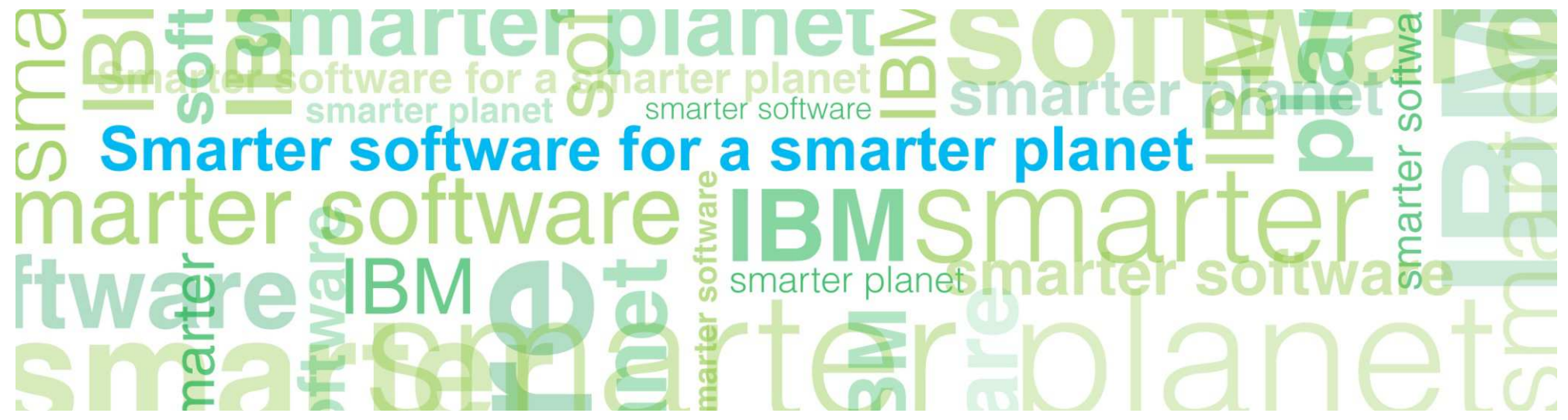# IBM Independent Integrated Systems
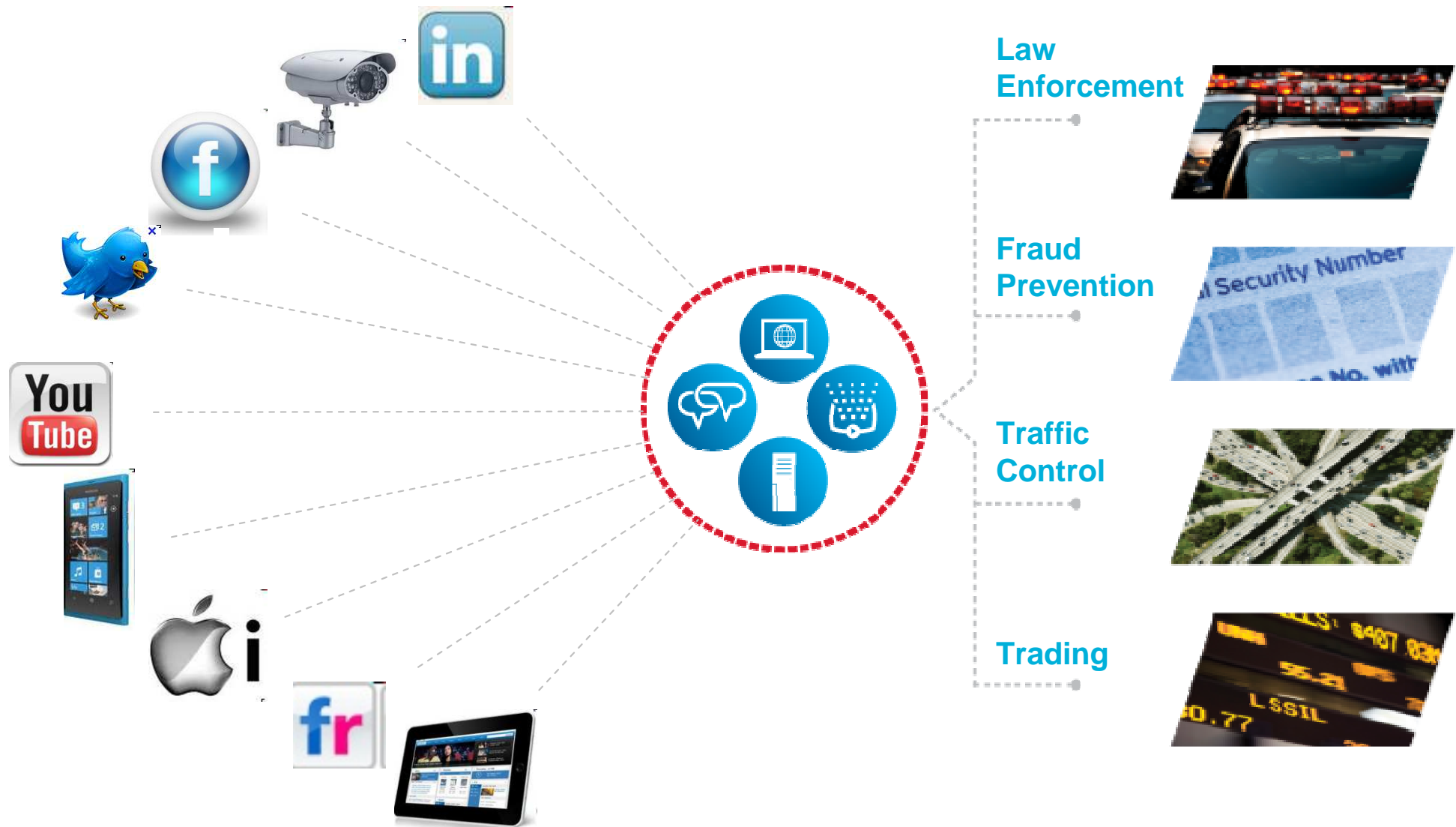
Erhan Ekici
Technical Sales
20.09.2012

Agenda

- Current IT Challenges

- Introducing IBM PureApplication System Application System

- Deployment Models

- IBM PureApplication System Architecture

- IBM PureSystems Centre

- Q & A

Smarter Planet

Law Enforcement

Fraud Prevention

Traffic Control

Trading

IBM & Turkcell Confidential

What are today's pressures and realities

**Innovation-driven CIOs believe IT can have the highest impact by creating new revenue sources[1]**

Consumerization
- Mobility
- Social business
- Iterative solutions

75% of organizations face yearly business model changes affecting applications[2]

Business Demands
- Address opportunities more quickly
- Drive business innovation
- Leverage technology more strategically

Business

IT
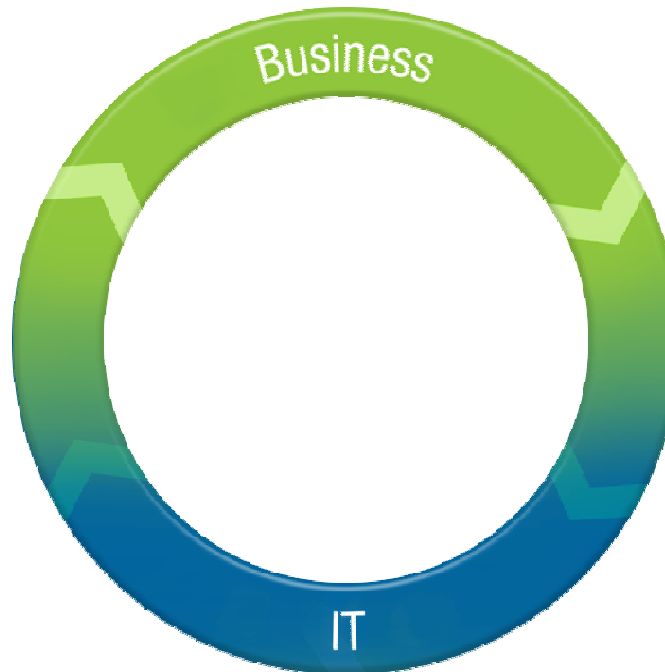
IT Needs
- Deliver new capabilities faster
- Shift resources from maintenance to transformation
- Control growing complexity

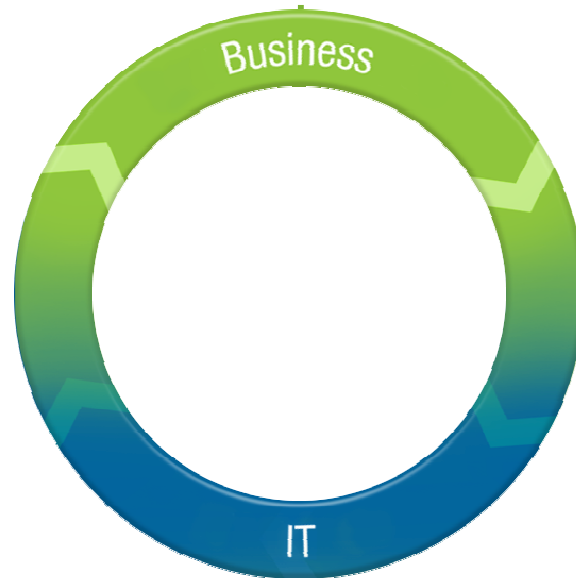1) 2011 CIO Study
2) 2010 IBM Internal Study

© 2012 IBM Corporation

You experience the barriers of time, cost and risk today
Aligning IT and business goals

Business Goals
Grow top and bottom line by:

- Driving business innovation
- Make new markets
- Respond to competitive threats
- Enhance the customer experience

IT Reality

Getting Up and Running

- 2-3 months to specify and procure
- 2-3 months to integrate, configure and deploy

Development Operations

- 3-6 months to go from development to production

Ongoing Effort

- 1-3 months to troubleshoot and tune
- Ongoing effort and downtime to maintain, scale and upgrade

Typical Results:

- 34% of new IT projects (US) deploy late
- 55% experience application downtime for major infrastructure upgrades once deployed

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

IBM & Turkcell Confidential

Only 1 in 5 can allocate more than half their IT budget to innovation

Least efficient data centers

Use of new technology:

43% first and fast technology adoption

1% move virtual machines to meet desired outcomes

21% use storage virtualization

3% use a storage service catalog (tiered storage)

Results:

New projects

35%

Maintaining existing infrastructure

65%
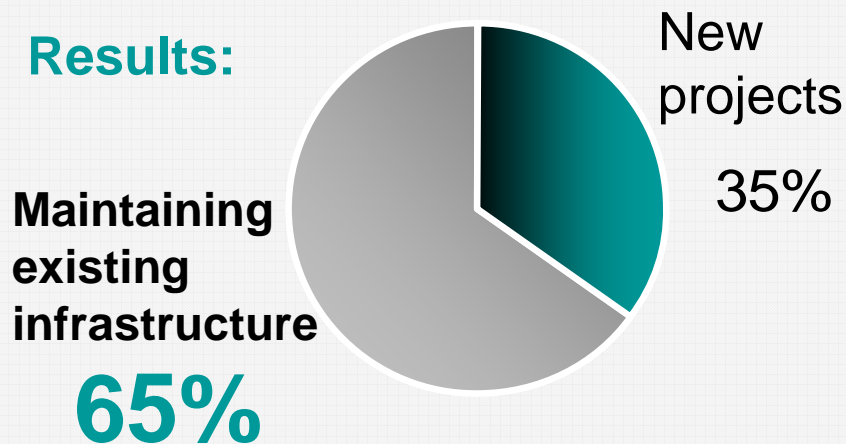
Most efficient data centers

Use of new technology:

86% first and fast technology adoption

58% move virtual machines to meet desired outcomes

93% use storage virtualization

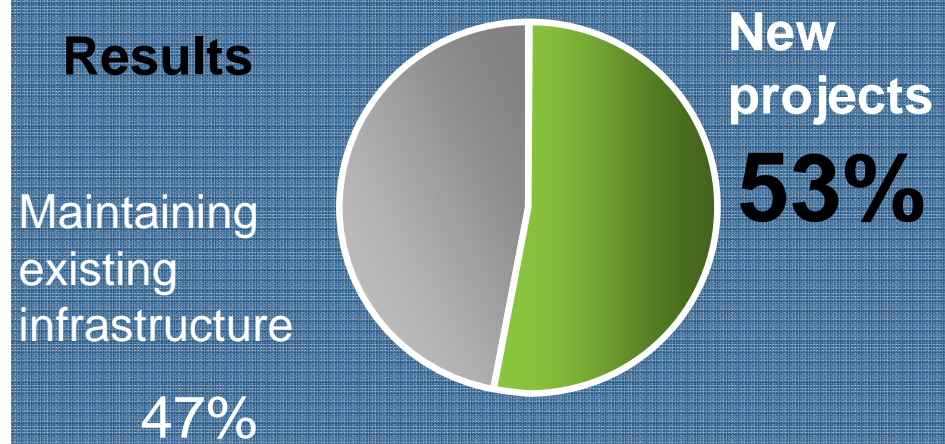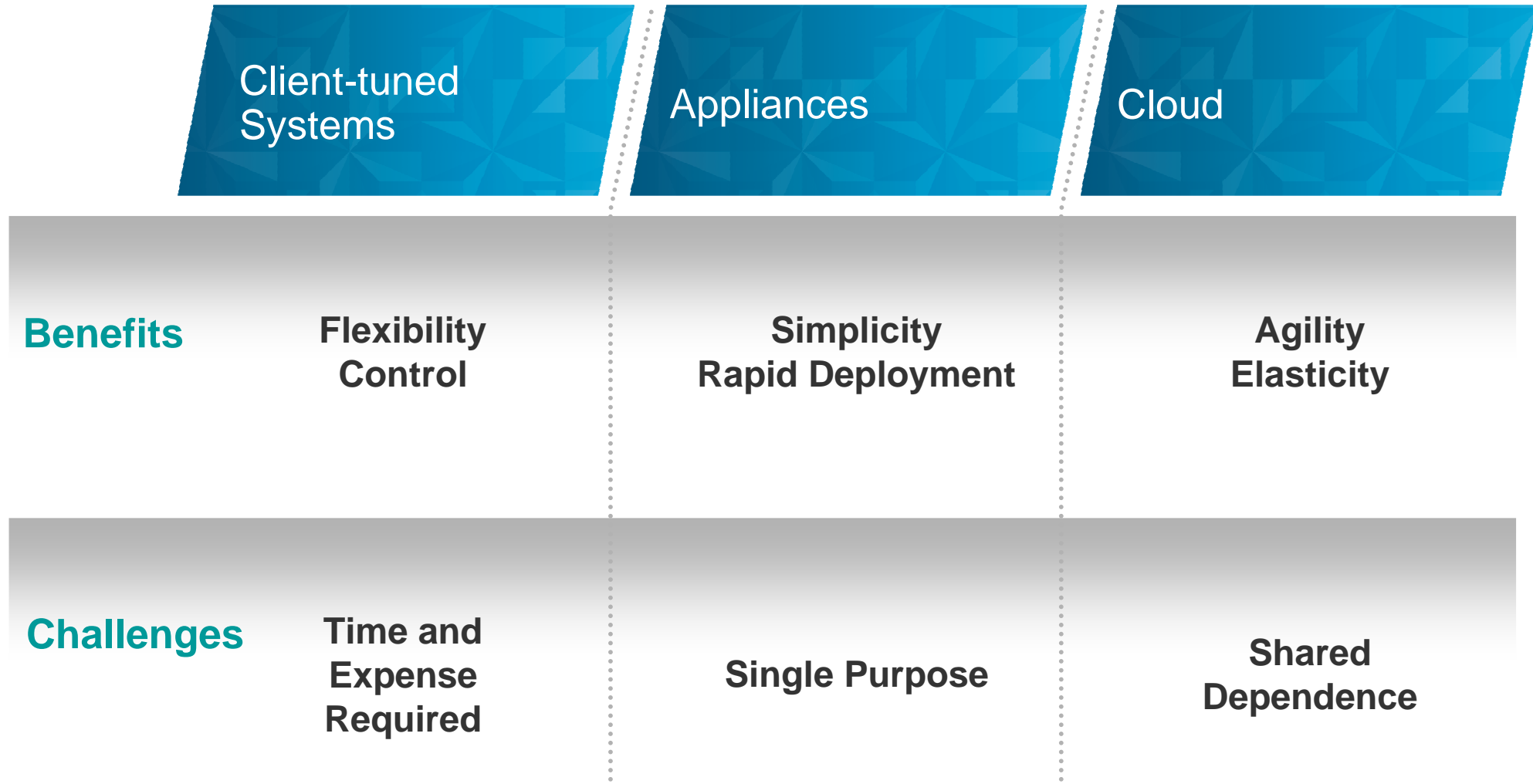**87%** use a storage service catalog (tiered storage)

Results

New projects

53%

Maintaining existing infrastructure

47%

Source: 2012 IBM Data Center Study: www.ibm.com/data-center/study (http://www.ibm.com/data-center/study)

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?

© 2012 IBM Corporation

Building custom systems is not sustainable

Up & Running

Specify/Design
Takes 30 days for an IT infrastructure system
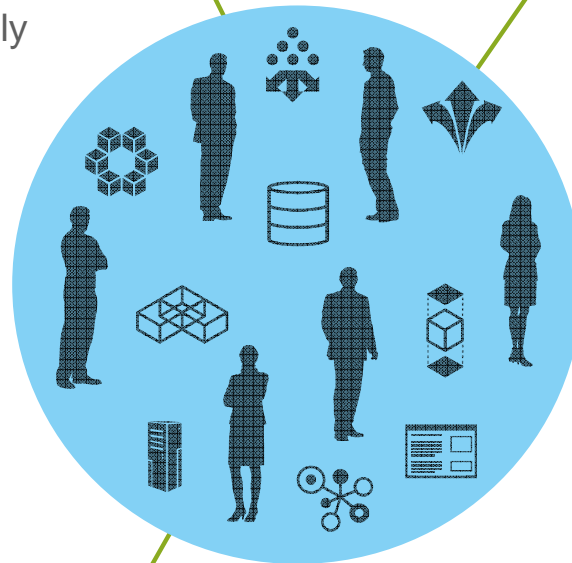
Procure
Software & hardware ordered separately taking 5-20 days

Integrate
Components arrive as "bag of parts" – requiring optimization

Deploy
Can take weeks to months

Ongoing Effort

Customize/Tune
Meeting SLAs requires customization and ongoing tuning

Scale
Lack of dynamic elasticity results in cumbersome re-allocation of resources

Manage
Managing and monitoring with multiple tools is time consuming

Maintain
Separate fixes require separate testing

Upgrade
Months to plan, procure and test; days of downtime

Development Operations

Provision
Takes 30-60 days for a development or test environment

Configure
Modified and non-standard Dev/Test/Production configurations cause errors and delay production deployments by weeks
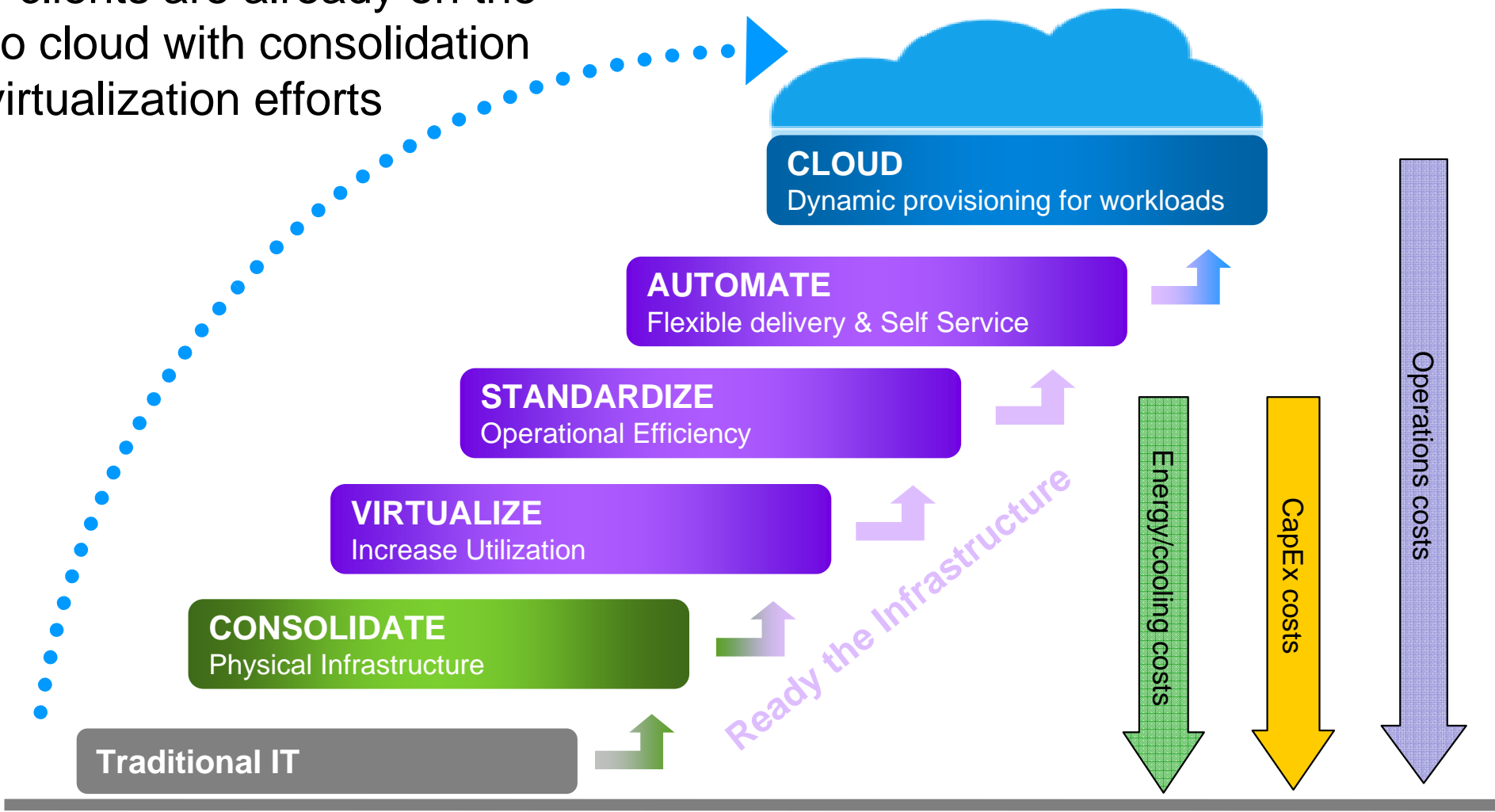
Cloud computing is delivering value today

- **Cloud is:**
  - *A new consumption and delivery model*

- **Cloud addresses:**
  - *Cost reduction*
  - *Scale*
  - *Utilization*
  - *Self-service*
  - *IT agility, flexibility and delivery of value*

- Cloud represents:
  - *The industrialization of delivery for IT supported services*

- **Cloud includes:**
  - *Deployment models: public, private, hybrid*
  - *Delivery models: Infrastructure as a Service (IaaS), Platform as a Service (PaaS), Software as a Service (SaaS) and Business Process as a Service*
  - *Focus on the End user – self service delivery*

IBM and clients are seeing benefits from cloud computing		
Test provisioning	Weeks	Minutes
Change management	Months	Days/hours
Release management	Weeks	Minutes
Service access	Administered	Self-service
Standardization	Complex	Reuse/share
Metering/billing	Fixed cost	Variable cost
Server/storage utilization	10–20%	70–90%
Payback period	Years	Months

Evolution

Many clients are already on the way to cloud with consolidation and virtualization efforts

CLOUD
Dynamic provisioning for workloads

AUTOMATE
Flexible delivery & Self Service

STANDARDIZE
Operational Efficiency

VIRTUALIZE
Increase Utilization

CONSOLIDATE
Physical Infrastructure

Traditional IT

Ready the Infrastructure

Energy/cooling costs
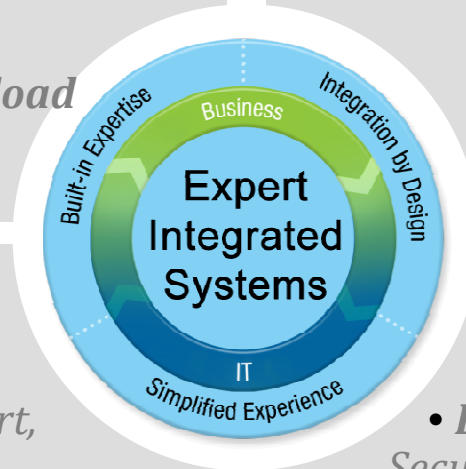
CapEx costs

Operations costs

What does that mean for you?

Agility

- **Months to hours**, *Time for deployment of new application projects dramatically decreases.*
- **Accelerate the industrial capabilities** *wide and open ecosystem*
- **Flexible compatibility to the workload** *Without re-purchasing*

Efficiency

- **Effective datacenter usage**.
- **Improve the maintenance lifecycle**, *without any outages.*
  - **Cost effective**, *switch the traditional IT approach to applicable IT costs.*

Built-in Expertise
Business
Integration by Design

Expert Integrated Systems

IT
Simplified Experience

Simplicity

- **Time saving,** *from delivery to support, test and publishing*
- **Stay away from delays**
- **Fast and simple protection,** *integrated system renewals*

Control

- **Low risk and cost with otomation** *Security and flexibility brings a smooth scalability*
- **Maximum flexibility** *with open standarts and architectures.*
- **Smart Cloud Computing**

The time has come for a new breed of systems
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
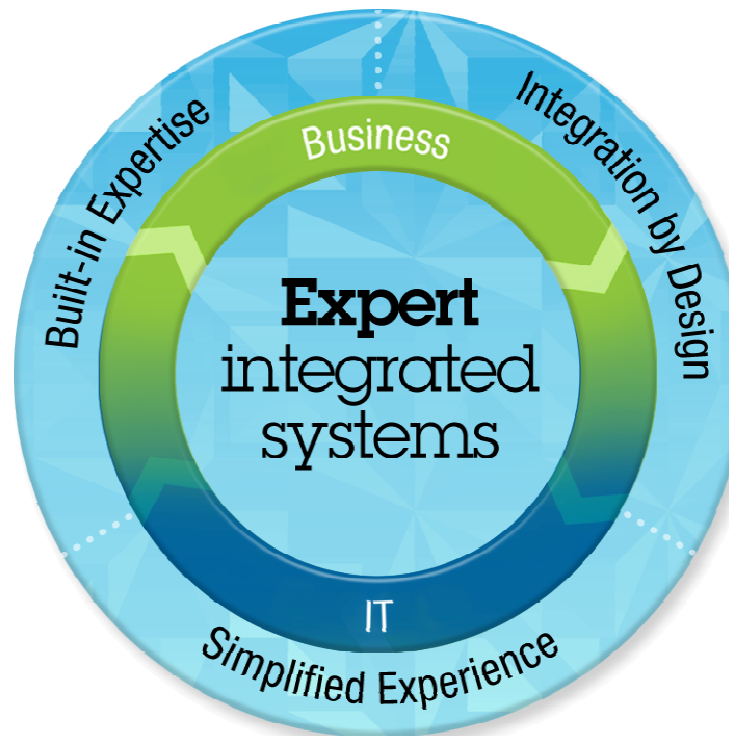
Integration by Design

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

Built-in Expertise · Business · Integration by Design

Expert integrated systems

IT · Simplified Experience
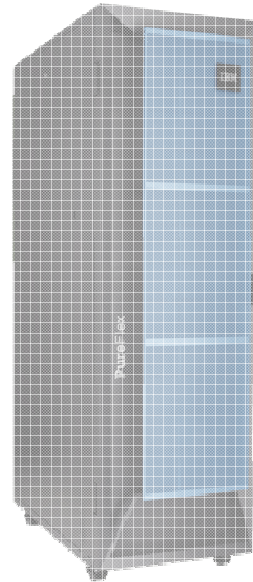
Simplified Experience

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

IBM & Turkcell Confidential

Announcing the First Two Members of the **IBM PureSystems Family**

PureFlex

Infrastructure System:
Expert at sensing and anticipating resource needs to optimize your infrastructure

PureApplication

Platform System:
Expert at optimally deploying and running applications for rapid time-to-value

Built-in expertise ▪ Integration by design ▪ Simplified experience

IBM PureApplication System integration by design

Expert integrated systems

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

Deployment
Middleware
Applications
Development
Management
Virtualization
Storage
Networking
Servers

IBM PureApplication System
A Simple, Efficient, Flexible, Virtualized Application Platform
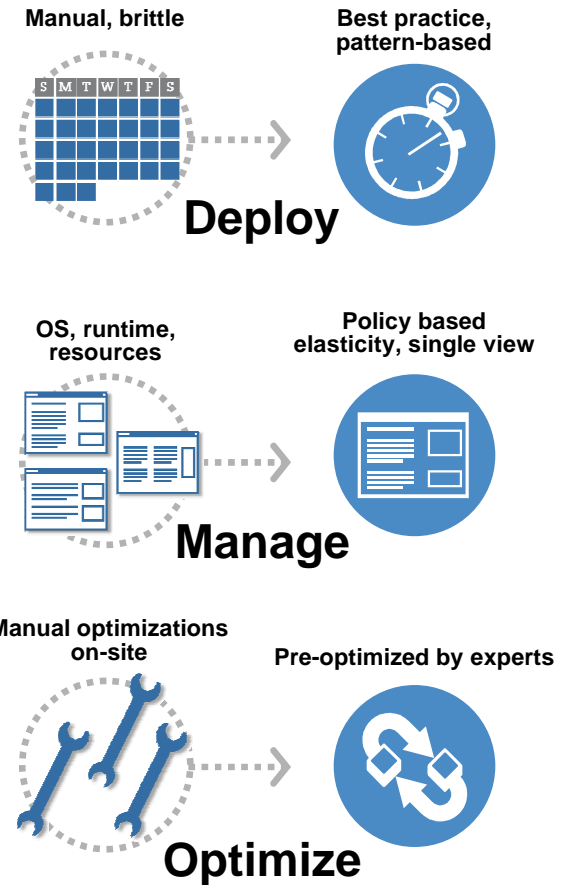
Complete, Ready-to-Go Systems

- Pre-integrated, up and running in <4 hours
- Pre-optimized for enterprise application workloads

Simplify Ongoing Tasks

- Single point of platform and application management
- Repeatable self service application provisioning

Built for Cloud

- "Platform as a Service"
- Elastic application runtimes
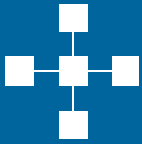
Manual, brittle   **Best practice, pattern-based**

Deploy

OS, runtime, resources   **Policy based elasticity, single view**

Manage

Manual optimizations on-site   **Pre-optimized by experts**

Optimize

IBM PureApplication System
Combining virtualized workloads with scalable infrastructure

Middleware
Data and Runtime

Deploy
From Weeks to Minutes

Manage
From Separate to Integrated

Compute
96 Way Configuration

Storage
Solid State Devices Relieve Spindles

Interconnect
Local Speeds Compute, Storage

Examples of IBM PureApplication System use cases

Initiative	Use Case EXAMPLE	IBM PureApplication System Value
Consolidate	**Consolidate 100s of applications on single system**	Single system supports 100s of web application workloads to drive **90% utilization for optimal resource efficiency.**
Optimize	**Upgrade and optimize current web application**	Manage, tune, and upgrade with no downtime your platform resources via a single management console to drive **55% reduction in cost and required management time and 98% reduction in unplanned outages.**
Innovate	**Launch self-service applications efficiently**	Web application deployment pattern of expertise can yield up to **100X faster deployment with reduced risk**
Accelerate Cloud	**Deliver IT services**	Deeply integrated Cloud deployment and application infrastructure and server virtualization can **reduce time to provision from 45 days to minutes**

IBM PureApplication System configurations

Configuration

1

6 Nodes
96 Cores
1.5 TB Ram

+

Configuration

2

12 Nodes
192 Cores
3.1 TB Ram

+

Configuration

3

24 Nodes
384 Cores
6.1 TB Ram

+

Configuration

4

38 Nodes
608 Cores
9.7 TB Ram

+

6.4 TB SSD storage
48 TB HDD storage
Application Services entitlement
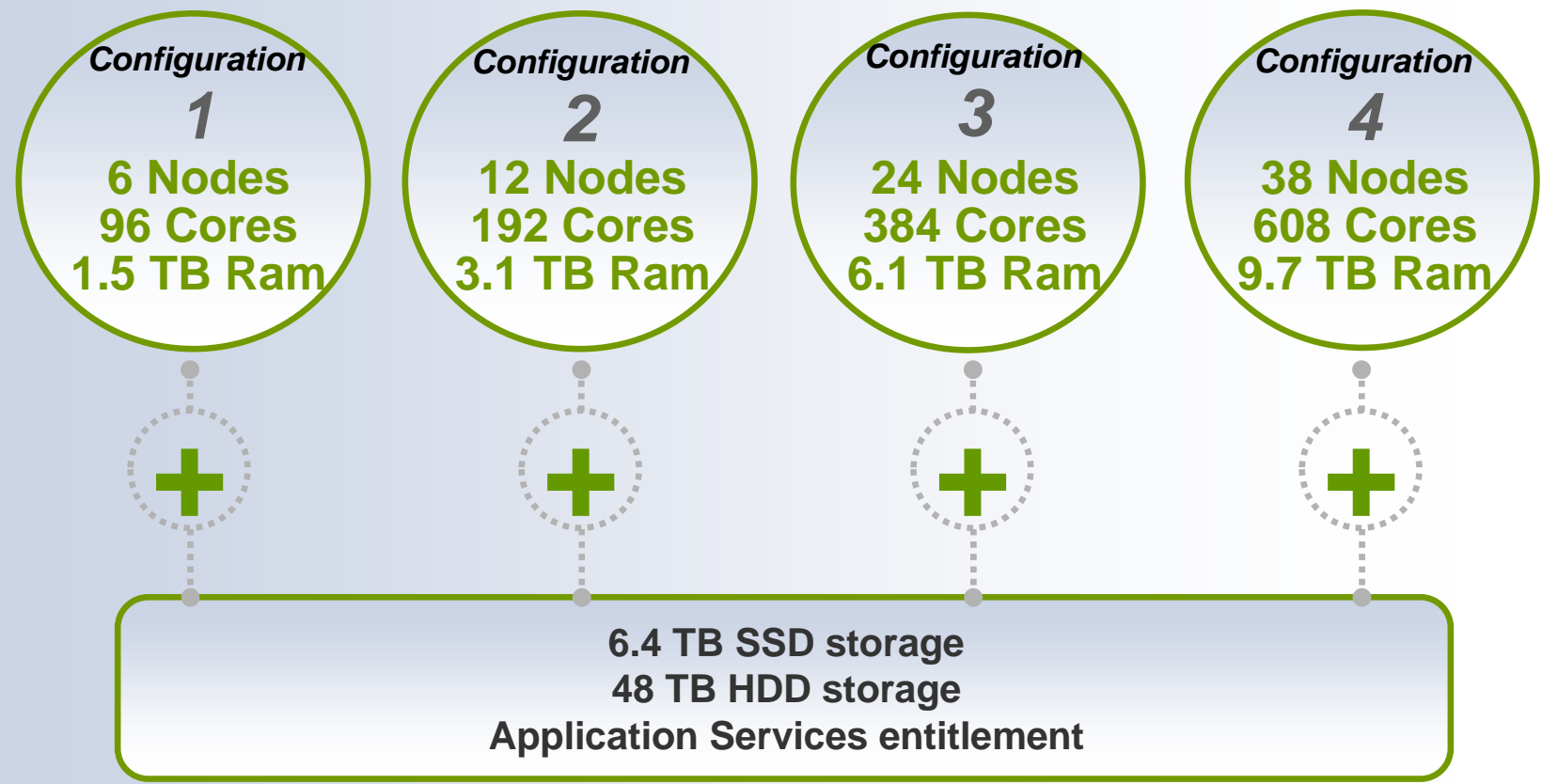
Upgrade to larger systems *without taking an outage*!

What the business wants…   What's required…

**Monitoring
Lifecycle
Management**

IBM & Turkcell Confidential
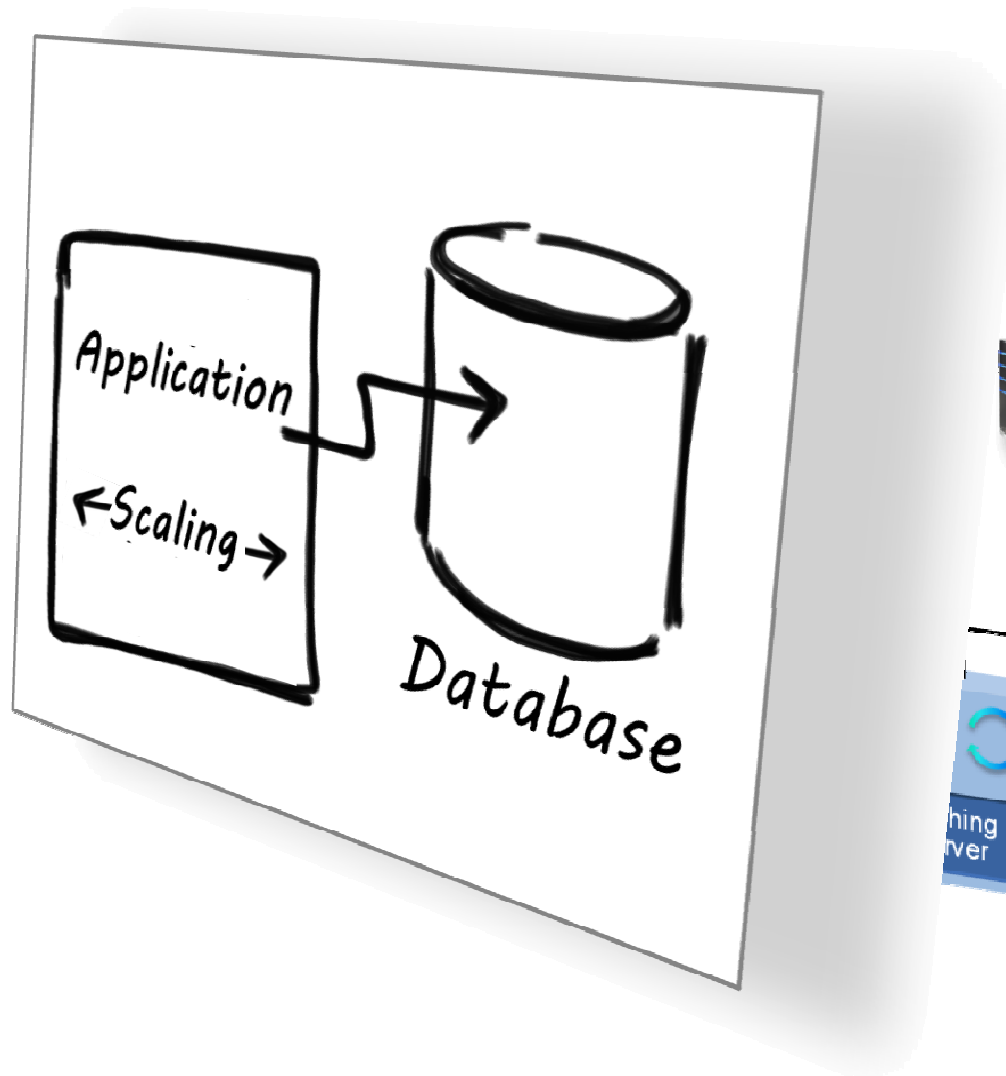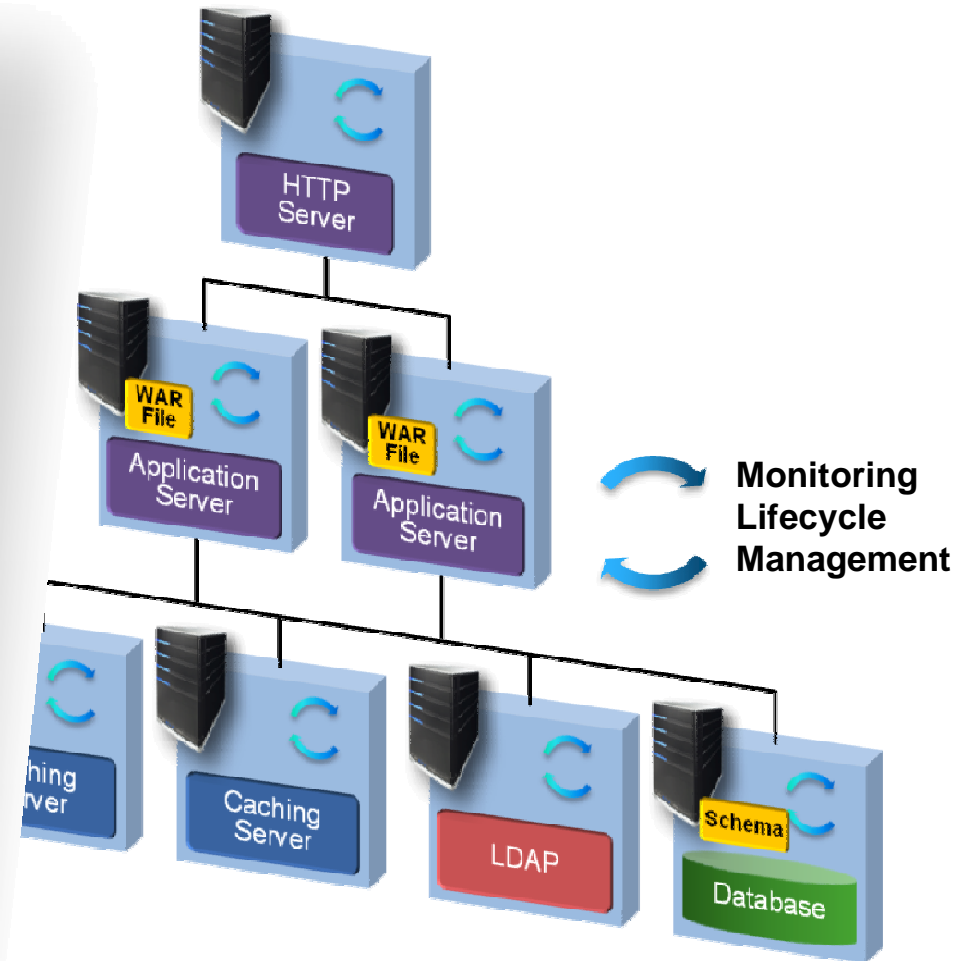
What will be needed tomorrow…

| HTTP Server | HTTP Server | HTTP Server | HTTP Server |

| WAR File Application Server | WAR File Application Server | WAR File Application Server | WAR File Application Server | WAR File Application Server | WAR File Application Server | WAR File Application Server | WAR File Application Server |

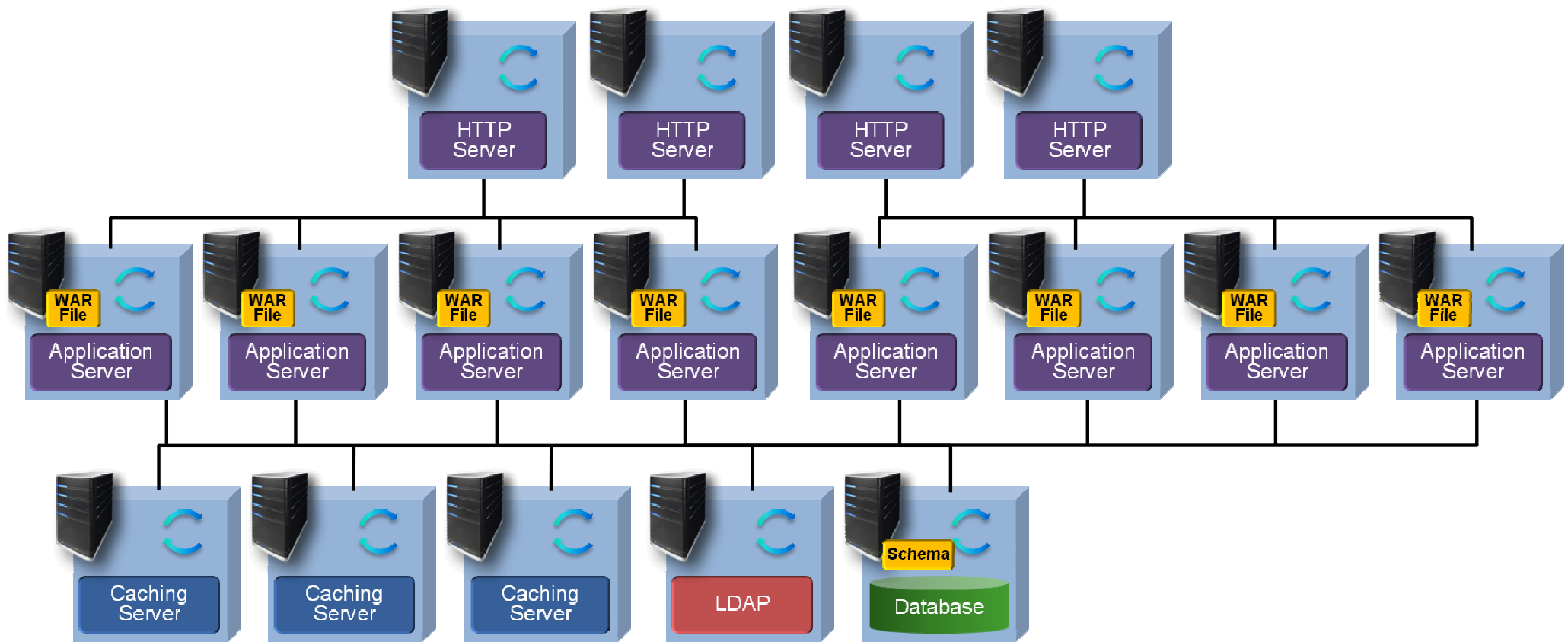| Caching Server | Caching Server | Caching Server | LDAP | Schema Database |

Monitoring Lifecycle Management

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
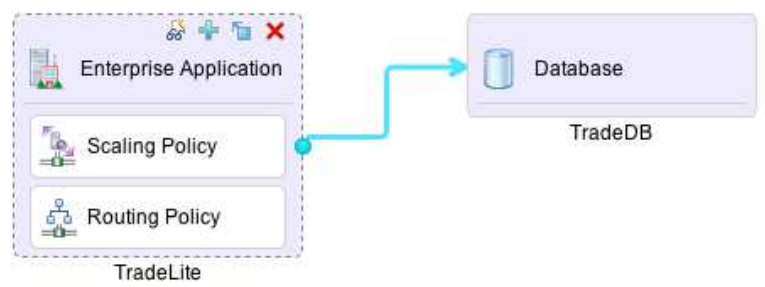WebSphere MQ

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):
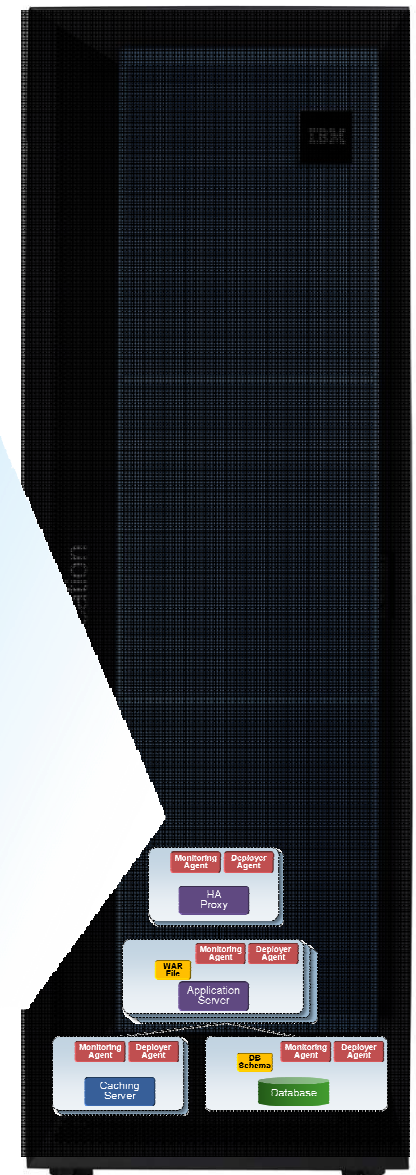0   10000

Range: 1000 - 5000
* Instance number range of scaling in/out:
1   50

Range: 1 - 10
* Minimum time (seconds) to trigger add or remove:

Initiates a fully scalable Web Application

Deploy

Software application

Monitoring Agent | Deployer Agent

HA Proxy

WAR File | Monitoring Agent | Deployer Agent

Application Server

Monitoring Agent | Deployer Agent

Caching Server

DB Schema | Monitoring Agent | Deployer Agent

Database
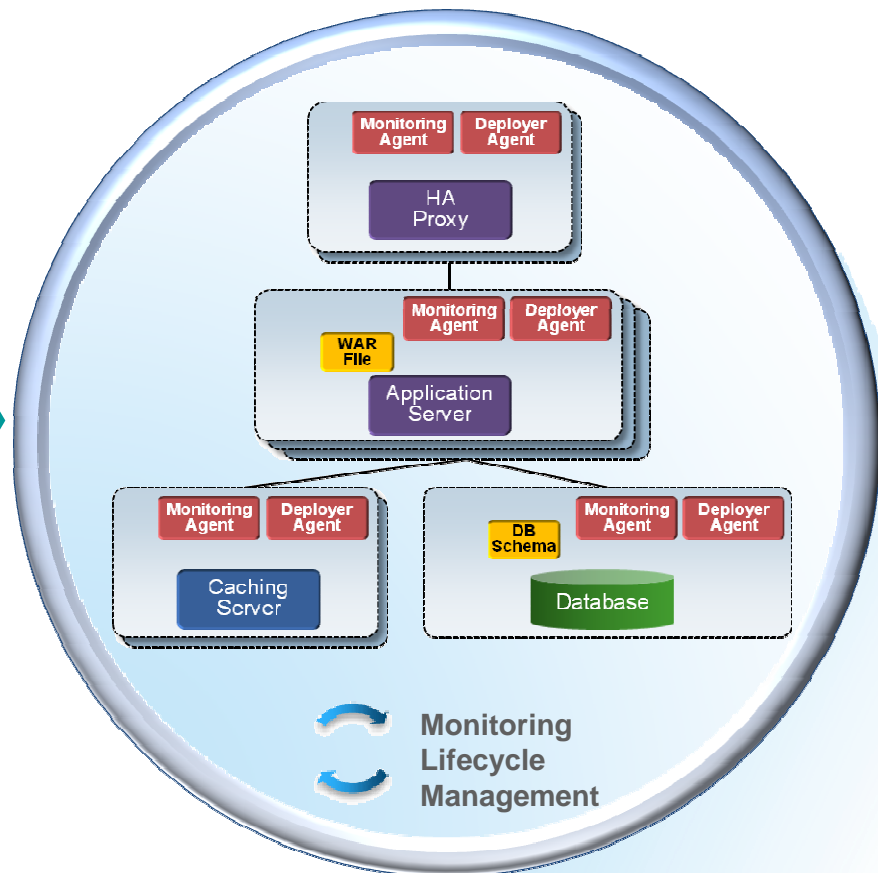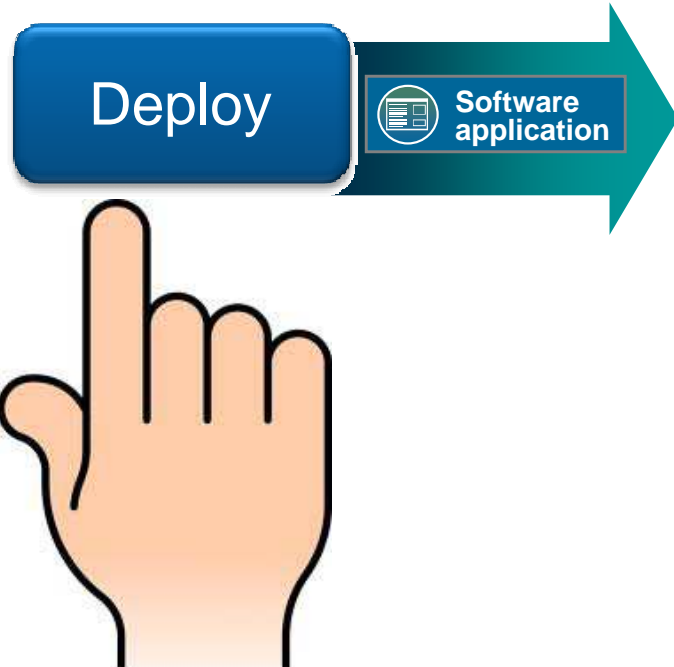
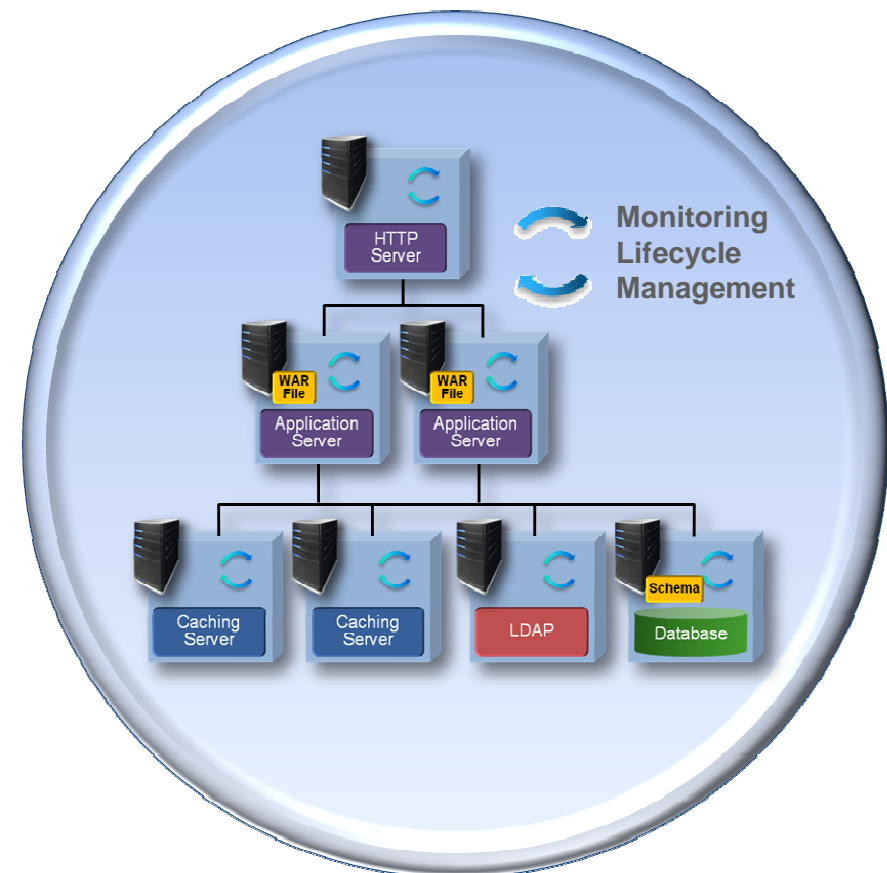Monitoring Lifecycle Management

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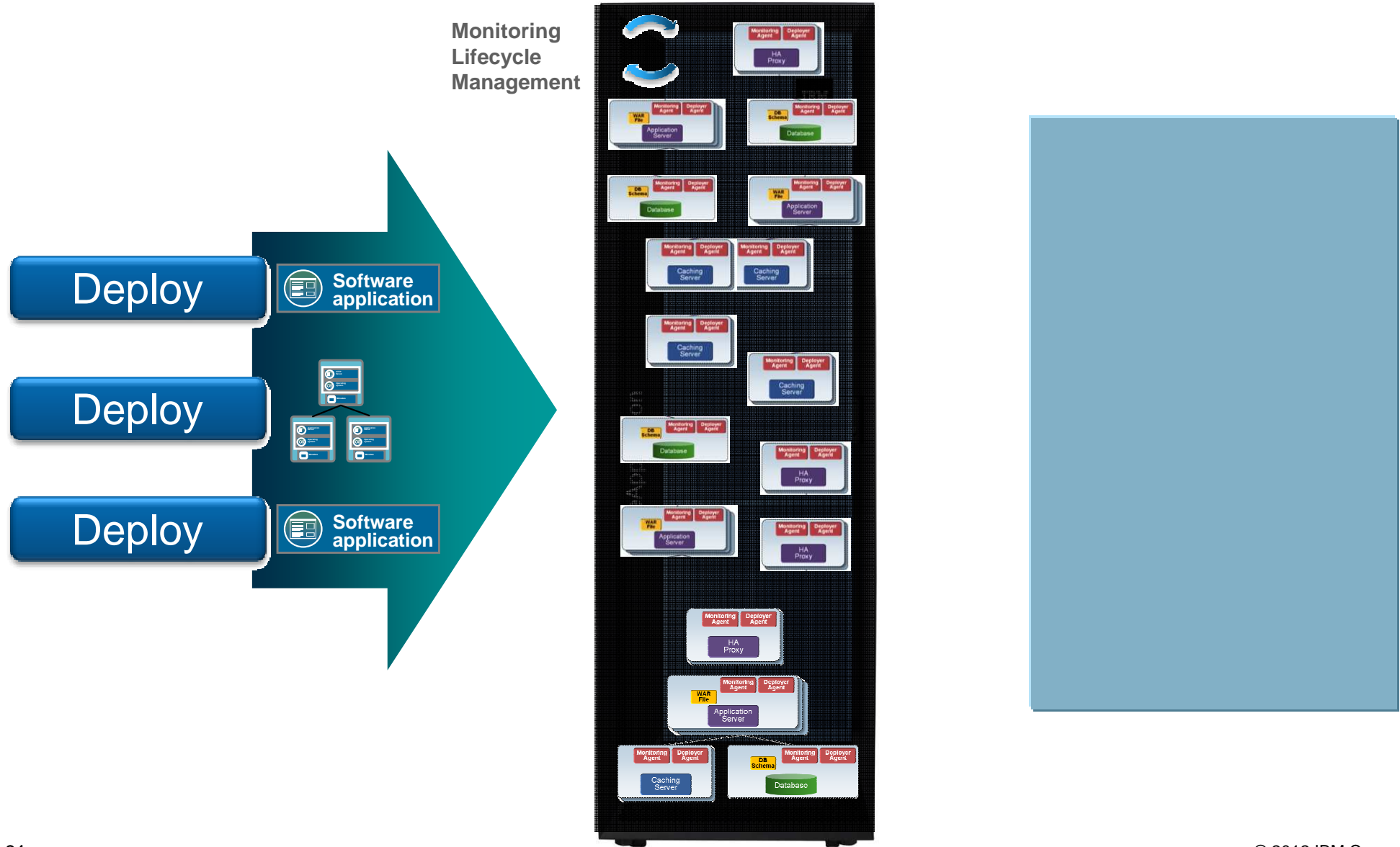
Patterns of Expertise: Proven best practices and expertise for complex tasks learned from decades of client and partner engagements that are captured, lab tested and optimized *into a deployable form*

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

HTTP Server

Monitoring Lifecycle Management

WAR File
Application Server

WAR File
Application Server

Caching Server

Caching Server

LDAP

Schema
Database

IBM & Turkcell Confidential

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Deployment Model - Concepts At A Glance

- **Virtual Applications**
  - Application Awareness
  - Highly standardized and automated
  - Integrated lifecycle management

- **Virtual Systems**
  - Topology Awareness
  - Ability to create custom patterns
  - Traditional administration model

- **Virtual Images**
  - Basic management/runtime services
  - Complete control over contents

Middleware

Operating System
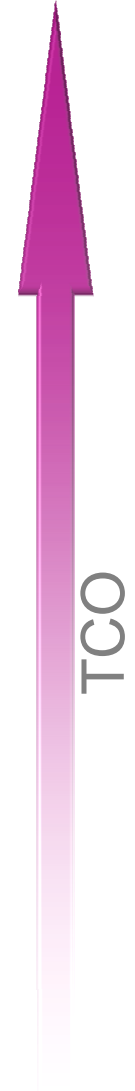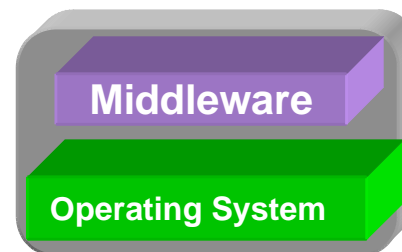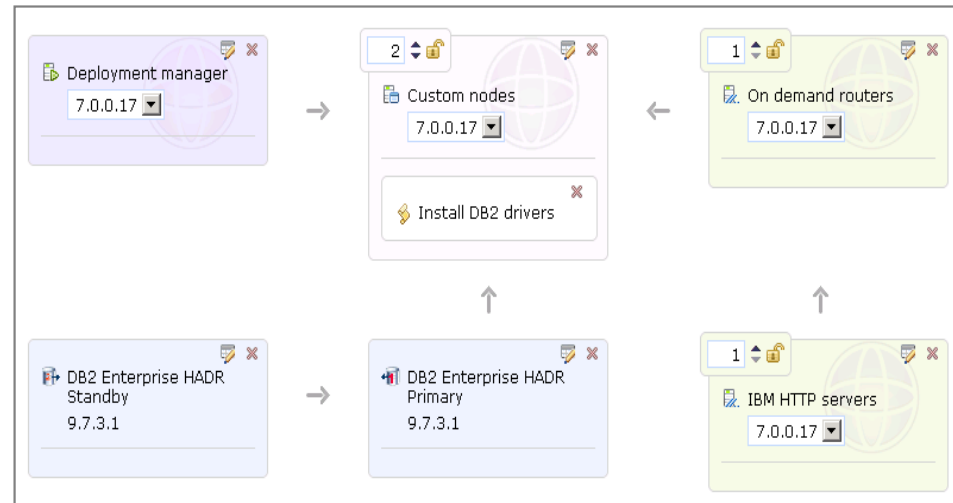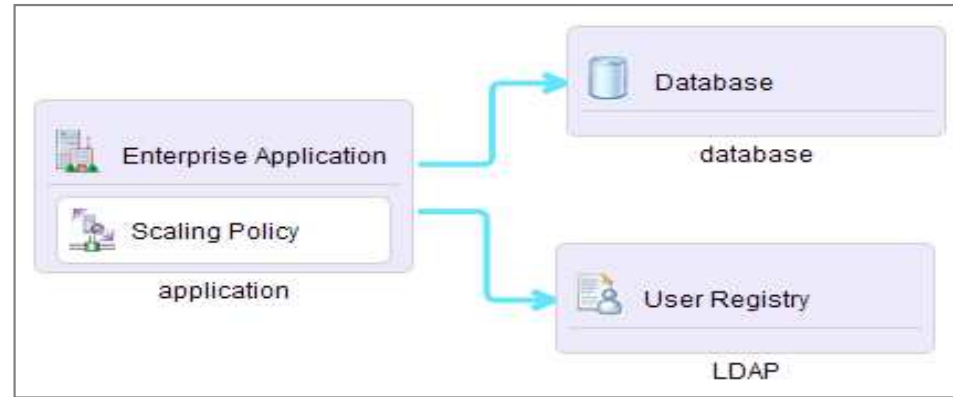
IBM PureApplication Pattern Types

Virtual Appliance
- Software application
- Operating system
- Metadata

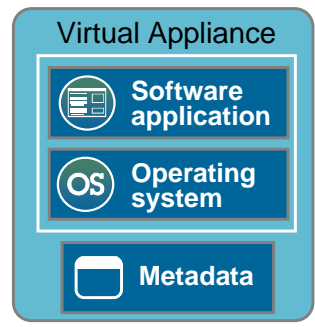## Virtual Appliances

- Standard software installation and configuration on OS
- Traditional administration and management model
- Infrastructure driven elasticity

Virtual Appliances
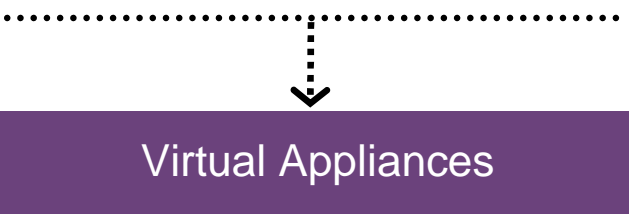
Standard TCO
***existing* applications**

HTTP Server / Operating system / Metadata

Application Server / Operating system / Metadata

Application Server / Operating system / Metadata
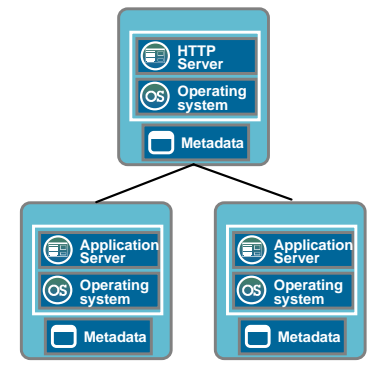
Virtual System Patterns

- Automated deployment of middleware topology patterns
- Traditional administration and management model
- Application and infrastructure driven elasticity
- Extend pattern by creating custom image

Virtual System Patterns
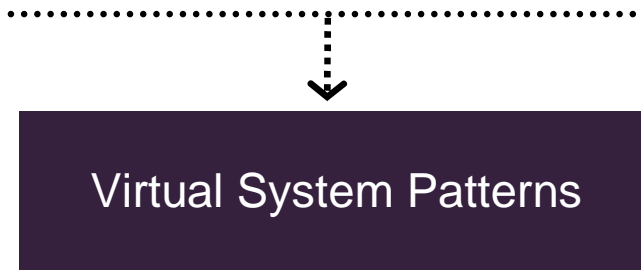
Improved TCO
***virtualized* applications**

Software application

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
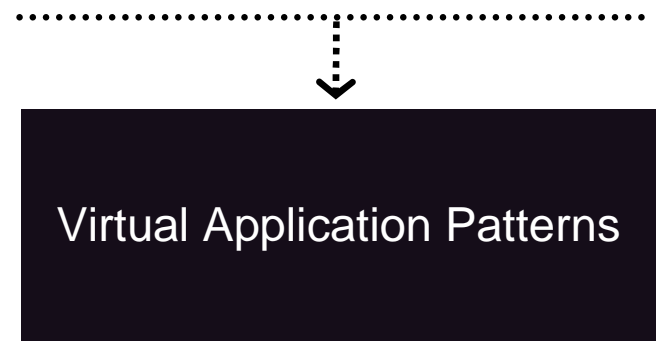
Best TCO
***cloud* applications**

PureApplication Sistem Deployment Models

Flexibility

Labor Saving

Virtual Applications

Virtual Systems

Custom Images
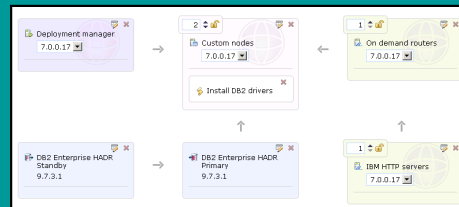
IBM PureApplication System Full Rack High Performance Model

Storage Controller
IBM Storwize V7000 Disk System
4 x 400 GB SAS SSD per enclosure
20 x 600 GB SAS HDD per enclosure

New Chassis
Common Management Module
2x 10Gb Ethernet Switch
2x 16 Gb FC Switch

Service Laptop

PureApplication System Management Node
IBM Workload Deployer

VM Management Node

Top of Rack Switches
BLADE Network Technologies Top of Rack Switches
Customer Data Center & Rack-to-rack communications

V7000 Disk Expansion
Per enclosure:
4 x 400 GB SAS SSD
20 x 600 GB SAS HDD

Intel Compute
2.6 GHz 8C Intel processor, 110 W
256 KB L2 per core
4 MB eDRAM L3 per core
2x 4 Port 10 GbE
2x 2 Port 8 Gb/s FC

Rack diagram

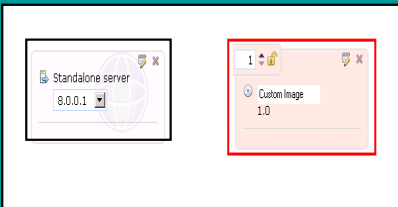Cable ingress / egress
- 42 U
- BNT 64 PT Enet SW — 41 U
- BNT 64 PT Enet SW — 40 U
- V7000 Expansion — 39 U / 38 U
- V7000 Controller — 37 U / 36 U
- V7000 Expansion — 35 U / 34 U
- V7000 Controller — 33 U / 32 U
- Intel Compute / Intel Compute — 31 U
- Intel Compute / Intel Compute — 30 U
- Intel Compute / Intel Compute — 29 U
- Intel Compute / Intel Compute — 28 U
- Intel Compute / Intel Compute — 27 U
- Intel Compute / Intel Compute — 26 U
- Intel Compute / Intel Compute — 25 U
- Intel Compute / Intel Compute — 24 U
- Intel Compute / Intel Compute — 23 U
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- Intel Compute / Intel Compute — 17 U
- Intel Compute / Intel Compute — 16 U
- Intel Compute / Intel Compute — 15 U
- Intel Compute / Intel Compute — 14 U
- MGMT / MGMT — 13 U / 12 U
- 11 U
- Intel Compute / Intel Compute — 10 U
- Intel Compute / Intel Compute — 9 U
- Intel Compute / Intel Compute — 8 U
- Intel Compute / Intel Compute — 7 U
- Intel Compute / Intel Compute — 6 U
- Intel Compute / Intel Compute — 5 U
- Intel Compute / Intel Compute — 4 U
- MGMT / MGMT — 3 U
- 2 U
Cable ingress / egress — 1 U

PDU

Overall	
Power	~30 KW
Cores	608 Cores
Memory	9.7 TB
SSD	6.4 TB (unformatted)
Storage	48.0 TB (unformatted)

		PureApplication System	"Integrated" Alternatives
Time to Value	Ordering	Single part number for entire system	Starting point "foundations" require customization
	Delivery (hardware)	Racked and cabled at factory	Some require on-site racking and cabling
	Delivery (software)	Pre-installed, complete system management tool	Some installed on-site, all require separate infrastructure and cloud management tools
	Installation	Ready to deploy applications within four hours	Typical on-site integration, requires weeks or months
	Upgrading	Single part number, no downtime required	Custom orders, downtime may be required
	Patterns	Deploys IBM, ISV, and custom patterns to improve automation, maintenance, and lifecycle management	Limited or no pattern support
Cost of Ownership	Hardware mgmt	Integrated hardware management and monitoring	Separate hardware management tools
	Cloud mgmt	Integrated cloud management and monitoring	Separate cloud management tools
	Application mgmt	Integrated application management and monitoring	No application management included
	Support	Single support organization for all components, covered by single contract	Separate support organizations or companies based on component
	Patch delivery	Single, bundled system fixpack for all hardware components including integration testing	Separate patches for all hardware components with no integration testing
	Patch installation	Automatically sequenced to require no downtime	Requires manual sequencing for each patch
	Virtualization	Fully virtualized with deep VM awareness	Either basic VM monitoring, or no virtualization at all
	Licensing	Includes hypervisors, operating systems, provisioning, middleware (WAS, DB2), monitoring	Hypervisors, operating systems, provisioning, middleware, monitoring all separately licensed
	License tracking	Automatic license tracking for easier management	No license tracking included
	Dynamic scale	Responds automatically to changes in demand	No dynamic scaling capabilities included
	Open standards	Open platform for extensibility using standards-based tools and components	Some introduce risk of vendor "lock-in"

IBM PureSystems extensible with "patterns of expertise"
Including built-in cloud capabilities

Expert integrated systems

IBM PureFlex System

IBM PureApplication System

Application Patterns and Images Available patterns images from IBM and Partners	Images available for client tuning	**100+ ISV business applications** **Business intelligence** **Business process management** **Web experience** *More to come in 2012…*

Available through PureSystems Centre

Platform Patterns Expertise across the middleware and infrastructure	Images available for client tuning	**Web application deployment** **Database deployment**
		Cloud platform management
Infrastructure Patterns Expertise across the compute resources		**Provisioning** **Storage optimization** **Scalability** **Upgradability**

Built-in with flexibility

Pre-Entitled Software Shipped with PureApplication System

- Clients have entitlement to run the following S/W on the full capacity of the System

- Virtual System (Hypervisor images)
  - IBM OS Image for Red Hat Systems 2.0.0.1 (includes Red Hat V6.2)
  - IBM WebSphere Application Server HV v7.0.0.23 – includes Intelligent Management Pack
  - IBM WebSphere Application Server HV v8.0.0.3 – includes Intelligent Management Pack
  - IBM WebSphere Application Server HV v8.5 – includes Intelligent Management Pack
  - DB2 V9.7-FP5, V10.1 Enterprise HV
  - Advanced Middleware Configuration HV 1.0 (for application onboarding) – same as Rational Automation Framework 3.0.0.3

- Virtual Application Patterns:
  - Application Pattern for Java Pattern v1.0.0.1
  - IBM Web Application Pattern 1.0.0.5 (based on WAS v7)
  - IBM Web Application Pattern 2 .0.0.2 (based on WAS v8)
  - IBM Transactional Database Pattern v1.
  - IBM Data Mart Pattern v1.1.0.3

- **Included in PureApplication System**
- **No upper limit on usage within the system**
- **Refer to Information Center for updated list**

- Shares Services and Tools
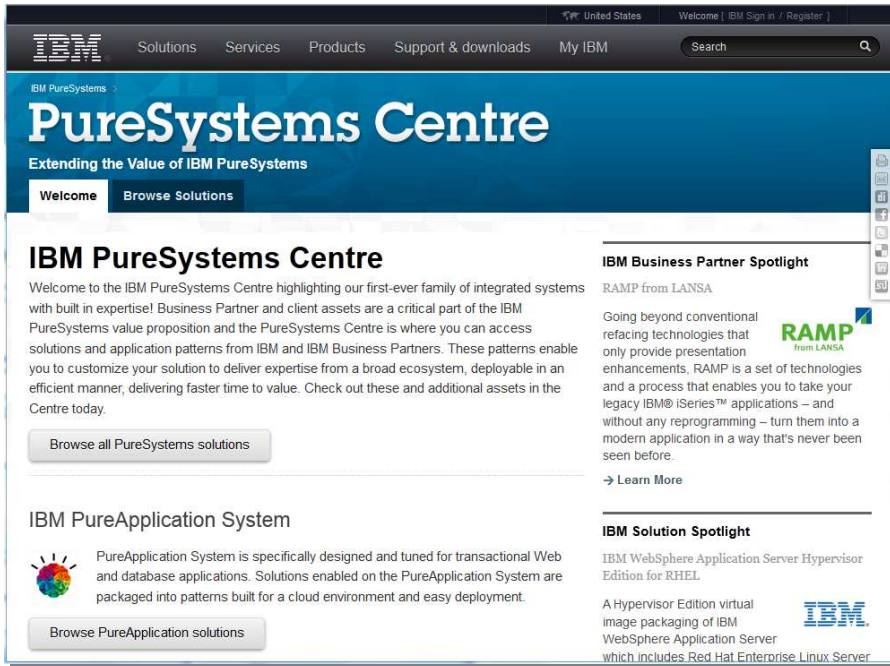 - Foundation Patten 2.0.0.3
  - Image Construction and Composition Tool 1.2

Software

Pre-Entitled

Patterns

- Web Application
- Transactional Database
- DataMart
- Java Application

| GA | Separately Purchased | 2H12 |

Patterns

- Business Process Management Pattern
- Portal Pattern
- Web Content Management Pattern
- Messaging Extension for Web App Pattern
- SLA Management for SOA Governance Pattern

- Business Intelligence Pattern
- Decision Management Pattern
- IBM Connections Pattern
- Integration Pattern (C&I)
- InfoSphere MDM Pattern
- Mobile Pattern
- InfoSphere Infoserver Pattern*
- WebSphere Commerce Pattern*
- Predictive Enterprise Pattern*
- CastIron Pattern*
- Maximo Pattern*

Images

- WAS 7
- WAS 8
- WAS 8.5
- DB2 9.7
- DB2 10
- RAFW 3.0.0.3

Images

- BPM Std and Advanced Editions
- Informix
- Message Broker 8.0
- MQ 7.0.1
- WebSphere Portal 7.0
- Web Content Management 7.0

- InfoSphere Information Server
- IBM Connections
- WODM
- InfoSphere MDM*
- WTX w/Launcher*
- WebSphere Commerce*
- CastIron*

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Thanks

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