Orchestrating the Continuous Delivery Process

CD Summit – London – 2015

@apemberton
2015-06-23
“Software is eating the world.”

“Every business is in the software business.”

“It’s an application economy.”
GPS
GPS of the Future
How Do You Deliver Better Software Faster?

Dev → Prod
Automation is the Key
Continuous Delivery (CD) Applies Automation to the Application Lifecycle

Dev

Commit → Build → Test → Stage → Deploy

Prod

Feedback Loop
CD Starts with Continuous Integration (CI): Automating Application Build and Test
CD Then Extends Automation Across the Lifecycle
What’s my application lifecycle anyway?

• Automating your app lifecycle starts by… mapping out the process!

• Map out every step along the way

• Lots of talking & discovery

• “Distilling” key information from brains into a process
Leverage Your Team

• Transformations are taking place across the globe (Agile, CI/CD, etc.)

• Key roles are changing, too (traditional QA to SDET / Test Engineer)

• Spot talent, re-train, and re-tool
  – Example with BDD
But remember…

• You might be forced to re-architect the way you do things…

• But don’t use this as a “must have” to get started, get velocity first!

• Focus on covering the full lifecycle as is, and THEN focus on improving hot spots: don’t stop somebody who’s running!
CD Then Extends Automation Across the Lifecycle
Implementing your CD pipeline

• You need an ORCHESTRATION ENGINE
  – Highly stable (HA, robust, etc.)
  – Able to run at scale (hundreds of nodes at least)
  – Able to operate sophisticated pipelines, with a sophisticated semantic
  – It will hold your application lifecycle “IP” ➔ what’s your cost of exit?

• You need INTEGRATIONS (LOTS of them)
  – CD *is* about integrating with 3\(^{rd}\) party frameworks/systems/servers
  – Think about it: build, load testing, UX testing, mobile testing, staging environments, deployment tools, etc.
  – If a build tool isn’t integrated w/your orchestration tool, what can you do?
With Workflow, Jenkins is Now Your Key to Continuous Delivery

Continuous Delivery

Commit | Build | Test | Stage | Deploy

Developer

Code Commit

Source Code Control System

Code Scan

Compile /Build

Tests

Deploy Stage

Deploy Prod

Complex Delivery Pipelines

Delivery of App and Config
Workflow Enables Pipelines for Application Code

Continuous Delivery

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Source Code Control System

Code Commit
Workflow Pipelines – Complex and Robust

Pipelines Need:
- Branching
- Looping
- Restarts
- Checkpoints
- Manual Input
Workflow Pipelines – Testing is Critical

- Unit Tests
- Quality Tests
- Functional Tests
- System Tests
- Integration Tests
- Security Tests
- Performance Tests
Key Workflow Features

• Sophisticated pipeline semantic
  – For loops, try-finally, fork-join …

• Can restart Jenkins while flow is running

• Allocate slave nodes and workspaces
  – As many as you want, when you want

• Stages throttle concurrency of builds

• Human input/approval integrated into flow

• Standard project concepts: SCM, artifacts, plugins
Executing, Monitoring, and Providing Feedback

Continuous Delivery

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Code Commit
Workflow Stage View Enables CD Pipeline Monitoring

- Branching
- Looping
- Restarts
- Checkpoints
- Manual Input
CloudBees Jenkins Workflow Stage View

Restartable Checkpoints
This Workflow run can be restarted from the following Checkpoint(s):
- Delete
- Restart
- ENTER QA
- Delete
- Restart
- CHOOSE TO ENTER STAGING

Artifact Downloads
Produced the following 2 artifact(s):
- src.tar (417.50KB)
- petclinic.war (28.04MB)

Average stage times:
(Average full run time: ~1min 10s)

<table>
<thead>
<tr>
<th>Build</th>
<th>Quality analysis and Perfs</th>
<th>QA</th>
<th>Staging</th>
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<tbody>
<tr>
<td>13s</td>
<td>43s</td>
<td>8s</td>
<td>40s</td>
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Almost complete
Over 1000 Jenkins Plugins for Tool Integration

- Automated API-based testing frameworks, static code analysis tools.
- Source code control systems and related asset management tools.
- Integrated Development Environments (IDEs), editors/compilers/debuggers, code review and collaboration tools.
- Automated API-based testing frameworks, static code analysis tools.
- Load & Security Tests
- Load Testing Tools and Security Scanning technology
- Unit Tests
- Build & Integrate
- Commit
- Develop
- Release (to Test)
- Release (to Prod)
- User Acceptance Tests
- Automated and manual UAT tools
- Release management, release automation, and change control software.
- Environment and Configuration Management Software
Jenkins is the Hub of the CD Ecosystem

- Commit
- Build
- Test
- Stage
- Deploy
- Run

Plug-ins for all your tools

On-premise or in the cloud
Leading the Charge on CD Support for Containers

Containers & Jenkins

- Docker plugins: June 18
- Kubernetes plugins: July

Workflow Support

- DSL for Docker and Kubernetes
- Improve pipeline visualization across organization
Jenkins, CD, & Lightweight Containers (Docker)

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**Source Code (git, etc.)** + **Certified Docker Images (Ubuntu, etc.)** → **Company “Gold” Docker Img (~per app)**

**Triggers:**
- New application code (i.e. feature, bug, etc.)
- Updated certified stack (security fix in Linux, etc.)

... will lead to a new gold image being built and available for...

- **TESTING**
- **STAGING**
- **PRODUCTION**

All taking place in a standardized/similar environment
CloudBees Jenkins Platform

Private

Enterprise Edition

Team Edition

Jenkins Core

Public

CloudBees Jenkins Platform in the public cloud

- Elastic Scale for Jenkins
- Professional support for Jenkins
- Elastic and scalable
- Pay for what you use
- No software to install or maintain
- Test resources also available

Support & Services

- Support
- Professional Services
- Training
- Security Advisories
- Newsletters
CloudBees Jenkins Platform

Abstract Complexity – Get a Cluster View

Operations at scale
• Apply operational changes across all masters/slaves at once
• Manage plugins centrally (white/black lists)

Security
• Apply centrally defined & robust role-based access control

Analytics
• Centrally collect CI/CD metrics from the entire cluster

Elastic Build Environments
• Leverage cloud infrastructure (private & public) to create shared elastic build pools

And much more…
Example: Monitoring, Visualization and Analytics

Jenkins Workflow Stage View – Visibility into Pipeline status

Jenkins Analytics – Cross-Team Build Analytics

... among many other features, tailored for enterprise organizations using Jenkins @ scale
It’s an application economy

“Every business is in the software business.”

### M – XL Enterprises Across All Industries

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<th>Embedded / Others</th>
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Additional Jenkins Services from CloudBees

Jenkins Certified Training
• Delivered via CloudBees partners

Jenkins Consulting
• Delivered via CloudBees Professional Services Team

Jenkins Newsletter
• Community news and expert tips

Jenkins User Conferences
• Learn from other community members
Thank You!

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