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Extending IBM WebSphere MQ and WebSphere Message Broker to the Clouds

5th February 2013

Session 12628

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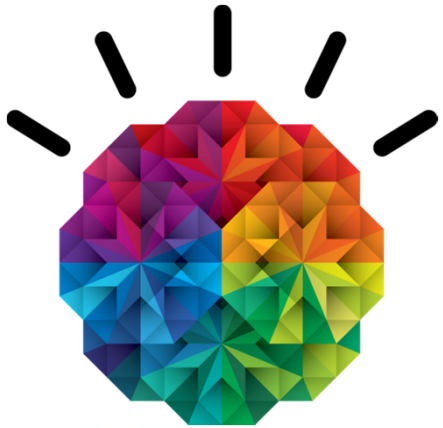
STSM, Messaging and Integration Customer Support
IBM Hursley Lab



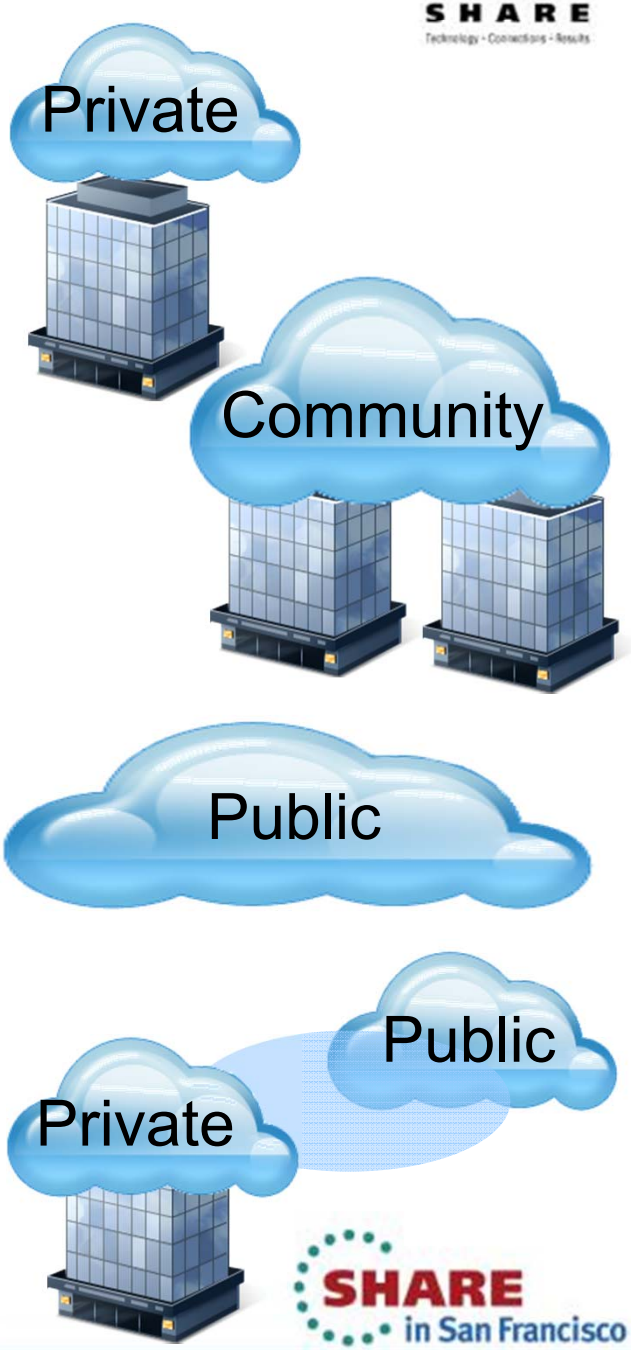
SHARE in San Francisco 2013

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

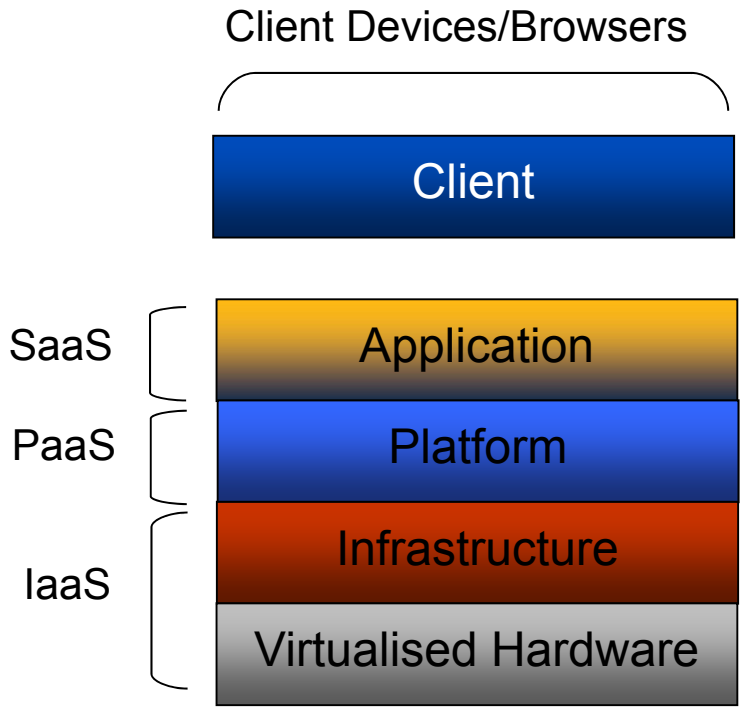
Cloud Deployment Models

- 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



Topics

- Cloud Concepts
- **IBM SmartCloud, PureApplication System, IWD and SCAS**
- Patterns and Messaging
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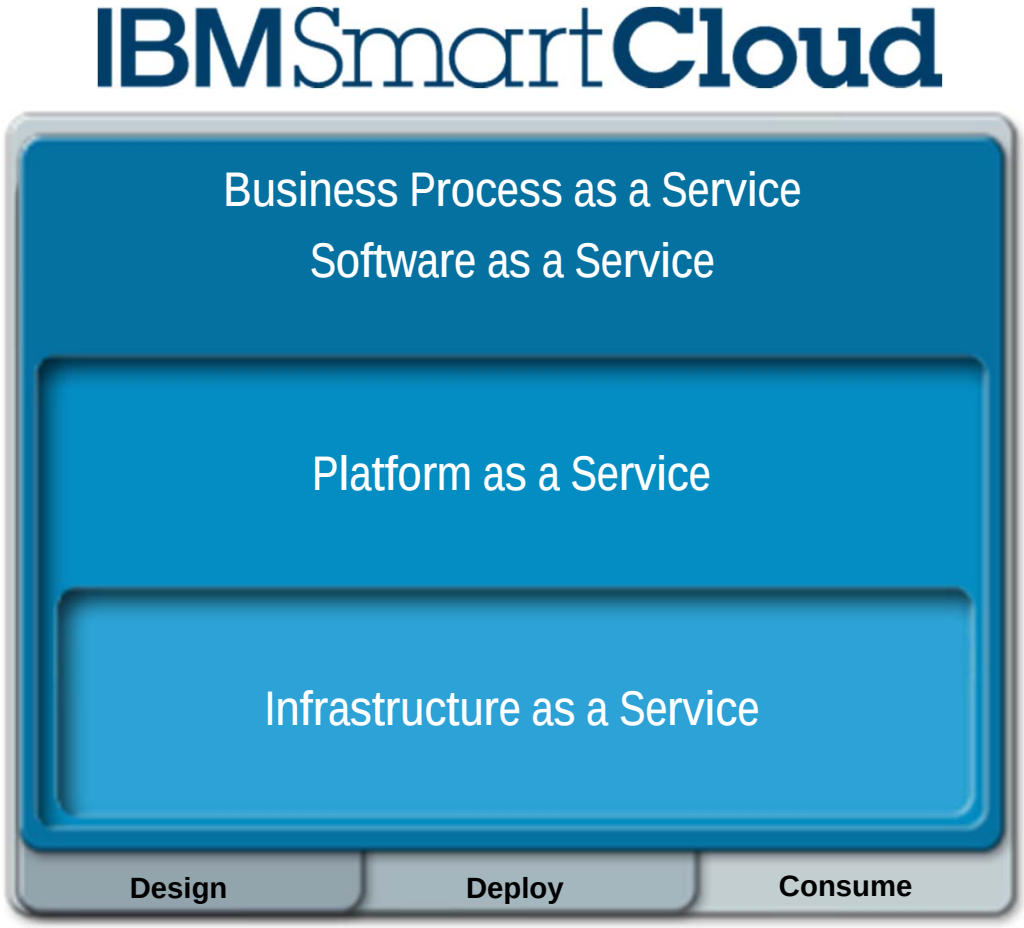
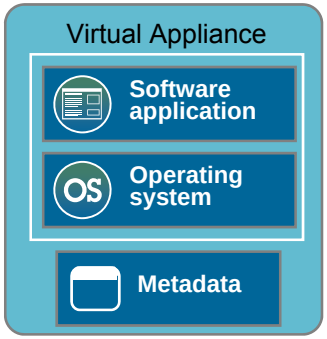
IBM SmartCloud

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



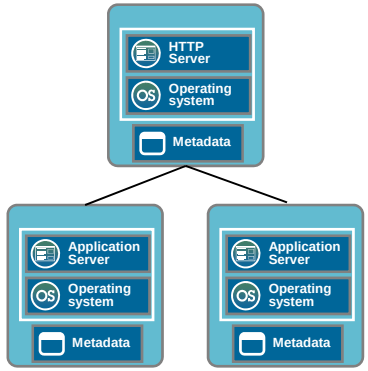
Multiple Pattern Types



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

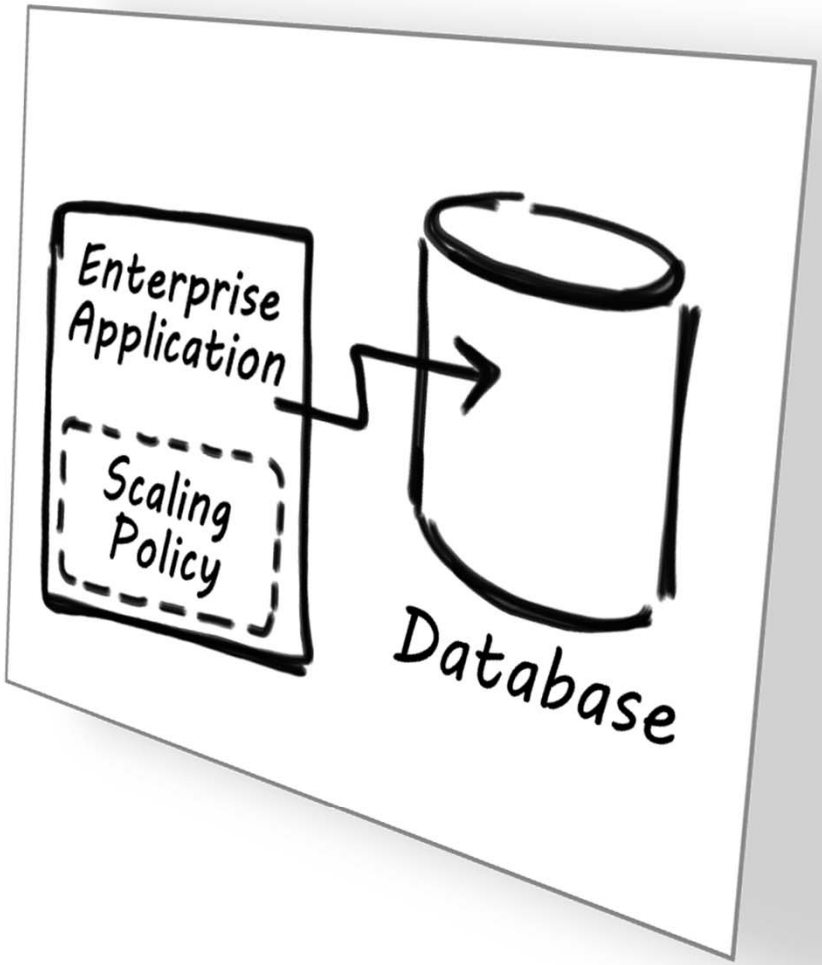
Virtual Application Patterns

- Highly automated deployments using expert patterns
- Business policy driven elasticity
- Built for the cloud environment
- Leverages elastic workload management services

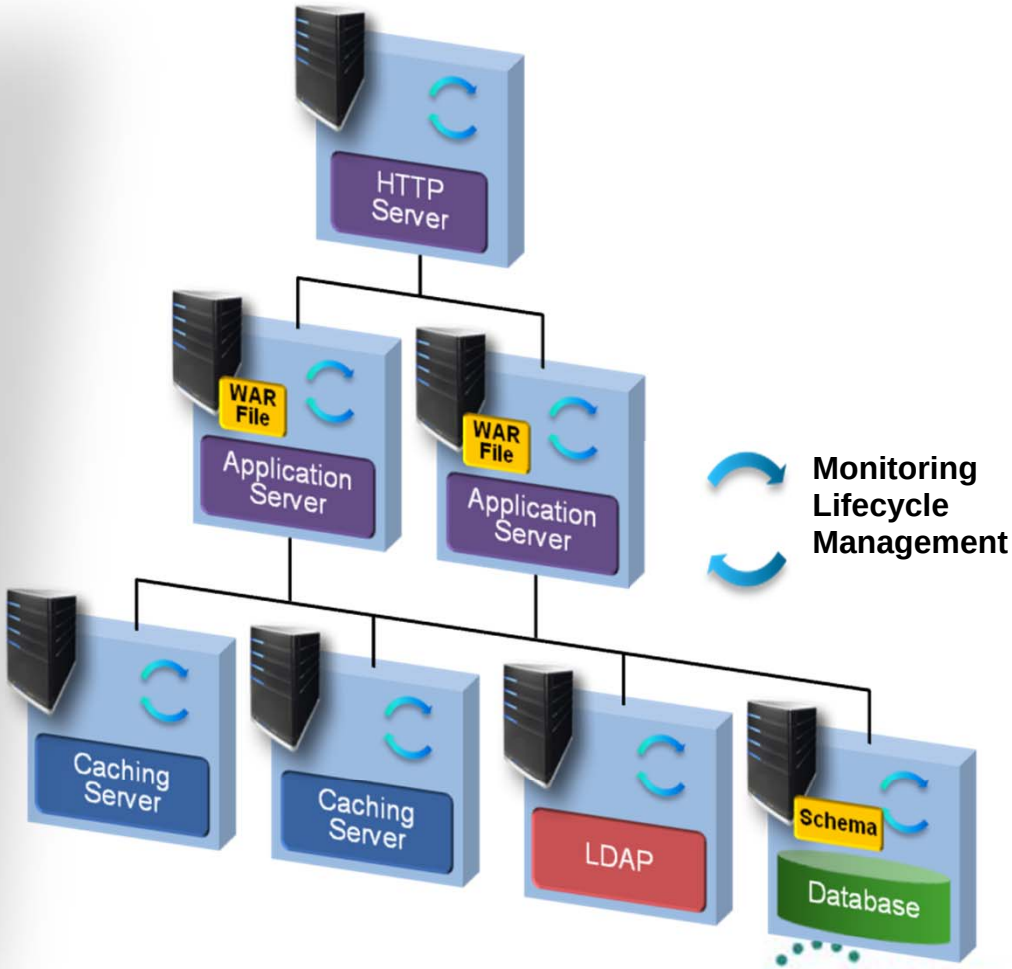
Virtual Application Patterns

Patterns accelerate business value

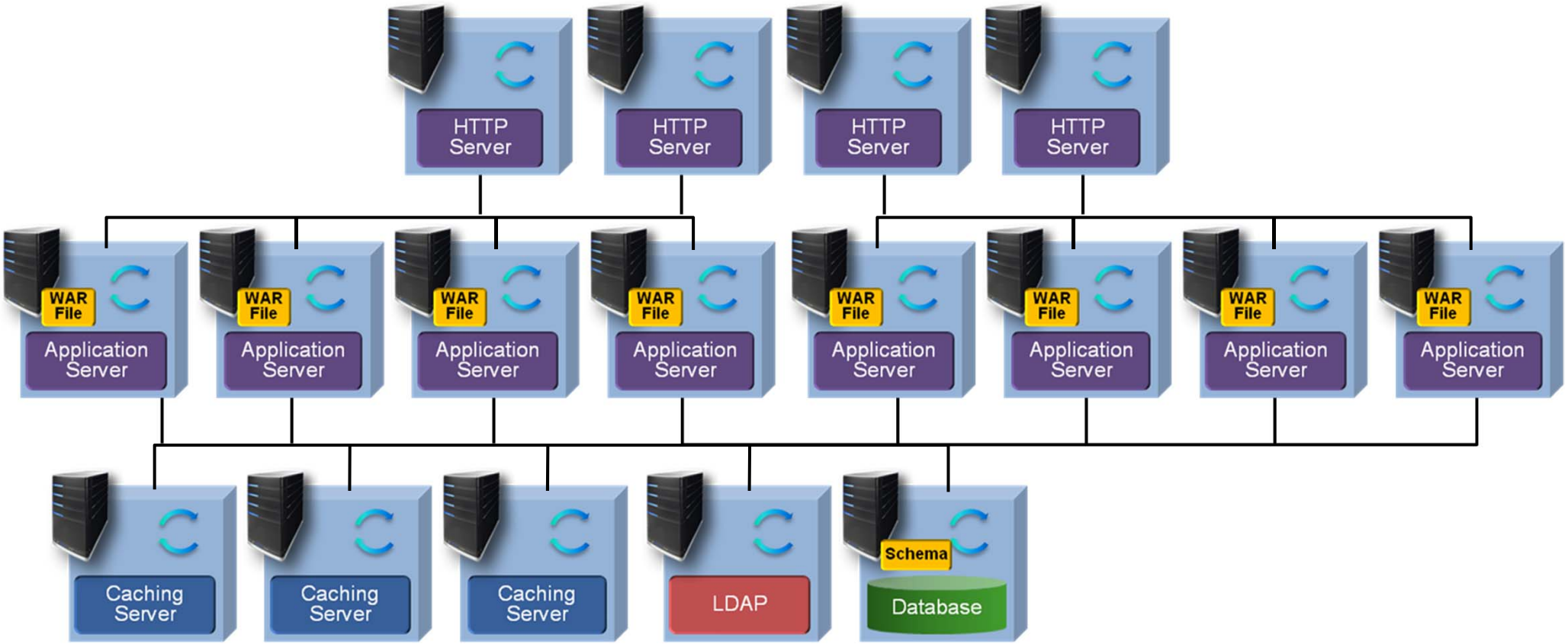
What the business wants…



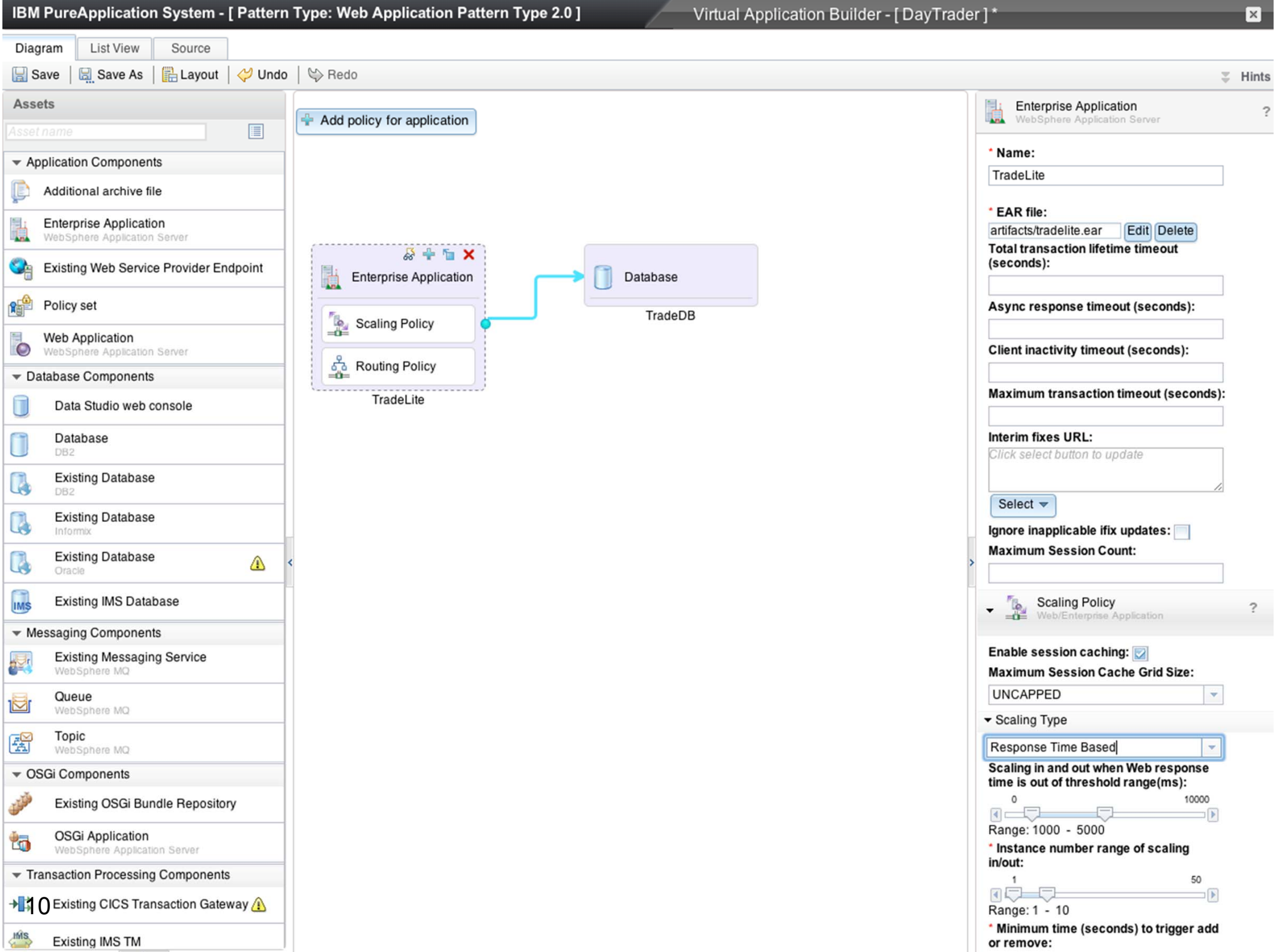
What's required…



What will be needed tomorrow…



Monitoring
Lifecycle
Management


IBM PureApplication System - [Pattern Type: Web Application Pattern Type 2.0]
Virtual Application Builder - [DayTrader] *
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
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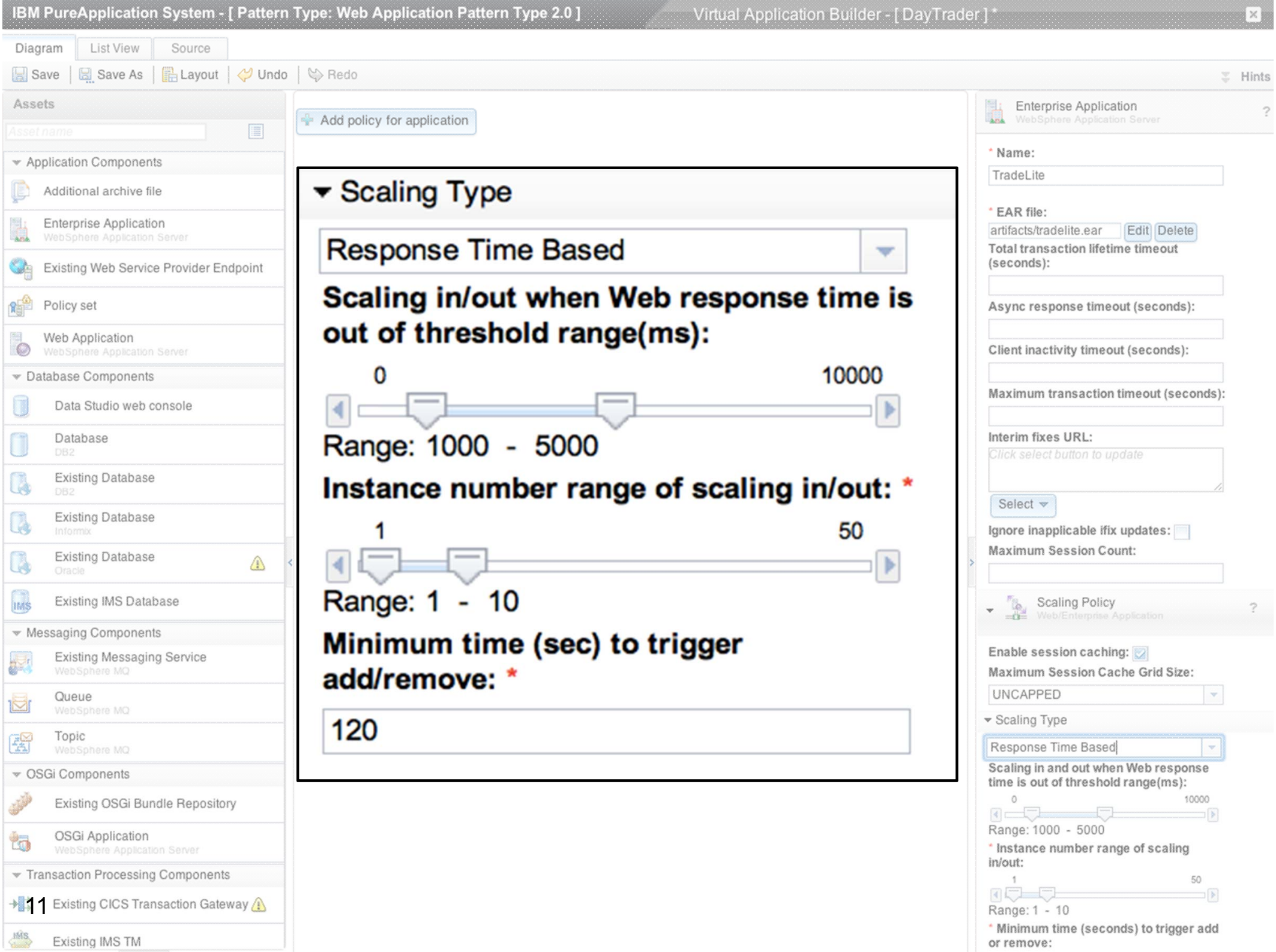
Informix
Existing Database
Oracle
Existing IMS Database
Messaging Components
Existing Messaging Service
WebSphere MQ
Queue
WebSphere MQ
Topic
WebSphere MQ
OSGi Components
Existing OSGi Bundle Repository
OSGi Application
WebSphere Application Server
Transaction Processing Components
Existing CICS Transaction 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: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Oracle
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Existing Messaging Service
WebSphere MQ
Queue
WebSphere MQ
Topic
WebSphere MQ
OSGi Components
Existing OSGi Bundle Repository
OSGi Application
WebSphere Application Server
Transaction Processing Components
Existing CICS Transaction Gateway
Existing IMS TM
Add policy for application
Scaling Type
Response Time Based
Scaling in/out when Web response time is out of threshold range(ms):
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
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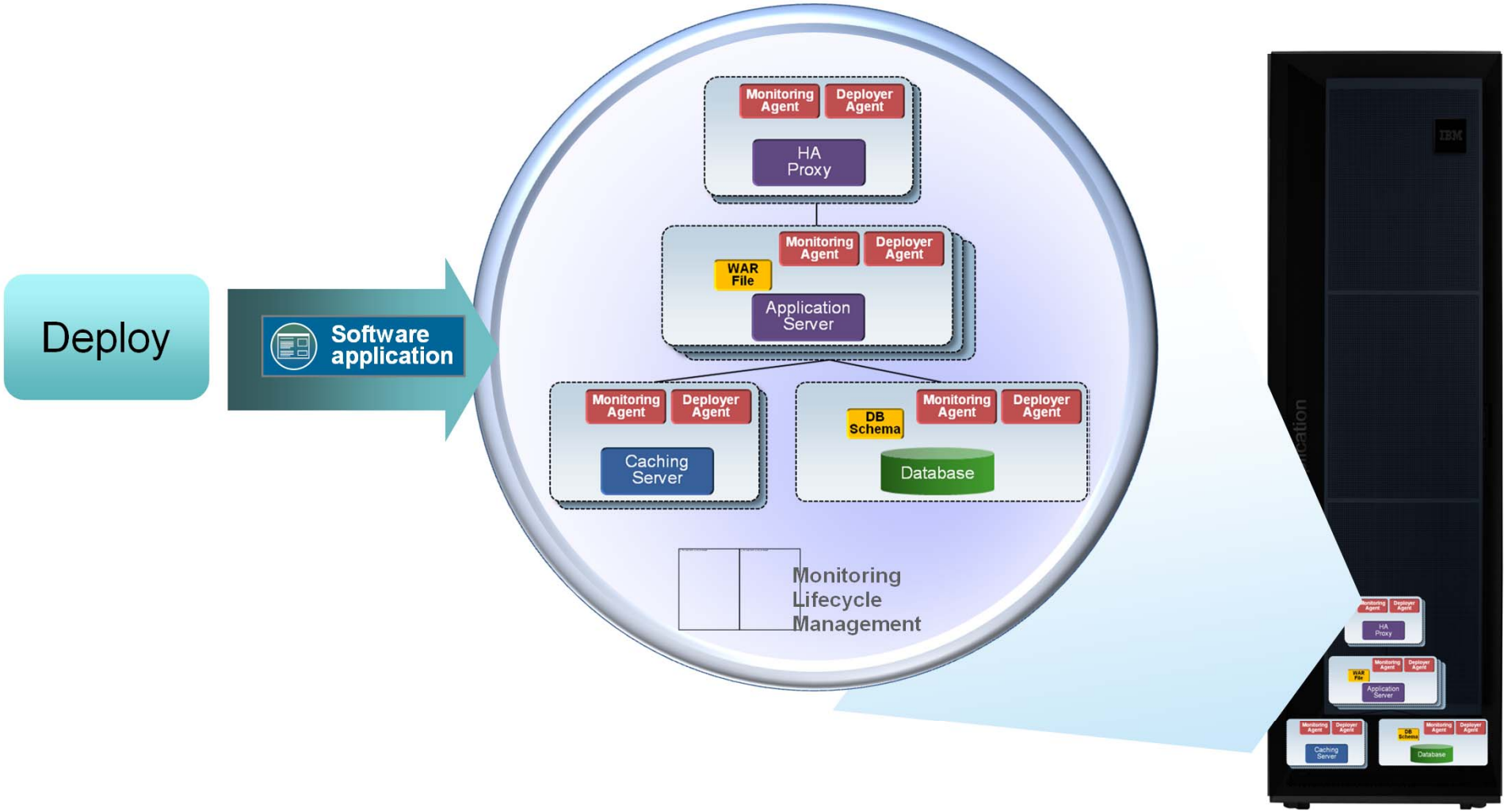
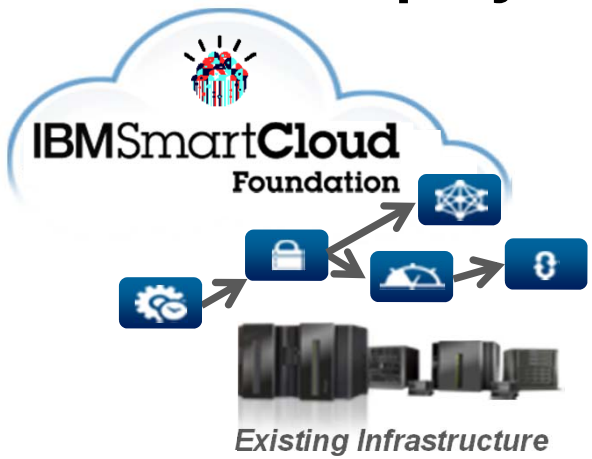
Initiates a fully scalable Web Application

PureApplication

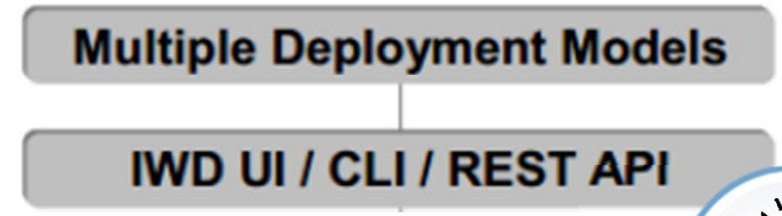


SmartCloud Family

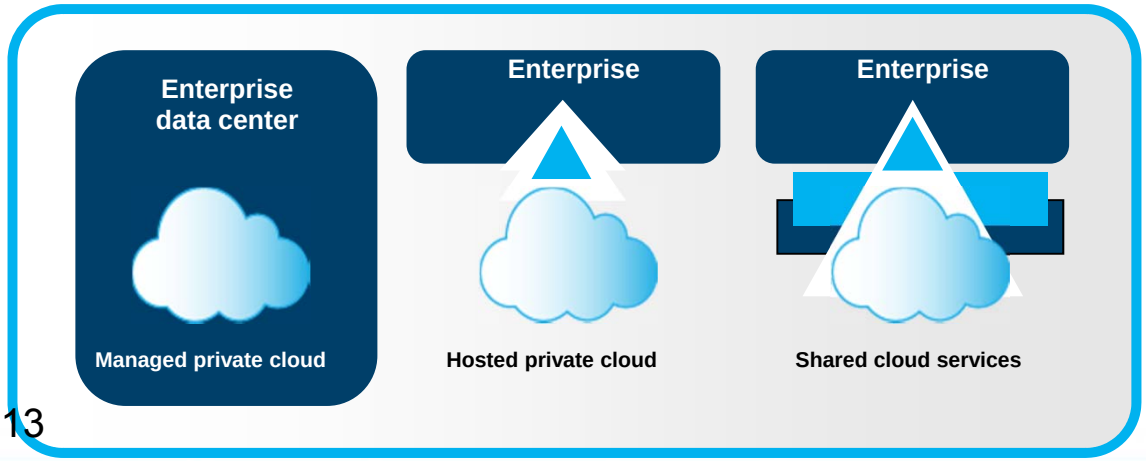
IBM Workload Deployer



Deploy patterns into your *existing infrastructure*



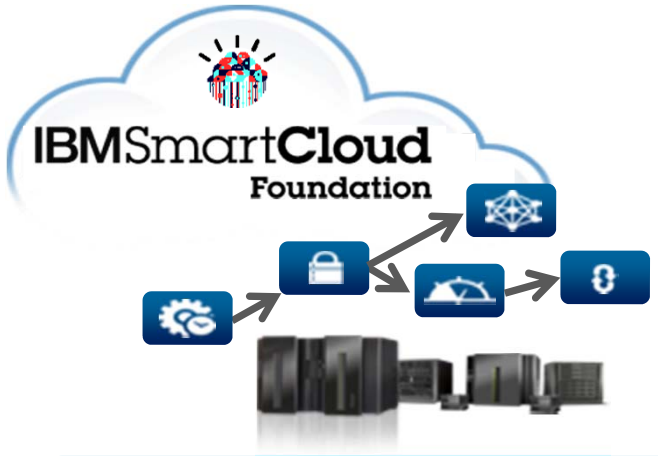
Accelerate deployments with expert *integrated systems*



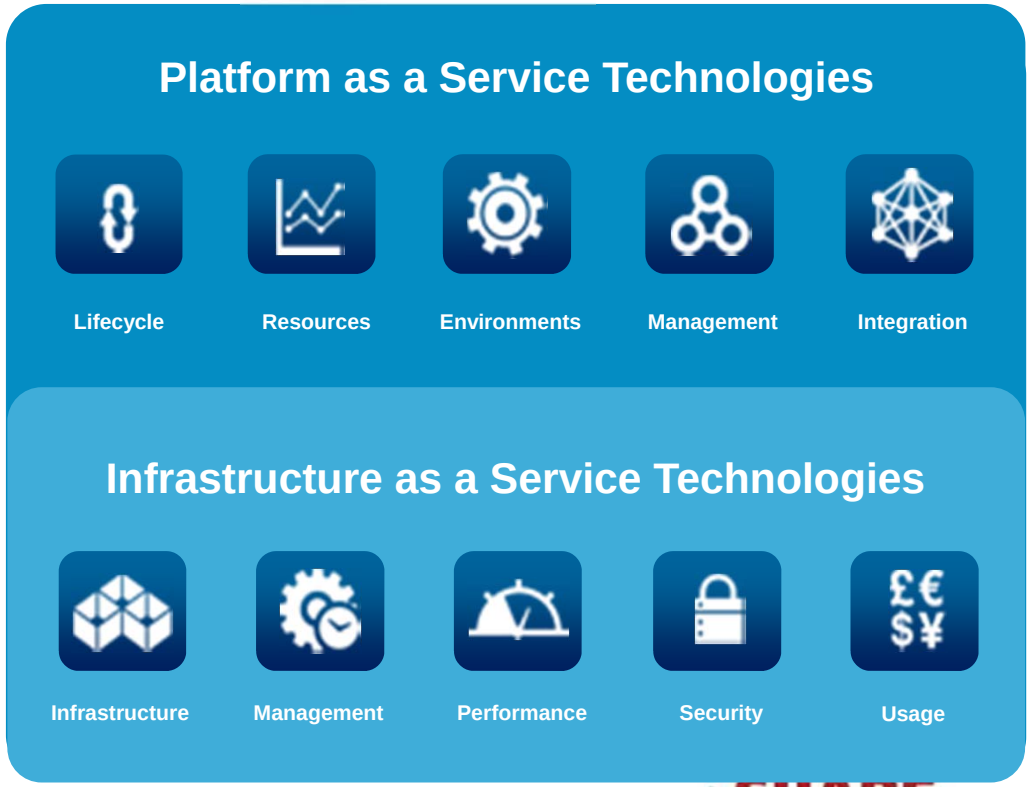
Immediate access to managed services

IBM Workload Deployer

- Hardware appliance
- Supports heterogeneous server, networking, storage & middleware
- Get started easily deploying to :
  - VMware ESX
  - PowerVM
  - zVM



Deploy Cloud platforms into your *existing infrastructure*



IBM PureApplication System

Complete, Ready-to-Go Systems

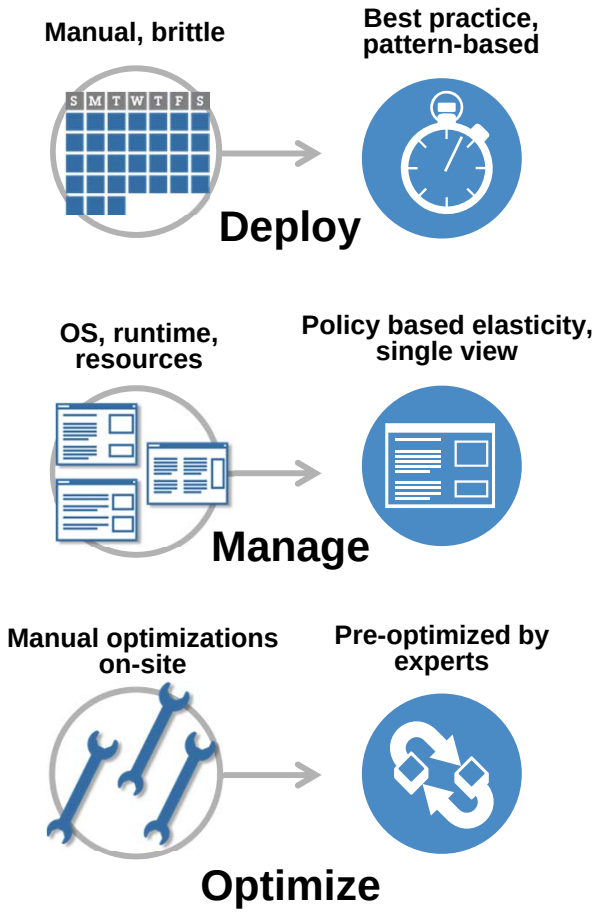
- Pre-integrated, up and running in <4 hours
- Pre-optimized for enterprise application workloads

Simplify Ongoing Tasks

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

Built for Cloud

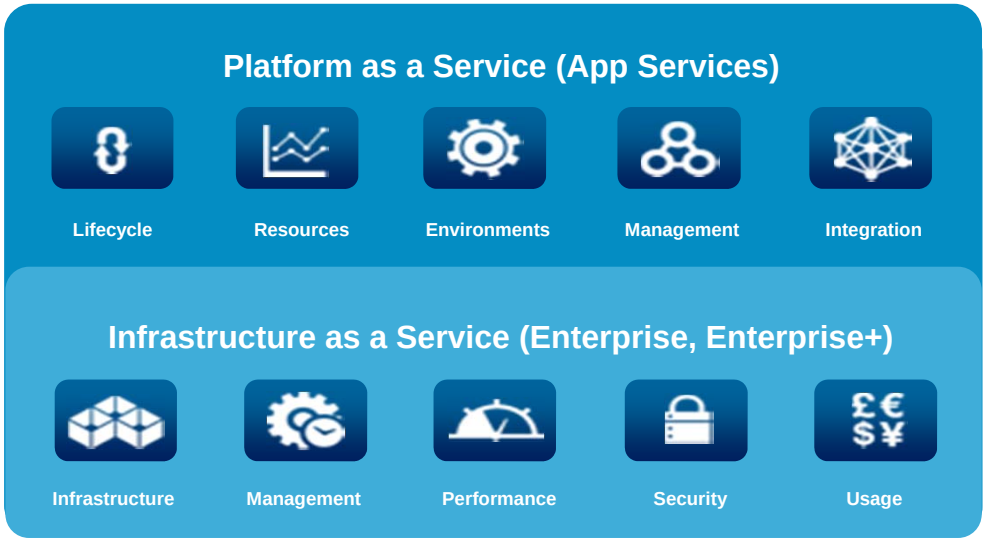
- "Platform as a Service"
- Elastic application runtimes



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

Accelerate deployments with expert *integrated systems*



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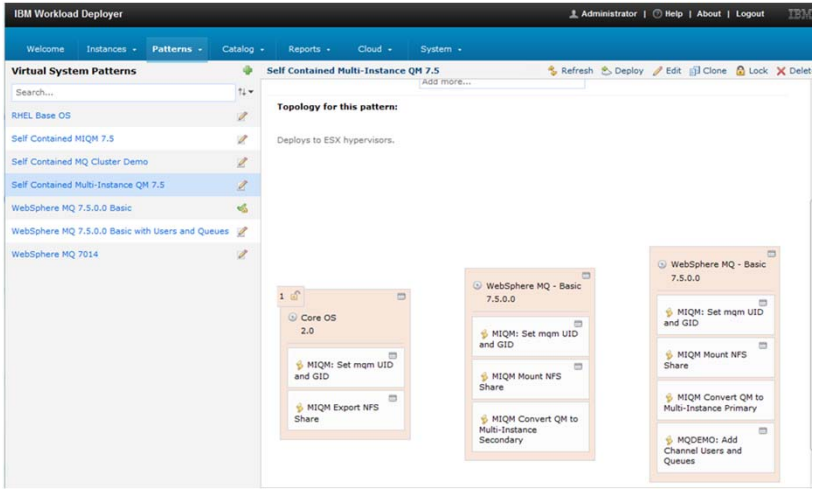
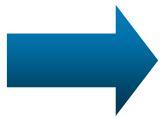
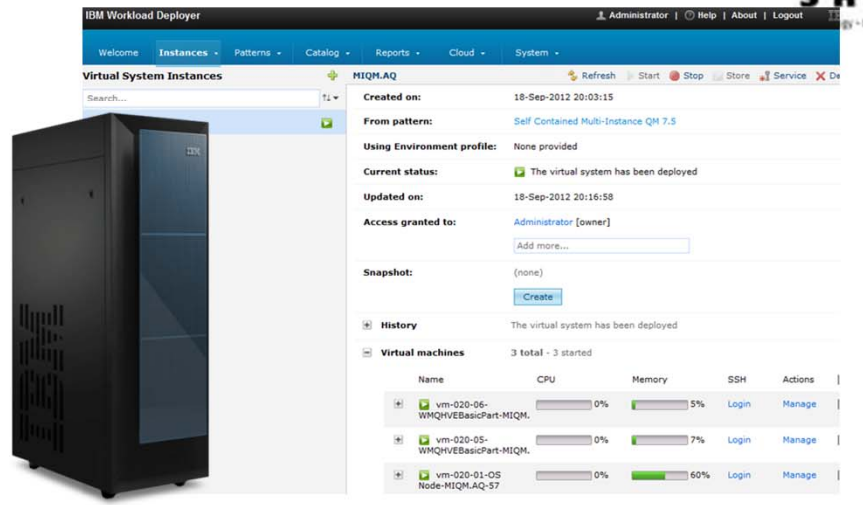
Messaging and Virtual System Patterns







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

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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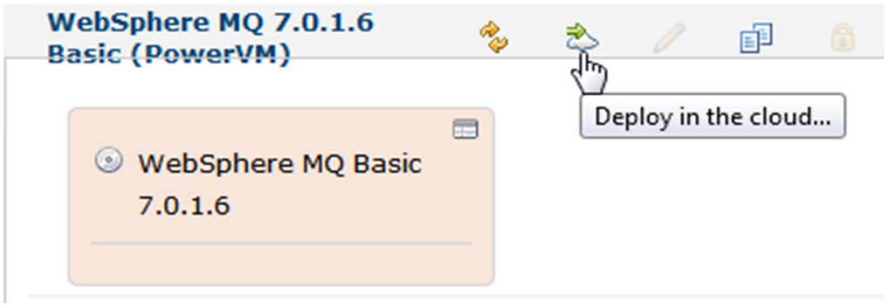
WebSphere MQ Hypervisor Edition 7.0.1 Updates

- 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

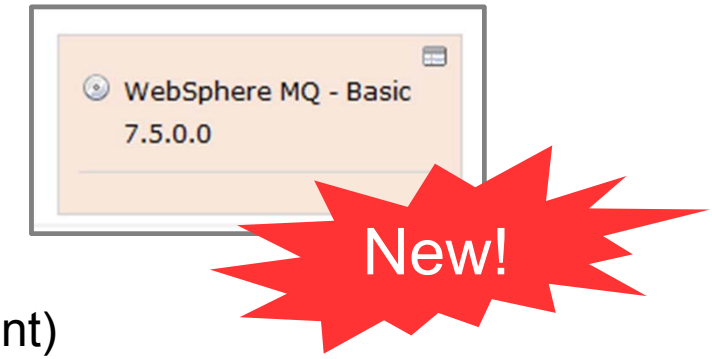


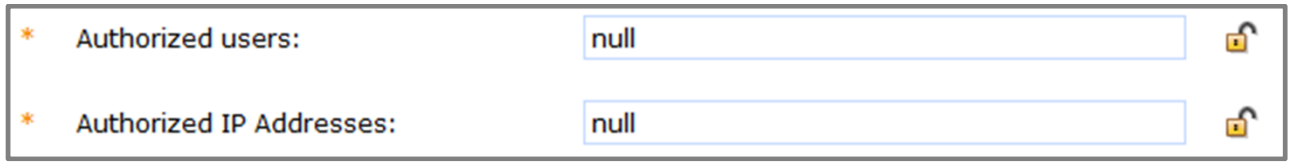
- Can be deployed as Virtual System Patterns from IBM Workload Deployer and IBM PureApplication System
  - –MQ HVE for RHEL can also be deployed direct to VMware ESX

- 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

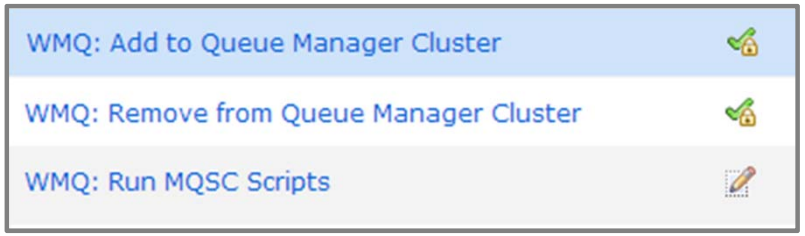




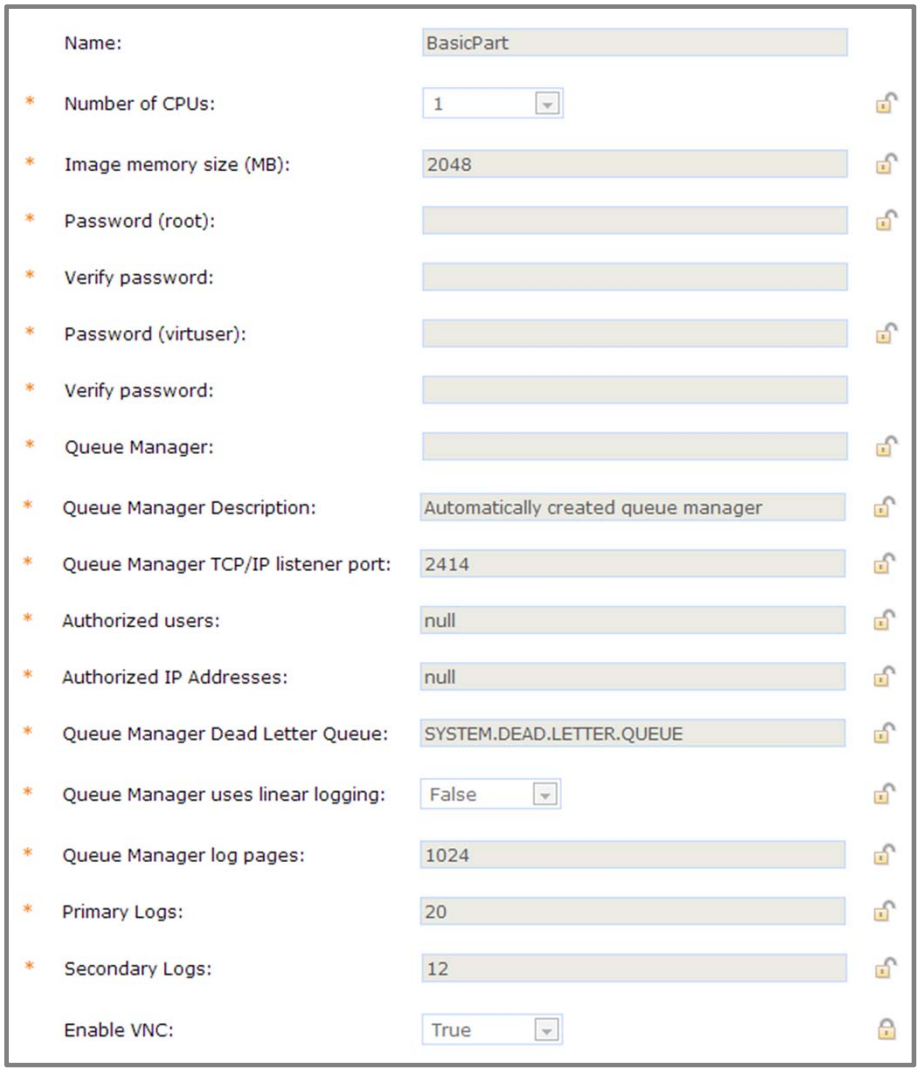
- Command line scripts to simplify image loading to IWD / PureAS appliance

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



MQ 7.5 script packages



MQ 7.5 deployment parameters

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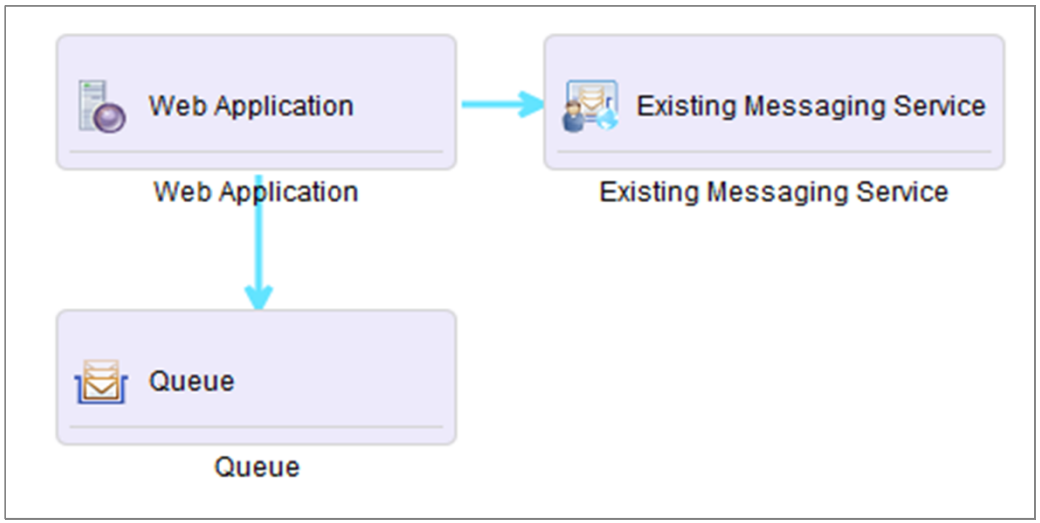
Web Application Pattern Type - MQ Plugin Updates

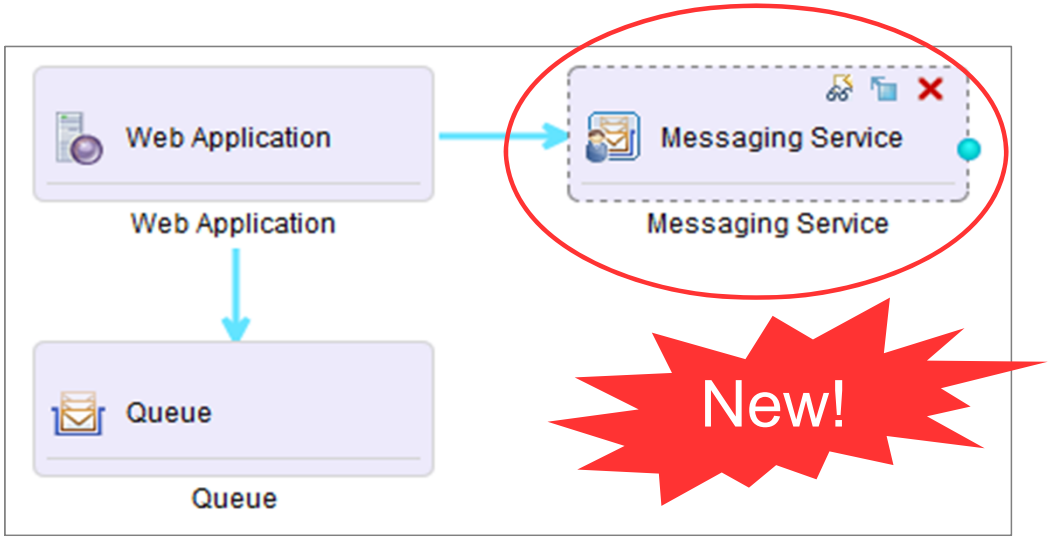
- In 2011 MQ delivered initial set of messaging plugins for the IWD web application pattern
  - No charge additions to Web Application Pattern
  - Enables a web application to connect to an external queue manager
  - Appears on palette as Queue, Topic and “Existing Messaging Service” plugins
  - Automatically configures the JNDI JMS resources bound into the WAS namespace



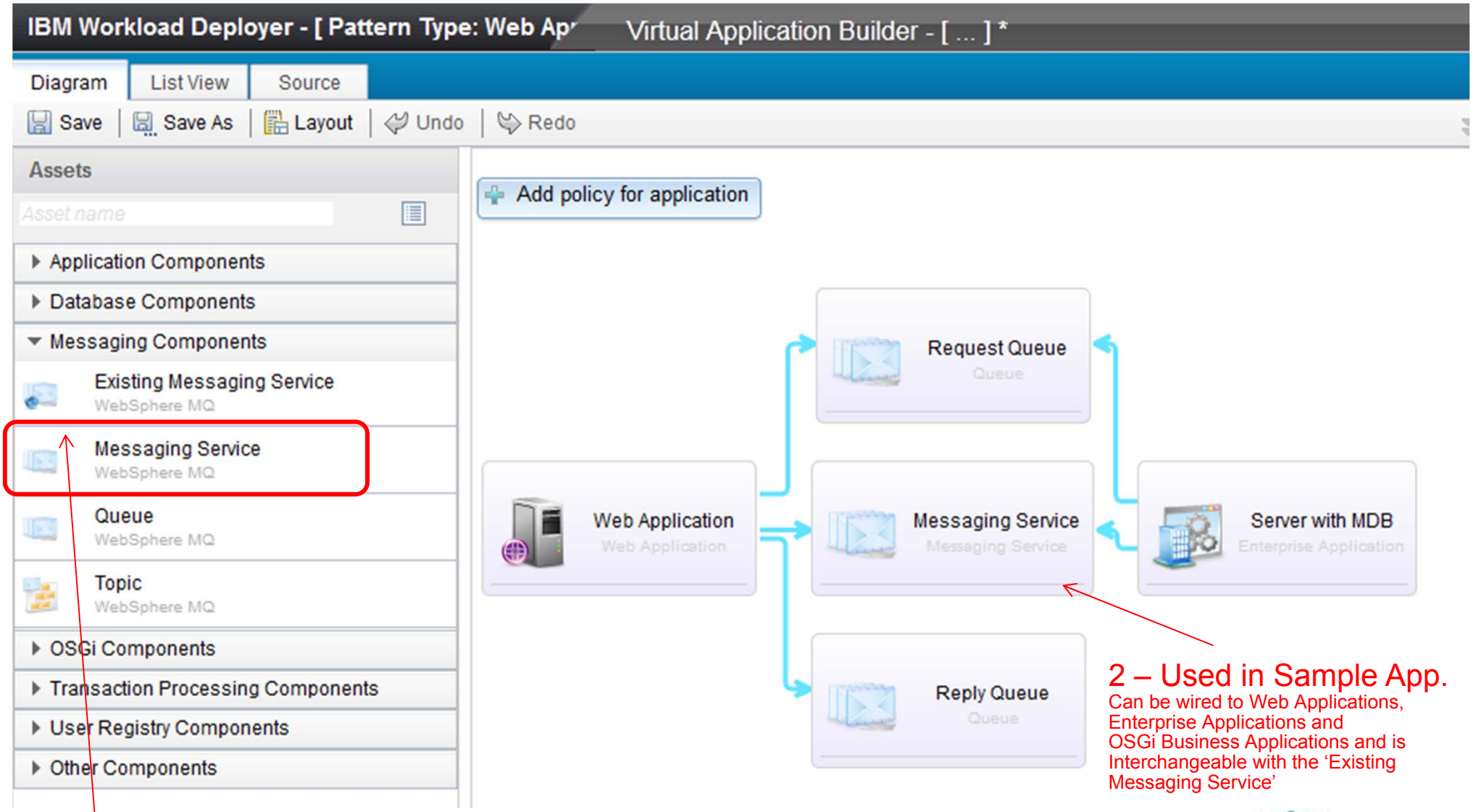
- In July 2012 the plugins were:
  - Enhanced to support Message Driven Beans (IWD 3.1.0.2 and later)
  - Included in IBM PureApplication System V1.0

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

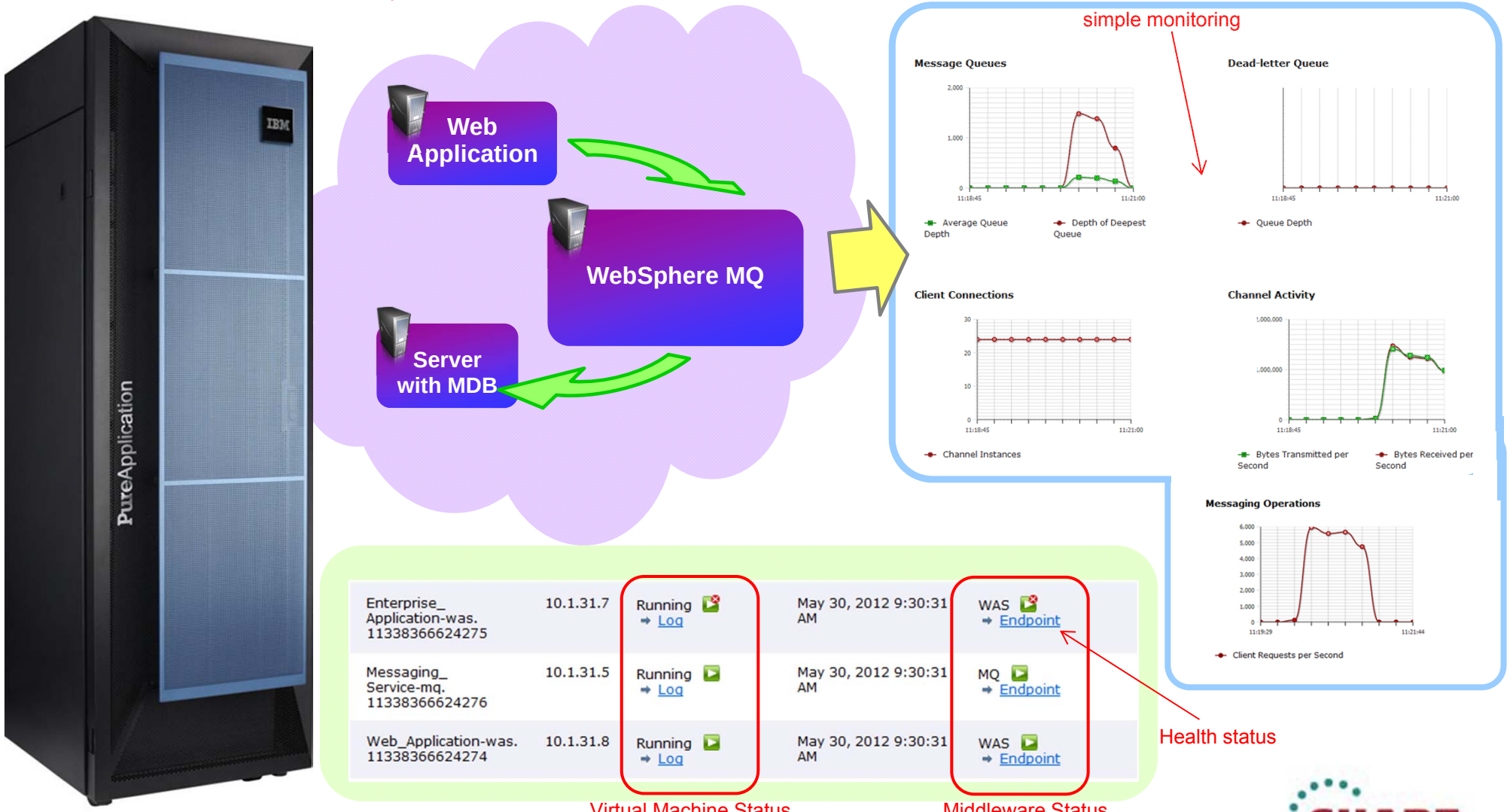


Messaging Extension For Web Application Pattern



Messaging Extension For Web Application Pattern

3 – Deployed Application



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What Is The WMB HvE Pattern?

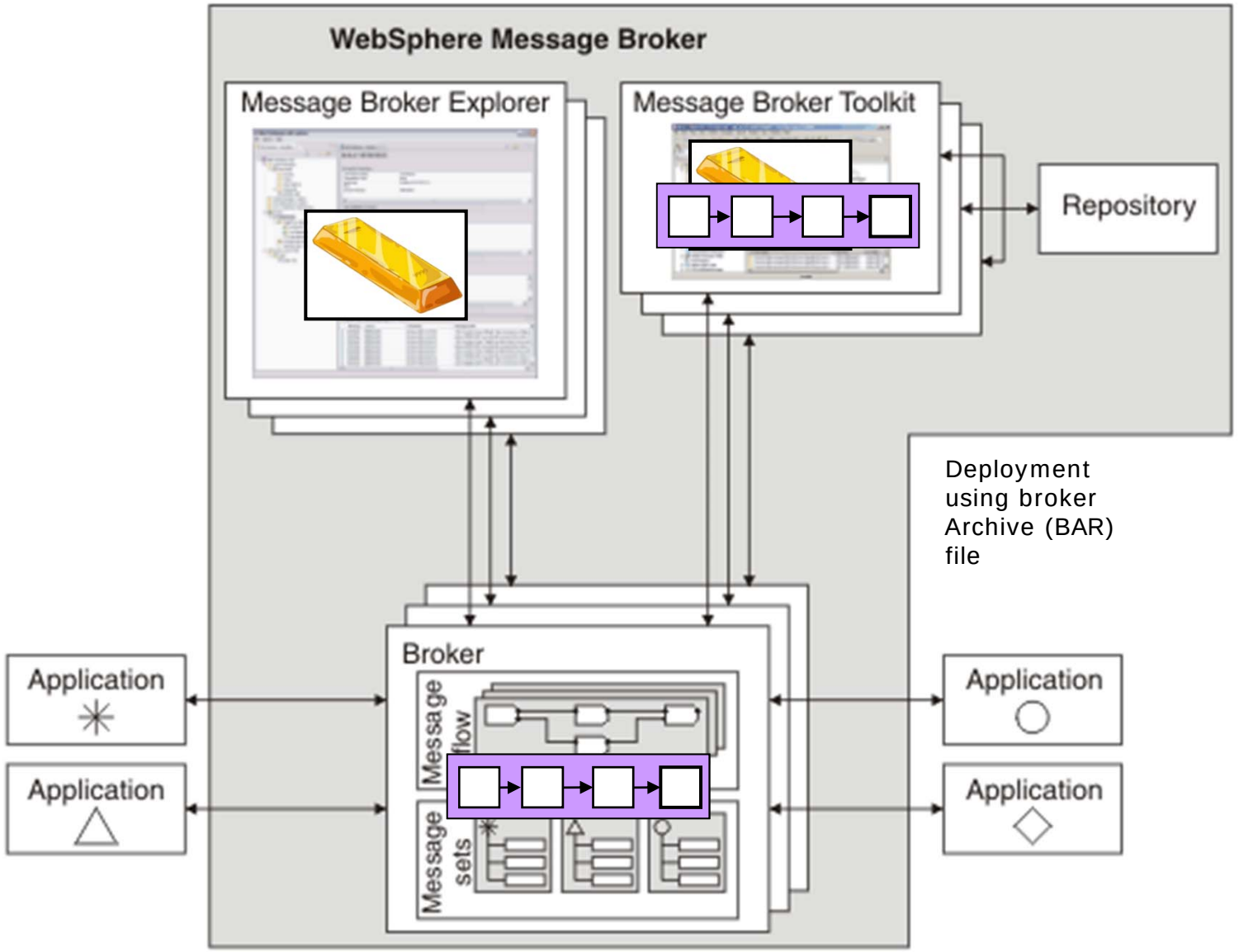
- A Virtual System Pattern on IBM Pure Application System
- A product to simplify provisioning MB (and MQ)

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

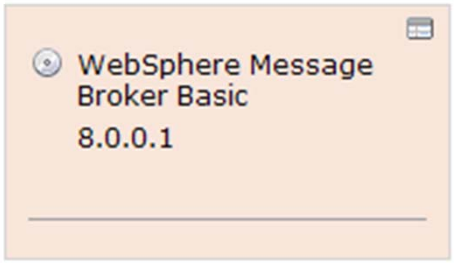
- Configuration Patterns
  - PureAS Patterns
  - PureAS Script Packages

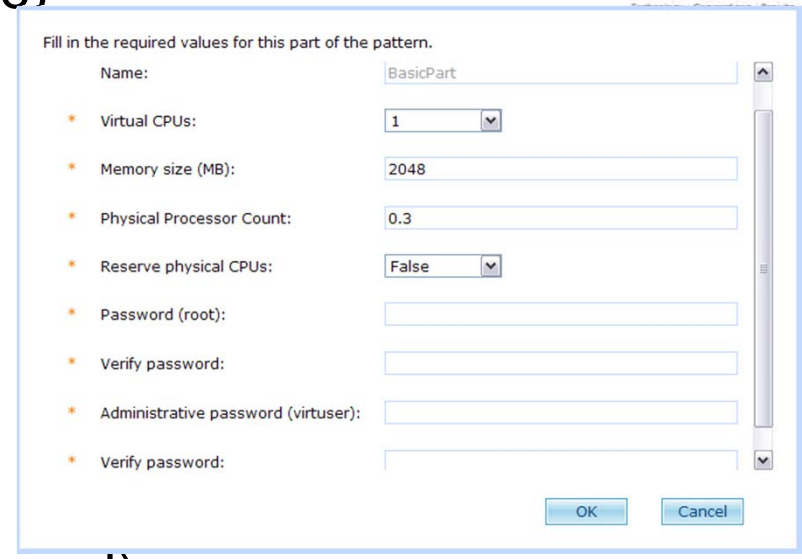
WebSphere Message Broker Components



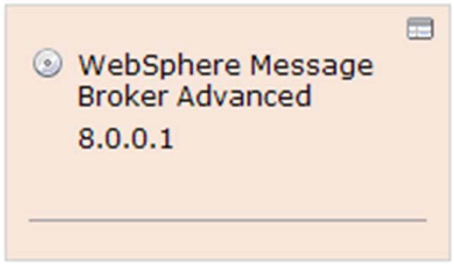
WMB HvE Configuration – PureAS Patterns

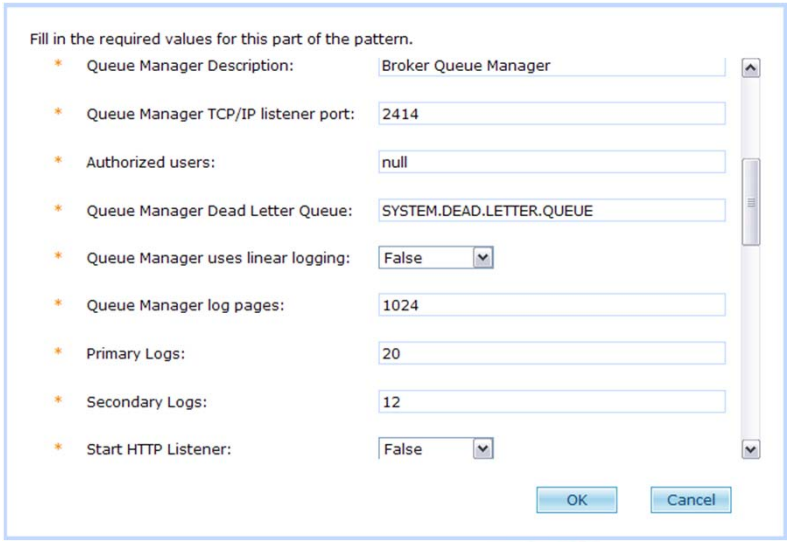
- WebSpshere Message Broker 8.0.0.1 (Basic)
  - Basic configuration parameters
  - VM specific configuration parameters
    - No specific MB or MQ configuration





- WebSphere Message Broker 8.0.0.1 (Advanced)
  - Extensive configuration parameters
    - MB and MQ
    - Defaults provided

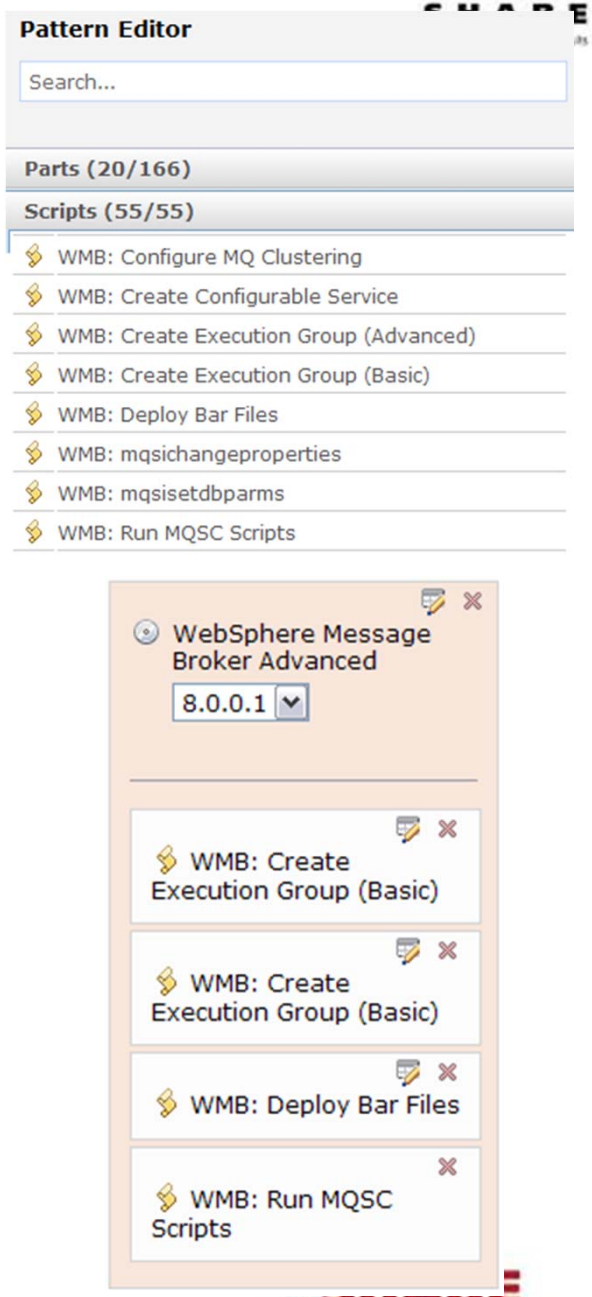




- Four images

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



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**

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

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)

Questions?

This was session 12628 - The rest of the week ……

	Monday	Tuesday	Wednesday	Thursday	Friday	
08:00					Are you running too many queue managers or brokers?	
09:30		What's New in WebSphere Message Broker			Diagnosing Problems for MQ	CICS and WMQ - The Resurrection of Useful
11:00		Extending IBM WebSphere MQ and WebSphere Message Broker to the Cloud	WMQ - Introduction to Dump Reading and SMF Analysis - Hands-on Lab	BIG Data Sharing with the cloud - WebSphere eXtreme Scale and WebSphere Message Broker integration	Getting the best availability from MQ on z/OS by using Shared Queues	
12:15						
01:30	Introduction to MQ	MQ on z/OS – Vivisection	Migration and maintenance, the necessary evil	The Dark Side of Monitoring MQ - SMF 115 and 116 Record Reading and Interpretation		
03:00	First Steps With WebSphere Message Broker: Application Integration for the Messy	BIG Connectivity with WebSphere MQ and WebSphere Message Broker	WebSphere MQ CHINIT Internals	Using IBM WebSphere Application Server and IBM WebSphere MQ Together		
04:30	WebSphere MQ application design, the good, the bad and the ugly	What's New in the WebSphere MQ Product Family	MQ & DB2 – MQ Verbs in DB2 & Q-Replication	WebSphere MQ Channel Authentication Records		
06:00			Clustering - The Easier Way to Connect Your Queue Managers			

Thank You!

Extending IBM WebSphere MQ and WebSphere Message Broker to the Clouds