

Jenkins & AWS Spot Instances

Cost-effective CI/CD solution



How to do CI/CD

- As a service
 - ... a lot of options to choose from
 - CircleCI
 - Travis
 - CodeShip
 - SemaphoreCI
- Use a platform
 - TeamCity
 - GitLab CI
 - Bitbucket pipelines
- Power of cloud
 - AWS CodeDeploy (...with many integration options)
 - Google CloudBuild
- Homemade solution
 - Maybe you have special needs and reasons
 - Let's try Jenkins and discuss it here today

Jenkins



- Open-source Java project
- Battle tested, some may say, almost legacy thing
- Very customizable
- Architecture of master server with agents to run builds
- Huge amount of available plugins
- More active development lately, new projects around Jenkins
- Self-hosted, you maintain and run the infrastructure
- With all good and bad it brings

Jenkins in 21st century

- Configuration as a Code!
 - <https://github.com/jenkinsci/configuration-as-code-plugin>
- Jenkins X
 - Native CI/CD for Kubernetes
 - <https://jenkins.io/projects/jenkins-x/>
- Terraform
 - Everything as a code.



Jenkins on AWS

- Traditional deployment using basic building blocks
- AWS VPC, EC2, EBS, all the usual
- Different options how to build farm of agent nodes
 - Using ondemand EC2 instances
 - Scaling with AWS Autoscaling groups
 - Using spot instances
- Offloading build artifacts to S3

Jenkins with AWS Spot instances

- There is a plugin to do that
 - <https://github.com/jenkinsci/ec2-fleet-plugin>
- Does a simple thing: spin up a spot instance when needed
- Devil is in the details
 - Some complexities the plugins have to take care of
- State of the plugin development
 - ~~Spoiler alert: not good~~
 - It's good! :tada:
- War stories, good and bad times, fun times with the plugin in the wild



AWS spot instances price

Instance type	Ondemand price / hour	Spot market price (eu-west-1)
m5.4xlarge (16vCPUs, 64GiB mem)	\$0.856 / h, \$624.88 / mo	~\$0.3015 / h, \$217 / mo
t3.2xlarge (8vCPUs, 32GiB mem)	\$0.3648 / h, \$266.304 / mo	~\$0.1088 / h, \$78.336 / mo
c5.24xlarge (96vCPUs, 192GiB mem)	\$4.608 / h, \$3363.84 / mo	~\$1.6490 / h, \$1187.28 / mo

Live demo

- Or not so live, if things goes wrong
- What will be done
 - Let's start a Jenkins master with Docker
 - Spin a couple of AWS SpotFleets using Terraform
 - Install the fleet plugin
 - Configure the plugin using JCasC
 - Run some builds



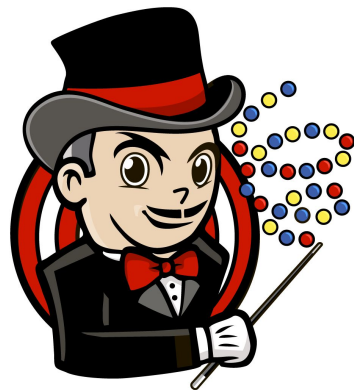
Fun with fleet plugin

- Deadlock
- Wrong slave decommission process
- Failing master/slave SSH connection
- Killing a wrong agent
- Parallel write to maven home



Tips and tricks

- How to deal with reclamation of a spot instance
 - AWS is going to take the machine back and you have to act
- How to deal with not enough capacity for a spot request
- How to monitor the whole thing
 - JMX is the only hope
 - Jmxtrans, collectd
 - Time-series storage + Grafana



Questions

