



# JBOSS ENTERPRISE APPLICATION PLATFORM (EAP)

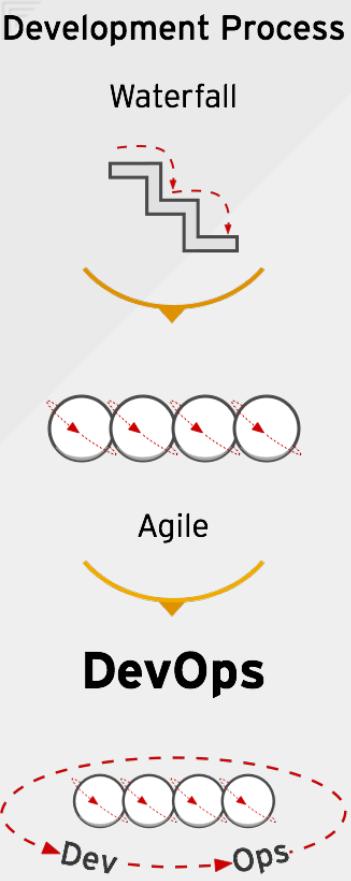
OVERVIEW

ROBIN PRICE II

SENIOR SOLUTIONS ARCHITECT

FEBRUARY 2, 2017

# IT EVOLUTION



## Application Architecture

Monolithic



N-Tier

## Microservices



## Deployment & Packaging

Physical Servers



Virtual Servers

## Containers



## Application Infrastructure

Datacenter



Hosted



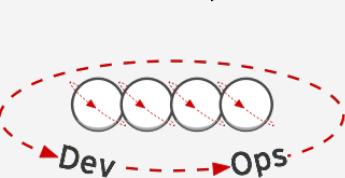
## Cloud



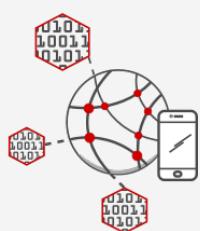
redhat®

# HOW DO YOU SEE THESE TRENDS IMPACTING YOU?

## DevOps



## Microservices



## Containers



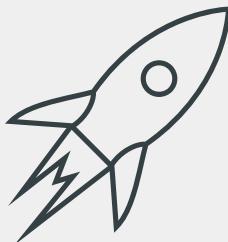
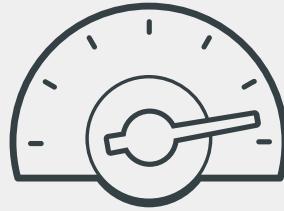
## Cloud



# JBOSS EAP 7

## Leading Open Source Java EE Application Server

- Supports Java EE 7 and Java SE 8
- 100% open-source and pure Java
- World class developer productivity
- Enterprise security, reliability, scalability
- Full Java EE across on-premise, containers, virtual, and cloud



# MODULAR ARCHITECTURE

The EAP core infrastructure is very **modular** and **lightweight**. Capabilities such as logging, database integration, messaging, etc. are implemented as **modules**. Only modules required by applications will be loaded and started making EAP extremely fast.

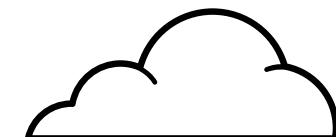
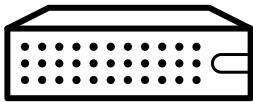
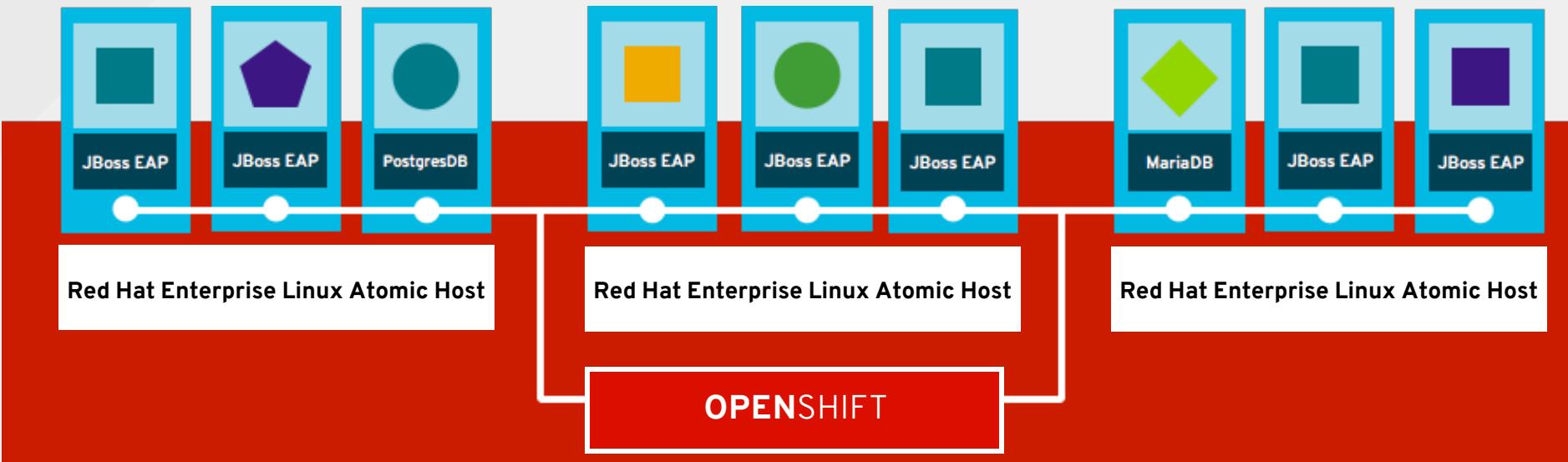
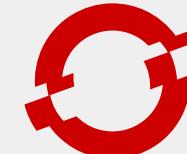
# MODULAR ARCHITECTURE

```
[jboss@hpc-d1360a-02 bin]$ ./standalone.sh
=====
JBoss Bootstrap Environment
=====
JBoss_HOME: /usr/share/jboss/jboss-eap-7.0
JAVA: java
JAVA_OPTS: -server -verbose:gc -Xloggc:"/usr/share/jboss/jboss-eap-7.0/standalone/log/gc.log" -XX:+PrintGCDetails -XX:+PrintGCDateStamps -XX:+UseGCLogFileRotation -XX:NumberOfGCLogFiles=5 -XX:GCLogFileSize=3M -XX:-TraceClass
Unloading -Xms1303m -Xmx1303m -XX:MetaspaceSize=96M -XX:MaxMetaspaceSize=256m -Djava.net.preferIPv4Stack=true -Djboss.modules.system.pkgs=org.jboss.byteman -Djava.awt.headless=true
=====

04:50:58,793 INFO [org.jboss.modules] (main) JBoss Modules version 1.5.1.Final-redhat-1
04:50:58,979 INFO [org.jboss.msc] (main) JBoss MSC version 1.2.6.Final-redhat-1
04:50:59,063 INFO [org.jboss.as] (MSC service thread 1-7) WFLYSRV0049: JBoss EAP 7.0.0.GA (WildFly Core 2.0.13.Final-redhat-1) starting
04:51:00,070 INFO [org.jboss.as.server] (Controller Boot Thread) WFLYSRV0039: Creating http management service using socket-binding (management-http)
04:51:00,089 INFO [org.xnio] (MSC service thread 1-7) XNIO version 3.3.4.Final-redhat-1
04:51:00,096 INFO [org.xnio.nio] (MSC service thread 1-7) XNIO NIO Implementation Version 3.3.4.Final-redhat-1
04:51:00,125 INFO [org.jboss.as.clustering.infinispan] (ServerService Thread Pool -- 38) WFLYCLINF0001: Activating Infinispan subsystem.
04:51:00,129 INFO [org.wildfly.extension.io] (ServerService Thread Pool -- 37) WFLYI00801: Worker 'default' has auto-configured to 32 core threads with 256 task threads based on your 16 available processors
04:51:00,130 INFO [org.jboss.as.naming] (ServerService Thread Pool -- 46) WFLVNAM0001: Activating Naming Subsystem
04:51:00,132 INFO [org.jboss.as.security] (ServerService Thread Pool -- 53) WFLVSEC0002: Activating Security Subsystem
04:51:00,135 INFO [org.jboss.as.webservices] (ServerService Thread Pool -- 56) WFLWWS0002: Activating WebServices Extension
04:51:00,137 INFO [org.jboss.as.security] (MSC service thread 1-8) WFLYSEC0001: Current PicketBox version=4.9.5.Final-redhat-1
04:51:00,146 INFO [org.jboss.as.jsf] (ServerService Thread Pool -- 44) WFLVJSF0007: Activated the following JSF Implementations: [main]
04:51:00,151 INFO [org.wildfly.extension.undertow] (MSC service thread 1-3) WFLYUT0003: Undertow 1.3.18.Final-redhat-1 starting
04:51:00,160 INFO [org.wildfly.extension.undertow] (ServerService Thread Pool -- 55) WFLYUT0003: Undertow 1.3.18.Final-redhat-1 starting
04:51:00,162 INFO [org.jboss.as.connector] (MSC service thread 1-6) WFLYJCA0009: Starting JCA Subsystem (WildFly/IronJacamar 1.3.2.Final-redhat-1)
04:51:00,181 INFO [org.jboss.as.naming] (MSC service thread 1-2) WFLVNAM0003: Starting Naming Service
04:51:00,183 INFO [org.jboss.as.mail.extension] (MSC service thread 1-4) WFLYMAIL0001: Bound mail session [java:jboss/mail/Default]
04:51:00,185 INFO [org.jboss.remoting] (MSC service thread 1-3) JBoss Remoting version 4.0.18.Final-redhat-1
04:51:00,210 INFO [org.jboss.connector.subsystems.datasources] (ServerService Thread Pool -- 33) WFLYJCA0004: Deploying JDBC-compliant driver class org.h2.Driver (version 1.3)
04:51:00,214 INFO [org.jboss.connector.deployers.jdbc] (MSC service thread 1-7) WFLYJCA0018: Started Driver service with driver-name = h2
04:51:00,263 INFO [org.wildfly.extension.undertow] (ServerService Thread Pool -- 55) WFLYUT0014: Creating file handler for path '/usr/share/jboss/jboss-eap-7.0/welcome-content' with options [directory-listing: 'false', follow-symlink: 'false', case-sensitive: 'true', safe-symlink-paths: []]
04:51:00,288 INFO [org.wildfly.extension.undertow] (MSC service thread 1-4) WFLYUT0012: Started server default-server.
04:51:00,295 INFO [org.wildfly.extension.undertow] (MSC service thread 1-8) WFLYUT0018: Host default-host starting
04:51:00,343 INFO [org.jboss.as.ejb3] (MSC service thread 1-8) WFLVEJB0482: Strict pool mdb-strict-max-pool is using a max instance size of 64 (per class), which is derived from the
04:51:00,344 INFO [org.jboss.as.ejb3] (MSC service thread 1-2) WFLVEJB0481: Strict pool alsb-strict-max-pool is using a max instance size of 256 (per class), which is derived from the
04:51:00,383 INFO [org.wildfly.extension.undertow] (MSC service thread 1-4) WFLYUT0066: Undertow HTTP listener default listening on 127.0.0.1:8888
04:51:00,532 INFO [org.jboss.as.server.deployment.scanner] (MSC service thread 1-3) WFLYDS0013: Started FileSystemDeploymentService for directory /usr/share/jboss/jboss-eap-7.0
04:51:00,651 INFO [org.jboss.ws.common.management] (MSC service thread 1-6) JBWS022052: Starting JBossWS 5.1.3.SP1-redhat-1 (Apache CXF 3.1.4.redhat-1)
04:51:00,696 INFO [org.jboss.connector.subsystems.datasources] (MSC service thread 1-3) WFLYJCA0001: Bound data source [java:jboss/datasources/ExampleDS]
04:51:00,705 INFO [org.infinispan.factories.GlobalComponentRegistry] (MSC service thread 1-4) ISPN000128: Infinispan version: Infinispan 'Mahou' 8.1.2.Final-redhat-1
04:51:00,838 INFO [org.jboss.as] (Controller Boot Thread) WFLYSRV0060: Http management interface listening on http://127.0.0.1:9900/management
04:51:00,838 INFO [org.jboss.as] (Controller Boot Thread) WFLYSRV0051: Admin console listening on http://127.0.0.1:9990
04:51:00,839 INFO [org.jboss.as] (Controller Boot Thread) WFLYSRV0025: JBoss EAP 7.0.0.GA (WildFly Core 2.0.13.Final-redhat-1) started in 2372ms - started 267 of 553 services (21 services are lazy, passive or on-demand)
```

# CONTAINER & CLOUD READY

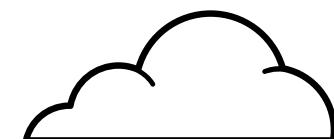
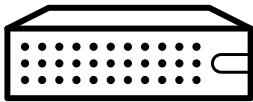
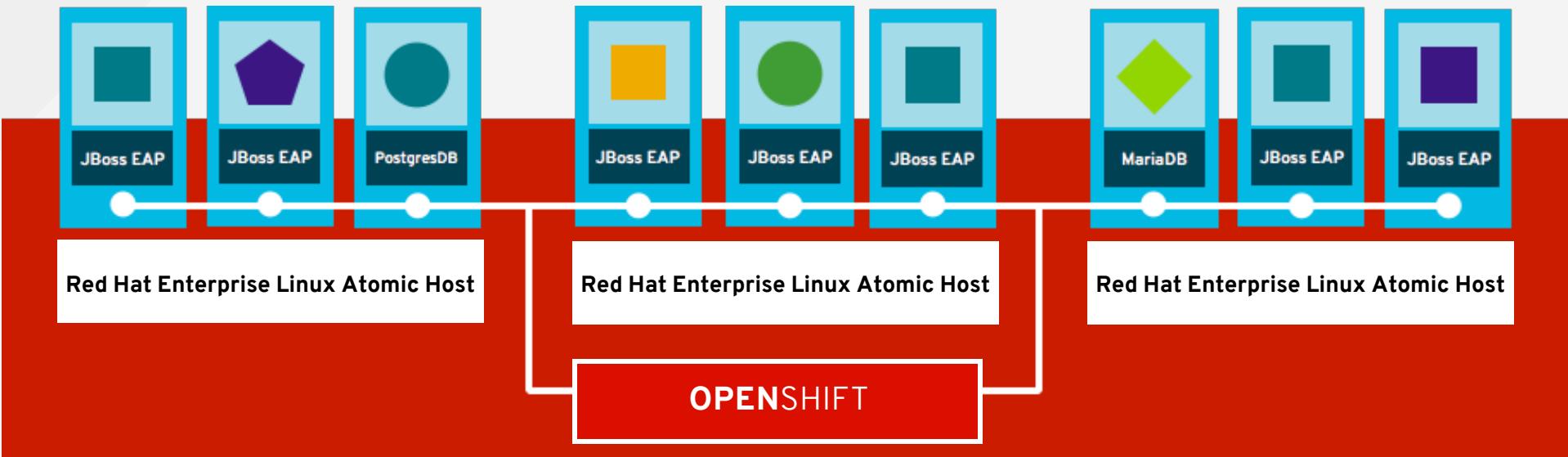
- High degree of automation
- Flexible management
- Frugal use of resources
- DevOps ready: Lean, agile development





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# IS YOUR CURRENT SOLUTION PREPARED FOR IT EVOLUTION?



# EAP MANAGEMENT

## WEB CONSOLE

RED HAT® JBOSS® ENTERPRISE APPLICATION PLATFORM 6.4.0.GA

Messages: 0

Red Hat Access

Search

admin

Home Deployments Configuration Domain Runtime Administration

Domain

GROUP CONFIGURATIONS

Overview

Server Groups

Host Configuration

Host:

master

Server Configurations

JVM Configurations

Interfaces

Host Properties

### Server Configurations: Host 'master'

A server configuration does specify the overall configuration of a server. A server configuration can be started and perform work. Server configurations belong to server groups.

#### Available Server Configurations

Add

Remove

Copy

| Configuration Name | Server Group       | Start Mode | Running? |
|--------------------|--------------------|------------|----------|
| server-one         | main-server-group  | auto       | ✓        |
| server-three       | other-server-group | on-demand  |          |
| server-two         | main-server-group  | auto       | ✓        |

« ‹ 1-3 of 3 › »

Attributes JVM Configuration System Properties

Need Help?

Edit

# EAP MANAGEMENT

## WEB CONSOLE

RED HAT® JBOSS® ENTERPRISE APPLICATION PLATFORM

Home

Deployments

Configuration

Runtime

Access Control

Patching

Browse By

Server Group (5)

Deployment (1)

Add

Content Repository >



Unassigned Content >

main-server-group >

jboss-helloworld-html5.war

View



Server Groups >

other-server-group >

primary-server-group >

secondary-server-group >

singleton-server-group >

# EAP MANAGEMENT

## COMMAND LINE INTERFACE

```
$ jboss-cli.sh --connect  
[domain@localhost:9999 /] deploy jboss-helloworld-html5.war  
--server-groups=primary-server-group,secondary-server-group
```

## SCRIPTABLE

```
#!/bin/bash  
  
PASSWORD=secret  
  
KEYFILE=ourKeyFileName  
  
FQHN=host.domain.com  
  
  
$JBOSS_HOME/bin/jboss-cli.sh --connect <<EOF  
batch  
/subsystem=web/connector=https:add(secure=true,name=https,socket-  
binding=https,scheme=https,protocol="HTTP/1.1")  
/subsystem=web/connector=https/ssl=configuration:add(name=ssl,password="$PASSWORD",certificate-key-  
file="\${jboss.server.config.dir}/$KEYFILE.jks",key-alias="$FQHN")  
run-batch  
exit  
EOF
```

# EAP MANAGEMENT

## REST API

OVERVIEW PACKAGE CLASS USE TREE DEPRECATED INDEX HELP

PREV NEXT FRAMES NO FRAMES

### Red Hat JBoss Enterprise Application Platform 7.0.0.GA public API

**Module com.fasterxml.jackson.core.jackson-annotations**

| Package  | Description  |
|--|--|
| <a href="#">com.fasterxml.jackson.annotation</a> | Public core annotations, most of which are used to configure how Data Mapping/Binding works. |

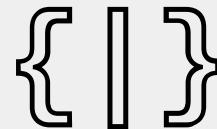
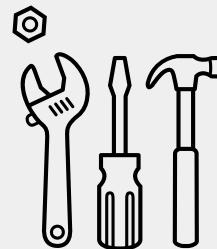
**Module com.fasterxml.jackson.core.jackson-core**

| Package                                    | Description  |
|--|--|
| <a href="#">com.fasterxml.jackson.core</a> | Main public API classes of the core streaming JSON processor: most importantly <code>JsonFactory</code> us |

```
$ curl --digest -D - http://localhost:9990/management --header "Content-Type: application/json" -d '{ "operation": "read-resource", "include-runtime": "true" , "recursive": "true", "address": [ "subsystem", "datasources", "datasource", "ExampleDS" ], "json.pretty": 1 }'
```

# JBOSS DEVELOPER STUDIO

- Eclipse-based IDE with extensions to develop with JBoss
- Developer Tools
  - Wizards
  - Debugging
- Build Tool Integration
  - Maven
  - Jenkins
- SCM Integration
  - GIT
  - SVN



Project Explorer    Package Expl

- jboss-javaee6-webapp
  - JAX-WS Web Services
  - JAX-RS REST Web Services
    - GET /rest/events
    - GET /rest/members
    - GET /rest/members/{id:[0-9][0-9]\*}
  - Deployment Descriptor: jboss-javaee6-web...
  - Web Resources
  - JPA Content
  - Java Resources
    - src/main/java
      - org.jboss.tools.examples.controller
      - org.jboss.tools.examples.data
      - org.jboss.tools.examples.model
        - Event.java
        - Member.java
        - Venue.java
      - org.jboss.tools.examples.rest
        - EventService.java
        - JaxRsActivator.java
          - JaxRsActivator
          - MemberResourceRESTService.java
      - org.jboss.tools.examples.service
      - org.jboss.tools.examples.util
    - src/main/resources
      - META-INF
        - persistence.xml
        - validation.xml
      - import.sql
    - src/test/java
      - org.jboss.tools.examples.test
        - MemberRegistrationTest.java
    - src/test/resources
    - Libraries
    - JavaScript Resources
    - Deployed Resources
    - pom.xml
    - readme.md

JBoss Central    http://www.amazon.co    https://ww...

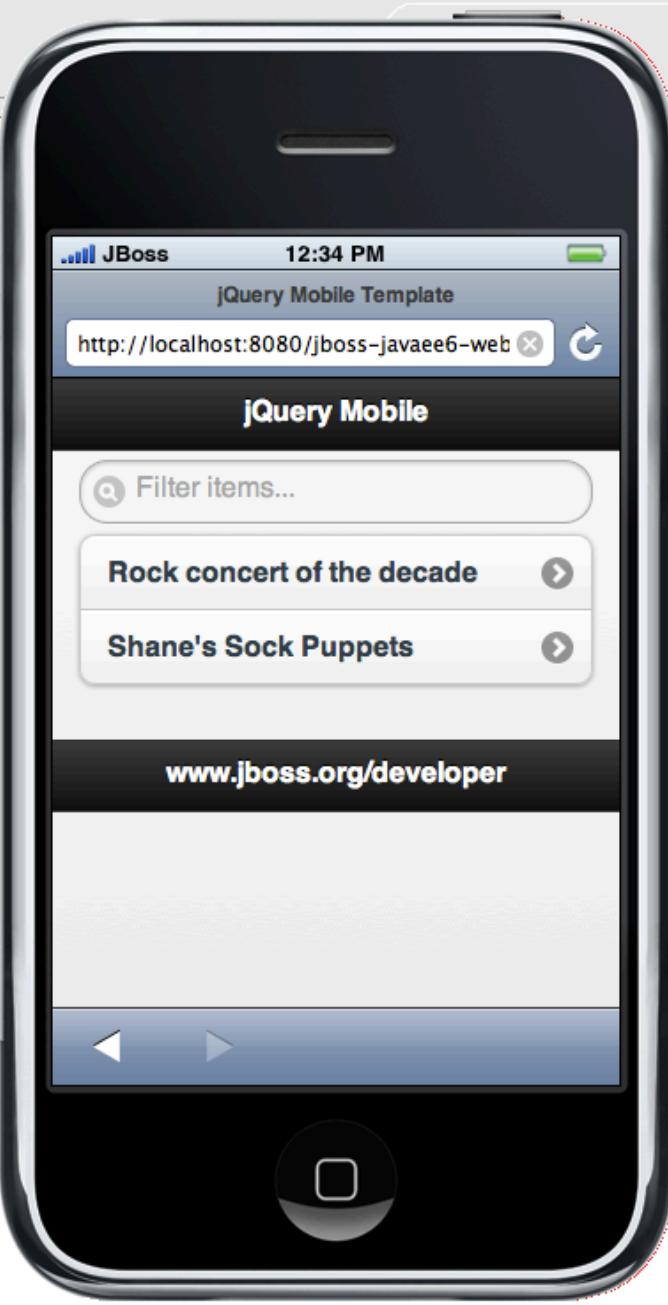
## JBoss Central

- Create Projects
  - Dynamic Web Project
  - OpenShift Application
  - Java EE Web Project
  - Java EE Project
  - HTML5 Project
  - RichFaces Project
  - Spring MVC Project
  - GWT Web Project
- News
  - This Someth...
  - If you w...
  - basis the...
  - contribut...
  - This by Mar...
  - Before w...
  - after las...
- Project Examples
  - JBoss Quickstarts
- Documentation
  - New and Noteworthy
  - User Forum
  - Reference
  - Developer Forum
  - FAQ
  - Wiki
  - Screencasts
  - Issue Tracker
- Blogs
  - Using JBoss Tc...
  - This mo...
  - Christos...
  - manage...
  - Mov...
  - by Max...
  - Over the...
  - at helpir...
  - (m2e) in...
- Settings
  - Show on Startup

Getting Started    Software/Update

- Problems
- Properties
- Servers
- OpenShift Explorer

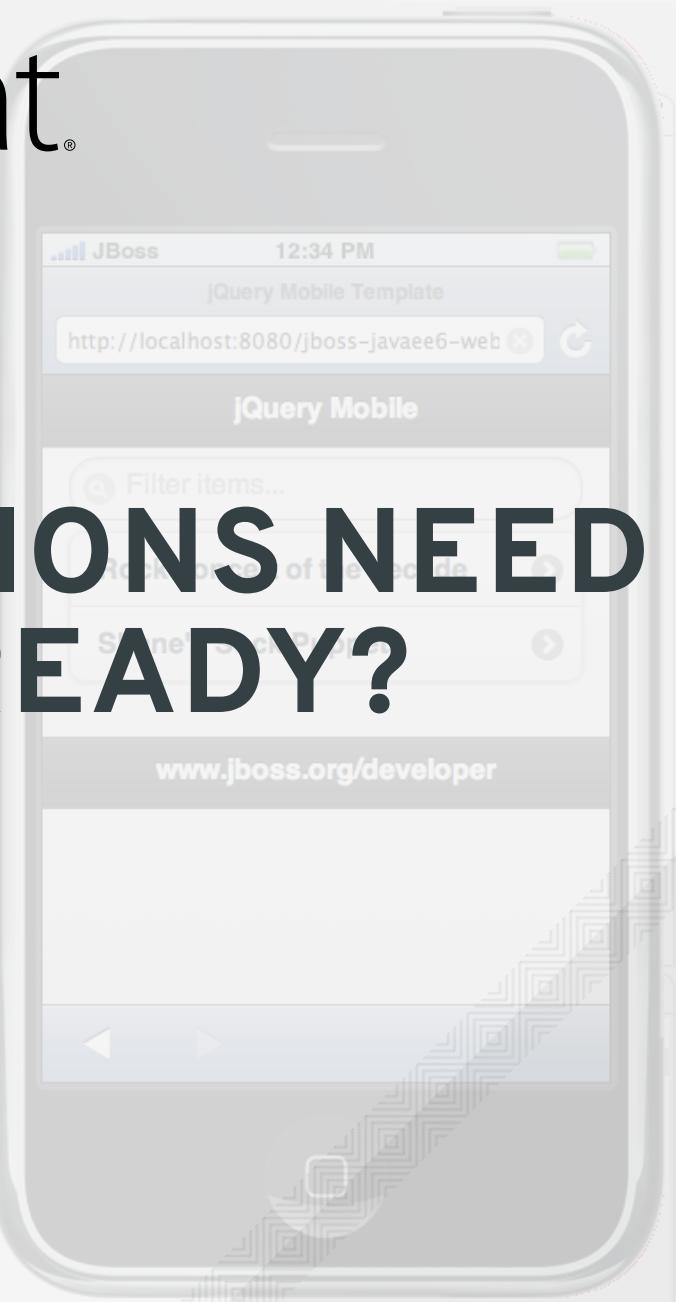
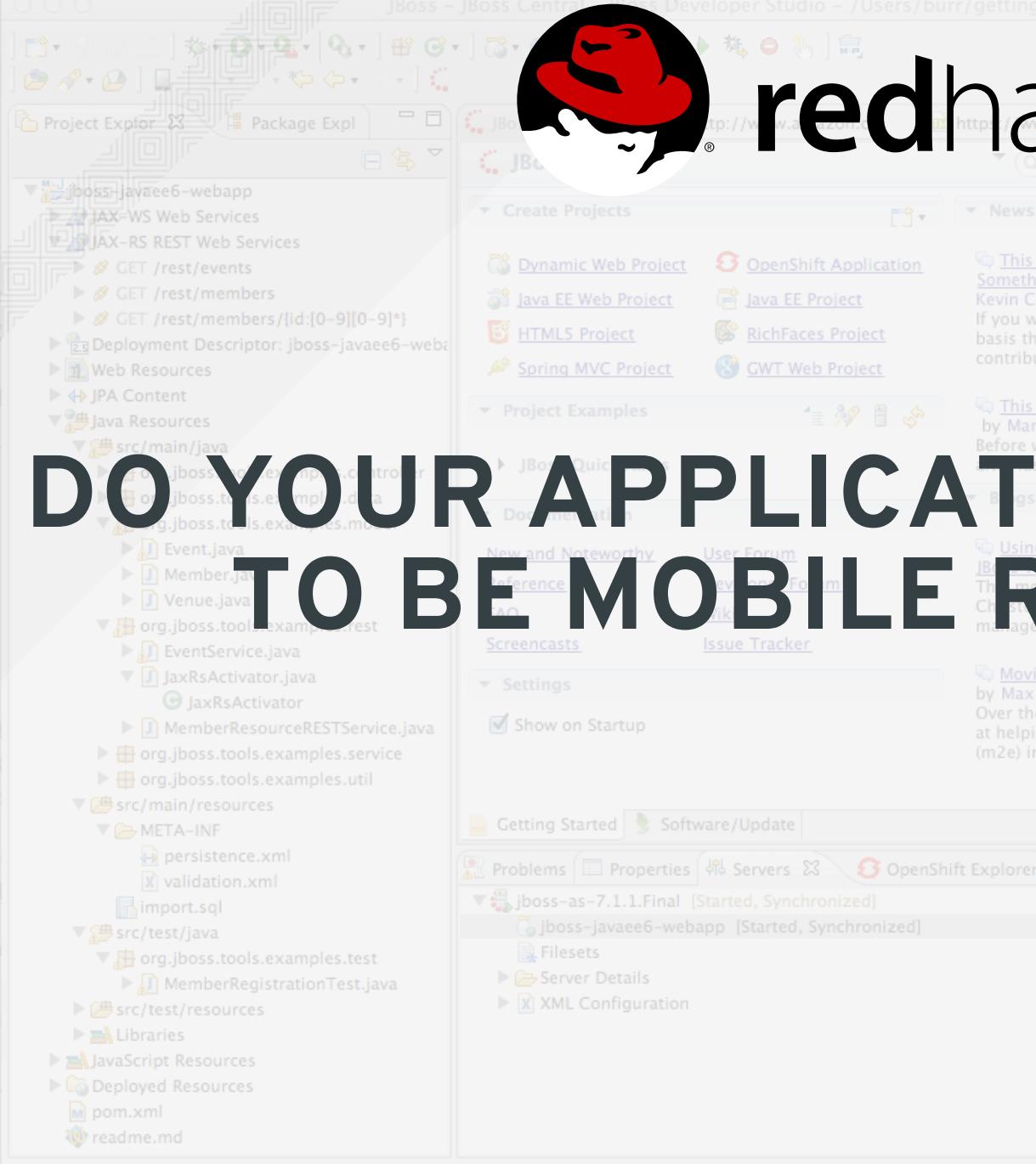
- jboss-as-7.1.1.Final [Started, Synchronized]
  - jboss-javaee6-webapp [Started, Synchronized]
    - Filesets
    - Server Details
    - XML Configuration





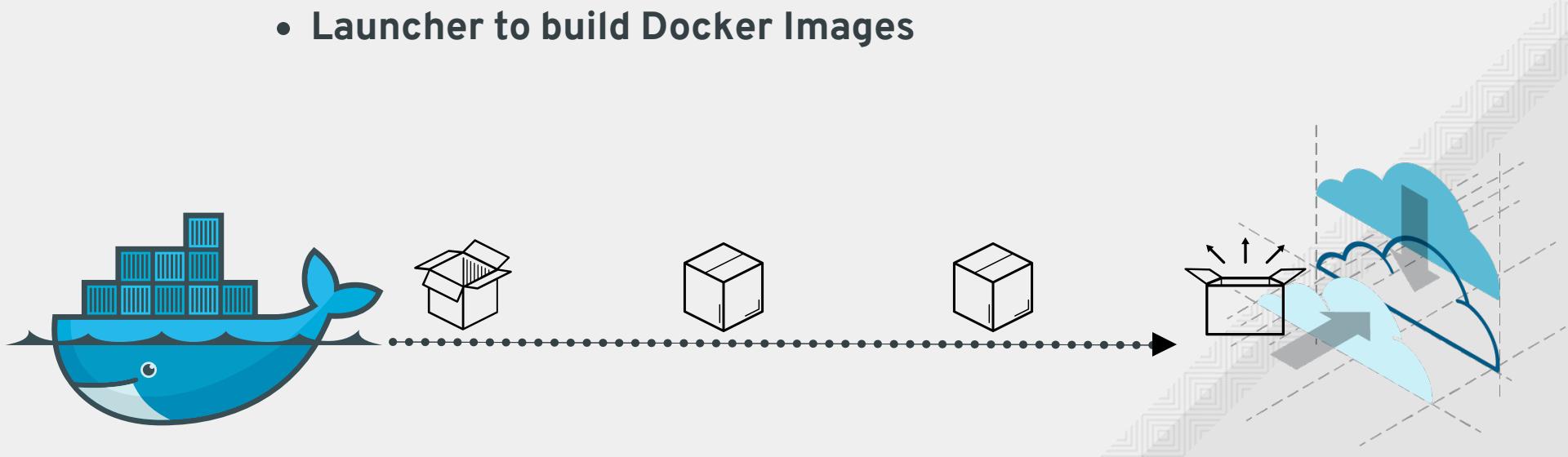
# redhat®

# DO YOUR APPLICATIONS NEED TO BE MOBILE READY?



# DOCKER CONTAINER SUPPORT

- Manage Docker Containers from the IDE
- Search and Pull images from any registry
- Visualize your containers and images in a single treeview
- Inspect containers and images
- Launcher to build Docker Images



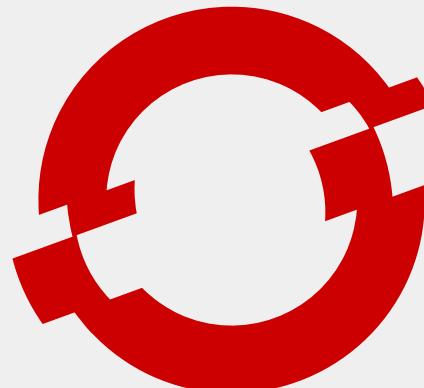
# DOCKER CONTAINER SUPPORT

Docker Explorer

- boot2docker (https://192.168.59.103:2376)
  - Containers
    - mongo-test (mongo:latest)
    - postgres-demo (xcoulon/postgres-demo:latest)
    - wildfly-demo (xcoulon/wildfly-postgres:latest)
  - Images
    - centos: 7 / centos7 / latest (8efe422e6104)
    - jboss/wildfly: 8.2.0.Final (c1abaf3a478a)
    - jbosstools/centos7-elasticsearch: 1.4.2 (fe)
    - jbosstools/centos7-kibana-proxy: 1.0.0 (67)
    - jbosstools/jbosstools-website: latest (9c8c)
    - maxandersen/jenkins-ootb: latest (ddab3c)
    - mongo: 2 / 2.6 / 2.6.8 (02e8f8c3e49c)
    - mongo: 3 / 3.0 / 3.0.0 (216d9a0e8264)
    - mysql: 5.7 / 5.7.7 (a923b6375d95)
    - postgres: 9.4 / 9.4.3 / latest (5258fff13033)
    - xcoulon/centos7-eknproxy: 1.0.0 (8fd147c8d)

# BUILT-IN OPENSIFT MANAGEMENT

- Scale your OpenShift instances right from the IDE
- OpenShift Explorer View
- Webhook build triggers GUI
- Port Forwarding
- Tailing Log Files
- Server Template Support



# OPENSHIFT MANAGEMENT

The screenshot shows the Red Hat OpenShift Management interface. At the top, there are three tabs: "OpenShift Explorer" (selected), "Docker Explorer", and "Console".

The left sidebar shows a tree structure:

- local (unix:///var/run/docker.sock)
  - Containers
  - Images
    - docker.io/capntrill/hello-openshift: latest (c4bbf23befd2)
    - test (c4bbf23befd2)
    - 7: latest (df046201a166)

Below the tree, there are several actions:

- Run Image...
- Push Image
- Tag Image
- Remove Tag
- Remove Images
- Deploy to OpenShift...

A context menu is open over the "latest" image entry, listing the same options.

A modal dialog titled "Application port forward" is displayed, prompting the user to configure port forwarding for the "eap6" application. It contains a table showing current port mappings:

| Service | Local Address | Local Port | Remote Address | Remote Port | Status  |
|---------|---------------|------------|----------------|-------------|---------|
| java    | 127.0.0.1     | 3528       | 127.3.85.1     | 3528        | Stopped |
| java    | 127.0.0.1     | 4447       | 127.3.85.1     | 4447        | Stopped |
| java    | 127.0.0.1     | 5445       | 127.3.85.1     | 5445        | Stopped |
| java    | 127.0.0.1     | 8080       | 127.3.85.1     | 8080        | Stopped |
| java    | 127.0.0.1     | 9990       | 127.3.85.1     | 9990        | Stopped |
| java    | 127.0.0.1     | 9999       | 127.3.85.1     | 9999        | Stopped |

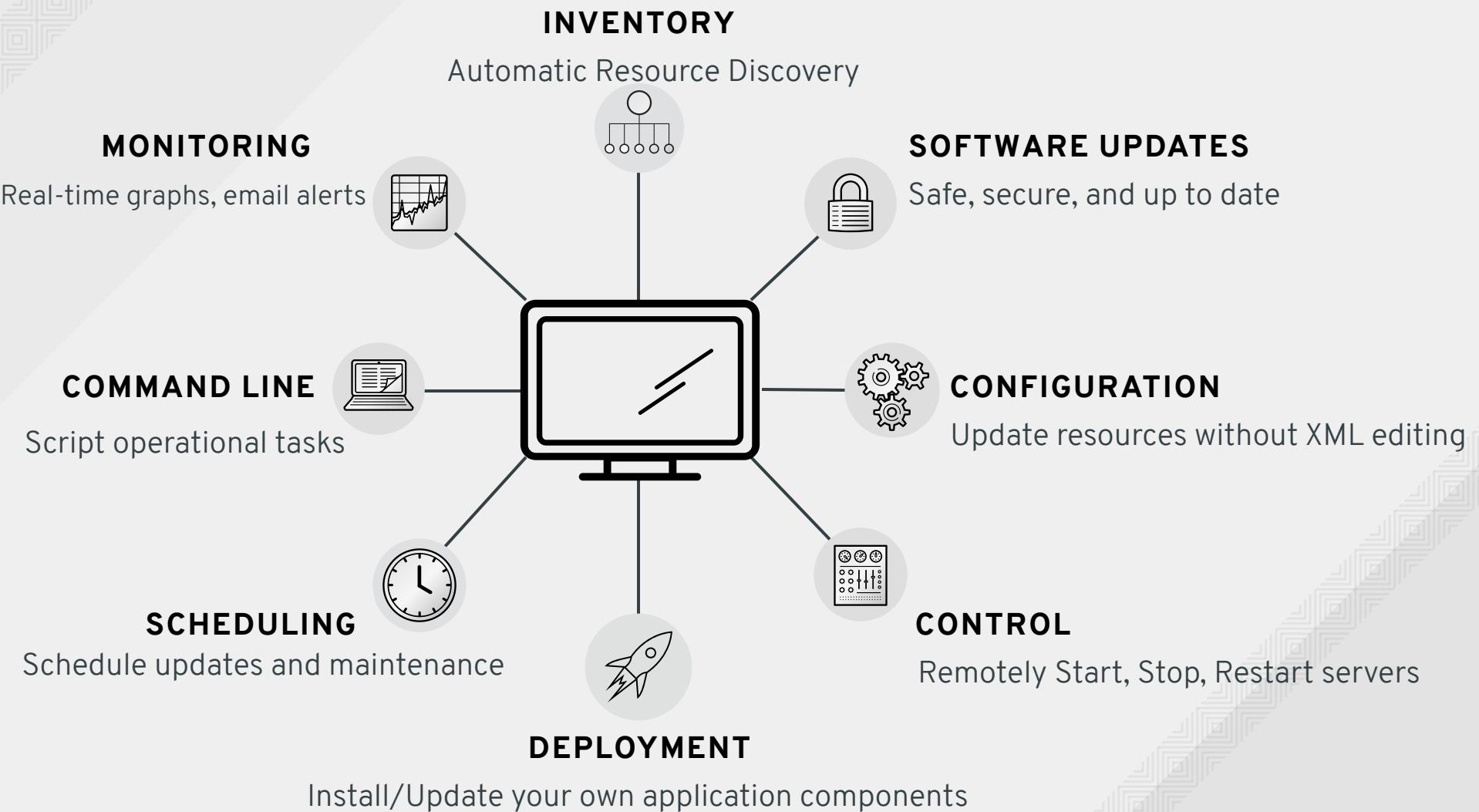
On the right side of the interface, there are buttons for "Refresh", "Start All", and "Stop All".

A second modal dialog titled "Webhooks triggers" is displayed, explaining that Webhook triggers allow triggering a new build by sending a request to the OpenShift API endpoint. It shows two entries:

- GitHub webhook: [ldconfigs/eap-app/webhooks/cei1wa8k/github](#) (with a copy icon)
- Generic webhook: [dconfigs/eap-app/webhooks/utndktyv/generic](#) (with a copy icon)

At the bottom of the "Webhooks triggers" dialog are "OK" and "Cancel" buttons.

# JBOSS OPERATIONS NETWORK





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**HOW DO YOU MANAGE AND  
MONITOR YOUR APPLICATIONS  
TODAY?**

# JBOSS EAP ON OPENSHIFT BENEFITS

**Calculate the business benefits and impacts of PaaS**

- Accelerated application development
- Automated application provisioning and config
- Web-scale application operations
- Increased hardware utilization efficiency

# JBOSS EAP ON OPENSHIFT BENEFITS

Build, Deploy, Scale, and Manage  
Container-based Java EE applications on  
JBoss EAP in the cloud or on-premise  
using OpenShift Container Platform.

# EAP ON OPENSHIFT EXAMPLE

Project otd Add to project demo

Overview Filter by label Add

BROWSE SERVICE : METROMAP metromap-otd.apps.10.2.2.2.xip.io 8080/TCP → 8080

DEPLOYMENT: METROMAP, #1 9 minutes ago from image change

2 pods

CONTAINER: METROMAP

- Image: otd/metromap (b455261) 151.7 MB
- Build: metromap, #1
- Source: placeholder for micro services demo code (62b2569)
- Ports: 8080/TCP

ReplicationController

|           |                          |
|-----------|--------------------------|
| Name      | metromap-1               |
| Namespace | otd                      |
| Created   | May 20, 2016 10:49:36 AM |
| Replicas  | 2                        |

Selector

DC Metro Stations

metromap-otd.apps.10.2.2.2.xip.io

Red Line  
Green Line  
Orange Line  
Yellow Line  
Blue Line

This screenshot shows the OpenShift web console for a project named 'otd'. On the left, there's a sidebar with 'Overview', 'Browse', and 'Settings' buttons. The main area is titled 'Overview' and shows a deployment named 'METROMAP' with two pods. A detailed view of the deployment container shows it's using the 'otd/metromap' image (b455261), has a build named 'metromap, #1', and is running on port 8080/TCP. To the right, there's a 'ReplicationController' section for 'metromap-1' in the 'otd' namespace, created on May 20, 2016, with 2 replicas. Below that is a 'Selector' section. A modal window is open, displaying a map of Washington D.C. with numerous metro station icons. The map includes labels for 'Red Line', 'Green Line', 'Orange Line', 'Yellow Line', and 'Blue Line', each represented by a different colored circle at specific station locations.

# EAP MIGRATIONS

**DELIVER MORE BUSINESS VALUE AT LOWER COST**

- **Freely available tools, documentation and quickstarts**
- **Training curriculum available for developers and administrators**
- **Broad range of professional services options**

# BUSINESS VALUE HIGHLIGHTS

**509%**

Average three-year ROI

**\$108,664**

Average discounted three-year business benefits per 100 users

**79.5%**

Less expensive than legacy commercial platform

**43.2%**

Application development staff efficiencies

**89.3%**

Less application development-related downtime

# WINDUP

- Scan source code or binaries
- Identify vendor dependencies
- Estimate LOE
- Inline Guidance



# SUBSCRIPTION MODEL

Core Based

- 16 or 64 bands
- Physical or Virtual

Totaled across all environments

- Production and Test/QA
- Hot Failover

Includes

- JBoss Developer Studio
- JBoss Core Services

## PRODUCTION

|                                     |                                     |  |  |
|-------------------------------------|-------------------------------------|--|--|
| Guest instance<br>(4 virtual cores) | Guest instance<br>(4 virtual cores) | JBoss EAP<br>guest instance<br>(4 virtual cores) | JBoss EAP<br>guest instance<br>(4 virtual cores) |
| Guest instance<br>(4 virtual cores) | Guest instance<br>(4 virtual cores) | JBoss EAP<br>guest instance<br>(4 virtual cores) | JBoss EAP<br>guest instance<br>(4 virtual cores) |

4 JBoss EAP guest instances in production, each with 4 virtual cores

| SERVER VIRTUALIZATION SOFTWARE |         |         |         |
|--------------------------------|---------|---------|---------|
| 8 cores                        | 8 cores | 8 cores | 8 cores |

Counted as  
16 cores

**32 physical cores total**

JB0060

# SUBSCRIPTION MODEL

## CUSTOMER PORTAL LABS

All Labs    Configuration    Deployment    Security    Troubleshoot    JBoss (7)    Filter apps by name or description

 **JBOSS DATA VIRTUALIZATION SIZING ARCHITECTURE TOOL**  
Plan Your JBoss Data Virtualization Deployment

[Go to App](#) ▶ [More info](#) ▶

 **LOG REAPER**  
Log Reaper provides analysis of common RHEL and Middleware logs with an emphasis on break/fix.

[Go to App](#) ▶ [More info](#) ▶

 **JMX/RMI REMOTE CODE EXECUTION DETECTOR**  
CVE-2014-3518 JMX/RMI Remote Code Execution Detector

[Go to App](#) ▶ [More info](#) ▶

ARE ANY OF YOUR VENDORS DOING THIS LEVEL OF SUPPORT FOR YOU?

# RED HAT PROFESSIONAL SERVICES

SOLVES STRATEGIC TECHNOLOGY CHALLENGES,  
MAXIMIZING PERFORMANCE AND INFRASTRUCTURE  
EFFICIENCY -- OPTIMIZING YOUR IT

- Unparalleled expertise in open source
- Accelerated time-to-value
- Facilitated interoperability
- Consultants directly tied to community and product development teams

## INFRASTRUCTURE SERVICES

- Increase IT infrastructure value with Red Hat Pathways
- Gain expertise for complex, mission-critical projects.
- Free your resources for greater ROI.

## MIDDLEWARE & APPLICATION SERVICES

- Full life-cycle development
- Strengths in application development and re-platforming services
- Agile development process

## RED HAT

## TRAINING

Arms your IT organization with knowledge and hands-on skills to optimize your Red Hat deployments -- enhancing productivity and mitigating risk.

Employees gain skills, promoting IT success

Large portfolio of courses

More than **100,000** Red Hat Certified professionals

More than **60%** of **Fortune 2000** companies use Red Hat Training

More than **1 million** Red Hat Training customers.

The background of the image is a high-angle aerial photograph of a city's urban landscape. The buildings are mostly modern skyscrapers with a grid-like pattern of windows. The sky above the buildings is filled with white and grey clouds. In the top left corner, there is a large, solid white triangular shape that overlaps the city scene.

**THANK YOU**