A Next-Gen Continuous Integration Solution
to Improve Software Delivery

Arnold Bechtoldt

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› Software-Defined Datacenters
› Infrastructure as Code
› Continuous Integration/Delivery
› High Availability & Scale-Out
Scenario
The Product

› Groupware system
› Several components/languages/teams/feature sets
› Advanced architecture
## Test Matrix

<table>
<thead>
<tr>
<th>Feature Set</th>
<th>v1</th>
<th>v2</th>
<th>v3</th>
<th>v4</th>
<th>...</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rails-FE</td>
<td>X</td>
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<tr>
<td>Mail-MW</td>
<td>X</td>
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<tr>
<td>Calendar-MW</td>
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<td>X</td>
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<tr>
<td>DBMS</td>
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<td>X</td>
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<tr>
<td>K/V 1</td>
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<td>X</td>
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<td></td>
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<tr>
<td>K/V 2</td>
<td></td>
<td>X</td>
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<tr>
<td>MDA Mail-Store</td>
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<tr>
<td>MDA IMAP/POP Proxy</td>
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<tr>
<td>Mail-FTS</td>
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<td>MTA Mail-In</td>
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<tr>
<td>MTA Mail-Out</td>
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<tr>
<td>Customer Feature Set 1</td>
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<td>Customer Feature Set 2</td>
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<tr>
<td>Customer Feature Set 3</td>
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<tr>
<td>Customer Feature Set 4</td>
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</tbody>
</table>

...
Stories from Real World
We can’t run integration tests in parallel.
Running all of our tests takes ages.
Our integration tests are fragile.
Producing a bugfix release is hard work.
Time For A Plan
The Plan

- Git-Pushes go to feature/bugfix branches
- Every Git-Push triggers a test
- Tests run in prod-like environments
- Tests run in isolated/dedicated environments
- Automate (almost) everything
- Increase & maintain (infra) test coverage
The Plan: Building A Private Travis CI Clone
CI Pipeline

Git Push

Gitlab

Jenkins

Jenkins

Master

Hooks

Docker-Compose

Status Report

Job Groovy DSL

Jenkins

Jenkins

Jenkins

Jenkins

Artifactory

Dockerfile + Bash Script

confd

Mac OS/Linux/Windows User

Parallelization (MatrixJob)
<table>
<thead>
<tr>
<th>Tool</th>
<th>Purpose</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gitlab</td>
<td>Git Repository Server</td>
</tr>
<tr>
<td>Docker</td>
<td>Container <em>Technology</em></td>
</tr>
<tr>
<td>Bash + Confd</td>
<td>Image/Container Configuration</td>
</tr>
<tr>
<td>Docker-Compose</td>
<td>Container/Service Management</td>
</tr>
<tr>
<td>Artifactory</td>
<td>Artifact Repository</td>
</tr>
<tr>
<td>Jenkins</td>
<td>CI Pipeline</td>
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</tbody>
</table>
Conclusions

- Don’t underestimate the effort for CI/CD preparation
- Isolated integration testing at ludicrous speed
- Infrastructure as Code improves documentation
- Similarity to production leads to faster bugfixing
- Parallel testing increases work efficiency
A voice in my head..
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Q&A
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