AWS re:Invent

OPN209

Netflix's application deployment at scale

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Netflix

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Principal Solutions Architect
Amazon Web Services

AWS re:Invent

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aws

Agenda

Application delivery at Netflix

Netflix tooling: Spinnaker

Netflix’s community engagement

AWS’s Spinnaker community involvement

Application delivery at scale

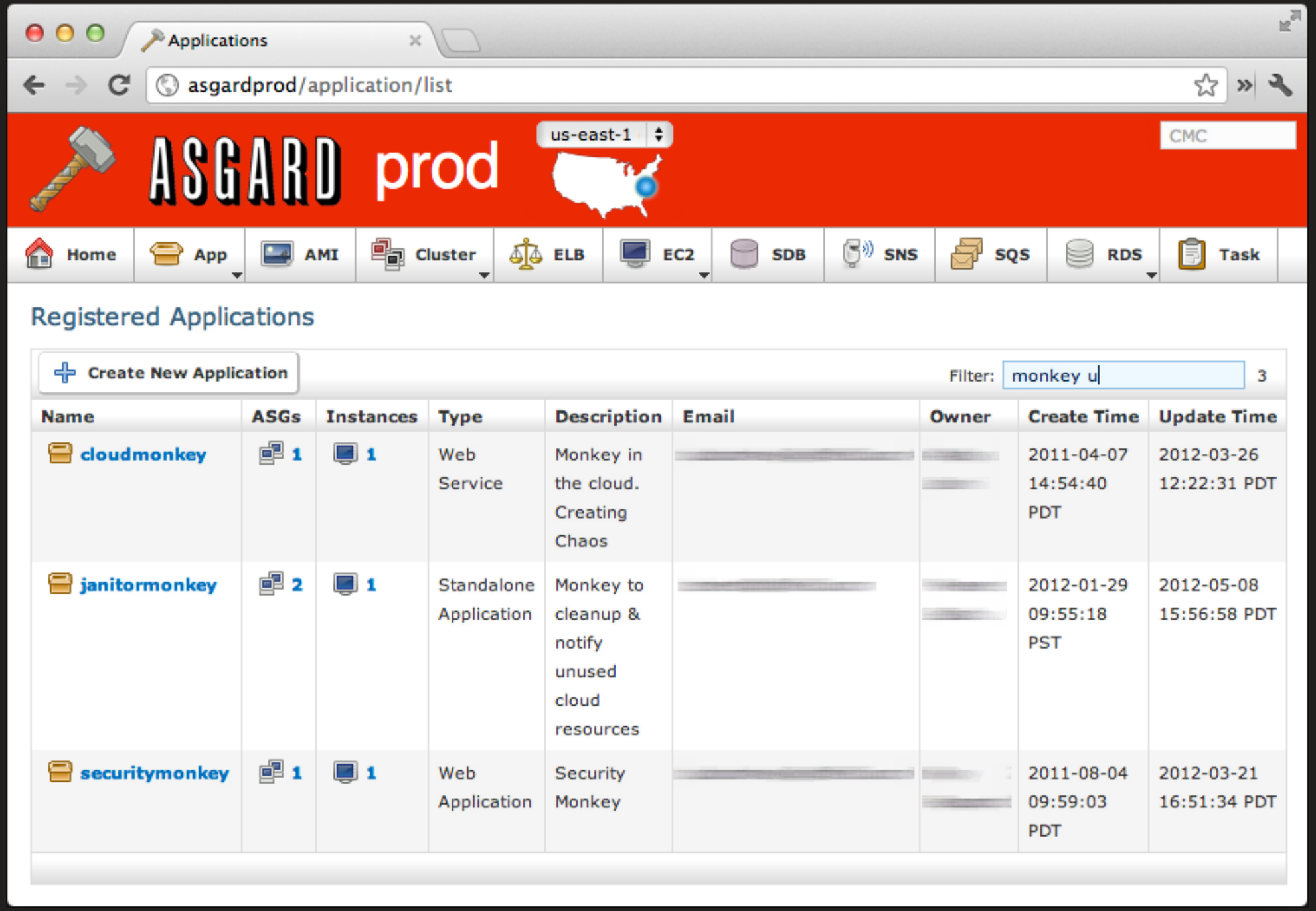








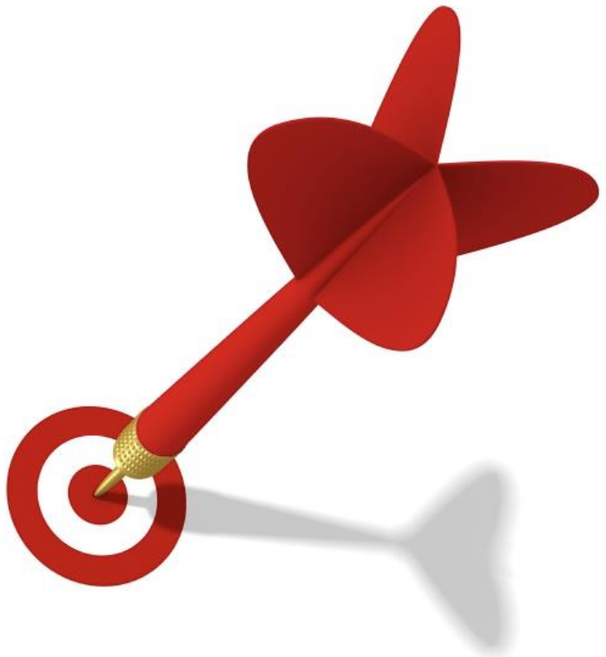

EFFICIENCY
QUALITY
SPEED
COST


Applications
asgardprod/application/list
ASGARD prod
us-east-1
CMC
Home
App
AMI
Cluster
ELB
EC2
SDB
SNS
SQS
RDS
Task
Registered Applications
Create New Application
Filter: monkey u
3
Name
ASGs
Instances
Type
Description
Email
Owner
Create Time
Update Time
cloudmonkey
1
1
Web Service
Monkey in the cloud. Creating Chaos
2011-04-07 14:54:40 PDT
2012-03-26 12:22:31 PDT
janitormonkey
2
1
Standalone Application
Monkey to cleanup & notify unused cloud resources
2012-01-29 09:55:18 PST
2012-05-08 15:56:58 PDT
securitymonkey
1
1
Web Application
Security Monkey
2011-08-04 09:59:03 PDT
2012-03-21 16:51:34 PDT


Index
1.56
0.78


PACIFIC OCEAN
AMERICA
GREENLAND
Greenland Sea
CANADA
ICELAND
NORWAY
FINLAND
ENGLAND
IRELAND
FRANCE
PORTUGAL
SPAIN
MOROCCO
ALGERIA
WEST SAHARA
NORTH AMERICA
AMERICA
MEXICO
Gulf of Mexico
GUATEMALA
BELIZE
HONDURAS
NICARAGUA
COSTA RICA
PANAMA
BAHAMAS
CUBA
HAITI
DOMINICAN
JAMAICA
ATLANTIC OCEAN
VENEZUELA
GUYANA
COLOMBIA
ECUADOR
SOUTH AMERICA
BRAZIL





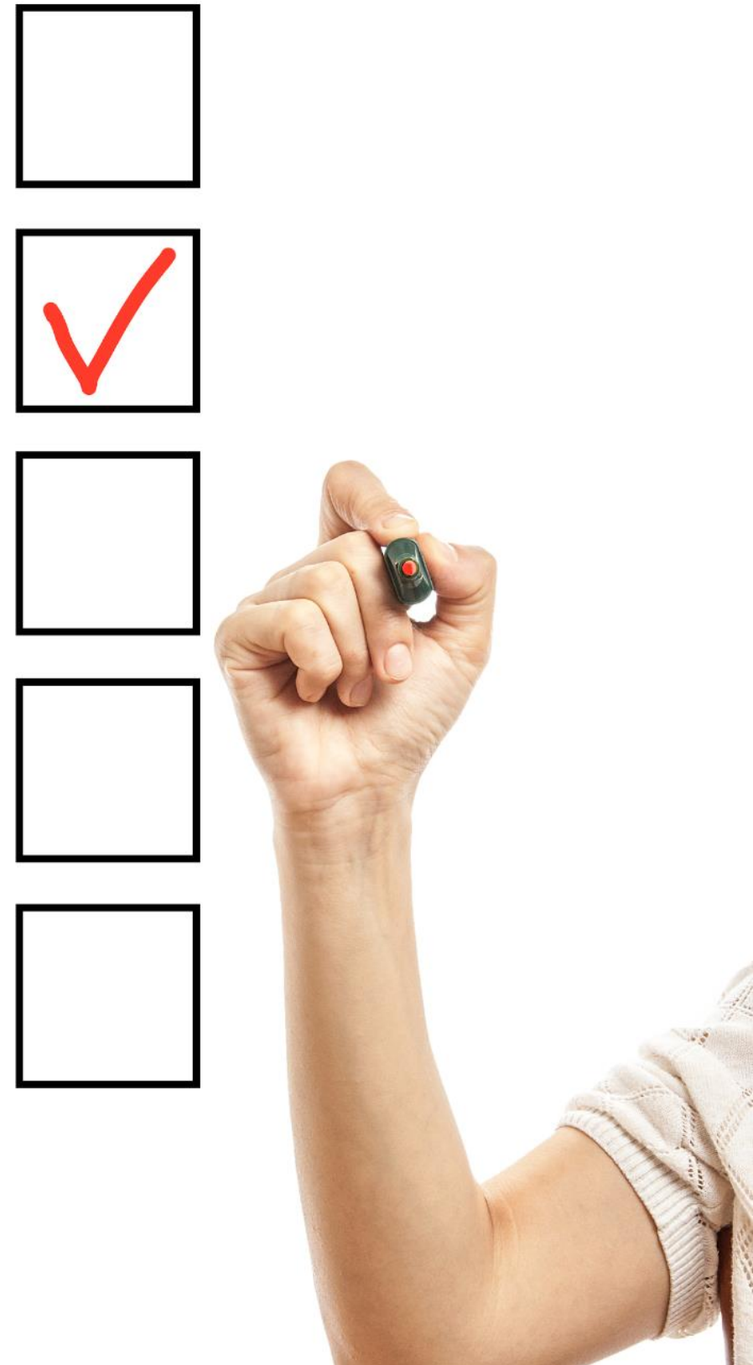
From 50M to 150M

VMs

Containers

Libraries

Feature flags



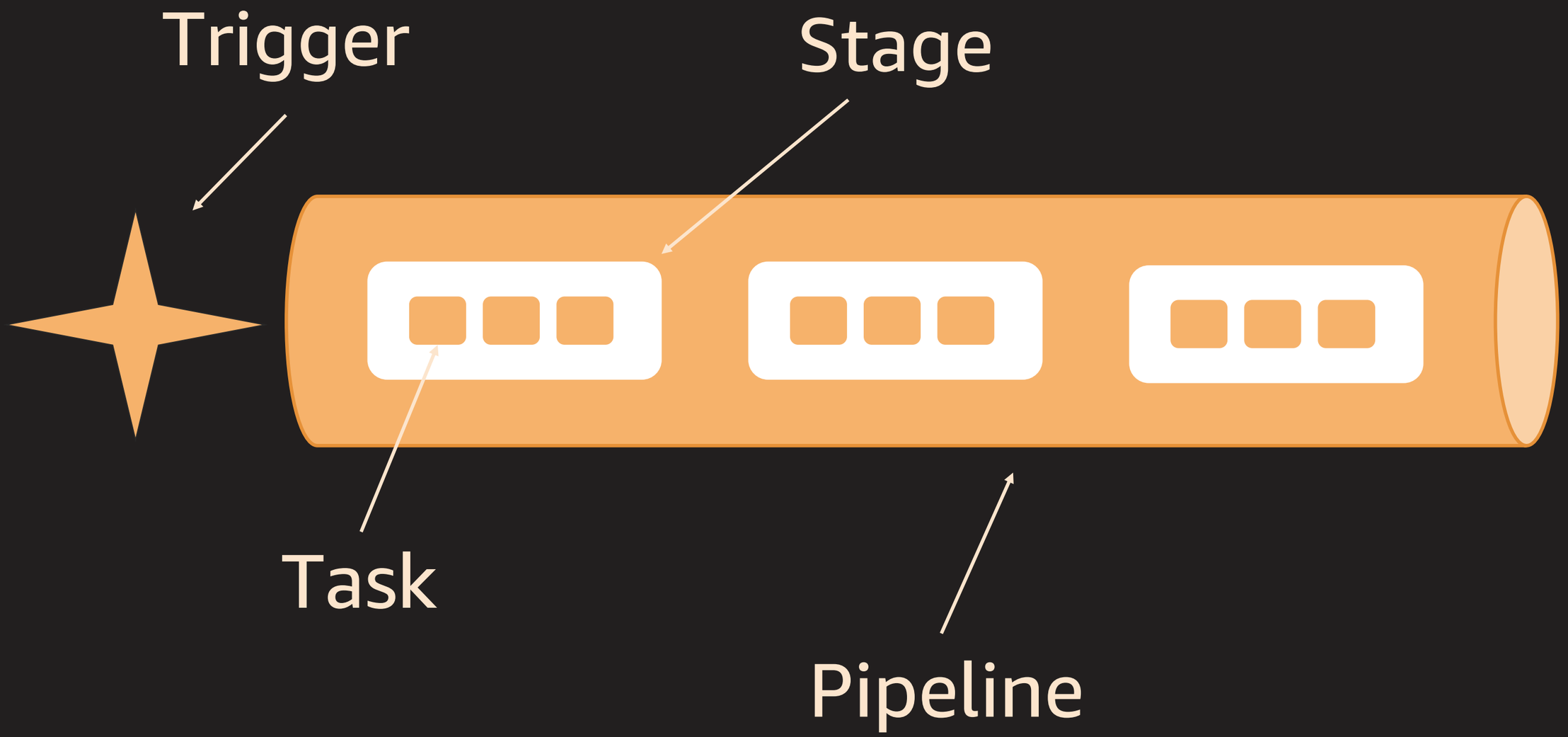



Spinnaker







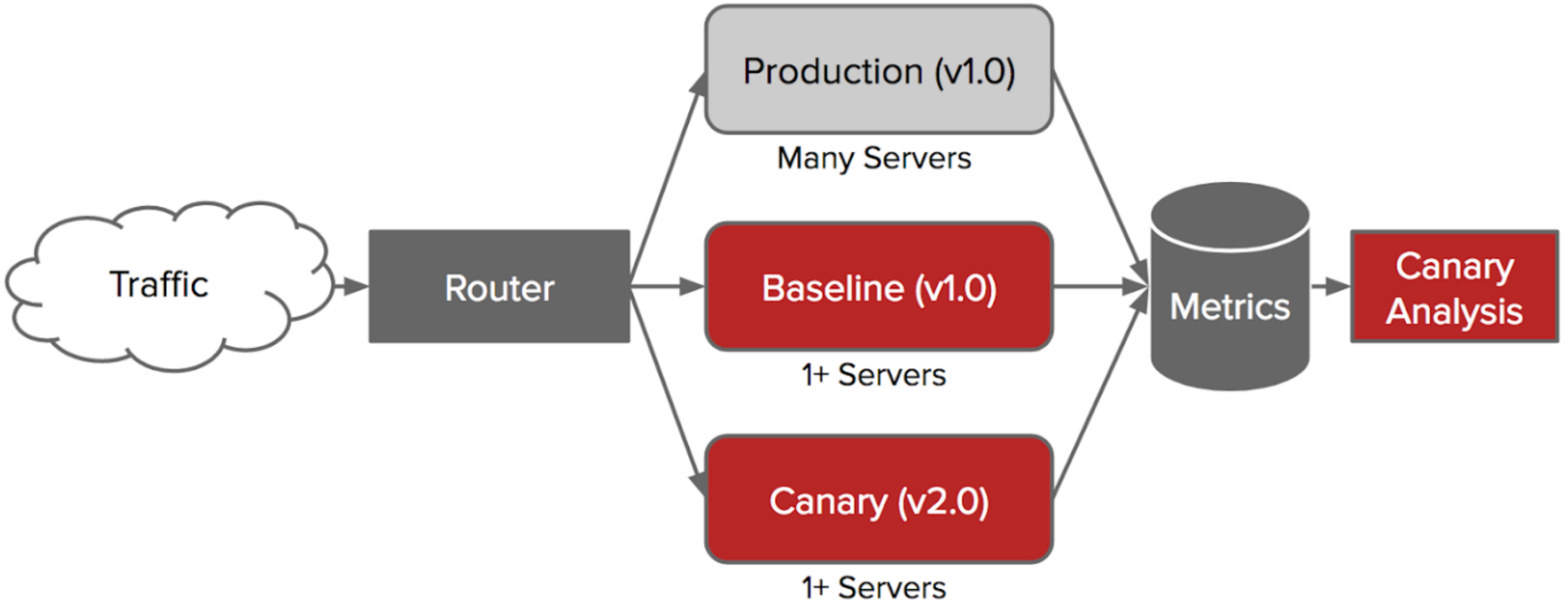

Trigger
Stage
Task
Pipeline

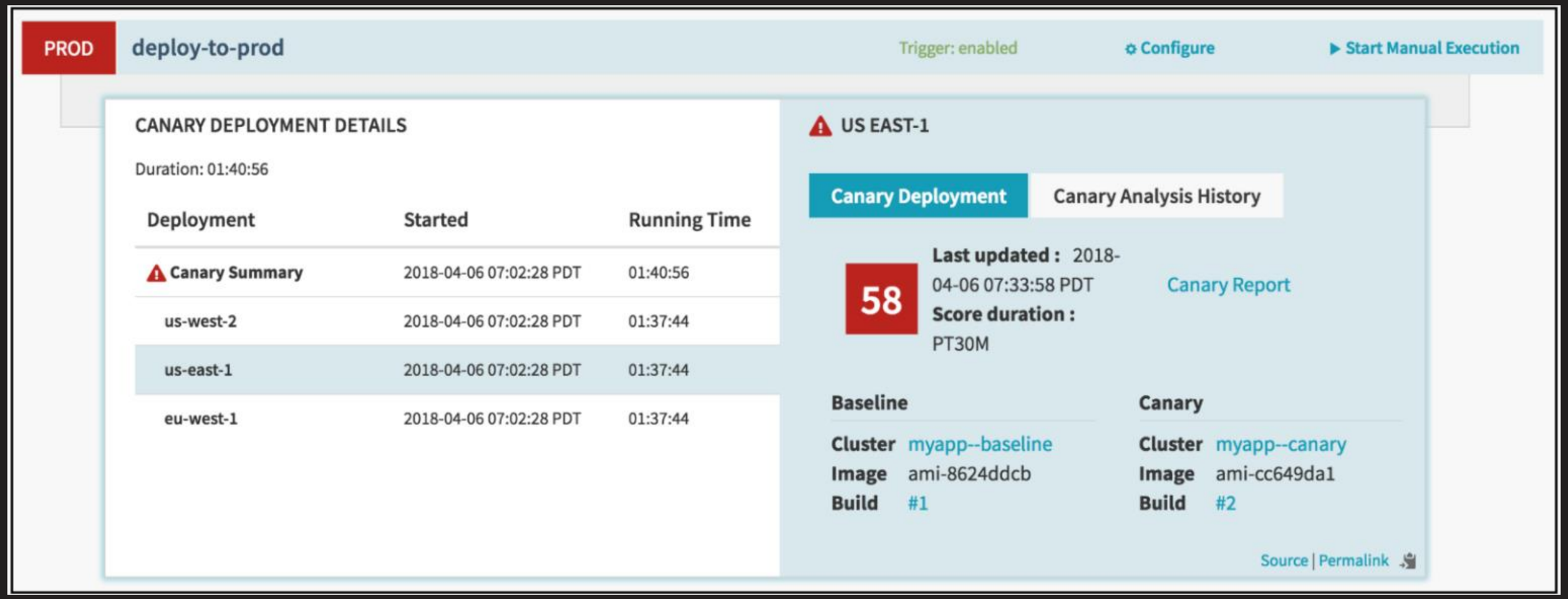

easy
shift

VMs on Amazon Elastic Compute Cloud (Amazon EC2)

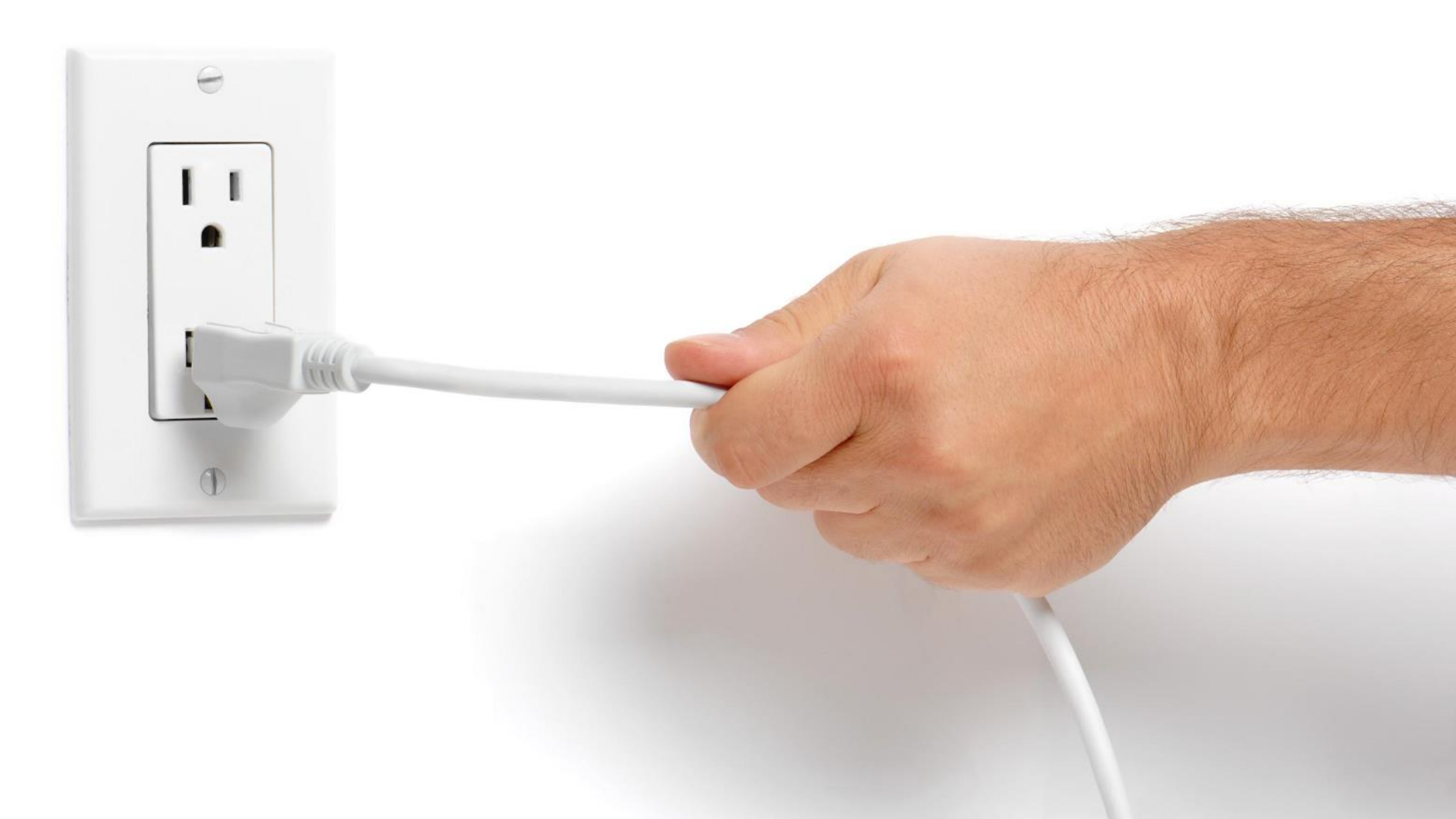
Containers on Titus




Production (v1.0)
Many Servers
Traffic
Router
Baseline (v1.0)
1+ Servers
Metrics
Canary Analysis
Canary (v2.0)
1+ Servers


PROD
deploy-to-prod
Trigger: enabled
Configure
Start Manual Execution
CANARY DEPLOYMENT DETAILS
Duration: 01:40:56
Deployment
Started
Running Time
Canary Summary
2018-04-06 07:02:28 PDT
01:40:56
us-west-2
2018-04-06 07:02:28 PDT
01:37:44
us-east-1
2018-04-06 07:02:28 PDT
01:37:44
eu-west-1
2018-04-06 07:02:28 PDT
01:37:44
US EAST-1
Canary Deployment
Canary Analysis History
58
Last updated : 2018-04-06 07:33:58 PDT
Score duration : PT30M
Canary Report
Baseline
Cluster myapp--baseline
Image ami-8624ddcb
Build #1
Canary
Cluster myapp--canary
Image ami-cc649da1
Build #2
Source | Permalink


CHAOS
MONKEY









OCA Deploy Firmware (Prod)

stage durations | Configure

OCA Deploy Firmware (Prod)

MANUAL START
openconnectfirmware-149510111645
14 days ago

01:48	00:04	00:29	2d09:07:09	2d11:12:49

Status: SUCCEEDED

Duration: 2d11:15:12

> View All Parameters (9)

Authorize → Prepare Upgrade Plan → Manual Judgment → Schedule Upgrades

Upgrade Engine

STAGE DETAILS: SCHEDULE UPGRADES

Duration: 2d09:07:09

Step	Started	Duration	Status
Schedule Upgrades	2019-10-22 19:52:57 PDT	2d09:07:09	SUCCEEDED
XXX managed caches beginning at 2019-10-24T06:00:00-07:00	2019-10-22 19:53:27 PDT	1d10:06:48	SUCCEEDED
XXX managed caches beginning at 2019-10-24T08:00:00-07:00	2019-10-22 19:53:27 PDT	1d12:07:15	SUCCEEDED
XXX managed caches beginning at 2019-10-24T08:30:00-07:00	2019-10-22 19:53:27 PDT	1d12:36:39	SUCCEEDED
XXX managed caches beginning at 2019-10-24T09:00:00-07:00	2019-10-22 19:53:27 PDT	1d13:06:59	SUCCEEDED
XXX managed caches	2019-10-22 19:53:27 PDT	1d13:36:34	SUCCEEDED

✓ XXX MANAGED CACHES BEGINNING AT 2019-10-24T08:00:00-07:00

Oca Begin Upgrade Schedule | Task Status

XXX managed caches beginning at 2019-10-24T08:00:00-07:00

- **c001.meb002.belong**(org: belong, id: XXXXXX, uuid: XXXXXXXXXXXXXXXXXXXXXXXX, tz: Australia/Melbourne)
- **c001.meb002.tpg**(org: tpg, id: XXXXXX, uuid: XXXXXXXXXXXXXXXXXXXXXXXX, tz: Australia/Melbourne)
- **c001.mel002.m2**(org: m2, id: XXXXXX, uuid: XXXXXXXXXXXXXXXXXXXXXXXX, tz: Australia/Melbourne)
- **c001.syd001.iinet**(org: iinet, id: XXXXXX, uuid: XXXXXXXXXXXXXXXXXXXXXXXX, tz: Australia/Sydney)
- **c001.syd001.m2**(org: m2, id: XXXXXX, uuid: XXXXXXXXXXXXXXXXXXXXXXXX, tz: Australia/Sydney)
- **c001.syd002.exetel**(org: exetel, id: XXXXXX, uuid: XXXXXXXXXXXXXXXXXXXXXXXX, tz: Australia/Sydney)
- **c001.syd002.iinet**(org: iinet, id: XXXXXX, uuid: XXXXXXXXXXXXXXXXXXXXXXXX, tz: Australia/Sydney)
- **c001.syd002.m2**(org: m2, id: XXXXXX, uuid: XXXXXXXXXXXXXXXXXXXXXXXX, tz: Australia/Sydney)
- **c002.meb001.aussiebb**(org: aussiebb, id: XXXXXX, uuid: XXXXXXXXXXXXXXXXXXXXXXXX, tz: Australia/Melbourne)

OCA Deploy Firmware (Prod)

stage durations | Configure

OCA Deploy Firmware (Prod)

MANUAL START
openconnectfirmware-149510111645
14 days ago

01:48	00:04	00:29	2d09:07:09	2d11:12:49

Status: SUCCEEDED

Duration: 2d11:15:12

> View All Parameters (9)

Authorize → Prepare Upgrade Plan → Manual Judgment → Schedule Upgrades → Upgrade Engine

STAGE DETAILS: UPGRADE ENGINE

Duration: 2d11:12:49

Step	Started	Duration	Status
Upgrade Engine	2019-10-22 19:52:57 PDT	2d11:12:49	SUCCEEDED
Monitor Draining Task	2019-10-22 19:52:57 PDT	2d10:12:23	SUCCEEDED
Monitor Upgrading Task	2019-10-22 19:52:57 PDT	2d10:51:54	SUCCEEDED
Complete Failed Task	2019-10-22 19:52:57 PDT	2d10:51:44	SUCCEEDED
Send Completed Mail Task	2019-10-22 19:52:57 PDT	2d11:12:42	SUCCEEDED
Monitor Deployment Task	2019-10-22 19:52:57 PDT	2d11:12:44	SUCCEEDED

✓ SEND COMPLETED MAIL TASK

Oca Upgrade Engine | Task Status

Total Caches:

2156

Completed Deployment (View in OCAdmin 1 2 3):

2149

Failed Upgrading (View in OCAdmin):

7

Set to Wonky

7

Source | Permalink



Artifact Management: netflix/atlas-plugin

Adoption Summary for 2.24.1

Include Transitive Usage | Deprecate <=2.24.1 | Blacklist 2.24.1

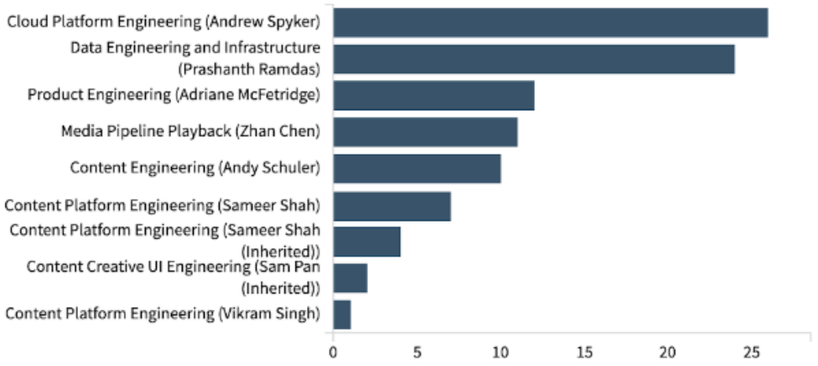
Summary

Only includes usage via a direct dependency. Show transitive usage

Results are for EC2 Server Groups. Titus Server Group support is under active development.

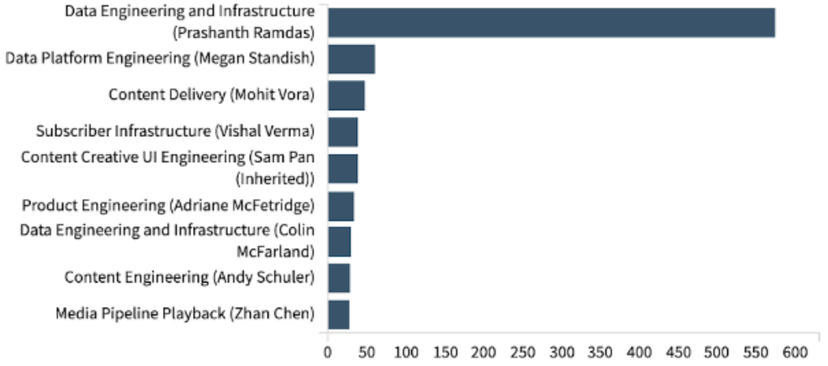
USAGE FOR 2.24.1

All Consumer Server Groups(97) 7.2% Adoption



USAGE FOR <2.24.1

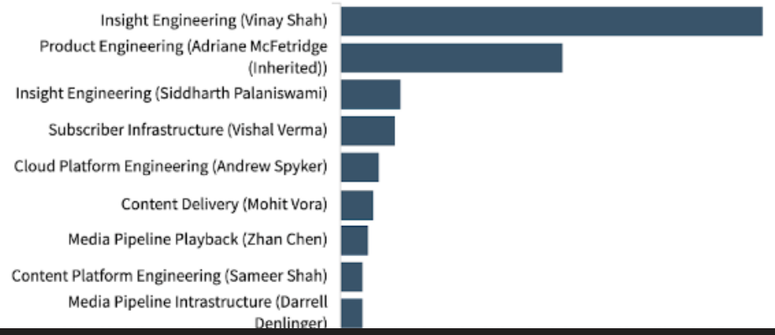
All Consumer Server Groups(1074) 79.67% Adoption

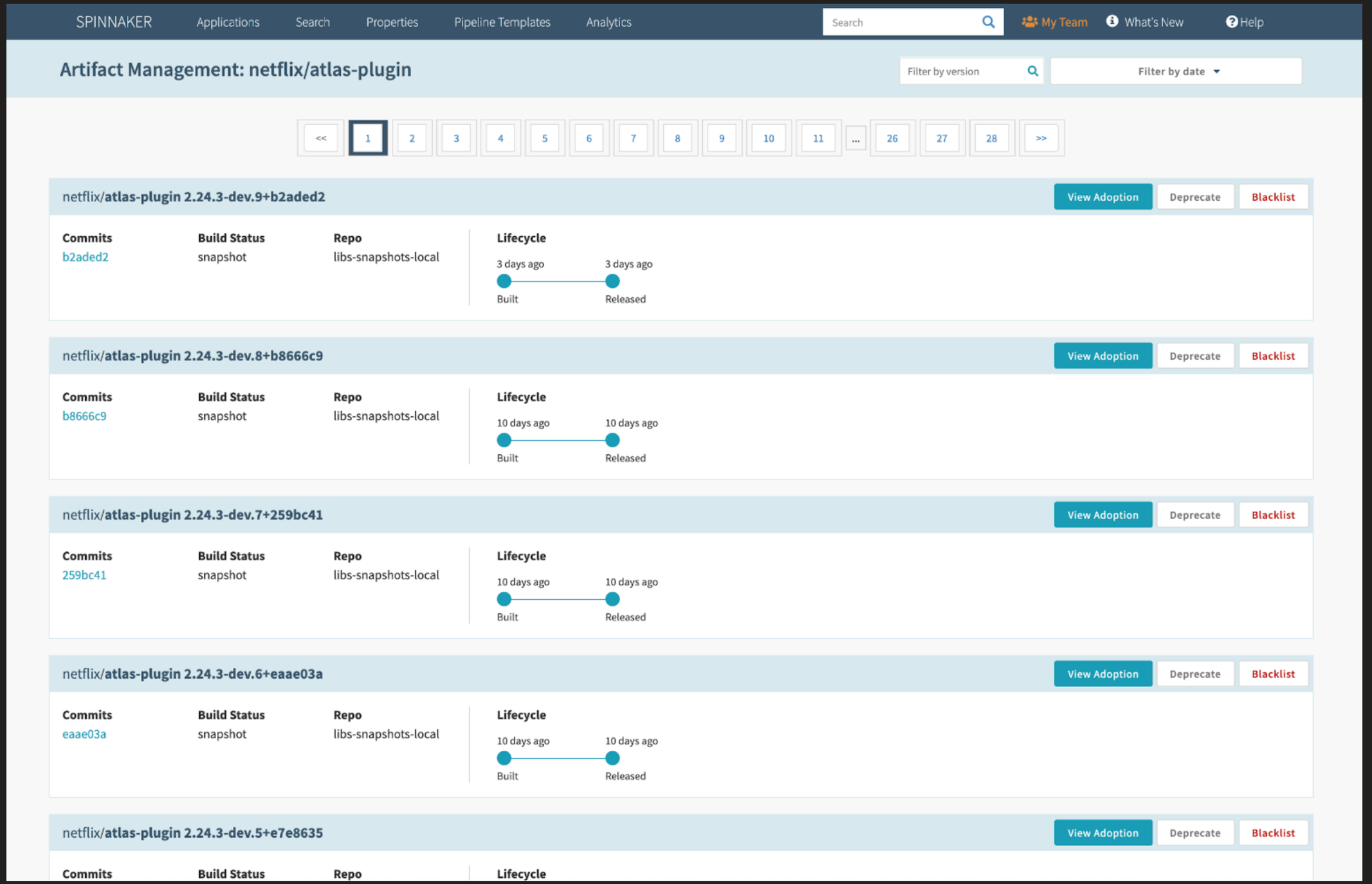


Show Complete List

USAGE FOR >2.24.1

All Consumer Server Groups(177) 13.13% Adoption




SPINNAKER
Applications
Search
Properties
Pipeline Templates
Analytics
Search
My Team
What's New
Help
Artifact Management: netflix/atlas-plugin
Filter by version
Filter by date
<< 1 2 3 4 5 6 7 8 9 10 11 ... 26 27 28 >>
netflix/atlas-plugin 2.24.3-dev.9+b2aded2
View Adoption
Deprecate
Blacklist
Commits
b2aded2
Build Status
snapshot
Repo
libs-snapshots-local
Lifecycle
3 days ago
Built
3 days ago
Released
netflix/atlas-plugin 2.24.3-dev.8+b8666c9
View Adoption
Deprecate
Blacklist
Commits
b8666c9
Build Status
snapshot
Repo
libs-snapshots-local
Lifecycle
10 days ago
Built
10 days ago
Released
netflix/atlas-plugin 2.24.3-dev.7+259bc41
View Adoption
Deprecate
Blacklist
Commits
259bc41
Build Status
snapshot
Repo
libs-snapshots-local
Lifecycle
10 days ago
Built
10 days ago
Released
netflix/atlas-plugin 2.24.3-dev.6+eaae03a
View Adoption
Deprecate
Blacklist
Commits
eaae03a
Build Status
snapshot
Repo
libs-snapshots-local
Lifecycle
10 days ago
Built
10 days ago
Released
netflix/atlas-plugin 2.24.3-dev.5+e7e8635
View Adoption
Deprecate
Blacklist
Commits
Build Status
Repo
Lifecycle





Flexible delivery



AWS



CDN



Titus

Extensibility



Open Connect Appliances

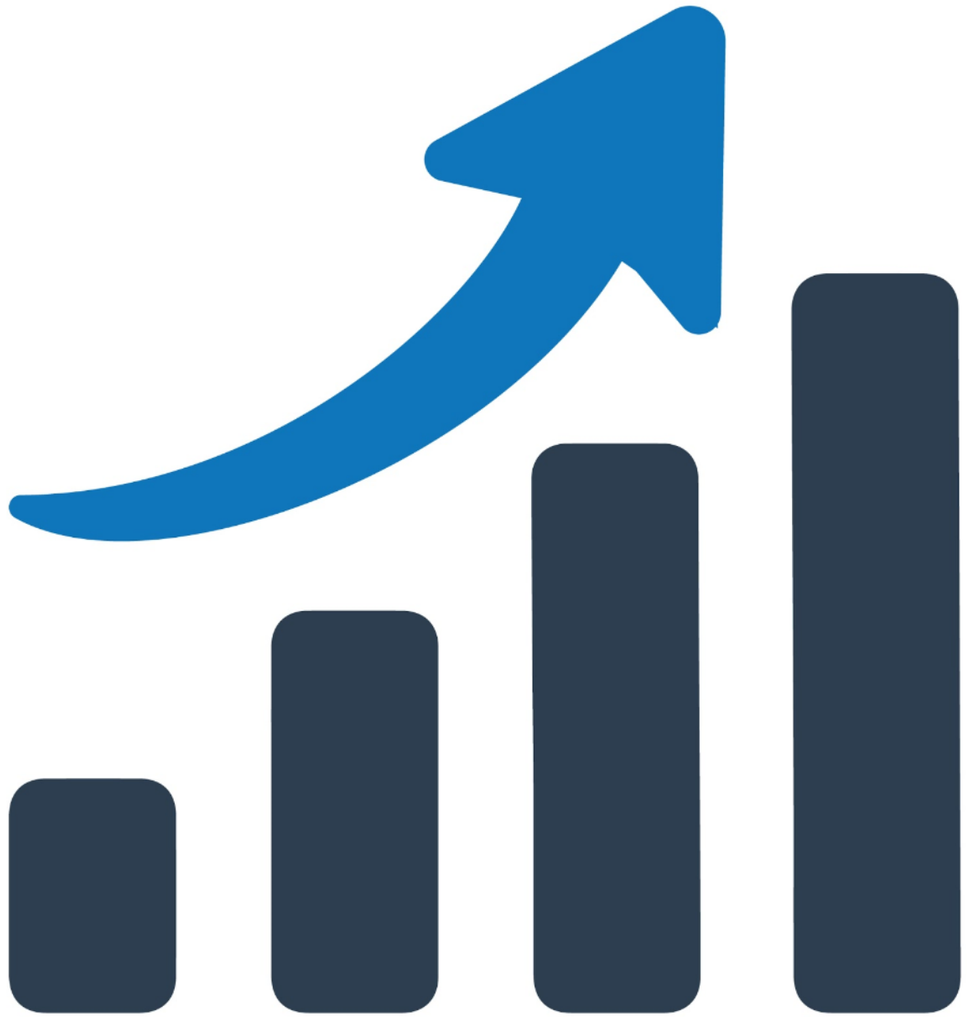


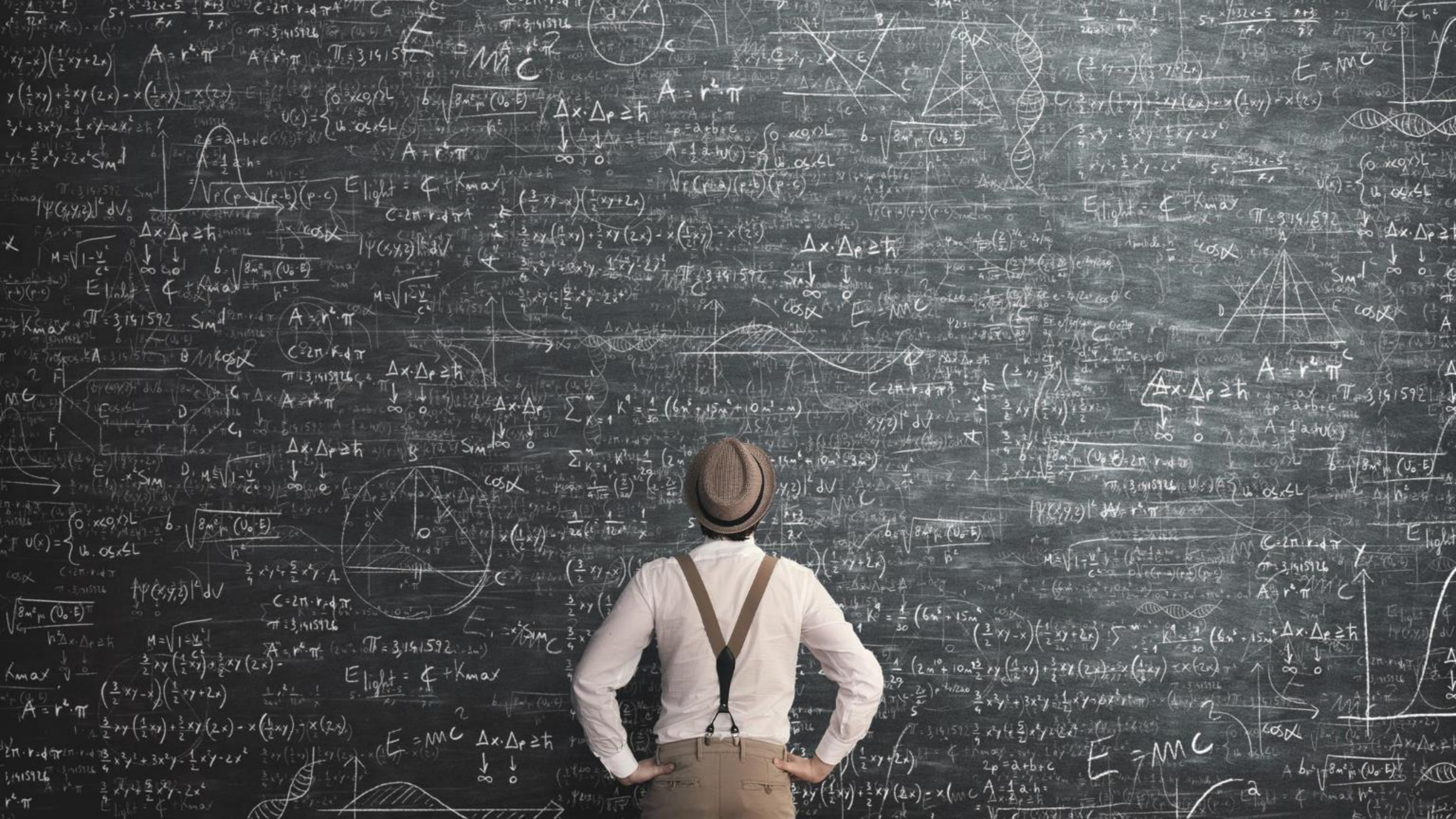
Runtime properties



Library management

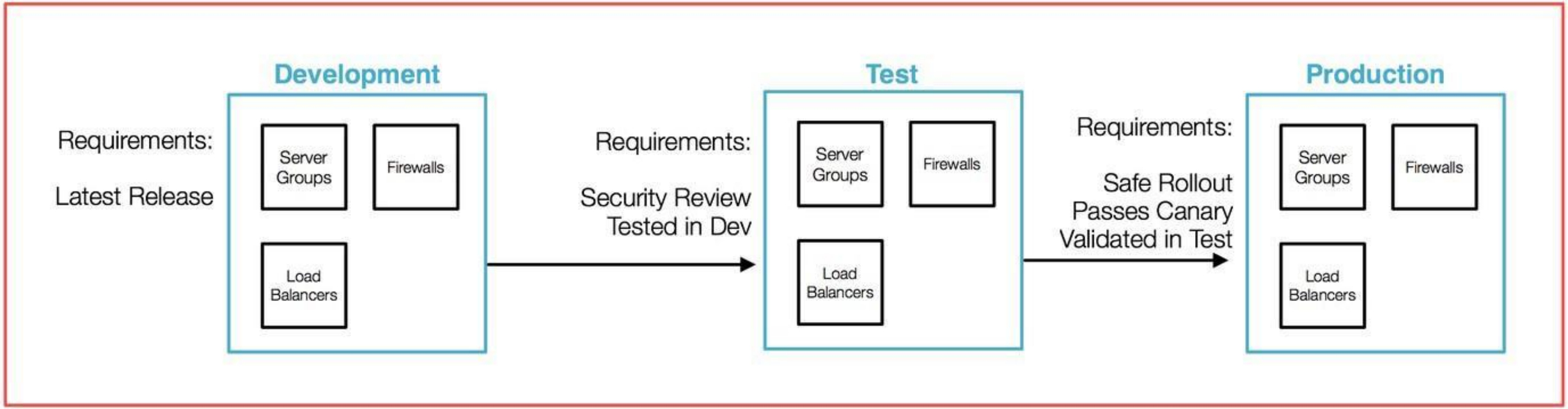

CHANGE
JUST AHEAD



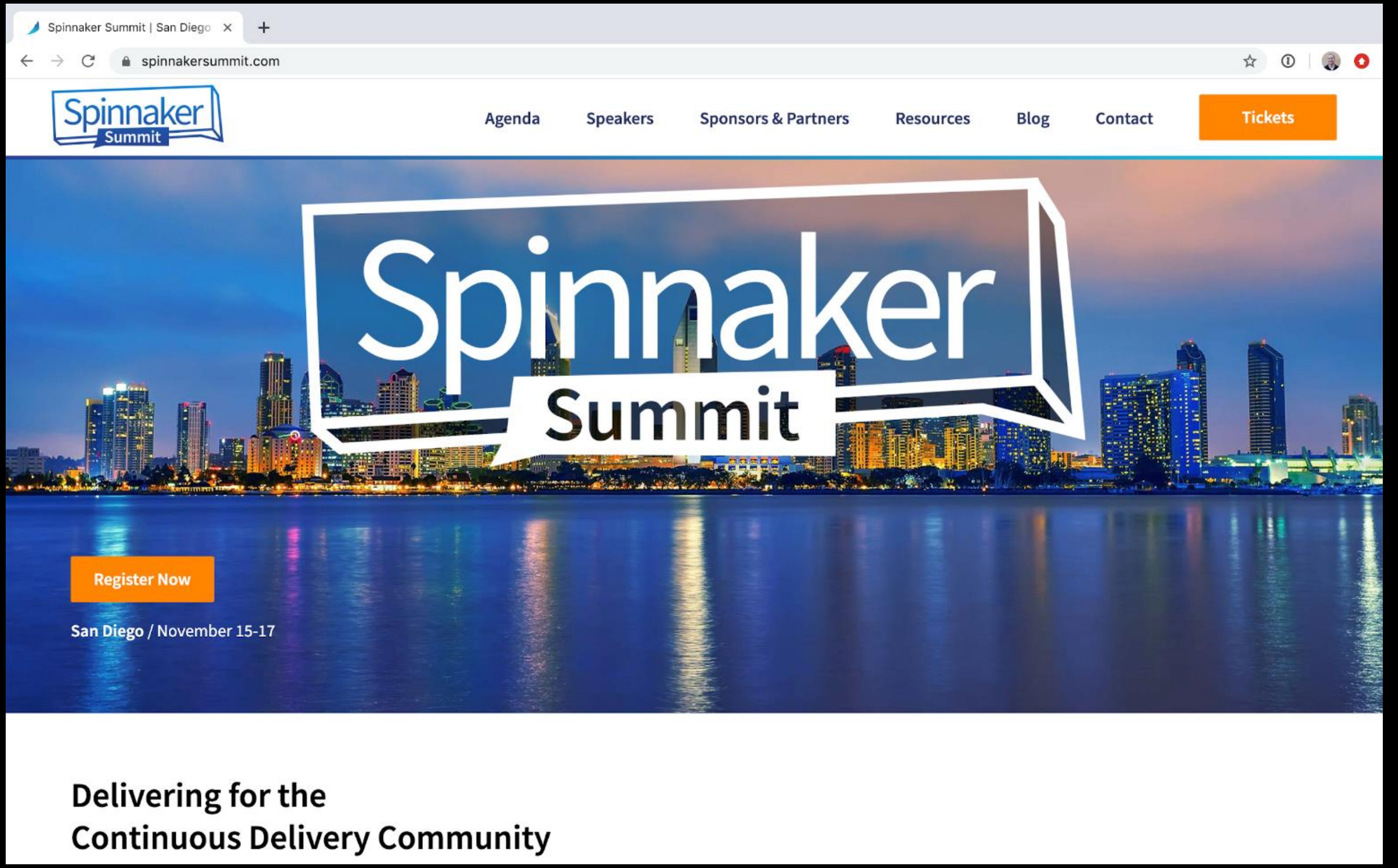




Template: Generic Web App

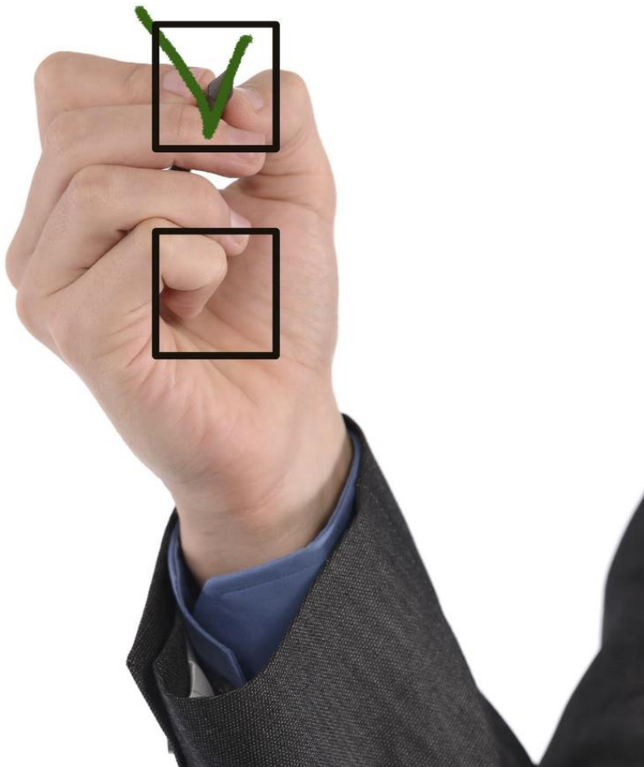





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Agenda
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San Diego / November 15-17
Delivering for the
Continuous Delivery Community

500+ attendees

300+ companies



Projects - CD Foundation

cd.foundation/projects/

THE LINUX FOUNDATION PROJECTS

CD.FOUNDATION

About Projects Members News & Events Store

Projects

The initial projects hosted by the CDF are Jenkins, Jenkins X, Spinnaker, and Tekton and there are several more interested projects. Future project decisions will be made by the CDF Technical Overview Committee (TOC): https://github.com/cdfoundation/toc. If you would like more information about hosting your project at the CDF, please email info@cd.foundation.









Jenkins
Jenkins is the leading open source automation server supported by a large and growing community of developers, testers, designers and other people interested in continuous integration, continuous delivery and modern software

Jenkins X
Jenkins X is an open source CI/CD solution for modern cloud applications on Kubernetes. Jenkins X provides pipeline automation, built-in GitOps and preview environments to help teams

Spinnaker
Spinnaker is an open source, multi-cloud continuous delivery platform for releasing software changes with high velocity and confidence. Created at Netflix, it has been battle-tested in production by hundreds of teams over millions of deployments.

Tekton
Tekton is a set of shared, open source components for building CI/CD systems. It modernizes the Continuous Delivery control plane and moves the brains of software deployment to Kubernetes. Tekton's goal is to provide industry

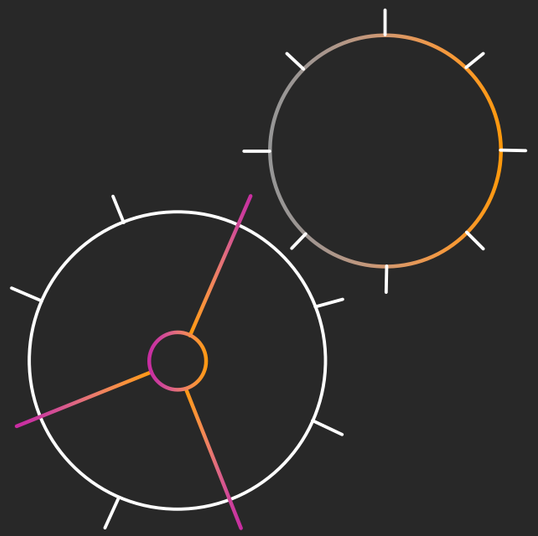
Community



AWS involvement with Spinnaker community

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Why did AWS get involved?

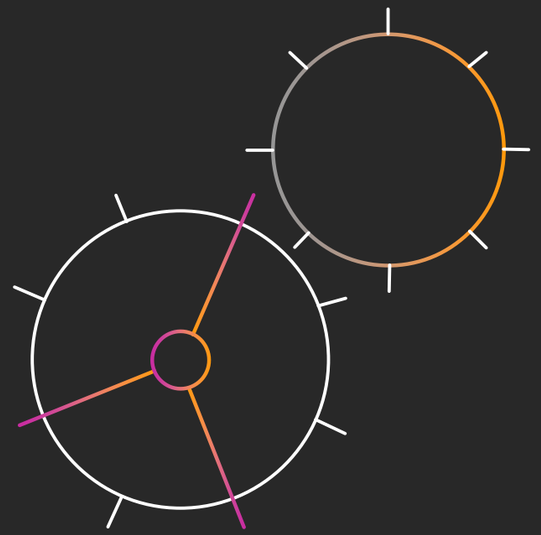


Go where the developers are

- Amazon EC2
- AWS Lambda
- Amazon Elastic Container Service (Amazon ECS)
- Amazon Elastic Kubernetes Service (Amazon EKS)
- AWS Fargate


Spinnaker
Amazon EC2
AWS Lambda
Amazon ECS
Amazon EKS
AWS Fargate

Spinnaker documentation



Sailing with Spinnaker on AWS

by Anuj Sharma, Alolita Sharma, and Paul Roberts | on 12 JUL 2018 | in Amazon EC2 Container Service, Amazon Elastic Container Service, Amazon Elastic Container Service For Kubernetes, Open Source | Permalink | Comments | Share

We have recently begun contributing to an exciting open source project, Spinnaker from Netflix. Spinnaker is a cloud-based continuous delivery platform for releasing software changes rapidly and reliably. Spinnaker makes it easier for developers to focus on writing code without having to worry about the underlying cloud infrastructure. It integrates seamlessly with tools such as Jenkins and TravisCI. Spinnaker provides the flexibility to deploy applications on virtual machines running in the cloud or in your container platform of choice, such as Amazon ECS or Kubernetes. AWS customers like Capital One are using Spinnaker to provide their developers with a single CI/CD pipeline to deploy their applications.

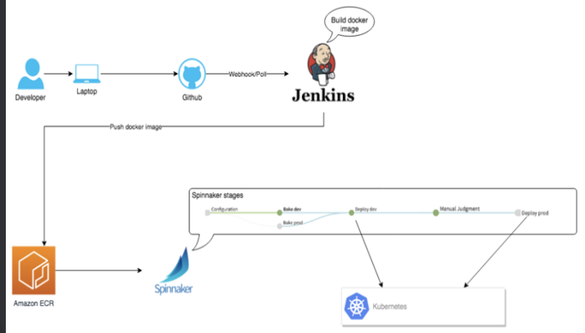
Today, we are excited to share that Spinnaker can now be deployed on Amazon Elastic Container Service for Kubernetes (Amazon EKS). To ensure proper installation of Spinnaker on top of Amazon EKS, we recently updated the official documentation.

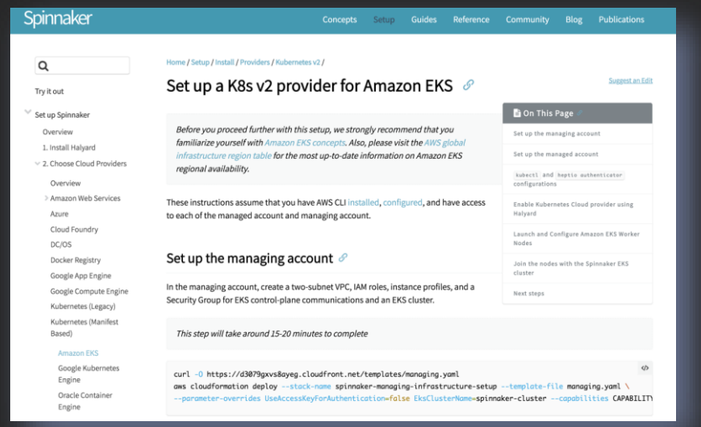
Build a Deployment Pipeline with Spinnaker on Kubernetes

by Prabhat Sharma | on 02 JUL 2019 | in Amazon Elastic Container Service For Kubernetes, DevOps, Open Source | Permalink | Comments | Share

Spinnaker is a continuous delivery platform, originally developed by Netflix, for releasing software changes rapidly and reliably. Spinnaker makes it easier for developers to focus on writing code without having to worry about the underlying cloud infrastructure. It integrates seamlessly with Jenkins and other popular build tools.

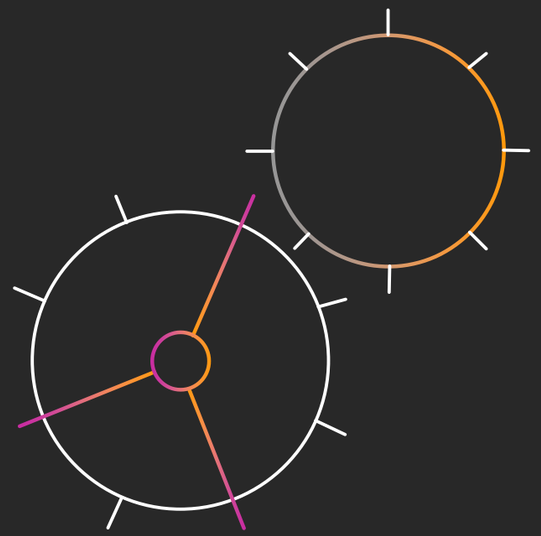
In this post we will discuss on how to install Spinnaker and build a continuous delivery pipeline for your workloads running on Kubernetes. Our workflow will look like:





http://www.spinnaker.io

AWS Fargate support



spinnaker / clouddriver

Watch 93 | Star 163

Code | Pull requests 12 | Projects 0 | Insights

feat(provider/ecs): Add support for Fargate launch type #2909

Merged robzienert merged 5 commits into spinnaker:master from clareliguori:fargate-launch-type 2 days ago

Conversation 1 | Commits 5 | Checks 0 | Files changed 3 +29

clareliguori commented 5 days ago — Contributor

Adds support for the Fargate launch type for ECS provider

Notes:

- Uses the Spinnaker-managed role for the ECS account as the ECS execution role (same as how it used for the ECS service role)
- Sets the task's hard limits for CPU/memory to the same as the CPU/memory setting of the single container
- Explicitly setting the launch type to 'EC2' is supported, as well as null launch type value

feat(provider/ecs): Add support for Fargate launch type — Verified 0e0fc53

clareliguori referenced this pull request 5 days ago

feat(provider/ecs): Add launch type option to support Fargate #5667 — Merged

Reviewers: robzienert

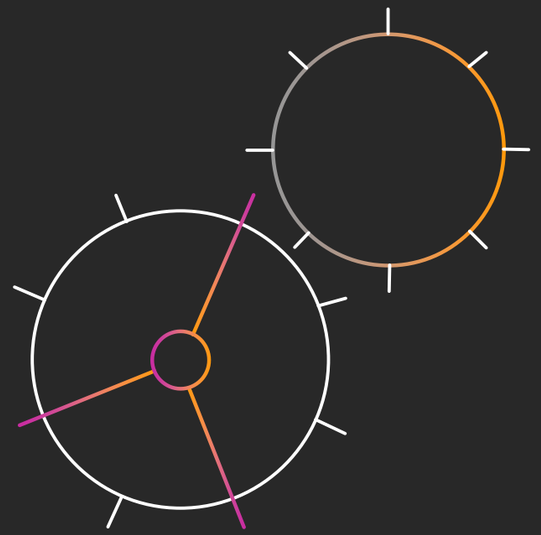
Assignees: No one assigned

Labels: target-release/1.10

Projects: None yet

Milestone: No milestone

AWS Lambda support



spinnaker / clouddriver

Watch 104 | Star 208 | Fork 605

Code | Pull requests 16 | Projects 0 | Security | Insights

Branch: master ▾ clouddriver / clouddriver-lambda / | Create new file | Upload files | Find file | History

dreynaud chore(dependencies): align on guava version from caffeine (#3692) — Latest commit ab56a24 on May 20

..

src/main/java/com/netflix/spinnaker	chore(*): Apply codestyles to clouddriver (#3662)	2 months ago
README.md	chore(*): Bump spinnaker-dev plugin (#3661)	2 months ago
clouddriver-lambda.gradle	chore(dependencies): align on guava version from caffeine (#3692)	2 months ago

README.md

AWS Lambda Support

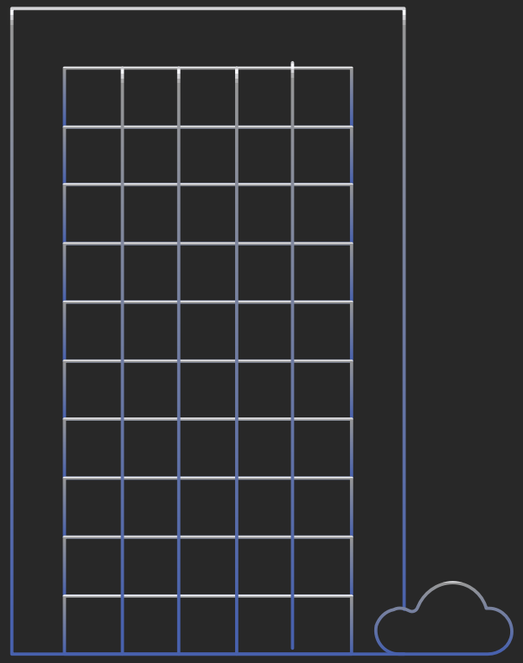
**Background **

Spinnaker CloudDriver has been enhanced to add support for AWS Lambda. Below lists the API contract input that have been coded in this repository.

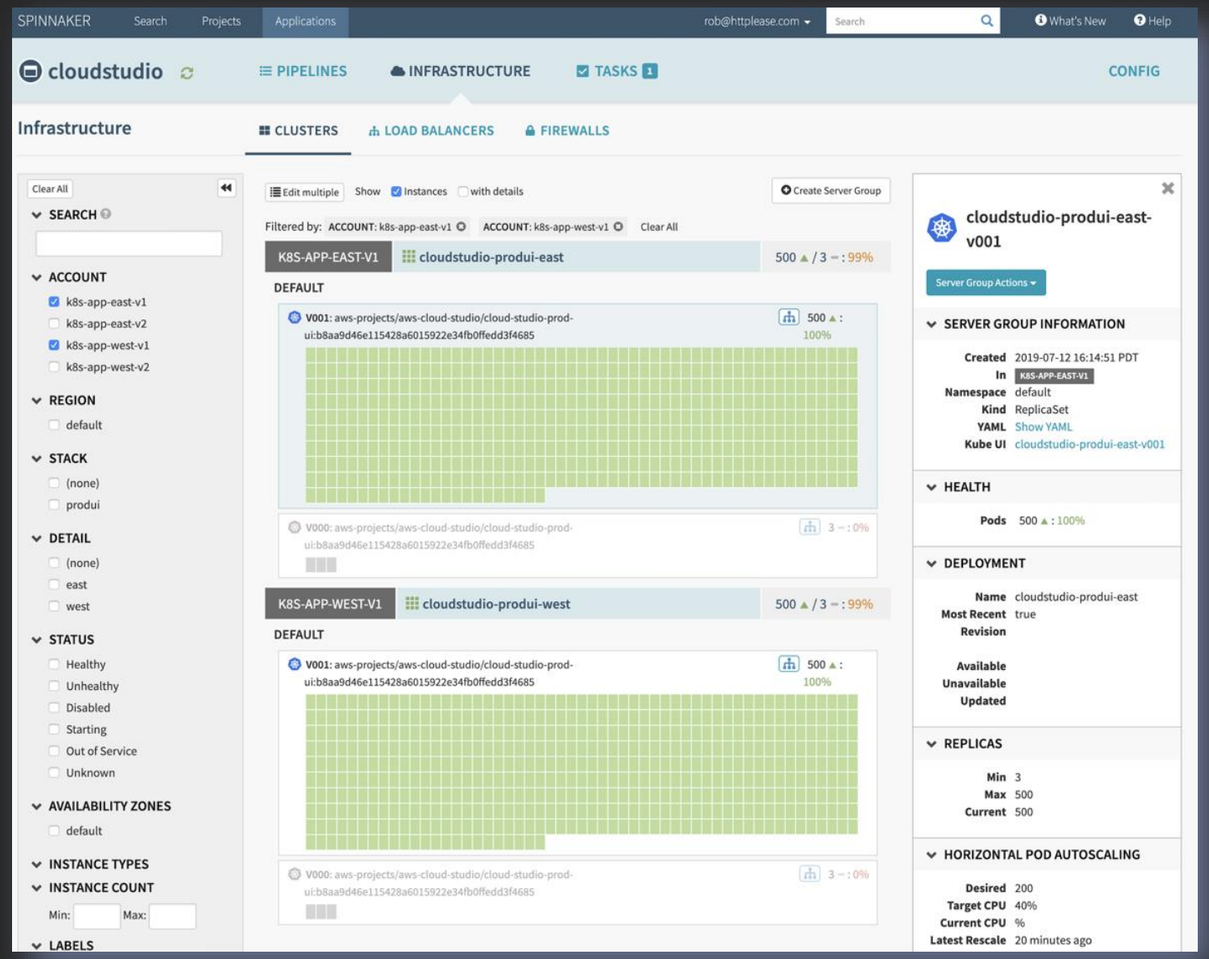
clouddriver.yml override

```
aws:
  lambda:
    enabled: true
  accounts:
    - name: test
      lambdaEnabled: true
```

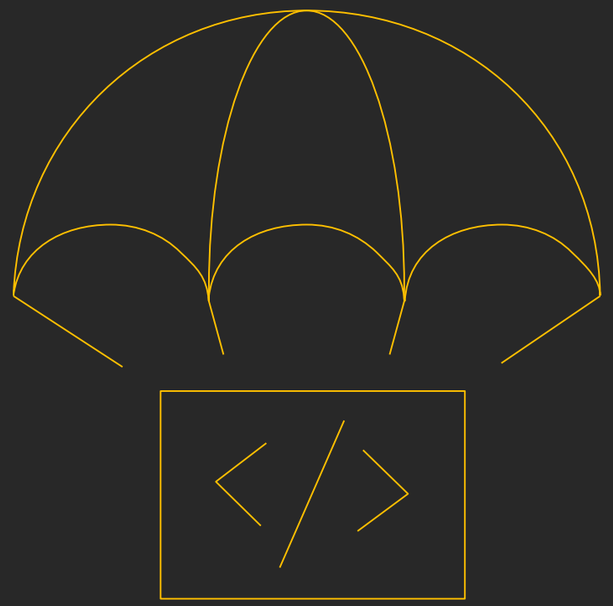
Amazon EKS integration



Scaling EKS apps with Spinnaker



What the community says



AUTODESK.

"Joining the Spinnaker community allows us to leverage the contributions from a large OpenSource community that improves our developer velocity across various compute, container, and function backends."

—Brandon Leach, Sr. Engineering Manager

salesforce

"Salesforce is leveraging Spinnaker to standardize deployments to EKS."

—Dilip Pai, Senior Director, Software Engineering

And hundreds of others!

Thank you!

Andy Glover
aglover@netflix.com

Paul Roberts
rbpa@amazon.com

AWS re:Invent

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aws



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