JUDCon

JBoss Users & Developers Conference

2012:Boston

JBoss EAP 6 – Alpha to GA

Reflection of six months onsite

Serge Pagop - Sr. Solution Architect MW
Jürgen Hoffmann - Sr. Architect MW

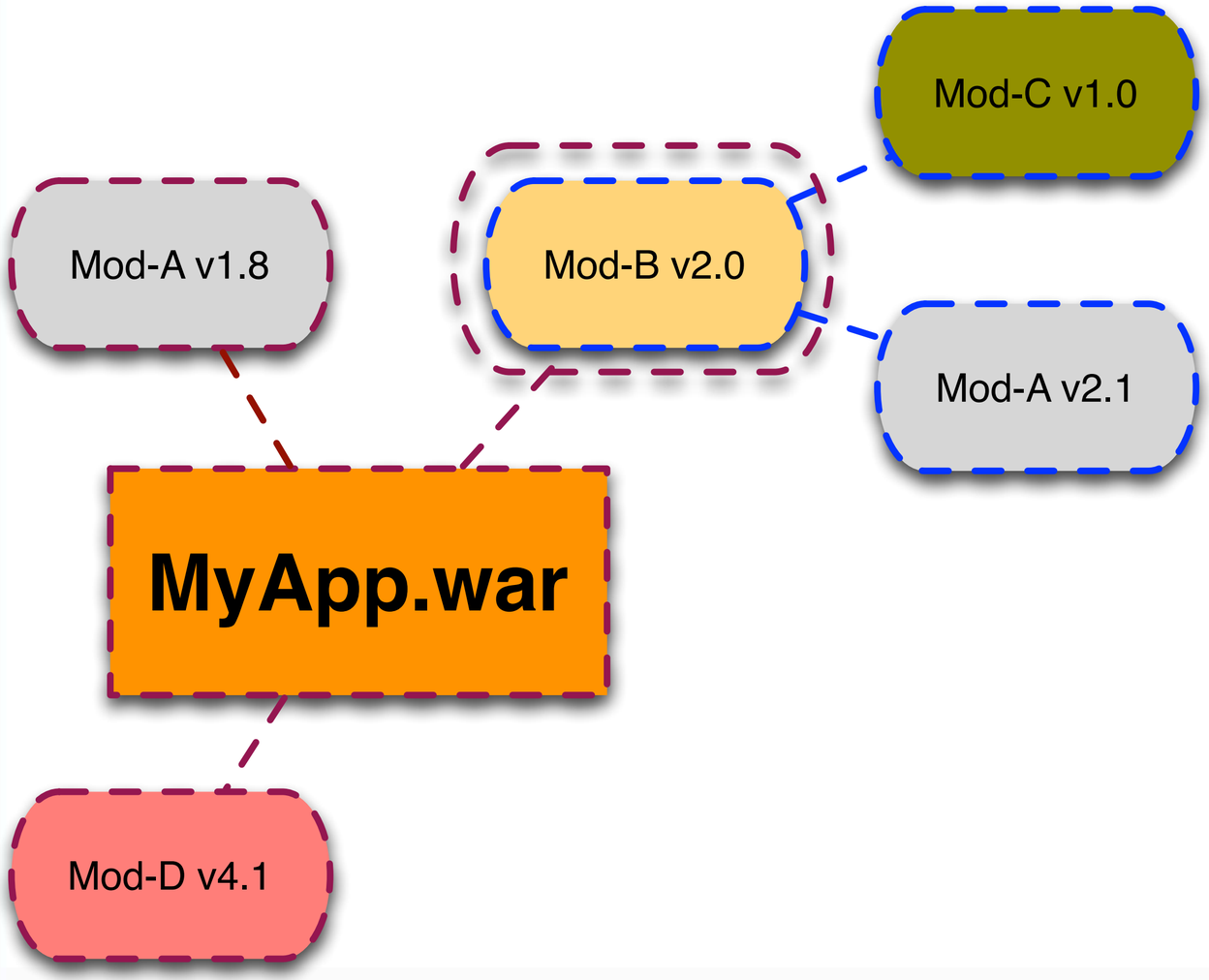
EAP 6 Key differences

- Modular Service Container
  - Modules ClassLoader
- Portable JNDI Naming
  - JBoss Vendor Specific Extension
    - `java:jboss`
    - `java:/`
    - `ejb:app/ejbjar/ejbname!com.test.bla`
- JSF Implementation bundled as Module
  - Mojarra 1.2 and 2.1 is bundled with Application Server
- !$@§ing Fast!!!

EAP6 vs. EAP5

- Different Directory Layout
- Different Architecture
- Different ClassLoader Mechanism
- Different Management
- Different Configuration
- Different Operating Modes
- Paradigm Shift between JAVA EE5 and JAVA EE6

Modular ClassLoader



- Modules delegate to one another as peers
- Module imports modules it directly uses
- Transitive dependencies are hidden by default
- Different module versions may co-exist
- Every application deployment is a module

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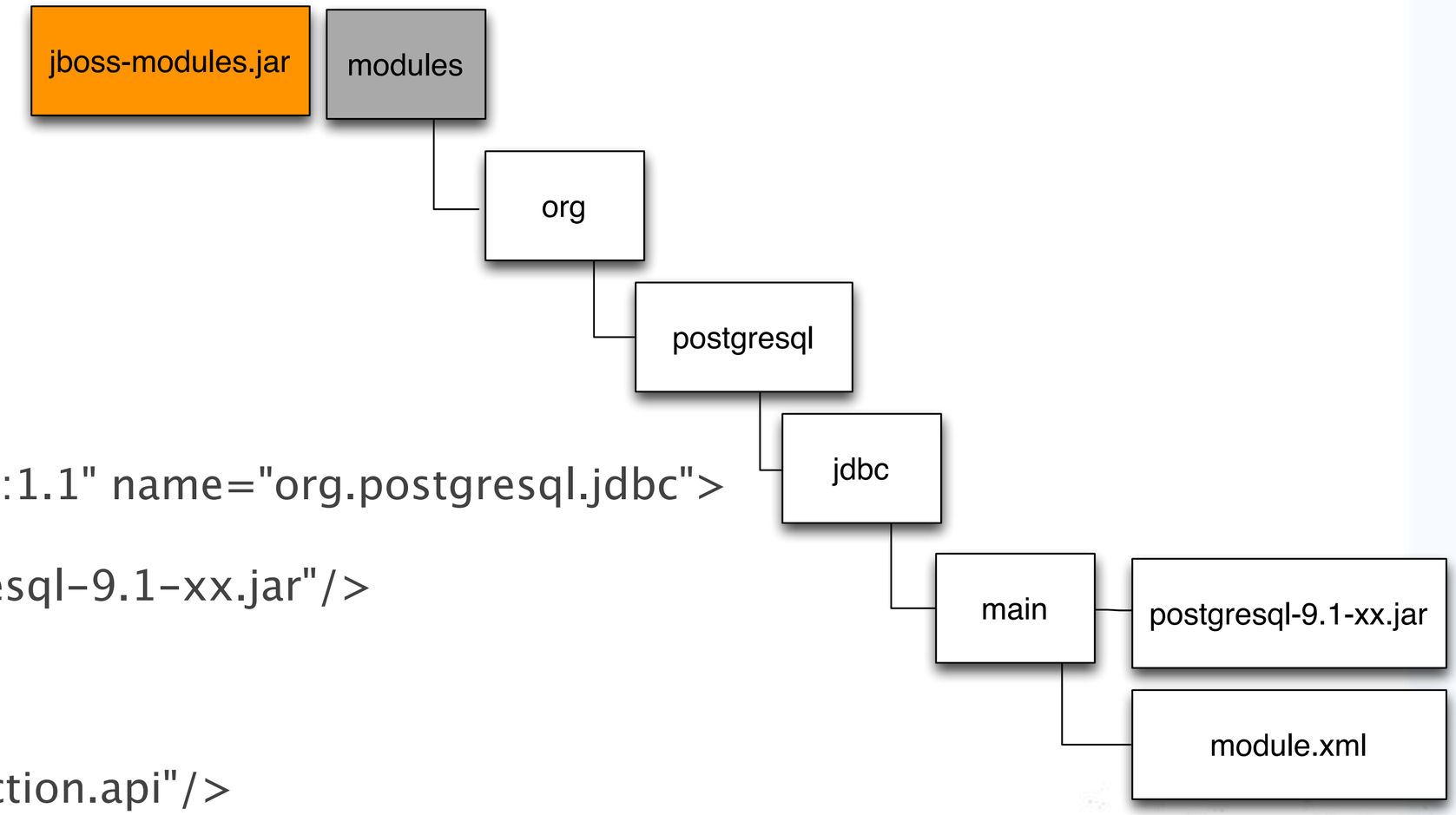
Creating Modules



- **module.xml**

```
<module xmlns="urn:jboss:module:1.1" name="org.postgresql.jdbc">
   <resources>
      <resource-root path="postgresql-9.1-xx.jar"/>
   </resources>
   <dependencies>
      <module name="javax.api"/>
      <module name="javax.transaction.api"/>
   </dependencies>
</module>
```

Customer Use Cases

- Financial Sector
- Transport Sector
- Public Sector
- Retail Sector

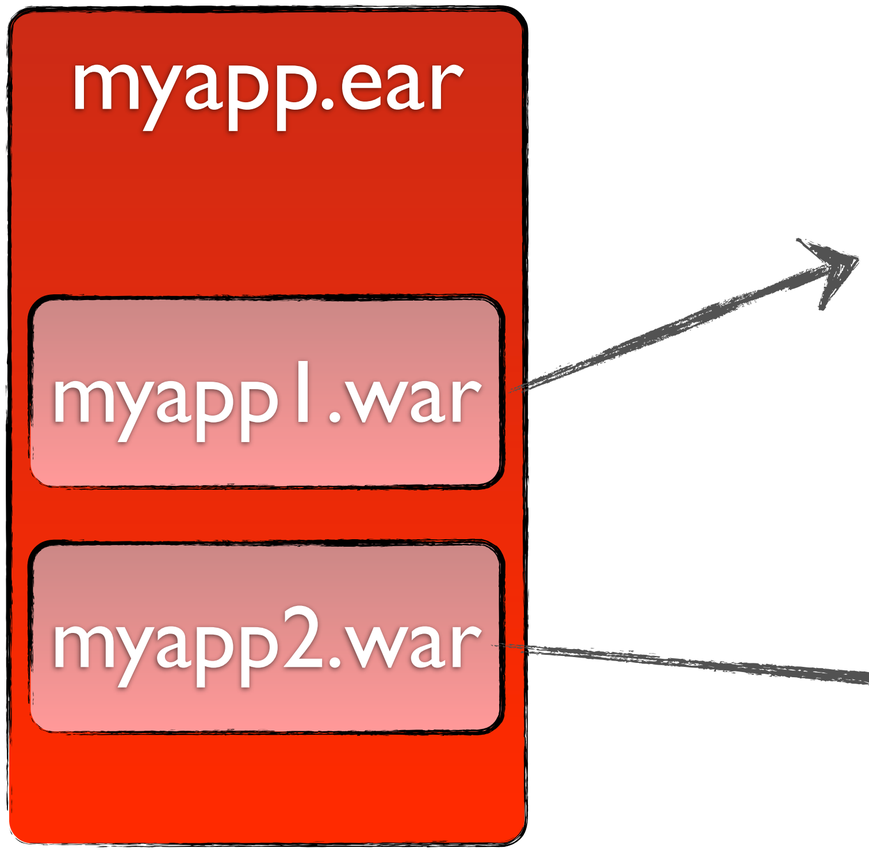
Financial Sector

- Large Organization ~500 Developers work in Frankfurt
- Small Team 8 Developers work on core framework
- IBM Websphere Company
- Interested in JBoss because of its speed
- Were using other JBoss technologies already (richfaces, hibernate, etc.)

Issues there

- Were using Community 7.0
- Moved to JBoss EAP 6 Alpha 2 (JBoss EAP 6 DR6)
- JAVA EE6 and CDI have quirks
- Module Service Container was hard to understand
- Impossible to deploy JSF 2.0 web application

CDI Quirks




```
package demo1;

import java.io.Serializable;
import javax.enterprise.context.SessionScoped;
import javax.inject.Named;

@Named @SessionScoped
public class DemoBean implements Serializable {
        private static final long serialVersionUID = 1L;
}
```

```
package demo2;

import java.io.Serializable;
import javax.enterprise.context.SessionScoped;
import javax.inject.Named;

@Named @SessionScoped
public class DemoBean implements Serializable {
        private static final long serialVersionUID = 1L;

}
```

Deployment Error

```
17:26:34,461 ERROR [org.jboss.msc.service.fail] (MSC service thread 1-8) MSC000001: Failed to start service
jboss.deployment.unit."multimodule-ear.ear".WeldService: org.jboss.msc.service.StartException in service
jboss.deployment.unit."multimodule-ear.ear".WeldService: org.jboss.weld.exceptions.DeploymentException: WELD-001414 Bean
name is ambiguous. Name demoBean resolves to beans [Managed Bean [class demo2.DemoBean] with qualifiers [@Any @Default
@Named], Managed Bean [class demo1.DemoBean] with qualifiers [@Any @Default @Named]]
   at org.jboss.as.weld.services.WeldService.start(WeldService.java:83)
   at org.jboss.msc.service.ServiceControllerImpl$StartTask.startService(ServiceControllerImpl.java:1811) [jboss-
msc-1.0.2.GA-redhat-1.jar:1.0.2.GA-redhat-1]
   at org.jboss.msc.service.ServiceControllerImpl$StartTask.run(ServiceControllerImpl.java:1746) [jboss-msc-1.0.2.GA-
redhat-1.jar:1.0.2.GA-redhat-1]
   at java.util.concurrent.ThreadPoolExecutor$Worker.runTask(ThreadPoolExecutor.java:886) [classes.jar:1.6.0_29]
   at java.util.concurrent.ThreadPoolExecutor$Worker.run(ThreadPoolExecutor.java:908) [classes.jar:1.6.0_29]
   at java.lang.Thread.run(Thread.java:680) [classes.jar:1.6.0_29]
Caused by: org.jboss.weld.exceptions.DeploymentException: WELD-001414 Bean name is ambiguous. Name demoBean resolves to
beans [Managed Bean [class demo2.DemoBean] with qualifiers [@Any @Default @Named], Managed Bean [class demo1.DemoBean]
with qualifiers [@Any @Default @Named]]
   at org.jboss.weld.bootstrap.Validator.validateBeanNames(Validator.java:440)
   at org.jboss.weld.bootstrap.Validator.validateDeployment(Validator.java:337)
   at org.jboss.weld.bootstrap.WeldBootstrap.validateBeans(WeldBootstrap.java:366)
   at org.jboss.as.weld.WeldContainer.start(WeldContainer.java:83)
   at org.jboss.as.weld.services.WeldService.start(WeldService.java:76)
   ... 5 more
```

demo1.DemoBean

demo2.DemoBean

The Docs say

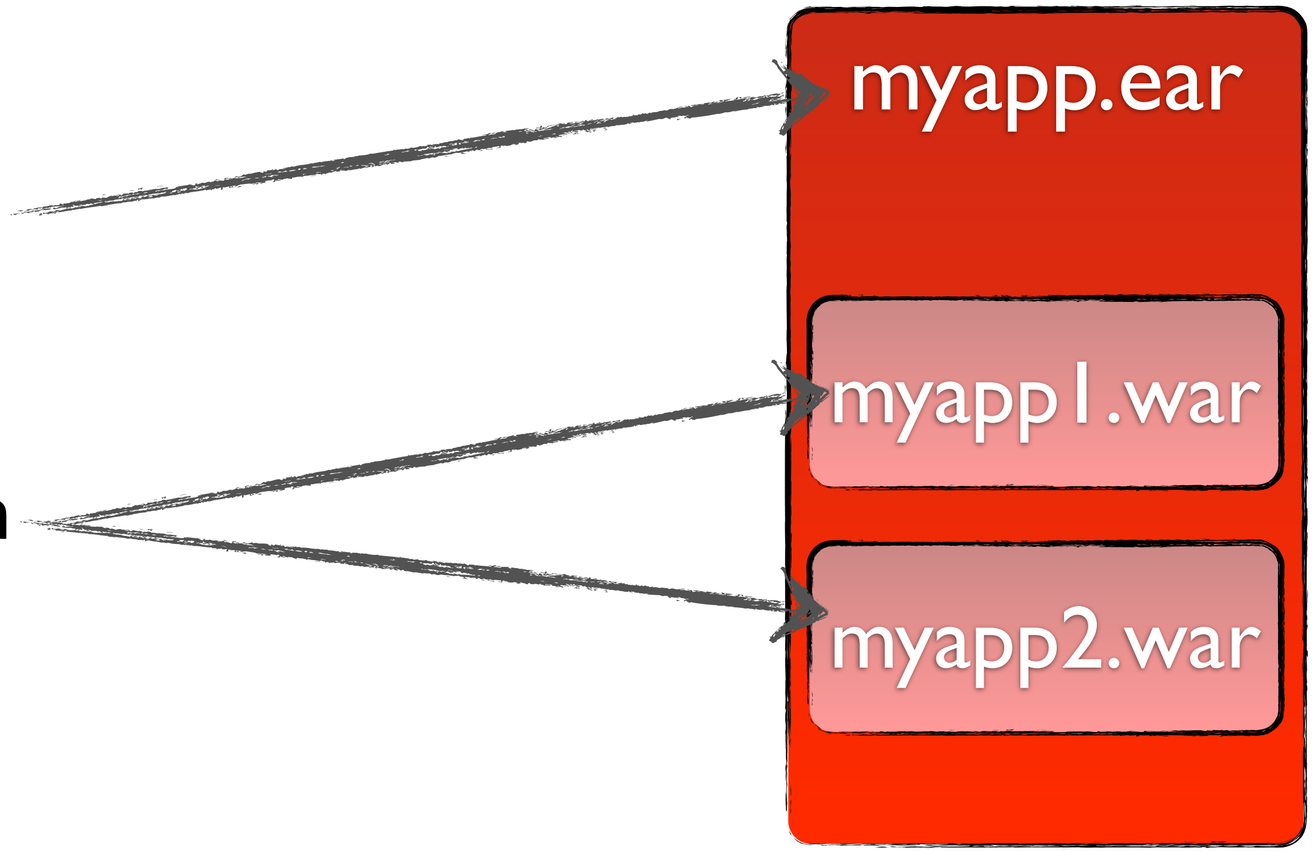
```
<subsystem xmlns="urn:jboss:domain:ee:1.0" >
  <ear-subdeployments-isolated>false</ear-subdeployments-isolated>
</subsystem>
```

The ear-subdeployments-isolated element value has no effect on the isolated classloader of the .war file(s). i.e. irrespective of whether this flag is set to true or false, the .war within a .ear will have a isolated classloader and other sub-deployments within that .ear will not be able to access classes from that .war. This is as per spec.

Why

CDI Naming Context

Class Loading Isolation



WAR Bundles JSF

- Developers should be able to bundle JSF Implementation
- AS7 supports JSF 1.2 and JSF 2.1
- What about JSF 2.0/2.2

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JBoss AS 6.0 and AS7.1

```
<?xml version="1.0" encoding="UTF-8"?>
<web-app version="2.4" xmlns="http://java.sun.com/xml/ns/j2ee"...>
  <display-name>JsfTutorial</display-name>

  <context-param>
  <param-name>javax.faces.CONFIG_FILES</param-name>
  <param-value>/WEB-INF/faces-config.xml</param-value>
 </context-param>
...
<context-param>
   <param-name>org.jboss.jbossfaces.WAR_BUNDLES_JSF_IMPL</param-name>
   <param-value>true</param-value>
</context-param>
...
 <servlet>
  <servlet-name>Faces Servlet</servlet-name>
  <servlet-class>javax.faces.webapp.FacesServlet</servlet-class>
  <load-on-startup>1</load-on-startup>
 </servlet>
</web-app>
```

jboss-deployment-structure

```
<jboss-deployment-structure>
  <deployment>
      <exclusions>
        <module name="javax.faces.api" slot="main"/>
        <module name="com.sun.jsf-impl" slot="main"/>
        <module name="javax.faces.api" slot="1.2"/>
        <module name="com.sun.jsf-impl" slot="1.2"/>
      </exclusions>
      <dependencies>
        <module name="org.apache.log4j" />
        <module name="org.dom4j" />
        <module name="org.apache.commons.logging" />
        <module name="org.apache.commons.collections" />
      </dependencies>
  </deployment>
</jboss-deployment-structure>
```

Exception

```
09:52:22,557 ERROR [org.apache.catalina.core.ContainerBase.[jboss.web].[default-host].[/framework]] (MSC service thread 1-4)
Exception sending context initialized event to listener instance of class com.sun.faces.config.ConfigureListener:
com.sun.faces.config.ConfigurationException: CONFIGURATION FAILED! Class
org.jboss.as.web.deployment.jsf.JandexAnnotationProvider is not an instance of com.sun.faces.spi.AnnotationProvider
at com.sun.faces.config.ConfigManager.initialize(ConfigManager.java:351) [jsf-impl-2.0.3-FCS.jar:]
at com.sun.faces.config.ConfigureListener.contextInitialized(ConfigureListener.java:220) [jsf-impl-2.0.3-FCS.jar:]
at org.apache.catalina.core.StandardContext.contextListenerStart(StandardContext.java:3392) [jbossweb-7.0.3.Final-redhat-1.jar:
7.1.0.Alpha1-redhat-1]
at org.apache.catalina.core.StandardContext.start(StandardContext.java:3850) [jbossweb-7.0.3.Final-redhat-1.jar:7.1.0.Alpha1-redhat-1]
at org.jboss.as.web.deployment.WebDeploymentService.start(WebDeploymentService.java:77) [jboss-as-web-7.1.0.Alpha1-redhat-1.jar:
7.1.0.Alpha1-redhat-1]
at org.jboss.msc.service.ServiceControllerImpl$StartTask.startService(ServiceControllerImpl.java:1824)
at org.jboss.msc.service.ServiceControllerImpl$StartTask.run(ServiceControllerImpl.java:1759)
at java.util.concurrent.ThreadPoolExecutor$Worker.runTask(ThreadPoolExecutor.java:886) [:1.6.0_24]
at java.util.concurrent.ThreadPoolExecutor$Worker.run(ThreadPoolExecutor.java:908) [:1.6.0_24]
at java.lang.Thread.run(Thread.java:662) [:1.6.0_24]
Caused by: javax.faces.FacesException: Class org.jboss.as.web.deployment.jsf.JandexAnnotationProvider is not an instance of
com.sun.faces.spi.AnnotationProvider
at com.sun.faces.spi.AnnotationProviderFactory.createAnnotationProvider(AnnotationProviderFactory.java:74) [jsf-impl-2.0.3-FCS.jar:]
at com.sun.faces.config.ConfigManager$AnnotationScanTask.<init>(ConfigManager.java:746) [jsf-impl-2.0.3-FCS.jar:]
at com.sun.faces.config.ConfigManager.initialize(ConfigManager.java:324) [jsf-impl-2.0.3-FCS.jar:]
... 9 more
```

WHY

```
 Links     Datei     Befehl     Optionen     Rechts
<- ...es/org/jboss/as/web/main/jboss-as-web-7.1.1.Final-redhat-1.jar
'n                              Name
/..
 com.sun.faces.spi.annotationprovider
 com.sun.faces.spi.injectionprovider
 java.net.URLStreamHandlerFactory
 org.jboss.as.controller.Extension
```

```
com.sun.faces.spi.annotationprovider
org.jboss.as.web.deployment.jsf.JandexAnnotationProvider
```

Caused by: javax.faces.FacesException: Class **org.jboss.as.web.deployment.jsf.JandexAnnotationProvider** is not an instance of com.sun.faces.spi.AnnotationProvider

Solvable!?

- JandexAnnotationProvider is JSF 2.1 compliant does not work with JSF 2.0
- jboss-deployment-structure.xml allows to exclude directories not files
- Delete the files from the jar or create separate module with removed files

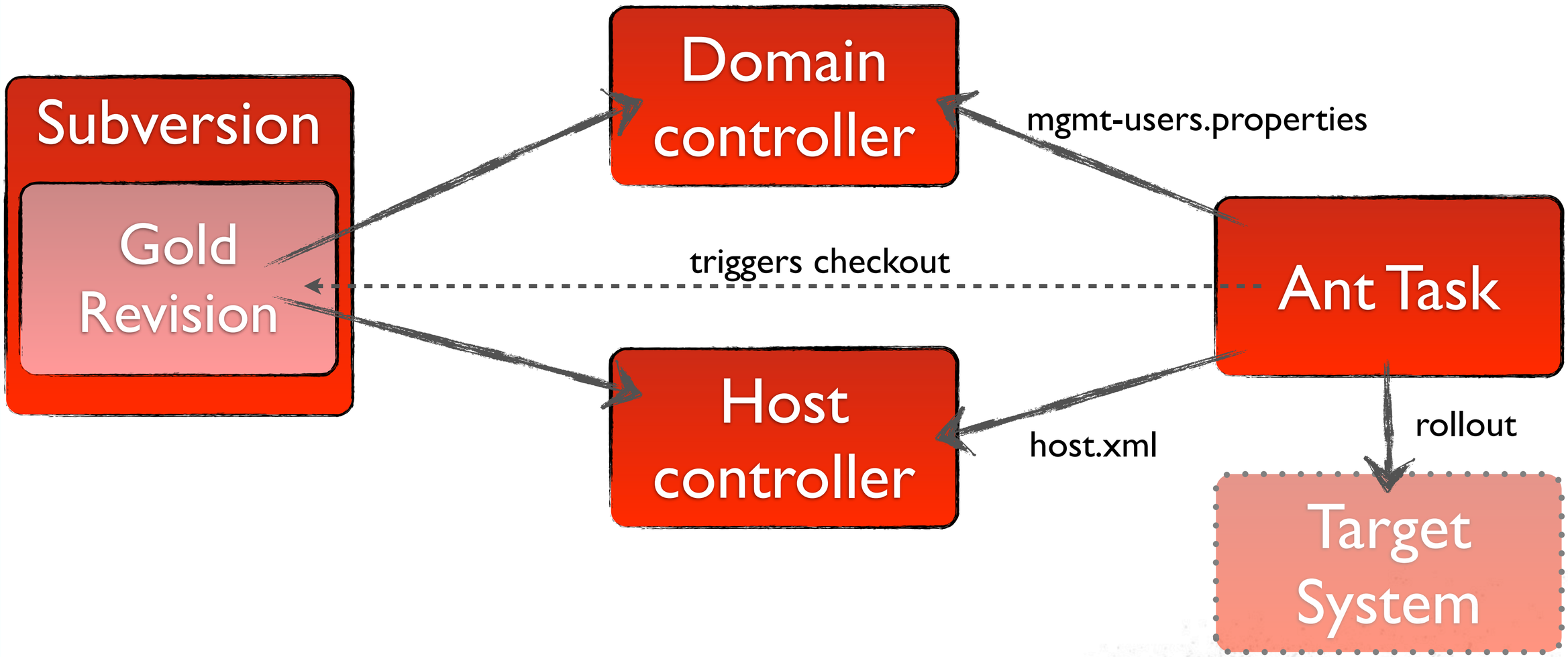
Transport Sector

- Specialized in Rail Logistics
- Strong Weblogic Dependency
- Operations Application already developed in GWT
- Challenge to manage Weblogic and JBoss EAP6 through same application

Problem Areas

- Make weblogic-client.jar work with JBoss EAP6
- very short time for complete automatic roll-out
- Make the Native Management API of JBoss EAP 6 make with their legacy management application
- show operating modes – make a decision which road to go

Mini SOE


Subversion
Gold Revision
Domain controller
mgmt-users.properties
triggers checkout
Ant Task
Host controller
host.xml
rollout
Target System

Public Sector

- Explain a little about customer
- Show Problems
- Explain Workarounds
- Maybe Demo

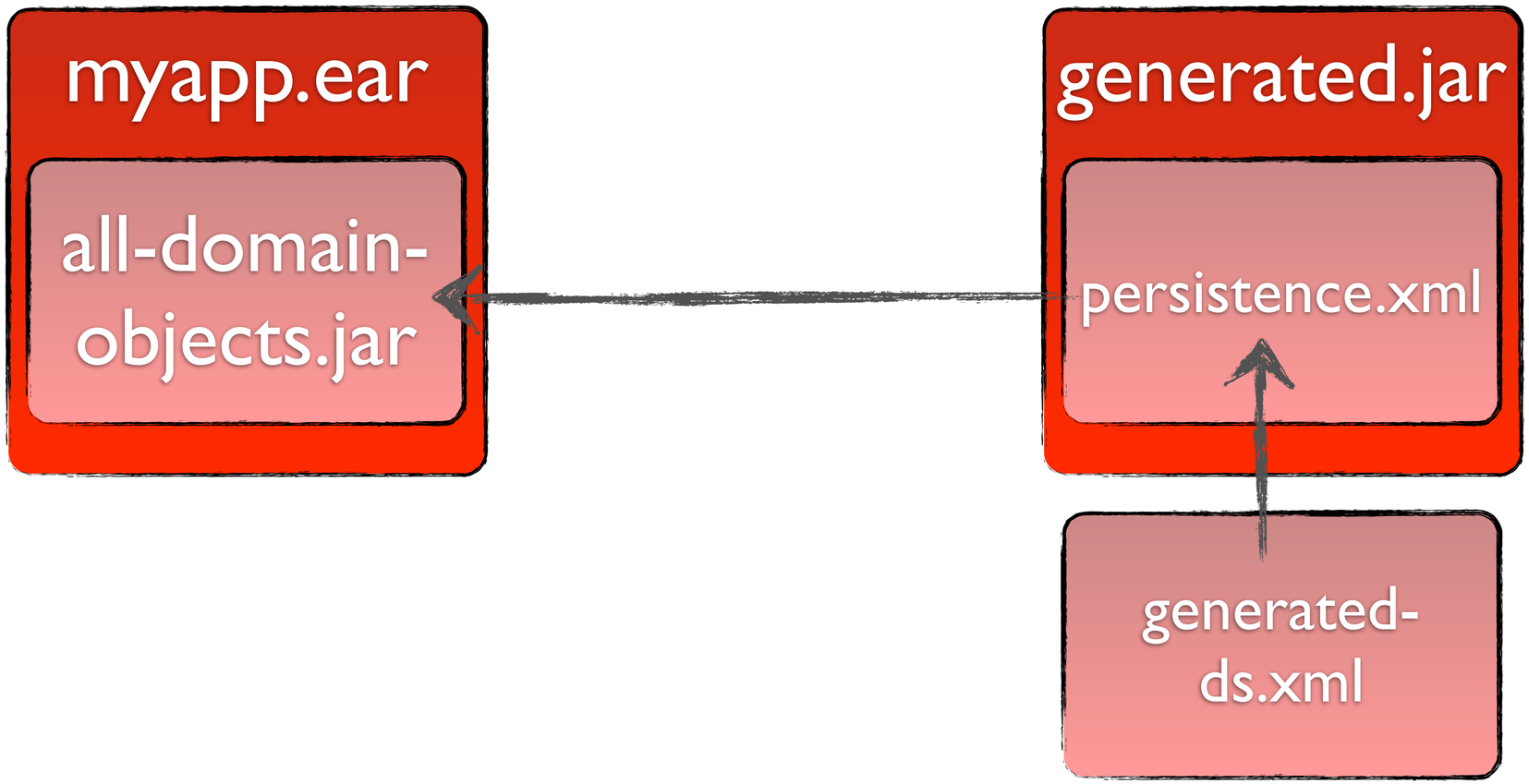
Public Sector

- 2-day workshop
- Customer creates Software for public sector
- Customer uses Community since forever
- Multi-Tennancy by Self Implementation
- Heavily dependent on *-ds.xml files
- Pesistence Units were generated by MBean
- application.ear could not „see“ persistence-unit.jar

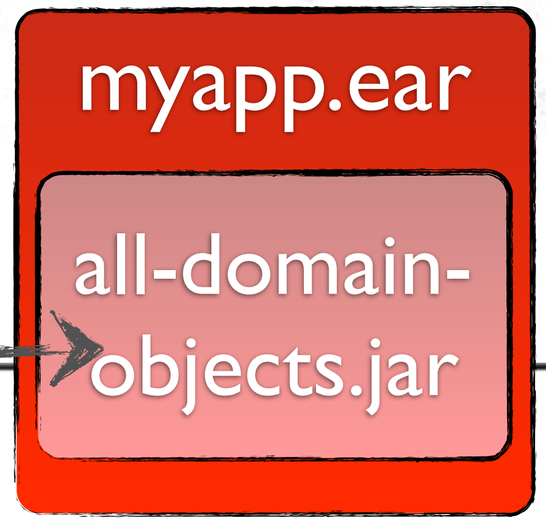
Problems

- *-ds.xml files were not supported at the time
- are still only to be considered for developement environment
- Their whole development model for Multi-Tennancy was broken
- Management API was poorly documented
- Workarounds were to be provided

Problem in more detail



Solvable!?



put in META-INF

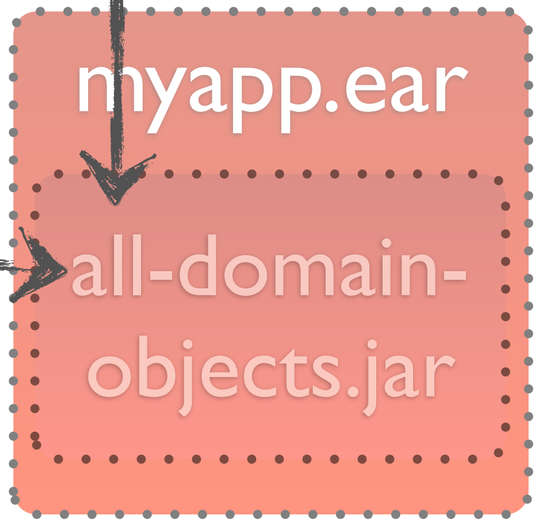
```
1 <jboss-deployment-structure>
2     <deployment>
3         <dependencies>
4             <module name="org.hibernate" slot="main" />
5             <module name="org.javassist" slot="main" />
6         </dependencies>
7     </deployment>
8 </jboss-deployment-structure>
```

now that we are dependant on hibernate and javassist, bytecode manipulation works

Solvable!?


```xml
<jboss-deployment-structure>
    <deployment>
        <dependencies>
            <module name="deployment.myapp.ear.all-domain-objects.jar" />
        </dependencies>
    </deployment>
</jboss-deployment-structure>
```

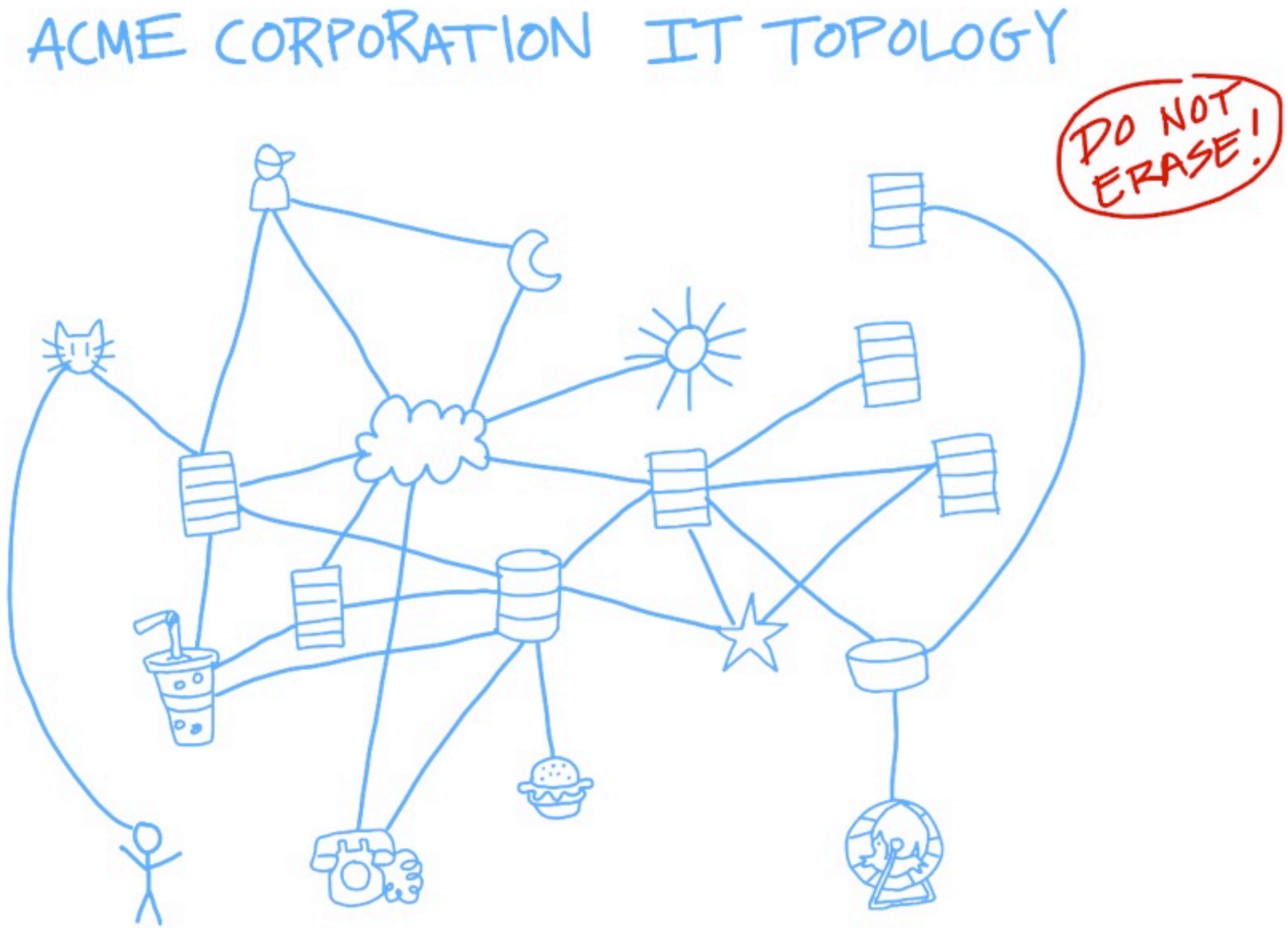
```xml
<?xml version="1.0" encoding="UTF-8"?>
<persistence version="2.0" xmlns="http://java.sun.com/xml/ns/persistence" xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xsi:schemaLocation="http://java.sun.com/xml/ns/persistence http://java.sun.com/xml/ns/persistence/persistence_2_0.xsd">
    <persistence-unit name="akdb-test-pu">
        <provider>org.hibernate.ejb.HibernatePersistence</provider>
        <jta-data-source>java:jboss/datasources/mysql</jta-data-source>
        <class>de.akdb.test.domain.Test</class>
        <properties>
         <property name="hibernate.dialect" value="org.hibernate.dialect.MySQL5Dialect"/>
         <property name="hibernate.transaction.jta.platform"
              value="org.hibernate.service.jta.platform.internal.JBossAppServerJtaPlatform"/>
         <property name="jboss.entity.manager.factory.jndi.name"
              value="java:global/persistence-units/public-test"/>
         <property name="hibernate.hbm2ddl.auto" value="create-drop"/>
       </properties>
    </persistence-unit>
</persistence>
```



Solvable!?

```java
package de.public.test;

import javax.ejb.Remote;
import javax.ejb.Stateless;
import javax.naming.InitialContext;
import javax.naming.NamingException;
import javax.persistence.EntityManager;
import javax.persistence.EntityManagerFactory;
import de.public.test.domain.Test;


@Stateless(mappedName = "Test")
@Remote(TestBeanRemote.class)
public class TestBean implements TestBeanRemote, TestBeanLocal {

    private EntityManager em;

    @Override
    public void createData() {
          Test entityHello = new Test();
          entityHello.setInterneNummer(new Integer(1));
          entityHello.setName("test hello");
          em.persist(entityHello);
    }

    public TestBean() {
        try {
            EntityManagerFactory emf = (EntityManagerFactory) new
InitialContext().lookup("java:global/persistence-units/public-test");
            em = emf.createEntityManager();
        } catch (NamingException e) {
            e.printStackTrace();
        }
    }
}
```

Todays Typical Provisioning Process (ex.)



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Jürgen Hoffmann - Sr. Architect MW

IT Ops vs. Developers

IT Operations

- Be in Control
- Monitor Resources
- Governance
- Business Automation and Orchestration
- Responsible in case of Failure

Developers

- Test new Technologies
- Tight Deadline
- Responsible for Releases
- No Access to Production Systems
- Need Resources Quickly

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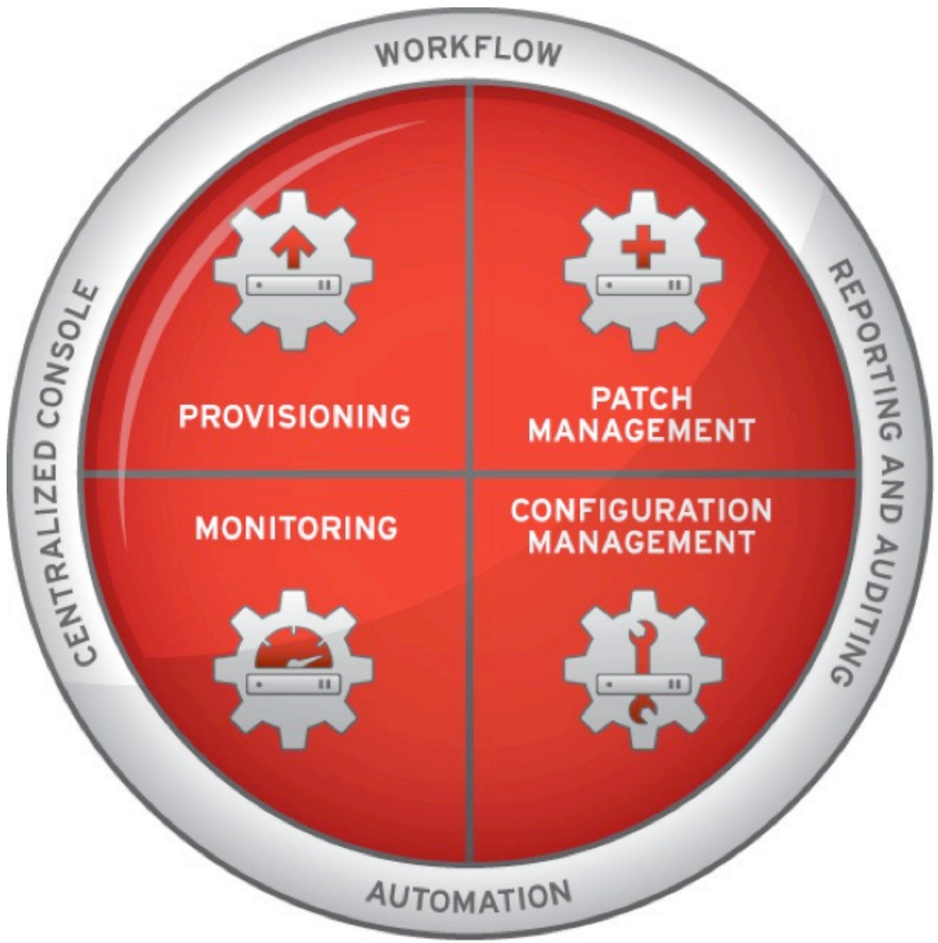
MW SOE for IT Ops



- Streamlining Provisioning Processes
- Simplify IT Operations
- Reducing Costs
- Better Planning

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Common Problems of IT Operations

- One Department per Problem Domain
  - IT Planning
  - IT Infrastructure
  - Networking Configuration
  - Server Administration
  - Virtualization
  - Enterprise Information Systems
  - Security
- Thinking in Silos
- Often outsourced
- Often Semi Automatic
- Often Long Running
- Takes Days or Weeks instead of hours
- Missing a broader Approach (Spanning the Silos)

What Developers want

Fast Deployment

Use instead of Setup

New Technology

Ad-Hoc Scenarios

Focus on Business Cases

Production Like Environment

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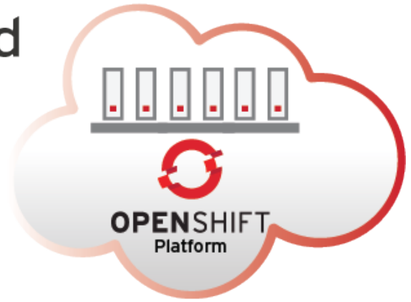
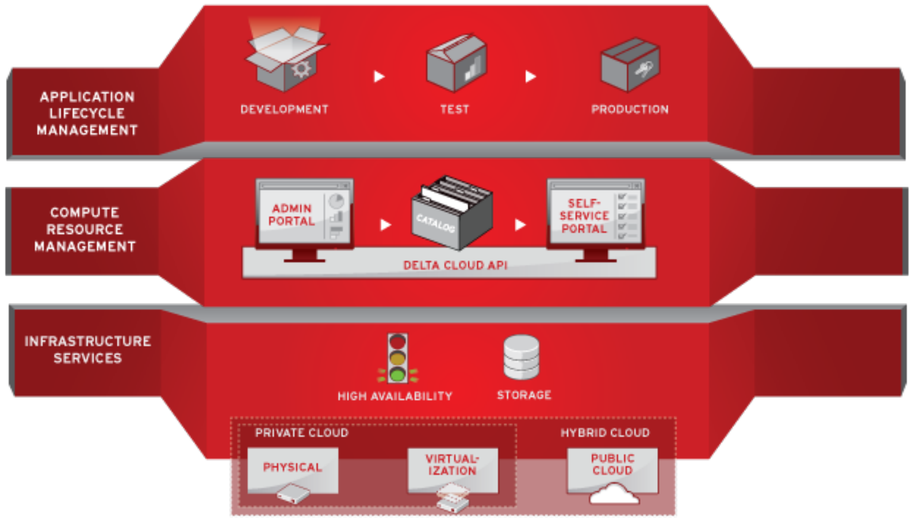
ITOps
Enterprise IT managed



CLOUDFORMS



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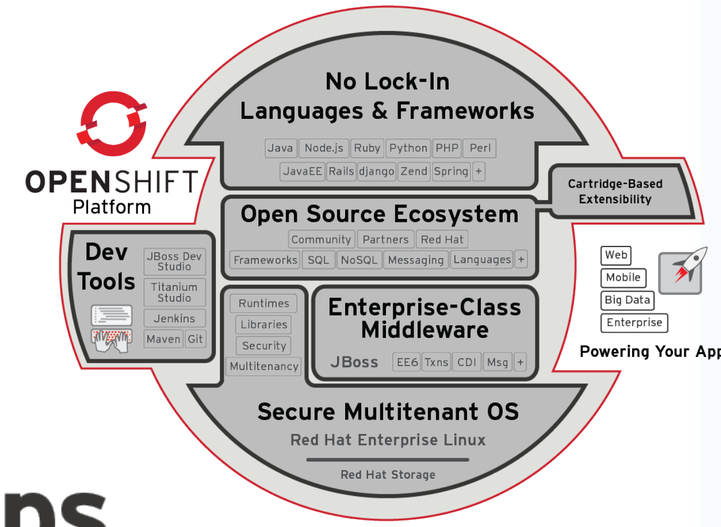
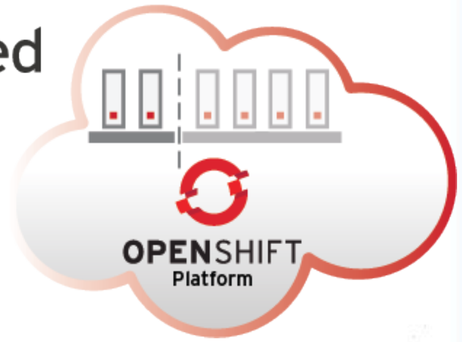


DevOps
Developer managed



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Red Hat: The Technology Provider

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Red Hat Consulting Pathways

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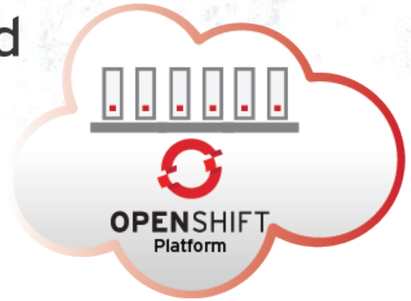
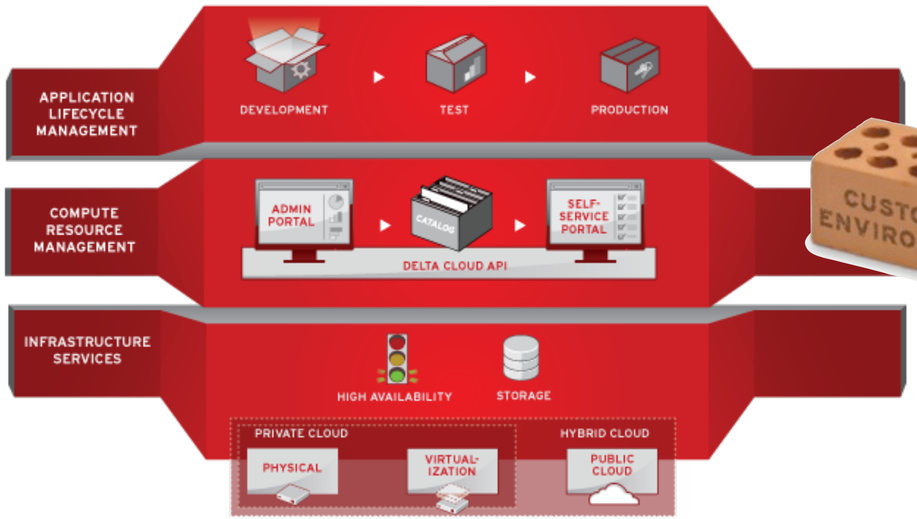
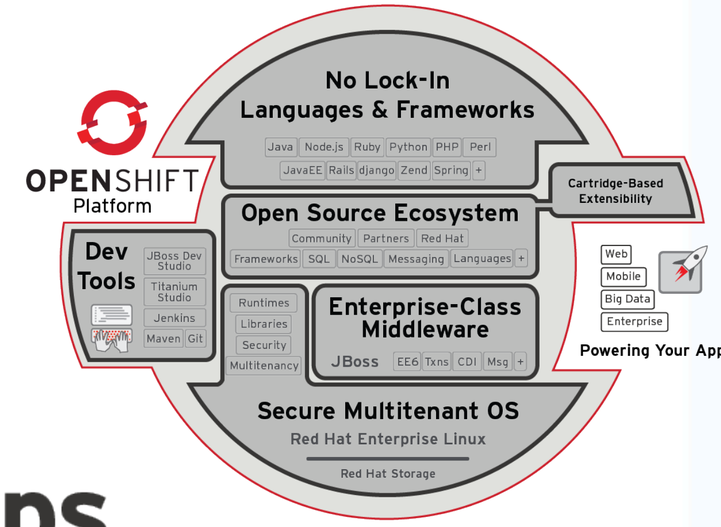
ITOps
Enterprise IT managed

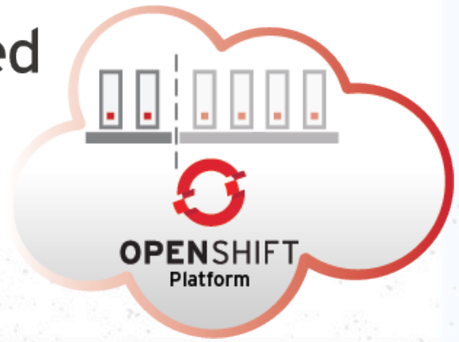


CLOUDFORMS





DevOps
Developer managed



Serge Pagop - Sr. Solution Architect MW
Jürgen Hoffmann - Sr. Architect MW

Q&A

Serge Pagop - Sr. Solution Architect MW
Jürgen Hoffmann - Sr. Architect MW