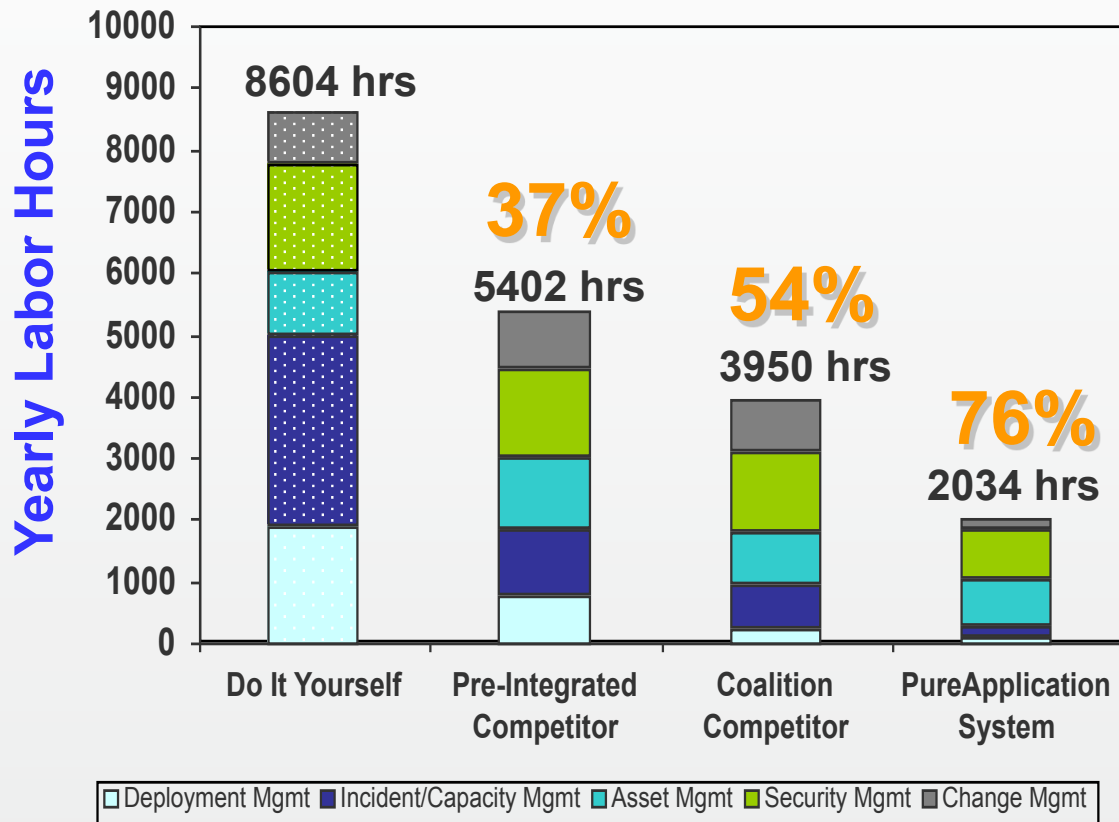


Pure and Simple.



# PureApplication System Can Reduce Labor Costs

## Labor Estimates Base on 72 Workloads On 9 Blades



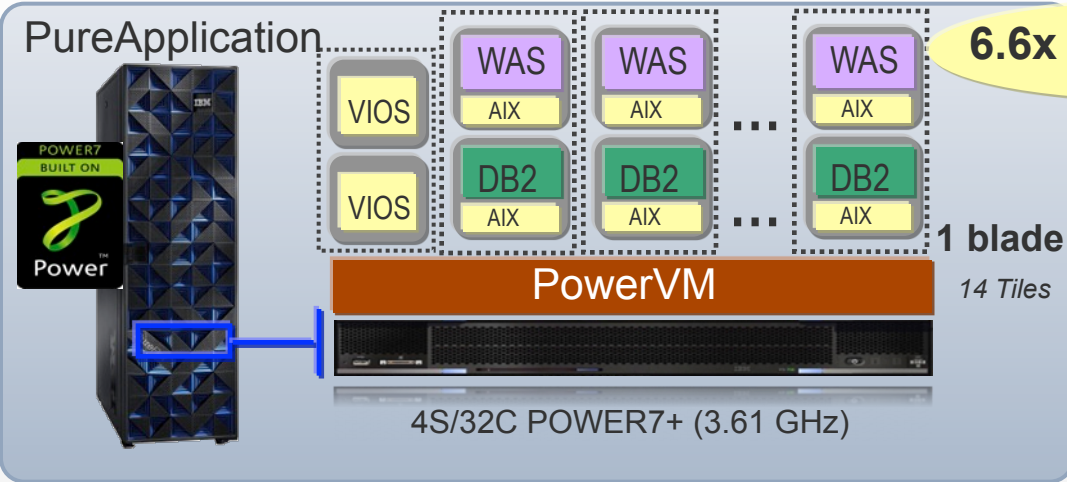
Note: Do It yourself used 9 blades (144 cores). Coalition competitor used 9 competitor blades (144 cores). Pre-Integrated competitor used 18 pre-integrated nodes (288 cores). IBM PureApplication System used 3 nodes (96 cores). Each system has the capacity to run 72 workloads where each workload can sustain a peak throughput of 1720 page elements per second.

### PureApplication Contributors to Labor Savings

- **Deployment**
  - ▶ Fully assembled and configured
  - ▶ Pre-installed management software
  - ▶ Fast pattern-based deployment
- **Incident/capacity**
  - ▶ Centrally monitor and resolve issues with automatic scaling
- **Asset**
  - ▶ Track license usage of products
- **Security**
  - ▶ Centralized access control
- **Change**
  - ▶ Visibility into relationships of virtual images in a workload
  - ▶ Automatically apply changes to desired virtual servers

The labor savings and assumptions herein are estimates based on a labor model that uses data obtained on the percentage of time customers spend on certain IT lifecycle tasks. It is not a benchmark. As such, actual customer results will vary based on customer applications, differences in stack deployed and other systems variations as well as actual configuration, applications, specific queries and other variables in a production environment.

## PureApplication Power ITE Up To 6.6X Better Price/Performance Than Native Pre-integrated Competitor In Web Application Plus Database Case Study (TradeLite)

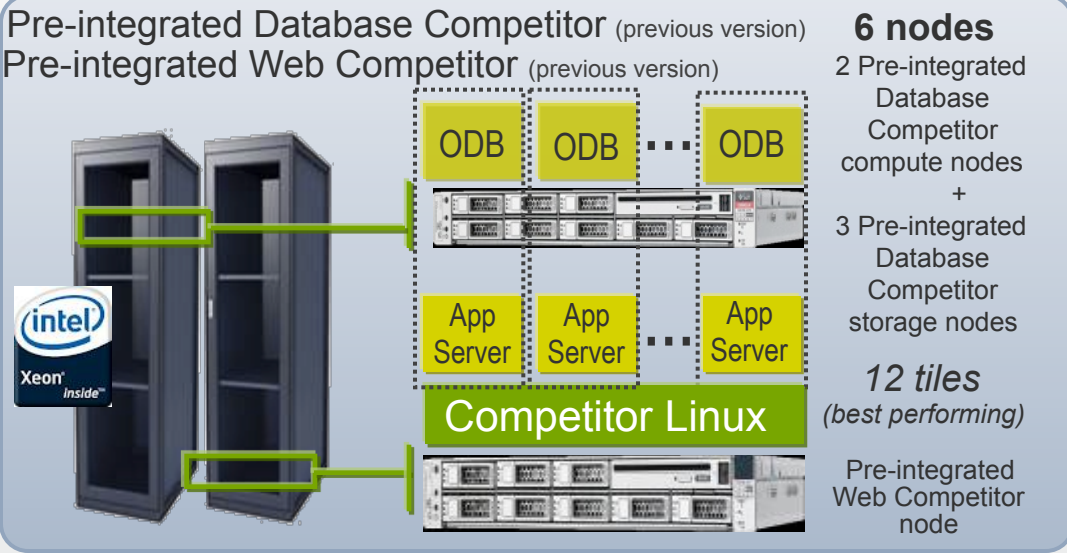


**42,816** Page elements per sec

**1,338** Page elements per sec per core

**\$31** Per page element/sec

14 Pairs WAS+DB2 on platform



**17,237** Page elements per sec

**331** Page elements per sec per core

**\$207** Per page element/sec

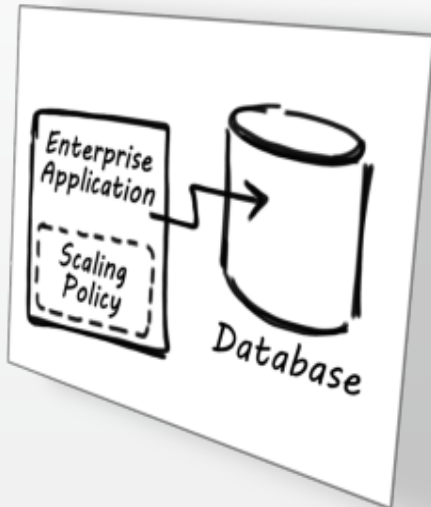
12 Pairs App Server on Pre-integrated Web Competitor and DB on Pre-integrated Database Competitor

Based on IBM internal tests of the IBM PureApplication System W1700-96 compared to results of testing of a competitor's configuration (previous version; no longer available; executing an online JEE trading application workload in a controlled laboratory environment and a 3 year total cost of acquisition (based on US list prices). The cost calculation compares the average cost per request. 3 year total cost of acquisition includes expected hardware, software, service & support. IBM's internal workload studies are not benchmark applications, nor are they based on any benchmark standard. As such, customer applications, differences in the stack deployed, and other systems variations or testing conditions may produce different results and may vary based on actual configuration, applications, specific queries and other variables in a production environment. Users of this document should verify the applicable data for their specific environment.

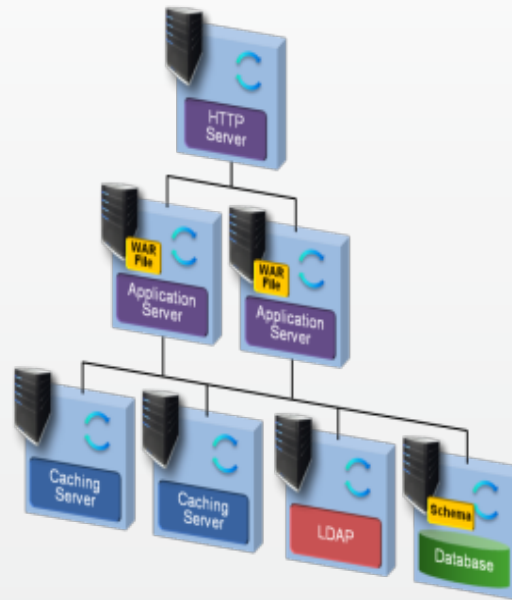
© 2012 IBM Corporation

# Patterns of Expertise - Key capability for Cloud Application Platforms

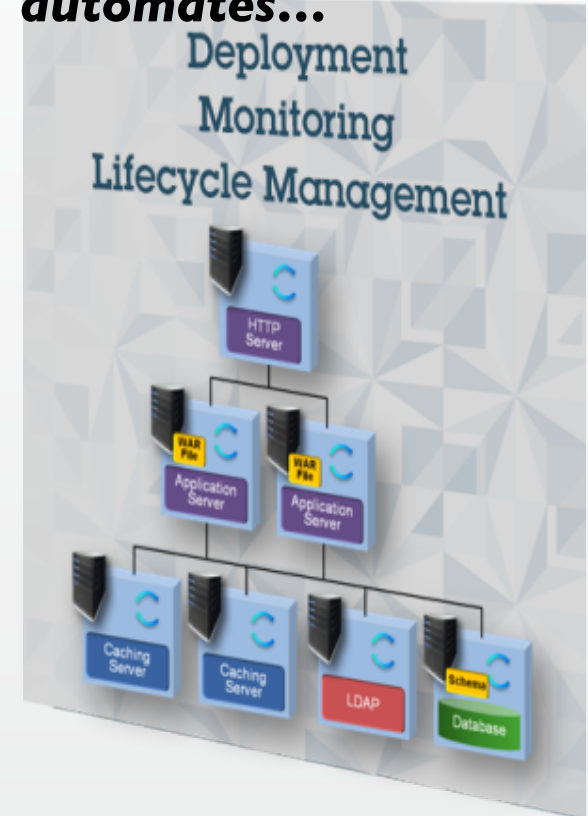
**What the business wants...**



**What's required...**



**What a pattern automates...**



**Patterns:**

1. Increase time to market
2. Increase value of your solution
3. Unparallel cost savings

## IBM enables IT lifecycle simplification with Patterns of Expertise

**Application Patterns:** Proven best practices and expertise learned from decades of client and partner engagements

Pre-defined architecture of an application or Cloud service

Captures best practices for complex tasks

Optimized into a deployable form for private or public cloud

Repeatable deployment with full lifecycle management

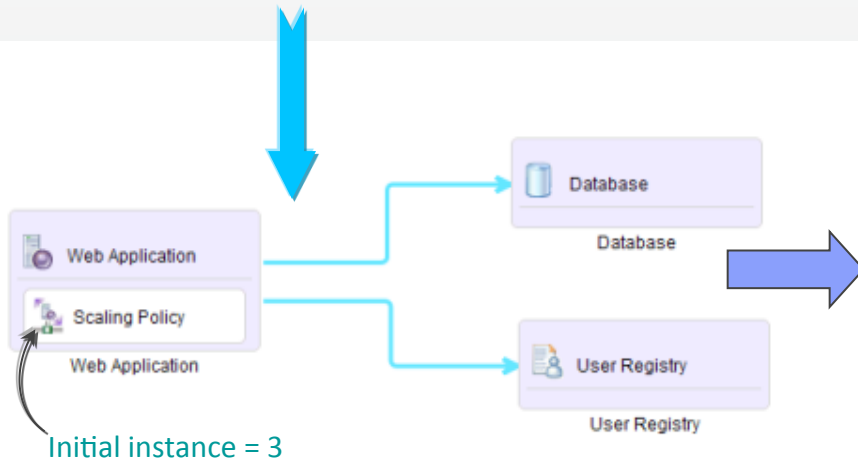


***“Patterns are the magic here. Customers are capturing expertise in patterns. It’s a new pride of ownership.”***

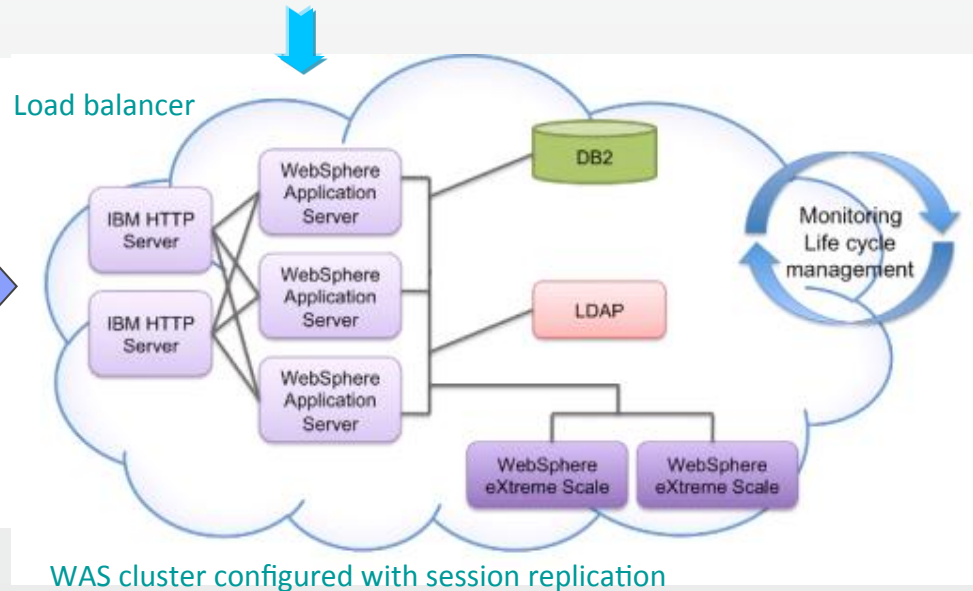
# Virtual Application Pattern

- A Virtual Application represents a collection of application components, behavioral policies and their relationships
  - Definition is agnostic to middleware product or topology
  - Makes customers focus on what's important to them – applications, SLAs
  - System Manages end-end lifecycle: deploy, update, monitor, scale, undeploy

## What admin defines



## What system deploys



**IBM PureApplication System - Virtual Application Builder** IBM

Diagram | List View | Source | Sample Java EE Web application \* | Pattern Type: Web Application Pattern Type 2.0

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
- OSGi Components

Layers

+ Add policy for application

```

graph LR
    TradeWeb[TradeWeb Enterprise Application] --> TradeDB[TradeDB Database]
    subgraph PolicyBox [ ]
        direction TB
        SP[Scaling Policy]
    end
    
```

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 - 2036

\* Instance number range of scaling in/out:

1 50  
Range: 2 - 10

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

300



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

## Scaling Type

Response Time Based

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

Range: 1000 - 5000

**Instance number range of scaling in/out: \***

Range: 1 - 10

**Minimum time (sec) to trigger add/remove: \***

120

Enterprise Application  
WebSphere Application Server

Name:

TradeLite

EAR file:

artifacts/tradelite.ear  

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*Ignore inapplicable ifx updates: 

Maximum Session Count:

Scaling Policy  
Web/Enterprise ApplicationEnable 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):



Range: 1000 - 5000

\* Instance number range of scaling in/out:

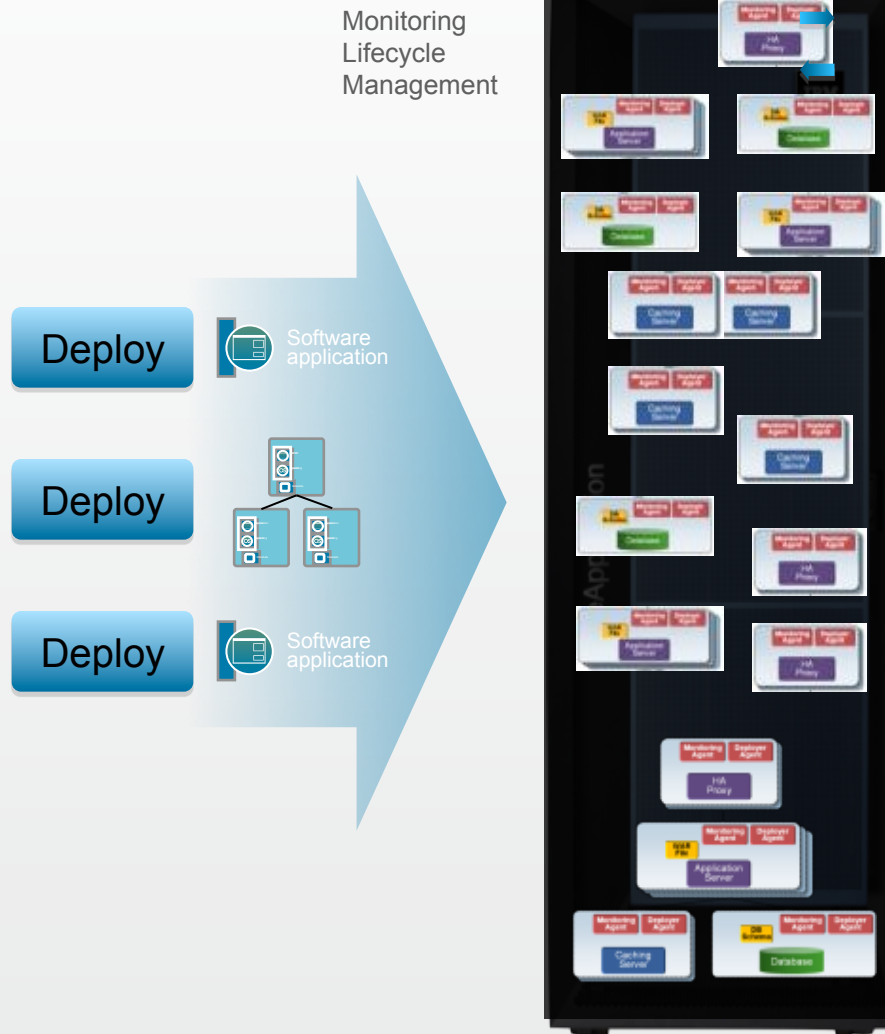


Range: 1 - 10

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

## Continuous application level optimization and management

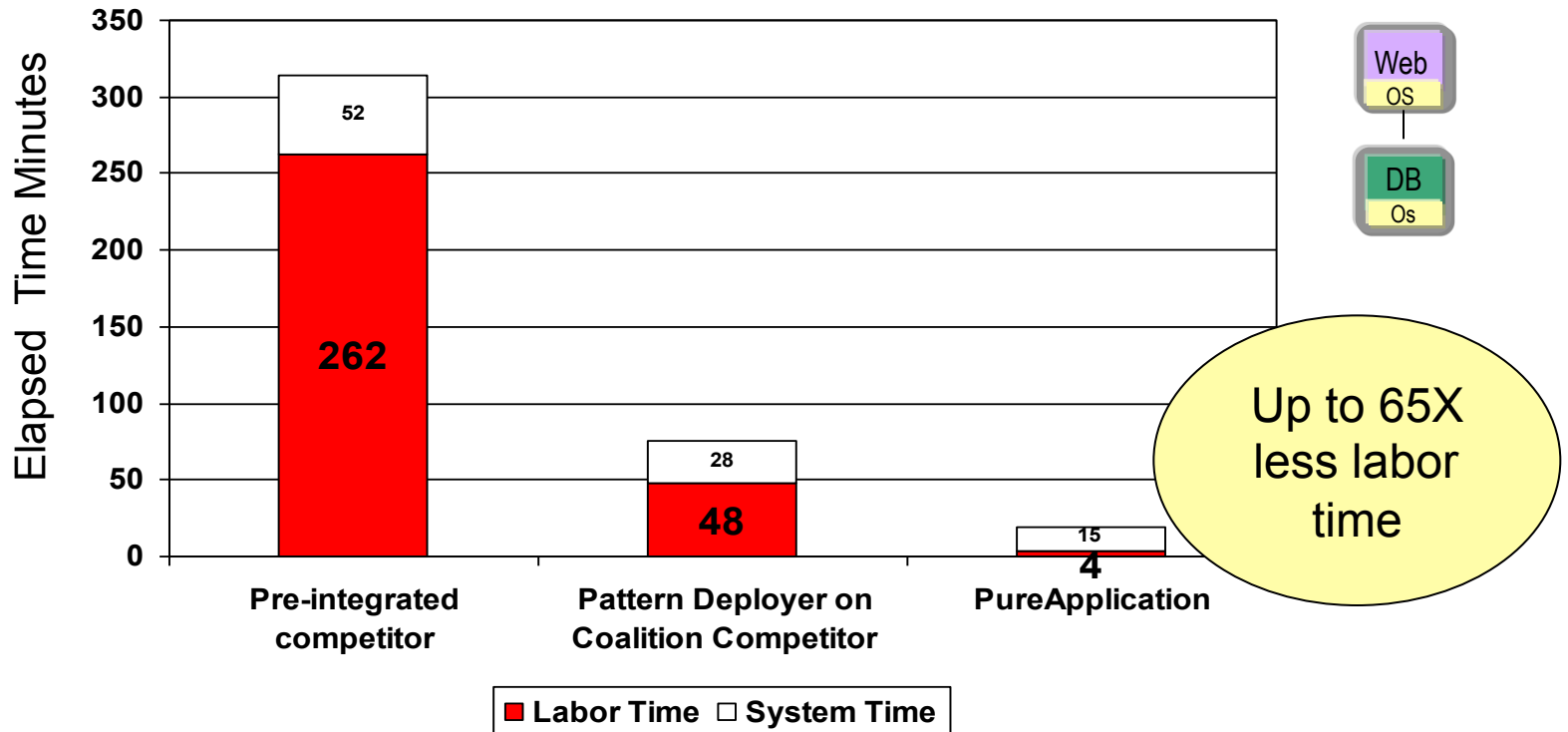
### PureApplication



- Application Optimization
- Policy-based placement
- Application level prioritization
- Dynamic scaling of applications and VM resources
- High Availability of applications and individual VMs
- Mobility of VMs for performance, management and maintenance
- Performance optimization
- Application level isolation
- System, Application and VM level monitoring

# Patterns Significantly Speed Deployment of Web Applications

## Elapsed Time to Create and Deploy a Single Web+DB Workload



PureApplication deployment using virtual application pattern

Pre-integrated competitor deployment assumes first creating templates for the application server and database images

Coalition competitor deployment using pattern deployer tool to deploy application server and database components

IBM internal study of effort needed for 1 FTE to install, setup and deploy an online trade application consisting of an application server and database component. Hardware: IBM PureApplication System (using 1 of 6 blades (16 Intel cores used) compared to a pre-integrated competitor's configuration (Intel Westmere EP 12-cores @ 2.93 GHz, virtualized system offering) and coalition competitor (Intel Sandy Bridge 16-cores @ 2.7 GHz, virtualized system offering) in a controlled laboratory environment. IBM software is based on using the Virtual Application Web App Pattern. Pre-integrated Competitor's software is based on using competitor Linux template, application server and database in a virtualized environment. Coalition competitor software is based on competitor application server and database installed in virtualized environment using competitor automated pattern deployment software. No performance testing was done; this is not a benchmark study. Customer applications, differences in the stack deployed, and other systems variations or testing conditions may produce different results and may vary based on actual configuration, applications, and other variables in a production environment. Users should verify the applicable data for their environment.

## PureApplication System Demo

PureSystems: Simplifying cloud, big data & analytics – tailored for your business

# PureFlex



New Models

Flex System

Infrastructure

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*Delivering Cloud Infrastructure Services*

# PureApplication



New Models

Application Platform

---

*Delivering Cloud Application Platform Services*

# PureData



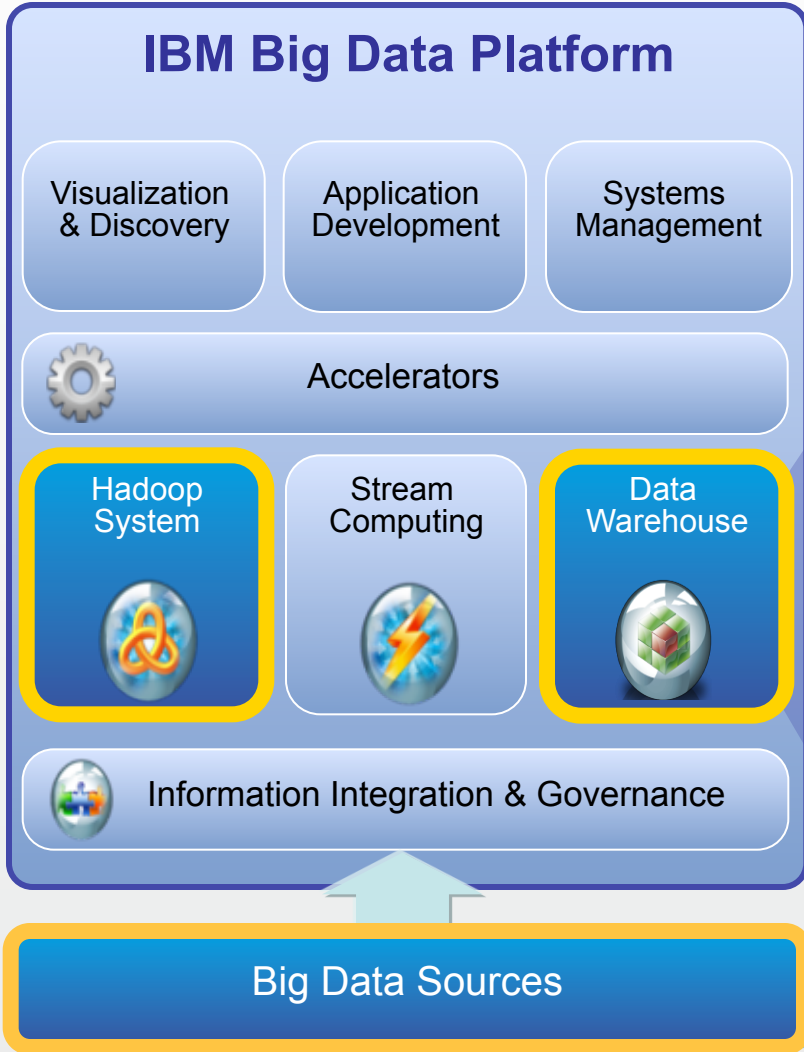
New Analytics Model

Data Platform

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*Delivering Big Data Platform Services*

Expert Integrated Systems for big data



# PureData

## for Hadoop

Optimized system delivering data services for exploration and as a queryable archive



## for Analytics

Optimized system delivering data services for analytics & reporting

## for Operational Analytics

Optimized system delivering data services for operational analytics

## for Transactions

Optimized system delivering data services for transactions



Delivering data workload optimized performance

## Meeting Big Data Challenges – Fast and Easy!

### **PureData** System for Transactions

#### **For apps like Order Management...**

Database cluster services optimized for transactional throughput and scalability

### **PureData** System for Analytics

#### **For apps like Sales Analysis...**

Data warehouse services optimized for high-speed, peta-scale analytics and simplicity

**Powered by  
Netezza Technology**

### **PureData** System for Operational Analytics

#### **For apps like Real-time Fraud Detection...**

Operational data warehouse services optimized to balance high performance analytics and real-time operational throughput

### **PureData** System for Hadoop

#### **For apps like Big Data Exploration...**

Hadoop services optimized for exploration of large volumes of data with any type of structure; and as a queryable archive to augment traditional data warehousing

Delivering data workload optimized performance

## Meeting Big Data Challenges – Fast and Easy!

### PureData System for Transactions

- Pattern based **database deployment in minutes, not hours**<sup>1</sup>
- Handles **more than 100 databases** on 1 system<sup>2</sup>

### PureData System for Analytics

- **3X faster performance**<sup>5</sup> for Big Data analytics
- **50% greater data capacity per rack**<sup>6</sup> helps optimize data center efficiency
- **More capacity and less power per rack** than both Oracle and Teradata
- **Improved system management and resilience** to spend less time managing and more time delivering value

### PureData System for Operational Analytics

- **Continuous ingest** of operation data
- Handles **1000+ concurrent operational queries**<sup>3</sup>
- Clients have experienced **10x storage savings** with adaptive compression<sup>4</sup>

### PureData System for Hadoop

- Deploy **8x faster** than custom-built solutions<sup>7</sup>
- Built-in visualization to **accelerate insight**
- No assembly required, data load ready in hours
- Single system console for full system administration

1. Based on IBM internal tests and system design for normal operation under expected typical workload. Individual results may vary.

2. Based on one large configuration

3. Based on IBM internal tests of prior generation system, and on system design for normal operations under expected typical workload. Individual results may vary.

4. Based on client testing in the DB2 10 Early Access Program

5. Based on a comparison of the IBM PureData System for Analytics N2001 to the IBM PureData System for Analytics N1001. The performance speed refers to the query times on both macro-analytic and mixed workload tests as conducted in IBM engineering lab benchmarks. The N2001 query times were an average of 3x faster than those of the N1001. Individual results may vary.

6. 128 GB/sec scan rate assuming an average of 4x compression across the system. Individual results may vary.

7. Based on IBM internal testing and customer feedback. "Custom built clusters" refer to clusters that are not professionally pre-built, pre-tested and

## PureData System For Transactions Beats Pre-Integrated Competitor Quarter Rack

### PureData System for Transactions - Small

Intel-based Processors  
¼ Rack  
4 Database Nodes  
2 Coupling Facilities



System Cost  
3 year TCA  
**\$2,856,000**

**9600** Transactions/sec  
**\$298** per Transaction/  
sec

✓ **3.3x** Throughput

✓ **4.3x** Lower Cost/tps

### Pre-Integrated Database Competitor Quarter Rack V3

Intel-based Processors  
¼ Rack  
2 Server Nodes  
3 Storage Nodes



System Cost  
3 year TCA  
**\$3,835,481**

**2956** Transactions/sec  
**\$1298** per Transaction/  
sec

Based on IBM internal tests comparing PureData System For Transaction with a comparably priced, comparably tuned competitor configuration (version available as of 01/01/2013) executing a materially identical online transaction processing workload in a controlled laboratory environment. Tests measured transaction throughput rate to execute identical SQL query workloads. More throughput is indicated by higher transactions/second. 3YR TCA means Total Cost of Acquisition for 3 years, based on publicly available U.S. prices current as of January 15, 2013, including hardware, software, and maintenance. Compared prices exclude applicable taxes, and are subject to change without notice. Competitor configuration: ¼ Unit (usable uncompressed capacity = 9.5TB) including competitor recommended software options and features. IBM configuration: PureData System for Transaction 'Small' (usable uncompressed capacity = 18.6TB). Results may not be typical and will vary based on actual workload, configuration, applications, queries and other variables in a production environment. Users of this document should verify the applicable data for their specific environment. Contact IBM and see what we can do for you.

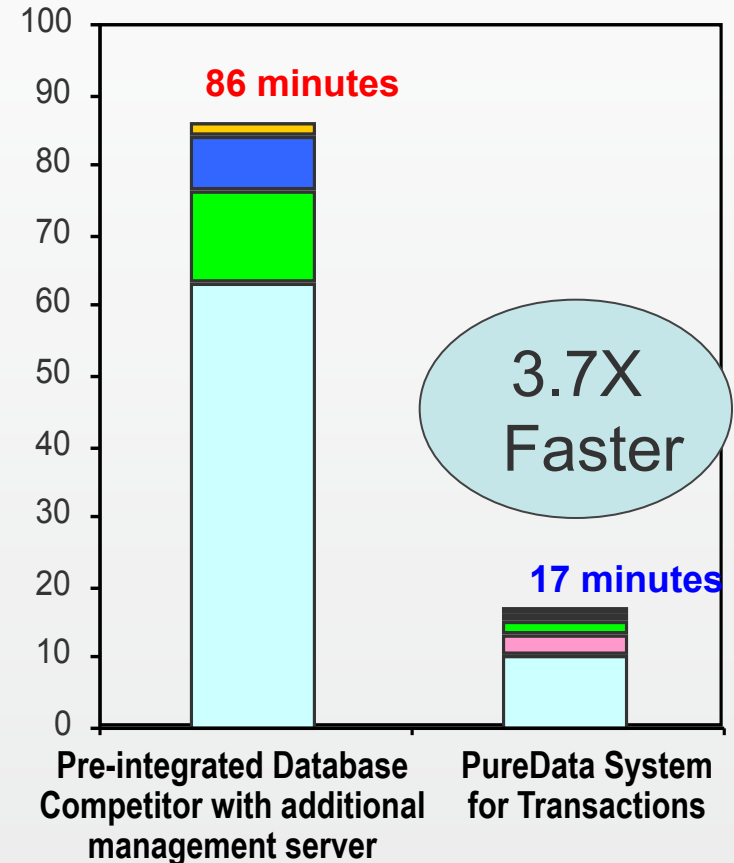
# PureData System for Transactions Requires Less Effort to Deploy Your First Database

Activity	Pre-integrated Database Competitor (minutes)	PureData System for Transactions (minutes)
Customer Setup/Config	63	10
Deploy Cluster	0	3
Customize database	13	2
Deploy database	8	1
Add Storage	2	1
<b>Total</b>	<b>86</b>	<b>17</b>

Customer labor required to perform first database deployment after vendor hands off configured system

Competitor required significant time to install separate management server and software to provide function comparable to PureData System for Transactions

Customer Labor To Deploy First Database (measured from system handoff)



Based on IBM internal tests comparing PureData System For Transaction with a comparably priced competitor configuration (version available as of 01/01/2013). Configurations include hardware, software, and systems needed to deploy workloads in a production environment with comparable capability. Tests measured customer tasks to complete system and management configuration then deploy comparable versions of a moderate complexity database. Competitor configuration: ¼ Unit (usable uncompressed capacity = 9.5TB) including competitor recommended software options and features. IBM configuration: PureData System for Transaction "Small" (usable uncompressed capacity = 18.6TB). Results obtained under laboratory conditions and will vary based on actual configuration, applications, specific queries, and other variables in a production environment. Users of this document should verify the applicable data for their specific environment. Contact IBM and see what we can do for you.

# PureSystems

- Integration by Design
- Built-In Expertise
- Simplified Experience

## PureFlex



### Infrastructure

*Delivering Cloud Infrastructure Services*

## PureApplication



### Application Platform

*Delivering Cloud Application Platform Services*

## PureData



### Data Platform

*Delivering Big Data Platform Services*



**THANK  
YOU!**

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