Performance Testing in Continuous Delivery Pipelines



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Importance of CI and CD

- Machine time costs nothing, human time priceless
- De-facto winning practice
- Most advanced teams go with CD
- A lot of teams are still in process of adopting it



Agenda

- 1. Things we put into CI
- 2. Best practice (for now)
- 3. Challenges of testing in CI
- 4. Jenkins for Performance Testing

Things we put into Cl

Triggering and Preparations

- When to do the job
- VCS checkout + dependencies checkout
- Building project (compiling etc.)
- Put resulting packages into repos

Quality Control

- 1. Static code analysis
- 2. Unit tests
- 3. Functional tests
- 4. Performance tests_

needs deployment

Deployment

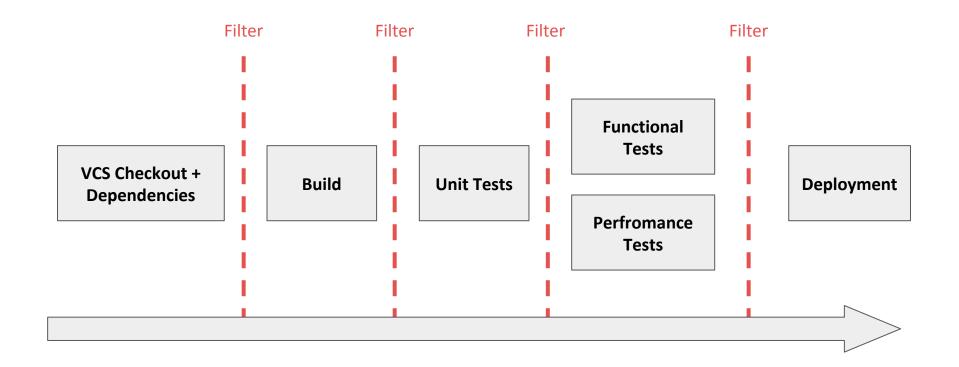
- To QA environment (for further manual tests)
- To staging environment
- To production environment



The Best Practice



One Way Road (Driverless)



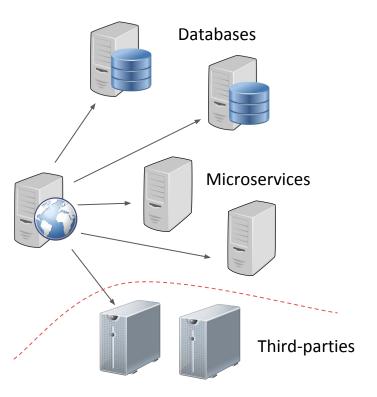
VCS-Driven Pipeline

- Natural evolution of CI systems
- Branching and pull requests
- Jenkins 2.0 pipelines
- Taurus Tool as part of this approach

Why testing is challenging in Cl

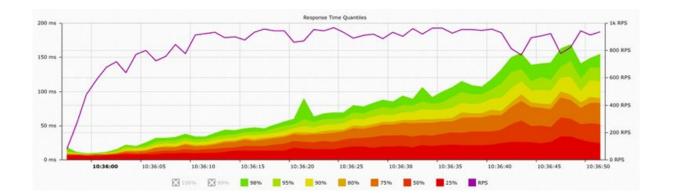
Challenge #1: Test Environment

- Applications are complex
- Lots of dependencies
- Third-party systems



Challenge #2: Time Consuming

- Preparations
- A lot of functional tests
- Performance tests are naturally long



Challenge #3: Debugging CI Jobs

- Evolving test complexity
- Debugging and troubleshooting
- Build history is a value

| #32 | 01.09.2016 16:15 |
|--------------|------------------|
| #31 | 23.08.2016 20:05 |
| <u>) #30</u> | 18.08.2016 12:25 |
| #29 | 18.08.2016 11:56 |
| <u>) #28</u> | 08.08.2016 17:05 |
| i #27 | 07.08.2016 11:35 |
| #26 | 12.07.2016 12:05 |
| #25 | 05.07.2016 22:40 |
| #24 | 05.07.2016 22:25 |
| #23 | 17.06.2016 16:25 |
| #22 | 08.06.2016 14:35 |
| #21 | 01.06.2016 15:55 |
| #20 | 31.05.2016 17:35 |
| #19 | 04.05.2016 13:35 |
| #18 | 25.04.2016 14:35 |
| #17 | 14.04.2016 15:15 |
| #16 | 11.04.2016 16:35 |
| | |

Challenge #4: Results Analysis

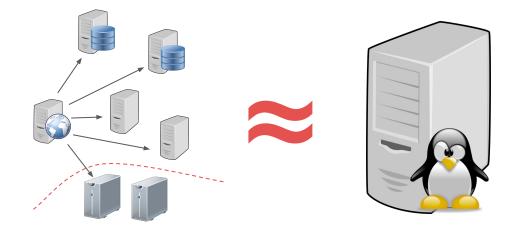
- Rich reporting needed
- Jenkins UI has its limits
- Automated decision making for CD
- Collaboration for non-tech people



Overcoming Challenges

Overcome: Test Environment

- Containers help (you have to use containers :)
- You don't need to be as realistic

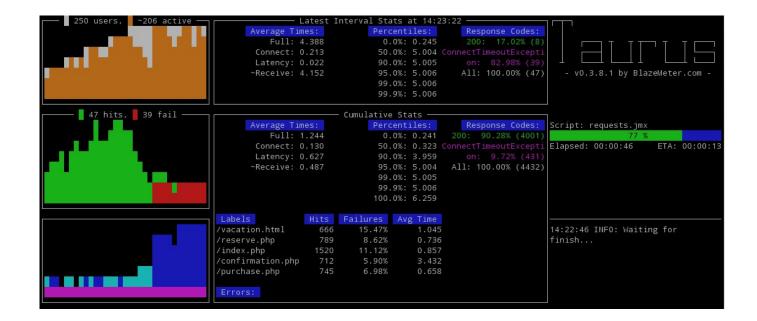


Overcome: Time Consuming

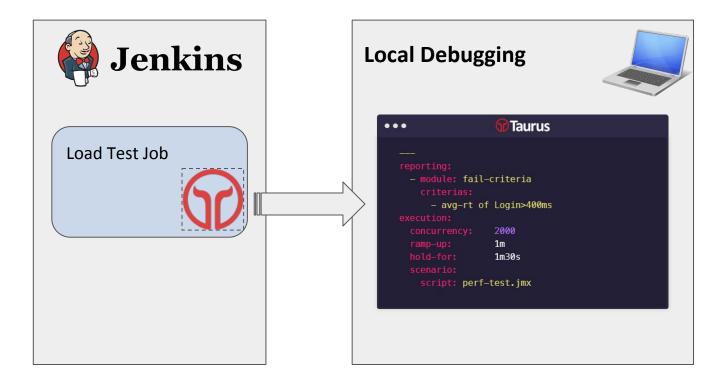
- Prepare what you can upfront in the night
- Reuse what you can
- Short tests can reveal a lot of things
- Don't try to put spike and endurance tests into CI
- Parallelize tests, Jenkins 2.0 or Taurus helps

Overcome: Debugging and Improving

• Taurus Tool, the handheld piece of CI



Overcome: Debugging and Improving



Overcome: Reporting & Result Consumption

- Purpose-built services with integrations
- Overview & Status in Jenkins



Overcome: Decision Making

- Deploy to staging is great win
- Have pass/fail criteria, including APM info
- It's ok to have deploy as separate job

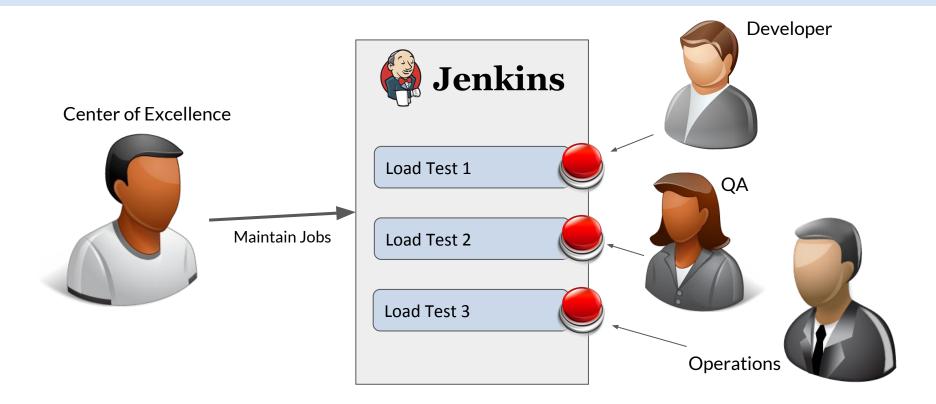
(for UAT, to avoid disruptions)

Jenkins for Performance Testing

Why Use Jenkins for Testing?

- Multi-step process
- Long process
- Repetitive process

Start Simple

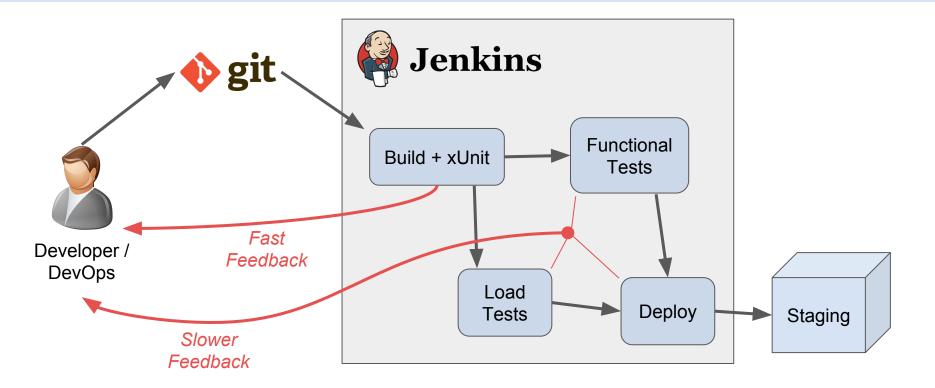


Become Continuous

- Periodic jobs have many applications
- Have valid failure criteria (thresholds)
- Use non-blocking downstream jobs



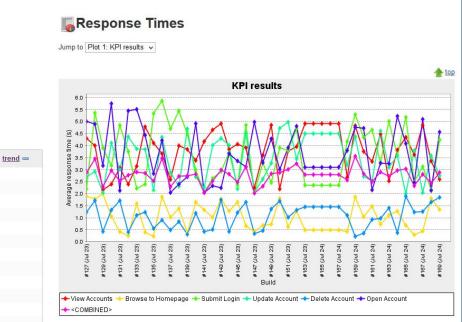
Pursue Continuous Delivery



Some Useful Plugins

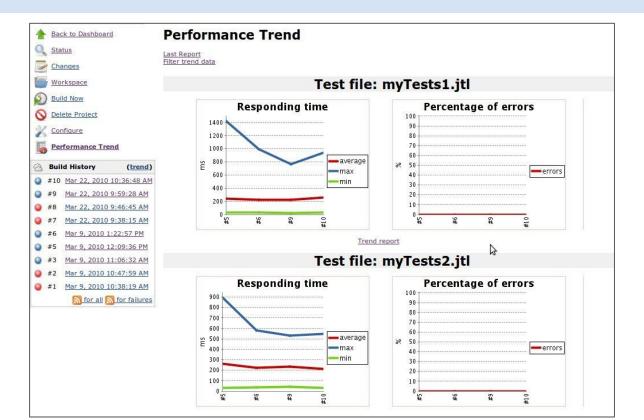
Plot Plugin

| 摿 Back t | o Dashboard |
|---------------|-------------------|
| 🔍 Status | |
| 🔁 Chang | es |
| Works | pace |
| - | vith Parameters |
| O Delete | |
| | |
| X Config | ure |
| Plots | |
| | |
| a Buile | History |
| #169 | 24-Jul-2015 12:51 |
| #168 | 24-Jul-2015 12:49 |
| #167 | 24-Jul-2015 12:45 |
| #166 | 24-Jul-2015 12:36 |
| #165 | 24-Jul-2015 12:21 |
| #164 | 24-Jul-2015 12:06 |
| #163 | 24-Jul-2015 11:51 |
| #162 | 24-Jul-2015 11:36 |
| #161 | 24-Jul-2015 11:21 |
| #160 | 24-Jul-2015 11:06 |
| #159 | 24-Jul-2015 10:51 |
| #158 | 24-Jul-2015 10:36 |
| #157 | 24-Jul-2015 10:21 |
| #156 | 24-Jul-2015 10:06 |
| 🥥 <u>#155</u> | 24-Jul-2015 09:51 |
| #154 | 24-Jul-2015 09:36 |
| #153 | 23-Jul-2015 19:51 |



| Build # | View Accounts | Browse to Homepage | Submit Login | Update Account | Delete Account | Open Account | |
|---------|---------------|--------------------|--------------|----------------|----------------|--------------|-------|
| 169 | 2.6 | 1.347 | 4.238 | 2.741 | 1.841 | 4.561 | 2.888 |
| 168 | 3.355 | 1.802 | 2.17 | 3.574 | 1.645 | 2.134 | 2.447 |
| 167 | 4.86 | 0.433 | 3.119 | 2.038 | 1.259 | 5.099 | 2.801 |
| 166 | 3.619 | 0.29 | 2.513 | 3.796 | 1.236 | 2.468 | 2.32 |
| 165 | 4.351 | 0.682 | 5.181 | 2.008 | 1.892 | 4.083 | 3.033 |
| 101 | 0.000 | 1.000 | 0.570 | 0.570 | 0.007 | LE 000 | 0.074 |

Performance Publisher Plugin



BlazeMeter Plugin



ALL - Users — ALL - Hit/s Total — ALL - Avg - Response Time — ALL - Hit/s Errors

Taurus Tool

- Why not plugin, but command-line tool
- Universal plug for tests inside Jenkins
- Taurus designed to work with other Jenkins plugins





Final Summary

- 1. We have to test inside CI
- 2. There are ways to start it simple
- 3. There are tools & plugins to help
- 4. Jenkins 2.0 pipelines FTW!

Thank you! Any questions?

