# Automate all the things


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CHECK24

"Automate until the job is boring as hell"

# System Configuration

# Software packaging

# Software deployment

Combining all to work seamlessly together

# System Configuration

# ANSIBLE

*“App deployment, configuration management and orchestration all from one system. Powerful automation that you can learn quickly.“*

# About Ansible

- Written in Python
- Using SSH
- No agents
- YAML

# Ansible Modules

- Package management (apt, yum…)
- Command execution (command, shell)
- Service management (start, stop…)
- File handling (copy, template…)
- SCM (git, Bazzar, Subversion)

# Inventory

# Roles

# Playbook

# System configuration with Ansible

# Inventory

```
ops/
+- inv/
   +- integration/
   +- local/
   +- production/
```

good practice inventory setup

# Inventory

```
[webserver]
192.168.1.111

[dbserver]
192.168.1.222
192.168.1.223
```

ops/inv/integration/hosts

# Playbook

```yaml
- hosts: webserver
  roles:
    - apache
```

ops/install.webserver.yml

# Role

```
ops/
+- roles/
|   +- apache/
|      +- files/
|      +- handlers/
|      +- tasks/
|      +- templates/
+- install.webserver.yml
```

good practice role setup

# Tasks

```
- name: install apache
  action: apt
          pkg=apache2
          state=present
          force=yes

- name: copy mpm prefork conf
  copy: dest=/etc/apache2/mods-available/mpm_prefork.conf
        src=mpm_prefork.conf
  notify: restart apache
```

ops/roles/apache/tasks/main.yml

# Tasks

```
- name: install apache
  action: apt
          pkg=apache2
          state=present
          force=yes

- name: copy mpm prefork conf
  copy: dest=/etc/apache2/mods-available/mpm_prefork.conf
        src=mpm_prefork.conf
  notify: restart apache
```

ops/roles/apache/tasks/main.yml

# Tasks

```
- name: install apache
  action: apt
          pkg=apache2
          state=present
          force=yes

- name: copy mpm prefork conf
  copy: dest=/etc/apache2/mods-available/mpm_prefork.conf
        src=mpm_prefork.conf
  notify: restart apache
```

ops/roles/apache/tasks/main.yml

# Tasks

```
- name: install apache
  action: apt
          pkg=apache2
          state=present
          force=yes

- name: copy mpm prefork conf
  copy: dest=/etc/apache2/mods-available/mpm_prefork.conf
        src=mpm_prefork.conf
  notify: restart apache
```

ops/roles/apache/tasks/main.yml

# Handler

```
- name: restart apache
  action: service name=apache2 state=restarted
```

ops/roles/apache/handlers/main.yml

# Handler

```
- name: restart apache
  action: service name=apache2 state=restarted
```

ops/roles/apache/handlers/main.yml

# Recap

- Create inventories
- Install playbook
    - Apache role
        - Install tasks / handlers

# Execute Ansible

```
$ ansible-playbook -i inv/integration/hosts install.webserver.yml
```

execution example

# Execute Ansible

```
$ ansible-playbook -i inv/integration/hosts install.webserver.yml
```

execution example

# Execute Ansible

```
$ ansible-playbook -i inv/integration/hosts install.webserver.yml
```

execution example

# Execute Ansible

```
$ ansible-playbook -i inv/integration/hosts install.webserver.yml
```

execution example

```
PLAYBOOK: install.webserver.yml
*************************************************
1 plays in ansible/install.webserver.yml

PLAY [webserver]
*************************************************************************

TASK [apache : install apache]
*************************************************************************
ok: [192.168.1.111]

TASK [apache-c24 : copy mpm prefork conf]
*************************************************************************
ok: [192.168.1.111]
NOTIFIED HANDLER restart apache

PLAY RECAP *************************************************************************
192.168.1.111  : ok=2    changed=2    unreachable=0    failed=0

Finished: SUCCESS
```

```
PLAYBOOK: install.webserver.yml
*************************************************
1 plays in ansible/install.webserver.yml

PLAY [webserver]
*************************************************************************

TASK [apache : install apache]
*************************************************************************
ok: [192.168.1.111]

TASK [apache-c24 : copy mpm prefork conf]
*************************************************************************
ok: [192.168.1.111]
NOTIFIED HANDLER restart apache

PLAY RECAP ************************************************************************
192.168.1.111  : ok=2    changed=0    unreachable=0    failed=0

Finished: SUCCESS
```

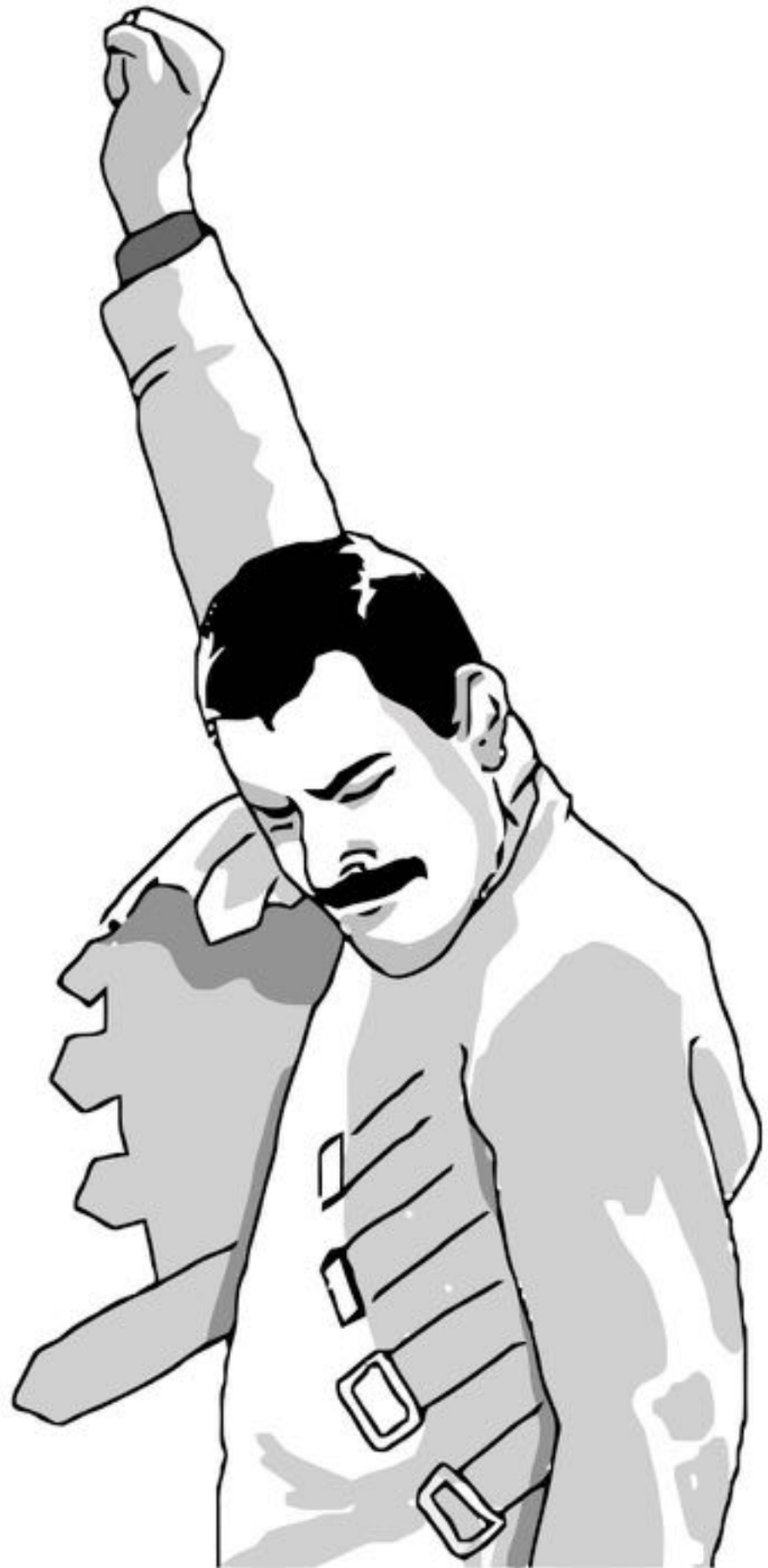
# Execute Ansible

```
$ ansible-playbook -i inv/integration/hosts --check install.webserver.yml
```

dry run with --check

```
$ ansible-playbook -i inv/integration/hosts --limit 192.168.1.111 install.webserver.yml
```

restrict execution with --limit



# Software Packaging


"Ant can be used to pilot any type of process
which can be described in terms of targets and tasks"

# Ant

- Written in Java
- XML configuration
- Targets (tasks)
- Bundled with Java

# Software packaging with Ant

# Ant Configuration

```
<?xml version="1.0" encoding="UTF-8"?>
<project name="projectx" default="build">
  <target name="build" depends="target1, target2, target3" />
  <target name="target1">...</target>
  <target name="target2">...</target>
  ...
</project>
```

build.xml

# Ant Configuration

```xml
<?xml version="1.0" encoding="UTF-8"?>
<project name="projectx" default="build">
  <target name="build" depends="target1, target2, target3" />
  <target name="target1">...</target>
  <target name="target2">...</target>
  ...
</project>
```

build.xml

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<project name="projectx" default="build">
  <target name="build" depends="target1, target2, target3" />
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  ...
</project>
```

build.xml

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<?xml version="1.0" encoding="UTF-8"?>
<project name="projectx" default="build">
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  <target name="target1">...</target>
  <target name="target2">...</target>
  ...
</project>
```

build.xml

# Composer

```
<target name="composer-install">
  <exec executable="composer" failonerror="true">
    <arg value="install" />
    <arg value="--no-interaction" />
  </exec>
</target>
```

build.xml

# Composer

```
<target name="composer-install">
  <exec executable="composer" failonerror="true">
    <arg value="install" />
    <arg value="--no-interaction" />
  </exec>
</target>
```

build.xml

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  </exec>
</target>
```

build.xml

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  <exec executable="composer" failonerror="true">
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  </exec>
</target>
```

build.xml

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```
<target name="composer-install">
  <exec executable="composer" failonerror="true">
    <arg value="install" />
    <arg value="--no-interaction" />
  </exec>
</target>
```

build.xml

# PHPUnit

```
<target name="phpunit" description="Run unit tests">
  <exec executable="phpunit" failonerror="true"></exec>
</target>
```

build.xml

# PHPUnit

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  <exec executable="phpunit" failonerror="true"></exec>
</target>
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build.xml

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</target>
```

build.xml

# PHPUnit

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  <exec executable="phpunit" failonerror="true"></exec>
</target>
```

build.xml

# Ant Tasks

- Minify Assets
- Cache warmup (Templates, DIContainer…)
- …

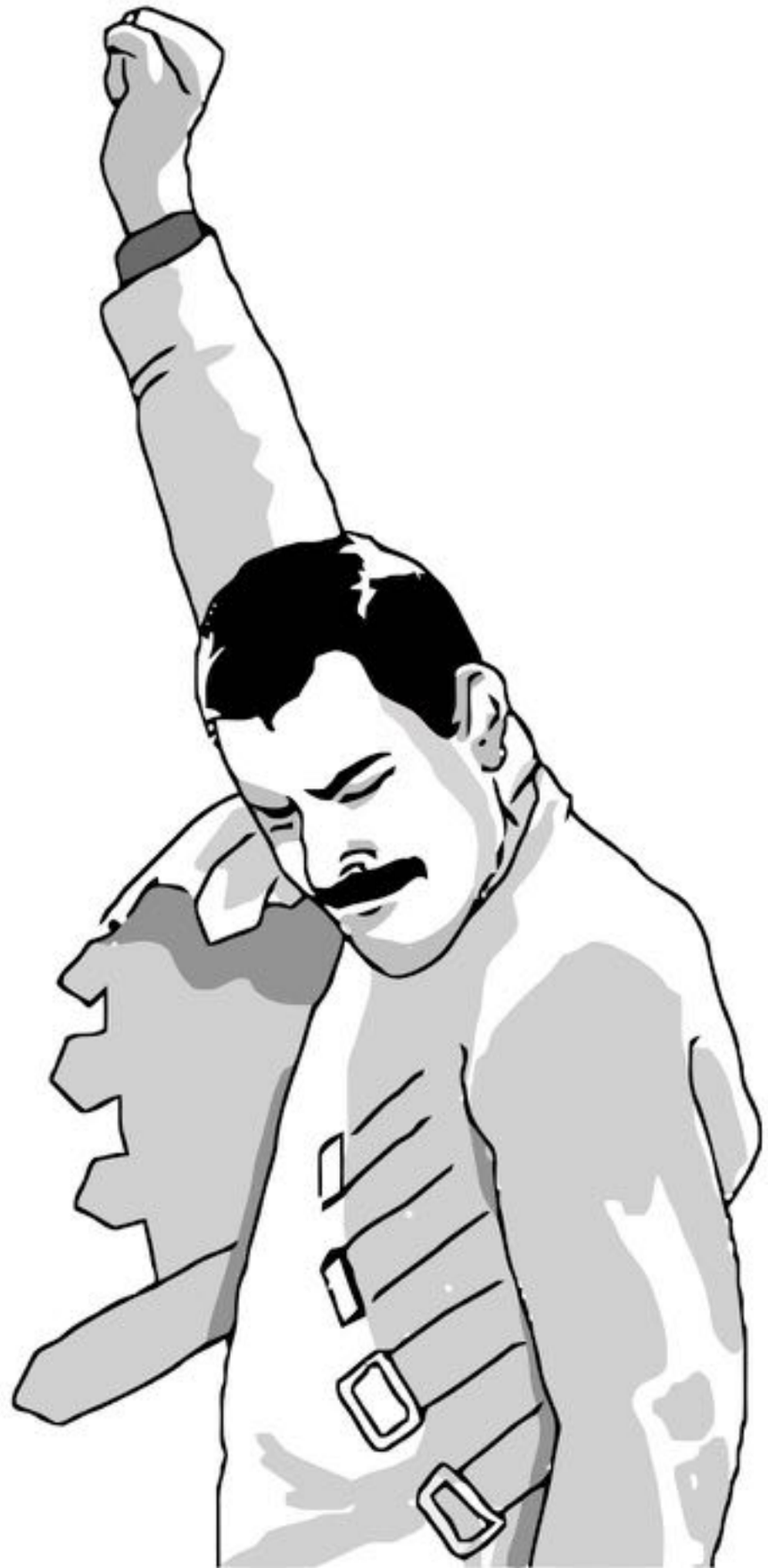
# Ant Execution

```
$ ant
```

execute default target

```
$ ant phpunit
```

execute specific target



# Software Deployment

# Software deployment with Ansible

# Software Deployment

- Copy app to server
- Activate deployed app
- Allow quick rollbacks

# Half Way There

- Enhance the inventory
- New playbook
- New role

# Inventory

```
ops/
+- inv/
   +- integration/
      +- group_vars/
      +- host_vars/
```

add variables

# Variables

```yaml
system:
  environment: integration

projectx:
  domain: www.projectx.int
```

ops/inv/integration/group_vars/webserver

# Playbook

```yaml
- hosts: webserver
  roles:
    - projectx
```

ops/deploy.projectx.yml

# Role

```
ops/
+- roles/
|    +- projectx/
|         +- files/
|         +- handler/
|         +- tasks/
|         +- templates/
+- deploy.projectx.yml
```

best practice role setup

# Tasks

```
# create the directory for the current app version
- name: Create version directory
  file: path=/var/www/projectx/{{ version }}
        state=directory

# copy the prepared app to your web servers
- name: Copy files to server
  synchronize: src={{ app }}
               dest=/var/www/projectx/{{ version }}
               perms=yes
               recursive=yes
               delete=yes
               owner=no
               group=no
```

ops/roles/projectx/main.yml

# Tasks

```
# create the directory for the current app version
- name: Create version directory
  file: path=/var/www/projectx/{{ version }}
        state=directory

# copy the prepared app to your web servers
- name: Copy files to server
  synchronize: src={{ app }}
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ops/roles/projectx/main.yml

# Tasks

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               perms=yes
               recursive=yes
               delete=yes
               owner=no
               group=no
```

ops/roles/projectx/main.yml

# Tasks

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               dest=/var/www/projectx/{{ version }}
               perms=yes
               recursive=yes
               delete=yes
               owner=no
               group=no
```

ops/roles/projectx/main.yml

# Tasks

```
# deploy the vhost configuration for our project
- name: Deploy vhost configuration
  action: template
          src=projectx.conf
          dest=/etc/apache2/sites-available/projectx.conf
  notify: restart apache
  tags: rollback
```

ops/roles/projectx/main.yml

# Tasks

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# deploy the vhost configuration for our project
- name: Deploy vhost configuration
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ops/roles/projectx/main.yml

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  action: template
          src=projectx.conf
          dest=/etc/apache2/sites-available/projectx.conf
  notify: restart apache
  tags: rollback
```

ops/roles/projectx/main.yml

# Tasks

```
# create a symlink to activate the vhost
# could be done with "command: a2ensite projectx.conf"
# but this would always trigger an apache restart
# even if nothing changes
- name: Activate vhost configuration
  file: dest=/etc/apache2/sites-enabled/010-projectx.conf
        src=/etc/apache2/sites-available/projectx.conf
        state=link
  notify: restart apache
```

ops/roles/projectx/tasks/main.yml

# Tasks

```
# create a symlink to activate the vhost
# could be done with "command: a2ensite projectx.conf"
# but this would always trigger an apache restart
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- name: Activate vhost configuration
  file: dest=/etc/apache2/sites-enabled/010-projectx.conf
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ops/roles/projectx/tasks/main.yml

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```

ops/roles/projectx/tasks/main.yml

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ops/roles/projectx/tasks/main.yml

# Tasks

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- name: Activate vhost configuration
  file: dest=/etc/apache2/sites-enabled/010-projectx.conf
        src=/etc/apache2/sites-available/projectx.conf
        state=link
  notify: restart apache
```

ops/roles/projectx/tasks/main.yml

# Template

```
<VirtualHost *:80>
        ServerName {{ projectx.domain }}
        DocumentRoot /var/www/projectx/{{ version }}/htdocs

        setenv APP.ENVIRONMENT {{ system.environment }}

        <Directory /var/www/projectx/{{ version }}/htdocs>
                AllowOverride All
                Require all granted
        </Directory>
</VirtualHost>
```

ops/roles/projectx/templates/projectx.conf

# Variables

```yaml
system:
  environment: integration

projectx:
  domain: www.projectx.int
```

ops/inv/integration/group_vars/webserver

# Template

```
<VirtualHost *:80>
        ServerName {{ projectx.domain }}
        DocumentRoot /var/www/projectx/{{ version }}/htdocs

        setenv APP.ENVIRONMENT {{ system.environment }}

        <Directory /var/www/projectx/{{ version }}/htdocs>
                AllowOverride All
                Require all granted
        </Directory>
</VirtualHost>
```

ops/roles/projectx/templates/projectx.conf

# Recap

- Inventory variables
- Deploy playbook
- Project role
- Deployment tasks

# Execute Ansible

```
$ ansible-playbook -i inv/integration/hosts
   --extra-vars "version=1.0.1 app=/some/local/dir/app/"
   deploy.projectx.yml
```

deployment execution

# Execute Ansible

```
$ ansible-playbook -i inv/integration/hosts
   --extra-vars "version=1.0.1 app=/some/local/dir/app/"
   deploy.projectx.yml
```

deployment execution

# Execute Ansible

```
$ ansible-playbook -i inv/integration/hosts
   --extra-vars "version=1.0.1 app=/some/local/dir/app/"
   deploy.projectx.yml
```

deployment execution

# Execute Ansible

```
$ ansible-playbook -i inv/integration/hosts
    --extra-vars "version=1.0.1 app=/some/local/dir/app/"
    deploy.projectx.yml
```

deployment execution

# Execute Ansible

```
$ ansible-playbook -i inv/integration/hosts
   --extra-vars "version=1.0.1 app=/some/local/dir/app/"
   deploy.projectx.yml
```

deployment execution

# Execute Ansible

```
$ ansible-playbook -i inv/integration/hosts
   --extra-vars "version=1.0.1 app=/some/local/dir/app/"
   deploy.projectx.yml
```

deployment execution

# Tasks

```
# deploy the vhost configuration for our project
- name: Deploy vhost configuration
  action: template
          src=projectx.conf
          dest=/etc/apache2/sites-available/projectx.conf
  notify: restart apache
  tags: rollback
```

ops/roles/projectx/main.yml

# Template

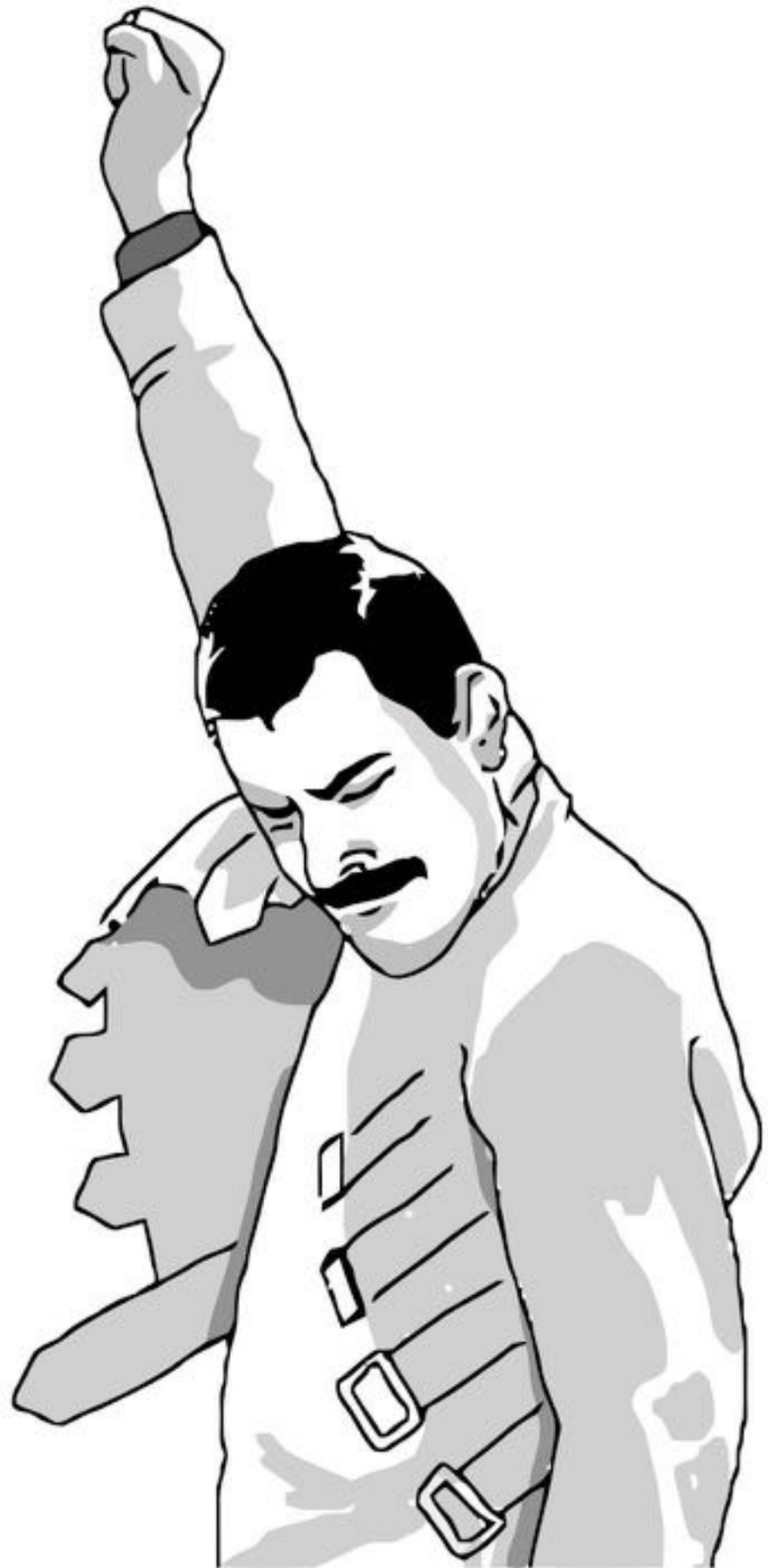
```
<VirtualHost *:80>
        ServerName {{ projectx.domain }}
        DocumentRoot /var/www/projectx/{{ version }}/htdocs

        setenv APP.ENVIRONMENT {{ system.environment }}

        <Directory /var/www/projectx/{{ version }}/htdocs>
                AllowOverride All
                Require all granted
        </Directory>
</VirtualHost>
```

ops/roles/projectx/templates/projectx.conf

# Rollback

```
$ ansible-playbook -i inv/integration/hosts
    --extra-vars "version=1.0.0"
    --tags rollback
    deploy.projectx.yml
```

rollback execution



# System Config

- Clone repository
- Execute Ansible

# Deployment

- Tag version
- Checkout version
- Execute Ant
- Execute Ansible

Not boring!

NOT BAD

But I only want to click a button

And everything should work

# Jenkins

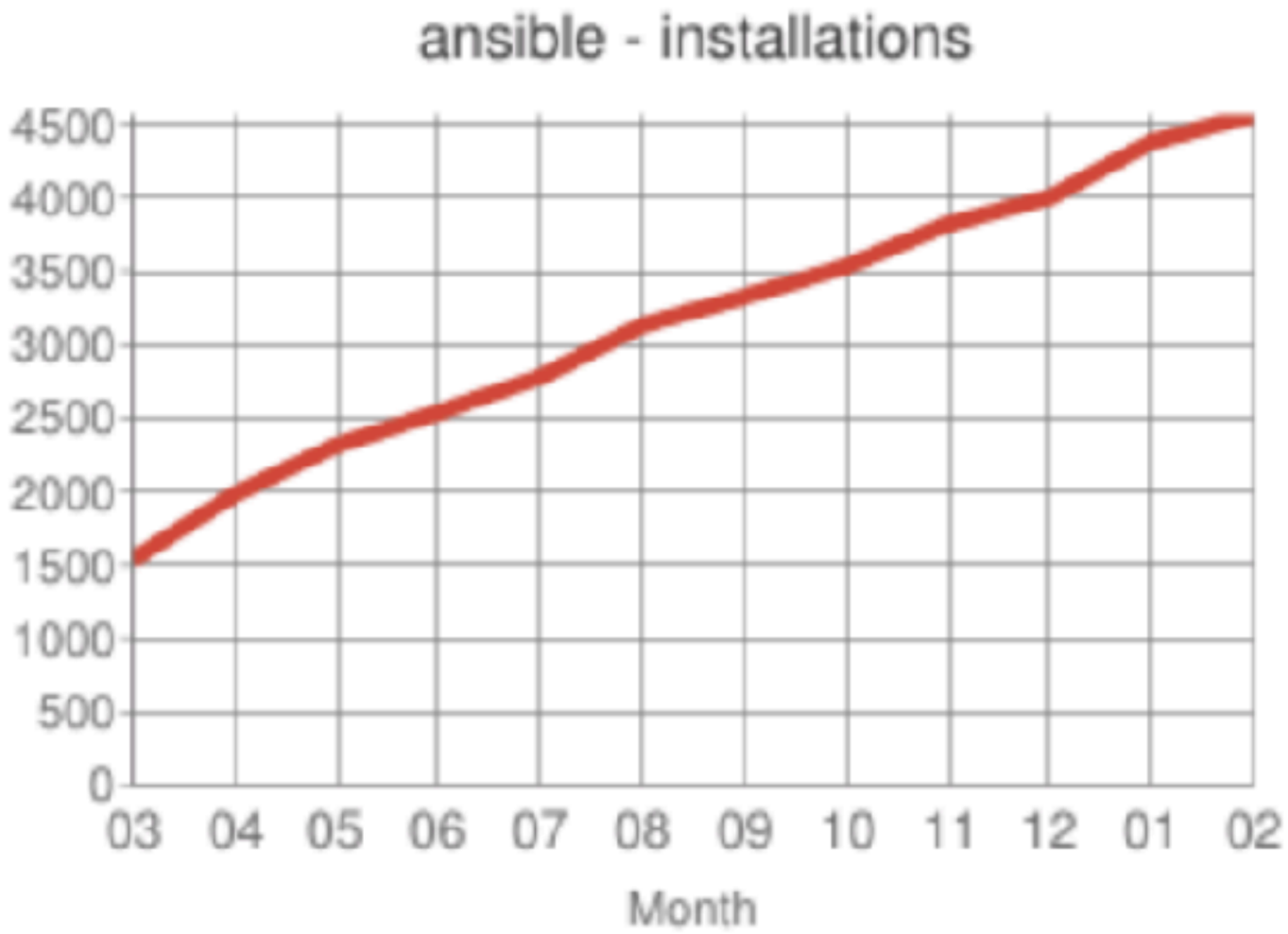
*“Build great things at any scale“*

# Jenkins

- Written in Java
- Build server
- Projects / Jobs
- Jetty (build in webserver)

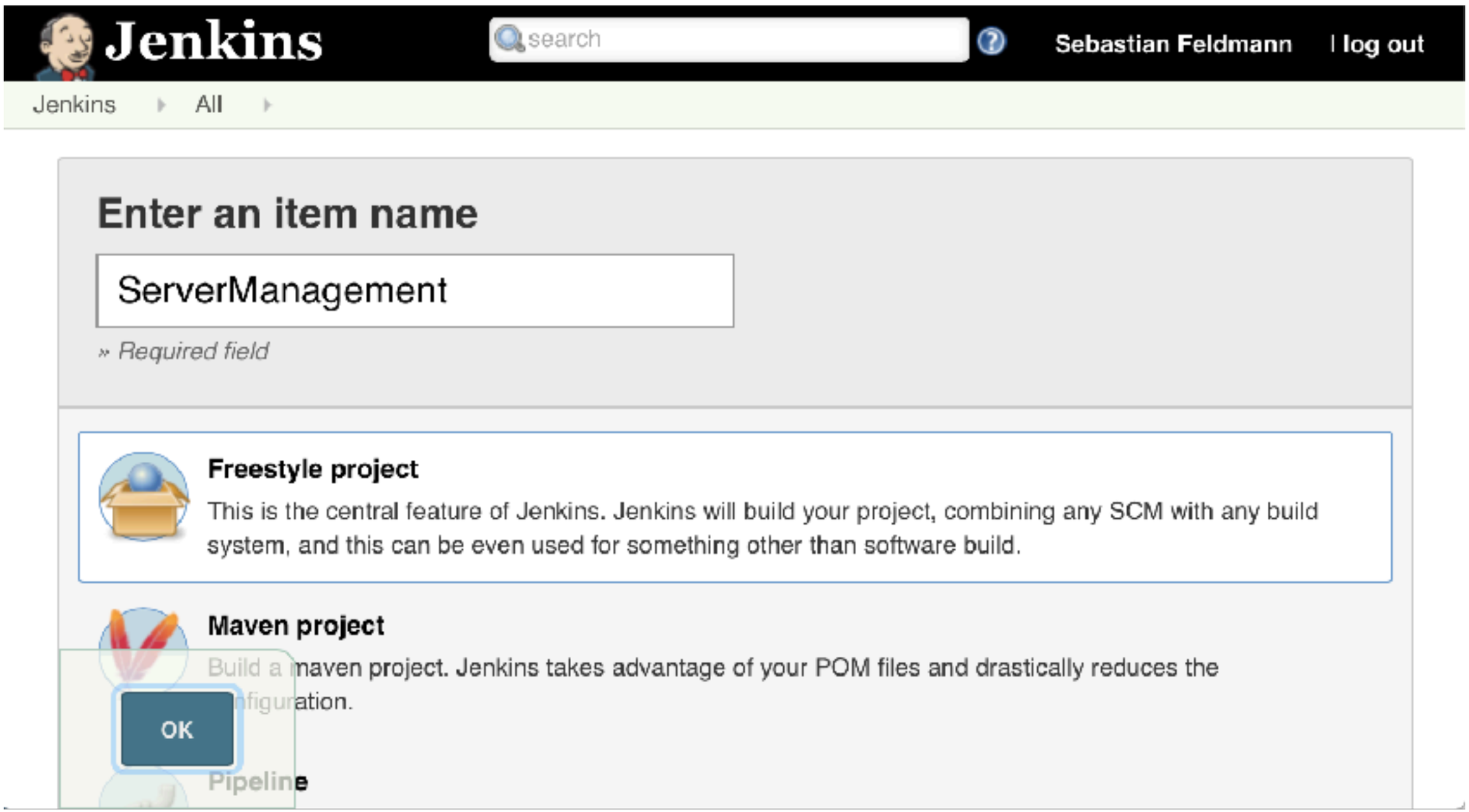
# Ansible Plugin

**Usage**



# System configuration with Ansible and Jenkins

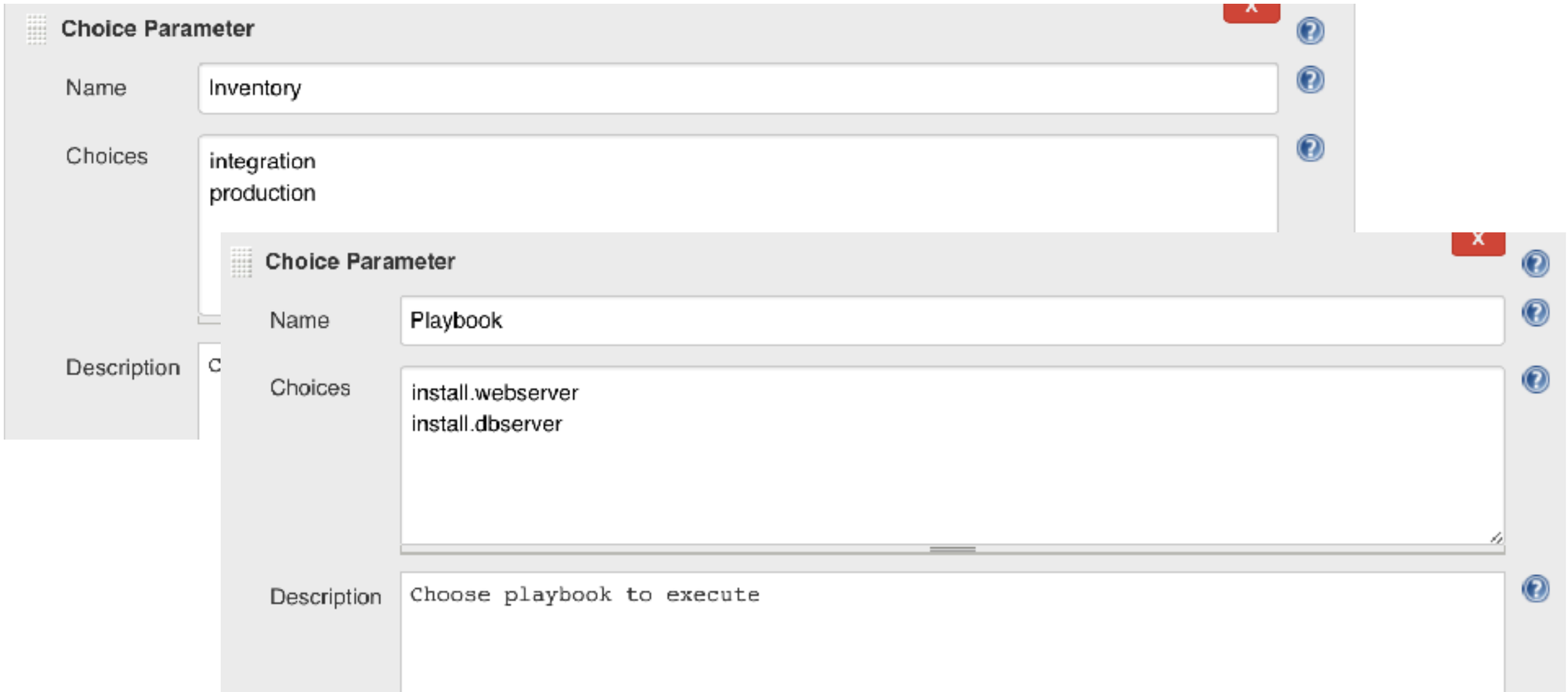
# System Management



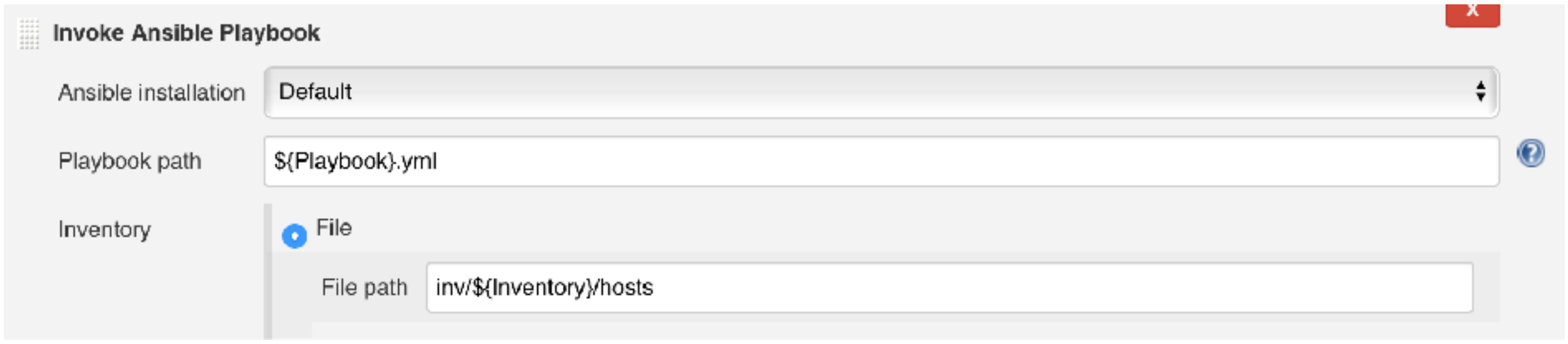
# SCM Config


use some SCM to manage your Ansible project

# Parameter Setup

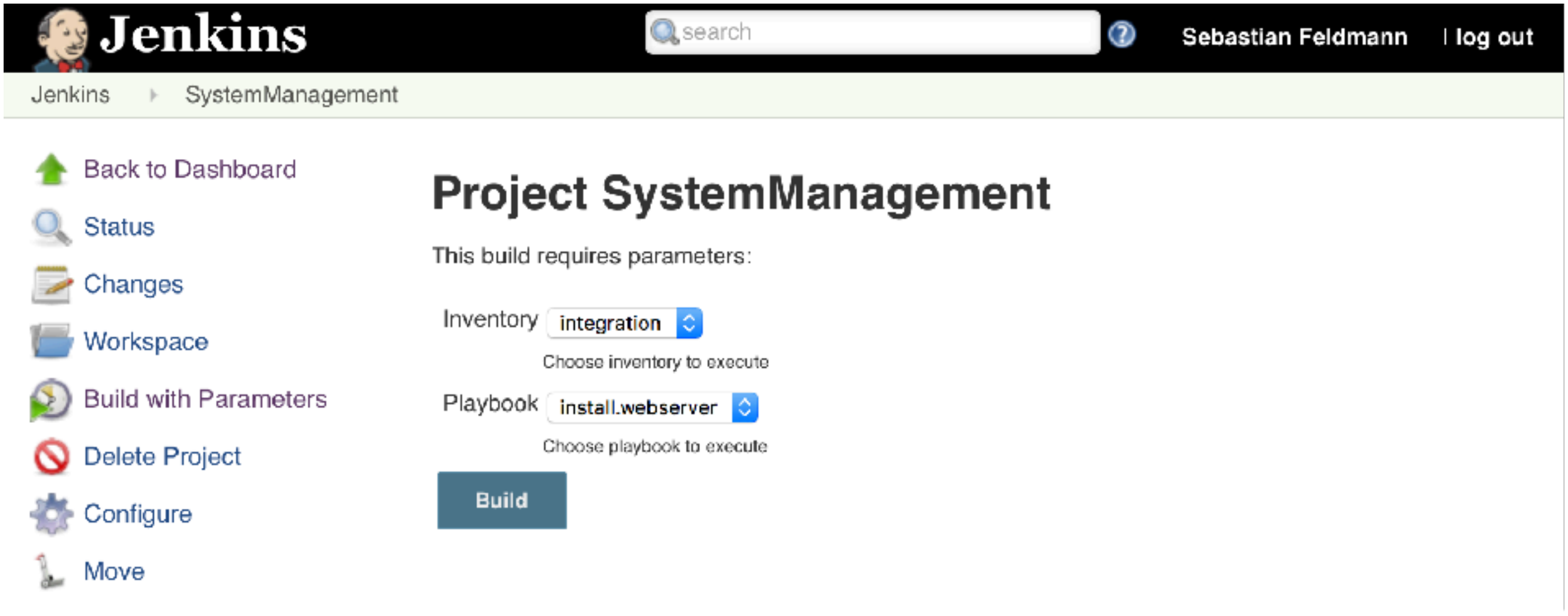


# Ansible Plugin Config




parameter usage

# Job Execution

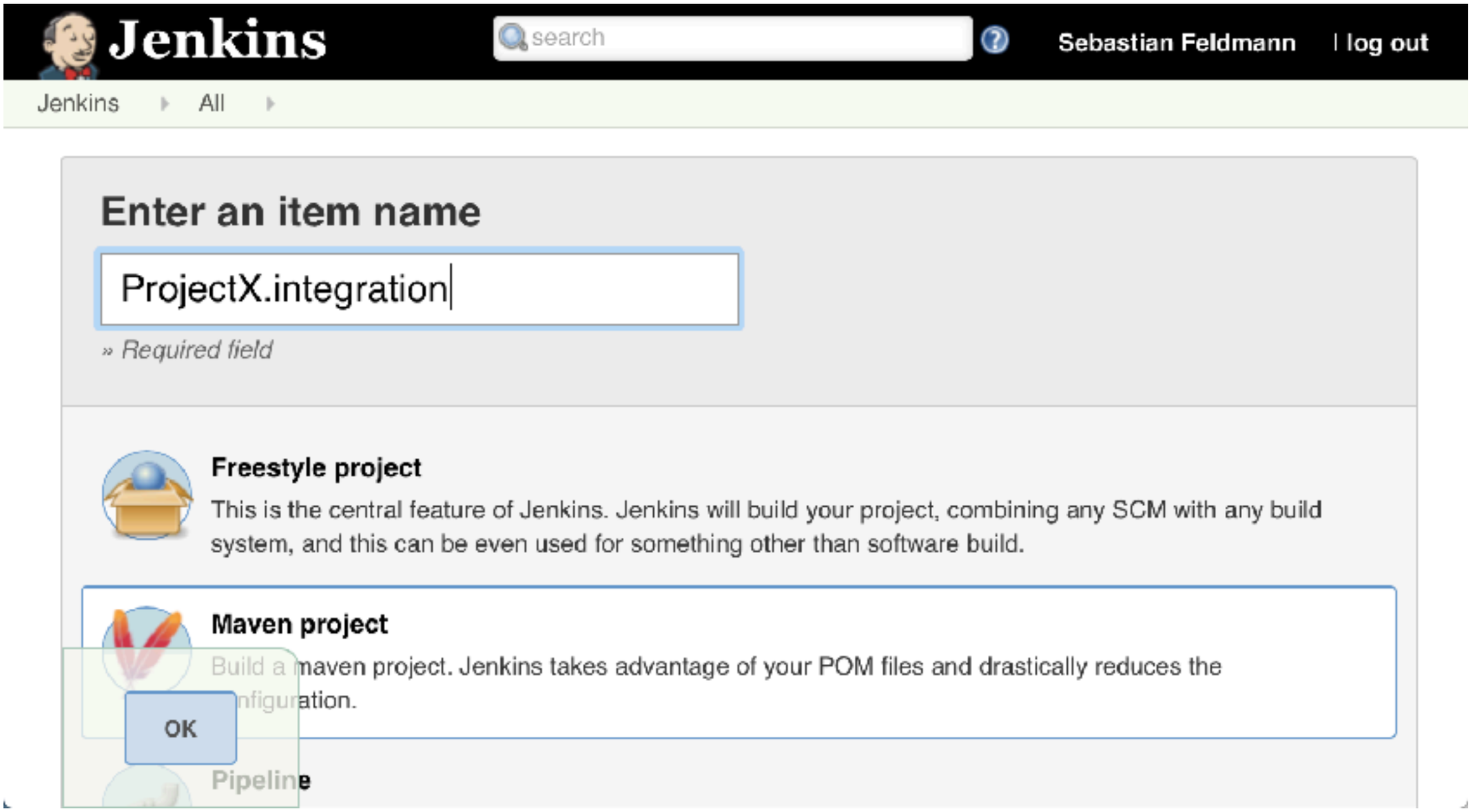


# System Configuration

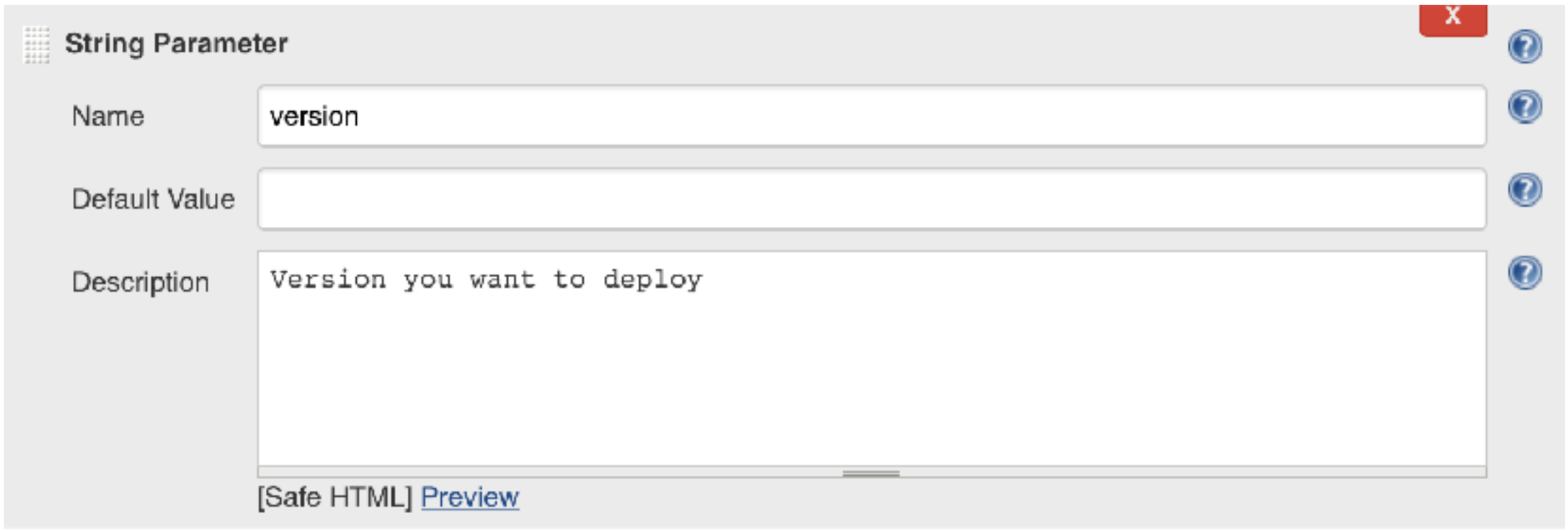
- Push code to git repository
- Push a button

# Software packaging and deployment with Ant, Ansible and Jenkins

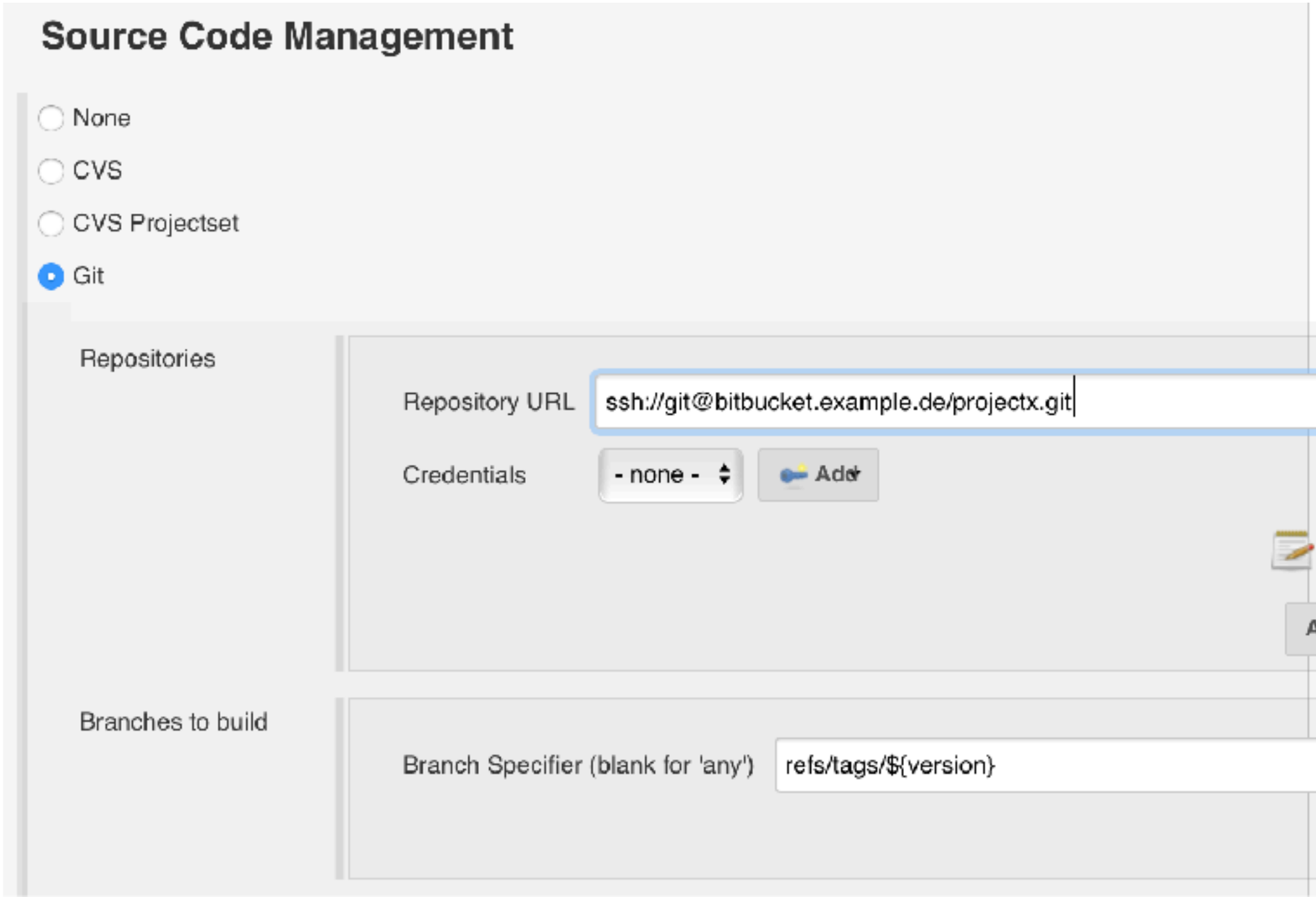
# Software Deployment



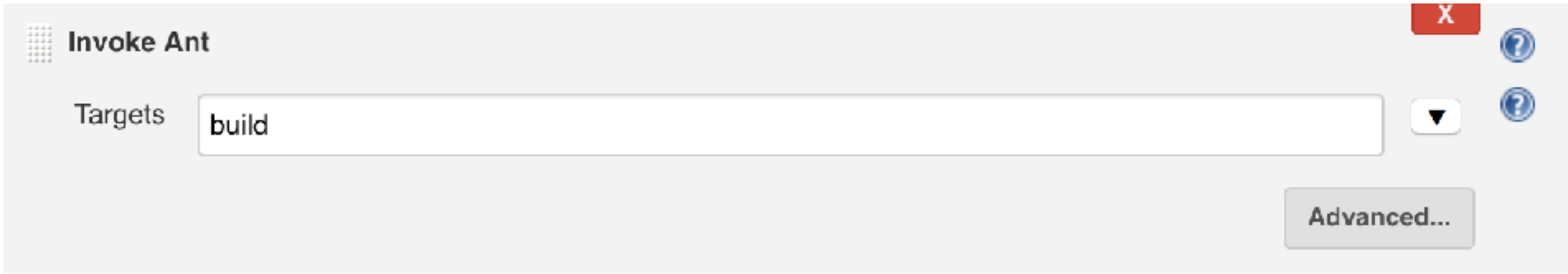
# Parameter Setup



# SCM Config


Source Code Management
None
CVS
CVS Projectset
Git
Repositories
Repository URL
ssh://git@bitbucket.example.de/projectx.git
Credentials
- none -
Add
Advanced...
Add Repository
Branches to build
Branch Specifier (blank for 'any')
refs/tags/${version}
Add Branch

# Ant

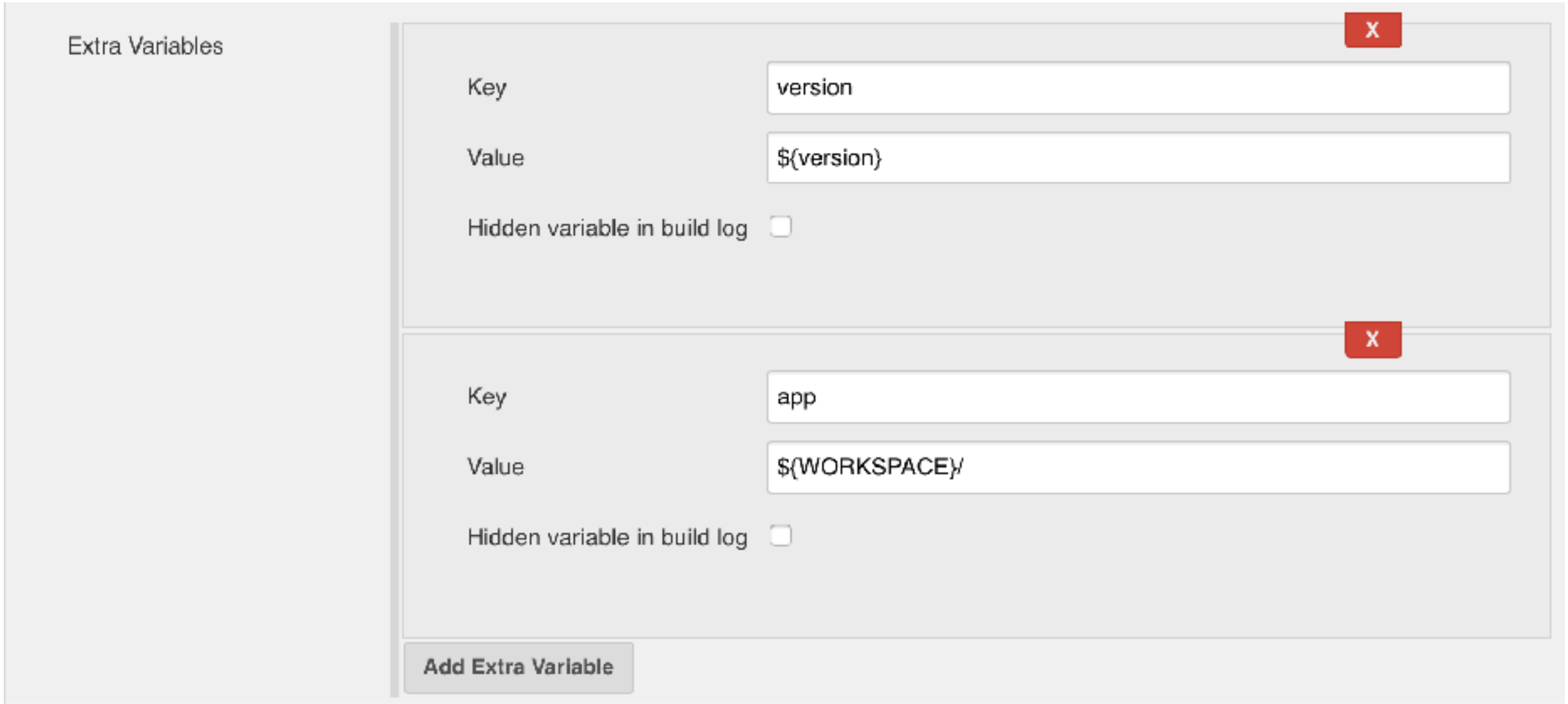



Ant support out of the box

# Ansible Plugin Config

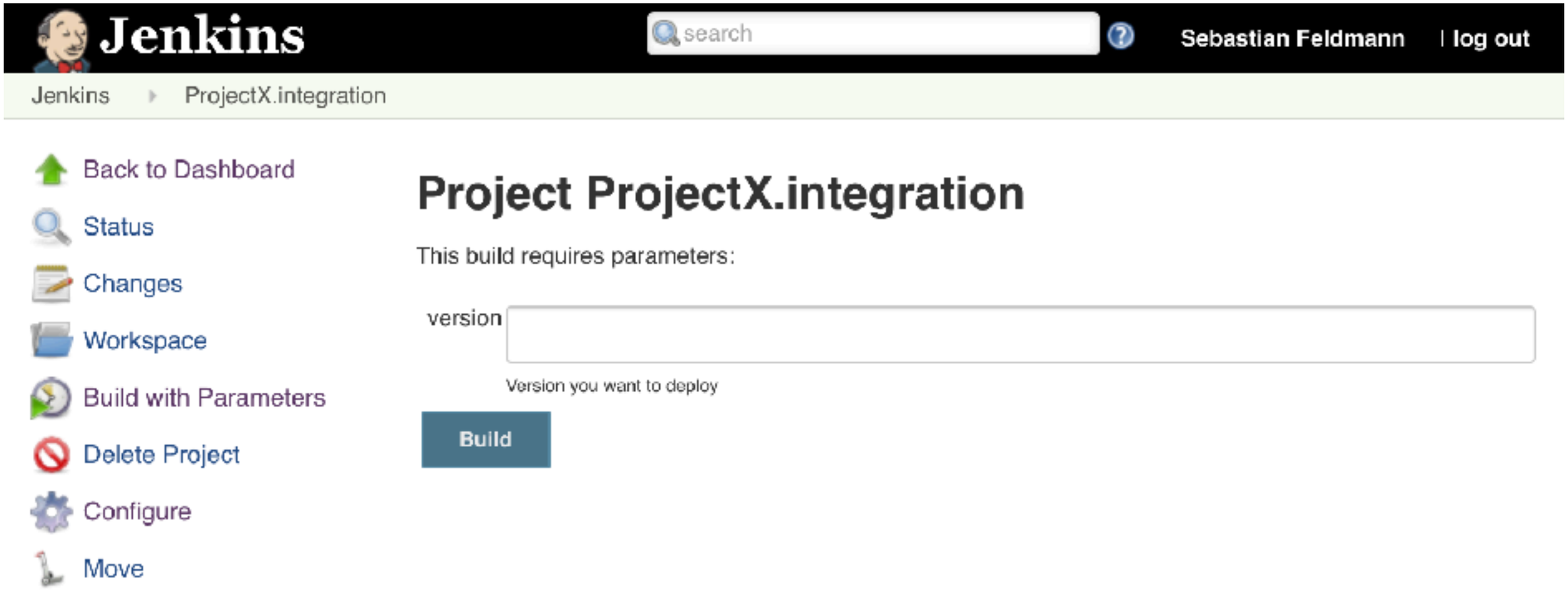

setup ansible playbook and inventory

# Ansible Extra Variables




setup version and application directory

# Job Execution



# App Deployment

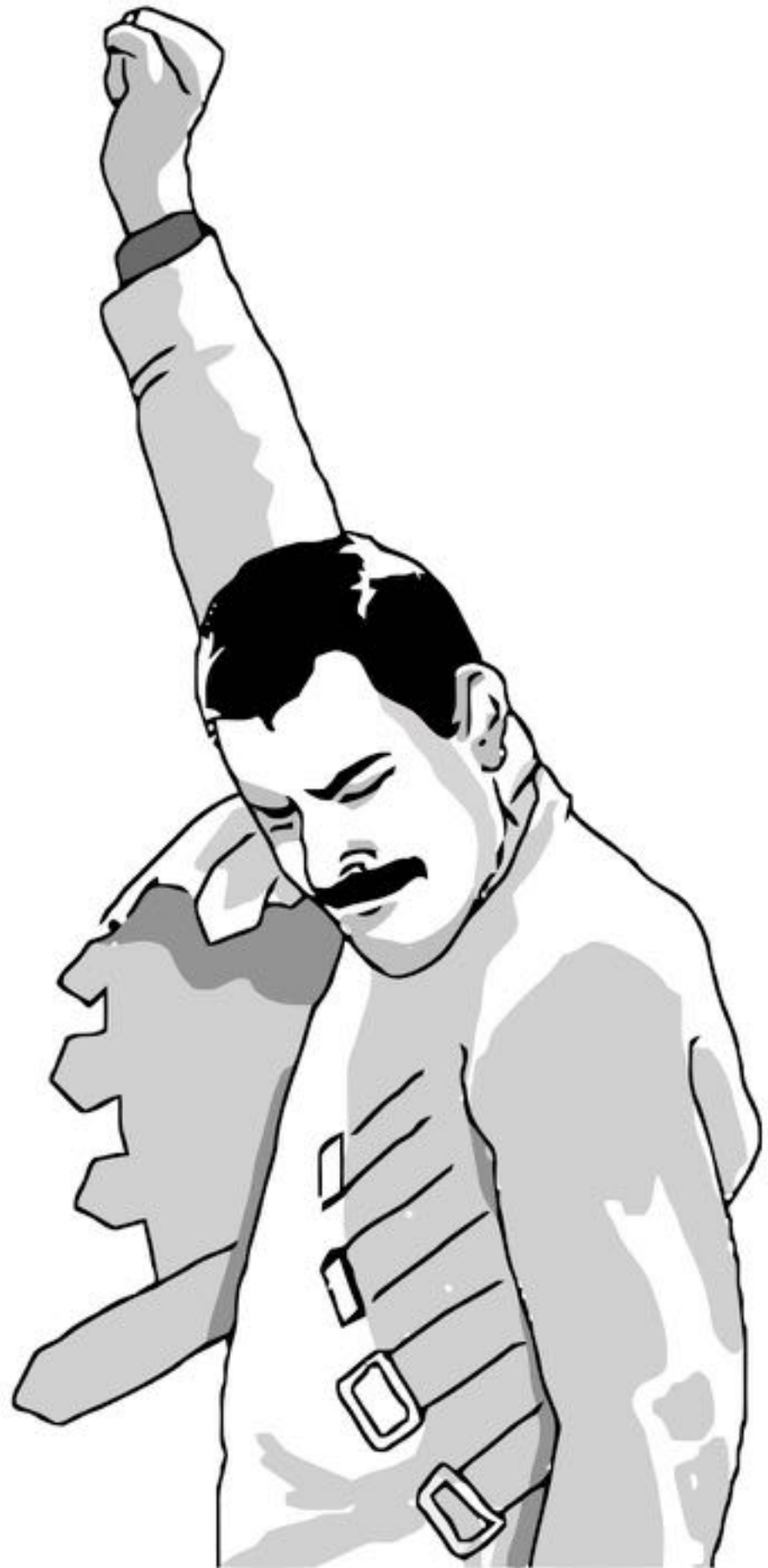
- Tag version in git repository
- Push button

# Recap

- System Management Build
- Software Deployment Build
- Execute everything with a single click

# Is it getting boring yet?

At least a little right ;)



# Sebastian Feldmann

phpbu

https://phpbu.de

php User Group Munich

CHECK24

@movetodevnull

sebastianfeldmann