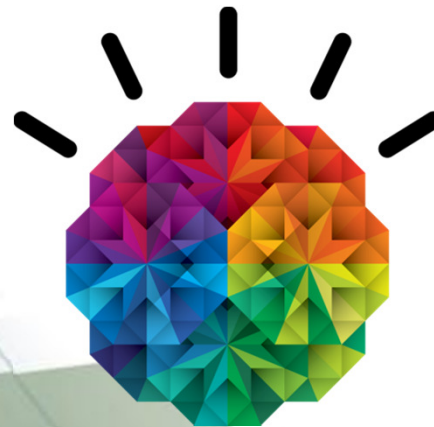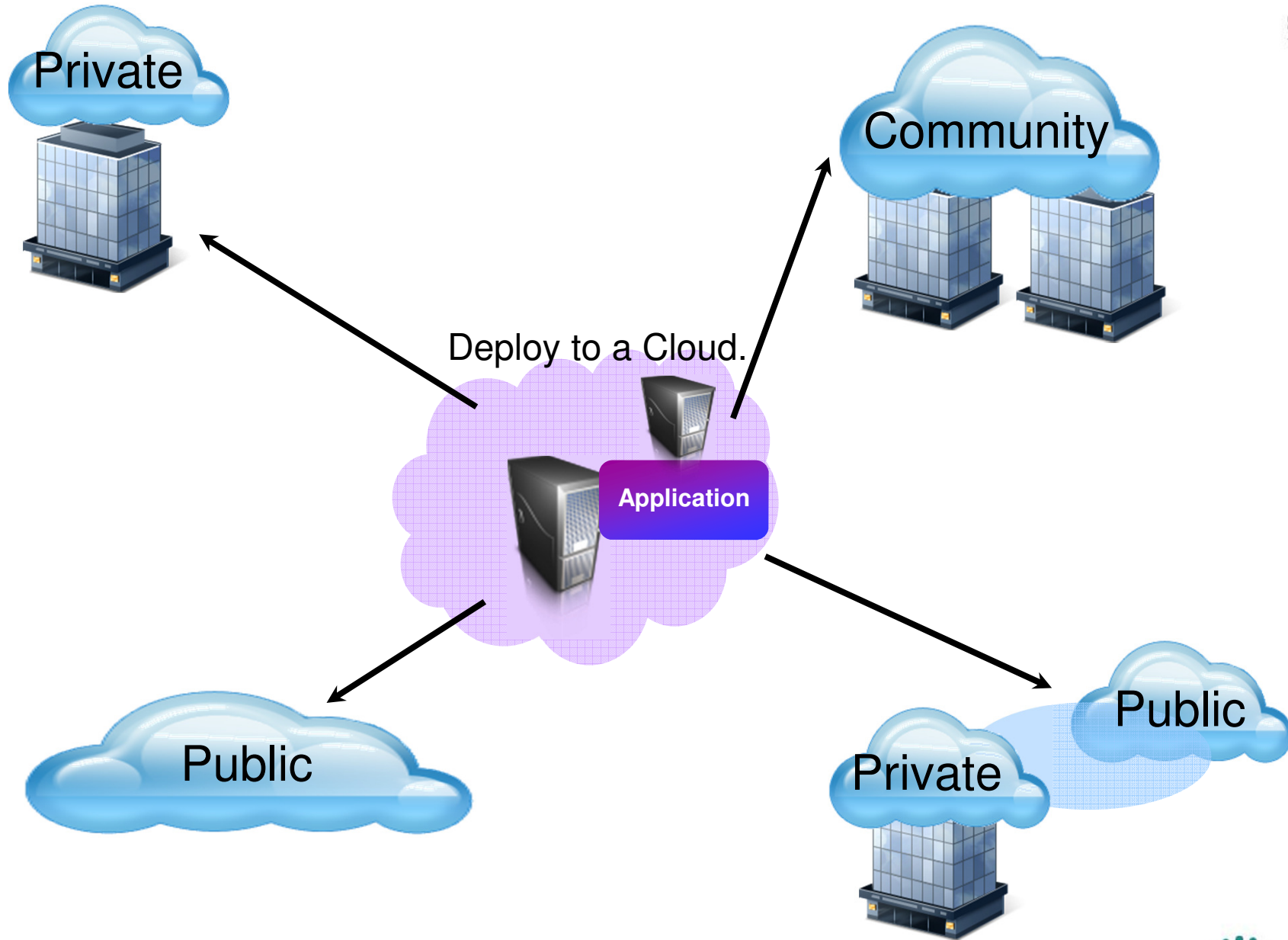# Extending IBM WebSphere MQ and WebSphere Message Broker to the Clouds

Session 14238

Ralph Bateman (ralph@uk.ibm.com)

STSM, Messaging and Integration Customer Support

IBM Hursley Lab

Private

Community

Deploy to a Cloud.

Application

Public

Public

Private

Complete your sessions evaluation online at SHARE.org/BostonEval

SHARE
in Boston

Don't worry it's in the cloud…..

Thanks for listening.

Questions?

Topics

- **Cloud Concepts**

- Introduction to PureApplication System, IWD, and SCAS

- Patterns and Messaging

- Virtual System Pattern – WebSphere MQ Hypervisor Edition

- Virtual Application Pattern – Messaging Extension

- Virtual System Pattern – Message Broker

- Reference – Current Versions and Links

Cloud Deployment Models

- Private
- Used solely by the owning organisation
- Benefits include in-house storage of critical data

- Community
- Owned by several organisations but supporting a specific community
- Some of the benefits of public cloud whilst in a closed community

- Public
- The consumer and provider of cloud services are separate enterprises
- Benefits include low-cost and scalability

- Hybrid
- Seamlessly combines services from public and private cloud
- Combination of benefits, but requires careful placement of secure/regulated data and apps

Cloud Service Models

- Reflect the traditional computing layers

- Software as a Service (SaaS)

– Provides access to hosted applications or services, which may themselves use PaaS and IaaS services

– Usage based charging , per hour or per 'transaction'

- Platform as a Service (PaaS)

– Application Centric view - consumer's application deployed into an environment hosted in the cloud

– Platform takes care of application dependencies

– Charging by licensed capacity or by usage

– e.g.: IBM PureApplication System, Google App Engine

- Infrastructure as a Service (IaaS)

– Access to compute and storage resources as a service

– Virtualization speeds deployment of patterns of standardised images giving more control over software versions, reduced setup cost, faster time to value

– Charging generally by (virtual) machine capacity

– e.g.: IBM Workload Deployer, PureApplication System, VMWare, IBM SmartCloud, Amazon EC2

Client Devices/Browsers

Client

SaaS — Application

PaaS — Platform

IaaS — Infrastructure

Virtualised Hardware
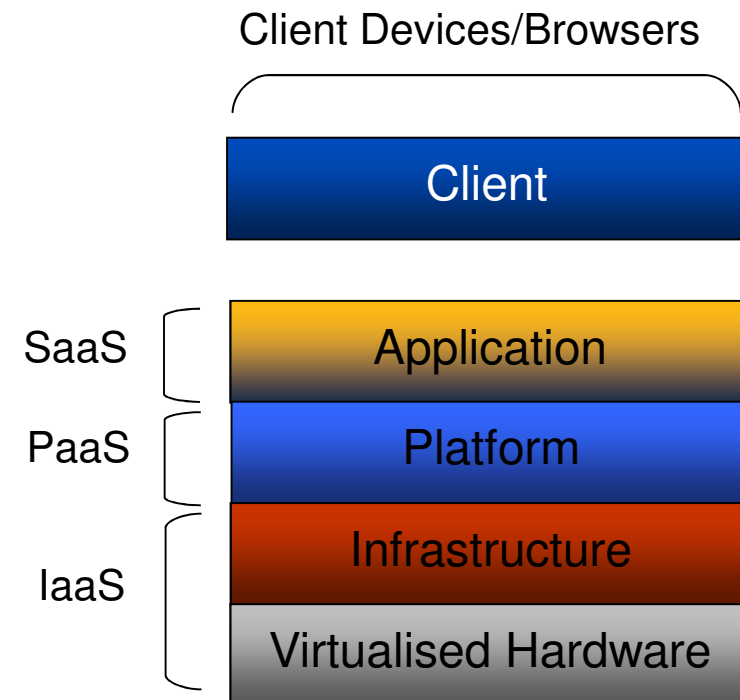
Topics

- Cloud Concepts

- **IBM SmartCloud, PureApplication System, IWD and SCAS**

- Patterns and Messaging

- Virtual System Pattern – WebSphere MQ Hypervisor Edition

- Virtual Application Pattern – Messaging Extension

- Virtual System Pattern – Message Broker
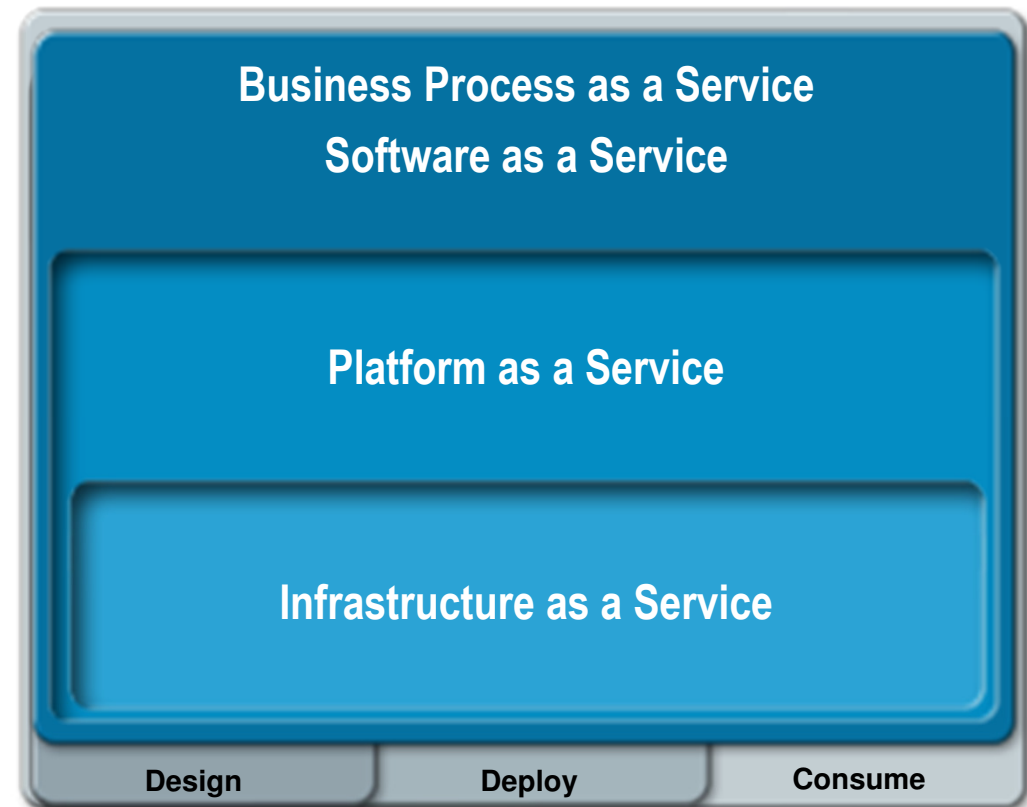
- Reference – Current Versions and Links

IBM SmartCloud

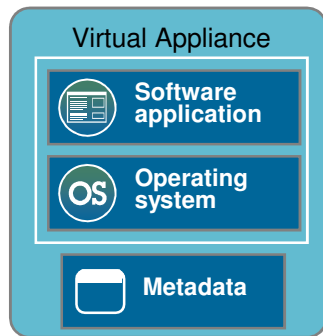An open, enterprise-class Cloud platform optimized to proven best practice patterns

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

- **Choice & Flexibility** in hybrid delivery & consumption models

- **Built-in Expertise** enabling workload awareness & optimization

- **Secure & Scalable** smoothing evolution from existing environments

- **Integrated analytics** improving QoS and responsiveness

IBMSmartCloud

Business Process as a Service

Software as a Service

Platform as a Service

Infrastructure as a Service
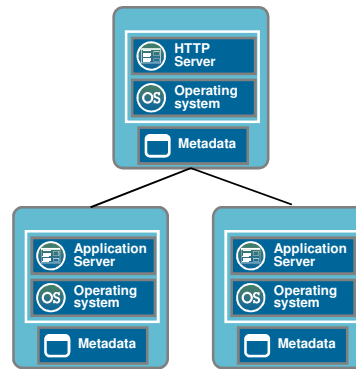
| Design | Deploy | Consume |

Multiple Pattern Types

Virtual Appliances

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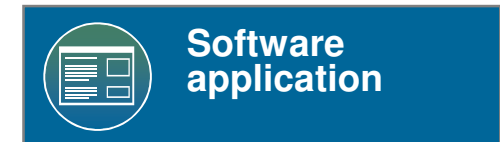- Infrastructure driven elasticity

Virtual Appliances

Virtual System Patterns

- Automated deployment of middleware topologies
- Traditional administration and management model
- Application and infrastructure driven elasticity
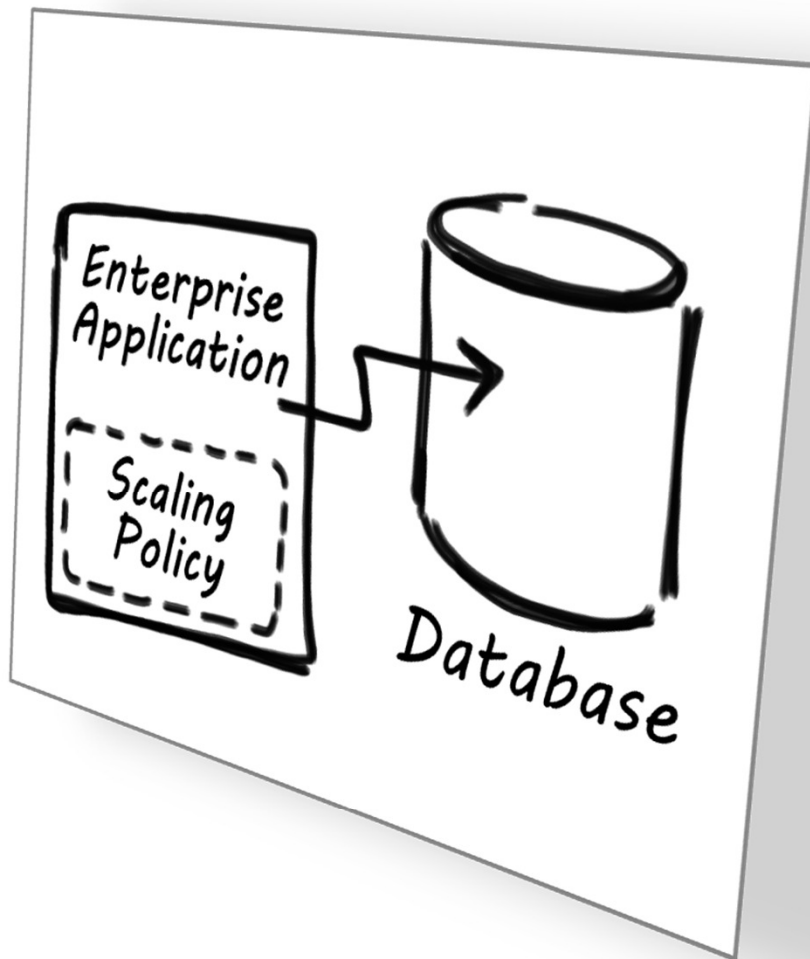
Virtual System Patterns

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

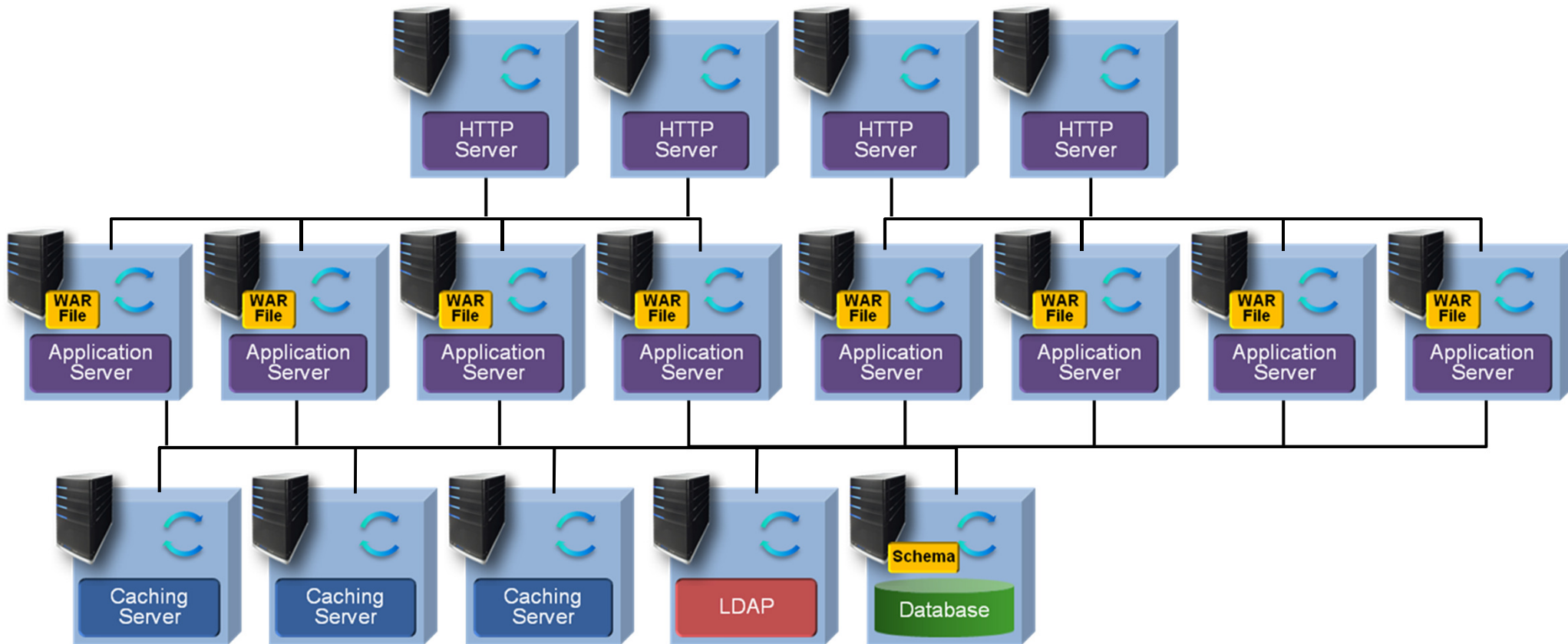# Patterns accelerate business value
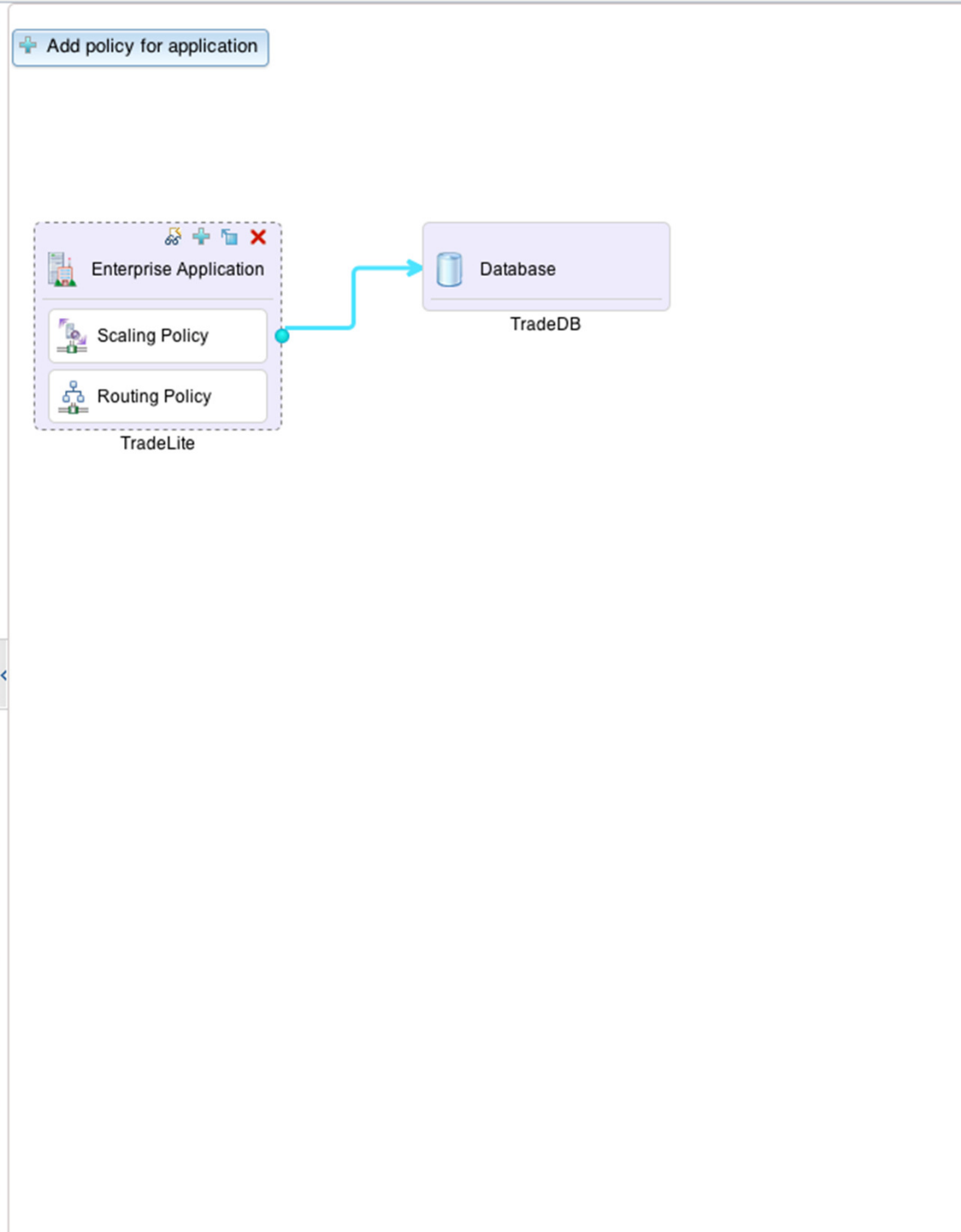
What the business wants…

What's required…

Complete your sessions evaluation online at SHARE.org/BostonEval

What will be needed tomorrow…

Complete your sessions evaluation online at SHARE.org/BostonEval

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

→12 📇 Existing CICS Transaction Gateway ⚠

📇 Existing IMS TM

✚ Add policy for application

Enterprise 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:**

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

13 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):

0   10000

◀ ▭　　　　▭ ▶

Range: 1000 - 5000

Instance number range of scaling in/out: *

1   50

◀ ▭▭ ▶

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   ?
   Web/Enterprise Application

Enable session caching: ☑

Maximum Session Cache Grid Size:

UNCAPPED ▾

▾ Scaling Type

Response Time Based ▾

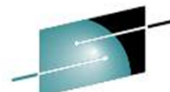Scaling in and out when Web response time is out of threshold range(ms):

0   10000

◀ ▭　▭ ▶

Range: 1000 - 5000

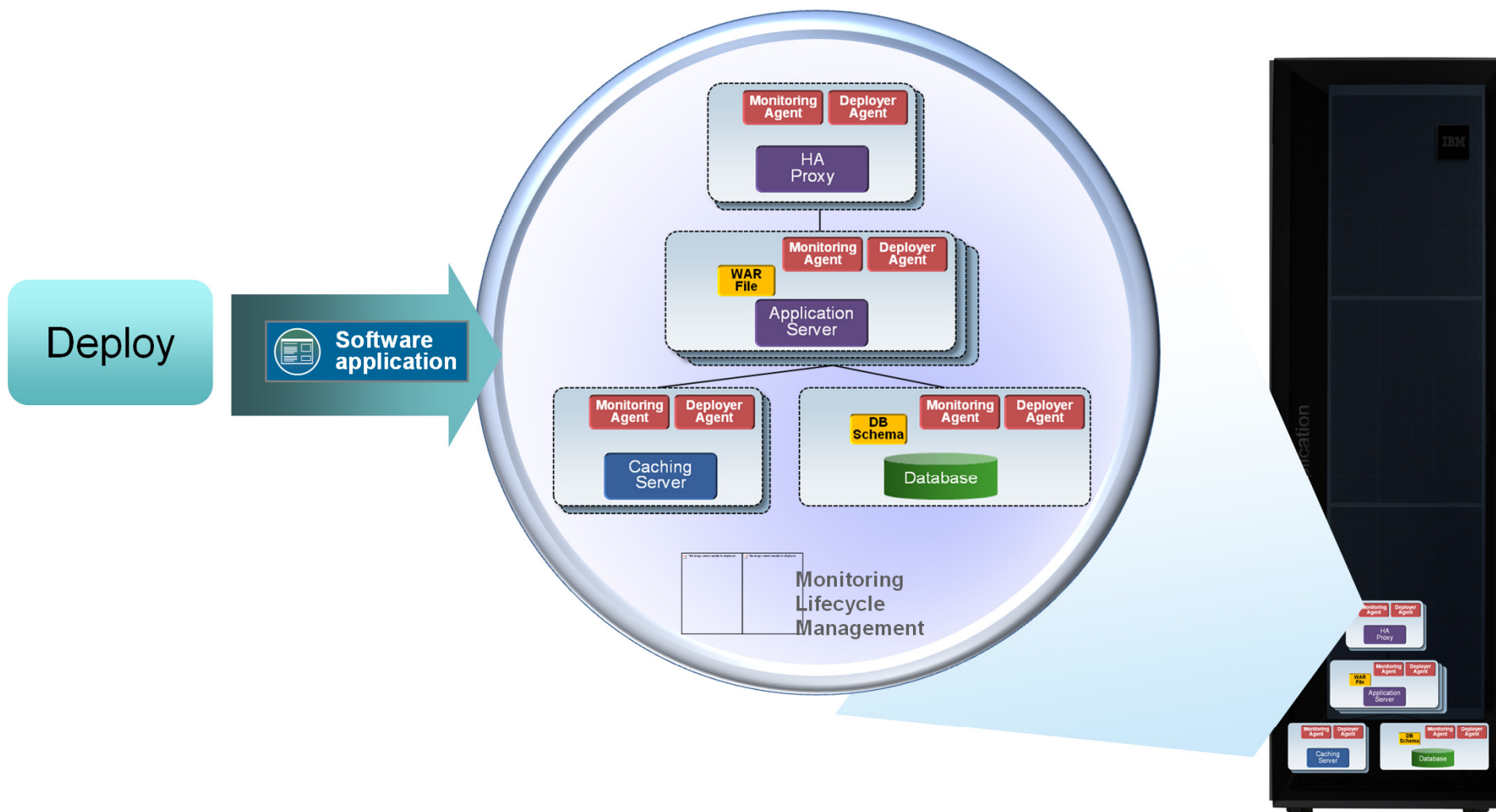*** Instance number range of scaling in/out:**

1   50

◀ ▭▭ ▶

Range: 1 - 10

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

Initiates a fully scalable Web Application

Complete your sessions evaluation online at SHARE.org/BostonEval

SmartCloud Family

IBM Workload Deployer
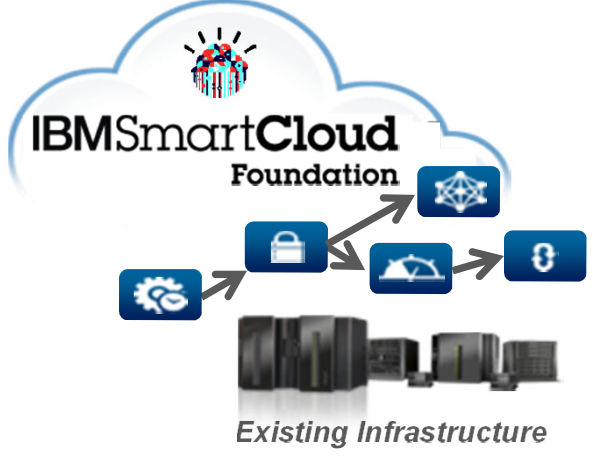
Multiple Deployment Models

IWD UI / CLI / REST API

IBM**SmartCloud**
Foundation

Existing Infrastructure

Deploy patterns into your *existing infrastructure*

IBM**SmartCloud**
Foundation

PureApplication

Accelerate deployments with expert *integrated systems*

**Enterprise
data center**

Managed private cloud

Enterprise

Hosted private cloud

Enterprise

Shared cloud services

IBM**SmartCloud**
Services
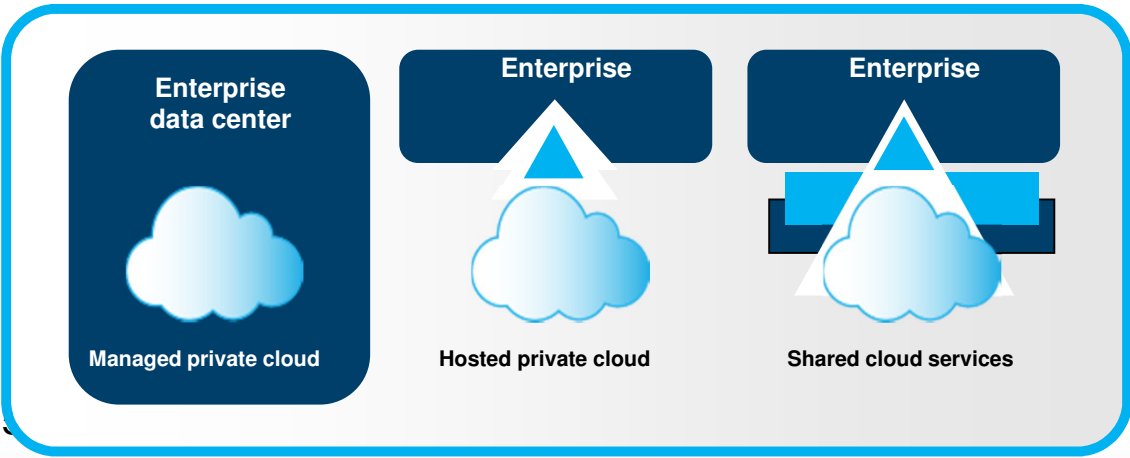
Immediate access to managed services

IBM Workload Deployer

•Hardware appliance

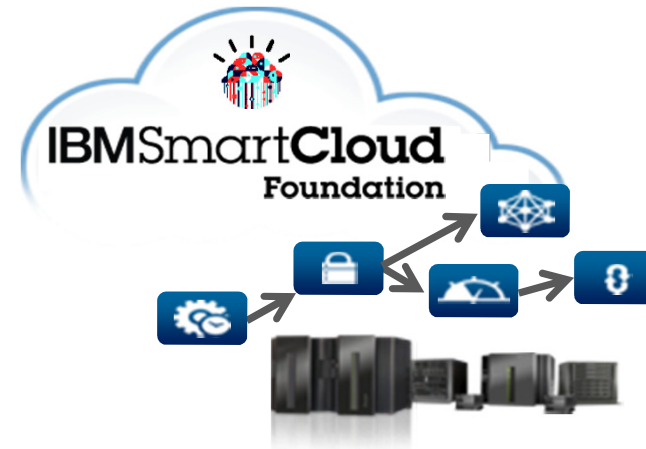•Supports heterogeneous server, networking, storage & middleware

•Get started easily deploying to :

- VMware ESX
- PowerVM
- zVM

IBMSmartCloud Foundation

Deploy Cloud platforms into your *existing infrastructure*

Platform as a Service Technologies

| Lifecycle | Resources | Environments | Management | Integration |

Infrastructure as a Service Technologies

| Infrastructure | Management | Performance | Security | Usage |

IBM PureApplication System
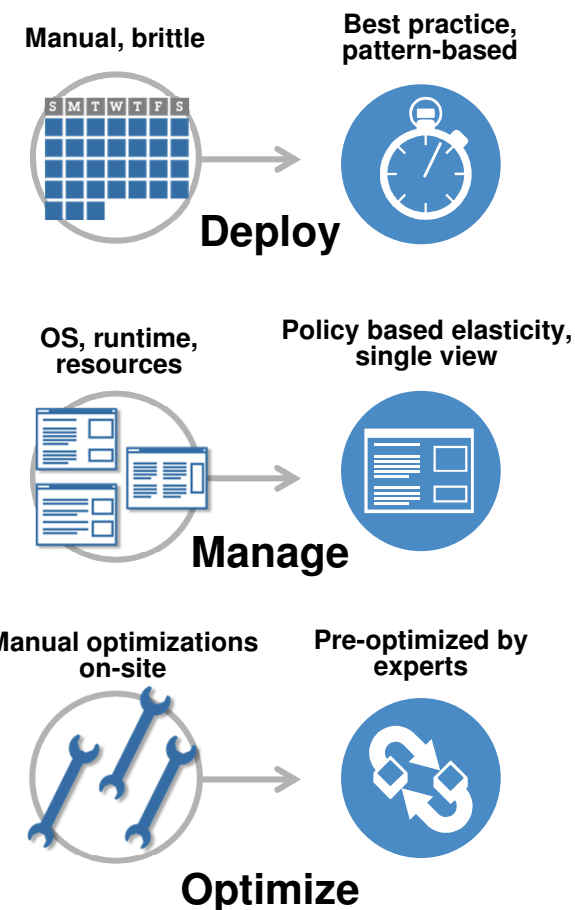
Complete, Ready-to-Go Systems

- 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 SmartCloud Services

▪Includes IBM hosted Enterprise **PaaS** with unprecedented choice in app development, deployment and management

▪The **PaaS** is hosted on IBM **IaaS**, with enterprise-class governance, administration, and management control

▪The most complete set of automated and integrated services to support enterprise applications

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

▪Multiple **IBM hosted** delivery models allow clients to optimize against economics, integration, security and control
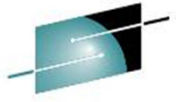
IBMSmartCloud Services

Accelerate deployments with expert *integrated systems*

Platform as a Service (App Services)

| Lifecycle | Resources | Environments | Management | Integration |

Infrastructure as a Service (Enterprise, Enterprise+)

| Infrastructure | Management | Performance | Security | Usage |

Complete your sessions evaluation online at SHARE.org/BostonEval

Topics

- Cloud Concepts

- Introduction to PureApplication System, IWD, and SCAS

- **Patterns and Messaging**

- Virtual System Pattern – WebSphere MQ Hypervisor Edition

- Virtual Application Pattern – Messaging Extension

- Virtual System Pattern – Message Broker

- Reference – Current Versions and Links

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Messaging and Virtual System Patterns
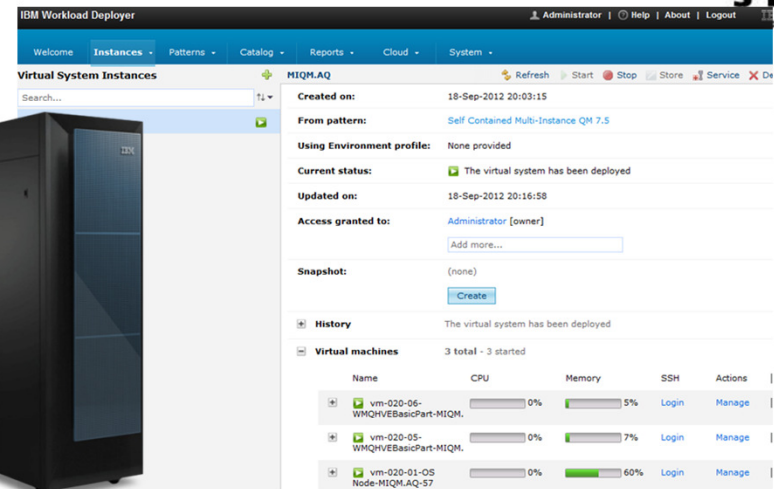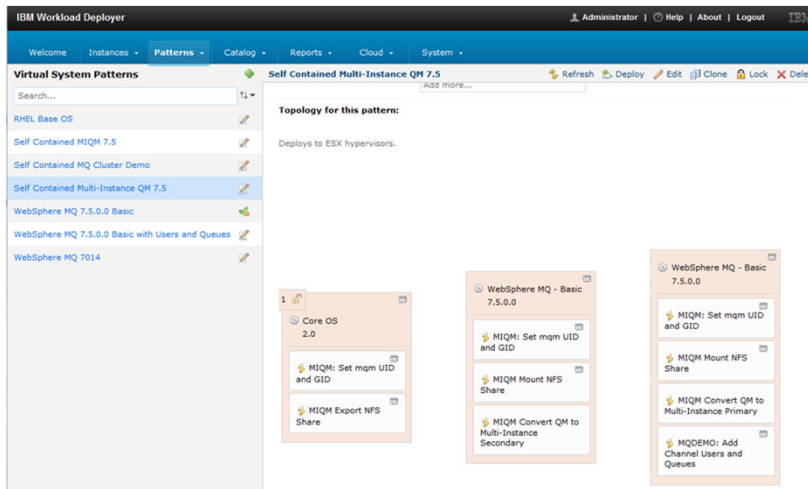
MQ Hypervisor Editions allow automation and standardisation of the traditional approach to provisioning messaging systems, which combined with IWD/PureApp gives many benefits:

- Standardization of software images reduces risk and uncertainty

- Automated provisioning reduces errors and speeds time to value
    - Repeatable configuration across sets of machines is quicker and less error-prone

- Applying software maintenance is simpler and quicker using IWD/IPAS GUI or CLI

- Comprehensive history/audit is maintained

- License tracking is integrated

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Messaging and Virtual Application Patterns

The **Messaging Extension for Web Application** pattern type and **MQ Plugins** for virtual application patterns enable deployment of messaging resources in an application–centric model reducing the time and skill needed to deploy applications

▪The Web App Pattern type provides vApp capabilities for JEE applications (EAR/WAR files)

▪A virtual application pattern defines the application's dependencies

–Pattern builder tool introspects application's deployment descriptor

–Identifies application's dependencies (resource references like **JMS ConnectionFactories, Queues, and Topics**) which can then be defined and "wired" into the pattern

▪At deploy time the IWD/PureApplication System creates and configures the necessary resources and JNDI objects

Comparison of MQ Hypervisor Edition and Messaging Extension for Web App Pattern

|	MQ Hypervisor Edition	IBM Messaging Extension for Web App Patterns
Pattern type	Virtual System	Virtual Application
Audience	•System admins •MQ administrators •MQ developers	•JEE app developers •JEE app testers •JEE app deployers
MQ knowledge required	Medium / High	Low
Pattern dependencies	None	•Web Application pattern 2.0 •OS pattern
Intended use:	• Rapid provisioning of standardised middleware in virtual environments. • Repeatable automated configuration; Simplified maintenance; Audit trail and License tracking. • MQ HVE adds virtual image • Traditional MQ admin model.	• Quick and simple modelling and rapid deployment of applications • Cloud automatically provisions and configures middleware pre-requisites • MQ adds rapid provisioning of black-box messaging server for JEE environments • Little/No MQ knowledge required

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Topics

- Cloud Concepts

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- Patterns and Messaging

- **Virtual System Pattern – WebSphere MQ Hypervisor Edition**

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WebSphere MQ Hypervisor Edition 7.0.1 Updates

■Two MQ Hypervisor products (HVEs) were delivered in 2011

–WebSphere MQ Hypervisor Edition for Red Hat Enterprise Linux

•RHEL 5.5, WMQ 7.0.1.4

–WebSphere MQ Hypervisor for AIX

•AIX 6.1 TL5, WMQ 7.0.1.6
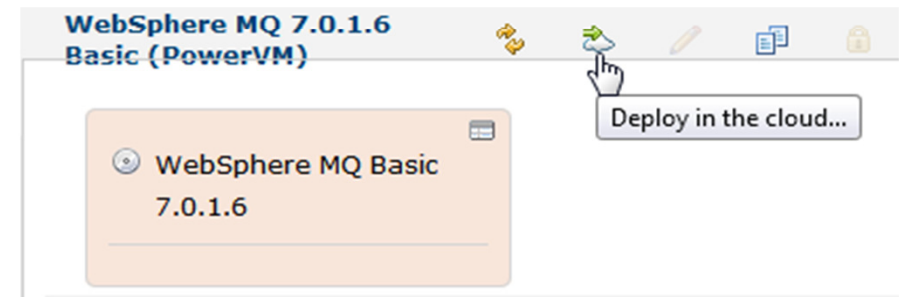
■Can be deployed as Virtual System
Patterns from IBM Workload
Deployer and IBM PureApplication System

–MQ HVE for RHEL can also be deployed direct to VMware ESX

■The HVEs were updated in June 2012 as follows:

–MQ HVE for RHEL - RHEL 6.2, WMQ 7.0.1.8

–MQ HVE for AIX – AIX 6.1 TL6, WMQ 7.0.1.8

WebSphere MQ Hypervisor Edition 7.5

- WebSphere MQ Hypervisor Edition V7.5 for Red Hat Enterprise Linux Server available August 21st 2012

  – RHEL 6.2, WMQ 7.5.0.0

- Deploy in virtual system patterns from IBM Workload Deployer and IBM PureApplication Systems

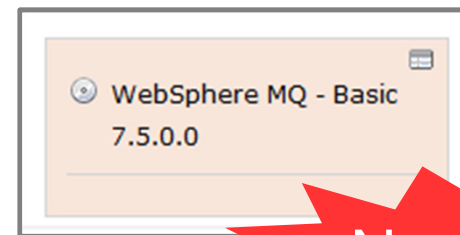 – Can also be deployed direct to VMware ESX

- Extends the 7.0.1 HVE with:

  – MQ 7.5 core MQ runtime and clients

  – MQ Telemetry Server and Clients (server needs entitlement)

  – FTE and AMS install packages included in VM and available to install (subject to license entitlement)

  – VM hardened out-of-the-box with additional deploy-time security options

- Command line scripts to simplify image loading to IWD / PureAS appliance

Complete your sessions evaluation online at SHARE.org/BostonEval
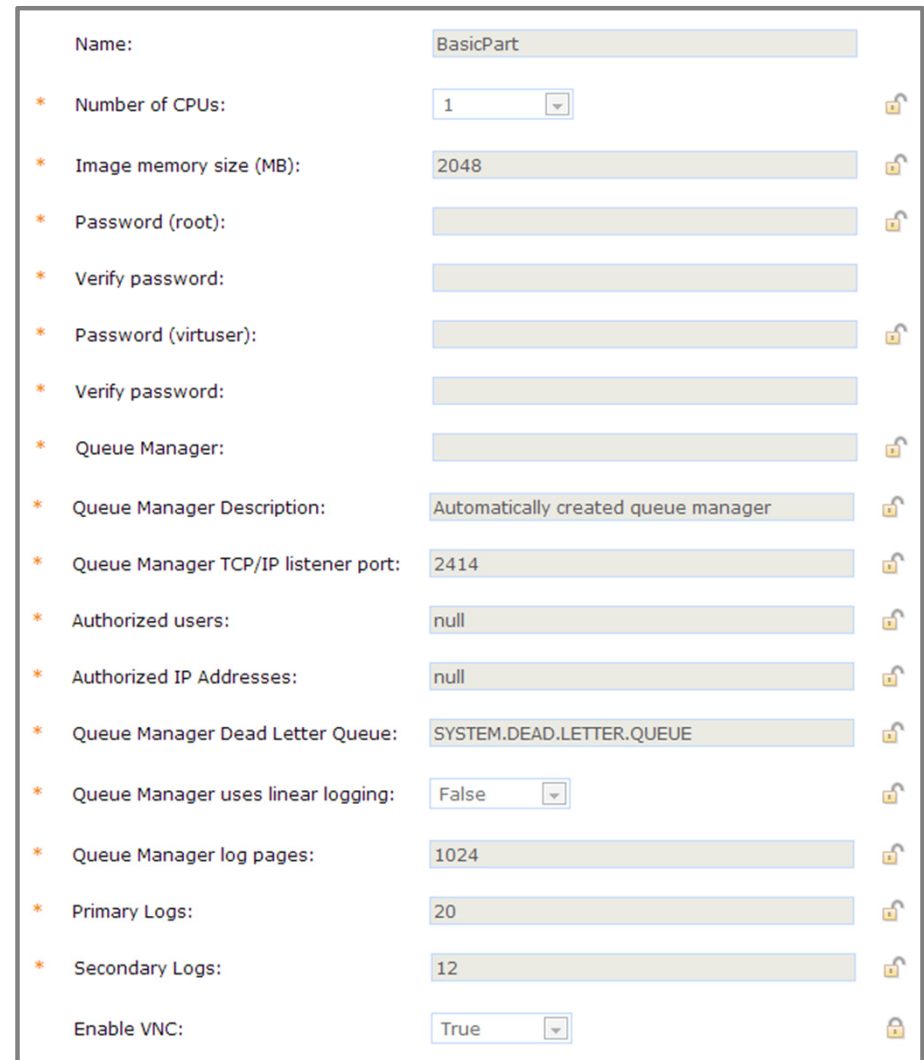
WebSphere MQ Hypervisor Edition Content

■ **WebSphere MQ Hypervisor Edition comes with simple parts, patterns, and script packages**

– When deployed a MQ part creates a VM containing a configured queue manager

– Primarily intended to be composed with other system images in more complex patterns

WMQ: Add to Queue Manager Cluster	✅🔒
WMQ: Remove from Queue Manager Cluster	✅🔒
WMQ: Run MQSC Scripts	✏️

MQ 7.5 script packages

Name:	BasicPart	
* Number of CPUs:	1	🔓
* Image memory size (MB):	2048	🔓
* Password (root):		🔓
* Verify password:		
* Password (virtuser):		🔓
* Verify password:		
* Queue Manager:		🔓
* Queue Manager Description:	Automatically created queue manager	🔓
* Queue Manager TCP/IP listener port:	2414	🔓
* Authorized users:	null	🔓
* Authorized IP Addresses:	null	🔓
* Queue Manager Dead Letter Queue:	SYSTEM.DEAD.LETTER.QUEUE	🔓
* Queue Manager uses linear logging:	False	🔓
* Queue Manager log pages:	1024	🔓
* Primary Logs:	20	🔓
* Secondary Logs:	12	🔓
Enable VNC:	True	🔒

MQ 7.5 deployment parameters

SHARE in Boston

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Web Application Pattern Type - MQ Plugin Updates

- In 2011 MQ delivered initial set of messaging plugins for the IWD web application pattern

  – No charge additions to Web Application Pattern

  – Enables a web application to connect to an external queue manager

  – Appears on palette as Queue, Topic and "Existing Messaging Service" plugins

  – Automatically configures the JNDI JMS resources bound into the WAS namespace

- In July 2012 the plugins were:

  – Enhanced to support Message Driven Beans (IWD 3.1.0.2 and later)

  – Included in IBM PureApplication System V1.0

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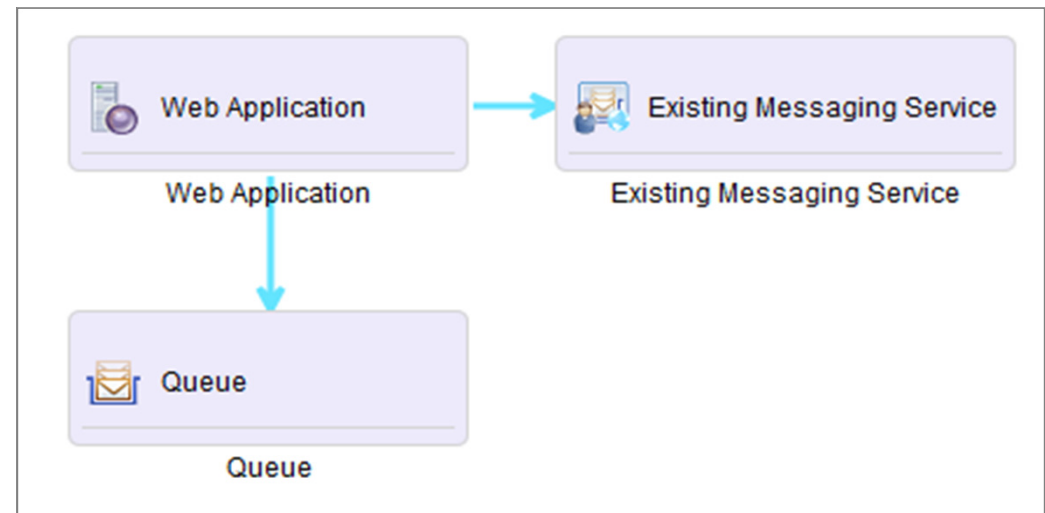
Messaging Extension For Web Application Pattern V2.0

▪New Messaging pattern type for IBM Workload Deployer and IBM PureApplication System

– Separate product which extends Web Application Pattern V2.0

– Loaded as PatternType to IWD/IPAS

– Available on PPA from 2012/07/31

▪Simplifies Web application deployment by:

– Provisioning a new virtual machine containing a queue manager for each deployment

– Creating queues and topics in queue manager

– Linking new resources to JNDI objects used by application

▪Can still connect to existing queue managers, where queues or topics are hosted inside or outside the cloud

▪Also supports MDBs

Complete your sessions evaluation online at SHARE.org/BostonEval
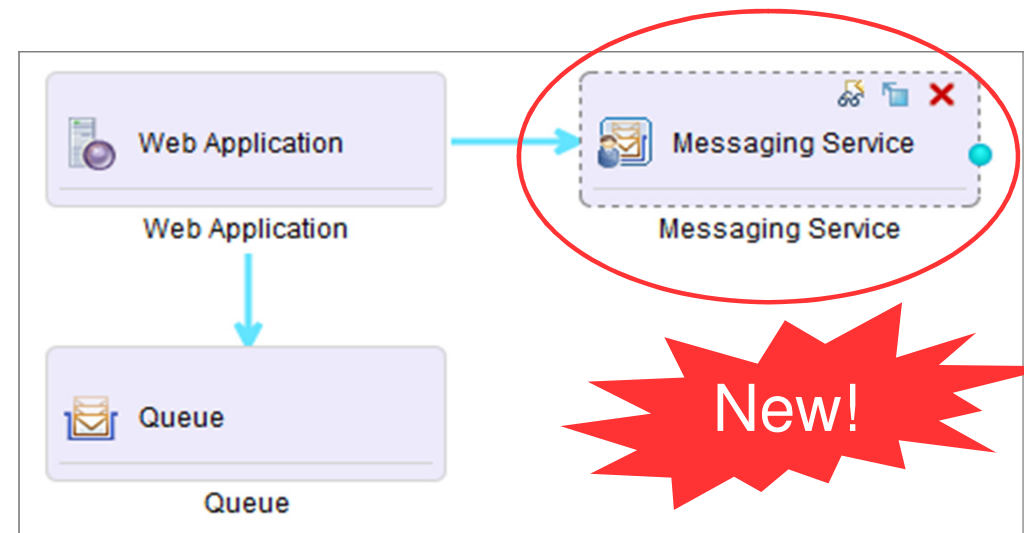
Messaging Extension For Web Application Pattern

IBM Workload Deployer - [Pattern Type: Web Ap...   Virtual Application Builder - [...] *

Diagram | List View | Source
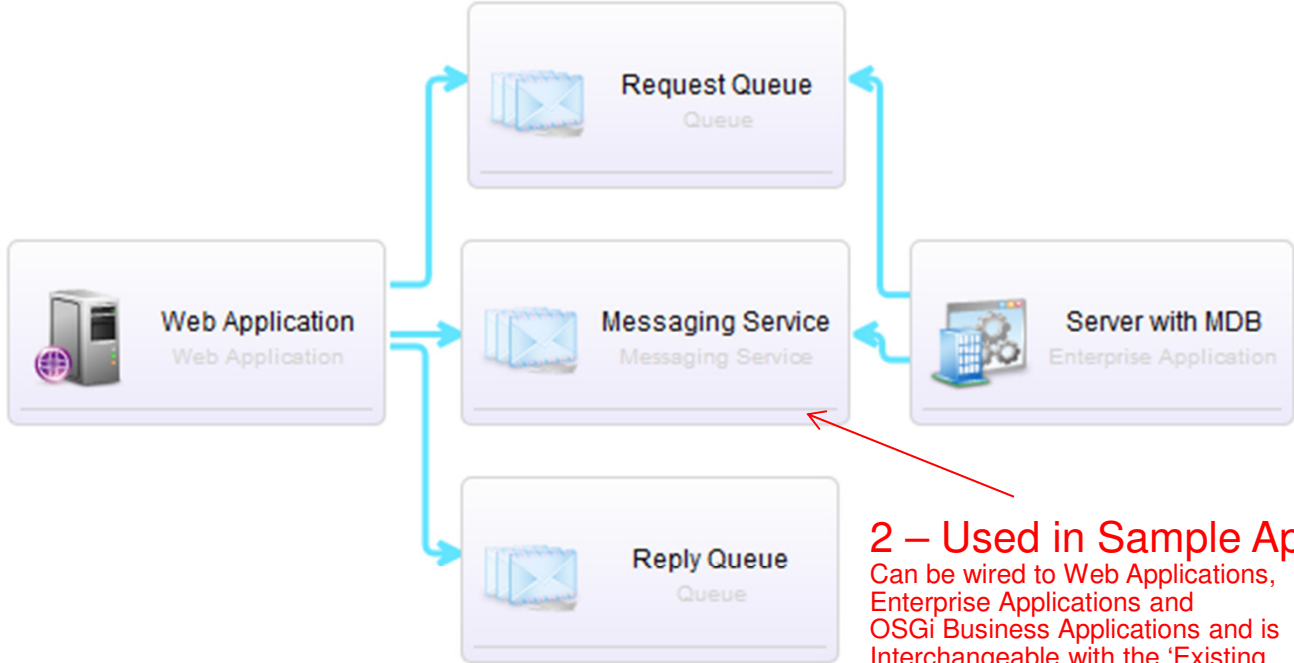
Save | Save As | Layout | Undo | Redo

Assets

Asset name

▶ Application Components
▶ Database Components
▼ Messaging Components

    Existing Messaging Service
    WebSphere MQ

    Messaging Service
    WebSphere MQ

    Queue
    WebSphere MQ

    Topic
    WebSphere MQ

▶ OSGi Components
▶ Transaction Processing Components
▶ User Registry Components
▶ Other Components

Add policy for application

Request Queue — Queue

Web Application — Web Application

Messaging Service — Messaging Service

Server with MDB — Enterprise Application

Reply Queue — Queue

2 – Used in Sample App.
Can be wired to Web Applications,
Enterprise Applications and
OSGi Business Applications and is
Interchangeable with the 'Existing
Messaging Service'

1 – New node

Complete your sessions evaluation online at SHARE.org/BostonEval

Messaging Extension For Web Application Pattern

3 – Deployed Application

simple monitoring

Message Queues

- Average Queue Depth
- Depth of Deepest Queue

Dead-letter Queue

- Queue Depth

Client Connections

- Channel Instances

Channel Activity

- Bytes Transmitted per Second
- Bytes Received per Second

Messaging Operations

- Client Requests per Second

Web Application

WebSphere MQ

Server with MDB

Enterprise_ Application-was. 11338366624275	10.1.31.7	Running → Log	May 30, 2012 9:30:31 AM	WAS → Endpoint
Messaging_ Service-mq. 11338366624276	10.1.31.5	Running → Log	May 30, 2012 9:30:31 AM	MQ → Endpoint
Web_Application-was. 11338366624274	10.1.31.8	Running → Log	May 30, 2012 9:30:31 AM	WAS → Endpoint

Health status

Virtual Machine Status

Middleware Status

31

Complete your sessions evaluation online at SHARE.org/BostonEval

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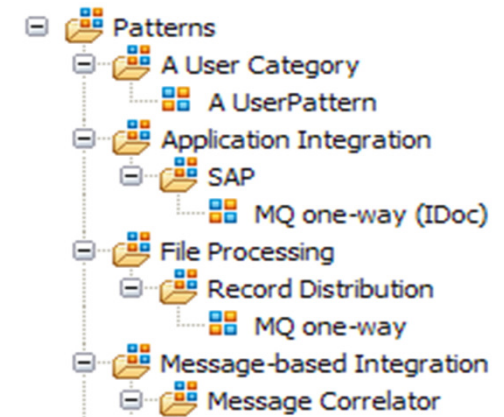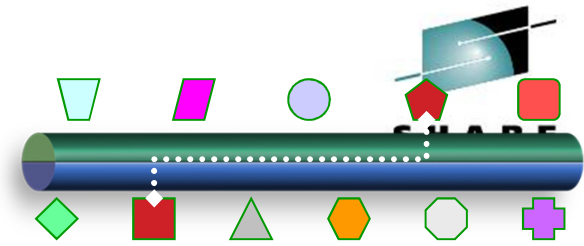
What Is The WMB HvE Pattern?

- A Virtual System Pattern on IBM Pure Application System
- A product to simplify provisioning MB (and MQ)

  1. Simplify initial system deploy resulting in quicker time to solution
  2. Simplify fix pack deploy to reduce recurring maintenance cost for existing systems
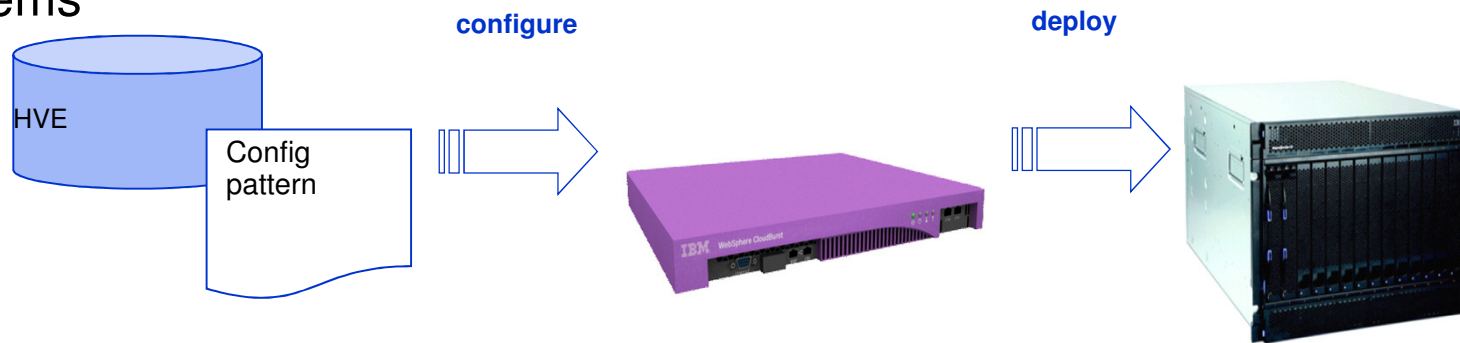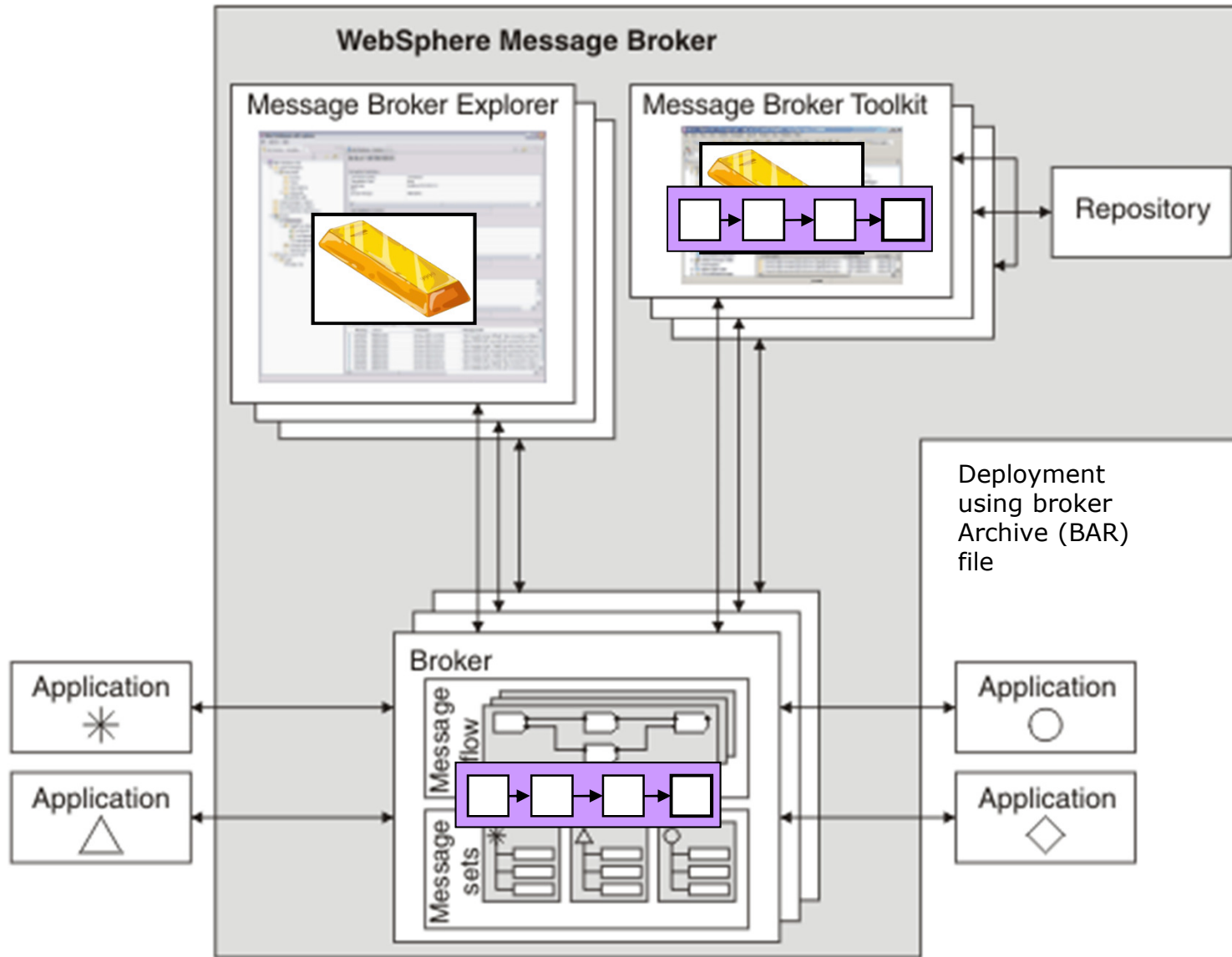

- Pre-built image
  - RHEL 6.2 x86-64
  - Includes all MQ & MB components
  - Includes regular PureAS image & VMWare image

- Configuration Patterns
  - PureAS Patterns
  - PureAS Script Packages

WebSphere Message Broker

- Universal Connectivity FROM anywhere, TO anywhere
  - Simplify application connectivity for a flexible & dynamic infrastructure

- Comprehensive Protocols, Transports, Data Formats & Processing
  - Connect to applications, services, systems and devices
    - MQ, JMS 1.1, HTTP(S), SOAP, REST, File (incl. FTP, FTE, ConnectDirect), Database, TCP/IP, MQTT, CICS, IMS, SAP, SEBL, .NET, PeopleSoft, JDEdwards, SCA, CORBA, email…
  - Understand the broadest range of data formats
    - Binary (C/COBOL), XML, CSV, JSON, Industry (SWIFT, EDI, HL7…), IDOCs, User Defined
  - Built-in suite of request processors
    - Route, Filter, Transform, Enrich, Monitor, Publish, Decompose, Sequence, Correlate, Detect…

- Simple Programming with Patterns & Graphical Data Flows
  - Patterns for top-down, parameterized connectivity of common use cases
    - e.g. Service façades, Message processing, Queue2File…
    - IBM & User defined patterns for development reuse & governance
  - Graphical data flows represent application & service connectivity
    - Custom logic via Graphical mapping, PHP, Java, ESQL, XSL & WTX

- Extensive Management, Performance & Scalability
  - Extensive Administration & Systems Management facilities for developed solutions
  - Wide range of operating system &hardware platforms supported, including virtual & cloud options
  - High performance transactional processing, additional vertical & horizontal scalability
  - Deployment options include Trial, Express, Standard and Advanced

- Connectivity Packs for Industry Specific Content
  - Connectivity Pack for Healthcare includes HL7 Connectors, Patterns & Tooling
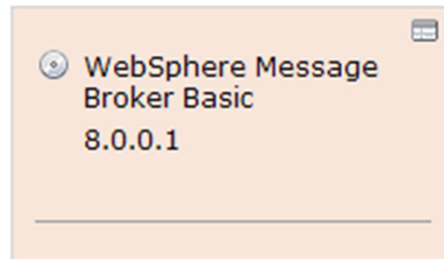
Patterns
  A User Category
    A UserPattern
  Application Integration
    SAP
      MQ one-way (IDoc)
  File Processing
    Record Distribution
      MQ one-way
  Message-based Integration
    Message Correlator

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WebSphere Message Broker Components

WMB HvE Configuration – PureAS Patterns

- WebSpshere Message Broker 8.0.0.1 (Basic)

  - Basic configuration parameters
  - VM specific configuration parameters

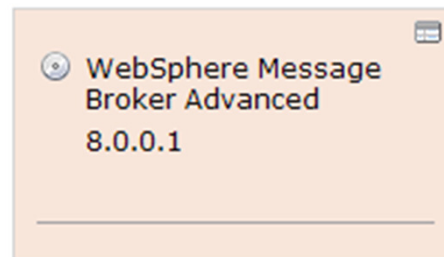   - No specific MB or MQ configuration

- WebSphere Message Broker 8.0.0.1 (Advanced)

  - Extensive configuration parameters

    - MB and MQ

    - Defaults provided

- Four images

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WMB HvE Configuration – Script Packages

- Used for additional configuration

- Drag and Drop onto pattern
  - Same script can be dropped multiple times onto a pattern

- Eight pre-defined script packages
  - WMB: Create Configurable Service
  - WMB: Create Execution Group (Advanced)
  - WMB: Create Execution Group (Basic)
  - WMB: Deploy Bar Files
  - WMB: Run MQSC scripts
  - WMB: mqsichangeproperties
  - WMB: mqsisetdbparms
  - WMB: Configure MQ Clustering
- Allows the appropriate properties to be configured directly on the script package residing on the pattern

- Pre-fixed with 'WMB:' to separate / group script packages

- User can create own script packages to perform additional tasks
  - Additional configuration
  - Installation of additional applications
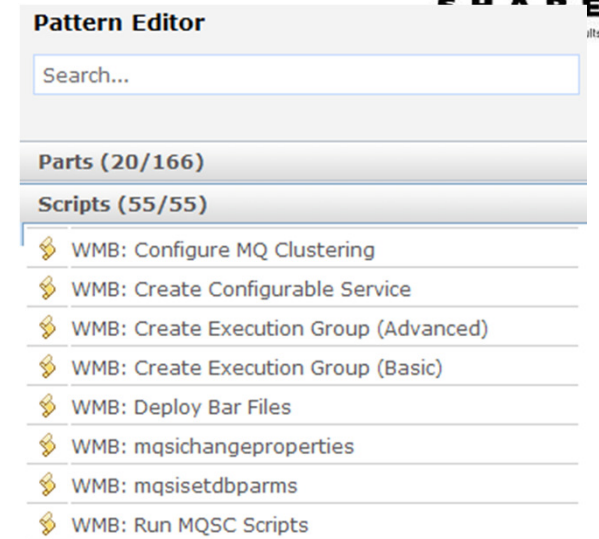
Pattern Editor

Search...

Parts (20/166)

Scripts (55/55)

- WMB: Configure MQ Clustering
- WMB: Create Configurable Service
- WMB: Create Execution Group (Advanced)
- WMB: Create Execution Group (Basic)
- WMB: Deploy Bar Files
- WMB: mqsichangeproperties
- WMB: mqsisetdbparms
- WMB: Run MQSC Scripts

WebSphere Message Broker Advanced

8.0.0.1

WMB: Create Execution Group (Basic)

WMB: Create Execution Group (Basic)

WMB: Deploy Bar Files

WMB: Run MQSC Scripts

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Topics

- Cloud Concepts

- Introduction to PureApplication System, IWD, and SCAS

- Patterns and Messaging

- Virtual System Pattern – WebSphere MQ Hypervisor Edition

- Virtual Application Pattern – Messaging Extension

- Virtual System Pattern – Message Broker

- **Reference – Current Versions and Links**

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Reference

- WMQ in Pure Application Systems – Pure System Centre

- WebSphere MQ Hypervisor Editions

  – V7.5 Infocenter

  – System Requirements (V7.0.1) (V7.5)

  – V7.0.1 Announcement Letters: RHEL (211-088), AIX (ZP11-0439)

  – V7.5 Announcement Letter: RHEL (212-277)

- IBM Messaging Extension for Web Application Pattern Type V2.0

  – Infocenter

  – System Requirements

  – Announcement letter: (ZP12-0178)

  – "Existing Messaging Service" plugin documentation

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Further Reading

- [Preparing for IBM PureApplication System: Article series on onboarding your applications](#)

- [Manage the topology with virtual system patterns](#)

- [Developing script packages for IBM Workload Deployer Virtual System patterns](#)

- [High availability topologies for IBM PureApplication System](#)
    - (Not MQ specific but same principles apply)

- [IBM Workload Deployer: Pattern-based Application and Middleware Deployments in a Private Cloud](#) (Redbook)

Complete your sessions evaluation online at SHARE.org/BostonEval

This was session 14238 - The rest of the week ......

	Monday	Tuesday	Wednesday	Thursday	Friday
08:00				Extending IBM WebSphere MQ and WebSphere Message Broker to the Cloud	CICS and WMQ - The Resurrection of Useful
09:30	Introduction to MQ				Can I Consolidate My Queue Managers and Brokers?
11:00		MQ on z/OS - Vivisection	Hands-on Lab for MQ - take your pick!	MOBILE connectivity with Broker	Migration and Maintenance, the Necessary Evil. Into the Dark for MQ and Message Broker
12:15					
01:30	MQ Parallel Sysplex Exploitation, Getting the Best Availability From MQ on z/OS by Using Shared Queues	What's New in the MQ Family	MQ Clustering - The basics, advances and what's new	Using IBM WebSphere Application Server and IBM WebSphere MQ Together	
03:00	First Steps With Message Broker: Application Integration for the Messy	What's New in Message Broker	BIG Connectivity with mobile MQ	WebSphere MQ CHINIT Internals	
04:30	What's available in MQ and Broker for high availability and disaster recovery?	The Dark Side of Monitoring MQ - SMF 115 and 116 Record Reading and Interpretation	MQ & DB2 – MQ Verbs in DB2 & Q-Replication performance	Big Data Sharing with the Cloud - WebSphere eXtreme Scale and IBM Integration Bus Integration	
06:00				WebSphere MQ Channel Authentication Records	

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Questions?

Thank You!

Extending IBM WebSphere MQ and WebSphere Message Broker to the Clouds

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