

Jenkins Job DSL

Configuration as Code



- **Introduction**
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- **Job DSL**
- **Questions**



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- AOE GmbH - June 2013
- DevOps/Automation
- TYPO3.org, Crawler
- Golf, #t3runners

 @tomasnorre





We are the champions

- Team FourSquare





I have been running marathons
- but still I consider myself being lazy!



What is Jenkins?





**The leading open source automation server,
Jenkins provides hundreds of plugins to support
building, deploying and automating any project.**

- <https://jenkins.io/>



What can we use Jenkins for



- Run Unit tests
- Build docker images
- Build artifacts
- Deploy website/applications
- Publish TER Extensions on Git-tag
- etc.



Create a Jenkins job

The screenshot shows the Jenkins web interface. At the top, there is a navigation bar with the Jenkins logo, a search bar, and user information for 'Tomas Norre Mikkelsen'. Below the navigation bar, the page title is 'Jenkins > T3EE16-JENKINS'. On the left, there is a sidebar with various Jenkins management links: New Item, People, Build History, Edit View, Delete View, Project Relationship, Check File Fingerprint, Manage Jenkins, My Views, and Credentials. The main content area is titled 'T3EE16-JENKINS' and contains a message: 'This view has no jobs associated with it. You can either [add some existing jobs](#) to this view or create a [new job](#) in this view.' There are also sections for 'Build Queue' (No builds in the queue) and 'Build Executor Status' (1 Idle, 2 Idle). The overall theme is white with dark blue header elements.



Every configuration is XML

```
<?xml version='1.0' encoding='UTF-8'?>
<project>
    <description></description>
    <keepDependencies>false</keepDependencies>
    <properties>
        <hudson.plugins.buildblocker.BuildBlockerProperty plugin="build-blocker-plugin@1.7.3">
            <useBuildBlocker>false</useBuildBlocker>
            <blockLevel>GLOBAL</blockLevel>
            <scanQueueFor>DISABLED</scanQueueFor>
            <blockingJobs></blockingJobs>
        </hudson.plugins.buildblocker.BuildBlockerProperty>
        <com.sonyericsson.rebuild.RebuildSettings plugin="rebuild@1.25">
            <autoRebuild>false</autoRebuild>
            <rebuildDisabled>false</rebuildDisabled>
        </com.sonyericsson.rebuild.RebuildSettings>
    </properties>
    <scm class="hudson.scm.NullSCM"/>
    <canRoam>true</canRoam>
    <disabled>false</disabled>
    <blockBuildWhenDownstreamBuilding>false</blockBuildWhenDownstreamBuilding>
    <blockBuildWhenUpstreamBuilding>false</blockBuildWhenUpstreamBuilding>
    <triggers/>
    <concurrentBuild>false</concurrentBuild>
    <builders>
        <hudson.tasks.Shell>
            <command>#!/bin/sh
                echo &quot;Welcome to T3EE16 - Jenkins JobDSL&quot;</command>
            </hudson.tasks.Shell>
        </builders>
        <publishers/>
        <buildWrappers/>
    </project>
```



Challenges

- Copying jobs
- Adjusting same setting multiple times
- UI can be slow
- Fields hidden under advanced button



Job DSL

- Domain Specific Language
- Groovy
- Can be extend with configure blocks



File structure

```
.  
├── Config  
│   └── settings.groovy  
├── Jobs  
│   ├── t3ee.groovy  
│   └── views.groovy  
├── README.md  
├── bart_tools_job-dsl_seed.groovy  
└── build  
    └── workspace  
        ├── Config  
        │   └── settings.groovy  
        ├── Jobs  
        │   ├── t3ee.groovy  
        │   └── views.groovy  
        ├── t3ee_groovy_latest_job.xml  
        ├── t3ee_groovy_production_job.xml  
        └── t3ee_groovy_stage_job.xml  
└── build.gradle  
└── gradle  
    └── wrapper  
        └── gradle-wrapper.jar  
        └── gradle-wrapper.properties  
└── gradlew  
└── gradlew.bat  
└── settings.gradle
```



Groove Job

```
job ('t3ee_groovy') {  
    steps {  
        shell('''  
#!/bin/sh  
  
echo "Welcome to T3EE16 - Jenkins JobDSL"  
''')  
    }  
}
```



Play ground

Jenkins Job DSL Playground [Docs](#)

Run XML

```
1 job('t3ee_groovy') {  
2     steps {  
3         shell(''  
4 #!/bin/sh  
5 echo "Welcome to T3EE16 - Jenkins JobDSL"  
6         '')  
7     }  
8 }  
9
```

```
1  <!-- 1. t3ee_groovy -->  
2 <project>  
3  <actions></actions>  
4  <description></description>  
5  <keepDependencies>false</keepDependencies>  
6  <properties></properties>  
7  <scm class='hudson.scm.NullSCM'></scm>  
8  <canRoam>true</canRoam>  
9  <disabled>false</disabled>  
10 <blockBuildWhenDownstreamBuilding>false</blockBuildWhenDownstreamBuilding>  
11 <blockBuildWhenUpstreamBuilding>false</blockBuildWhenUpstreamBuilding>  
12 <triggers class='vector'></triggers>  
13 <concurrentBuild>false</concurrentBuild>  
14 <builders>  
15   <hudson.tasks.Shell>  
16     <command>  
17 #!/bin/sh  
18 echo "Welcome to T3EE16 - Jenkins JobDSL"  
19     </command>  
20   </hudson.tasks.Shell>  
21 </builders>  
22 <publishers></publishers>  
23 <buildWrappers></buildWrappers>  
24 </project>  
25
```



How to setup Jenkins JobDSL

- install Job DSL plugin
- Seeder job



Seeder Job

General Source Code Management Build Triggers Build Environment Build Post-build Actions

Project name: bart_job_dsl_seeder

Description:

[Plain text] [Preview](#)

Block build if certain jobs are running

Discard old builds

Strategy: Log Rotation

Days to keep builds: 10
if not empty, build records are only kept up to this number of days

Max # of builds to keep: 10
if not empty, only up to this number of build records are kept

[Advanced...](#)

GitHub project

Rebuild options:

Rebuild Without Asking For Parameters

Disable Rebuilding for this job

This project is parameterized

Throttle builds

Prepare an environment for the run

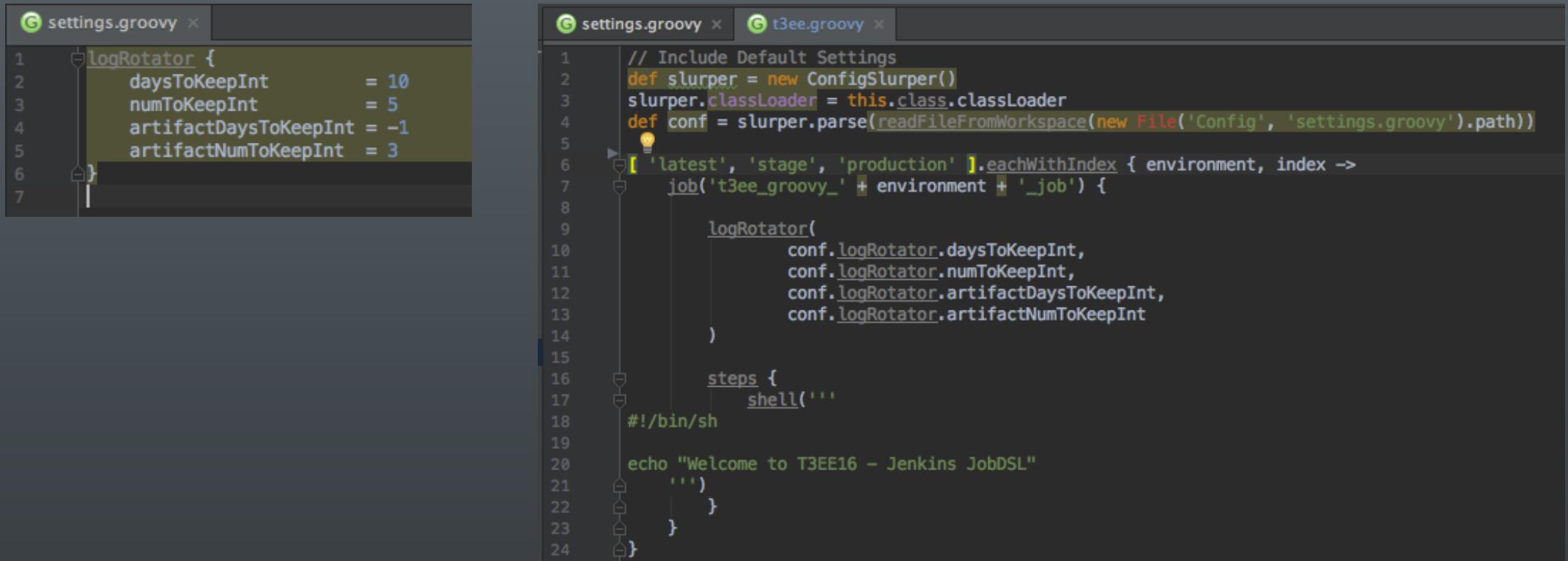
Disable this project

Execute concurrent builds if necessary

[Save](#) [Apply](#) [Advanced...](#)



Shared configuration



The image shows two Jenkins Groovy script windows side-by-side. The left window is titled "settings.groovy" and contains the following code:`1 logRotator {
2 daysToKeepInt = 10
3 numToKeepInt = 5
4 artifactDaysToKeepInt = -1
5 artifactNumToKeepInt = 3
6 }
7`The right window is titled "t3ee.groovy" and contains the following code:`1 // Include Default Settings
2 def slurper = new ConfigSlurper()
3 slurper.classLoader = this.class.classLoader
4 def conf = slurper.parse(readFileFromWorkspace(new File('Config', 'settings.groovy').path))
5
6 ['latest', 'stage', 'production'].eachWithIndex { environment, index ->
7 job('t3ee_groovy_' + environment + '_job') {
8 logRotator(
9 conf.logRotator.daysToKeepInt,
10 conf.logRotator.numToKeepInt,
11 conf.logRotator.artifactDaysToKeepInt,
12 conf.logRotator.artifactNumToKeepInt
13)
14 }
15
16 steps {
17 shell('''
18 #!/bin/sh
19
20 echo "Welcome to T3EE16 - Jenkins JobDSL"
21 ''')
22 }
23 }
24 }`The "logRotator" block from the "settings.groovy" file is highlighted in both windows, demonstrating its reuse.



Looping for environments

The screenshot shows the Jenkins web interface. At the top, there is a navigation bar with links for 'Jenkins', 'T3EE16-JENKINS', 'ENABLE AUTO REFRESH', and user information ('Tomas Norre Mikkelsen' and 'log out'). Below the navigation bar is a sidebar containing various Jenkins management links: 'New Item', 'People', 'Build History', 'Edit View', 'Delete View', 'Project Relationship', 'Check File Fingerprint', 'Manage Jenkins', 'My Views', and 'Credentials'. The main content area displays a table for the 't3ee_testjob' project. The table has columns for Status (S), Weather (W), Name, Last Success, Last Failure, and Last Duration. The job status is 'Success' (green circle), weather is 'Good' (yellow sun), name is 't3ee_testjob', last success was 18 hr - #1, last failure is 'N/A', and last duration was 24 ms. Below the table, there is a legend for RSS feeds: 'RSS for all', 'RSS for failures', and 'RSS for just latest builds'. At the bottom of the page, there are sections for 'Build Queue (1)' and 'Build Executor Status', both of which show one idle executor.

S	W	Name ↓	Last Success	Last Failure	Last Duration
		t3ee_testjob	18 hr - #1	N/A	24 ms

Icon: S M L

Legend [RSS for all](#) [RSS for failures](#) [RSS for just latest builds](#)

Build Queue (1)

[bart_job_dsl_seeder](#)

Build Executor Status

1 Idle
2 Idle



Setting up views

```
listView('T3EE16-JENKINS') {  
    jobs {  
        regex("t3ee_.*")  
    }  
    bart_default_columns(delegate)  
}  
  
/**  
 * Default Columns for the Views.  
 */  
private void bart_default_columns(context) {  
    context.columns {  
        buildButton()  
        status()  
        weather()  
        name()  
        lastSuccess()  
        lastFailure()  
        lastDuration()  
    }  
}
```

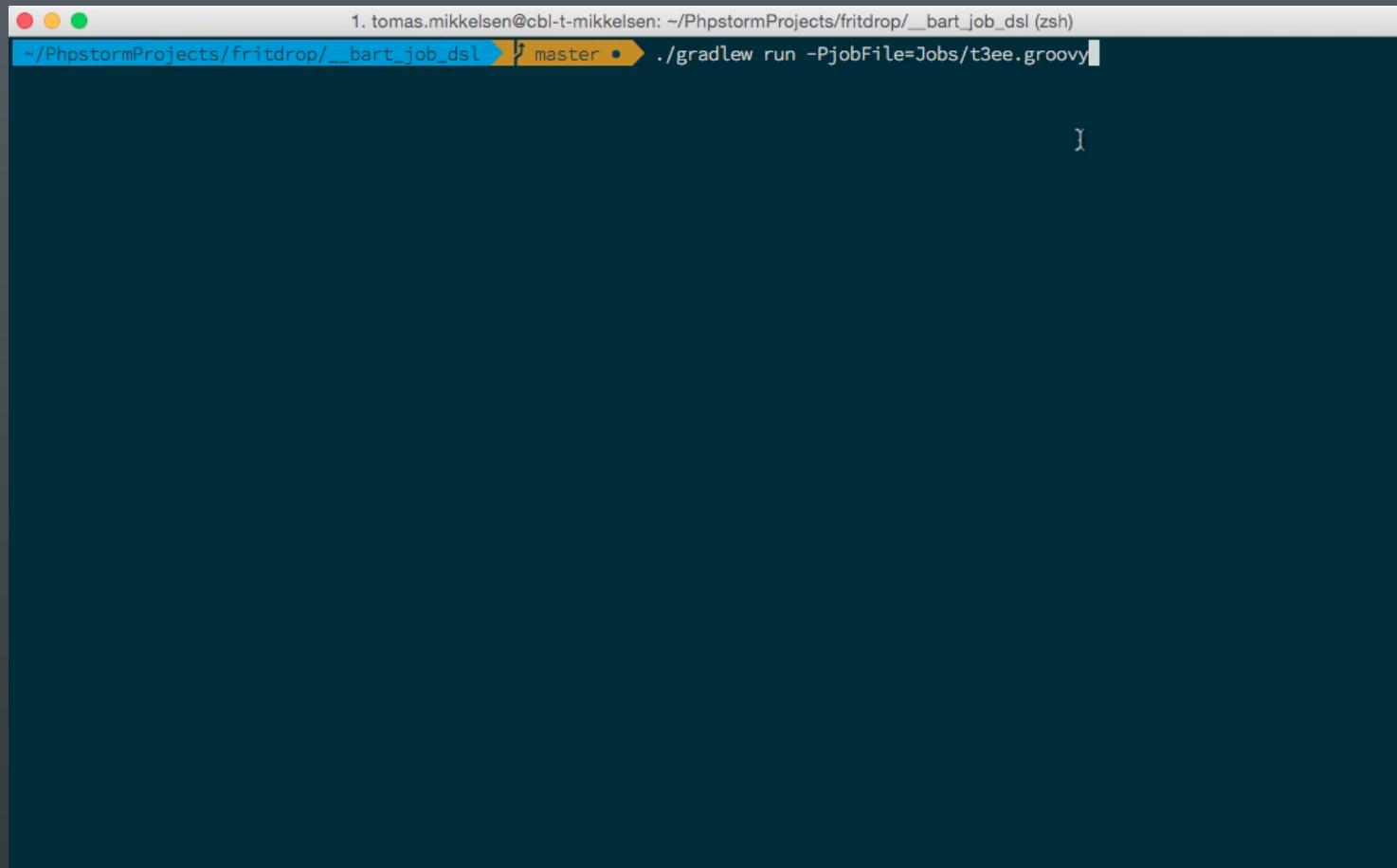
All	Cookbooks	Fritdrop	Gnilive	Helper Jobs	Milpoer	Nico	T3EE16-JENKINS
S	W	Name ↓	Last Success				
			t3ee_groovy_latest_job				N/A
			t3ee_groovy_production_job				N/A
			t3ee_groovy_stage_job				N/A
			t3ee_testjob				18 hr - #1

Icon: [S](#) [M](#) [L](#)

[Legend](#) [RSS for all](#)



How to test your jobs



A screenshot of a terminal window on a Mac OS X system. The window title bar says "1. tomas.mikkelsen@cbl-t-mikkelsen: ~/PhpstormProjects/fritdrop/_bart_job_dsl (zsh)". The command line shows the user is in the directory "~/PhpstormProjects/fritdrop/_bart_job_dsl" and is running "master" branch. The command entered is "./gradlew run -PjobFile=Jobs/t3ee.groovy". The terminal has a dark background and light-colored text.



Pros & Cons



- Version Control
- More readable
- Change shared configurations
- Test locally
- Review



- Not all plugins are supported
- Learning curve



Best practice

- Start converting few jobs
- All jobs goes to version control
- Trigger seed job on SCM changes
- Don't commit credentials
- Think about design, refactor, streamline etc.
it's code treat it like code.





**Developers want to write code,
so let them do what they love!**

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Questions?



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Links

- <https://jenkinsci.github.io/job-dsl-plugin/> - Documentation
- <http://job-dsl.herokuapp.com/> - Play Ground
- <http://www.groovy-lang.org/> - Groove Website
- https://github.com/tomasnorre/t3ee16_jenkins - Example Repository

