Supercharged Configuration As Code

Bulk Updates with Job DSL and System Groovy

Who Am I

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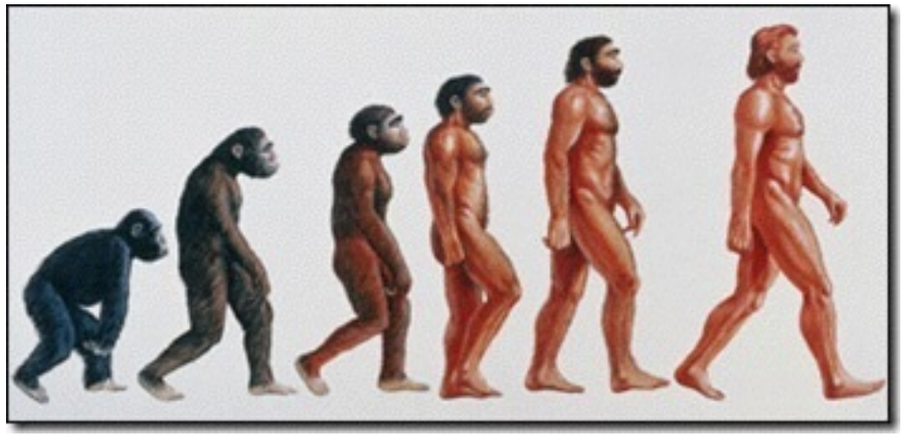
Any opinions expressed are my own and do not represent the opinions of my employer

Observations about build jobs

- Jobs Change over Time
- Most jobs are like other jobs

Jobs Change Over Time



- Correctness Changes
- Bug Fixes
- Complexity Increase

Most Jobs are Similar

- Small number of themes with structured variation

How do these observation help?

- Job DSL enables us to using coding techniques to create job configurations
- System groovy scripts enable use to automate repeated calls to jobs

Player Piano

Our metaphor for bulk job regeneration

The Piano Roll

- Controls the sound of the piano
- Orchestrates the automation of job recreation

Job DSL for gradle build

```
job {

    name "git-gradle-simple-build"

    scm {

        git('/Users/alanbeale/sandbox/samples/java/basic',
                '*/master'  )

    }

    steps {

        gradle ( "build", null, true )

    }

}
```

Evolution Example

```
job {
    name "git-gradle-build-with-worspace-option"
    scm {
        git('/Users/alanbeale/sandbox/samples/java/basic',
            '*/master')
    }
    steps {
        gradle ( "build", null, true
        ){ node -> //hudson.plugins.gradle.Gradle
            node/useWorkspaceAsHome(true)
        }
    }
}
```

Add Gerrit Trigger

```
job {

    name "git-gradle-build-with-gerrit-trigger"

    scm {
        git(
            '/Users/alanbeale/sandbox/samples/java/basic',
            '$GERRIT_BRANCH'
        ){ node ->
            node/extensions {
                'hudson.plugins.git.extensions.impl.BuildChooserSetting'{
                    buildChooser(buildChooserAttrs){
                        separator('#')
                    }
                }
            }
            def remoteConfig = node/userRemoteConfigs/
            'hudson.plugins.git.UserRemoteConfig'
            remoteConfig << refspec('$GERRIT_REFSPEC')
        }

}
```

continued

```
triggers {
    gerrit {
        events {
            PatchsetCreated
            DraftPublished
        }
        project(
            "plain: /Users/alanbeale/sandbox/samples/java/basic",
            'ant:**'
        )
    }
}
steps {
    gradle ("build", null, true)
    { node -> //hudson.plugins.gradle.Gradle
        node/useWorkspaceAsHome(true)
    }
}
}
```

Repeated elements

- Job Name
- Git URL
- Gerrit Trigger Project

Towards Job Factory

- Factor out common operations
- Parameterize calling Job DSL

Create Utility class

- jobdsl.JobUtilities methods
  - setupGradleGerritJobName()
  - setupGerritScm()
  - setupGerritTrigger()
  - setupGradleBuild()

generator job DSL

```
job {
    name "gradle-gerrit-job-generator"
    parameters {
        stringParam("PROJECT_NAME","sample/java/library")
    }
    steps {
        dsl {
            removeAction('IGNORE')
            ignoreExisting(false)
            text('''
import jobdsl.JobUtilities
import javaposse.jobdsl.dsl.Job
def gerritProjectName= "${PROJECT_NAME}"
def simpleJavaVerifyJob = job {}
JobUtilities.setupGradleGerritJobName(simpleJavaVerifyJob, gerritProjectName)
JobUtilities.setupGerritScm( simpleJavaVerifyJob, gerritProjectName)
JobUtilities.setupGerritTrigger( simpleJavaVerifyJob, gerritProjectName)
JobUtilities.setupGradleBuild(simpleJavaVerifyJob)
''')
```

Part 2 : System Groovy

Regeneration script

```
import jenkins.model.*

import hudson.model.*

def jenkins = jenkins.model.Jenkins.instance
def jobGeneratorName='gradle-gerrit-job-generator'
def jobGenerator = jenkins.getItem(jobGeneratorName)
def projectParamName ='PROJECT_NAME'
def projectParamValue=‘sample/java/library'

if(jobGenerator){
    boolean buildQueued =
        jobGenerator.scheduleBuild(  5,
            new Cause.UserIdCause(),
            new ParametersAction(
                new StringParameterValue(projectParamName, projectParamValue)
            )
        )
}
```

Regenerate from existing job name

```
import jenkins.model.*

import hudson.model.*

def jenkins = jenkins.model.Jenkins.instance
def jobGeneratorName='gradle-gerrit-job-generator'
def jobGenerator = jenkins.getItem(jobGeneratorName)
def projectParamName ='PROJECT_NAME'
def jobs = jenkins.getItems()

def gerritJobs = jobs.findAll { job ->
 job.name.endsWith('gradle-gerrit')
}

def projectNames =gerritJobs.collect {  item ->
    item.triggers.values().find {
        it.class.simpleName =='GerritTrigger'
    }. gerritProjects[0].pattern
}

if(jobGenerator){
    projectNames.each {  projectName ->
        boolean buildQueued =
            jobGenerator.scheduleBuild( 5,
                new Cause.UserIdCause(),
                new ParametersAction(
                    new StringParameterValue( projectParamName,projectName)
                )
            )
    }
}
```

Example of Job Themes

- Continuos Integration Jobs
- Gerrit Verification Jobs
- Release Jobs
- Privileged SCM Task Automation

Summary

- Job DSL enables precise control
- Define parameterized Job Generator (the piano)

Summary

- System Groovy Jobs
- automates calling job generator in bulk

(piano roll)

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Thank you

- Source Code at https://github.com/bealeaj1214/jenkins-juc-job-dsl-bulk-regeneration