JenkinsOps @ NPR

An Initiative to Streamline & Automate Jenkins

Presented by Paul Miles & Grant Dickie
For Couples Skipping The Ring, It Pays To Plot Out Finances

As couples live together in greater numbers, old rules about how to divide finances and plan for the future don't quite fit the modern family. Experts offer financial tips for unmarried couples.

Attention Students: Put Your Laptops Away

Researchers Pam Mueller and Daniel M. Oppenheimer found that students remember more via writing notes longhand rather than on a laptop. It has to do with what happens when you're forced to slow down.
More About Us

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- 10+ Year Codebases
- Multiple Scrum teams
- Record setting growth and usage of our services
- Growing team
  - Hiring of a test automation engineer
  - More rigor in development practices
- Various initiatives
  - Scale
  - Separation of services & site code
  - More frequent deployment
Enabler: Major Investments in Testing
Image excerpted Martin Fowler's TestPyramid article
Jenkins

One Tool at the Center of it All
JenkinsOps to the Rescue
Overview of Building and Testing

Codebase

- BuildJob
- UpdateJob
- Stage Server

Stage Server-specific Test Master

Integration Test

UnitTest
Required Elements

- Comprehensive reporting via One-test-One-job
- Dynamically create jobs on the fly based on codebase + server hostname
- Notifications
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Plugins for Job Organization

- Multijob
- Folders
- Custom View Tabs
- Nested View
In comes Job DSL

```java
Config.jobs.each { _job ->
    switch (_job.type) {
        case 'job':
            job(namePrefix + _job.name) {
                logRotator(CarbonApiProps.num_days_to_keep, CarbonApiProps.num_builds_to_keep,
                           CarbonApiProps.num_artifacts_days, CarbonApiProps.num_artifacts)
                throttleConcurrentBuilds {
                    categories([carbonThrottleCategory])
                }
                if (userName && _job.remoteCommand) {
                    steps {
                        /**
                         * Replacing remoteShell with publishOverSsh
                         */
                        publishOverSsh {
                            failOnError(failOnError = true)
                            server(userName) {
                                retry(retries = 1, delay = 10000)
                                verbose(verbos = true)
                                transferSet {
                                    execTimeout(600000)
                                    execCommand(_job.remoteCommand)
                                }
                            }
                        }
                    }
                }
            }
        case 'test':
            test(namePrefix + _job.name) {
                steps {
                    /**
                     * Replacing remoteShell with publishOverSsh
                     */
                    publishOverSsh {
                        failOnError(failOnError = true)
                        server(userName) {
                            retry(retries = 1, delay = 10000)
                            verbose(verbos = true)
                            transferSet {
                                execTimeout(600000)
                                execCommand(_job.remoteCommand)
                            }
                        }
                    }
                }
            }
        case 'pipeline':
            pipeline(namePrefix + _job.name) {
                stages {
                    stage('Test') {
                        steps {
                            publishOverSsh {
                                failOnError(failOnError = true)
                                server(userName) {
                                    retry(retries = 1, delay = 10000)
                                    verbose(verbos = true)
                                    transferSet {
                                        execTimeout(600000)
                                        execCommand(_job.remoteCommand)
                                    }
                                }
                            }
                        }
                    }
                }
            }
    }
```
Automated Creation of Tests via File Traversal

Website codebase

WebsiteJobCreate

WebsiteConfigCreate

qa/ (copied)

qa/

WebsiteCodebaseJob

Stage1_Website

Stage1_WebsiteMasterJob

Stage1_Website_Php1Test

Stage1_Website_Php2Test

Stage1_Website_Php3Test

Stage1_Website_Php4Test
From another viewpoint...

Github Commit initiates CI

Jenkins Build Server

Build job started

Job done, notifies QA server

Staging server

Uploads code to staging server

Jenkins QA Server

MasterCodebaseJobs

JobConfigCreate, JobCreate jobs

Jobs triggered with codebase, environment, etc.

MasterTestJobA

MasterTestJobB

Generates jobs based on file traversal of PHPUnit/Junit directory (from latest commit)

Test jobs run against staging server specified in build trigger job.
Each Environment Folder is Self-Contained

StageX_Codebase

StageX_Tests
- Test1
- Test2
- Test3

StageX_Master
- StageXMasterTestJob

StageX_CI
- StageXMasterCodebaseJob
- StageXConfigCreate
- StageXJobCreate

POST received from build server
RunTestsJob
Auto-detects that folder is already built and triggers master job.
Welcome to Higgins!
Test environment for Stage4_WWW. Uses server cms@stage4.npr.org:22. Branch: dev

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Welcome to Higgins!
Test environment for Stage4_WWW. Uses server cms@stage4.npr.org:22. Branch: dev

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How Did it Go? And Now What?
Challenges

- Resurrection of the tests
  - Reliance on the test automation engineer to share results
  - Forever disabled tests
- Environment issues
  - Production vs. UAT vs. stage environment servers
- Culture issues
  - Education of development team
Challenges, continued

- ● Oopsies
  ○ Automated deletion of tests
  ○ Disk space / Memory / “Jenkins Scale” issues
- ● Implicit Oopsies:
  ○ All the parameters
  ○ Too much ‘noise’
Future Work

- One button click to create testing environment & tests
- ChatOps
- Claims
Your Presenters

Grant Dickie
https://twitter.com/jgrantd

Paul Miles
https://twitter.com/milespj
Questions