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JBoss in the Trenches

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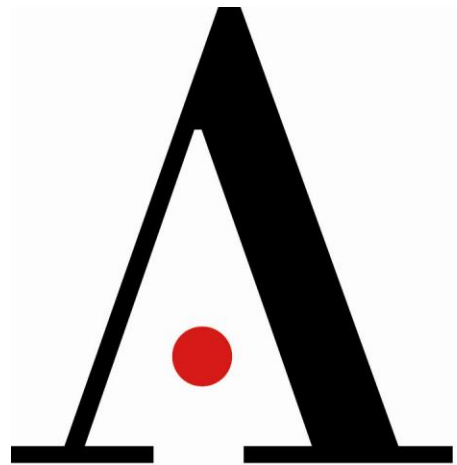Amentra, A Red Hat Company

May 5, 2011

Who We Are

Welcome to JBoss in the Trenches!

In this session, you'll learn about the best ways to configure and manage JBoss.

Why are these the best?

Configure and manage JBoss?

Agenda

- Introduction

- Versioning, Slimming, Architecture

- Deployments, Movement through Environments, Logging, and Security

- Performance Tuning, High Availability, Monitoring, Management

- Summary

- QA

Disclaimers!

1. Infrastructure Management for EAP 4/5

2. This presentation assumes you have a large, enterprise environment with an infinite amount of:

- **Time**

- **Money**

- **Resources**

Wait a second... Then why am I here?

No one has infinite time, resources and money!

Large or small, stick around because you'll learn:

- What makes successful shops successful
- Guidelines and ideals you should work toward

- Iterative Approach:

  - **Plan → Execute → Analyze → Repeat**

These recommendations may seem obvious!

- You may already be doing a lot of these things!

- Many of you do some of these things, few of you do all of these things.

Why we do the things we do...

- **Automation**

- **Security**

- **Performance**

- **Reliability**

- **Monitoring**

JBoss Versions

What version are you running?

```
INFO  [org.jboss.bootstrap.microcontainer.ServerImpl]
(main) JBoss (Microcontainer) [5.1.0 (build:
SVNTag=JBPAPP_5_1_0 date=201009150028)] Started in
1m:1s:32ms
```

JBOSS_HOME/lib/jboss-system.jar/META-INF/MANIFEST.MF:

```
Implementation-Title: JBoss [EAP]
Implementation-Version: 5.1.0 (build:
SVNTag=JBPAPP_5_1_0 date=2010091
 50028)
```

JBoss Versions

Enterprise Application Platform
vs.
Community Versions of JBoss

Configuration Storage Strategy

1. How many different JBoss configurations?

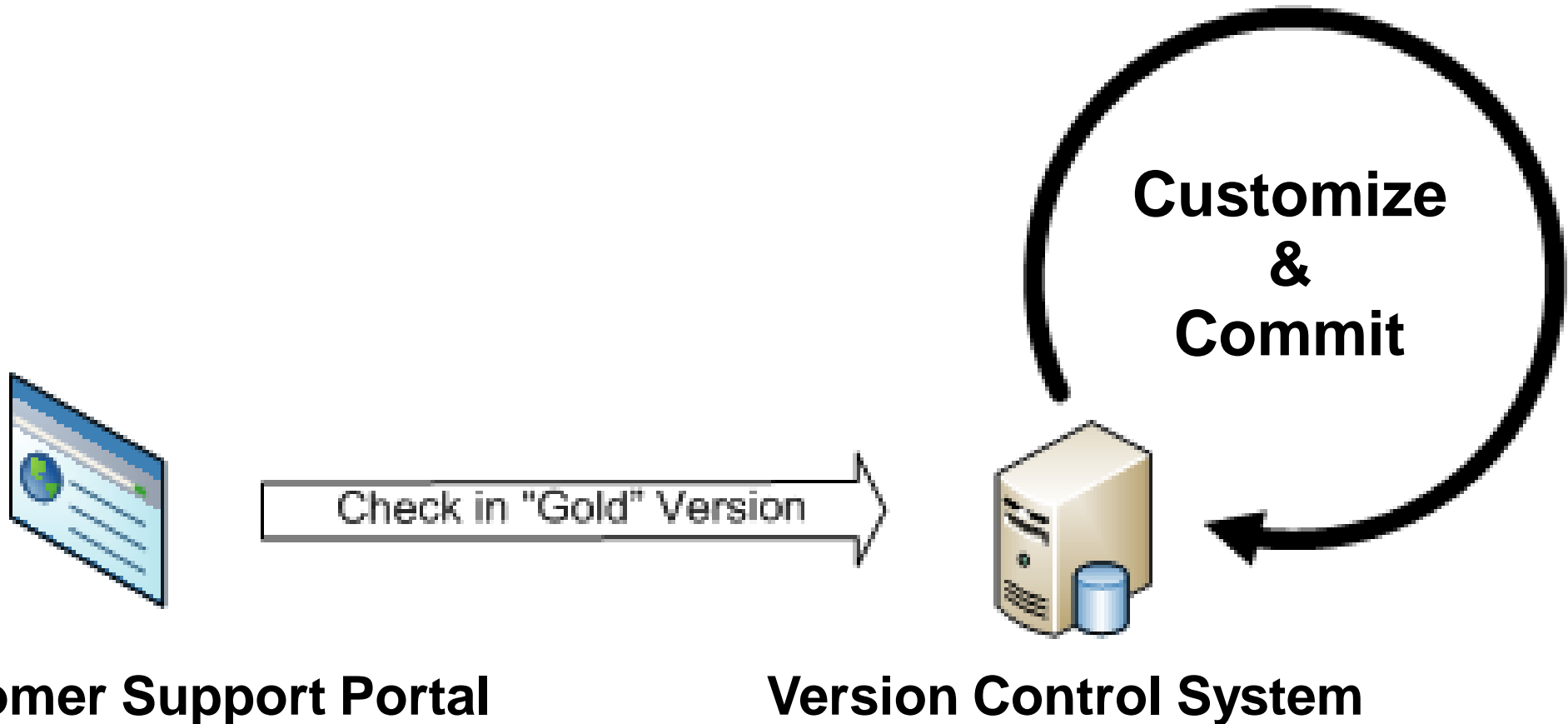**2. How frequently do your JBoss configurations change?**

Config Storage – 1st Approach

- Store "Gold Version" (freshly downloaded, MD5 sum verified) in a Version Control System (VCS)

- Commit all configuration changes to VCS

- Logic/Motivations stored in commit comments to VCS

- Branches for different environments / merge changes in VCS

Config Storage – 1ˢᵗ Approach

Customize & Commit

Check in "Gold" Version

Customer Support Portal

Version Control System

Config Storage – 2nd Approach

- Store "Gold Version" (freshly downloaded, MD5 sum verified) in a Version Control System (VCS)

- Changes are then applied dynamically on target server or a build server via an automated process

- Logic/Motivations stored in the automated process (scripts or rules engine)

Config Storage – 2nd Approach
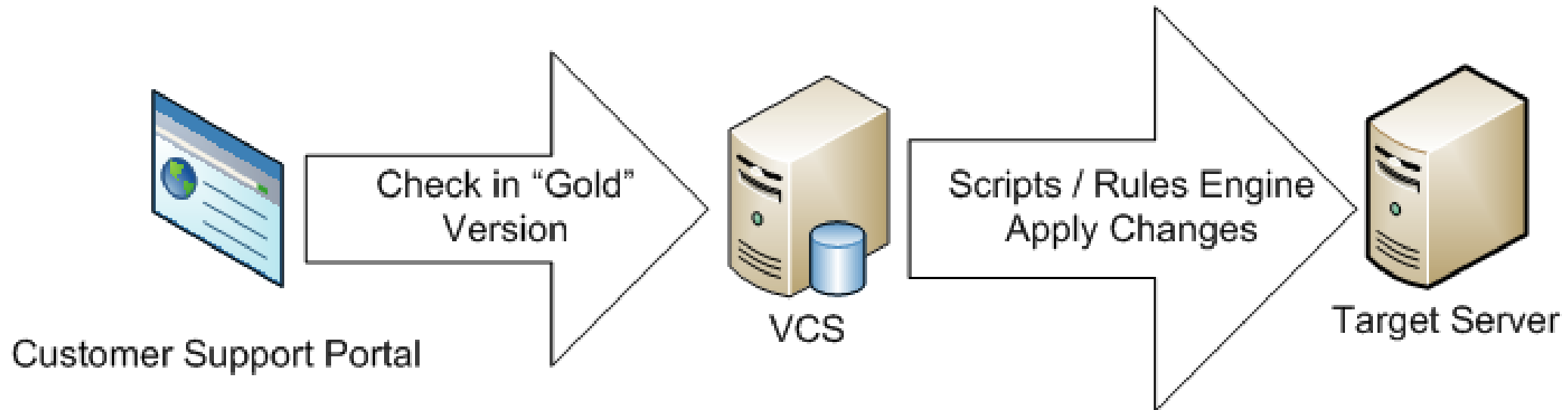
Storing Configurations

- Regardless of which approach you take be sure to parameterize all customized values

- Use application/environment specific properties files

- After deployment to target server, you shouldn't have to touch anything!

Upgrading JBoss

- Best to be on latest and greatest
    - BUT… check release notes for relevance

- Best way to upgrade:
    - Capture environment-specific configurations
    - Downloaded latest (newest version) of full EAP
    - Create new "gold version in VCS
    - Apply environment-specific changes
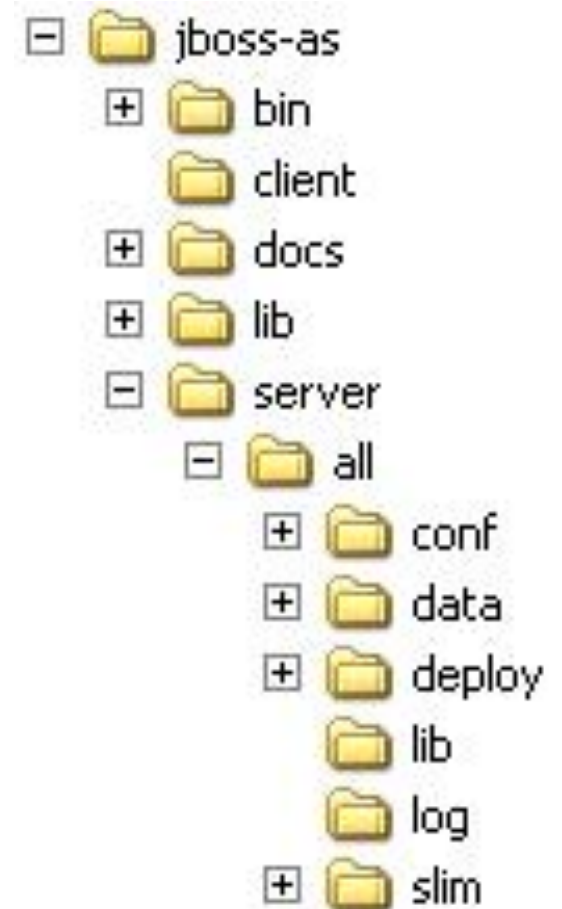
JBoss Cumulative Patches (CP)
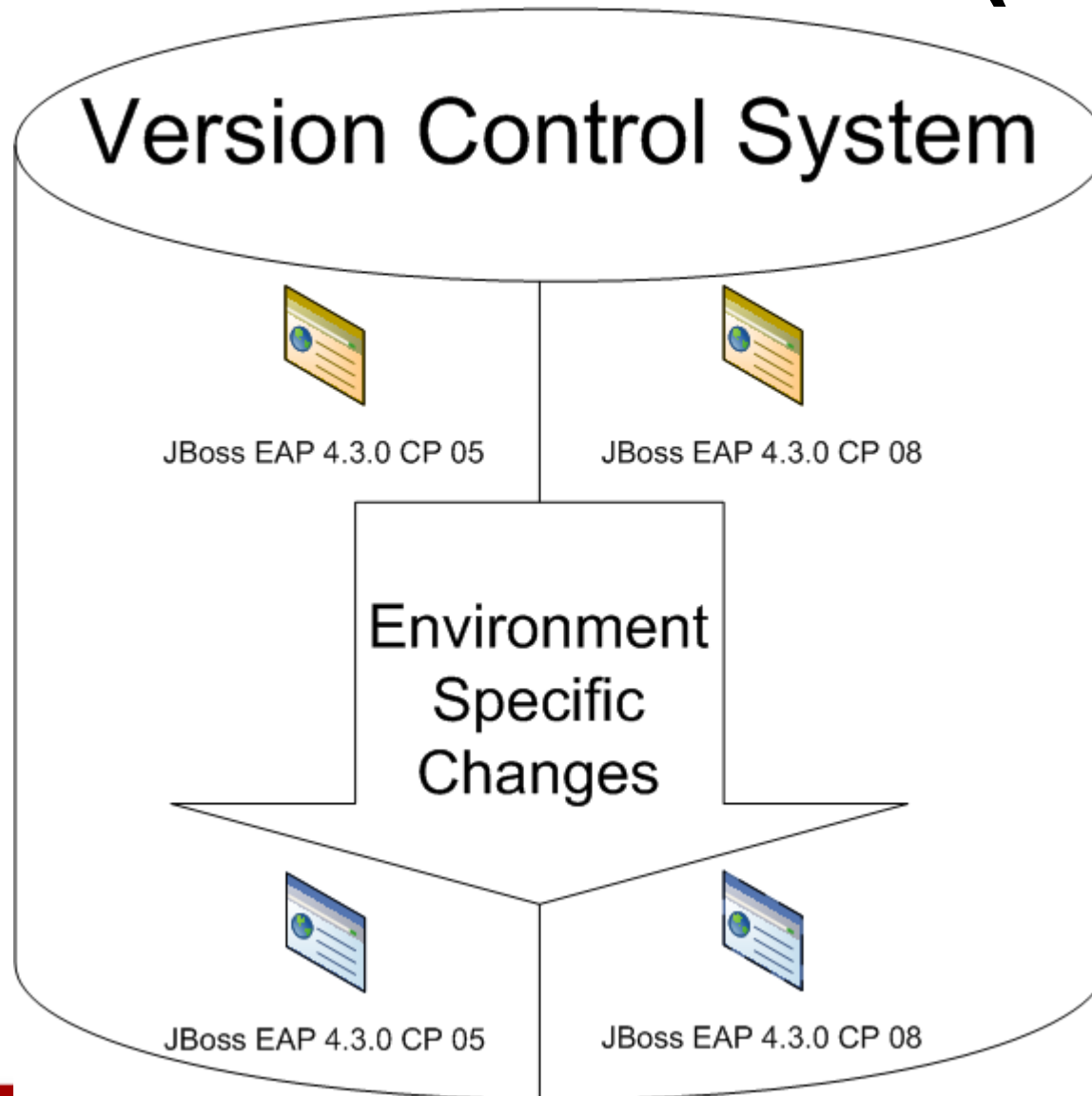
JBoss Slimming

- Lighter is better! Get rid of unused services!

- **Improve Performance**
  - Using less memory + resources boosts performance
  - Faster startup time

- **More Security**
  - Hard to hack an unused service or port!

JBoss Slimming Process

▪ Create "slim" folder outside of deploy

▪ Place unused .jars and service.xml files there.

▪What gets removed?
  ▪ Check the JBoss.org wiki
  ▪ Very application dependent.

▪ If you use VCS, no need to maintain "slim" folder

```
[-] 📁 jboss-as
  [+] 📁 bin
      📁 client
  [+] 📁 docs
  [+] 📁 lib
  [-] 📁 server
    [-] 📁 all
      [+] 📁 conf
      [+] 📁 data
      [+] 📁 deploy
          📁 lib
          📁 log
      [+] 📁 slim
```

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Trenches to... The Cloud?

If you follow all of these practices, you'll be better prepared for the cloud.

- Modular configurations support dynamic provisioning

- Software loadbalancers allow for zero-conf node addition/removal

Questions?
Comments?
Suggestions?

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Running Multiple JBoss Instances on One Server

Sometimes, no luxury of running one JBoss instance per box..

Usually, less is better
- Less IO on file system
- Less CPU Slicing
- Less file locking

Running Multiple JBoss Instances on One Server

If you must, you can either:
- Bind to different IPs **(recommended)**

- Bind to same IP using
  - Use Service Binding Manager to manage ports

Application Environments

Development   QA   Integration   Staging   Production

- Ideally, no shared resources
  - E.g., front end load-balancers, web servers, databases, other integration systems

- Ideally, staging (and perf. test) mimic production

Automated Deployment to Environments

1. Check out latest configuration from VCS
2. Apply environment specific changes
3. Deploy to environment

Ideally, you have script or tool to automate this

- No manual changes ever! *
- Ideally, a tool provides an audit trail

* Except in the "lowest" development environment
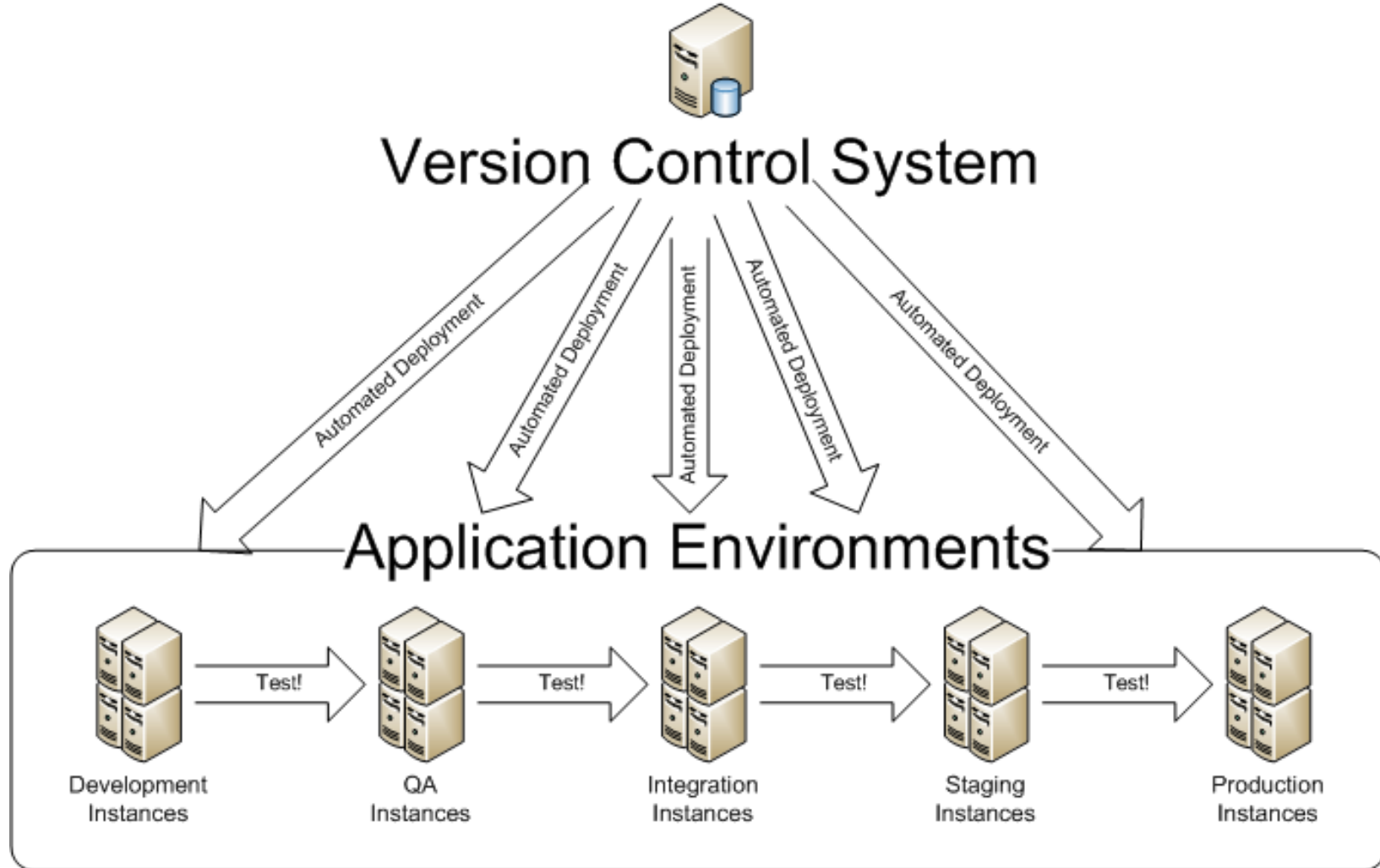
Movement Through Environments

For both JBoss configurations and application code:

- No manual changes ever! *
  - Criticality of using auto-deploy from VCS

- Test in each environment before promotion!

* Except the "lowest" development environment

Movement Through Environments

Logging

- Different setting for different environments

- Less verbose as environments get closer to production

- Define robust log rolling policies

- If necessary, back up historic logs

Security

- Secure JMX invokers

- Secure Admin consoles and remove them in production

- Eliminate clear text passwords in files:
    - Datasources
    - LoginModules
    - Tomcat Connectors

Security

- Remove unused services and ports

- Use "jboss" user that owns JBoss folders and files - run.sh must be run by this user

Questions? Comments? Suggestions?

Performance + HA Testing

- Peace of mind

- Plan the test, test the plan (stick to it!)

- Enterprise monitoring must be in place

- First, establish target performance profile

- Then, establish a baseline

Performance + HA Testing

- When testing, BE SCIENTIFIC

- Do NOT forget endurance testing

- Do NOT forget failover scenario testing

- Remember, use VCS for all changes

Performance + HA Testing

- HA architecture must consider:
    - Front end load balancers
    - Webservers
    - Application servers
    - Databases
    - Other integration points

- Consider all failure scenarios to achieve HA

JBoss Clustering for HA

- JBoss Clustering
  - Doesn't usually improve performance, in fact, it's usually the opposite (caching notwithstanding)

- Different clustering approaches:
  - Session sharing and tomcat clustering for web applications
  - Stateless session bean clustering
  - Stateful EJB3 entity beans

Monitoring

- Necessary in any load testing and production environment

- Plethora of tools exist

- Must be able to monitor:
    - OS level health including CPU usage, swap space
    - Active threads on application server
    - Front end http/ajp web connector threads
    - Database connection pools
    - JVM Metrics such as memory usage and GCs

Management

- Alerts, Alarms, and Automated Actions (oh my!)

- Must define plan for operations management

- Need a documented process flow for all possible environment issues

- User roles/permissions for given management tool or access to servers.

Conclusion

- Today, we have discussed ideal principles

- Illustrative of a widely tested, proven approach

- Consistency and repeatability

- Time + effort = efficiency + agility + reliability

Questions?
Comments?
Suggestions?

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http://j.mp/Trenches2011

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