SAMSUNG

Dealing with Data Driven Test Combinatorial Complexity using Jenkins Job DSL

Contents

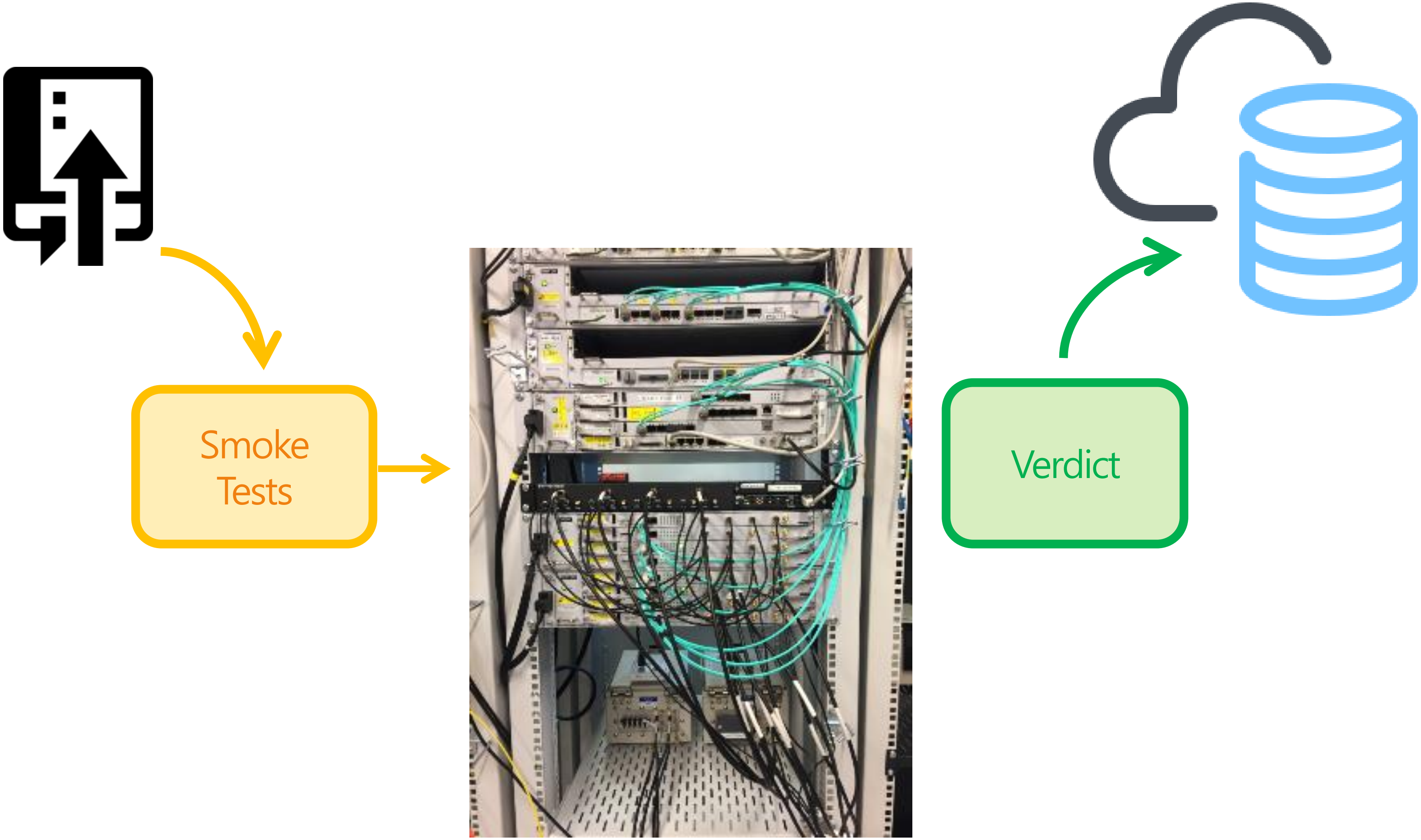
Ⅰ Motivation

Ⅱ Jenkins Job DSL Plugin Introduction

Ⅲ Summary

Motivation

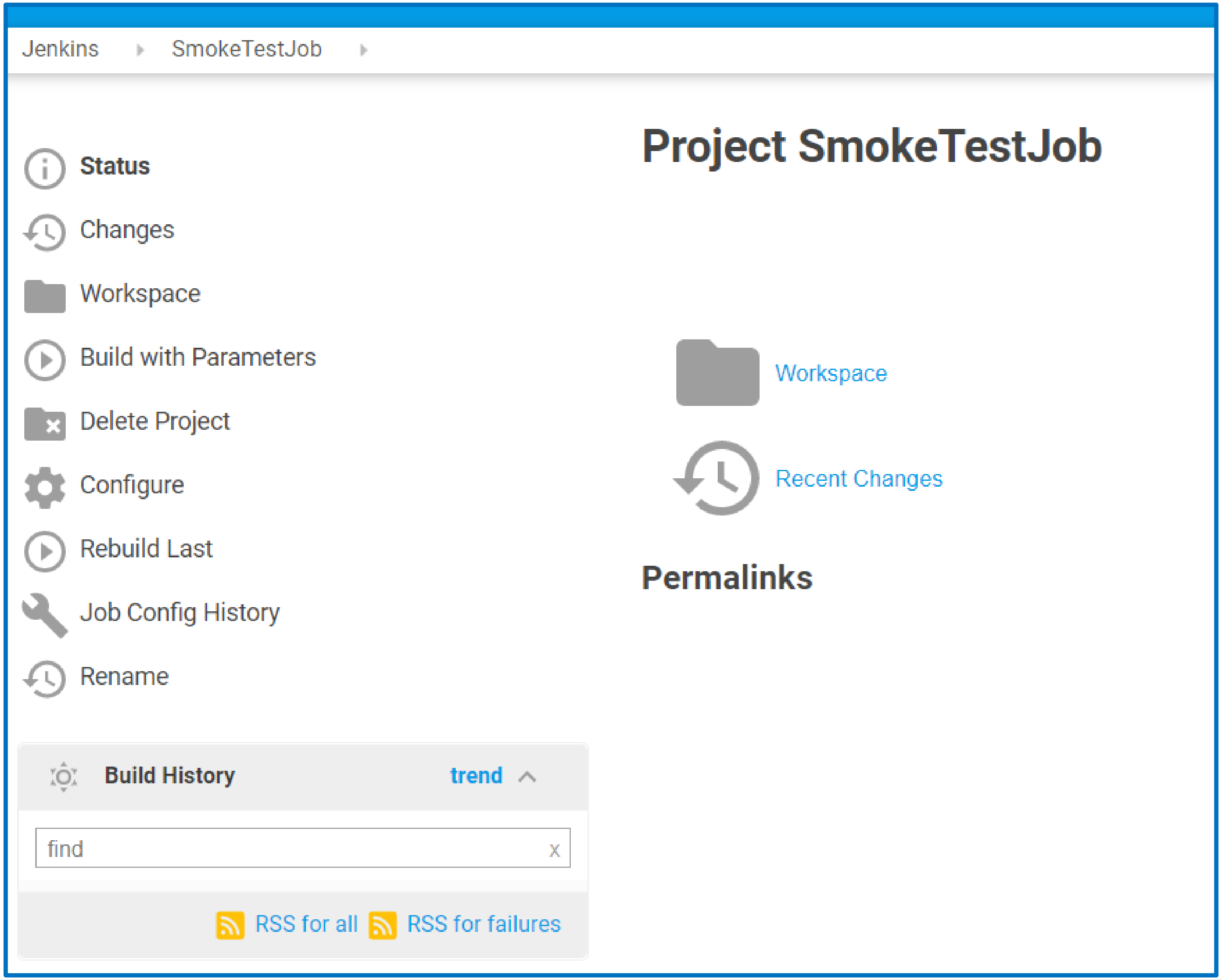
Original Task



Smoke Tests

Verdict

Solution: Create a Jenkins Job



Jenkins ▸ SmokeTestJob ▸

Status

Changes

Workspace

Build with Parameters

Delete Project

Configure

Rebuild Last

Job Config History

Rename

Build History trend

find x

RSS for all RSS for failures

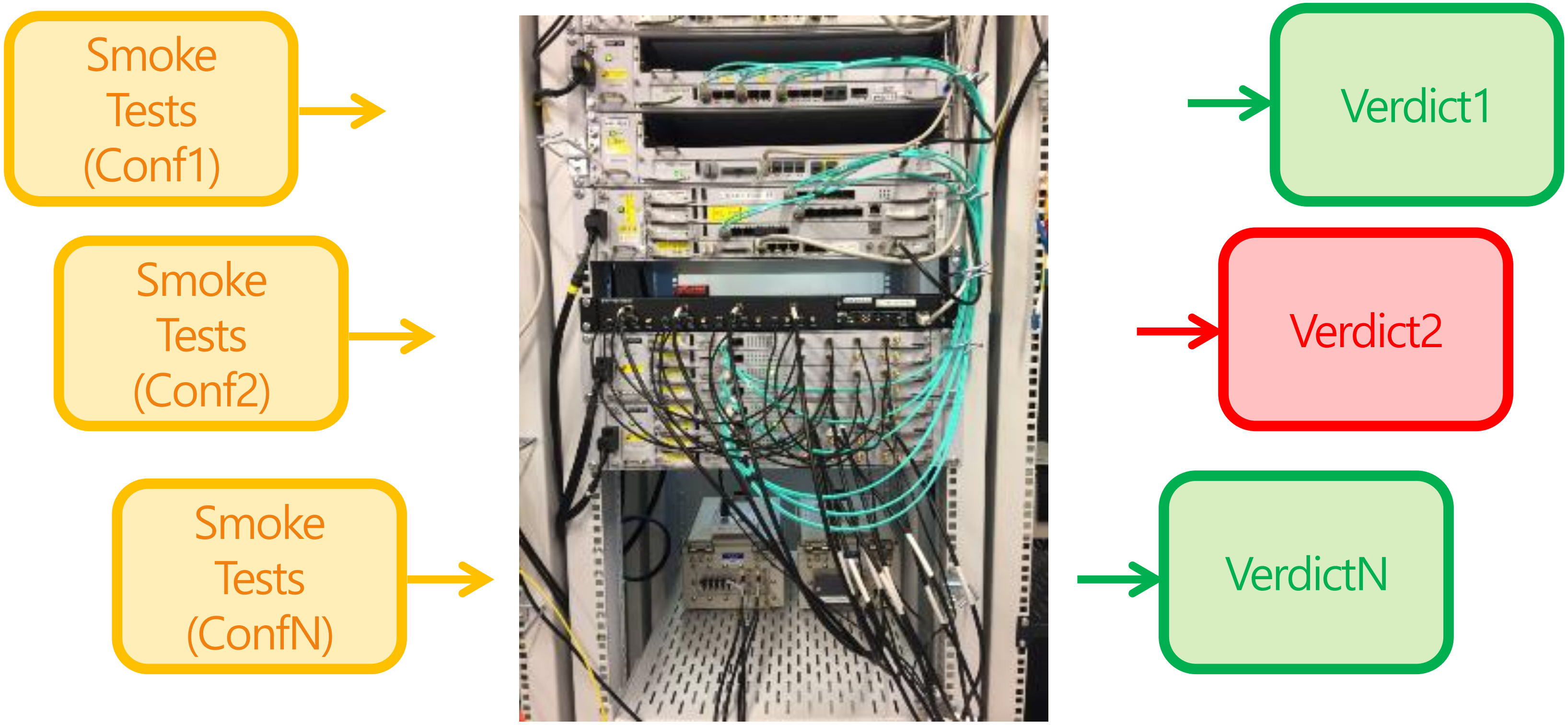
Project SmokeTestJob

Workspace

Recent Changes

Permalinks

Let’s Extend Our Task a Little



Smoke Tests (Conf1)

Smoke Tests (Conf2)

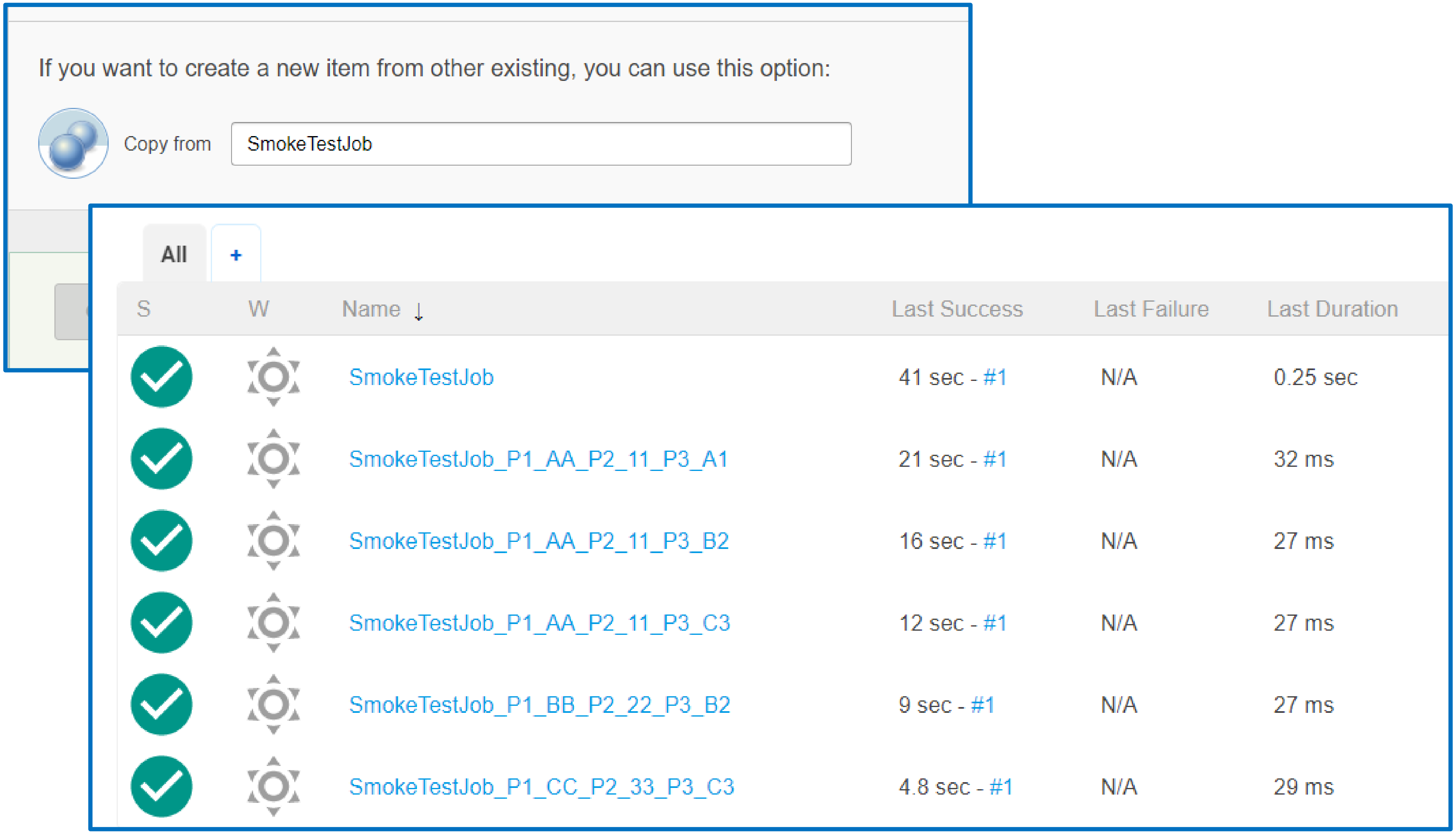
Smoke Tests (ConfN)

Verdict1

Verdict2

VerdictN

Naïve Solution 1: Just Copy the Original Job



If you want to create a new item from other existing, you can use this option:

Copy from: SmokeTestJob

S	W	Name ↓	Last Success	Last Failure	Last Duration
✓	☀	SmokeTestJob	41 sec - #1	N/A	0.25 sec
✓	☀	SmokeTestJob_P1_AA_P2_11_P3_A1	21 sec - #1	N/A	32 ms
✓	☀	SmokeTestJob_P1_AA_P2_11_P3_B2	16 sec - #1	N/A	27 ms
✓	☀	SmokeTestJob_P1_AA_P2_11_P3_C3	12 sec - #1	N/A	27 ms
✓	☀	SmokeTestJob_P1_BB_P2_22_P3_B2	9 sec - #1	N/A	27 ms
✓	☀	SmokeTestJob_P1_CC_P2_33_P3_C3	4.8 sec - #1	N/A	29 ms

What Could Have Possibly Go Wrong?

Preconditions:

1. Each configuration controls 3 parameters
2. Each parameter can take one of the 4 valid values
3. 90% of possible configurations are equally important

Total configuration number: 60

Adding a new testbed (different H/W type) doubles the number of jobs

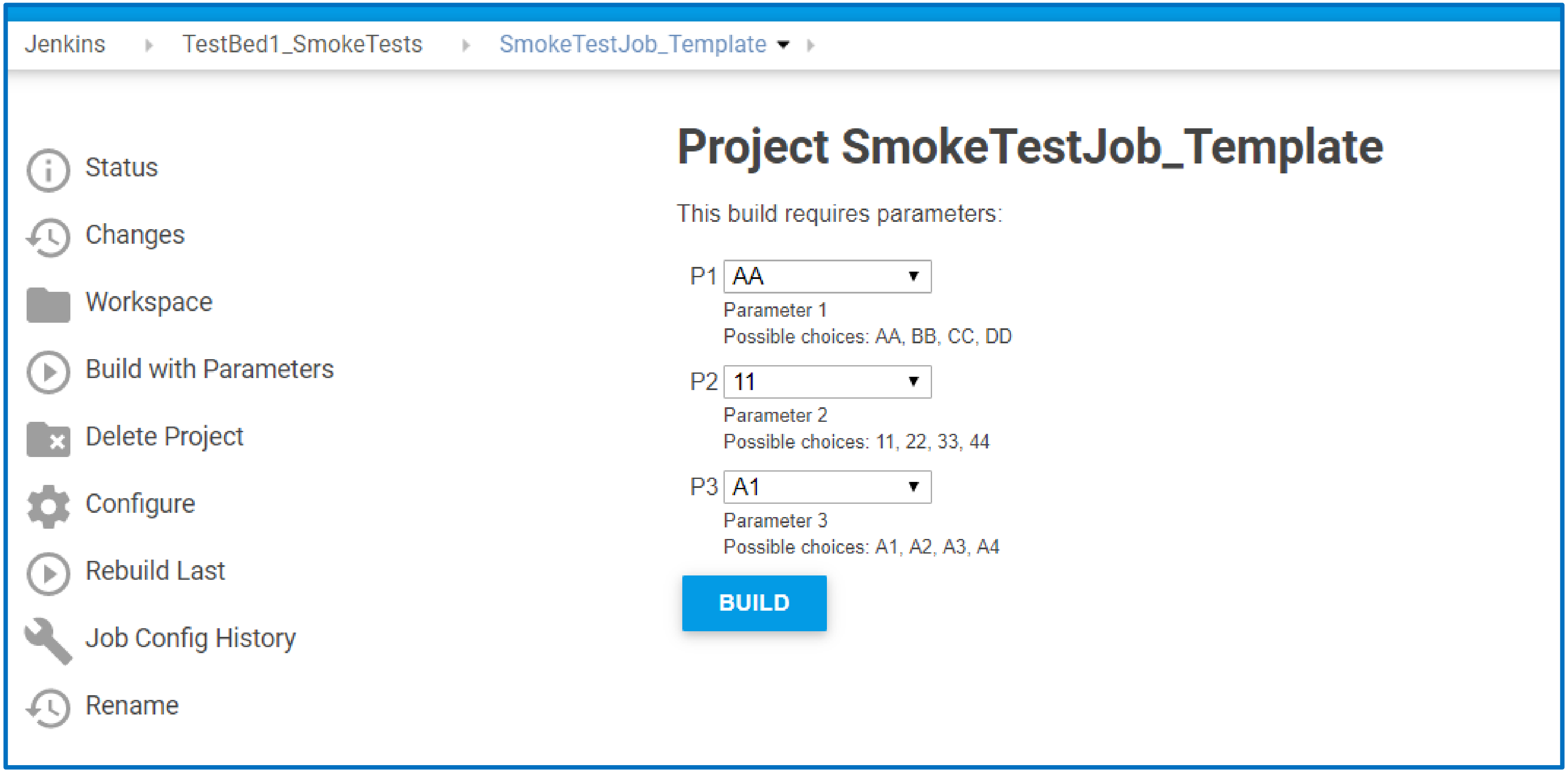
Solution 1 Drawbacks

1. New job creation is tedious and error prone
2. Need to change all jobs if additional parameter or execution step is required
3. Huge effort to recover the jobs in case of Jenkins host failure

Maintenance nightmare!

Let’s Improve It: MultiJob Step with Parameters

1. Create parametrized template job



Jenkins › TestBed1_SmokeTests › SmokeTestJob_Template ▾ ›

- Status
- Changes
- Workspace
- Build with Parameters
- Delete Project
- Configure
- Rebuild Last
- Job Config History
- Rename

Project SmokeTestJob_Template

This build requires parameters:

P1 AA ▾

Parameter 1
Possible choices: AA, BB, CC, DD

P2 11 ▾

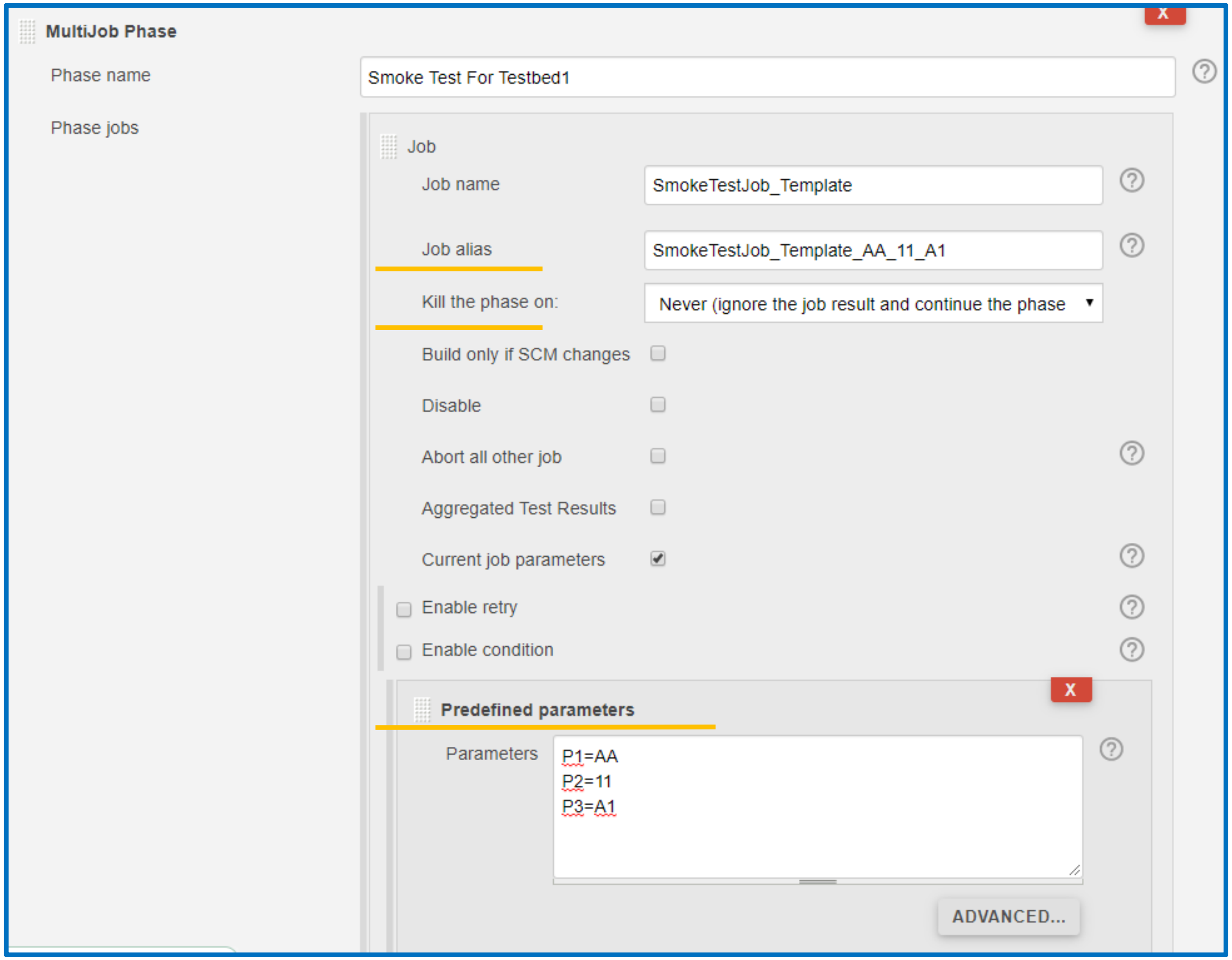
Parameter 2
Possible choices: 11, 22, 33, 44

P3 A1 ▾

Parameter 3
Possible choices: A1, A2, A3, A4

Let’s Improve It: MultiJob Job with Parameters

2. Create MultiJob Project and add each configuration as a separate phase job



MultiJob Phase

Phase name: Smoke Test For Testbed1

Phase jobs

Job

Job name: SmokeTestJob_Template

Job alias: SmokeTestJob_Template_AA_11_A1

Kill the phase on: Never (ignore the job result and continue the phase

Build only if SCM changes □

Disable □

Abort all other job □

Aggregated Test Results □

Current job parameters ☑

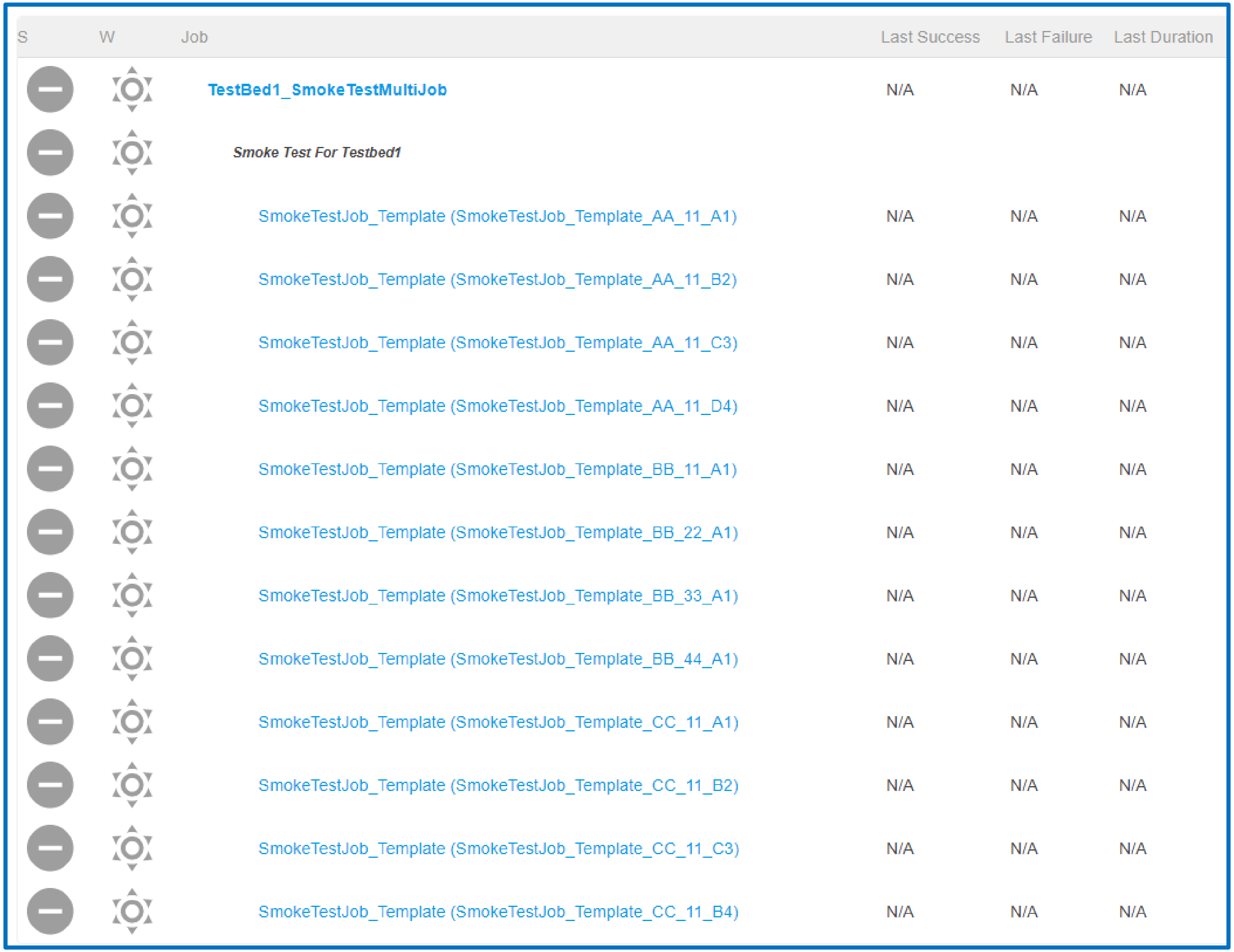
□ Enable retry

□ Enable condition

Predefined parameters

Parameters:
```
P1=AA
P2=11
P3=A1
```

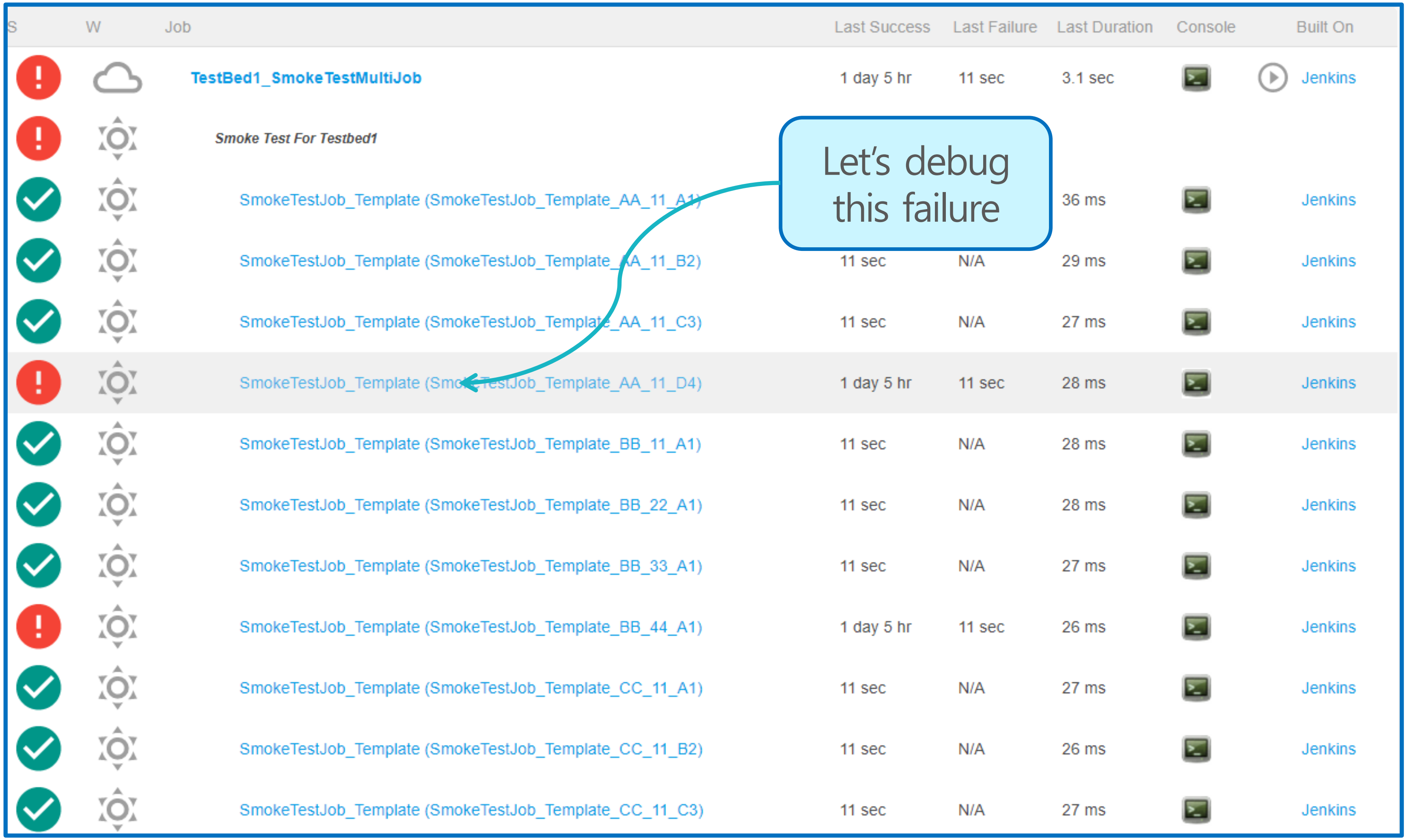
MultiJob Project Final Configuration



S	W	Job	Last Success	Last Failure	Last Duration
⊖	☼	**TestBed1_SmokeTestMultiJob**	N/A	N/A	N/A
⊖	☼	***Smoke Test For Testbed1***			
⊖	☼	SmokeTestJob_Template (SmokeTestJob_Template_AA_11_A1)	N/A	N/A	N/A
⊖	☼	SmokeTestJob_Template (SmokeTestJob_Template_AA_11_B2)	N/A	N/A	N/A
⊖	☼	SmokeTestJob_Template (SmokeTestJob_Template_AA_11_C3)	N/A	N/A	N/A
⊖	☼	SmokeTestJob_Template (SmokeTestJob_Template_AA_11_D4)	N/A	N/A	N/A
⊖	☼	SmokeTestJob_Template (SmokeTestJob_Template_BB_11_A1)	N/A	N/A	N/A
⊖	☼	SmokeTestJob_Template (SmokeTestJob_Template_BB_22_A1)	N/A	N/A	N/A
⊖	☼	SmokeTestJob_Template (SmokeTestJob_Template_BB_33_A1)	N/A	N/A	N/A
⊖	☼	SmokeTestJob_Template (SmokeTestJob_Template_BB_44_A1)	N/A	N/A	N/A
⊖	☼	SmokeTestJob_Template (SmokeTestJob_Template_CC_11_A1)	N/A	N/A	N/A
⊖	☼	SmokeTestJob_Template (SmokeTestJob_Template_CC_11_B2)	N/A	N/A	N/A
⊖	☼	SmokeTestJob_Template (SmokeTestJob_Template_CC_11_C3)	N/A	N/A	N/A
⊖	☼	SmokeTestJob_Template (SmokeTestJob_Template_CC_11_B4)	N/A	N/A	N/A

Are We There Yet?

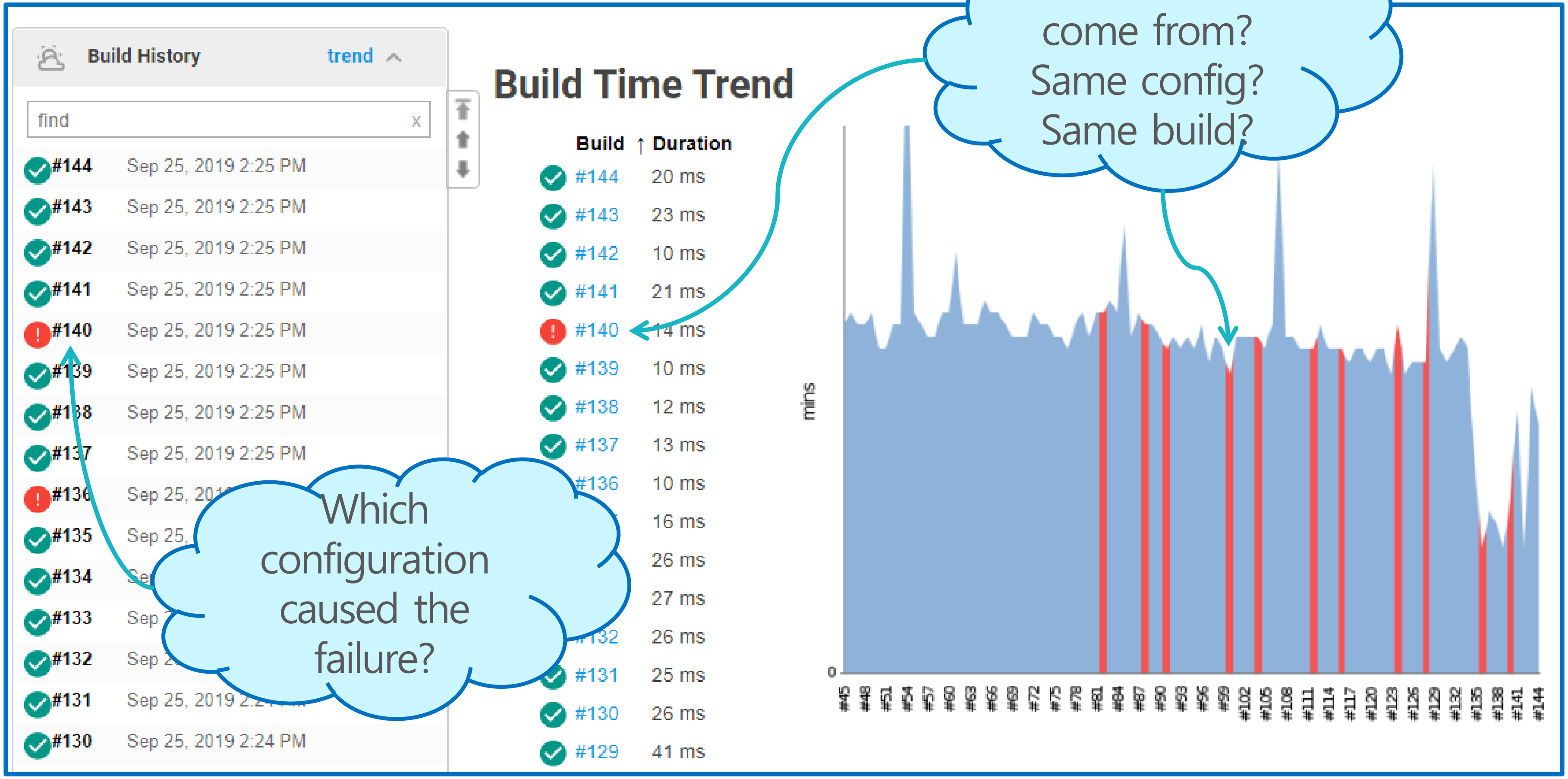
Let’s execute all the jobs



S	W	Job	Last Success	Last Failure	Last Duration	Console	Built On
!	☁	**TestBed1_SmokeTestMultiJob**	1 day 5 hr	11 sec	3.1 sec	▣	▷ Jenkins
!	☼	***Smoke Test For Testbed1***					
✓	☼	SmokeTestJob_Template (SmokeTestJob_Template_AA_11_A1)			36 ms	▣	Jenkins
✓	☼	SmokeTestJob_Template (SmokeTestJob_Template_AA_11_B2)	11 sec	N/A	29 ms	▣	Jenkins
✓	☼	SmokeTestJob_Template (SmokeTestJob_Template_AA_11_C3)	11 sec	N/A	27 ms	▣	Jenkins
!	☼	SmokeTestJob_Template (SmokeTestJob_Template_AA_11_D4)	1 day 5 hr	11 sec	28 ms	▣	Jenkins
✓	☼	SmokeTestJob_Template (SmokeTestJob_Template_BB_11_A1)	11 sec	N/A	28 ms	▣	Jenkins
✓	☼	SmokeTestJob_Template (SmokeTestJob_Template_BB_22_A1)	11 sec	N/A	28 ms	▣	Jenkins
✓	☼	SmokeTestJob_Template (SmokeTestJob_Template_BB_33_A1)	11 sec	N/A	27 ms	▣	Jenkins
!	☼	SmokeTestJob_Template (SmokeTestJob_Template_BB_44_A1)	1 day 5 hr	11 sec	26 ms	▣	Jenkins
✓	☼	SmokeTestJob_Template (SmokeTestJob_Template_CC_11_A1)	11 sec	N/A	27 ms	▣	Jenkins
✓	☼	SmokeTestJob_Template (SmokeTestJob_Template_CC_11_B2)	11 sec	N/A	26 ms	▣	Jenkins
✓	☼	SmokeTestJob_Template (SmokeTestJob_Template_CC_11_C3)	11 sec	N/A	27 ms	▣	Jenkins

Let’s debug this failure

Hard to Debug, Unreliable Execution Trend



Build History trend

find x

✓	#144	Sep 25, 2019 2:25 PM
✓	#143	Sep 25, 2019 2:25 PM
✓	#142	Sep 25, 2019 2:25 PM
✓	#141	Sep 25, 2019 2:25 PM
!	#140	Sep 25, 2019 2:25 PM
✓	#139	Sep 25, 2019 2:25 PM
✓	#138	Sep 25, 2019 2:25 PM
✓	#137	Sep 25, 2019 2:25 PM
!	#136	Sep 25, 201
✓	#135	Sep 25,
✓	#134	Se
✓	#133	Sep
✓	#132	Sep 2
✓	#131	Sep 25, 2019 2:2 PM
✓	#130	Sep 25, 2019 2:24 PM

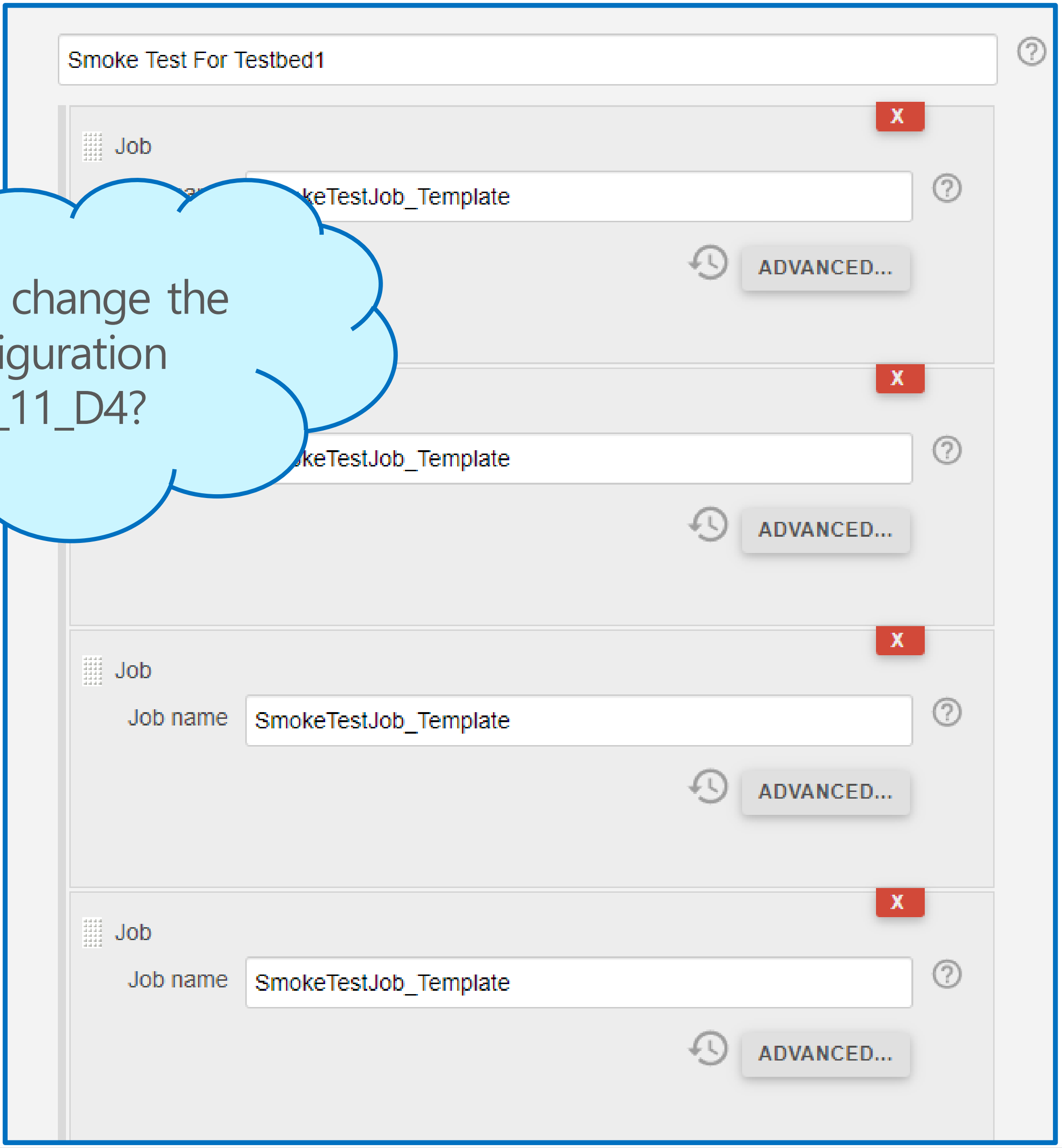
Build Time Trend

	Build ↑	Duration
✓	#144	20 ms
✓	#143	23 ms
✓	#142	10 ms
✓	#141	21 ms
!	#140	14 ms
✓	#139	10 ms
✓	#138	12 ms
✓	#137	13 ms
	#136	10 ms
		16 ms
		26 ms
		27 ms
	#132	26 ms
✓	#131	25 ms
✓	#130	26 ms
✓	#129	41 ms

Where does it come from? Same config? Same build?

Which configuration caused the failure?

Hard to Update the Configurations



Smoke Test For Testbed1

Job

keTestJob_Template

ADVANCED...

X

keTestJob_Template

ADVANCED...

X

Job

Job name SmokeTestJob_Template

ADVANCED...

X

Job

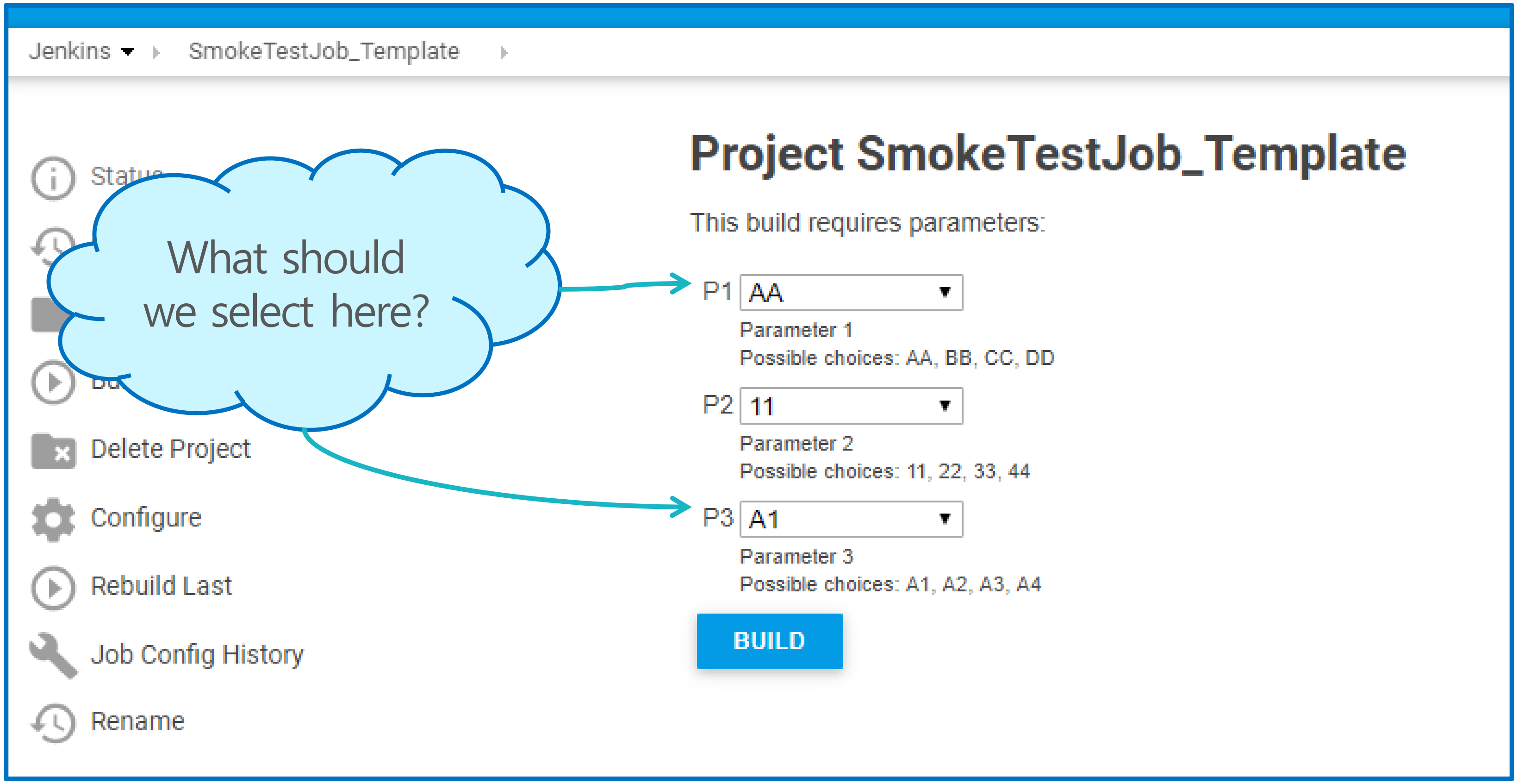
Job name SmokeTestJob_Template

ADVANCED...

X

How to change the configuration AA_11_D4?

Hard to Re-run the Failing Configuration



What should we select here?

Project SmokeTestJob_Template

This build requires parameters:

P1 AA ▾
Parameter 1
Possible choices: AA, BB, CC, DD

P2 11 ▾
Parameter 2
Possible choices: 11, 22, 33, 44

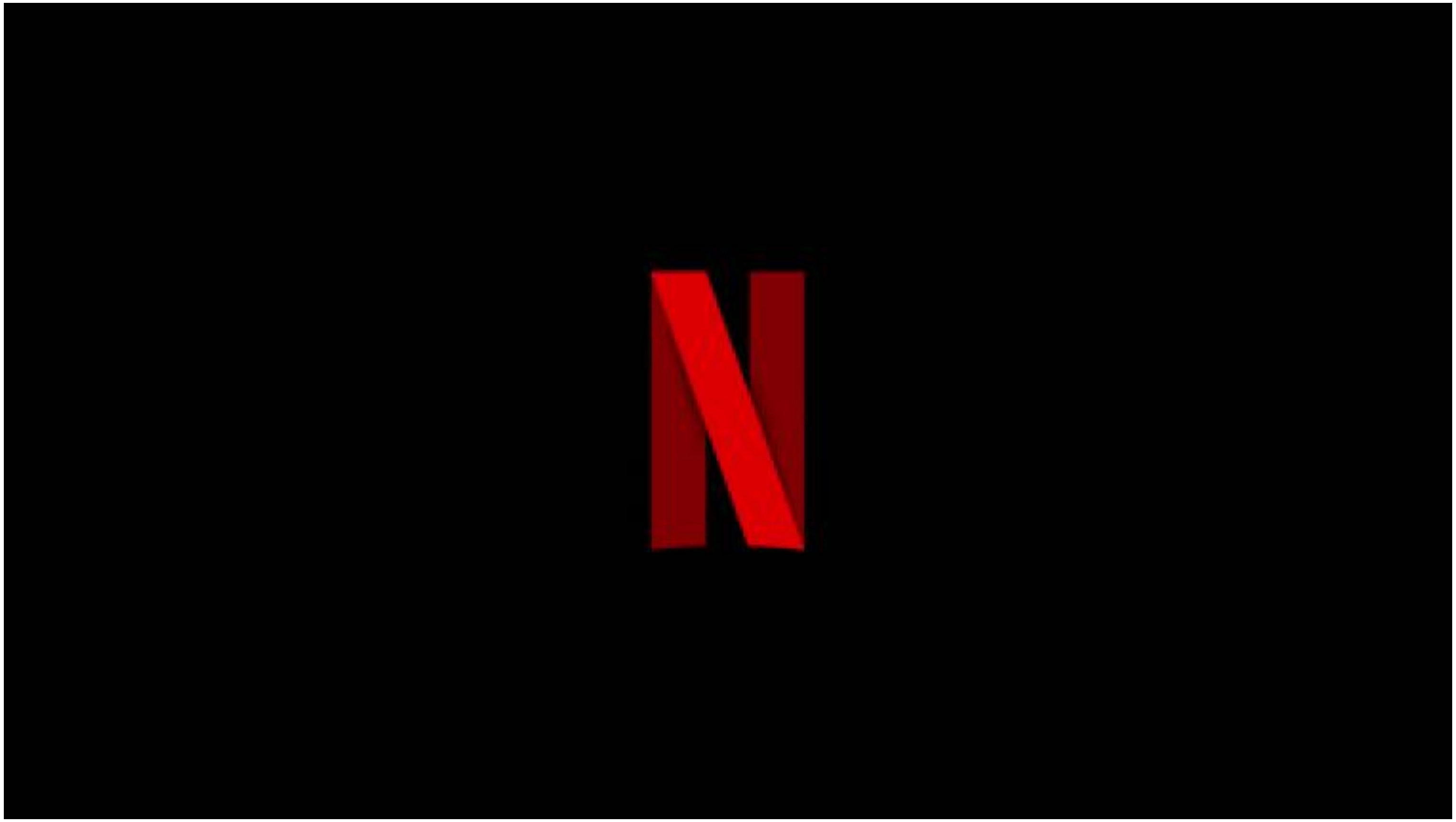
P3 A1 ▾
Parameter 3
Possible choices: A1, A2, A3, A4

BUILD

In a Nutshell…

Debugging Nightmare

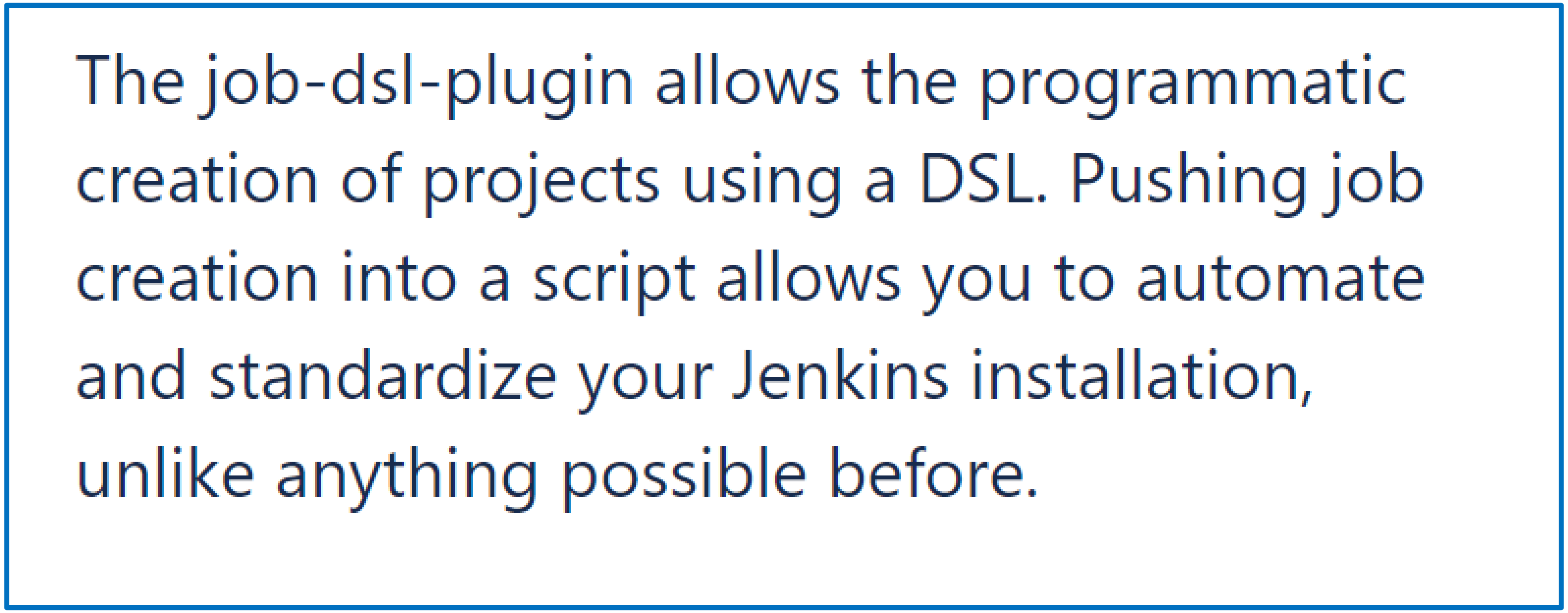
Who Could Help Us?



Jenkins Job DSL Plugin

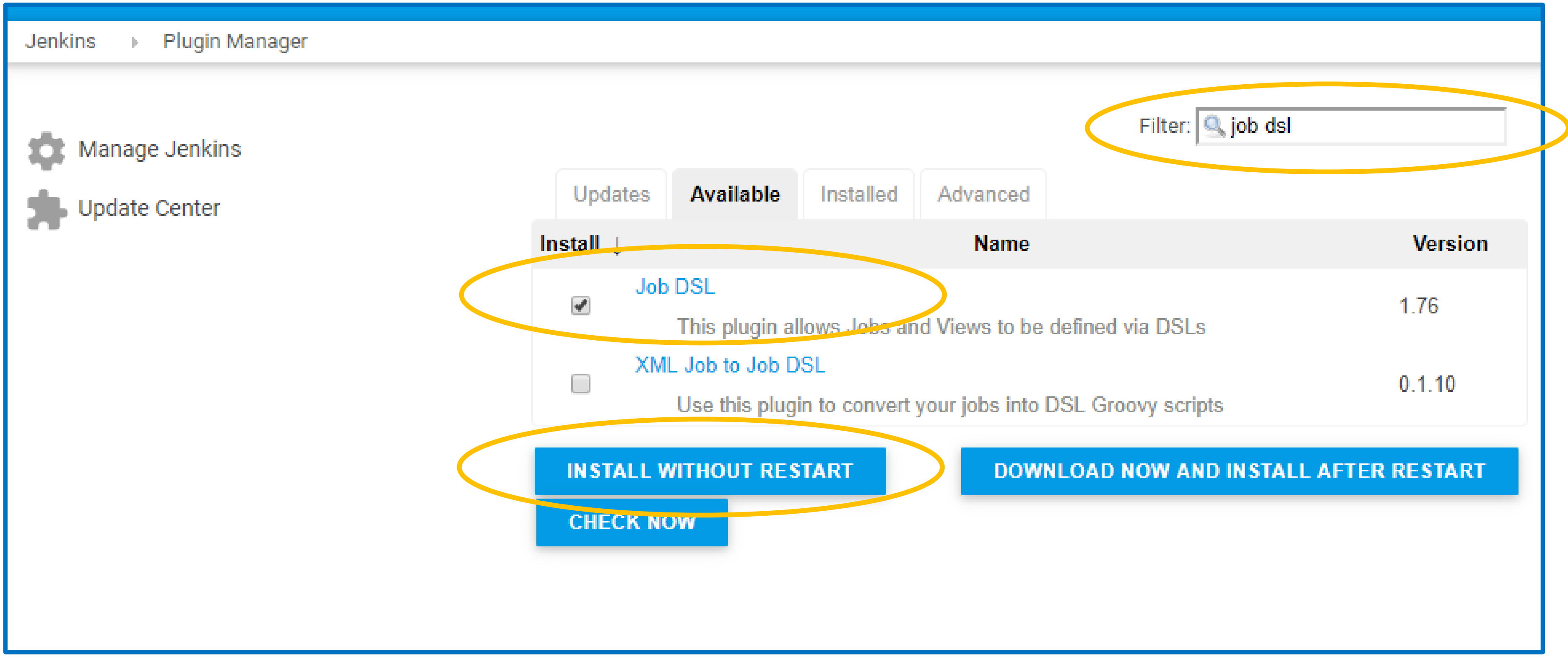
Introducing Jenkins DSL

From https://wiki.jenkins.io



The job-dsl-plugin allows the programmatic creation of projects using a DSL. Pushing job creation into a script allows you to automate and standardize your Jenkins installation, unlike anything possible before.

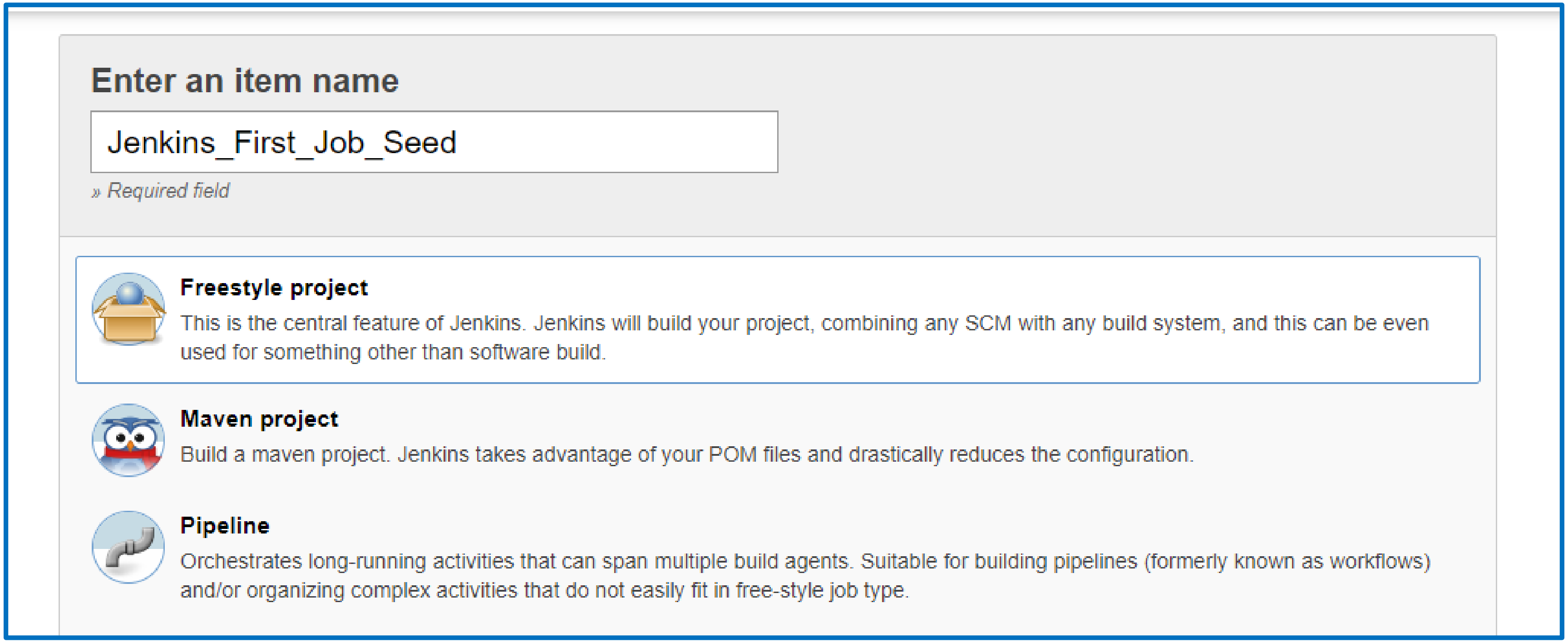
Installation



Filter: job dsl

Install ↓	Name	Version
☑	Job DSL This plugin allows Jobs and Views to be defined via DSLs	1.76
□	XML Job to Job DSL Use this plugin to convert your jobs into DSL Groovy scripts	0.1.10

Create First Seed Job



Enter an item name

Jenkins_First_Job_Seed

» Required field

Freestyle project

This is the central feature of Jenkins. Jenkins will build your project, combining any SCM with any build system, and this can be even used for something other than software build.

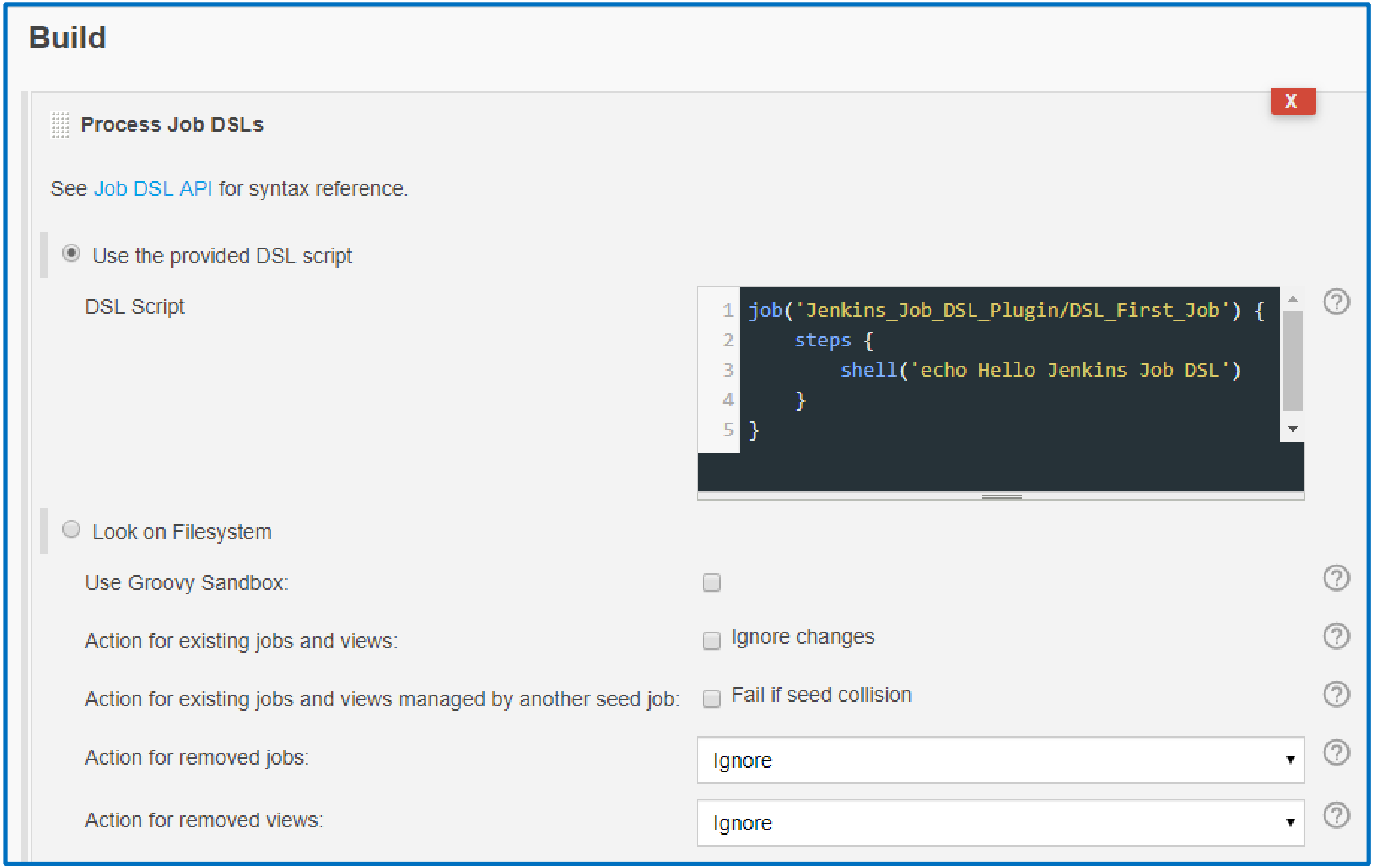
Maven project

Build a maven project. Jenkins takes advantage of your POM files and drastically reduces the configuration.

Pipeline

Orchestrates long-running activities that can span multiple build agents. Suitable for building pipelines (formerly known as workflows) and/or organizing complex activities that do not easily fit in free-style job type.

Create First Seed Job



Build

Process Job DSLs

See Job DSL API for syntax reference.

● Use the provided DSL script

DSL Script

```
job('Jenkins_Job_DSL_Plugin/DSL_First_Job') {
    steps {
        shell('echo Hello Jenkins Job DSL')
    }
}
```

○ Look on Filesystem

Use Groovy Sandbox: □

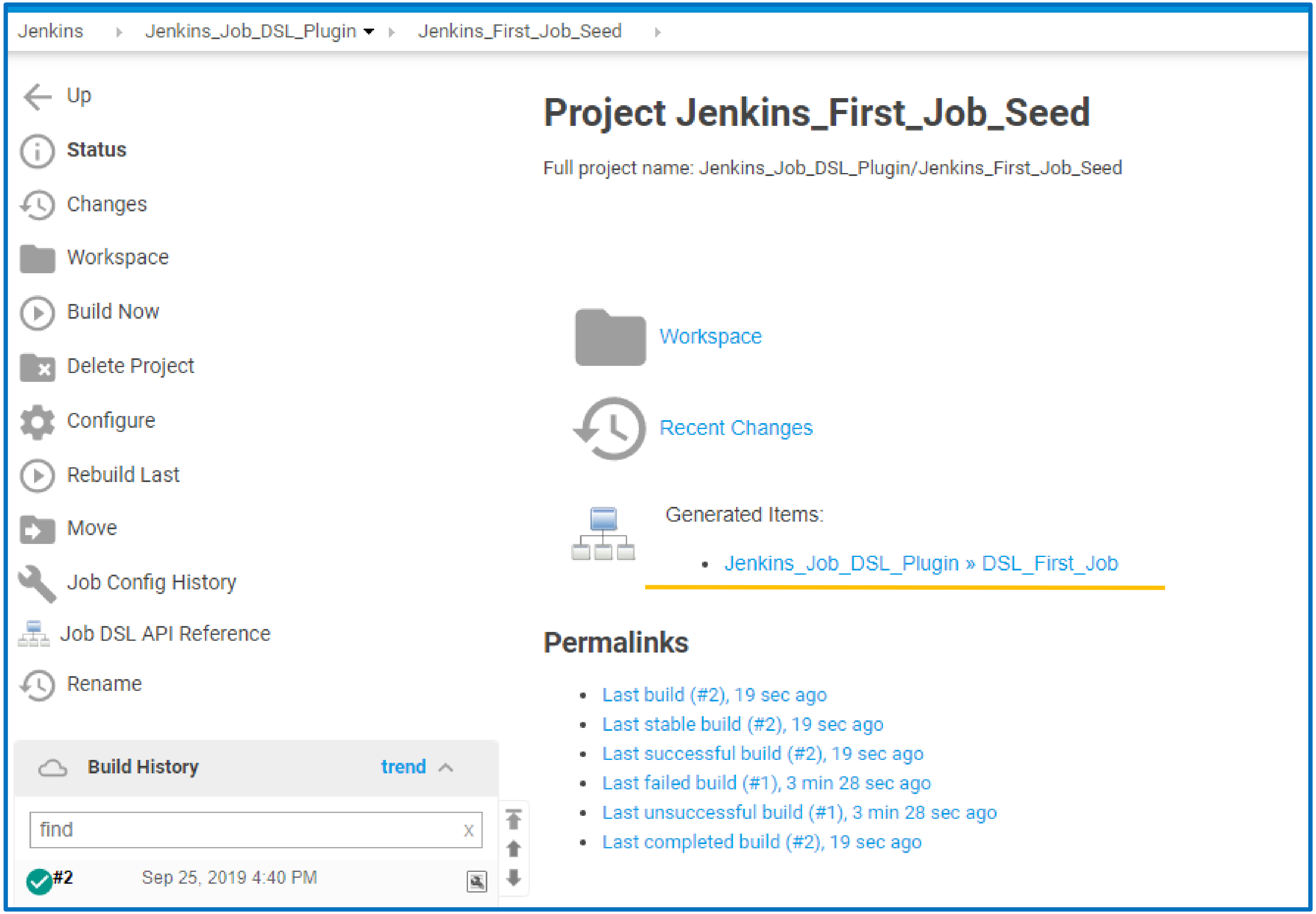
Action for existing jobs and views: □ Ignore changes

Action for existing jobs and views managed by another seed job: □ Fail if seed collision

Action for removed jobs: Ignore ▾

Action for removed views: Ignore ▾

Generate a Job from the Seed Job



#2 Sep 25, 2019 4:40 PM

Project Jenkins_First_Job_Seed

Full project name: Jenkins_Job_DSL_Plugin/Jenkins_First_Job_Seed

Workspace

Recent Changes

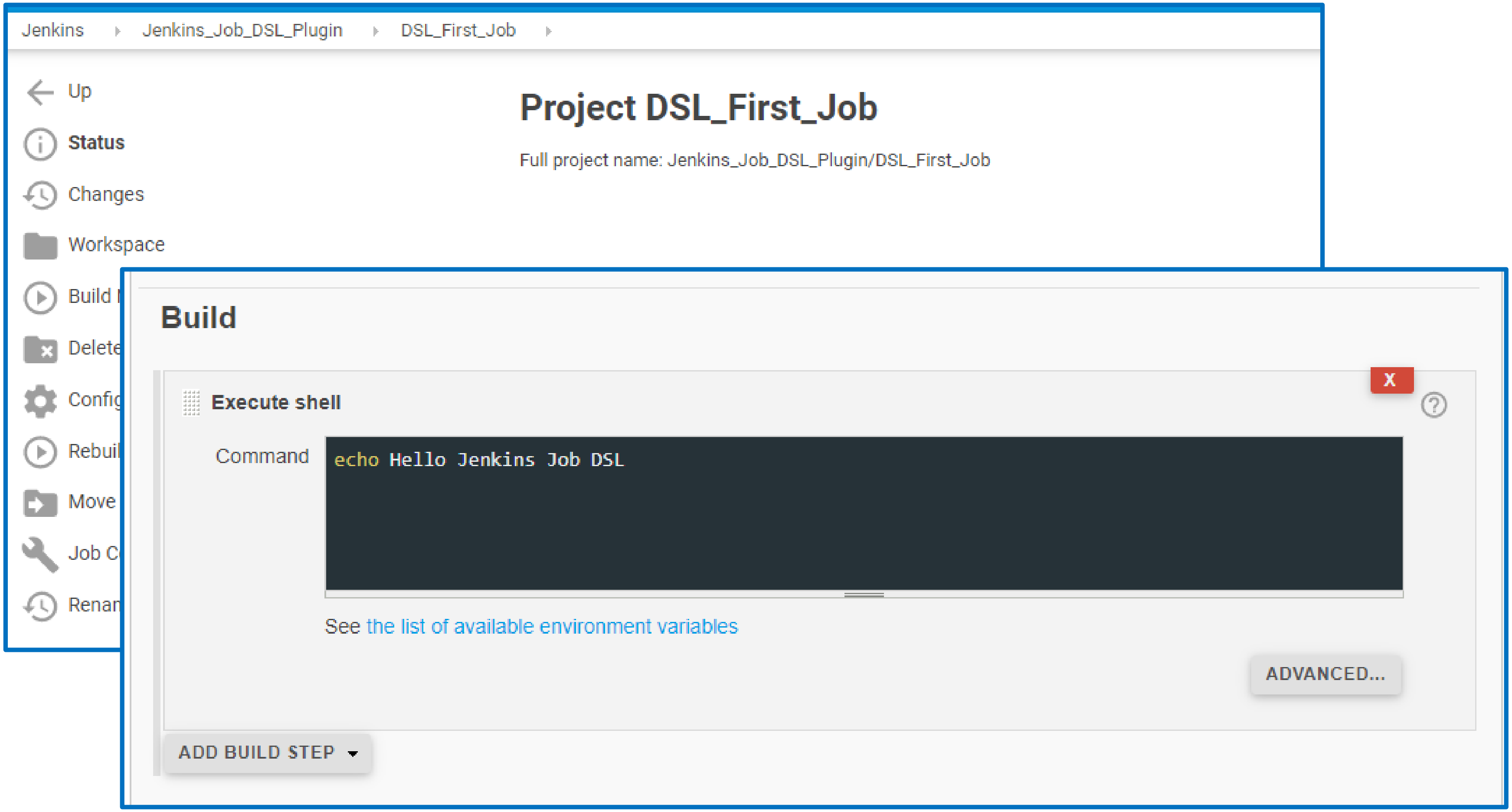
Generated Items:

- Jenkins_Job_DSL_Plugin » DSL_First_Job

Permalinks

- Last build (#2), 19 sec ago
- Last stable build (#2), 19 sec ago
- Last successful build (#2), 19 sec ago
- Last failed build (#1), 3 min 28 sec ago
- Last unsuccessful build (#1), 3 min 28 sec ago
- Last completed build (#2), 19 sec ago

Generate a Job from the Seed Job



Project DSL_First_Job

Full project name: Jenkins_Job_DSL_Plugin/DSL_First_Job

Build

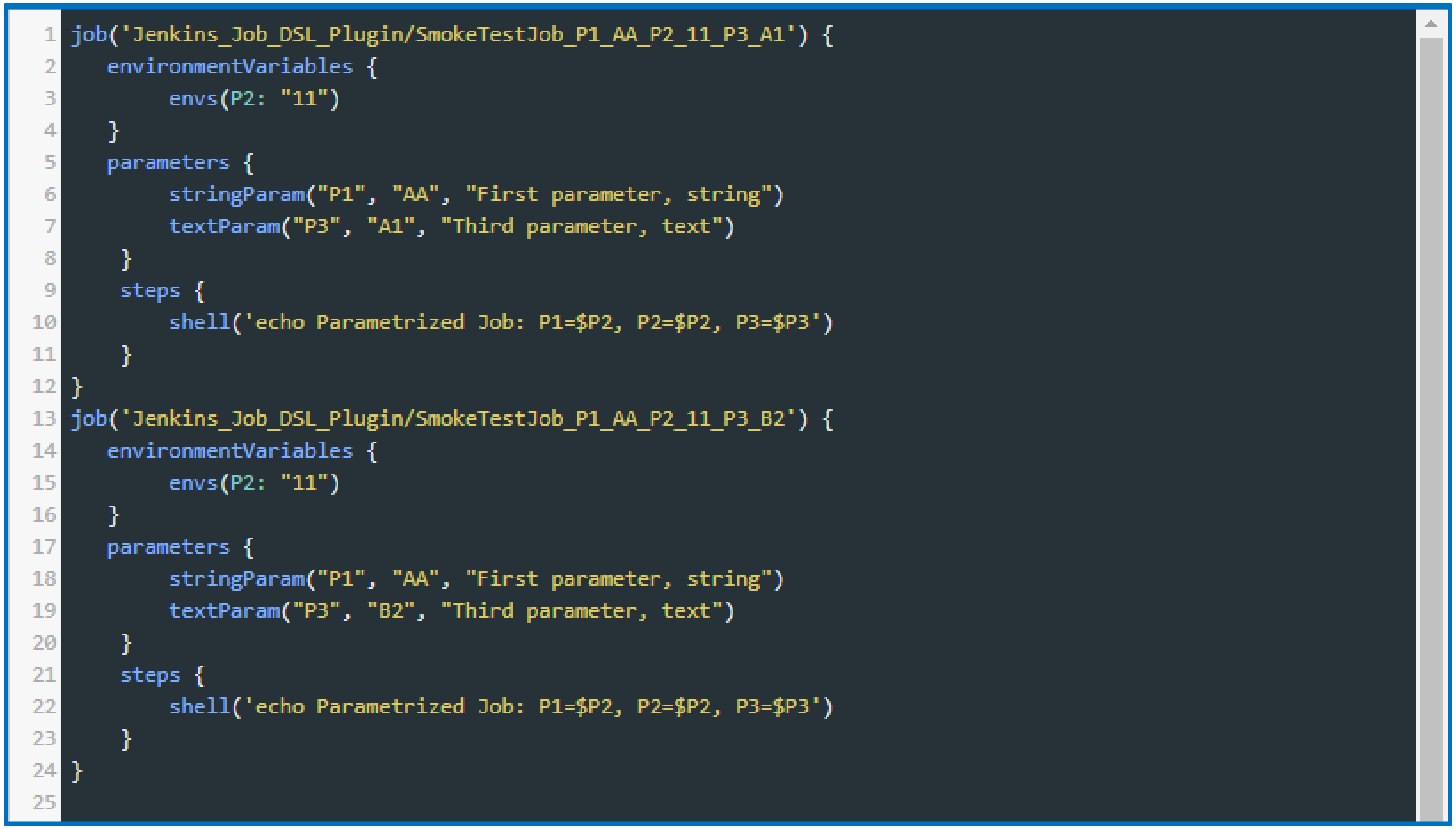
Execute shell

Command

```
echo Hello Jenkins Job DSL
```

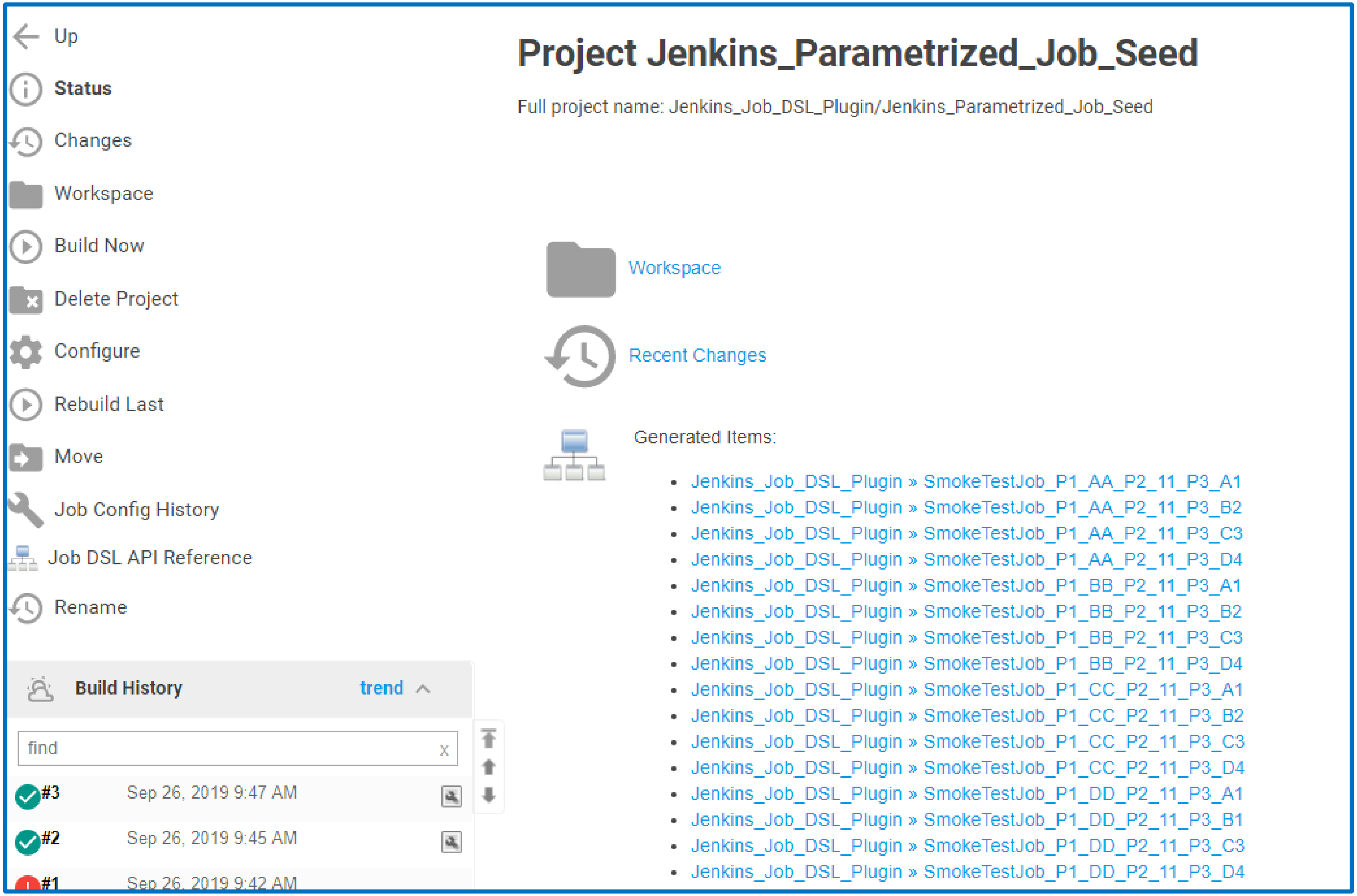
See the list of available environment variables

Let’s Add Some Parameters



```
job('Jenkins_Job_DSL_Plugin/SmokeTestJob_P1_AA_P2_11_P3_A1') {
   environmentVariables {
        envs(P2: "11")
   }
   parameters {
        stringParam("P1", "AA", "First parameter, string")
        textParam("P3", "A1", "Third parameter, text")
    }
    steps {
        shell('echo Parametrized Job: P1=$P2, P2=$P2, P3=$P3')
    }
}
job('Jenkins_Job_DSL_Plugin/SmokeTestJob_P1_AA_P2_11_P3_B2') {
   environmentVariables {
        envs(P2: "11")
   }
   parameters {
        stringParam("P1", "AA", "First parameter, string")
        textParam("P3", "B2", "Third parameter, text")
    }
    steps {
        shell('echo Parametrized Job: P1=$P2, P2=$P2, P3=$P3')
    }
}

```

… and Generate the Jobs



Project Jenkins_Parametrized_Job_Seed

Full project name: Jenkins_Job_DSL_Plugin/Jenkins_Parametrized_Job_Seed

Workspace

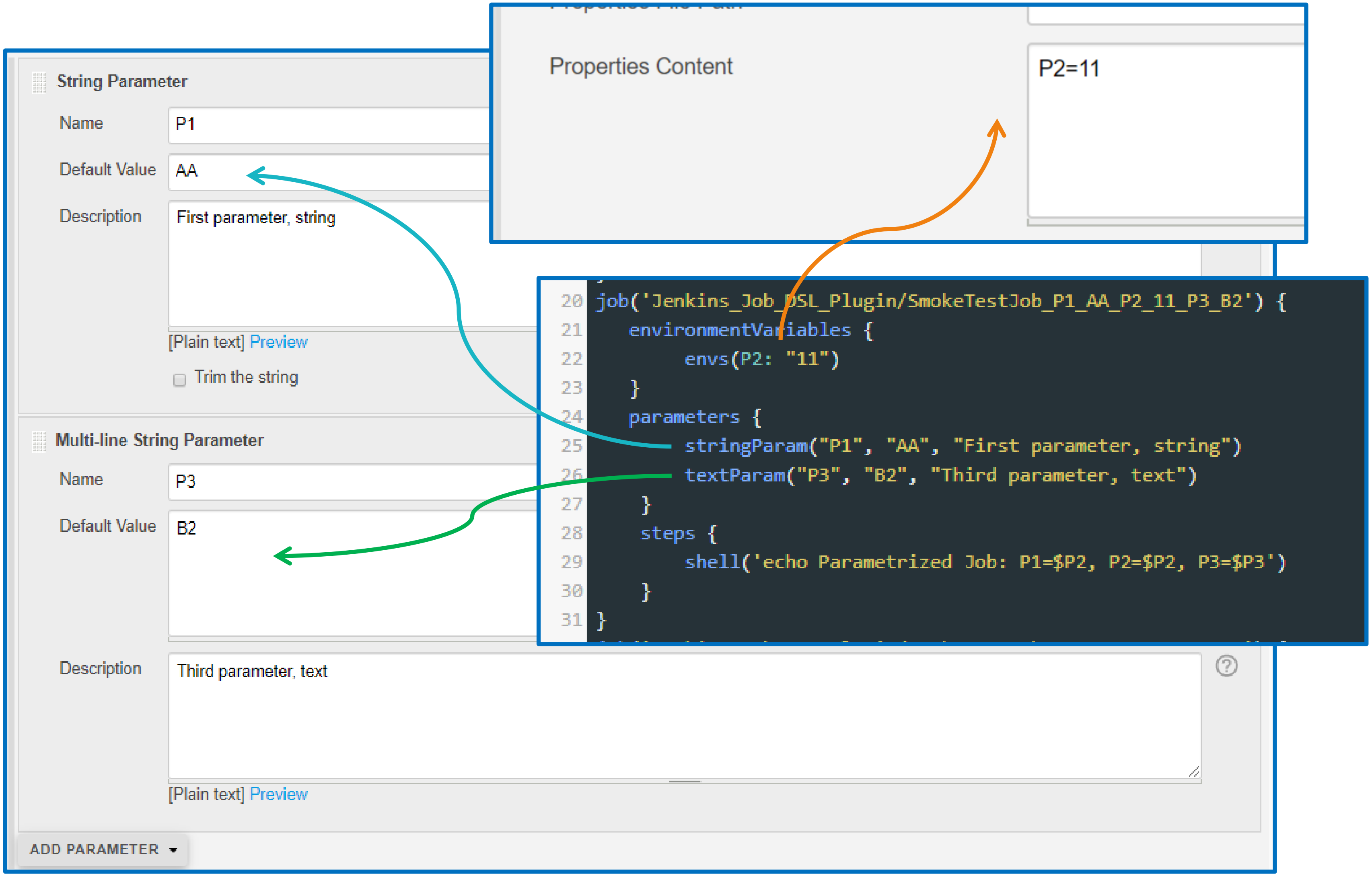
Recent Changes

Generated Items:

- Jenkins_Job_DSL_Plugin » SmokeTestJob_P1_AA_P2_11_P3_A1
- Jenkins_Job_DSL_Plugin » SmokeTestJob_P1_AA_P2_11_P3_B2
- Jenkins_Job_DSL_Plugin » SmokeTestJob_P1_AA_P2_11_P3_C3
- Jenkins_Job_DSL_Plugin » SmokeTestJob_P1_AA_P2_11_P3_D4
- Jenkins_Job_DSL_Plugin » SmokeTestJob_P1_BB_P2_11_P3_A1
- Jenkins_Job_DSL_Plugin » SmokeTestJob_P1_BB_P2_11_P3_B2
- Jenkins_Job_DSL_Plugin » SmokeTestJob_P1_BB_P2_11_P3_C3
- Jenkins_Job_DSL_Plugin » SmokeTestJob_P1_BB_P2_11_P3_D4
- Jenkins_Job_DSL_Plugin » SmokeTestJob_P1_CC_P2_11_P3_A1
- Jenkins_Job_DSL_Plugin » SmokeTestJob_P1_CC_P2_11_P3_B2
- Jenkins_Job_DSL_Plugin » SmokeTestJob_P1_CC_P2_11_P3_C3
- Jenkins_Job_DSL_Plugin » SmokeTestJob_P1_CC_P2_11_P3_D4
- Jenkins_Job_DSL_Plugin » SmokeTestJob_P1_DD_P2_11_P3_A1
- Jenkins_Job_DSL_Plugin » SmokeTestJob_P1_DD_P2_11_P3_B1
- Jenkins_Job_DSL_Plugin » SmokeTestJob_P1_DD_P2_11_P3_C3
- Jenkins_Job_DSL_Plugin » SmokeTestJob_P1_DD_P2_11_P3_D4

✓ #3	Sep 26, 2019 9:47 AM
✓ #2	Sep 26, 2019 9:45 AM
● #1	Sep 26, 2019 9:42 AM

What’s Inside?



Properties File Path

Properties Content: P2=11

String Parameter

Name: P1

Default Value: AA

Description: First parameter, string

[Plain text] Preview

□ Trim the string

Multi-line String Parameter

Name: P3

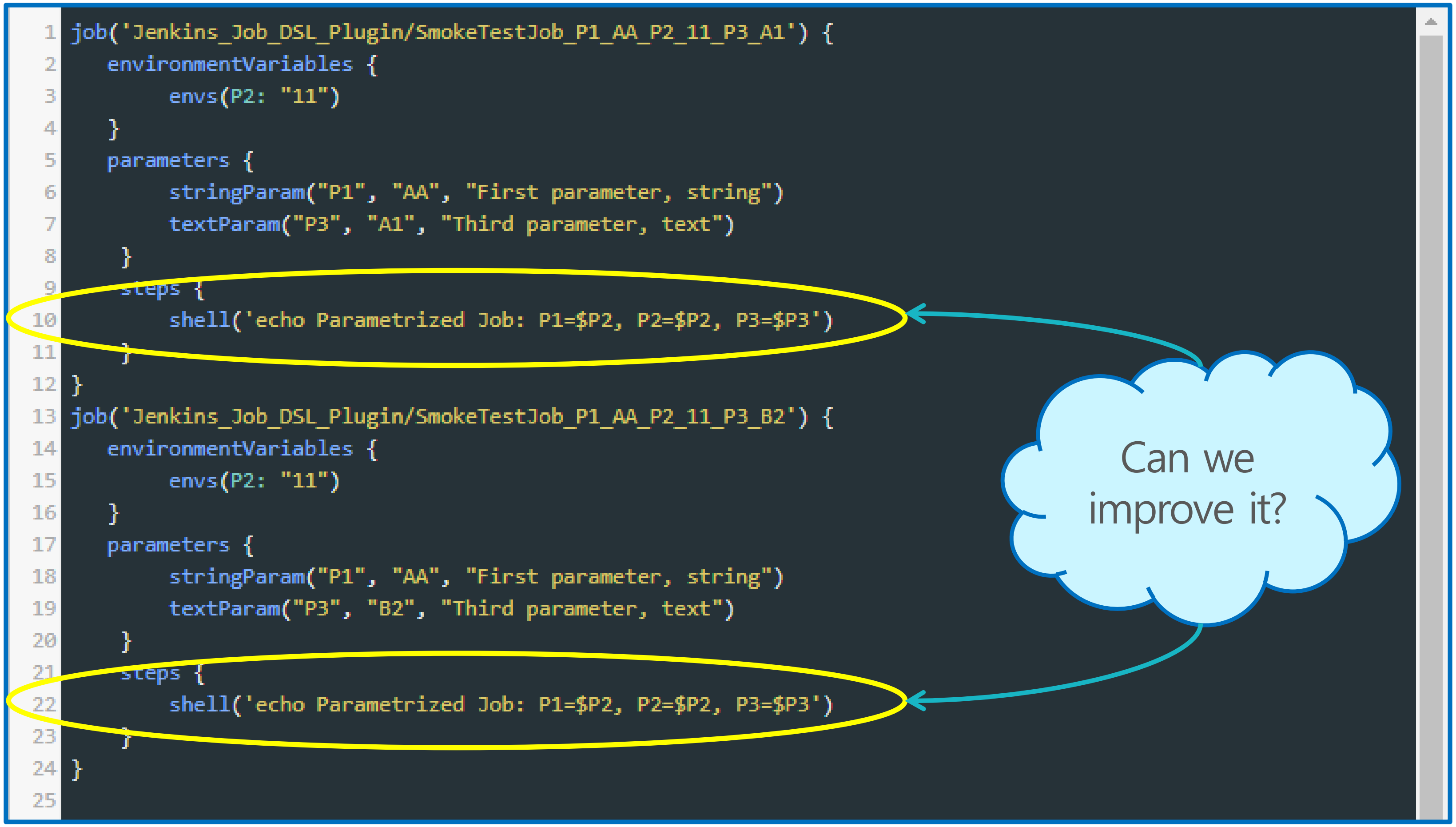
Default Value: B2

Description: Third parameter, text

[Plain text] Preview

```
job('Jenkins_Job_DSL_Plugin/SmokeTestJob_P1_AA_P2_11_P3_B2') {
   environmentVariables {
        envs(P2: "11")
   }
   parameters {
        stringParam("P1", "AA", "First parameter, string")
        textParam("P3", "B2", "Third parameter, text")
    }
    steps {
        shell('echo Parametrized Job: P1=$P2, P2=$P2, P3=$P3')
    }
}
```

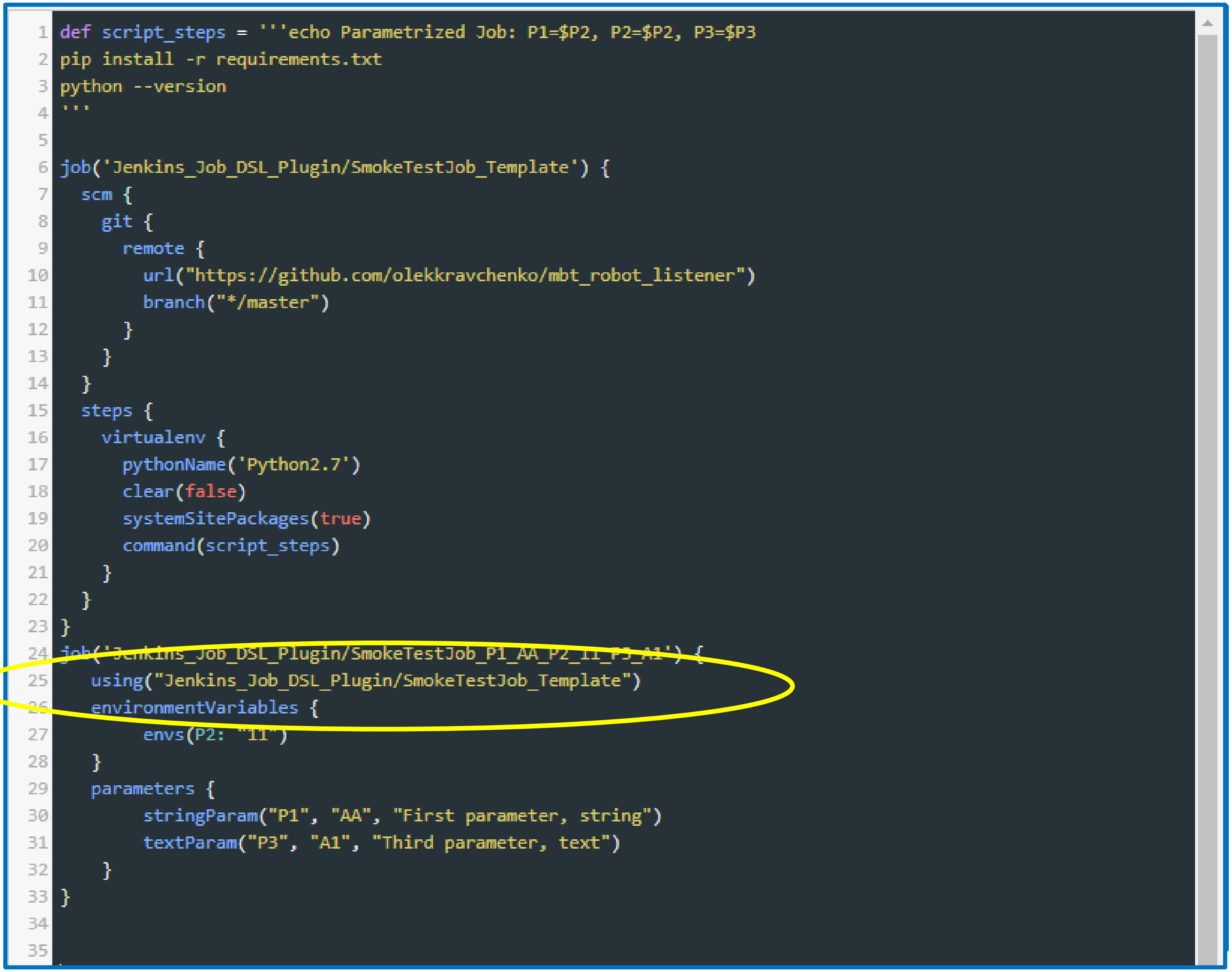
Now DRY It a Little…



```
job('Jenkins_Job_DSL_Plugin/SmokeTestJob_P1_AA_P2_11_P3_A1') {
   environmentVariables {
        envs(P2: "11")
   }
   parameters {
        stringParam("P1", "AA", "First parameter, string")
        textParam("P3", "A1", "Third parameter, text")
    }
    steps {
        shell('echo Parametrized Job: P1=$P2, P2=$P2, P3=$P3')
    }
}
job('Jenkins_Job_DSL_Plugin/SmokeTestJob_P1_AA_P2_11_P3_B2') {
   environmentVariables {
        envs(P2: "11")
   }
   parameters {
        stringParam("P1", "AA", "First parameter, string")
        textParam("P3", "B2", "Third parameter, text")
    }
    steps {
        shell('echo Parametrized Job: P1=$P2, P2=$P2, P3=$P3')
    }
}
```

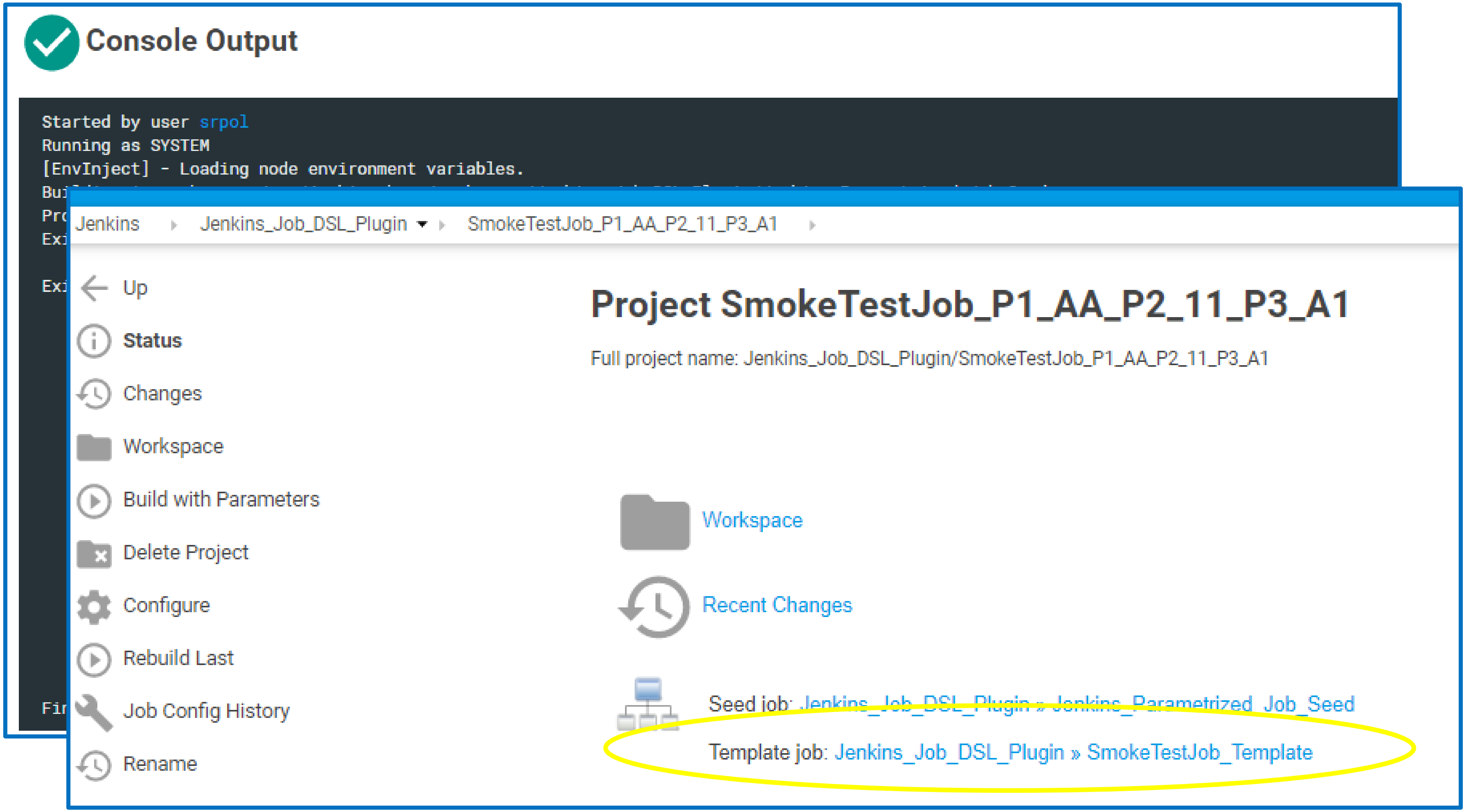
Can we improve it?

Use a Template Job



```
def script_steps = '''echo Parametrized Job: P1=$P2, P2=$P2, P3=$P3
pip install -r requirements.txt
python --version
'''

job('Jenkins_Job_DSL_Plugin/SmokeTestJob_Template') {
  scm {
    git {
      remote {
        url("https://github.com/olekkravchenko/mbt_robot_listener")
        branch("*/master")
      }
    }
  }
  steps {
    virtualenv {
      pythonName('Python2.7')
      clear(false)
      systemSitePackages(true)
      command(script_steps)
    }
  }
}
job('Jenkins_Job_DSL_Plugin/SmokeTestJob_P1_AA_P2_11_P3_A1') {
   using("Jenkins_Job_DSL_Plugin/SmokeTestJob_Template")
   environmentVariables {
        envs(P2: "11")
   }
   parameters {
        stringParam("P1", "AA", "First parameter, string")
        textParam("P3", "A1", "Third parameter, text")
    }
}
```

Build Results



Console Output

```
Started by user srpol
Running as SYSTEM
[EnvInject] - Loading node environment variables.
Bui
Pro
Exi

Exi




Fir
```

Jenkins › Jenkins_Job_DSL_Plugin › SmokeTestJob_P1_AA_P2_11_P3_A1 ›

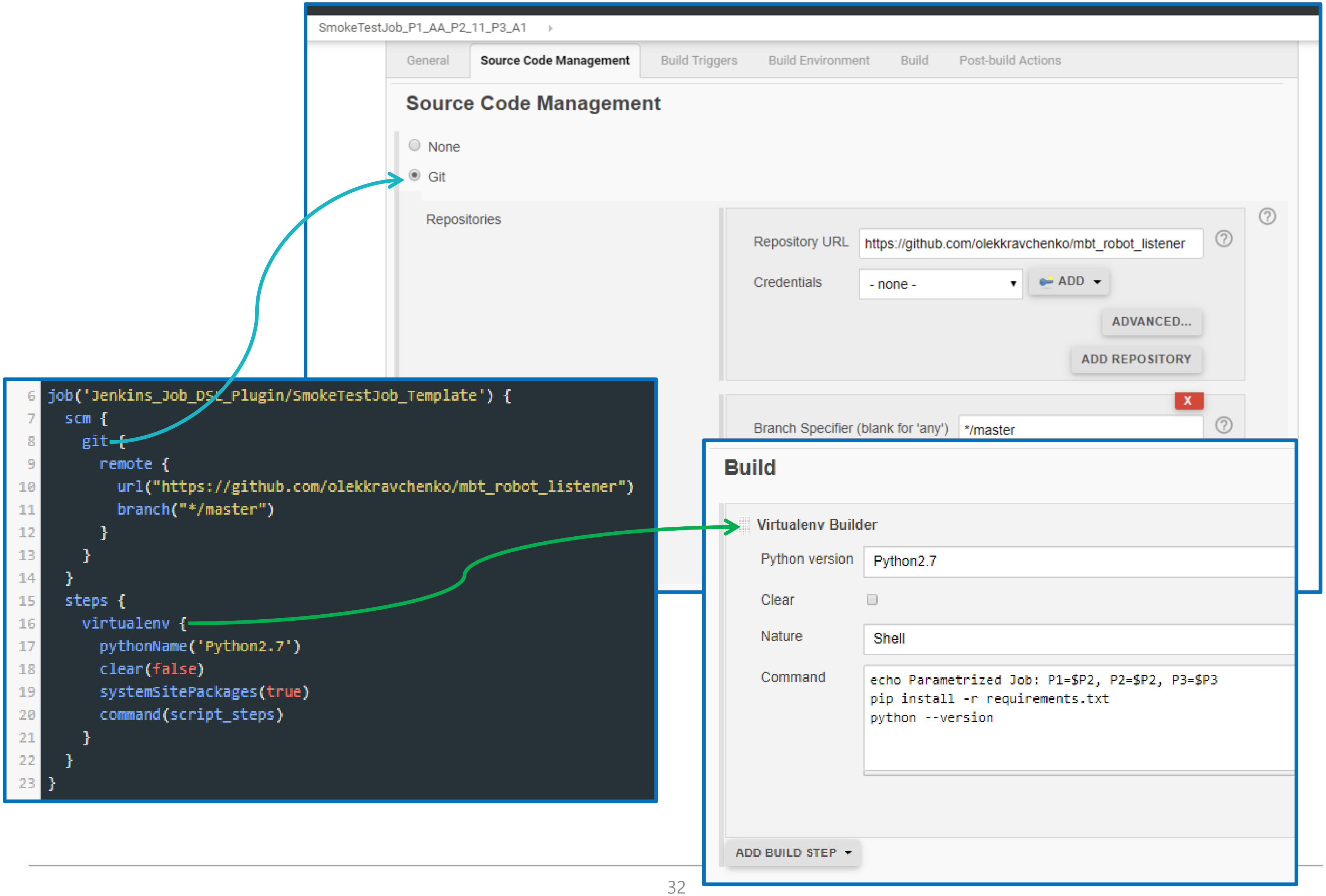
Project SmokeTestJob_P1_AA_P2_11_P3_A1

Full project name: Jenkins_Job_DSL_Plugin/SmokeTestJob_P1_AA_P2_11_P3_A1

Seed job: Jenkins_Job_DSL_Plugin » Jenkins_Parametrized_Job_Seed

Template job: Jenkins_Job_DSL_Plugin » SmokeTestJob_Template

What’s Generated?



SmokeTestJob_P1_AA_P2_11_P3_A1

Source Code Management

○ None

● Git

Repositories

Repository URL: https://github.com/olekkravchenko/mbt_robot_listener

Credentials: - none -

Branch Specifier (blank for 'any'): */master

```
job('Jenkins_Job_DSL_Plugin/SmokeTestJob_Template') {
  scm {
    git {
      remote {
        url("https://github.com/olekkravchenko/mbt_robot_listener")
        branch("*/master")
      }
    }
  }
  steps {
    virtualenv {
      pythonName('Python2.7')
      clear(false)
      systemSitePackages(true)
      command(script_steps)
    }
  }
}
```

Build

Virtualenv Builder

Python version: Python2.7

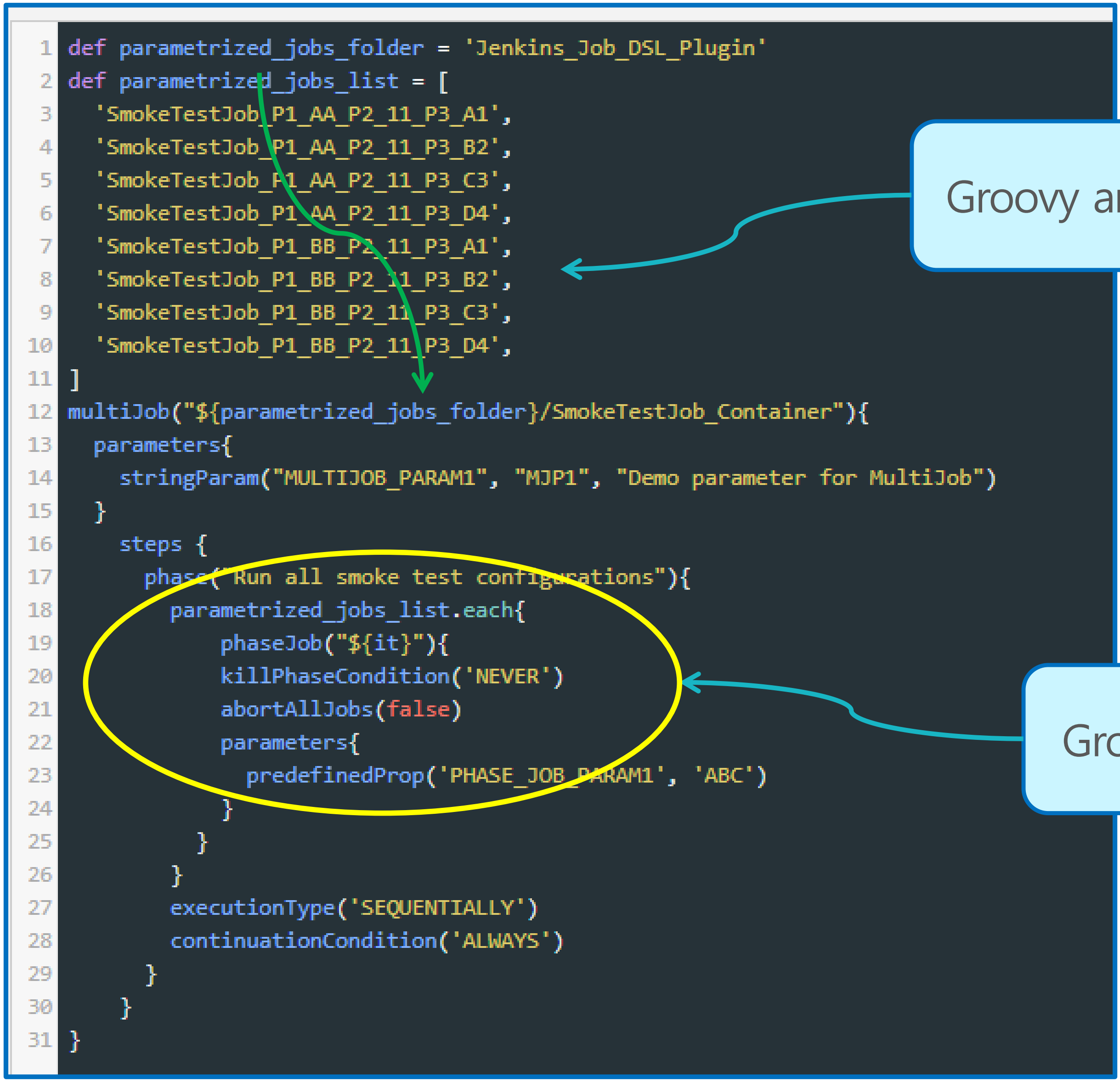
Clear: □

Nature: Shell

Command:

```
echo Parametrized Job: P1=$P2, P2=$P2, P3=$P3
pip install -r requirements.txt
python --version
```

Bringing It All Together…

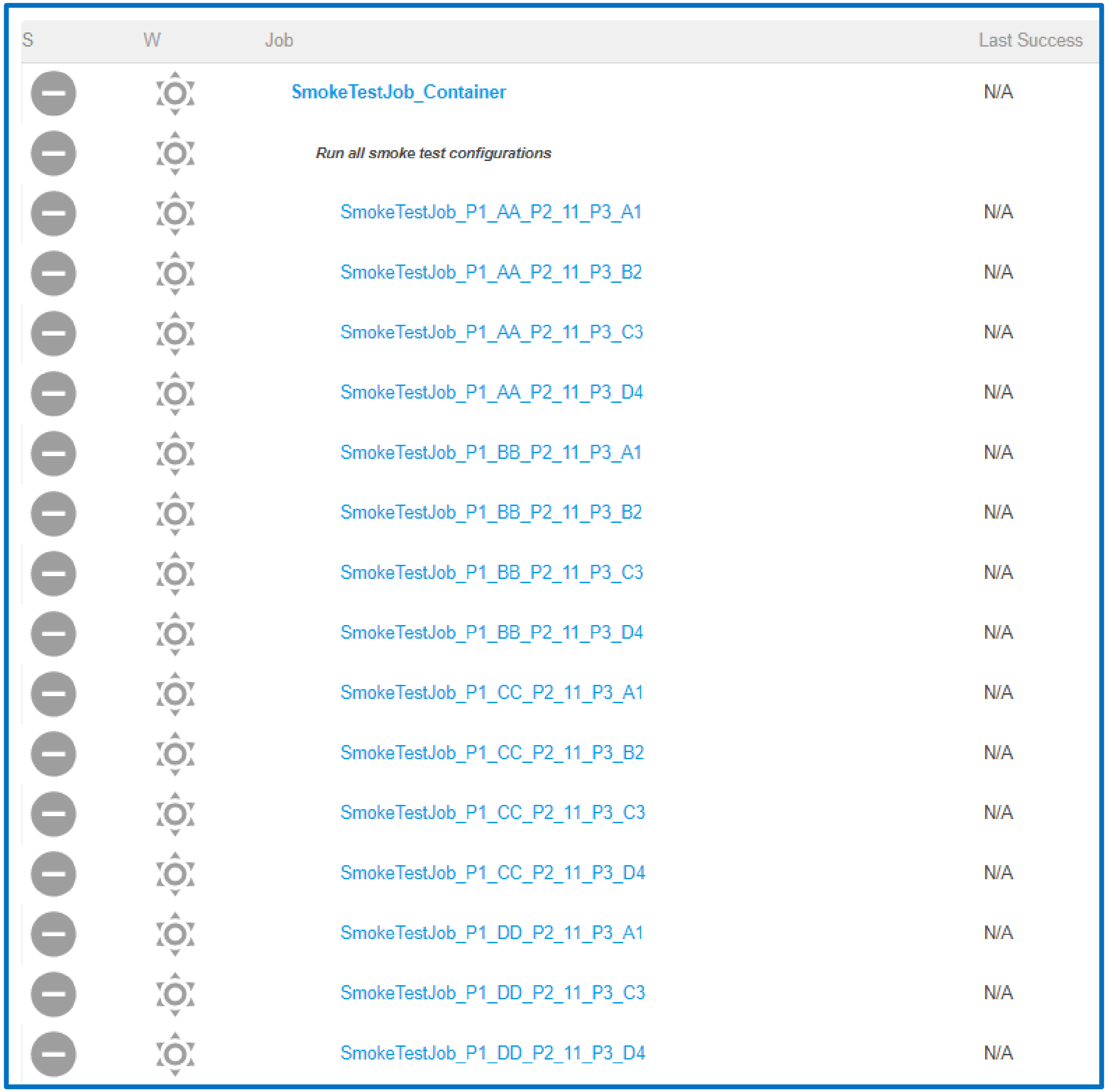


```
def parametrized_jobs_folder = 'Jenkins_Job_DSL_Plugin'
def parametrized_jobs_list = [
  'SmokeTestJob_P1_AA_P2_11_P3_A1',
  'SmokeTestJob_P1_AA_P2_11_P3_B2',
  'SmokeTestJob_P1_AA_P2_11_P3_C3',
  'SmokeTestJob_P1_AA_P2_11_P3_D4',
  'SmokeTestJob_P1_BB_P2_11_P3_A1',
  'SmokeTestJob_P1_BB_P2_11_P3_B2',
  'SmokeTestJob_P1_BB_P2_11_P3_C3',
  'SmokeTestJob_P1_BB_P2_11_P3_D4',
]
multiJob("${parametrized_jobs_folder}/SmokeTestJob_Container"){
  parameters{
    stringParam("MULTIJOB_PARAM1", "MJP1", "Demo parameter for MultiJob")
  }
    steps {
      phase("Run all smoke test configurations"){
        parametrized_jobs_list.each{
            phaseJob("${it}"){
            killPhaseCondition('NEVER')
            abortAllJobs(false)
            parameters{
              predefinedProp('PHASE_JOB_PARAM1', 'ABC')
            }
          }
        }
        executionType('SEQUENTIALLY')
        continuationCondition('ALWAYS')
      }
    }
}
```

Groovy array

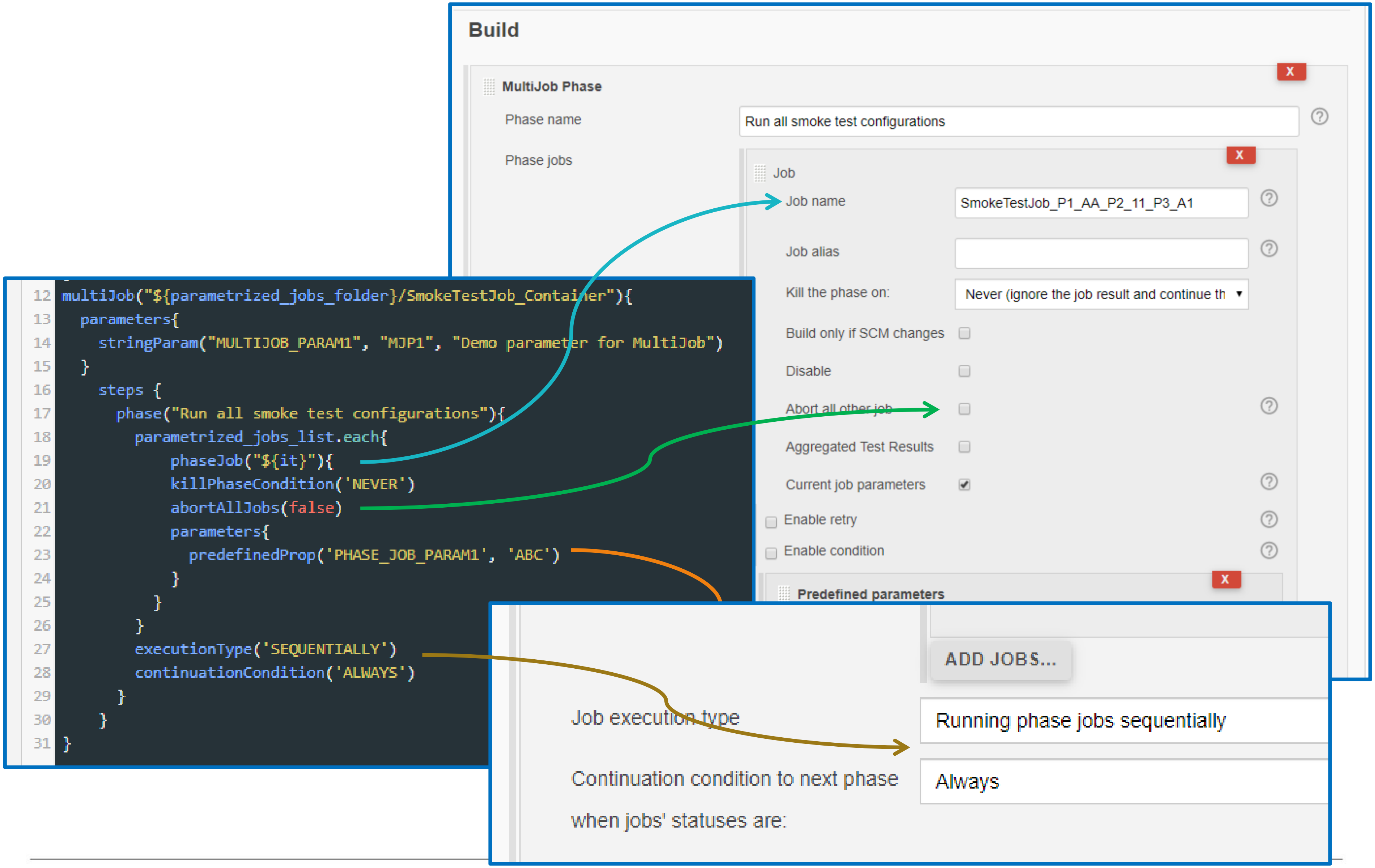
Groovy loop

And the Amazing Result Is…



S	W	Job	Last Success
⊖	☼	SmokeTestJob_Container	N/A
⊖	☼	*Run all smoke test configurations*	
⊖	☼	SmokeTestJob_P1_AA_P2_11_P3_A1	N/A
⊖	☼	SmokeTestJob_P1_AA_P2_11_P3_B2	N/A
⊖	☼	SmokeTestJob_P1_AA_P2_11_P3_C3	N/A
⊖	☼	SmokeTestJob_P1_AA_P2_11_P3_D4	N/A
⊖	☼	SmokeTestJob_P1_BB_P2_11_P3_A1	N/A
⊖	☼	SmokeTestJob_P1_BB_P2_11_P3_B2	N/A
⊖	☼	SmokeTestJob_P1_BB_P2_11_P3_C3	N/A
⊖	☼	SmokeTestJob_P1_BB_P2_11_P3_D4	N/A
⊖	☼	SmokeTestJob_P1_CC_P2_11_P3_A1	N/A
⊖	☼	SmokeTestJob_P1_CC_P2_11_P3_B2	N/A
⊖	☼	SmokeTestJob_P1_CC_P2_11_P3_C3	N/A
⊖	☼	SmokeTestJob_P1_CC_P2_11_P3_D4	N/A
⊖	☼	SmokeTestJob_P1_DD_P2_11_P3_A1	N/A
⊖	☼	SmokeTestJob_P1_DD_P2_11_P3_C3	N/A
⊖	☼	SmokeTestJob_P1_DD_P2_11_P3_D4	N/A

Most Important Parts in MultiJob Seed



```
multiJob("${parametrized_jobs_folder}/SmokeTestJob_Container"){
 parameters{
  stringParam("MULTIJOB_PARAM1", "MJP1", "Demo parameter for MultiJob")
 }
  steps {
   phase("Run all smoke test configurations"){
    parametrized_jobs_list.each{
      phaseJob("${it}"){
      killPhaseCondition('NEVER')
      abortAllJobs(false)
      parameters{
       predefinedProp('PHASE_JOB_PARAM1', 'ABC')
      }
     }
    }
    executionType('SEQUENTIALLY')
    continuationCondition('ALWAYS')
   }
  }
}
```

Build

MultiJob Phase

Phase name: Run all smoke test configurations

Phase jobs

Job

- Job name: SmokeTestJob_P1_AA_P2_11_P3_A1
- Job alias:
- Kill the phase on: Never (ignore the job result and continue th ▾
- Build only if SCM changes □
- Disable □
- Abort all other job □
- Aggregated Test Results □
- Current job parameters ☑
- □ Enable retry
- □ Enable condition

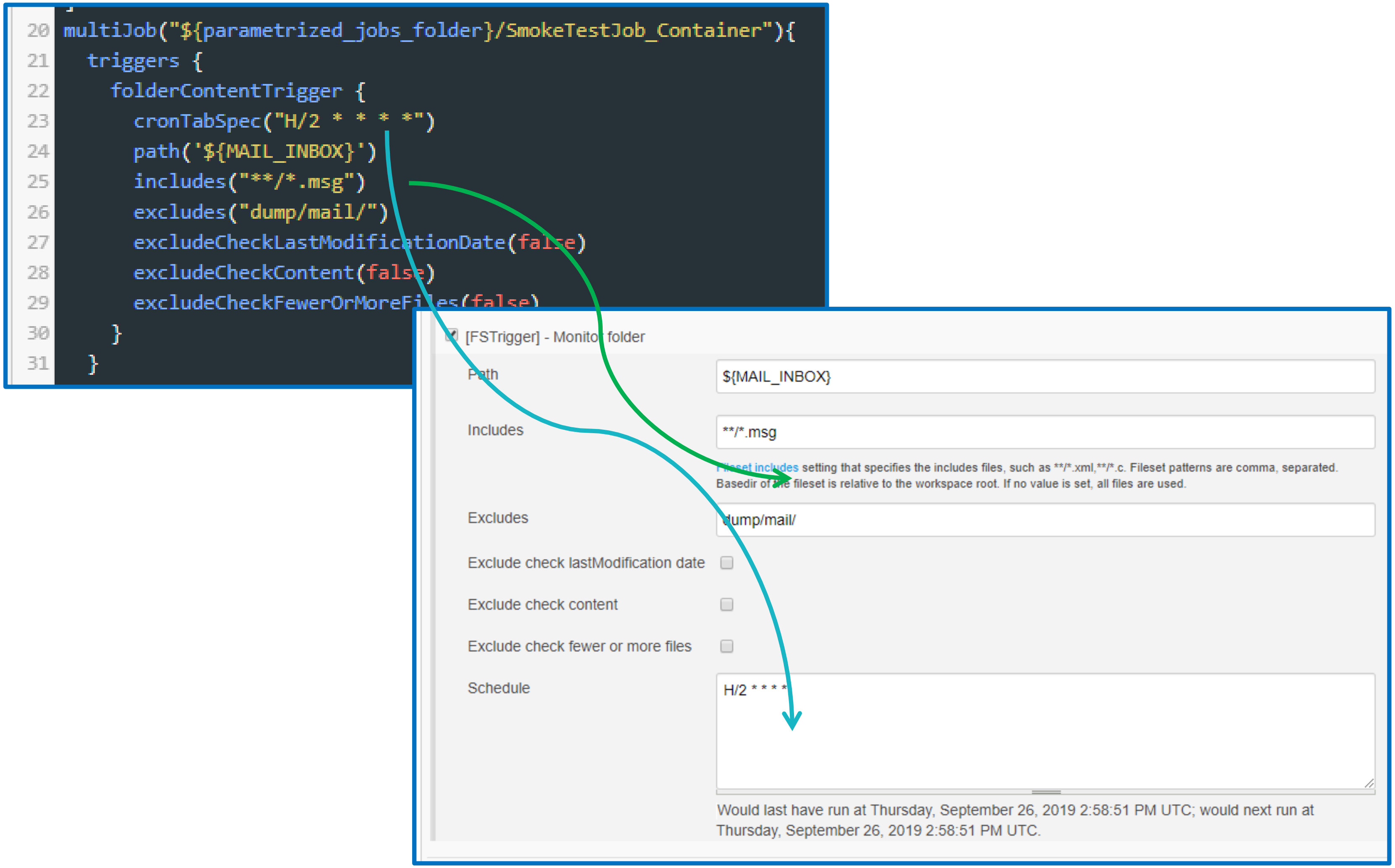
Predefined parameters

Job execution type: Running phase jobs sequentially

Continuation condition to next phase when jobs' statuses are: Always

What’s Missing?

Trigger



```
multiJob("${parametrized_jobs_folder}/SmokeTestJob_Container"){
  triggers {
    folderContentTrigger {
      cronTabSpec("H/2 * * * *")
      path('${MAIL_INBOX}')
      includes("**/*.msg")
      excludes("dump/mail/")
      excludeCheckLastModificationDate(false)
      excludeCheckContent(false)
      excludeCheckFewerOrMoreFiles(false)
    }
  }
```

☑ [FSTrigger] - Monitor folder

Path: ${MAIL_INBOX}

Includes: **/*.msg

Fileset includes setting that specifies the includes files, such as **/*.xml,**/*.c. Fileset patterns are comma, separated. Basedir of the fileset is relative to the workspace root. If no value is set, all files are used.

Excludes: dump/mail/

Exclude check lastModification date □

Exclude check content □

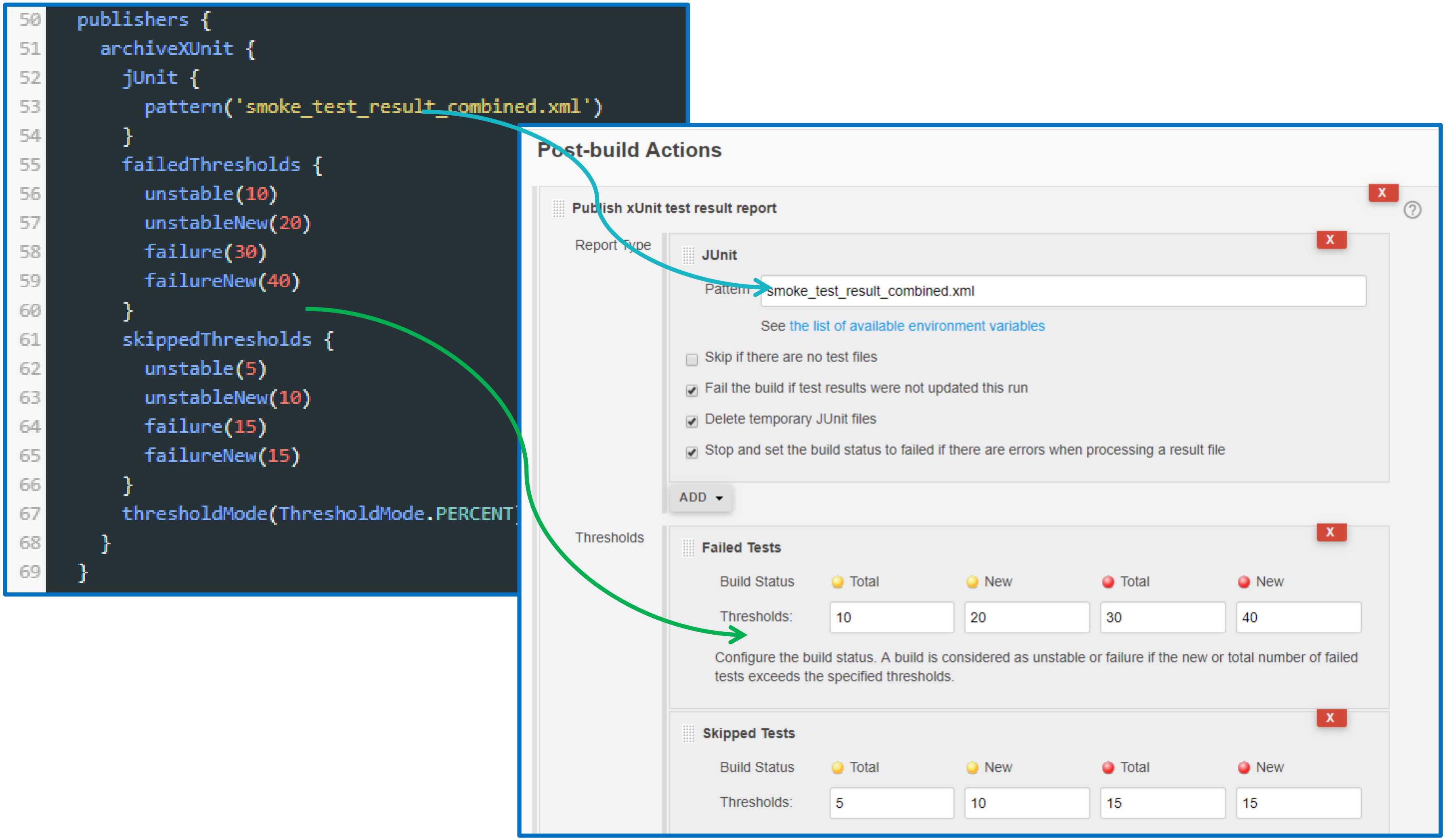
Exclude check fewer or more files □

Schedule: H/2 * * * *

Would last have run at Thursday, September 26, 2019 2:58:51 PM UTC; would next run at Thursday, September 26, 2019 2:58:51 PM UTC.

What’s Missing?

Result Publisher



```
publishers {
  archiveXUnit {
    jUnit {
      pattern('smoke_test_result_combined.xml')
    }
    failedThresholds {
      unstable(10)
      unstableNew(20)
      failure(30)
      failureNew(40)
    }
    skippedThresholds {
      unstable(5)
      unstableNew(10)
      failure(15)
      failureNew(15)
    }
    thresholdMode(ThresholdMode.PERCENT)
  }
}
```

Post-build Actions

Publish xUnit test result report

Report Type

JUnit

Pattern: smoke_test_result_combined.xml

See the list of available environment variables

- □ Skip if there are no test files
- ☑ Fail the build if test results were not updated this run
- ☑ Delete temporary JUnit files
- ☑ Stop and set the build status to failed if there are errors when processing a result file

Thresholds

Failed Tests

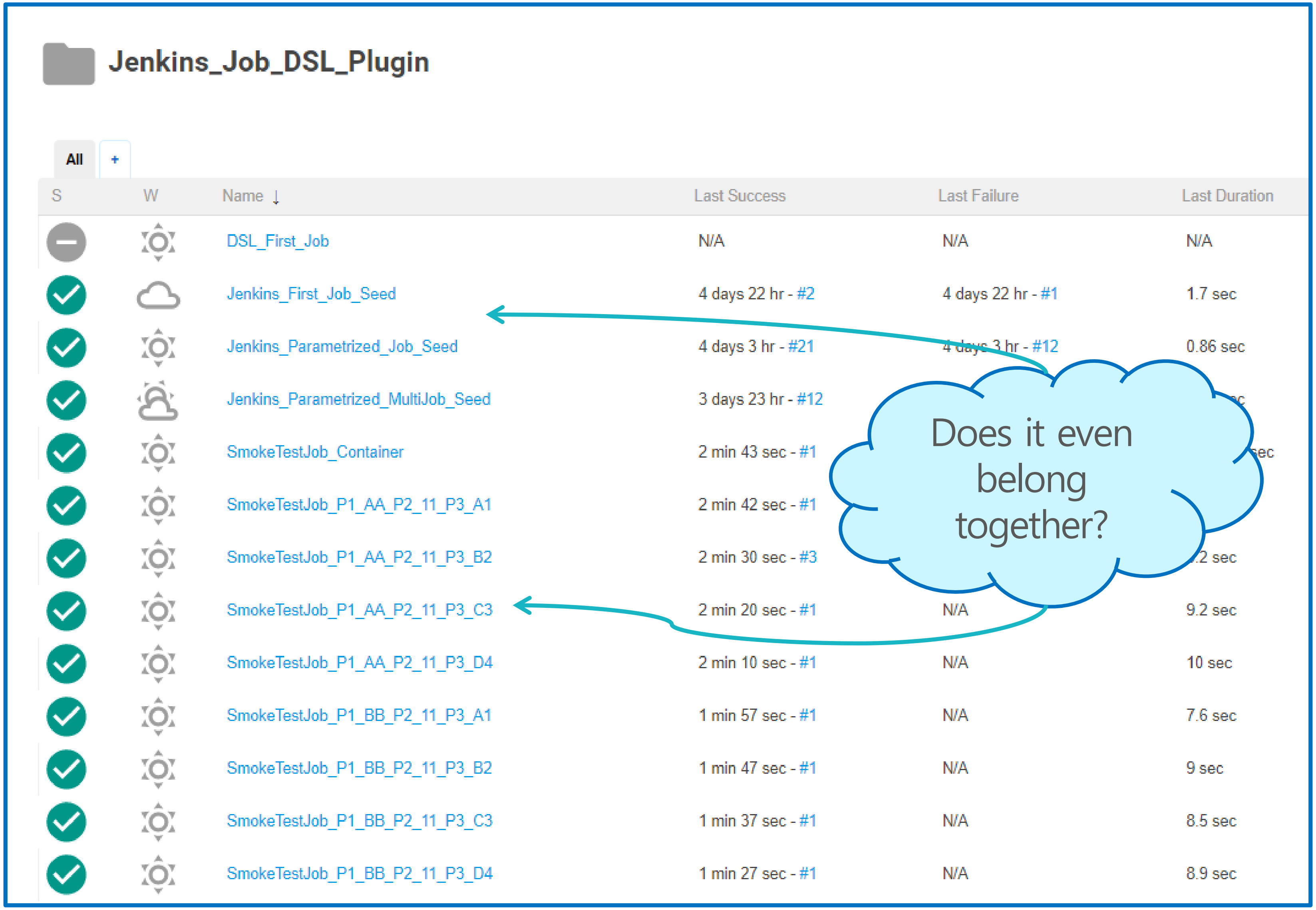
Build Status	● Total	● New	● Total	● New
Thresholds:	10	20	30	40

Configure the build status. A build is considered as unstable or failure if the new or total number of failed tests exceeds the specified thresholds.

Skipped Tests

Build Status	● Total	● New	● Total	● New
Thresholds:	5	10	15	15

It’s a Little Bit Messy



Jenkins_Job_DSL_Plugin

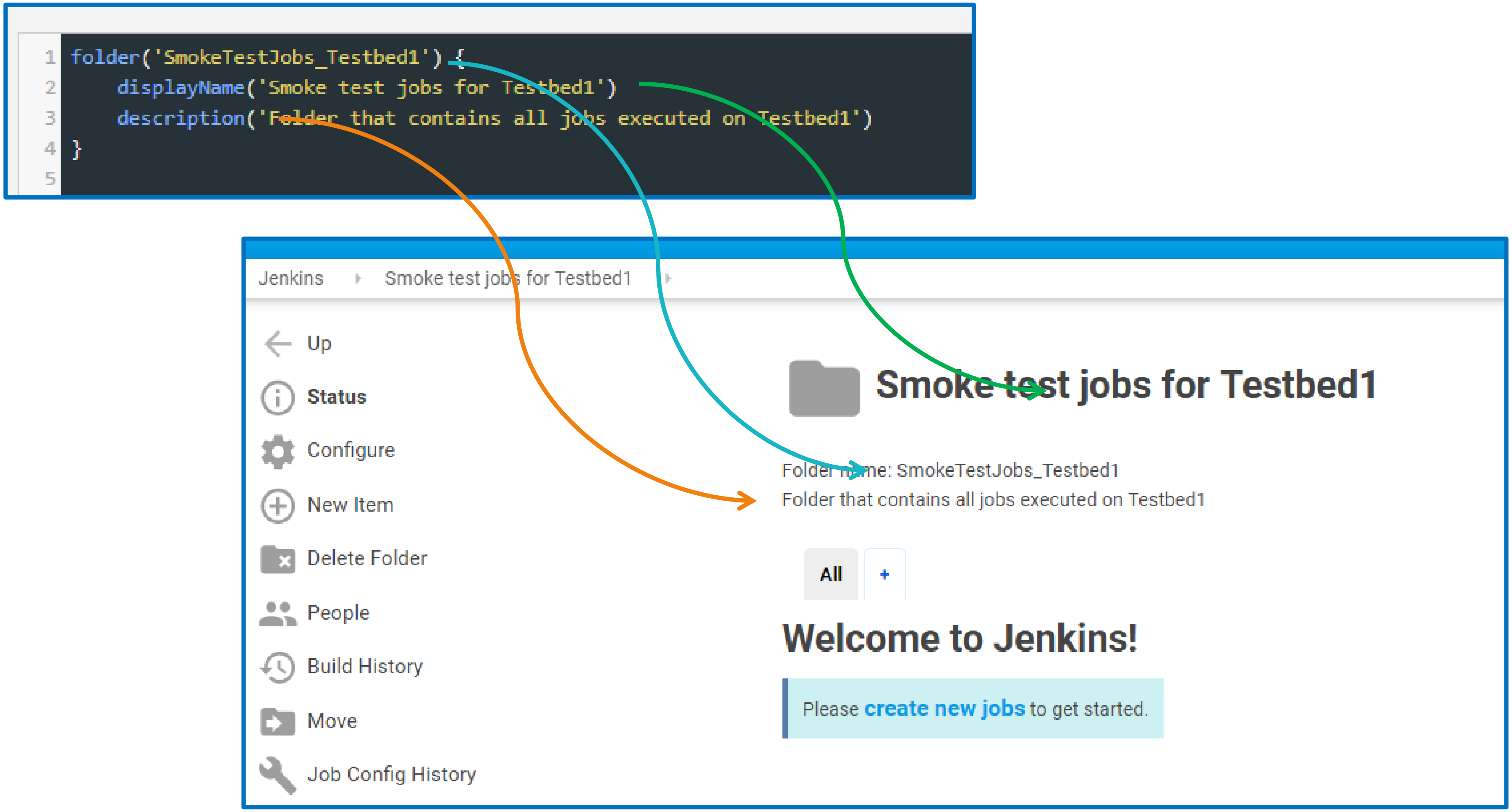
All | +

S	W	Name ↓	Last Success	Last Failure	Last Duration
⊖	☀	DSL_First_Job	N/A	N/A	N/A
✓	☁	Jenkins_First_Job_Seed	4 days 22 hr - #2	4 days 22 hr - #1	1.7 sec
✓	☀	Jenkins_Parametrized_Job_Seed	4 days 3 hr - #21	4 days 3 hr - #12	0.86 sec
✓	⛅	Jenkins_Parametrized_MultiJob_Seed	3 days 23 hr - #12		c
✓	☀	SmokeTestJob_Container	2 min 43 sec - #1		sec
✓	☀	SmokeTestJob_P1_AA_P2_11_P3_A1	2 min 42 sec - #1		
✓	☀	SmokeTestJob_P1_AA_P2_11_P3_B2	2 min 30 sec - #3		.2 sec
✓	☀	SmokeTestJob_P1_AA_P2_11_P3_C3	2 min 20 sec - #1	N/A	9.2 sec
✓	☀	SmokeTestJob_P1_AA_P2_11_P3_D4	2 min 10 sec - #1	N/A	10 sec
✓	☀	SmokeTestJob_P1_BB_P2_11_P3_A1	1 min 57 sec - #1	N/A	7.6 sec
✓	☀	SmokeTestJob_P1_BB_P2_11_P3_B2	1 min 47 sec - #1	N/A	9 sec
✓	☀	SmokeTestJob_P1_BB_P2_11_P3_C3	1 min 37 sec - #1	N/A	8.5 sec
✓	☀	SmokeTestJob_P1_BB_P2_11_P3_D4	1 min 27 sec - #1	N/A	8.9 sec

Does it even belong together?

Let’s Organize It Better

Create a Separate Folder



```
folder('SmokeTestJobs_Testbed1') {
    displayName('Smoke test jobs for Testbed1')
    description('Folder that contains all jobs executed on Testbed1')
}
```

Smoke test jobs for Testbed1

Folder name: SmokeTestJobs_Testbed1

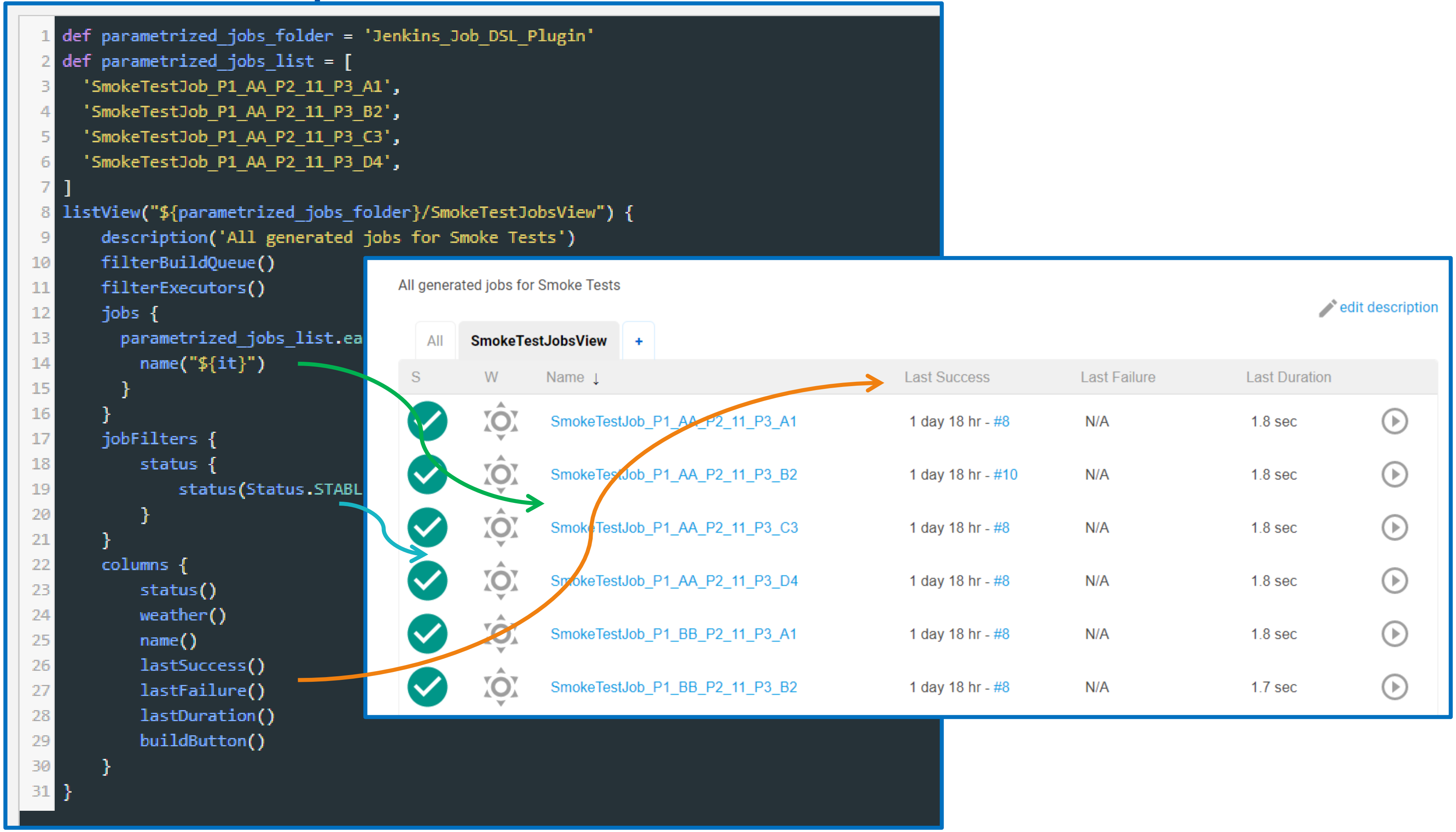
Folder that contains all jobs executed on Testbed1

Welcome to Jenkins!

Please **create new jobs** to get started.

Let’s Organize It Better

Create a Separate View



```
def parametrized_jobs_folder = 'Jenkins_Job_DSL_Plugin'
def parametrized_jobs_list = [
  'SmokeTestJob_P1_AA_P2_11_P3_A1',
  'SmokeTestJob_P1_AA_P2_11_P3_B2',
  'SmokeTestJob_P1_AA_P2_11_P3_C3',
  'SmokeTestJob_P1_AA_P2_11_P3_D4',
]
listView("${parametrized_jobs_folder}/SmokeTestJobsView") {
    description('All generated jobs for Smoke Tests')
    filterBuildQueue()
    filterExecutors()
    jobs {
      parametrized_jobs_list.ea
        name("${it}")
      }
    }
    jobFilters {
        status {
            status(Status.STABL
        }
    }
    columns {
        status()
        weather()
        name()
        lastSuccess()
        lastFailure()
        lastDuration()
        buildButton()
    }
}
```

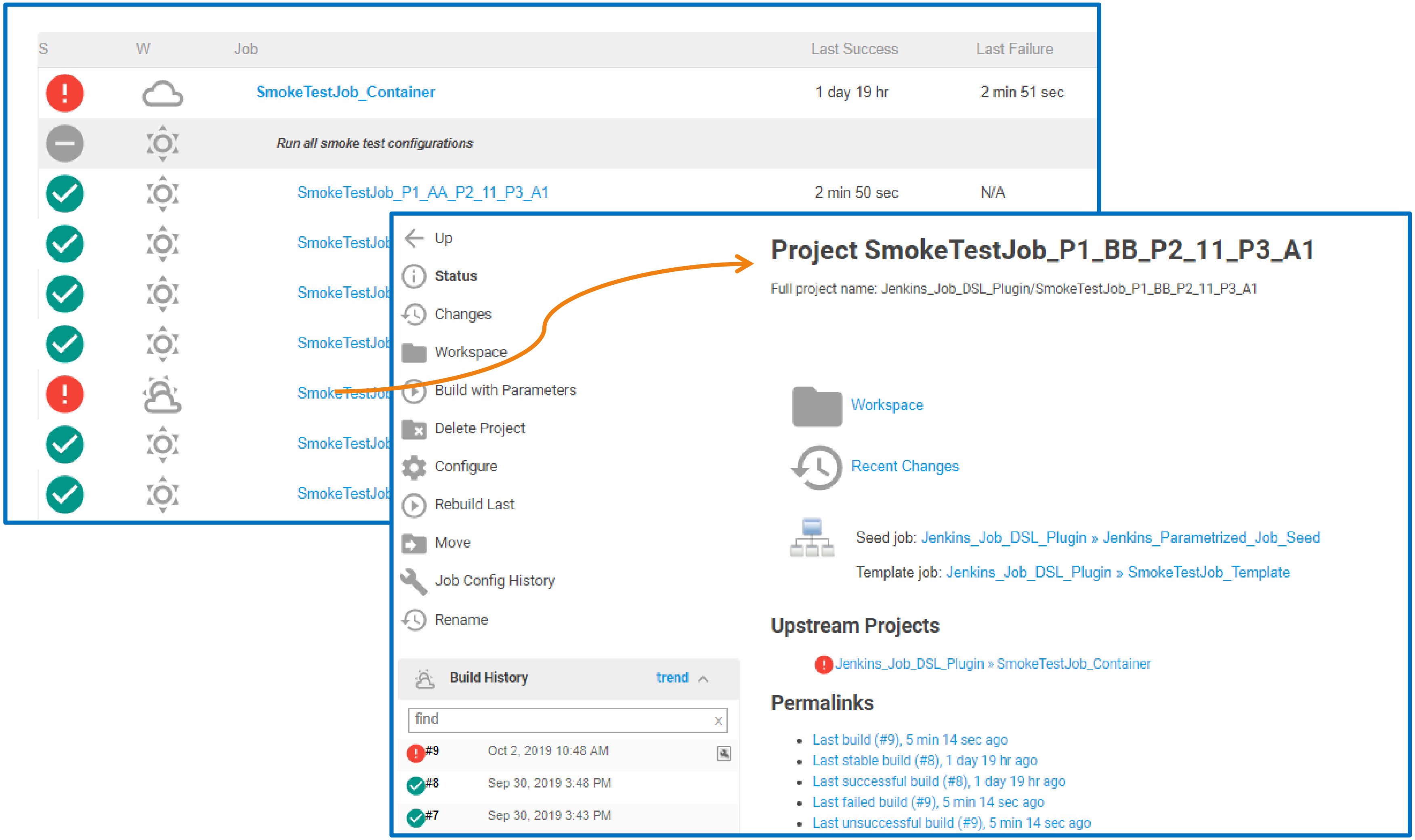
All generated jobs for Smoke Tests

edit description

S	W	Name ↓	Last Success	Last Failure	Last Duration	
✓	☀	SmokeTestJob_P1_AA_P2_11_P3_A1	1 day 18 hr - #8	N/A	1.8 sec	▶
✓	☀	SmokeTestJob_P1_AA_P2_11_P3_B2	1 day 18 hr - #10	N/A	1.8 sec	▶
✓	☀	SmokeTestJob_P1_AA_P2_11_P3_C3	1 day 18 hr - #8	N/A	1.8 sec	▶
✓	☀	SmokeTestJob_P1_AA_P2_11_P3_D4	1 day 18 hr - #8	N/A	1.8 sec	▶
✓	☀	SmokeTestJob_P1_BB_P2_11_P3_A1	1 day 18 hr - #8	N/A	1.8 sec	▶
✓	☀	SmokeTestJob_P1_BB_P2_11_P3_B2	1 day 18 hr - #8	N/A	1.7 sec	▶

What Did We Achieve?

Can isolate particular configuration failure



S	W	Job	Last Success	Last Failure
❗	☁	SmokeTestJob_Container	1 day 19 hr	2 min 51 sec
⊖	☀	*Run all smoke test configurations*		
✓	☀	SmokeTestJob_P1_AA_P2_11_P3_A1	2 min 50 sec	N/A
✓	☀	SmokeTestJob		
✓	☀	SmokeTestJob		
✓	☀	SmokeTestJob		
❗	⛅	SmokeTestJob		
✓	☀	SmokeTestJob		
✓	☀	SmokeTestJob		

❗ #9	Oct 2, 2019 10:48 AM	
✓ #8	Sep 30, 2019 3:48 PM	
✓ #7	Sep 30, 2019 3:43 PM	

Project SmokeTestJob_P1_BB_P2_11_P3_A1

Full project name: Jenkins_Job_DSL_Plugin/SmokeTestJob_P1_BB_P2_11_P3_A1

Workspace

Recent Changes

Seed job: Jenkins_Job_DSL_Plugin » Jenkins_Parametrized_Job_Seed

Template job: Jenkins_Job_DSL_Plugin » SmokeTestJob_Template

Upstream Projects

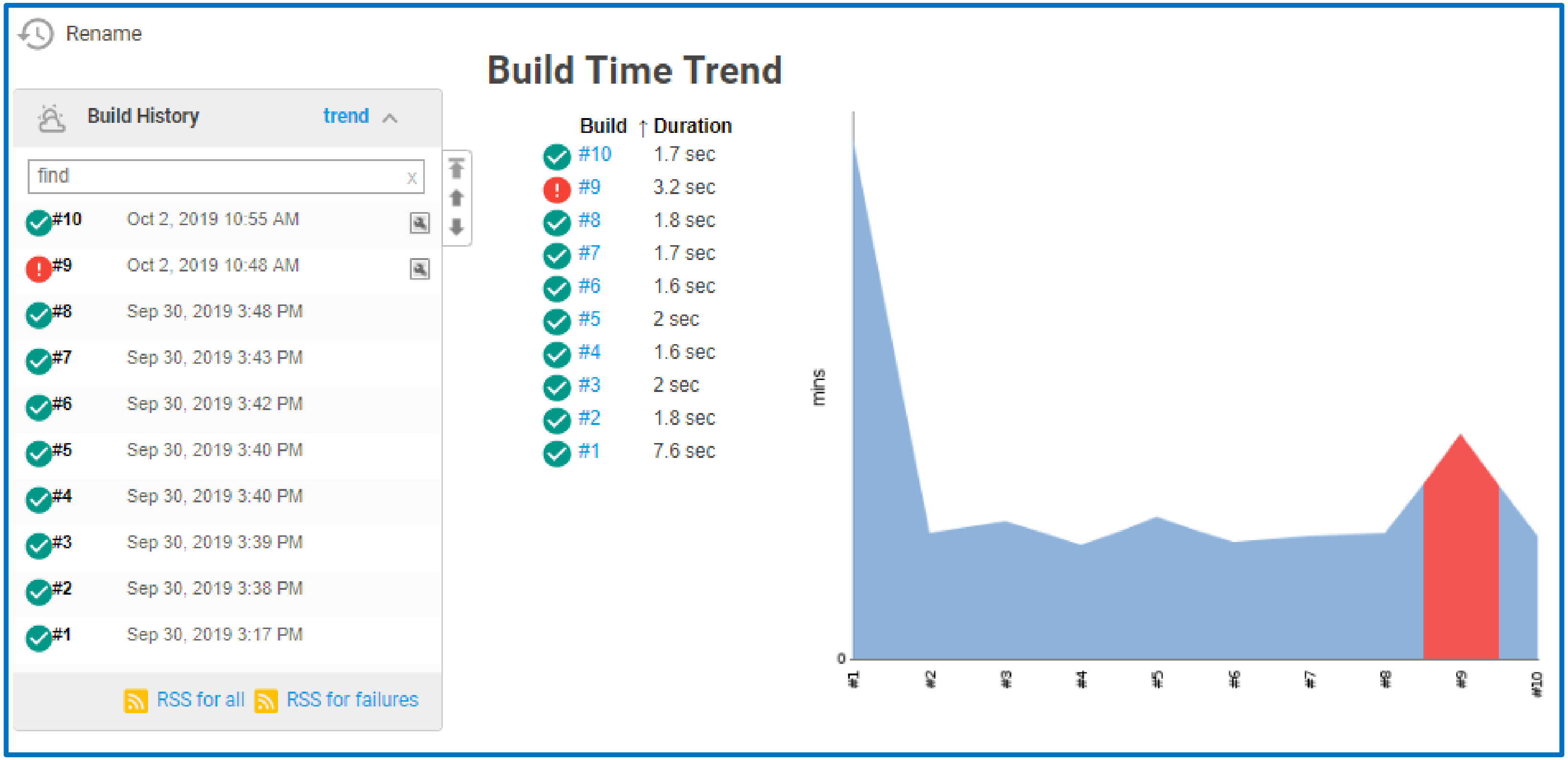
❗ Jenkins_Job_DSL_Plugin » SmokeTestJob_Container

Permalinks

- Last build (#9), 5 min 14 sec ago
- Last stable build (#8), 1 day 19 hr ago
- Last successful build (#8), 1 day 19 hr ago
- Last failed build (#9), 5 min 14 sec ago
- Last unsuccessful build (#9), 5 min 14 sec ago

What Did We Achieve?

Execution result history is separate for each job



Rename

Build History trend

find

✓	#10	Oct 2, 2019 10:55 AM
!	#9	Oct 2, 2019 10:48 AM
✓	#8	Sep 30, 2019 3:48 PM
✓	#7	Sep 30, 2019 3:43 PM
✓	#6	Sep 30, 2019 3:42 PM
✓	#5	Sep 30, 2019 3:40 PM
✓	#4	Sep 30, 2019 3:40 PM
✓	#3	Sep 30, 2019 3:39 PM
✓	#2	Sep 30, 2019 3:38 PM
✓	#1	Sep 30, 2019 3:17 PM

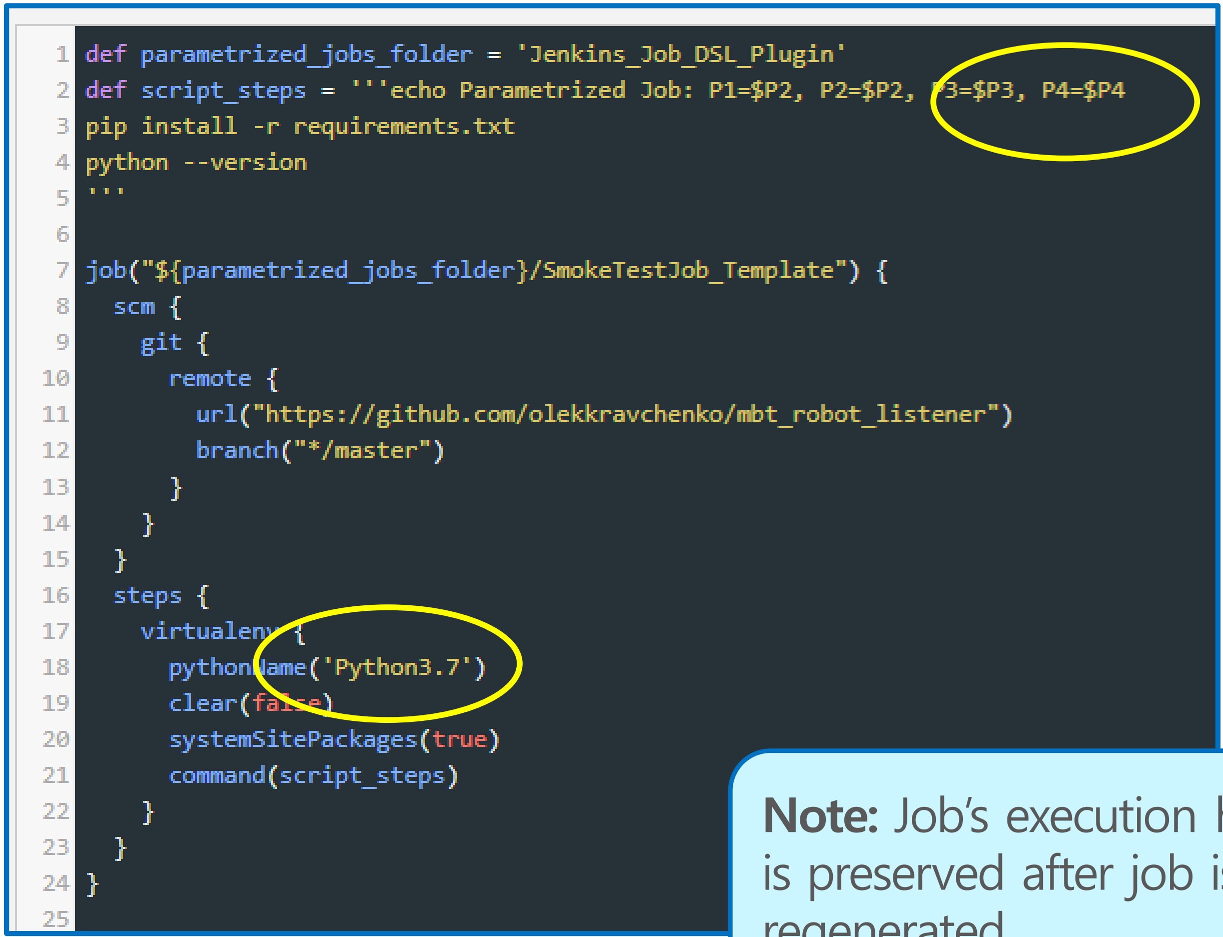
RSS for all RSS for failures

Build Time Trend

	Build	↑ Duration
✓	#10	1.7 sec
!	#9	3.2 sec
✓	#8	1.8 sec
✓	#7	1.7 sec
✓	#6	1.6 sec
✓	#5	2 sec
✓	#4	1.6 sec
✓	#3	2 sec
✓	#2	1.8 sec
✓	#1	7.6 sec

What Did We Achieve?

Can easily modify jobs steps or configuration at once or add a new parametrized job

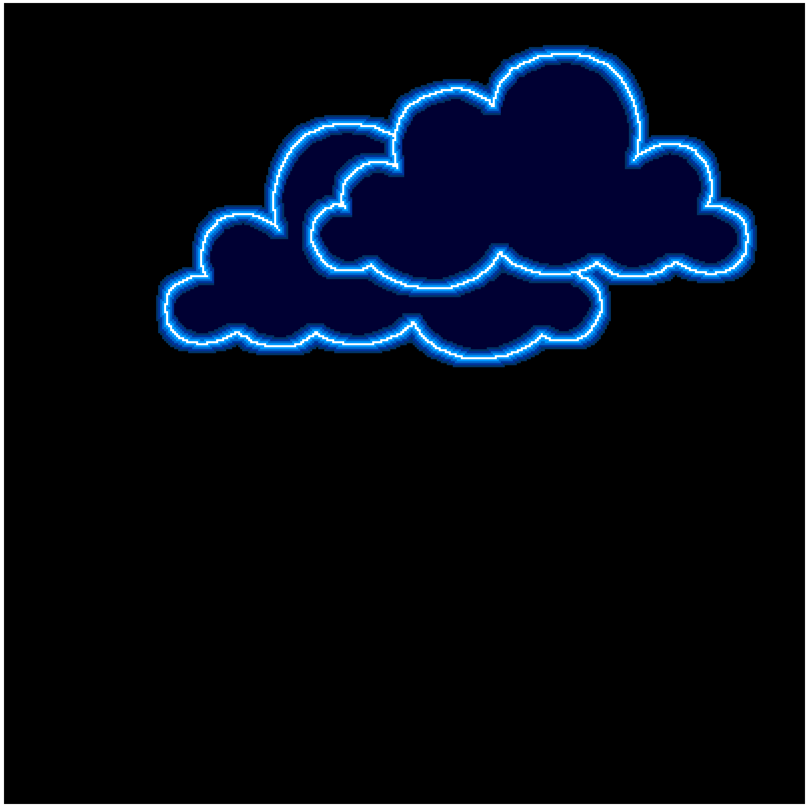


```
def parametrized_jobs_folder = 'Jenkins_Job_DSL_Plugin'
def script_steps = '''echo Parametrized Job: P1=$P2, P2=$P2, P3=$P3, P4=$P4
pip install -r requirements.txt
python --version
'''

job("${parametrized_jobs_folder}/SmokeTestJob_Template") {
  scm {
    git {
      remote {
        url("https://github.com/olekkravchenko/mbt_robot_listener")
        branch("*/master")
      }
    }
  }
  steps {
    virtualenv {
      pythonName('Python3.7')
      clear(false)
      systemSitePackages(true)
      command(script_steps)
    }
  }
}

```

Note: Job’s execution history is preserved after job is regenerated

What Did We Achieve?

If the lightning strikes our Jenkins host we can re-create all our jobs easily



Summary

Advantages

1. First and foremost: Configuration as Code
   a) Can leverage a Version Control system
   b) It is easier and faster to update the jobs
   c) It is easier to track and fix job configuration errors

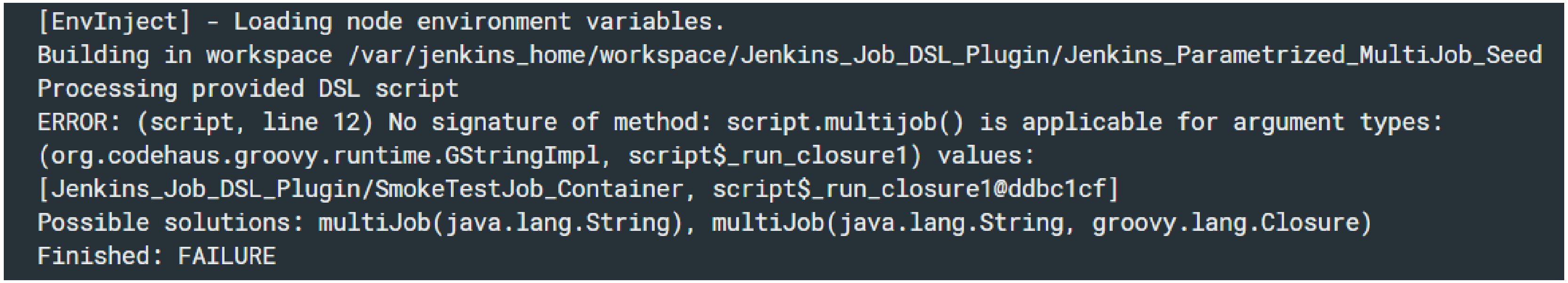
2. Probably the easiest way to control multiple related jobs
   a) Can keep jobs independent and self-sufficient
   b) Apply complex modifications in one go

3. Much more pleasant and fun than just GUI clicking

Drawbacks

Honestly, I don’t see any ☺

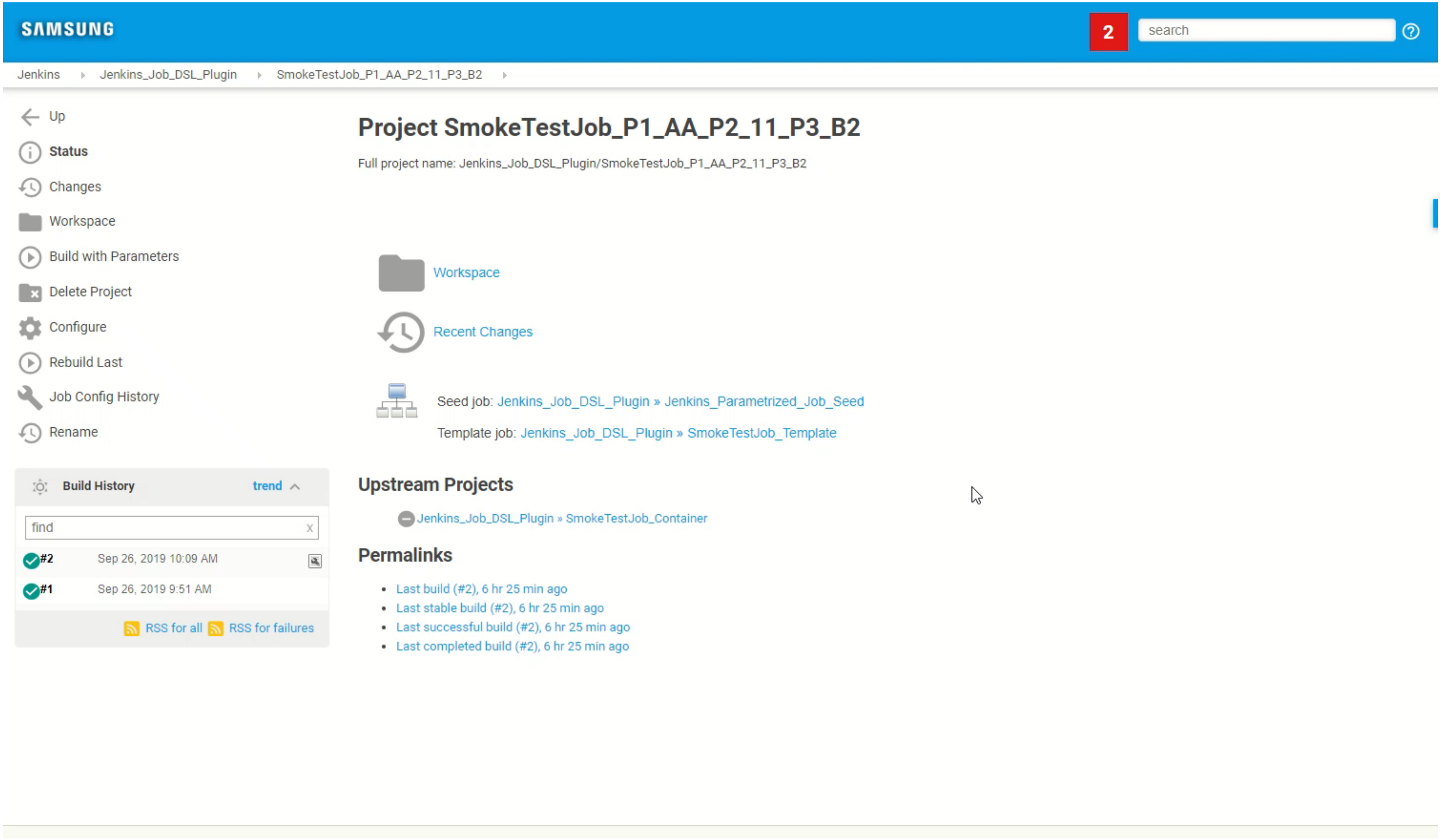
Except of some enigmatic Groovy error messages



```
[EnvInject] - Loading node environment variables.
Building in workspace /var/jenkins_home/workspace/Jenkins_Job_DSL_Plugin/Jenkins_Parametrized_MultiJob_Seed
Processing provided DSL script
ERROR: (script, line 12) No signature of method: script.multijob() is applicable for argument types:
(org.codehaus.groovy.runtime.GStringImpl, script$_run_closure1) values:
[Jenkins_Job_DSL_Plugin/SmokeTestJob_Container, script$_run_closure1@ddbc1cf]
Possible solutions: multiJob(java.lang.String), multiJob(java.lang.String, groovy.lang.Closure)
Finished: FAILURE
```

It May Help You a Little (or a Lot)

Jenkins Job DSL Documentation (Installed with plugin)



SAMSUNG

2

search

Jenkins › Jenkins_Job_DSL_Plugin › SmokeTestJob_P1_AA_P2_11_P3_B2 ›

- Up
- Status
- Changes
- Workspace
- Build with Parameters
- Delete Project
- Configure
- Rebuild Last
- Job Config History
- Rename

Build History trend

find

#2	Sep 26, 2019 10:09 AM
#1	Sep 26, 2019 9:51 AM

RSS for all RSS for failures

Project SmokeTestJob_P1_AA_P2_11_P3_B2

Full project name: Jenkins_Job_DSL_Plugin/SmokeTestJob_P1_AA_P2_11_P3_B2

Workspace

Recent Changes

Seed job: Jenkins_Job_DSL_Plugin » Jenkins_Parametrized_Job_Seed

Template job: Jenkins_Job_DSL_Plugin » SmokeTestJob_Template

Upstream Projects

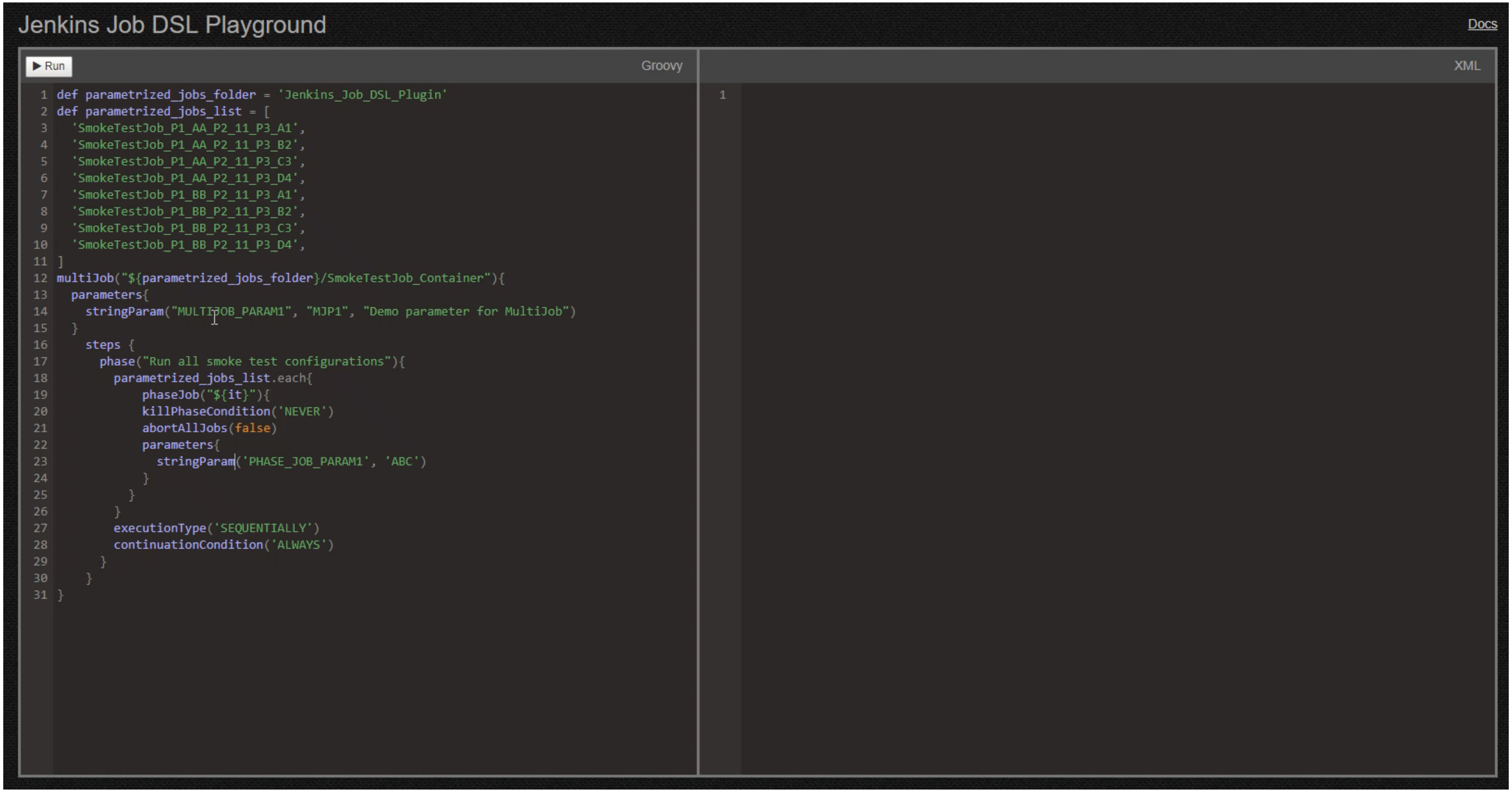
Jenkins_Job_DSL_Plugin » SmokeTestJob_Container

Permalinks

- Last build (#2), 6 hr 25 min ago
- Last stable build (#2), 6 hr 25 min ago
- Last successful build (#2), 6 hr 25 min ago
- Last completed build (#2), 6 hr 25 min ago

It May Help You a Little (or a Lot)

Jenkins Job DSL Playground (job-dsl.herokuapp.com)



```groovy
def parametrized_jobs_folder = 'Jenkins_Job_DSL_Plugin'
def parametrized_jobs_list = [
  'SmokeTestJob_P1_AA_P2_11_P3_A1',
  'SmokeTestJob_P1_AA_P2_11_P3_B2',
  'SmokeTestJob_P1_AA_P2_11_P3_C3',
  'SmokeTestJob_P1_AA_P2_11_P3_D4',
  'SmokeTestJob_P1_BB_P2_11_P3_A1',
  'SmokeTestJob_P1_BB_P2_11_P3_B2',
  'SmokeTestJob_P1_BB_P2_11_P3_C3',
  'SmokeTestJob_P1_BB_P2_11_P3_D4',
]
multiJob("${parametrized_jobs_folder}/SmokeTestJob_Container"){
  parameters{
    stringParam("MULTIJOB_PARAM1", "MJP1", "Demo parameter for MultiJob")
  }
    steps {
      phase("Run all smoke test configurations"){
        parametrized_jobs_list.each{
            phaseJob("${it}"){
            killPhaseCondition('NEVER')
            abortAllJobs(false)
            parameters{
              stringParam('PHASE_JOB_PARAM1', 'ABC')
            }
          }
        }
        executionType('SEQUENTIALLY')
        continuationCondition('ALWAYS')
      }
    }
}
```

Q&A

Thank You

SAMSUNG