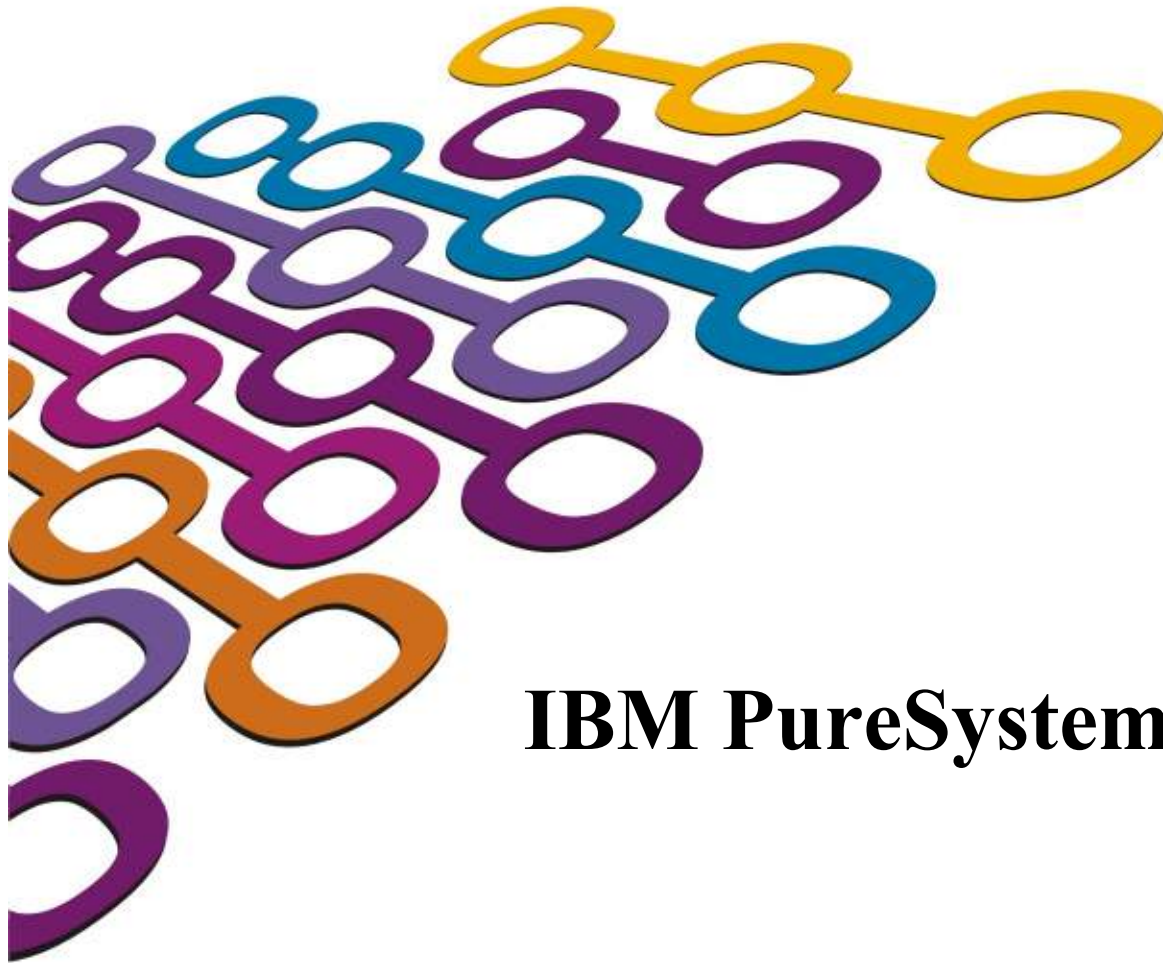


IBM Software

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IBM PureSystem



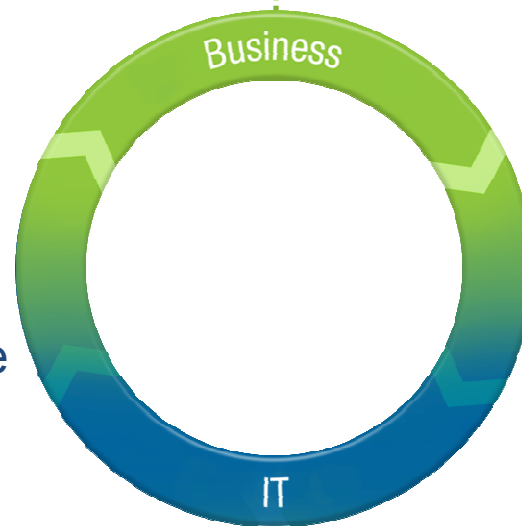
You experience the barriers of time, cost and risk today

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



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?



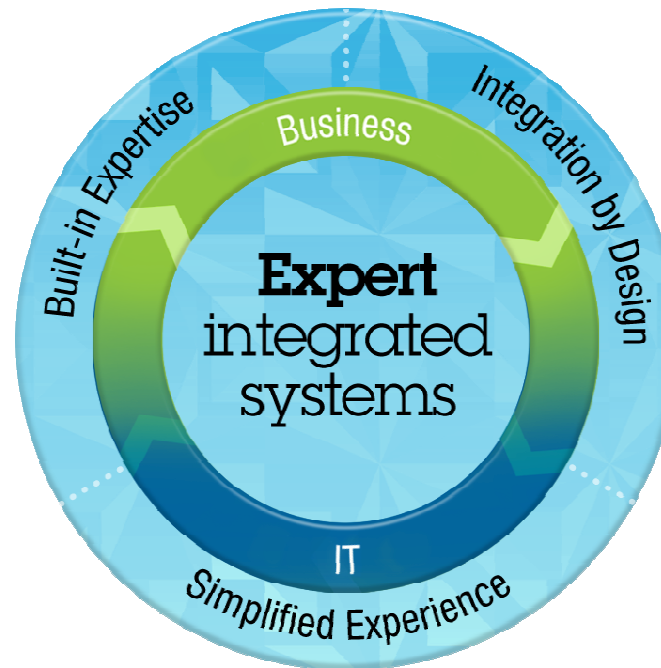


The time has come for a new breed of systems

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

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

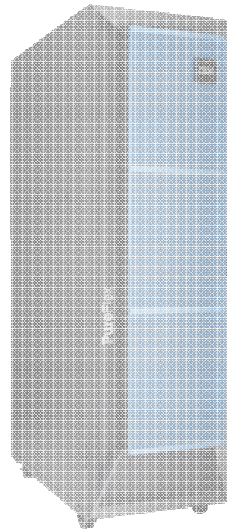




Announcing the First Two Members of the IBM PureSystems Family

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





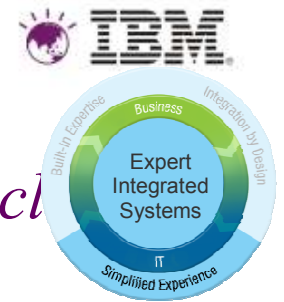
Announcing the First Two Members of the IBM PureSystems Family PureFlex

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



Built-in expertise ■ Integration by design ■ Simplified experience





Simplified experience

Reduce time, effort and risk throughout the solution lifecycle

Flex System Building Blocks

Chassis

14 half-wide bays for nodes



Compute Nodes

Power 2S/4S*
x86 2S/4S



Storage Node

V7000
Expansion inside or outside chassis



Management Appliance

Optional



Networking

10/40GbE, FCoE, IB
8/16Gb FC



Expansion

PCIe
Storage



IBM PureFlex System

Pre-configured, pre-integrated **infrastructure systems** with compute, storage, networking, physical and virtual management, and entry cloud management with **integrated expertise.**



System Software

Unified Management (Server, Storage, Network)



Networking Options (BNT, Broadcom, Juniper)



Virtualization



OS Options

PowVM
KVM
VMware
Hyperv

AIX
Sys i
Linux
Windows

Storage: Storwize V7000 + Virtualization



Compute Nodes (x, p)



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* POWER7 nodes available as part of PureFlex System configurations.



IBM PureFlex System Foundations

Configurations that ease acquisition experience and match Client needs



Express

Infrastructure for Small and midsize businesses. Most affordable entry point

- 10Gb Network Switch
- 8Gb Fibre Chan. Sw.
- 1 Power / 4 Fans
- Flex System Manager
- V7000 Storage Controller
- Compute Node (x or power)

Standard

Infrastructure for application servers with supporting storage and networking

- 1 x 10Gb Network Switch
- 2 x 8Gb Fibre Chan Sw.
- 4 Power / 6 Fans
- Flex Sys Mgr Advanced
- V7000 Storage Controller
- 2x SSDs
- Compute Node (x or power)

Enterprise

Infrastructure for scalable cloud deployments. Redundancy for resilient operation

- 2 x 10Gb Network Switch
- 2 x 8Gb Fibre Chan Sw.
- 6 Power / 8 Fans
- Flex Sys Mgr Advanced
- V7000 Storage Controller
- 2x SSDs
- Compute Node (x or power)

- Designed for choice of architectures: IBM POWER7 and/or Intel x86 processors within the same systems
- Designed for choice of OS: AIX, IBM i, Microsoft Windows[®], and Linux from Red Hat, SUSE
- Designed for choice of hypervisors: PowerVM, KVM, VMware, or Microsoft HyperV
- Designed for simplicity: Integrated, single system management across physical and virtual resources





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

PureApplication

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



Built-in expertise ■ Integration by design ■ Simplified experience



Design Matters: Inheriting Infrastructure



FLEX-ability

Application patterns
from IBM and partners

Integrates an
application platform
optimized for
enterprise applications

Inherits the
capabilities of
PureFlex System

Patterns of Expertise

- A deployable form of proven best practices from years of experience and expertise to simplify complex tasks

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

System Infrastructure

- Integrated Server, Storage, Network
- Power Management
- Storage & VM Optimization
- Virtualization
- Integrated System Management
- Provisioning
- Security
- Monitoring
- IT Lifecycle Management
- System design



IBM PureApplication System



Built-in Expertise

Capture and automate what experts do – infrastructure and application expertise enhance application time to value

- ‘Patterns of Expertise’ pre-integrated, out-of-the box IBM and Partner patterns for deploying application workloads based on proven best practices and expertise
- Open and extensible with tools to capture your own patterns of expertise, designed to deploy new applications 20-30X faster* than traditional approaches
- Application patterns can encapsulate failover, load balancing, and security features, reducing security management by 51% and change management by 53%*

Integration by Design

Deeply integrate and tune hardware and software – a secure, built for cloud, ready-to-go workload optimized platform system

- ‘Scale in’ integrated provisioning, elasticity and virtualization reduces cost and required management time by up to 55%
- Zero system downtime for capacity upgrades, system maintenance, software updates can result in 98% fewer unplanned outages*
- Integrated analytics to optimize database query performance and adaptive database compression that can provide 7x or greater overall space savings*

Simplified Experience

Make every part of the IT lifecycle easier - integrated management and an open solution ecosystem broadens choice

- ‘Single pane of glass’ view from the infrastructure up through the application platform – designed to be up & running in 4 hours*, not 4 months
- Online catalog with 80+ certified, optimized pattern solutions from a broad, open ecosystem
- Built-in workload management, integrated system monitoring and maintenance can drive up to 55% reduction in operation costs*

* Based on information from client experiences of existing IBM capabilities leveraged in PureApplication Systems. Results may not be typical and will vary based on actual configuration, applications, and other variables in a production environment.

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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

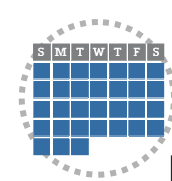
- Single point of platform and application management
- Repeatable self service application provisioning

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

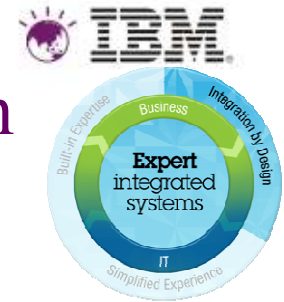
IBM Software

Impact2012

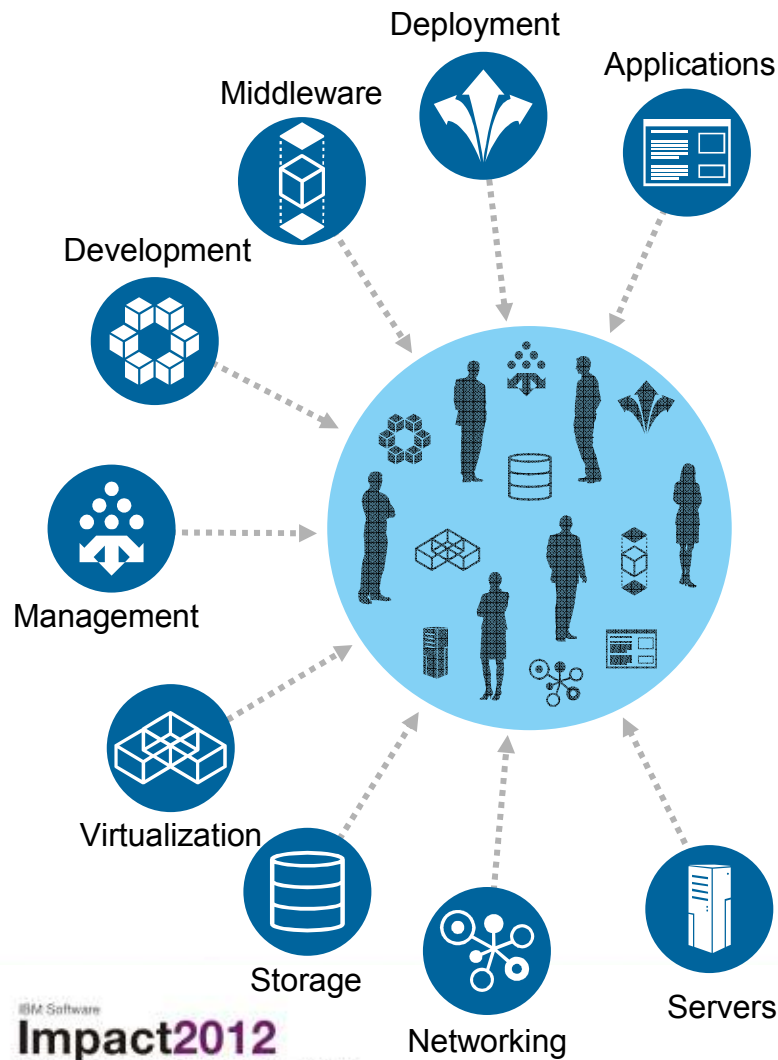
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IBM PureApplication System integration by design



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



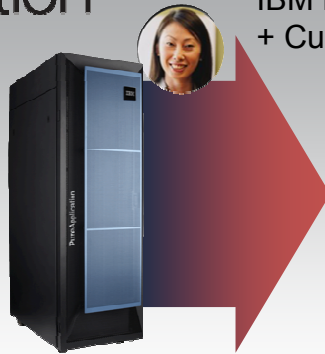
Faster Set Up and Deployment



PureApplication

IBM PEP Team
+ Customer

IBM
PureApplication
System



<4 hours

- Includes** (at no additional cost):
- ✓ Hardware set-up and configuration
 - ✓ Software set-up and configuration
 - ✓ First workload deployment

Pre-
integrated
System



Competitor HW
Engineer



Competitor SW
Engineer



Customer

Hardware
Set-Up and
Configuration
(2 days*)

Software
Set-Up and
Configuration
(2 days*)

First
Workload
Deployment
(1 day*)

5 days*

*Actual times reported by customer working with competitor setup team

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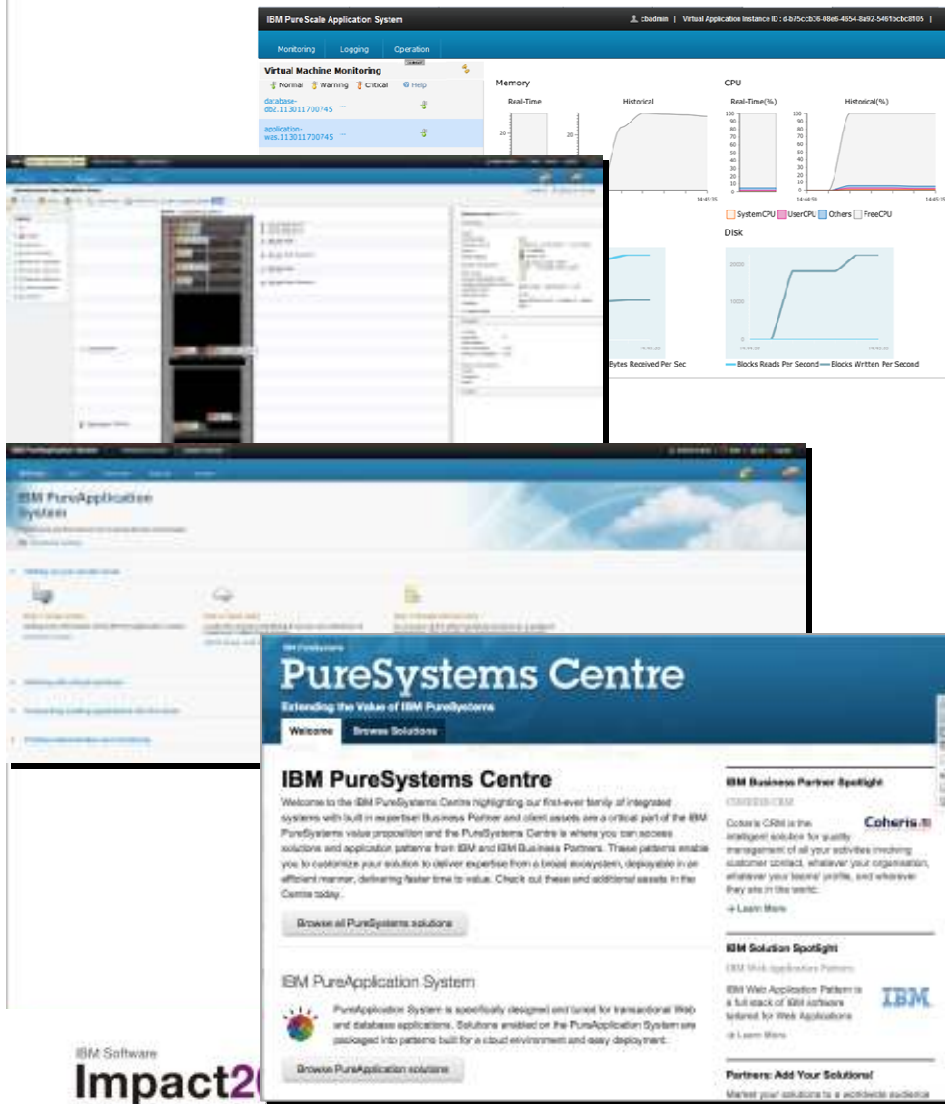
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IBM PureApplication System simplified experience



New client experience:

- Single product streamlines ordering, tracking, receiving, installing and running
- Factory installed, fully packaged solutions drive simple setup (pull it out of the box, plug it in and boot it up)
- Management integration across system
- Single point of contact for support
- Upgrade with zero downtime based on integrated patches and system design
- PureSystems Centre – an online catalog of applications and patterns.
- A broad open ecosystem of optimized solutions



Integrated management tools



PureApplication

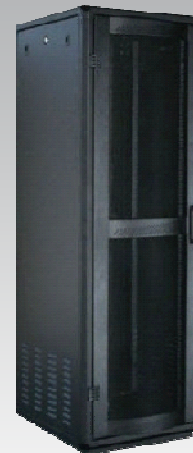
IBM PureApplication System



No set-up time

- Pre-installed, pre-integrated management stack
- Single pane-of-glass management

Pre-Integrated Competitor



Software Management

Add-On Packs

Hardware Management

Add-On Packs

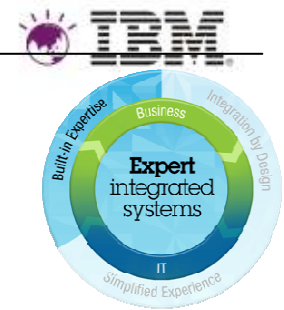


>24 hour* set-up time

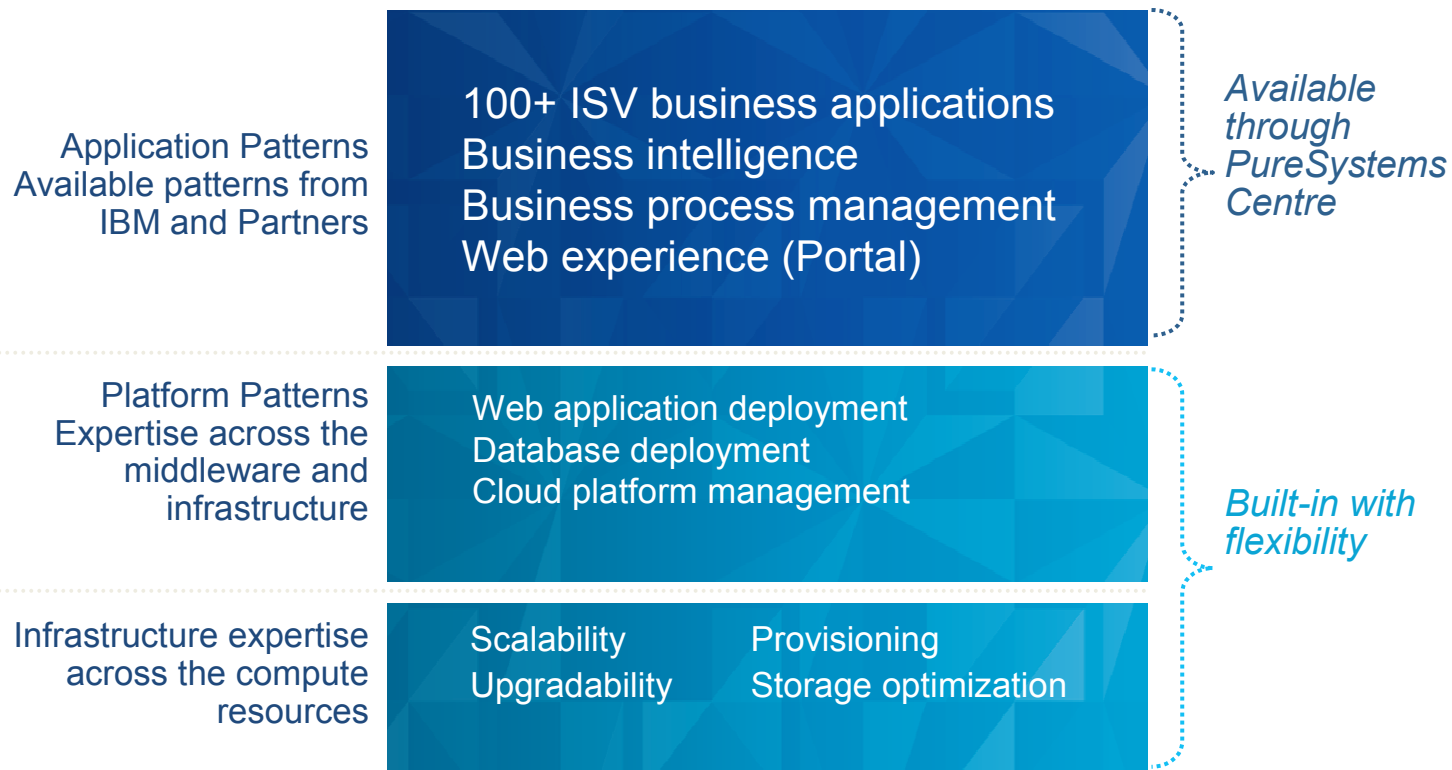
- Management stack requires separate purchase, install and configuration
- Different user interfaces

*Actual times reported by customer working with competitor setup team

IBM PureApplication System built in expertise

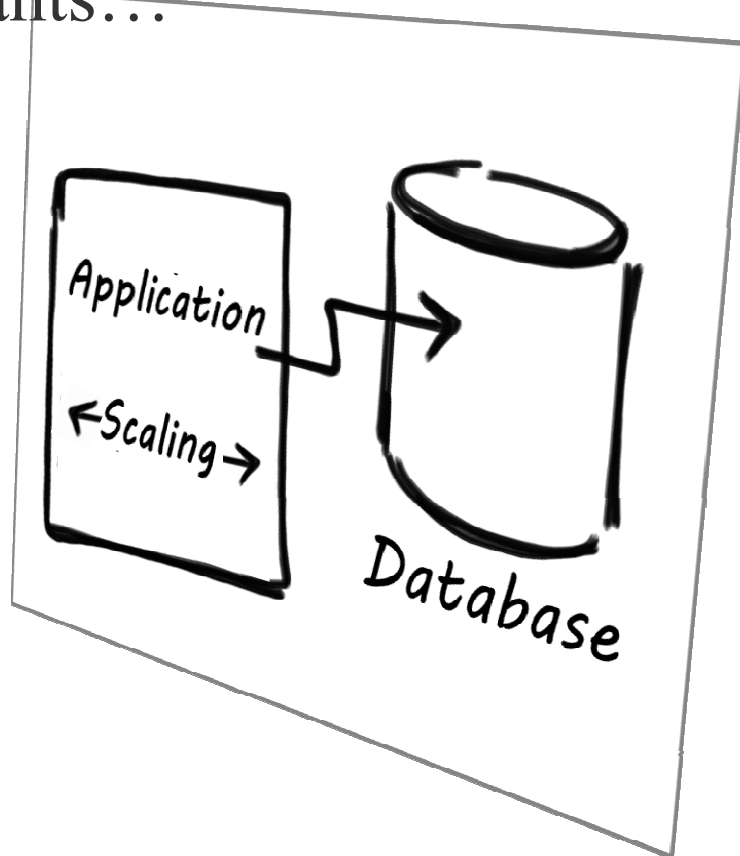


Patterns of Expertise: Proven best practices and expertise for complex tasks learned from decades of client and partner engagements that are captured, lab tested and optimized and then built into the system

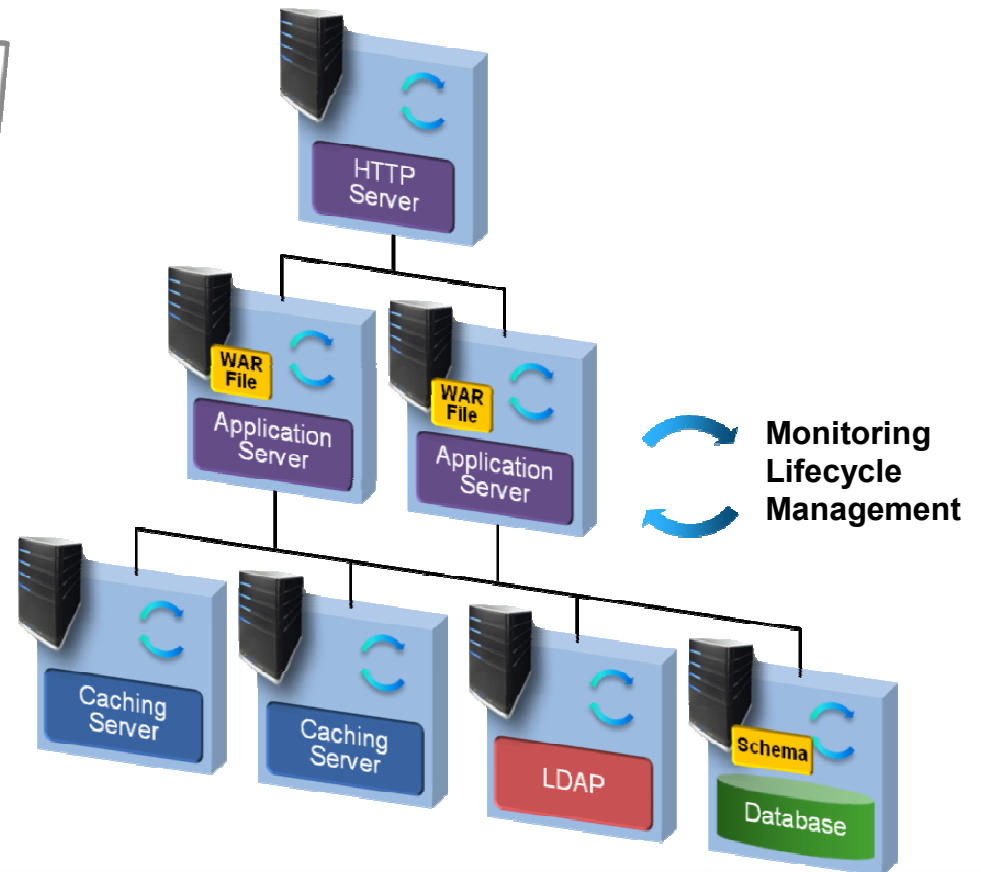


Through *unmatched expertise* in: System design * Infrastructure management * Application deployment * Data management * Datacenter management * Application management * High availability and scalability * Security * Storage optimization * Networking * Cloud

What the business
wants...



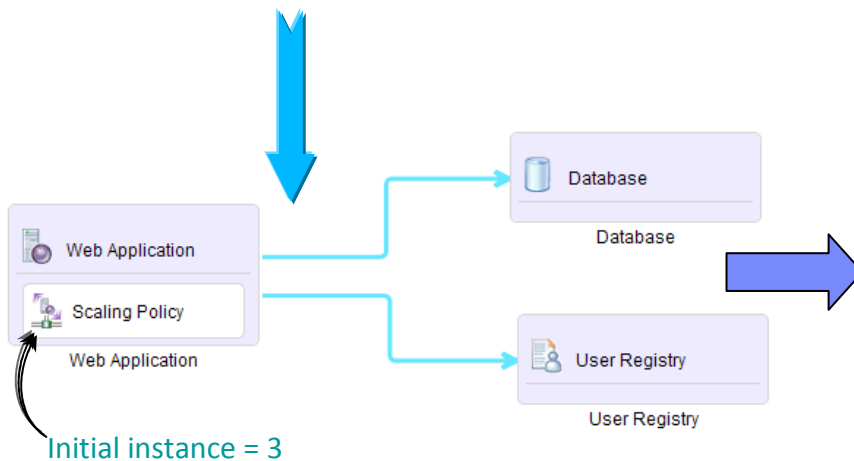
What's required...



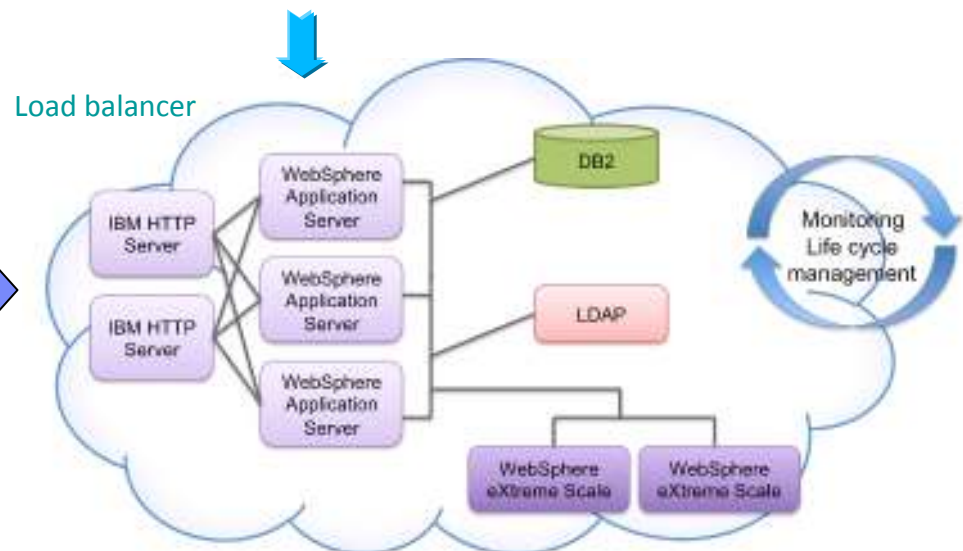
Virtual Application Pattern

- 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 deployer defines

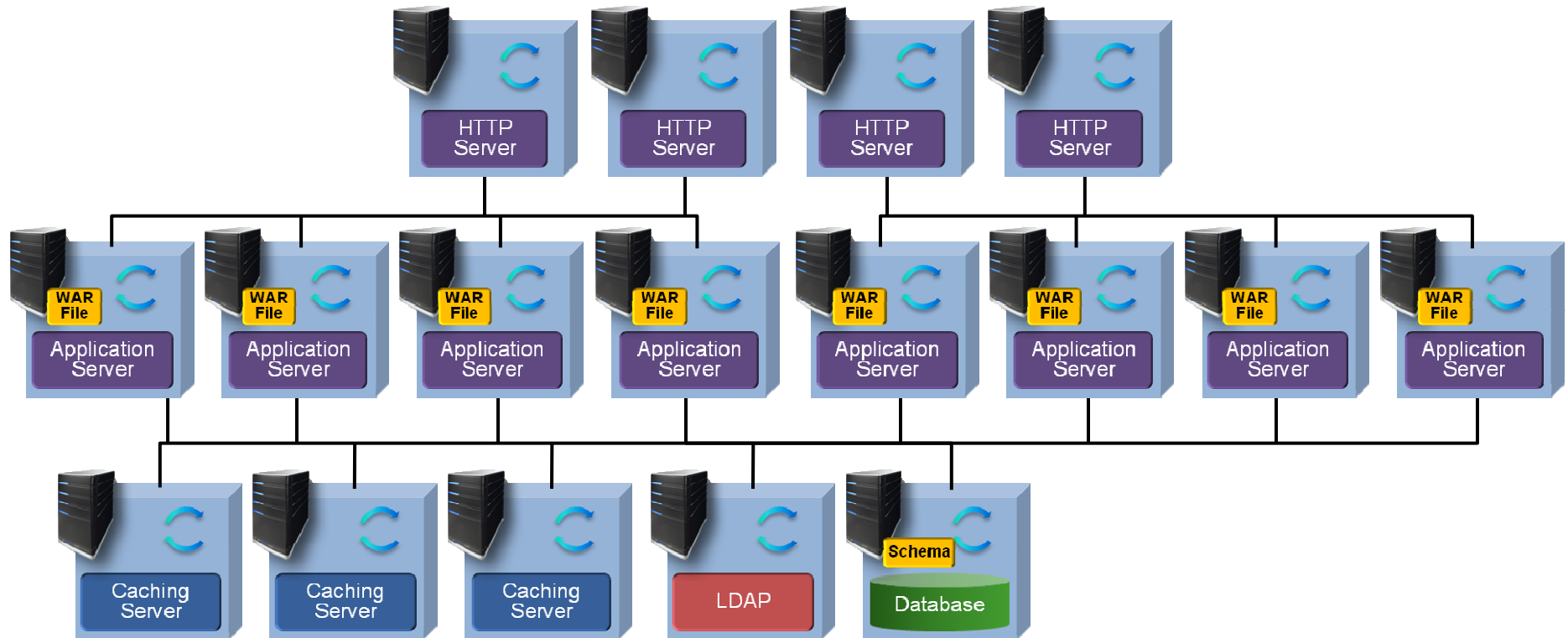


What system deploys



WAS cluster configured with session replication

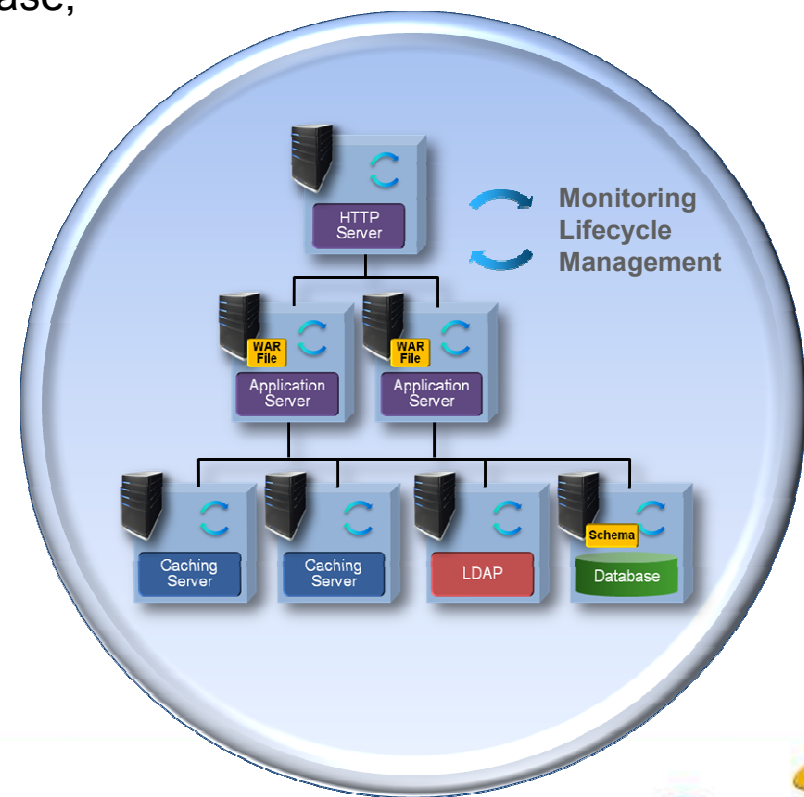
What will be needed tomorrow...



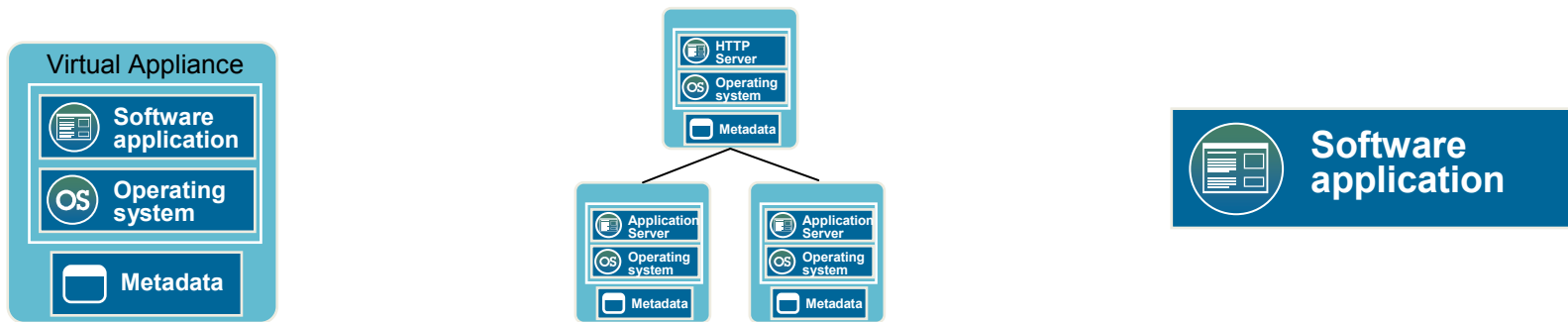
Patterns of Expertise: Proven best practices and expertise for complex tasks learned from decades of client and partner engagements that are captured, lab tested and optimized *into a deployable form*

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



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 infrastructure 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



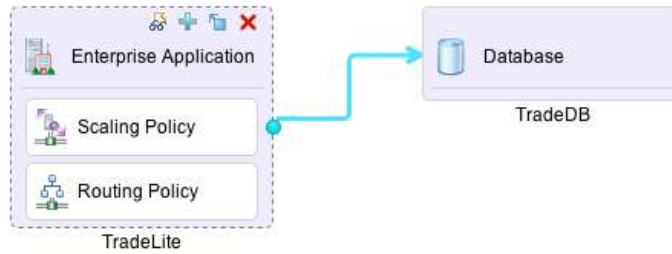
Diagram | List View | Source

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
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:

Diagram | List View | Source

Save | Save As | Layout | Undo | Redo

- Assets
- Application Components
 - Additional archive file
 - Enterprise Application
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- 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 [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
WebSphere 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):



Range: 1000 - 5000

* Instance number range of scaling in/out:



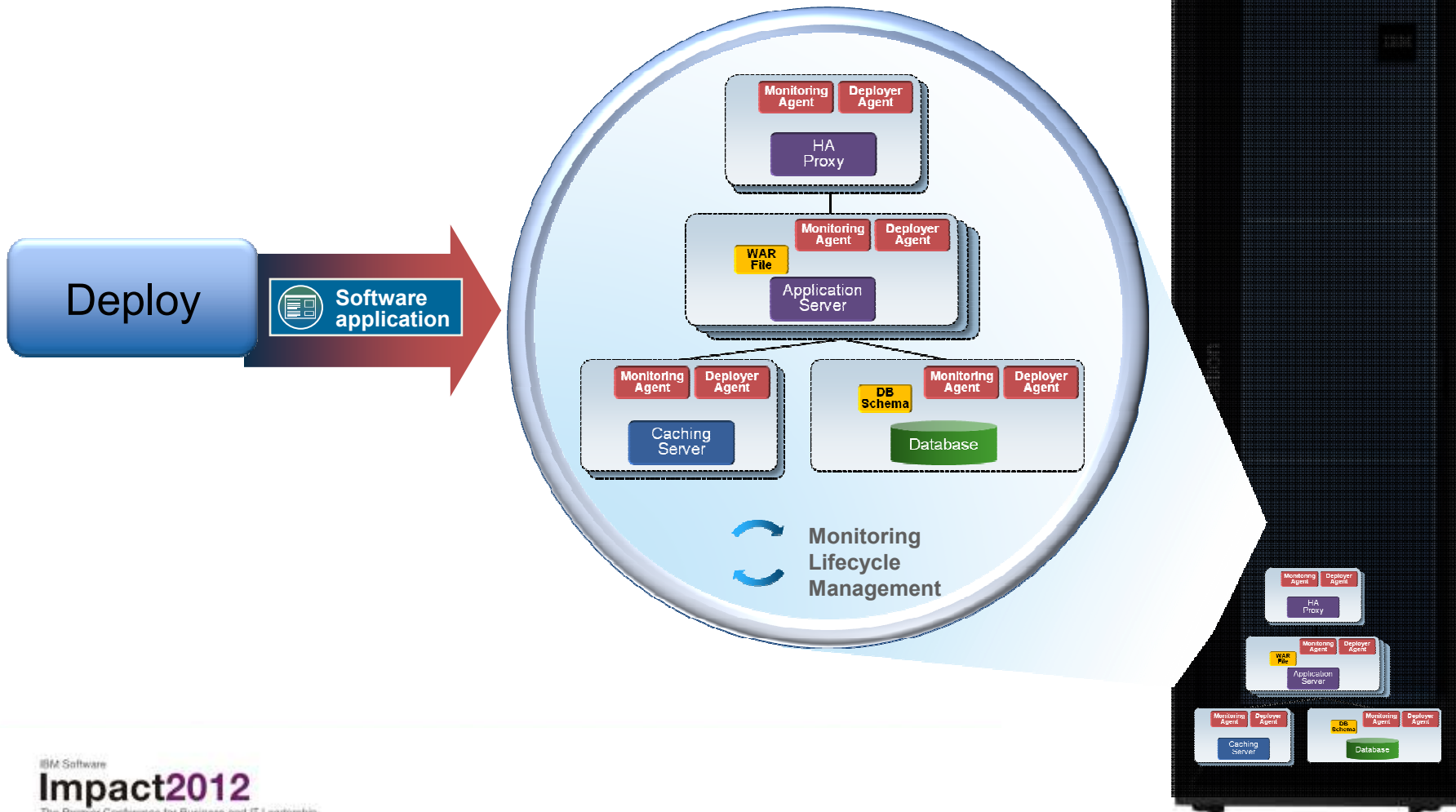
Range: 1 - 10

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

Initiates a fully scalable Web Application



PureApplication

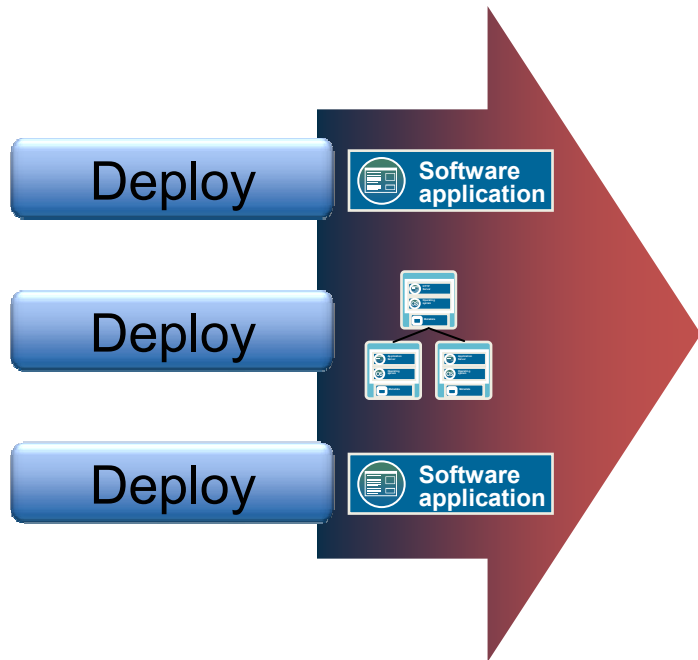




Continuous application level optimization and management

PureApplication

Monitoring
Lifecycle
Management



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
- Multiple applications and middleware



Extend the value of PureApplication System

- Build custom patterns with **Pattern Development Kit**
 - Virtual Appliances
 - Virtual System Patterns
 - Virtual Application Patterns



Extensibility from the broadest ecosystem is made easy



New IBM PureSystems Centre:

- Gain access to a broad community of IBM and certified partner expertise
- Download optimized, deployable application patterns from 100+ leading ISV partners
- Search by solution area, industry or system
- Download fixes and patches
- Access to developer community

*Also run your existing applications today**



Design Matters: Open Ecosystem on Integrated Platform



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



IBM PureApplication System delivers value throughout the IT lifecycle

Driving efficiencies across these areas

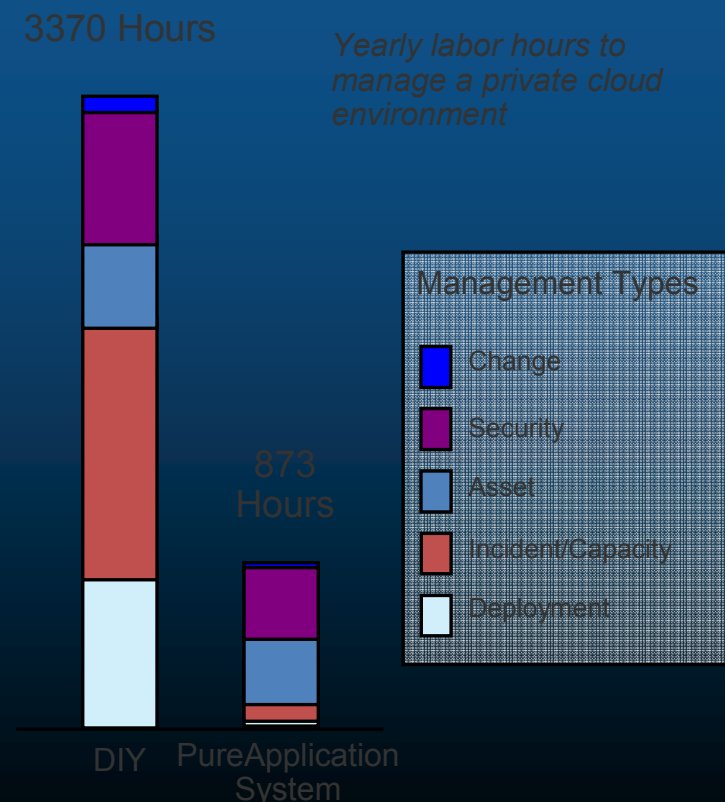
47% fewer deployment labor hours

Virtually eliminating these steps:

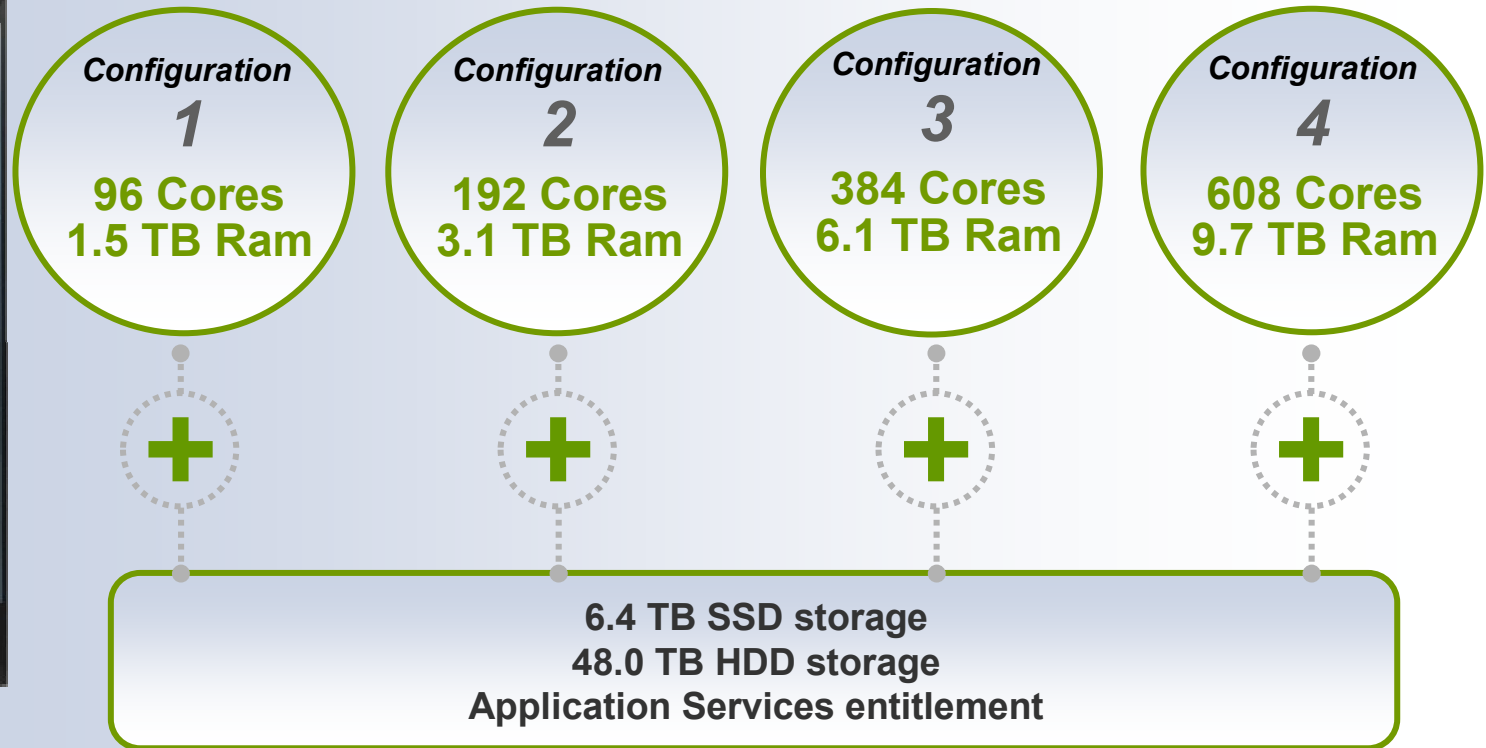
- Specify/design required servers
- Integration/configuration/testing of infrastructure software and middleware
- Application deployment
- Clustering and backup implementation
- Trouble shooting/tuning production environment
- Implementing hardware management environment



73% fewer management labor hours



IBM Pure Application System configurations



Upgrade to larger systems *without taking an outage!*



Full Rack High Performance Model

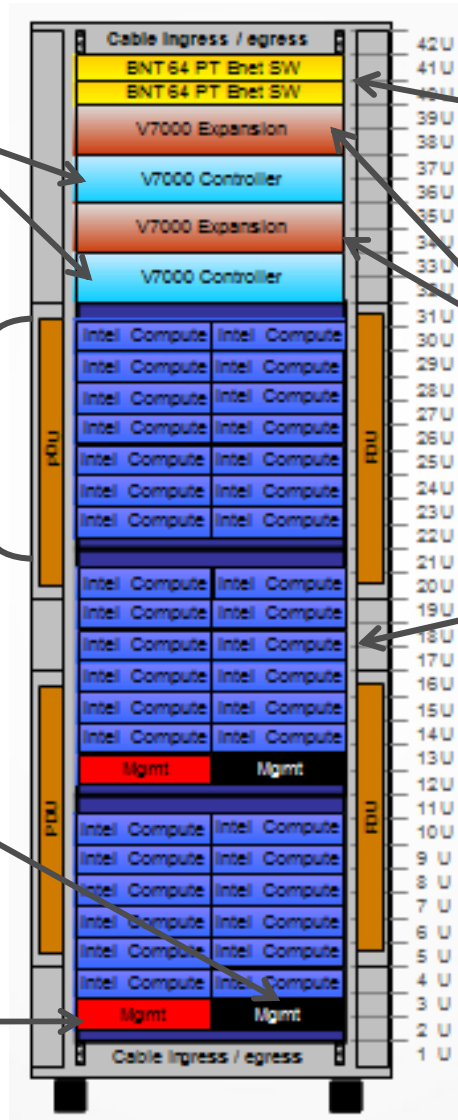


Storage Controller
 IBM Storwize V7000 Disk System
 4 x 400 GB SAS SSD per enclosure
 20 x 600 GB SAS HDD per enclosure

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

Troy Application System Management Node
 IBM Workload Deployer

VM Management Node



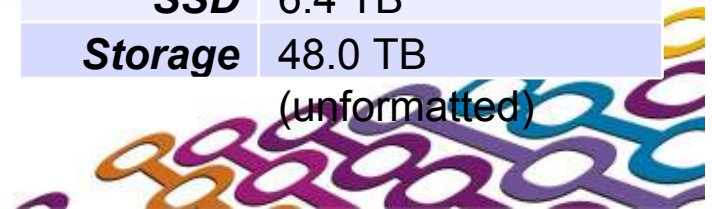
Top of Rack Switches
 BLADE Network Technologies Top of Rack Switches
 Customer Data Center & Rack-to-rack communications

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

Intel Compute Node
 2.6 GHz 8C Intel processor, 115 W
 20 MB L3 cache
 2x 4 Port 10 GbE
 2x 2 Port 8 Gb/s FC

Overall	
Power	24.5 KW
Cores	608 Cores
Memory	9.7 TB
SSD	6.4 TB
Storage	48.0 TB

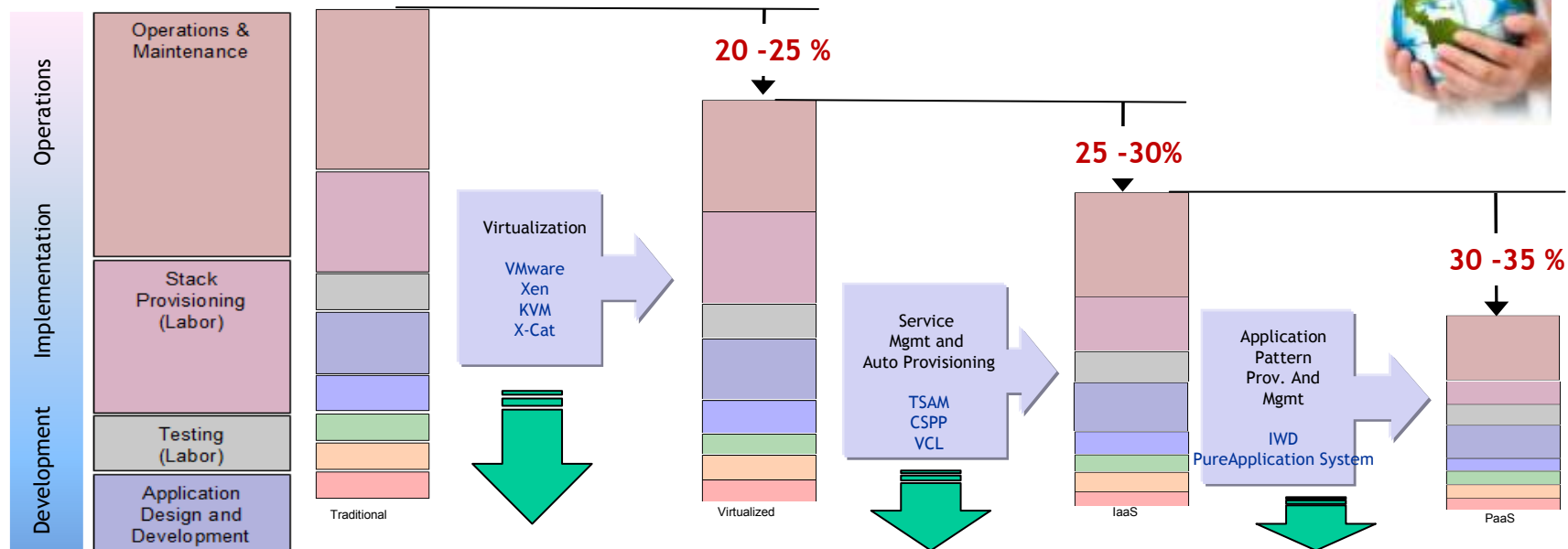
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Business Value growth – TCO



From virtual appliances ..to System Patterns & Application patterns



Life-Cycle TCO

Challenges in the Traditional IT Model:

- Ability to track Resources
- Manual Installation and configuration standard & Automation

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Benefits:

- Provisioning Service Requirements & Fulfillment
- Aligned with Bus. Process
- Track Resources & Usages
- Virtual Image Creation
- VM & Resources Mgt

Potential Impact:

- 65% Reduction in Provisioning time
- 200 - 500% improved resource utilization
- 60 - 100 % ROI
- 3-9 Months Payback

Benefits:

- Self Service Model
- Optimized Bus. Proc. steps
- Automated Res. Tracking
- Image Usage profiling
- Reusable Image Library
- E-2-E automation

Potential Impact:

- 90% reduction in process overhead
- 100 - 200 % ROI
- 6-12 Months payback

Benefits:

- Automated Provisioning & Applying of app stack
- Integration Topology & App. Workload patterns
- Automated Mgmt of application pattern

Potential Impact:

- 30% improvements on top of virtualization
- 80% reduction in workload deployment and management
- 3-9 Months payback

* Number and percentages are approximated.



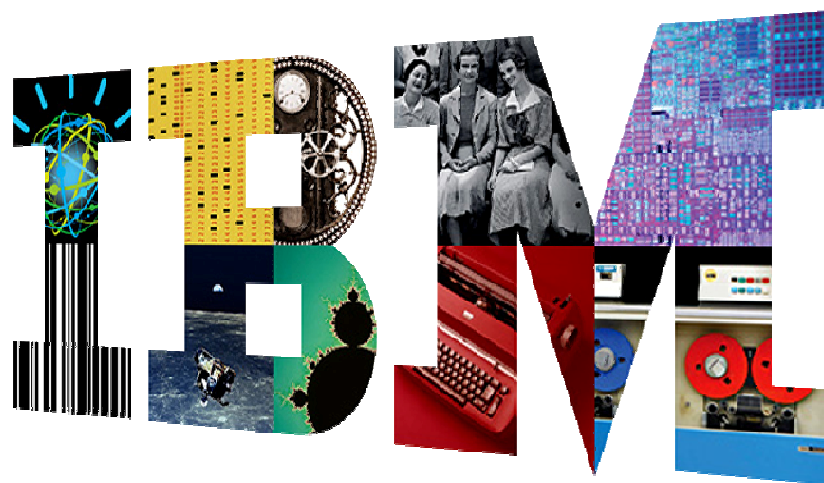
PureExperience: IBM's investment to *prove it*



IBM PureExperience Offers the following at no charge:

1. On-site installation of PureApplication System and guided demonstration of business value
2. Execution of a 10 day on-site service engagement
3. Use of the PureApplication System for 30 days
4. Lab advocate for usage questions and advice
5. Single point of IBM support and maintenance





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Editing a Virtual Application



- [Pattern Type: WebApp Virtual Application Builder - [TradeLite Application] *

Diagram | ListView | Source

Save | Save As | Layout | Undo | Redo

Assets

Asset name

- Enterprise Application
WebSphere Application Server
- Existing Web Service Provider Endpoint
- Policy Set
- Web Application
WebSphere Application Server
- Database Components
 - Database
DB2
 - Existing Database
DB2
 - Existing Database
Informix
 - Existing Database
Oracle
 - Existing IMS Database
- Messaging Components
 - Existing Messaging Service
WebSphere MQ
 - Existing Queue
WebSphere MQ
 - Existing Topic
WebSphere MQ
- OSGi Components
 - Existing OSGi Bundle Repository
 - OSGi Application

Layers

+ Add policy for application

Enterprise Application TradeLite → Database TradeDB

Database DB2

Name: *
TradeDB

Database Name: *
mydb

Database Description:

Purpose:
Production

Database Image List:

Workload standards:

Source
Create a new database pattern

Workload Type:
Departmental OLTP Sample

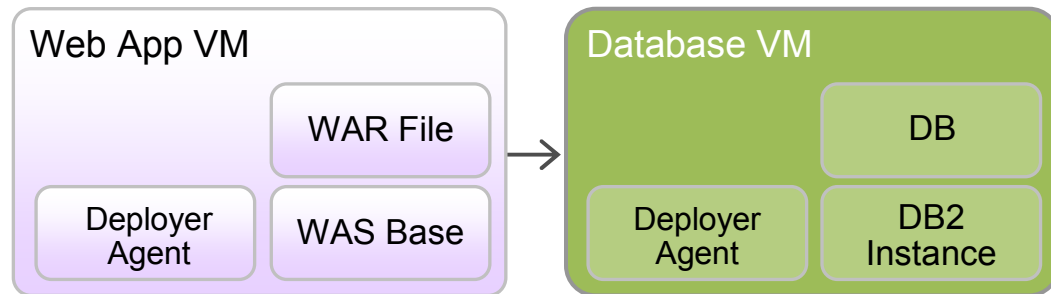
Maximum User Data Space (GB):
10

DB2 Compatibility Mode:
Default Mode

Schema File:
artifacts/setup_db.sql [Browse](#) [Delete](#)



Instantiates Virtual Application as...



Add a Scaling Policy



- [Pattern Type: WebApp Virtual Application Builder - [TradeLite Application] *

Diagram | ListView | Source

Save | Save As | Layout | Undo | Redo

Assets

Asset name

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WebSphere MQ
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WebSphere MQ
- OSGi Components
 - Existing OSGi Bundle Repository
 - OSGi Application

Layers

+ Add policy for application

Enterprise Application
TradeLite

Database
TradeDB

EAR File: *
artifacts/tradelite.ear [Browse](#) [Delete](#)

Total transaction lifetime timeout (sec):
120

Async response timeout (sec):
120

Client inactivity timeout (sec):
60

Maximum transaction timeout (sec):
300

Interim fixes URL:
Click select button to update

Select

Scaling Policy
Web/Enterprise Application

Enable session caching:

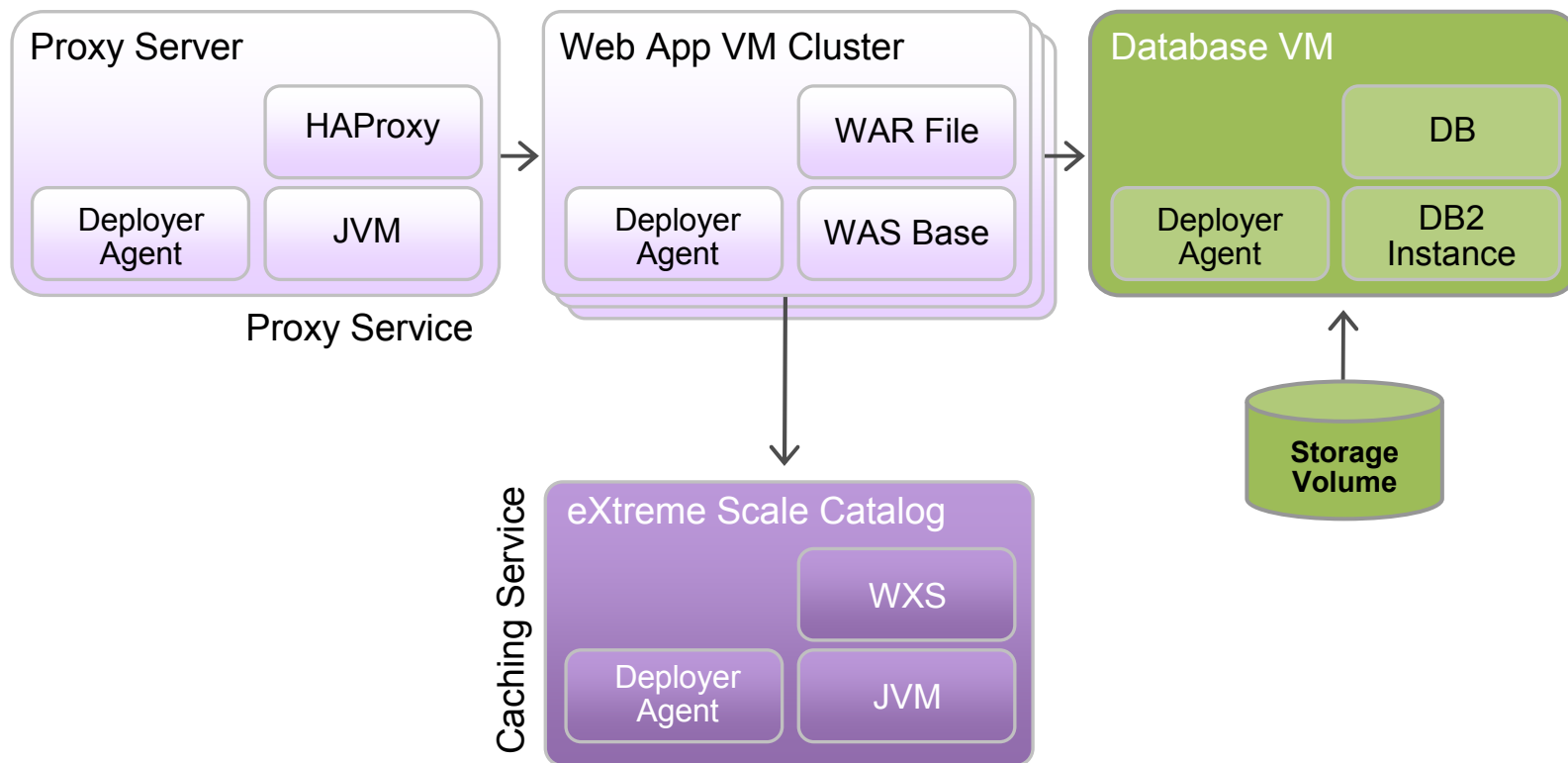
Scaling Type
Response Time Based

Scaling in/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: 2 - 16

Minimum time (sec) to trigger add/remove: *
120

The Virtual Application now maps to:



1

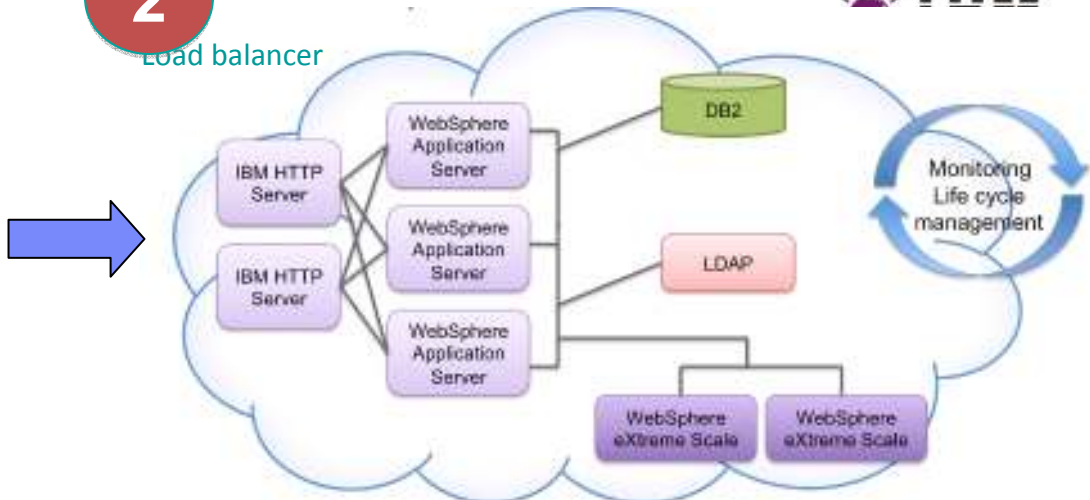
Deployment Interface



Initial instance = 3

2

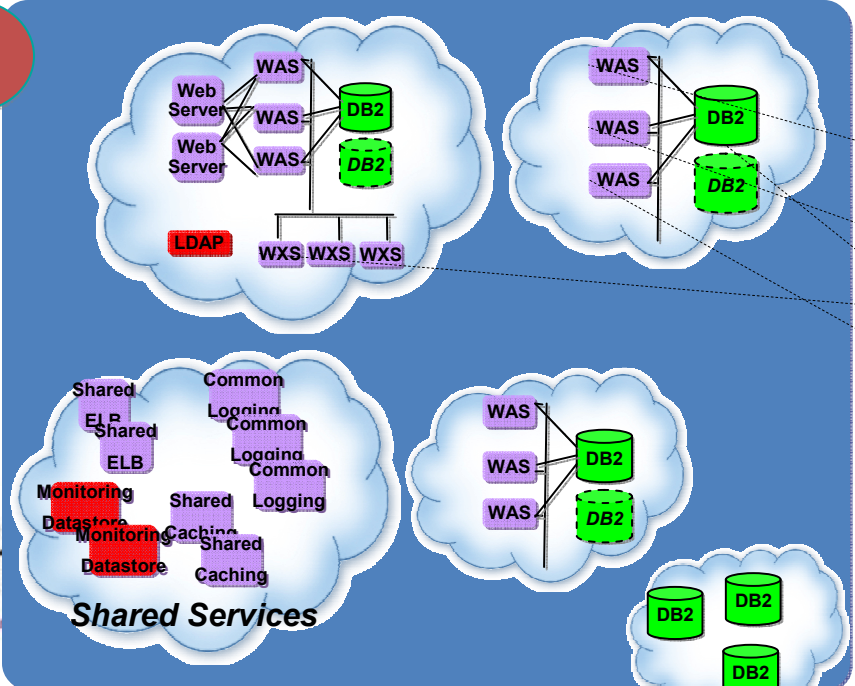
Virtual Application Instance (WAS + DB2)



WAS cluster configured with session replication

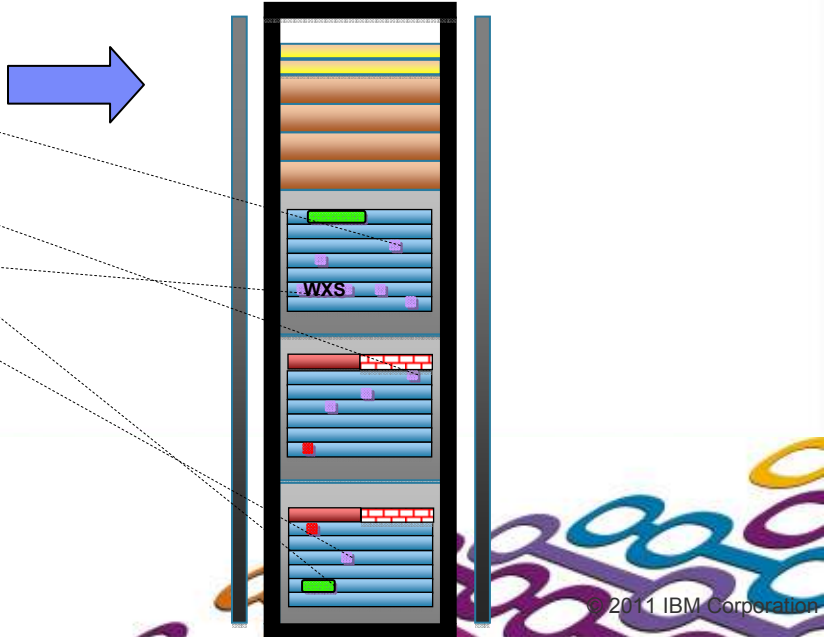
3

Multiple Consolidated Applications (Virtual View)

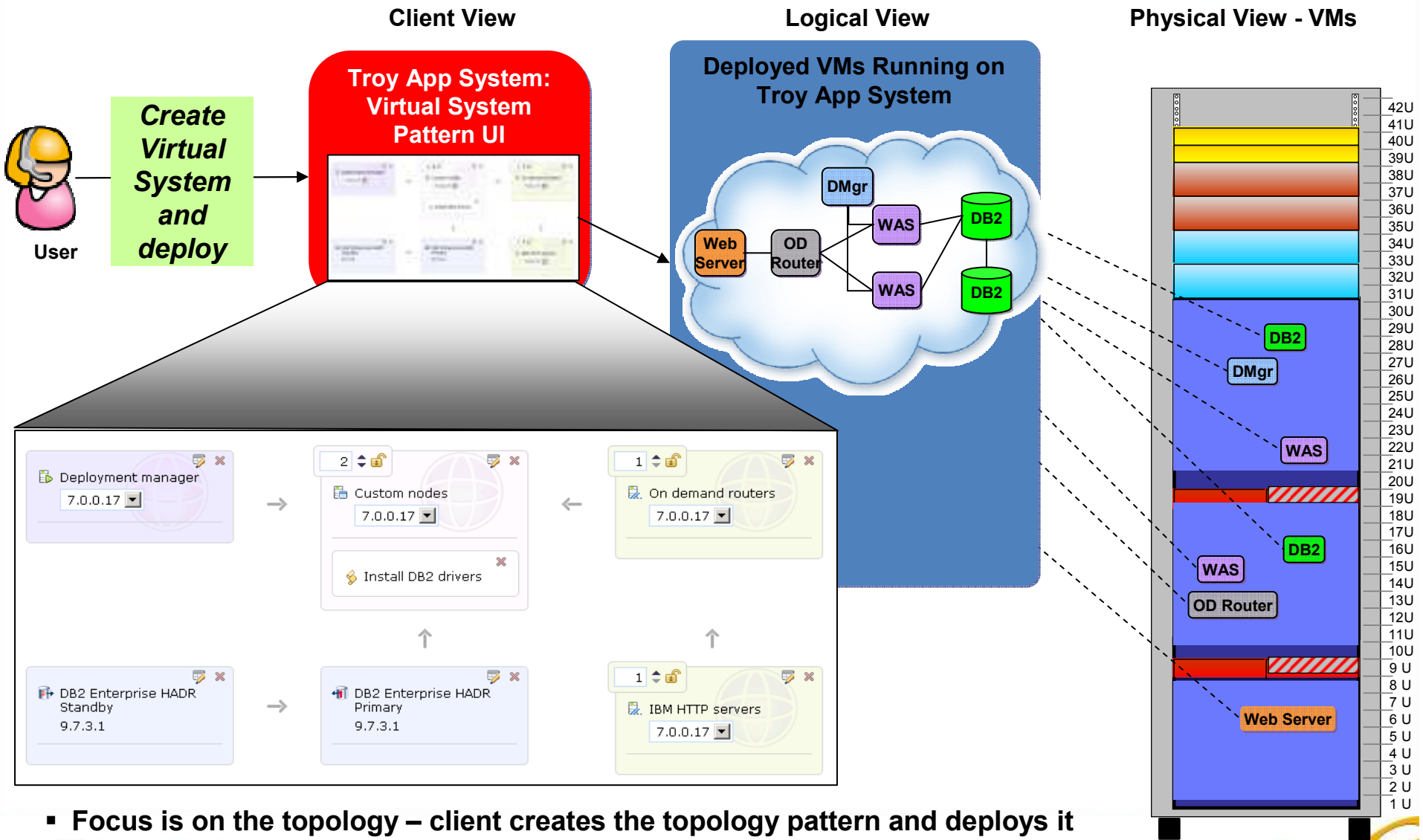


4

Multiple Consolidated Applications (Physical View)



Virtual System Views



- Focus is on the topology – client creates the topology pattern and deploys it
- Application and configuration scripts are added to the Virtual System pattern



Pre-Entitled Software with Troy Application System



- Clients have entitlement to run the following software on the full capacity of the System
 - OEM Virtualization components (not accessible by clients):
 - Virtual Systems:
 - IBM OS Image for Red Hat Linux Systems v1 (RHEL 64-bit v6.2)
 - IBM WebSphere Application Server Hypervisor Edition v7 (WAS 7.0.0.21)
 - IBM WebSphere Application Server Hypervisor Edition v8 (WAS 8.0.0.2)
 - DB2 9.7 FP5 Enterprise Server Edition HV
 - DB2 10 Enterprise Server Edition HV
 - Automation Framework HV (for migrating applications onto Troy Application System)
 - Virtual Application Patterns:
 - Java Pattern v1 (64-bit Java 7 SDK)
 - IBM Workload Deployer Pattern for Web Applications v1 (with WAS v7)
 - IBM Web Application Pattern v2 (with WAS v8)
 - IBM Transactional Database for Cloud v1.1 (with DB2 9.7 FP5)

