IBM SolutionsConnect 2014

A New Era of Smart

Expert Integrated System

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Expert Integrated System

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IT LANDSCAPE
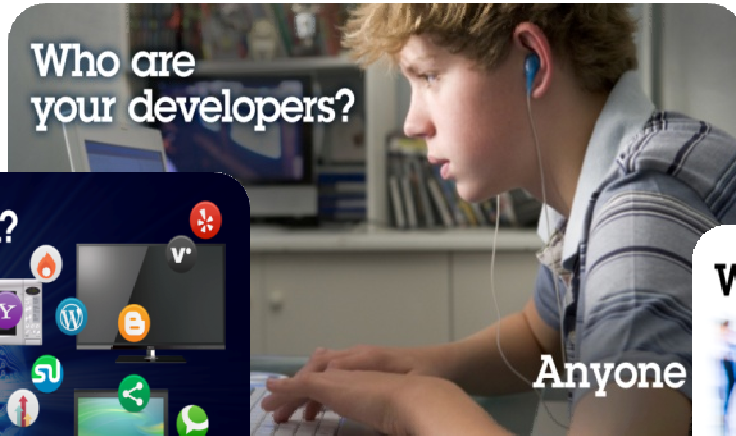
Technology is reshaping industries

Mobile   Social

Big Data

Who are your developers?

Anyone

What is an application?

Anything

Who can access your information?
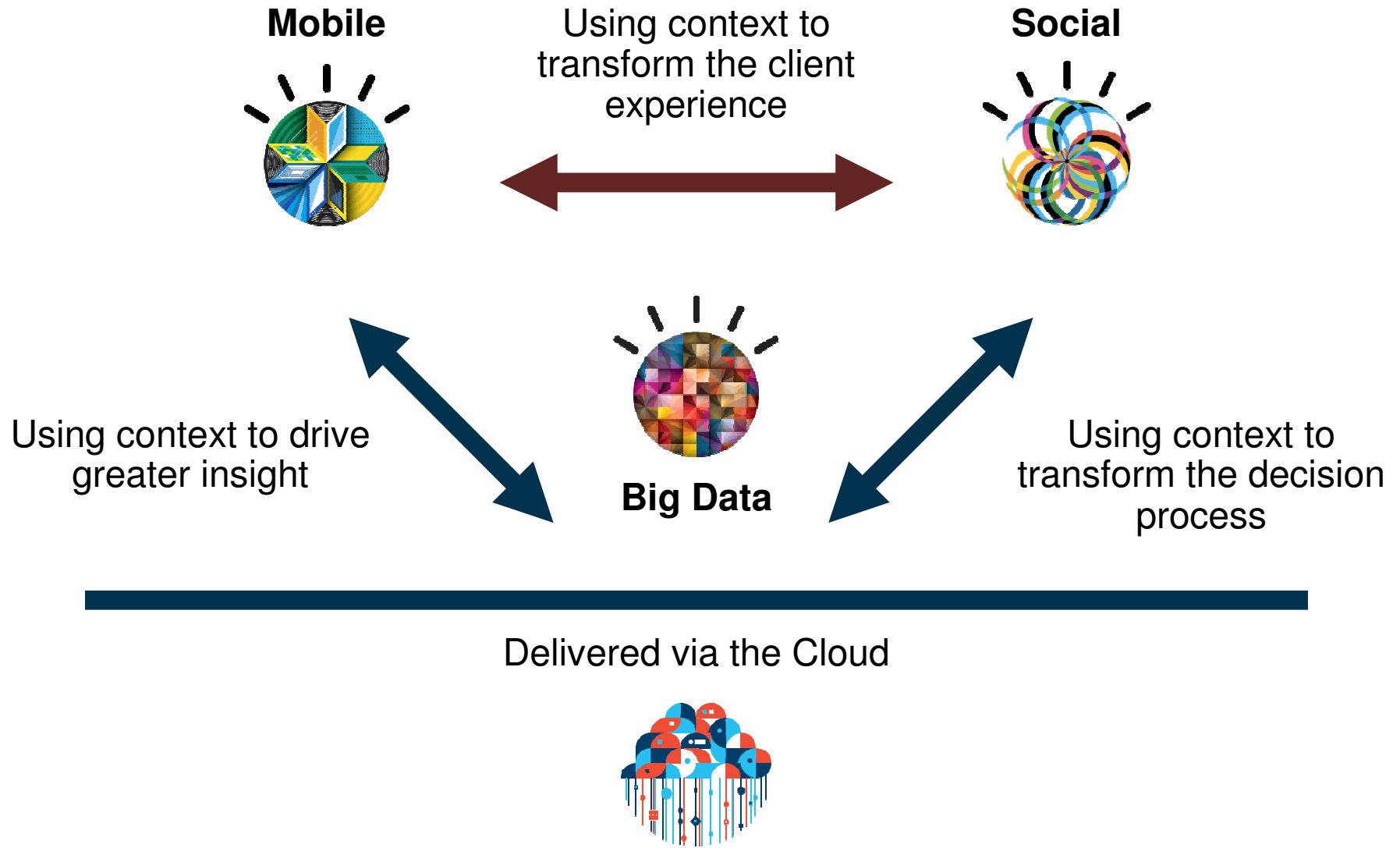
Everyone

Who is influencing your business?

Anyone

Where do transactions happen?

Everywhere

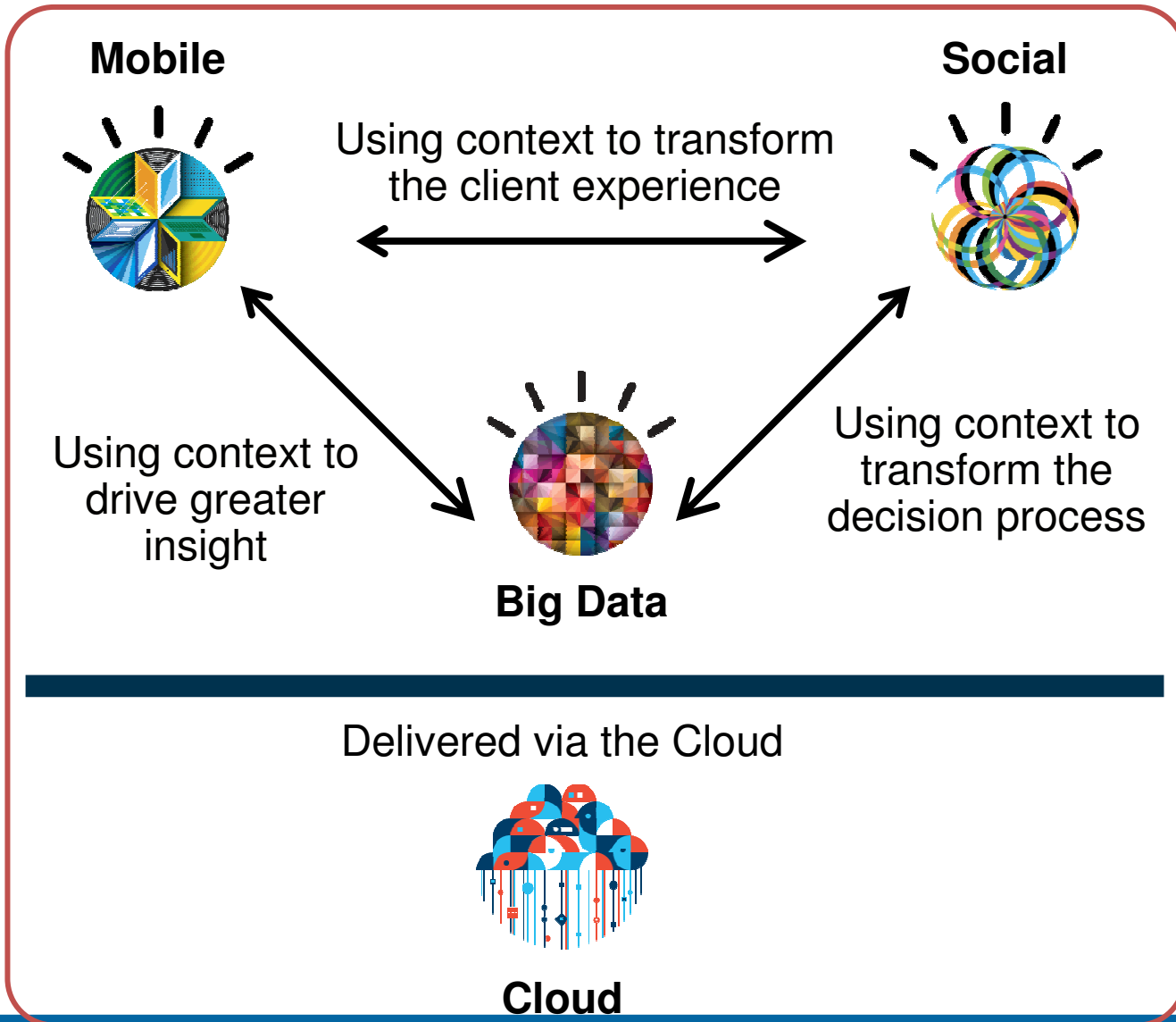# These trends also drive more engaging applications

Mobile

Using context to transform the client experience

Social

Using context to drive greater insight

Big Data

Using context to transform the decision process

Delivered via the Cloud

Cloud

These Trends Drive new Systems of Engagement…But…

Mobile

Social

Using context to transform the client experience

Using context to drive greater insight

Using context to transform the decision process

Big Data

BUT…Current IT approaches hinder client **Agility** and **Responsiveness** to new opportunities enabled through Systems of Engagement
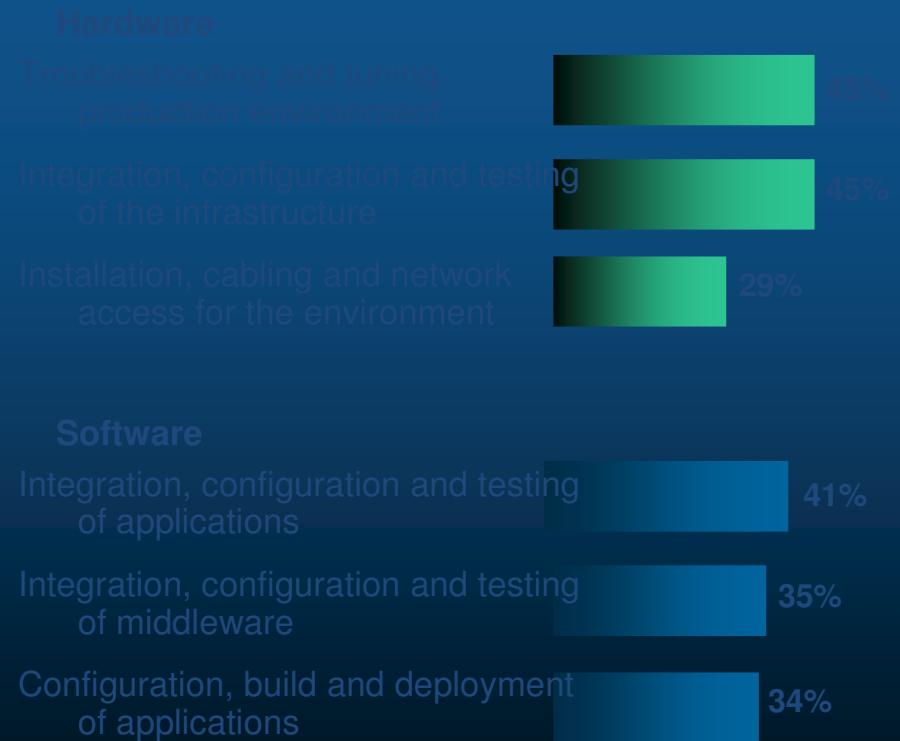
Delivered via the Cloud

Cloud

Clients struggle to overcome barriers of time, cost and risk

Typical IT Project Time and Budget

Phase	Time (days)	Budget
Specify/design	73 - 96	14% - 16%
Procure	57 - 112	19% - 21%
Implement	74 – 93	12%
Configure/test	74 – 80	10% - 11%
Cluster & HA	66 – 104	11% - 12%
Backup	44 – 108	10%
Tune	89 – 98	9% - 10%
Management	67 – 110	9 – 10%

34% of new IT projects (US) *deploy late*

Top Causes of Project Delays

Hardware

Troubleshooting and tuning production environment

Integration, configuration and testing of the infrastructure — 45%

Installation, cabling and network access for the environment — 29%

Software

Integration, configuration and testing of applications — 41%

Integration, configuration and testing of middleware — 35%

Configuration, build and deployment of applications — 34%

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

to April 11, 2013

IBM

Organisations have tried various approaches to close the gap

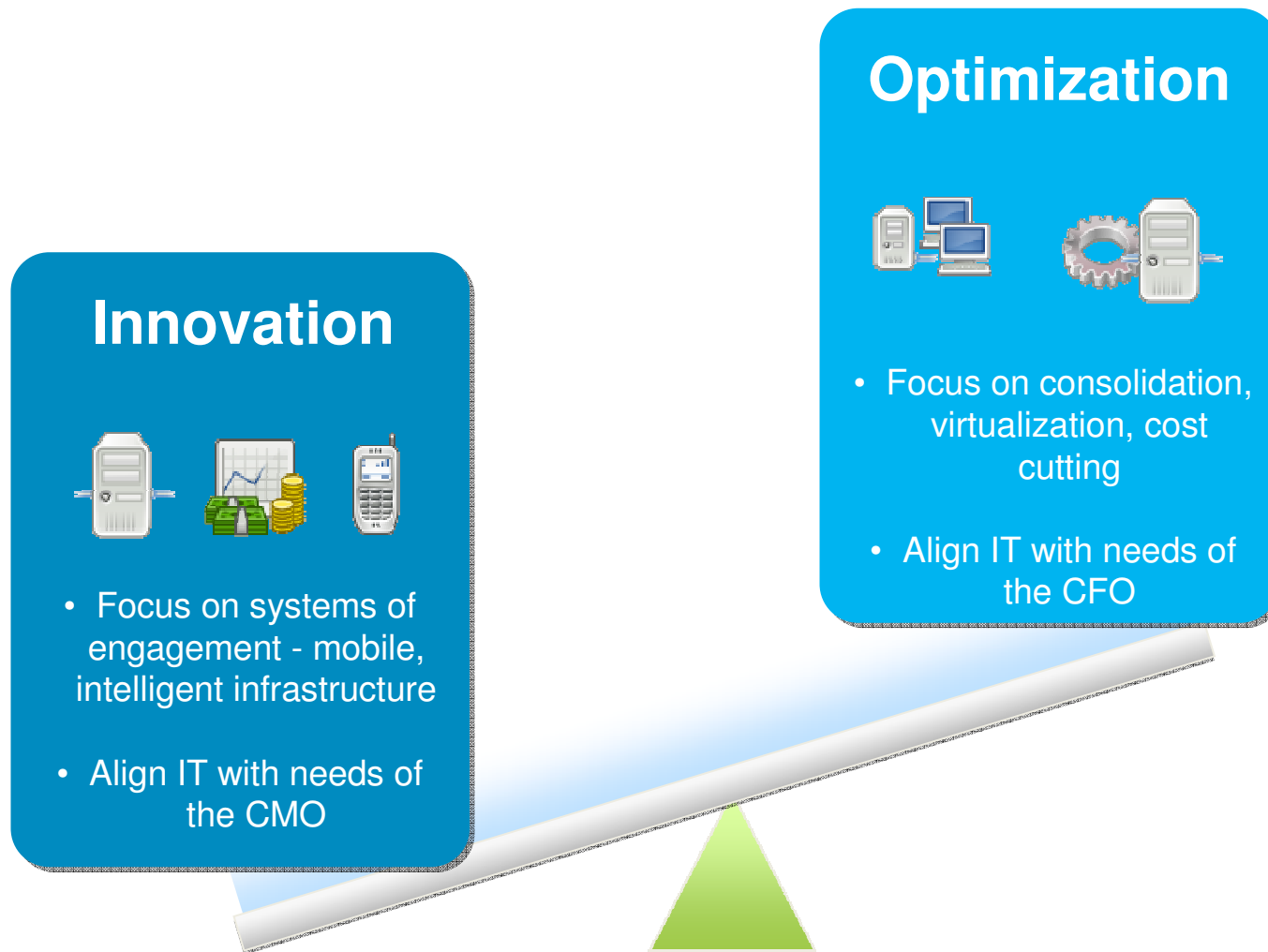|	Client-tuned Systems	Appliances	Cloud
Benefits	Flexibility Control	Simplicity Rapid Deployment	Agility Elasticity
Challenges	Time and Expense Required	Single Purpose	Shared Dependence
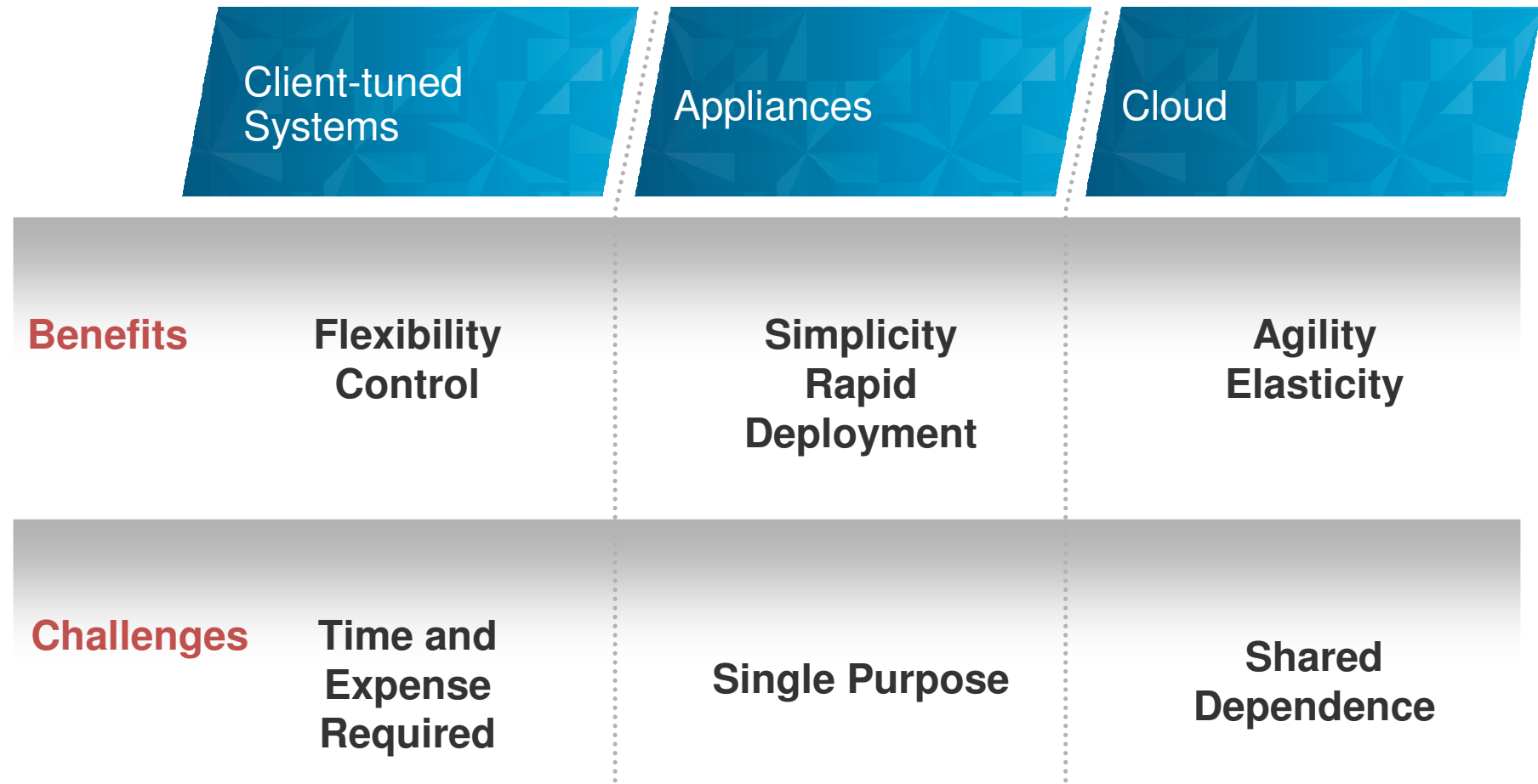
What if you could have the best of all three?

PureSystems - helps IT leaders shift the balance of investments to Innovation, helping drive Business Agility & Market Responsiveness for their business

Optimization

- Focus on consolidation, virtualization, cost cutting

- Align IT with needs of the CFO

Innovation

- Focus on systems of engagement - mobile, intelligent infrastructure

- Align IT with needs of the CMO

IBM's APPROACH

PureSystems - IBM Innovations for the Most Demanding Workloads

The IBM PureSystems Family Fundamentally Change the Economics and Experience of IT

PureSystems
Systems with integrated expertise and built for cloud

Built-in Expertise
Capturing and automating what experts do – from the infrastructure patterns to the application patterns

Integration by Design
Deeply integrating and tuning hardware and software – in a ready-to-go workload optimized system

Simplified Experience
Making every part of the IT lifecycle easier - *with integrated management of the entire system and a broad open ecosystem of optimized solutions*

The PureSystems family that changed the economics of IT and accelerate time to value

PureFlex

Infrastructure

Delivering Infrastructure Services

PureApplication

Application Platform

Delivering Platform Services

PureData

Data Platform

Delivering Data Services

PUREAPPLICATION SYSTEMS

Innovations to meet requirements of demanding workloads

IBM

Attributes Of Demanding Workload

- Ease of deploying the workload environment
- Ease of replicating the workload environment
- Ease of maintaining the workload environment
- Handling unpredictable spike
- Ease of DR infrastructure setup

PureApplication System is…

- A pre-integrated **cloud application platform (PaaS)**

- Shipped **ready to run**

- Designed to be **simple**

Broad, open, and extensible ecosystem of available **pattern content**

Enterprise-class **cloud application platform** with integrated **pattern engine**

Fault tolerant **hardware infrastructure**

Small rack (25U)

Large rack (42U)

PureApplication System – Capabilities

Application patterns from IBM and partners

Patterns of Expertise

- 100+ ISV business applications
- Business intelligence
- Business process management
- Web experience (Portal)

Integrates an application platform optimized for enterprise applications

Application Platform

- Application Optimization
- System wide Management
- Automation & Scaling
- Caching & Elasticity
- Application Centric Provisioning
- Usage Metering

- Security
- Monitoring
- App Lifecycle Management
- License Management
- Self-service
- Data management

Inherits the capabilities of **PureFlex System**

System Infrastructure

- Integrated Server, Storage, Network
- Power Management
- Storage & VM Optimization
- Virtualization
- Integrated System Management

- Provisioning
- Security
- Monitoring
- IT Lifecycle Management
- System design

PureApplication System adds deep application-aware value to its PureFlex foundation!
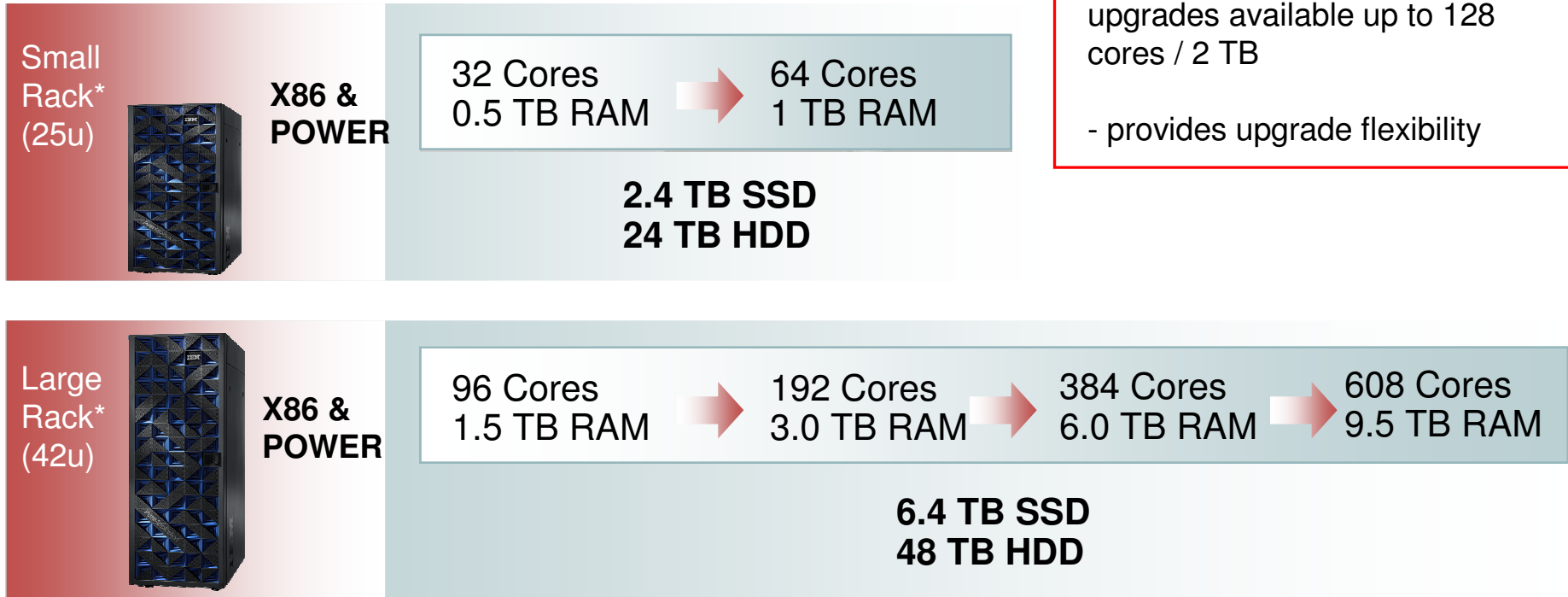
PureApplication System Configurations

* Incremental 32 core/0.5TB upgrades available up to 128 cores / 2 TB

- provides upgrade flexibility
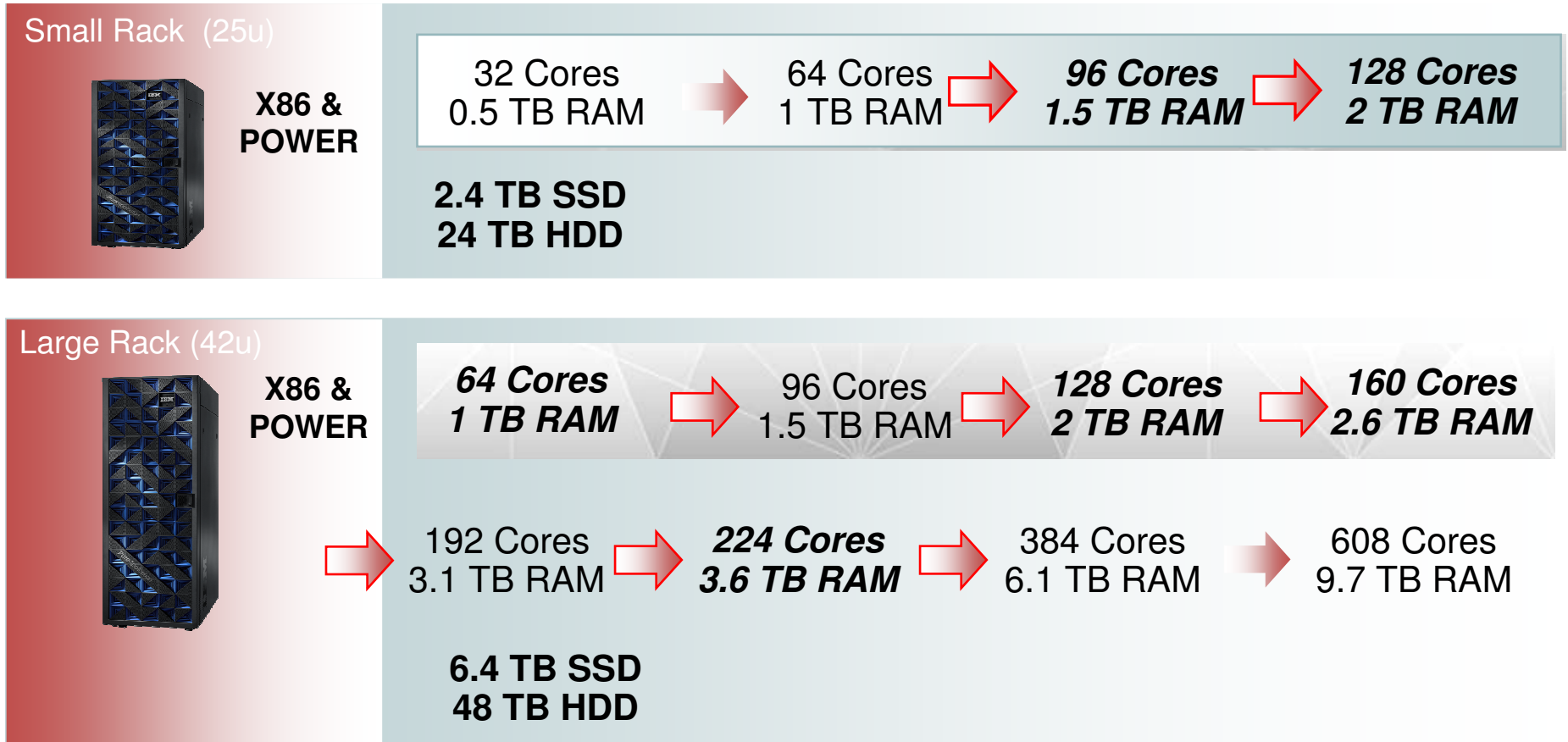
Small Rack* (25u)

X86 & POWER

32 Cores 0.5 TB RAM	➡	64 Cores 1 TB RAM

2.4 TB SSD
24 TB HDD

Large Rack* (42u)

X86 & POWER

96 Cores 1.5 TB RAM	➡	192 Cores 3.0 TB RAM	➡	384 Cores 6.0 TB RAM	➡	608 Cores 9.5 TB RAM

6.4 TB SSD
48 TB HDD

All configurations include:
- **Rack, Chassis, PDUs**
- **Networking** (Top of Rack, Chassis & Fibre)
- **Pre-integrated software entitled for full capacity of configuration:** OS, Hypervisor, application server, database, Java runtime, cloud provisioning, management and full stack monitoring

➡ Upgrade configurations **without taking an outage**

PureApplication System Configurations

Small Rack (25u)

X86 & POWER

| 32 Cores 0.5 TB RAM | → | 64 Cores 1 TB RAM | → | *96 Cores 1.5 TB RAM* | → | *128 Cores 2 TB RAM* |

2.4 TB SSD
24 TB HDD

Large Rack (42u)

X86 & POWER

| *64 Cores 1 TB RAM* | → | 96 Cores 1.5 TB RAM | → | *128 Cores 2 TB RAM* | → | *160 Cores 2.6 TB RAM* |

| → | 192 Cores 3.1 TB RAM | → | *224 Cores 3.6 TB RAM* | → | 384 Cores 6.1 TB RAM | → | 608 Cores 9.7 TB RAM |

6.4 TB SSD
48 TB HDD

- Existing models and upgrades remain unchanged

Shift from providing individual infrastructure components to delivering software patterns

Software 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 repeatable deployable form with full lifecycle management**
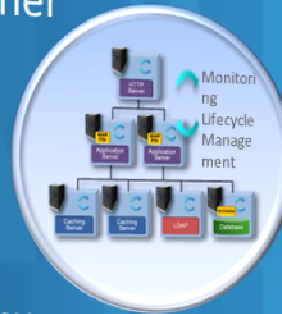
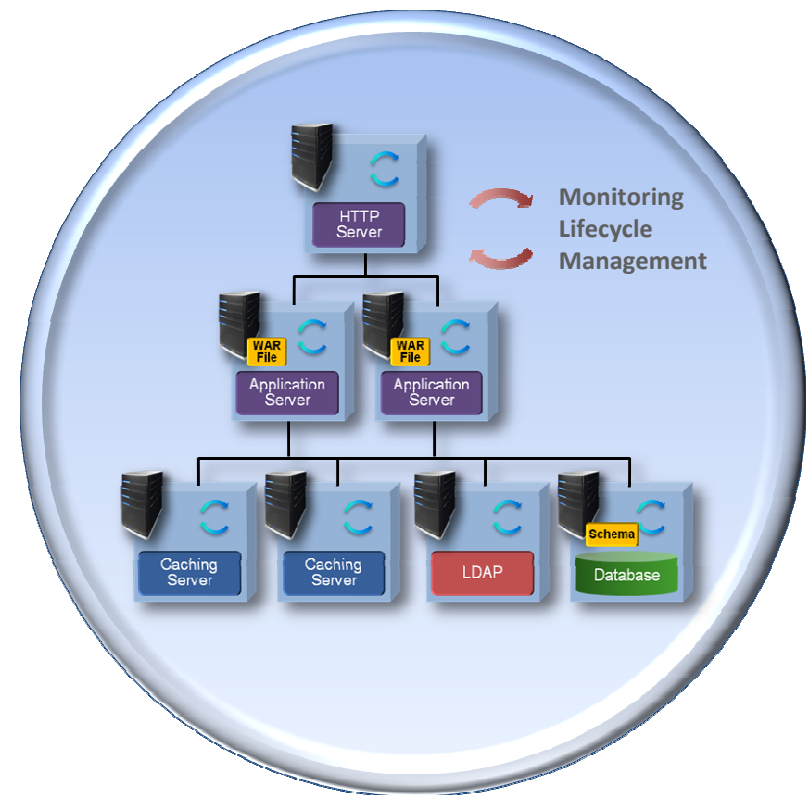Three ways to get the value of patterns of expertise

- Use **IBM** patterns of expertise throughout the system

- Patterns : Leverage **third-party** application patterns of expertise

- Capture **your own** expertise

IBM.

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*
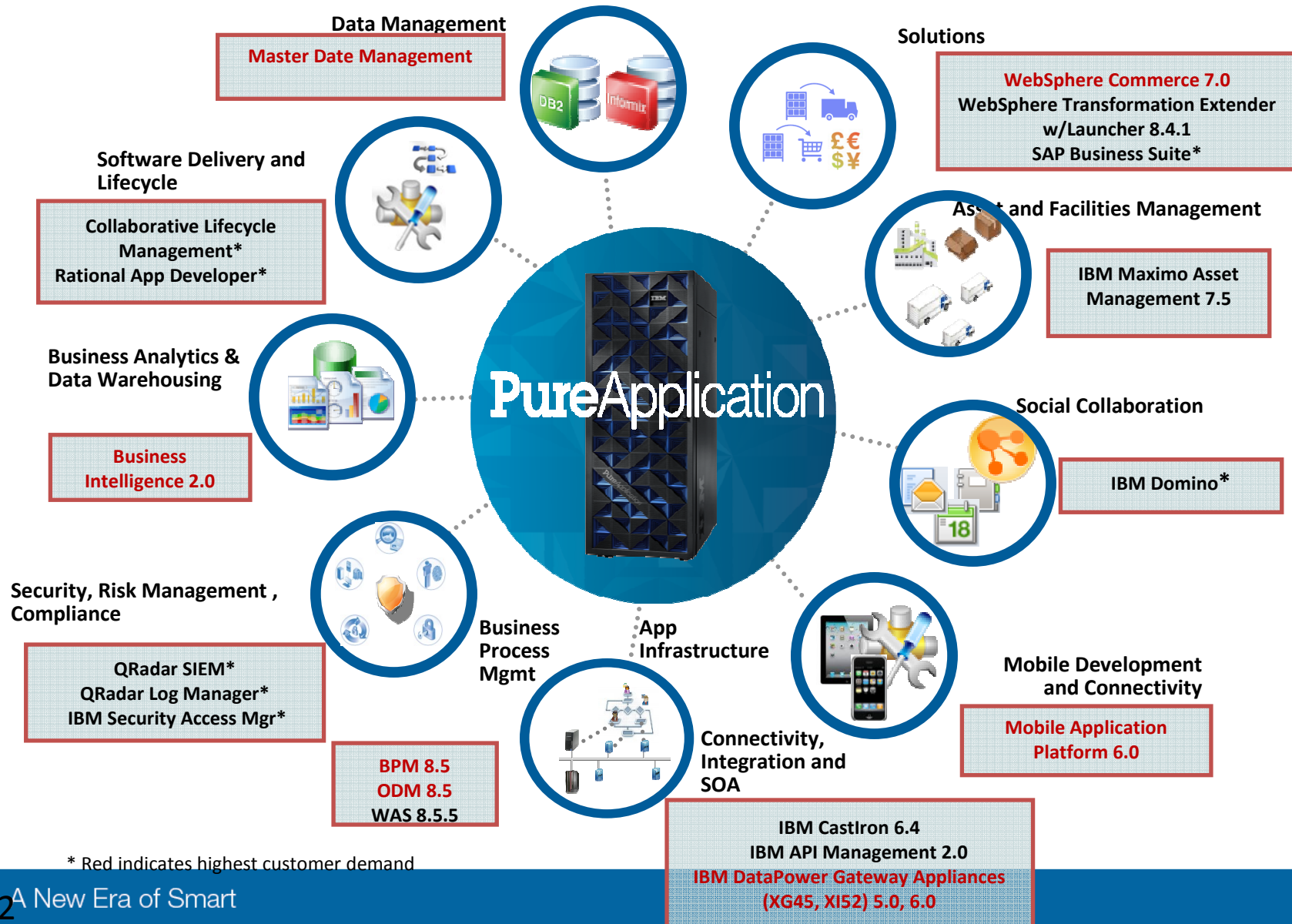
What is a Pattern?

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

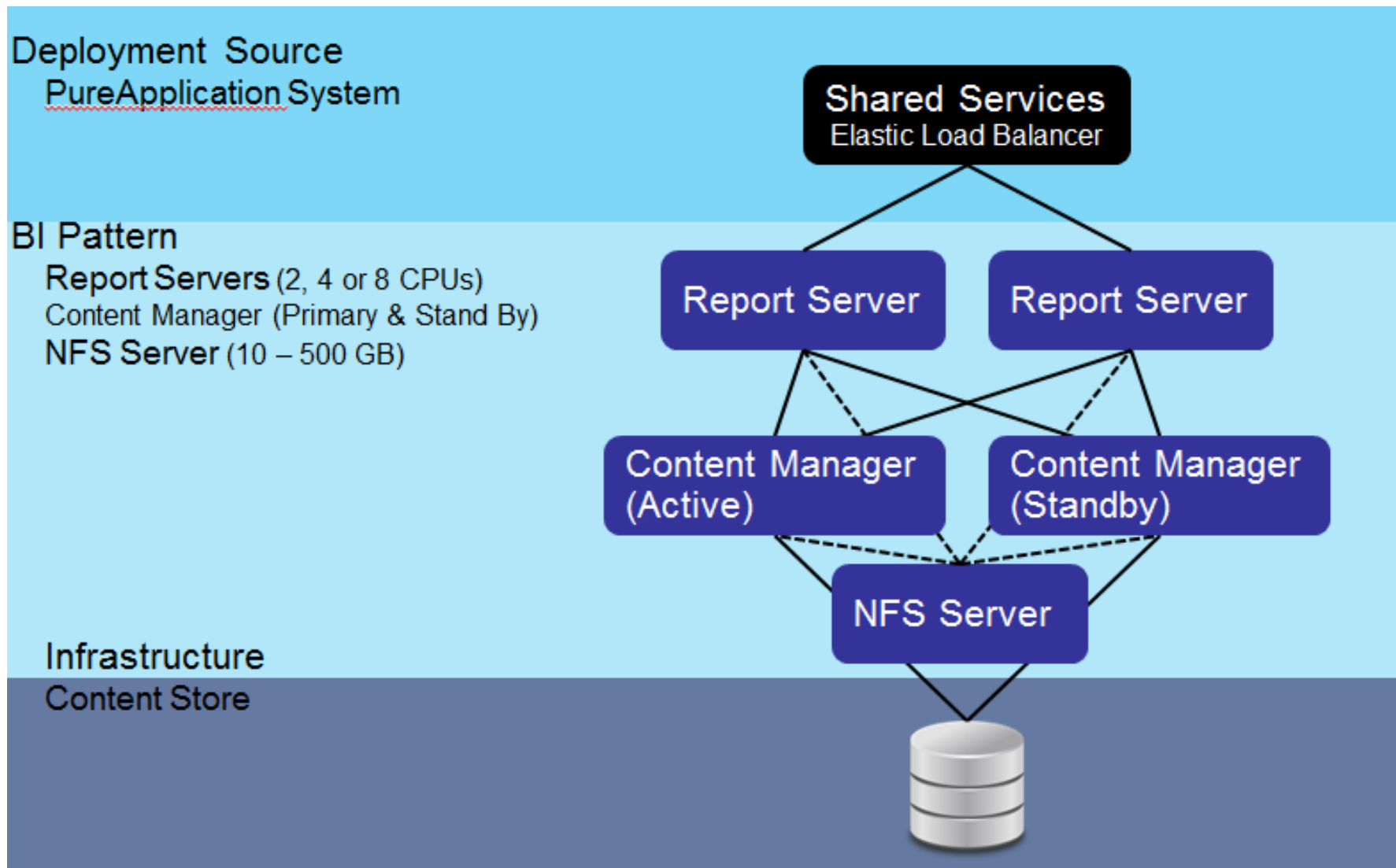# IBM Patterns of Expertise Optimize Leading Software Capabilities

Data Management

Master Date Management

Solutions

WebSphere Commerce 7.0
WebSphere Transformation Extender
w/Launcher 8.4.1
SAP Business Suite*

Software Delivery and Lifecycle

Collaborative Lifecycle Management*
Rational App Developer*

Asset and Facilities Management

IBM Maximo Asset Management 7.5

Business Analytics & Data Warehousing

Business Intelligence 2.0

PureApplication

Social Collaboration

IBM Domino*

Security, Risk Management , Compliance

QRadar SIEM*
QRadar Log Manager*
IBM Security Access Mgr*

Business Process Mgmt

App Infrastructure

Mobile Development and Connectivity

Mobile Application Platform 6.0

BPM 8.5
ODM 8.5
WAS 8.5.5

Connectivity, Integration and SOA

IBM CastIron 6.4
IBM API Management 2.0
IBM DataPower Gateway Appliances (XG45, XI52) 5.0, 6.0

* Red indicates highest customer demand

Demanding Workload : Patterns Of Expertise

The IBM Business Intelligence Pattern 2.0

Deployment Source
PureApplication System

Shared Services
Elastic Load Balancer

BI Pattern
Report Servers (2, 4 or 8 CPUs)
Content Manager (Primary & Stand By)
NFS Server (10 – 500 GB)

Report Server

Report Server

Content Manager (Active)

Content Manager (Standby)

NFS Server

Infrastructure
Content Store

Global Bank Production Business Intelligence Deployment
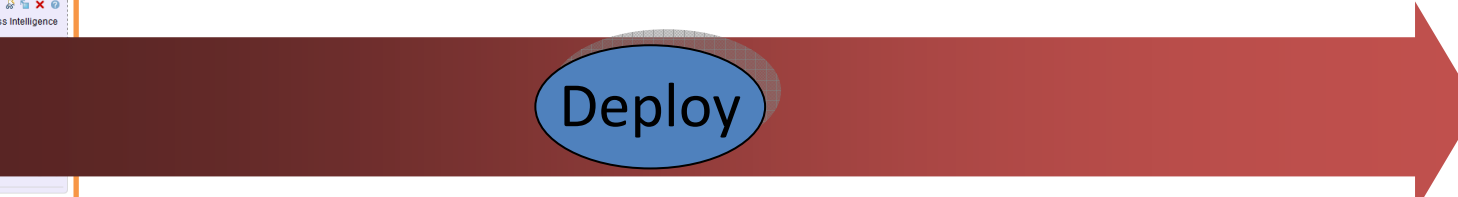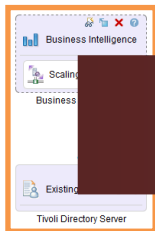
Deploy

▪**Time taken to Deploy/Provision the environment - 29 minutes**
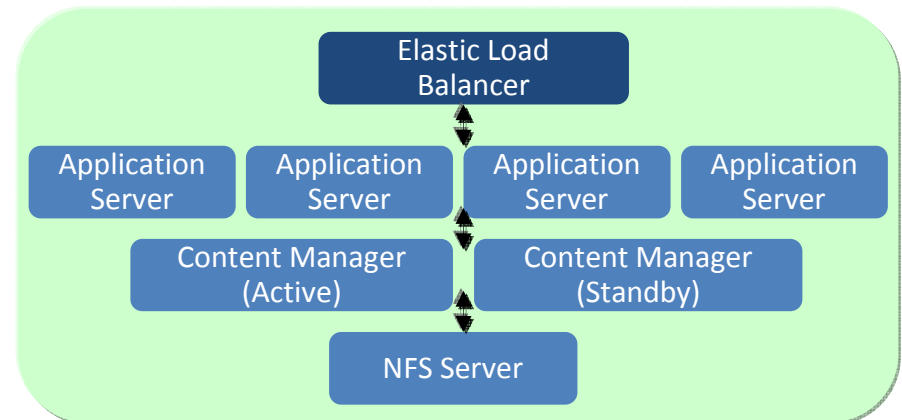▪**Infrastructure Breakdown**
   ▪**Application servers**   - 4 x [8vCPU's/64GB RAM/62GB Disk]
   ▪**Content Manager servers**   - 2 x [8vCPU's/18GB RAM/62GB Disk]
   ▪**NFS Server**   - 1 x [4vCPU's/8GB RAM/62GB Disk]

           52vCPU's/296GB RAM/434 GB DISK


Additional Activities:

- Successfully *applied fix pack to the running production* environment with a single click and minimal downtime (**~12 mins**.)

- *Infrastructure monitoring and logging* of deployed servers from the monitoring console

- General *configuration management operations* tasks such updating passwords/changing setting etc. from the operations console

Elastic Load Balancer			
Application Server	Application Server	Application Server	Application Server
Content Manager (Active)		Content Manager (Standby)	
NFS Server			

IBM BPM Best Practice ("Golden") Topology
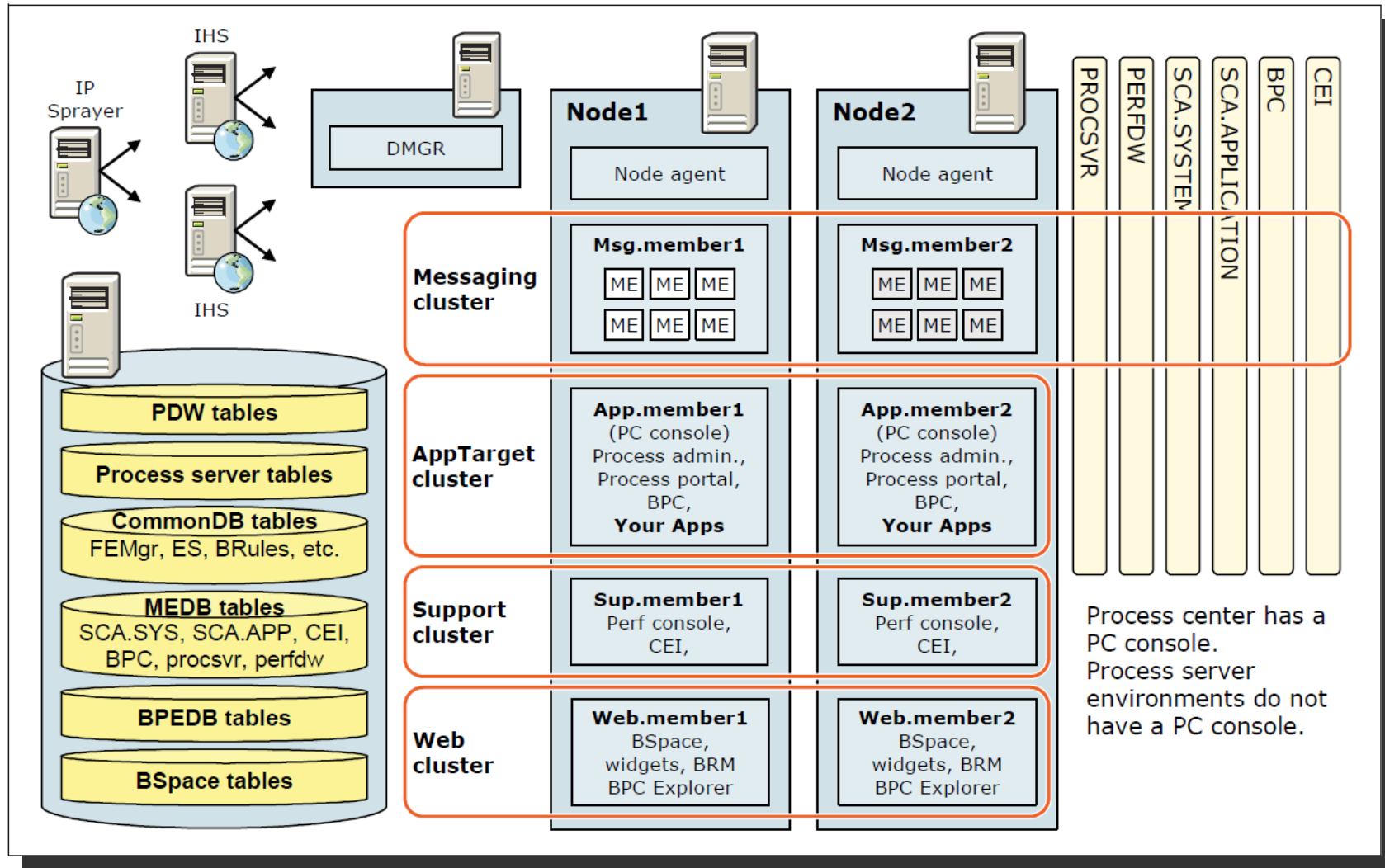
Spin up Business Process Environments in Minutes

PureApplication

- *Significantly simplify the provisioning and management of development, test, or production BPM environments*

Deploy → •BPM
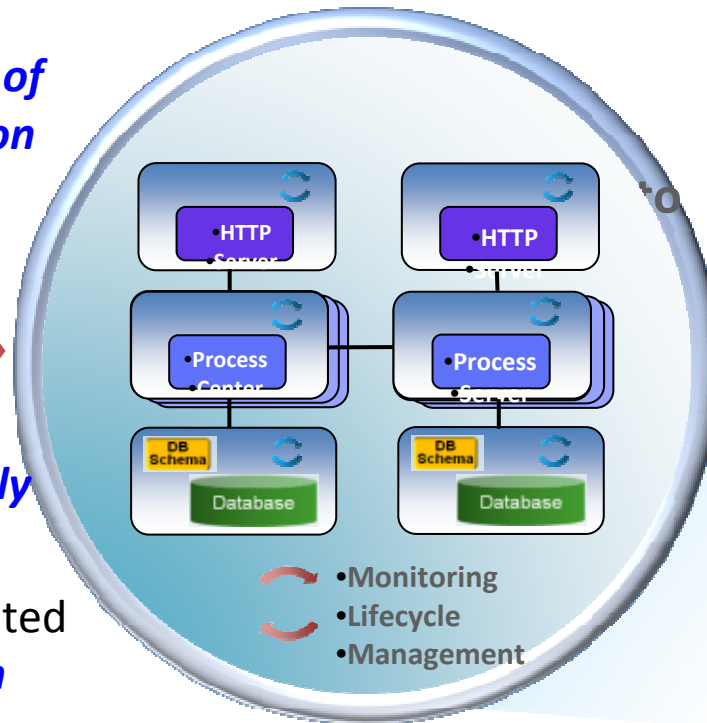
- Provides IBM recommended *highly available elastic* golden topology

- Reduces the time with an automated *setup* of these *environments from days to minutes*

- Enables *repeatable deployment* with the *ability to customize* and extend the pattern to better meet your requirements

- Easier environment management and maintenance with the ability to *monitor and apply maintenance at the pattern level* instead of individual server instances.

- •HTTP •Server
- •HTTP •Server
- •Process •Center
- •Process •Server
- DB Schema
- Database
- DB Schema
- Database
- •Monitoring
- •Lifecycle
- •Management

Accelerate Time to Value with PureApplication System Patterns of Expertise

		Traditional	With PureAS
Increasing speed and flexibility	Test provisioning	Weeks	Minutes
	Change management	Months	Days/hours
	Release management	Weeks	Minutes
	Service access	Administered	Self-service
	Standardization	Complex	Reuse/share
Reducing costs	Metering/billing	Fixed cost	Variable cost
	Server/storage utilization	10–20%	~ 70 %
	Payback period	Years	Months

PureApplication System's capabilities go beyond Patterns of Expertise & Resource pooling

- *Rapid and reliable provisioning* of pattern-based application environments
  - Self-service provisioning of the most complex environments
  - Reusable to save time, reduce costs and risk
- *Improved, accelerated application development* lifecycles
  - Enables test environments to be deployed and deleted as needed
  - Eliminates expensive, difficult-to-control "just in case" test environments and images
- *Single pane of glass management* (including software license usage and enforcement) simplifies administration, reduces cost
- *Automated monitoring* and management of application policies, SLAs, and system performance
  - Automatically adjusts and optimizes resources as needed
  - Migrates and/or provisions resources automatically to avoid incidents; identifies and isolates problems to facilitate resolution
- *Automated patching and updates* – use of pre-integrated and pre-tested downloads simplifies upgrades, reduces cost; applicable across both hardware and software components

Automated Vertical and Horizontal Scaling

Faster response times during usage spikes

- Smooth response times under load with automated vertical scaling

- PureApplication System offers options for scaling patterns to address demand spikes:
  - **Vertical**: increase CPU/memory resource allocated to existing nodes/server instances
  - **Horizontal**: add additional VMs, start additional nodes/server instances, tie into existing environment
  - **Combination**: try vertical scaling first, then move to horizontal scaling

- Decision to scale a pattern up is made based on policies specified by user
  - Types of policies available differ by pattern

Vertical Scaling

VM   VM   VM
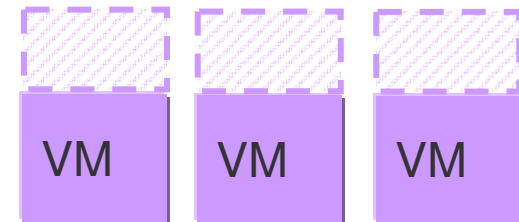
Adding resource to an existing VM takes **seconds**

Horizontal Scaling

VM   VM   VM   VM

**Adding a VM** takes **minutes**

PureApplication System - Disaster Recovery in 5 Clicks

Delivering easy-to-use **cross-site disaster recovery** for applications - setup **in just 5 clicks!**
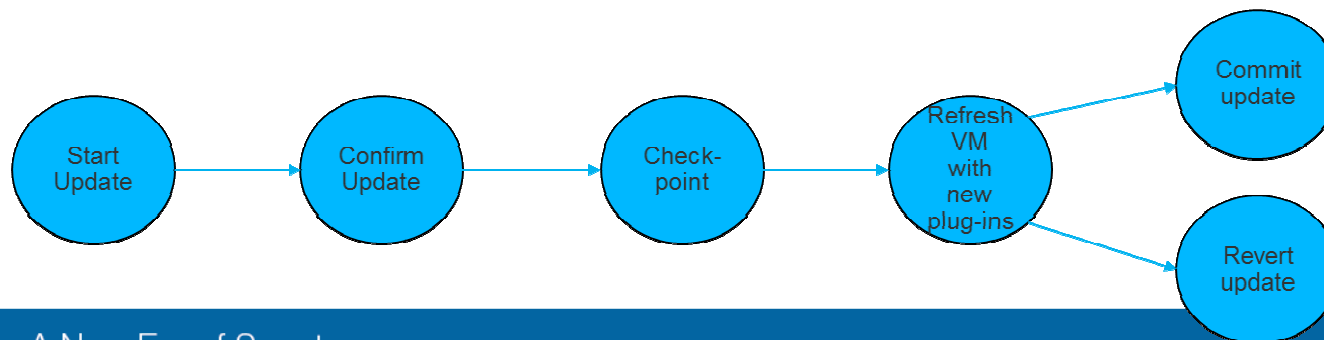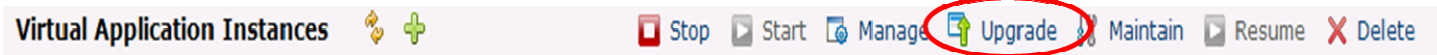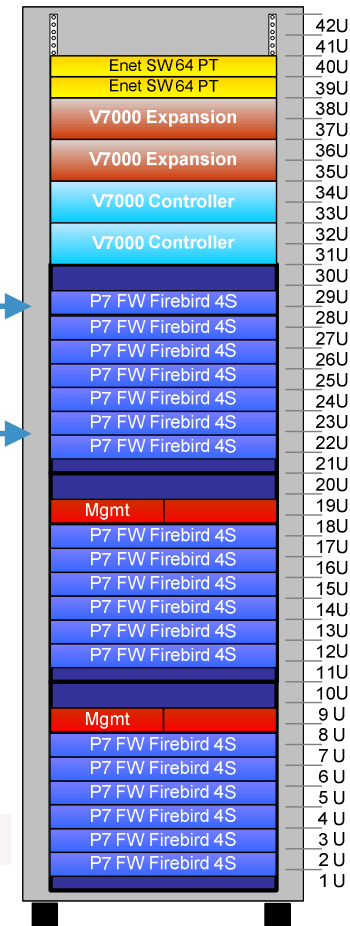
- Active/passive replication DR solution setup **in just 5 clicks** on each system!

- Achieve business continuity for **all applications** running on the system

- Begin recovery from planned or unplanned failures with two clicks

- Up to 8,000 km between systems
  - Uses asynchronous replication for improved performance

- Recovery Point Objectives (RPOs):
  - Planned failover: **zero** data loss
  - Unplanned failover: **near zero** data loss

- Recovery Time Objectives (RTOs) vary on application startup time, between 2-8 hours

Primary   Backup

DWDM

Fiber

A-sync replication
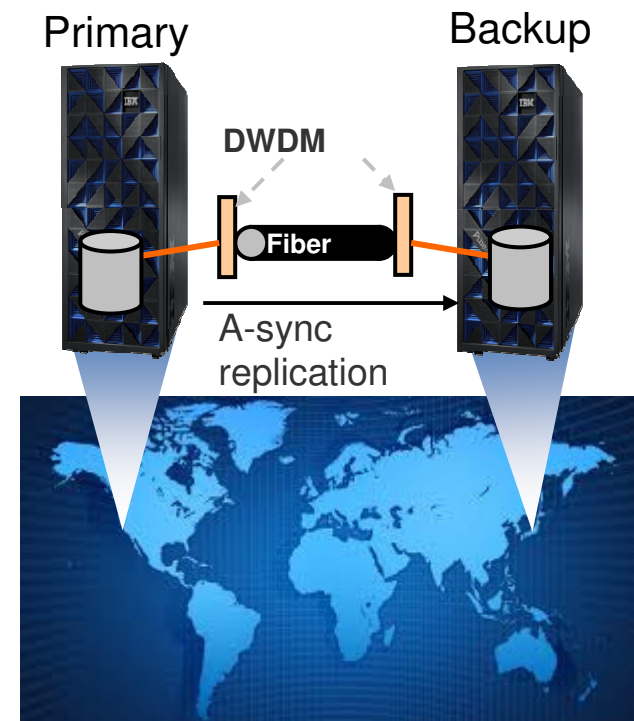
PureApplication System – Maintenance and Updates

- Maintenance consists of applying single update package
  - System Update
  - Content update

- Updates can be
  - Cumulative
  - Emergency fixes

- Packaging
  - Single monolithic package for system
  - Separate upgrades for content or single package

	42U
	41U
Enet SW 64 PT	40U
Enet SW 64 PT	39U
V7000 Expansion	38U
	37U
V7000 Expansion	36U
	35U
V7000 Controller	34U
	33U
V7000 Controller	32U
	31U
	30U
P7 FW Firebird 4S	29U
P7 FW Firebird 4S	28U
P7 FW Firebird 4S	27U
P7 FW Firebird 4S	26U
P7 FW Firebird 4S	25U
P7 FW Firebird 4S	24U
P7 FW Firebird 4S	23U
P7 FW Firebird 4S	22U
	21U
	20U
Mgmt	19U
P7 FW Firebird 4S	18U
P7 FW Firebird 4S	17U
P7 FW Firebird 4S	16U
P7 FW Firebird 4S	15U
P7 FW Firebird 4S	14U
P7 FW Firebird 4S	13U
P7 FW Firebird 4S	12U
	11U
	10U
Mgmt	9 U
P7 FW Firebird 4S	8 U
P7 FW Firebird 4S	7 U
P7 FW Firebird 4S	6 U
P7 FW Firebird 4S	5 U
P7 FW Firebird 4S	4 U
P7 FW Firebird 4S	3 U
P7 FW Firebird 4S	2 U
	1 U

Workload

System

Virtual Application Instances 🔧 ➕   ⬛ Stop ▶ Start ⬚ Manage ⬆ Upgrade ⚙ Maintain ▶ Resume ✕ Delete

Start Update → Confirm Update → Check-point → Refresh VM with new plug-ins → Commit update

Refresh VM with new plug-ins → Revert update

IBM PureApplication System Integration by design

Deployment

Applications

Middleware

Development

Management

Virtualization

Storage

Networking

Servers

Optimizes the complete solution stack:

- All hardware and software components factory integrated and optimized

- Virtualized across the stack for efficiency

- Unified management, monitoring & maintenance

- Integrated and elastic application and data runtimes

- Application patterns allocate system and application resources for optimal performance, security and reliability

Recap - Traditionally IT spent valuable resources managing the applications and infrastructure instead of innovating
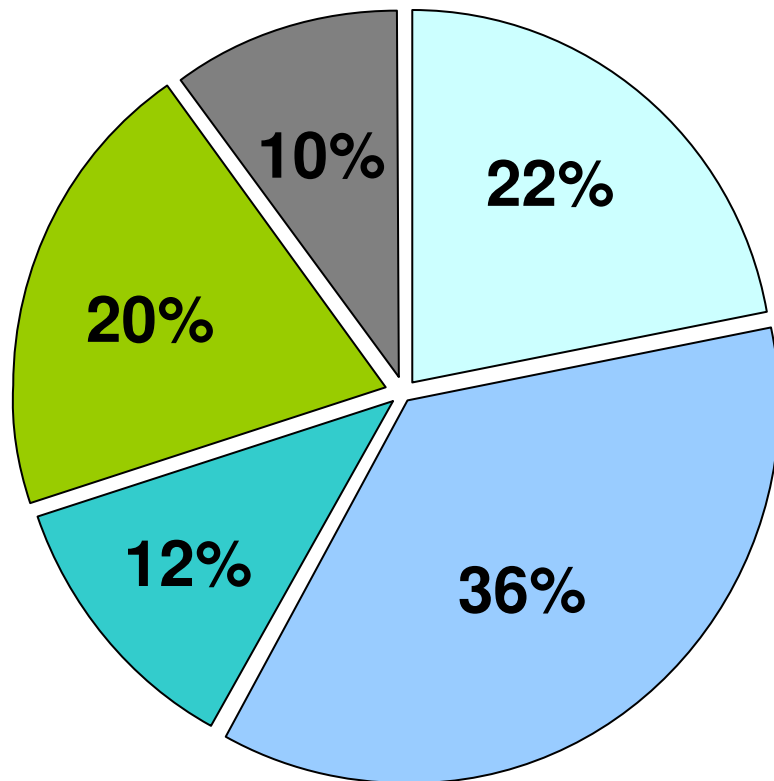
Typical percentage of time spent on each task category

Deployment Management
– *Hardware set-up and software deployment*

Incident/Capacity Management
– *Monitor and respond automatically*

Asset Management
– *Hardware and software asset tracking*

Security Management
– *Access control*

Change Management
– *Hardware and software changes*

Allocation based on customer data from IBM study

IBM PureApplication System Accelerates Demanding workload deployment with savings across the IT lifecycle

Labor Hours Spent*

9612 hrs

76%
Savings
2302 hrs

10000

5000

0

Do It Yourself   **PureApplication System**
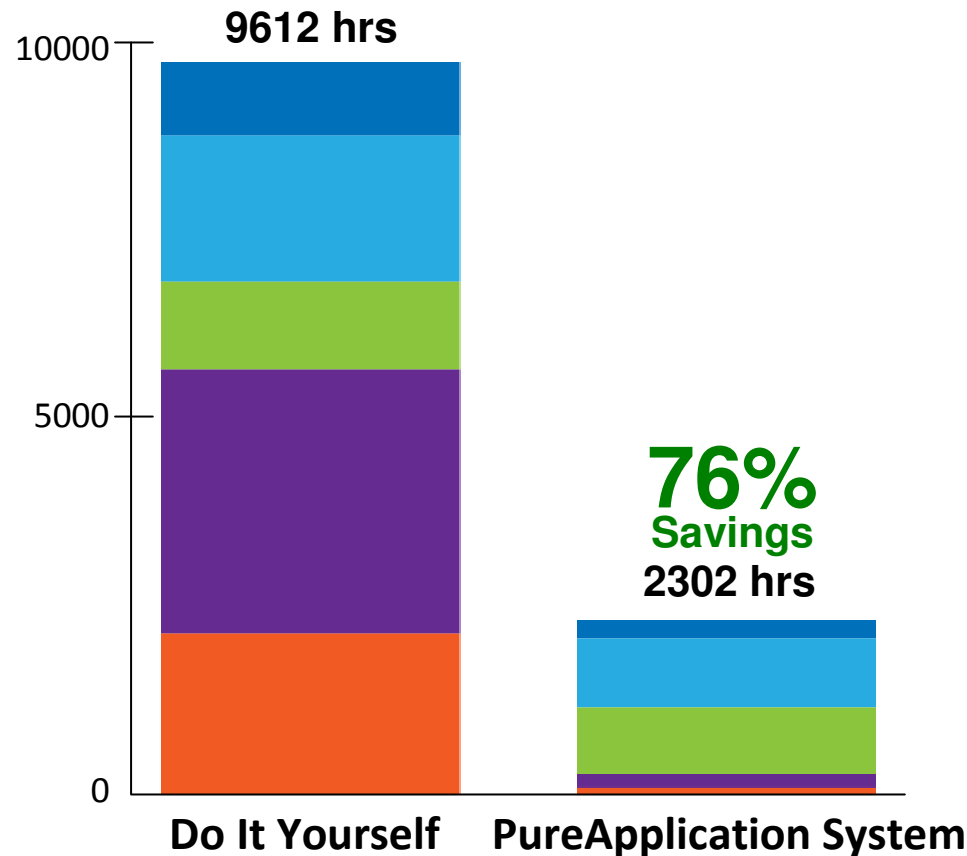
Deployment
- Fully assembled and configured
- Pre-installed management software
- Fast pattern-based deployment

Incident/capacity management
- Centrally monitor and resolve issues
- Automatic scaling

Asset management
- Track license usage of products

Security management
- Centralized access control

Change management
- Visibility into relationships of virtual images in a workload
- Automatically apply changes to desired virtual servers

*Note: Do It yourself used 9 blades (144 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.

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Thank You