GO, GO, KUBERNETES

Building a Kubernetes Powered Central Go Modules Repository

JFrog

LET'S GO ON A TRIP THROUGH HISTORY

A QUICK HISTORY OF GO

Go 1.0

First major milestone as a long term stable release

Go 1.5

First release to no longer use C (except for cgo)

Support for Vendoring

Go 1.8

Introduction of Go plugins

Go 1.10

Changes to the toolchain, runtime, and libs

2012 | 2015 | 2017 | 2018

ONE THING MISSING

Dependency Management...

"Tis impossible to be sure of anything but Death and Taxes"

- Christopher Bullock

A QUICK HISTORY OF GO

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2018

Go 1.11

Go Modules!

2018

SO, WHAT ARE MODULES?

Official Dependency Management

No more GOPATH

In one single tool

VENDORING IS A REALLY, REALLY BAD IDEA

But why not use vendoring?

FORKING IS NOT ALWAYS GOOD, BAD FORKING IS ALWAYS BAD

And that's what vendoring is

IN SOFTWARE IMMUTABLE AND REPEATABLE ARE REALLY IMPORTANT

Immutable dependencies

The best way to guarantee issues is force push

Lost Dependencies

Who doesn't remember left-pad with Node.js?

Trust

Do you trust your colleagues? What about the rest of the Internet?

WHO AM I?

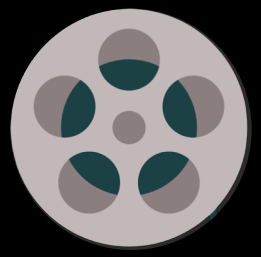
Baruch Sadogursky, Chief Sticker Officer

@jbaruch

- Head of Developer Relations
- Chief Sticker Officer

SHOWNOTES

Slides



Video

Links

Comments

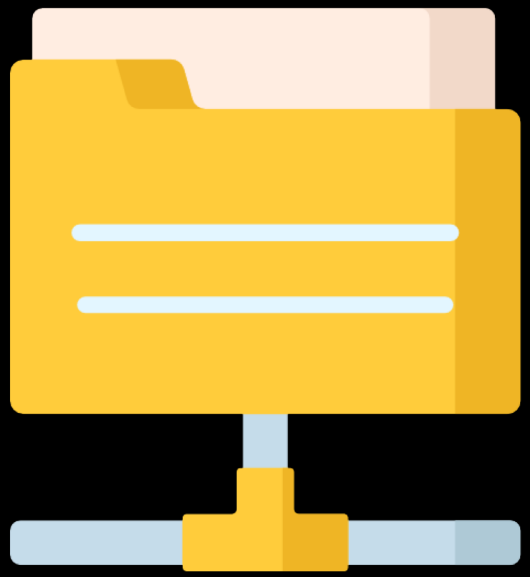
Ratings

Raffle!

https://jfrog.com/shownotes

#1 WHAT IS GOCENTER ACTUALLY?

WHAT IS GOCENTER ACTUALLY?



#2 HOW WE GOT TO KUBERNETES

WHY DID WE CHOOSE KUBERNETES?

- Make use of a proven orchestration platform
- Leverage out-of-the-box features

kubernetes

RUNNING ON GOOGLE CLOUD PLATFORM

Most mature Kubernetes offering

Easy to deploy using existing tools and techniques

Lots of troubleshooting tools like BigQuery and StackDriver

Google Cloud Platform

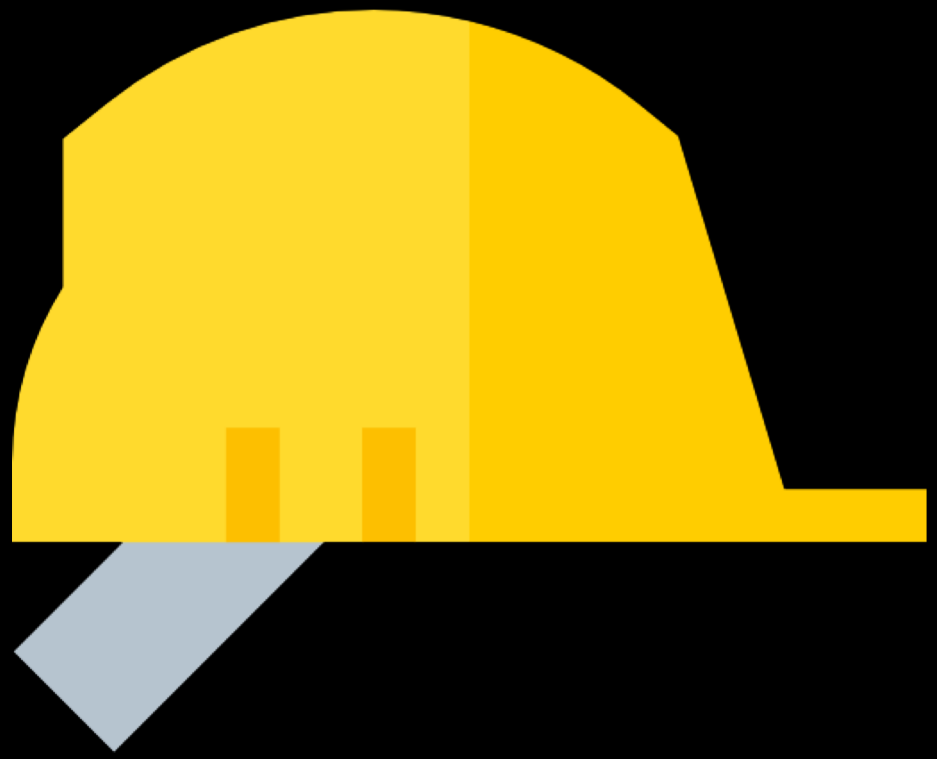
WHO NEEDS STATE ANYWAY?

1. Codebase
2. Dependencies
3. Config
4. Backing services
5. Build, release, run
6. Processes
7. Port binding
8. Concurrency
9. Disposability
10. Dev/Prod parity
11. Logs
12. Admin processes

THE TWELVE-FACTOR APP

BUT WE DIDN'T BUILD EVERYTHING OURSELVES

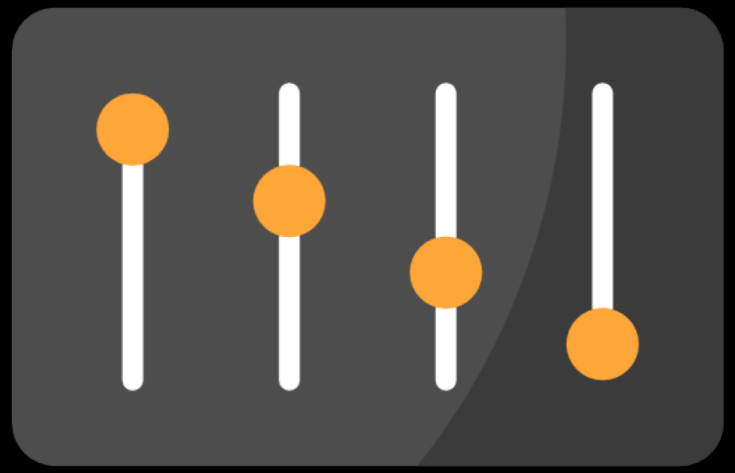
DEPLOYMENTS USING HELM



- Helm Charts are versioned
- Separate value files per environment
- Having one of the co-founders of Helm at our company also doesn't hurt

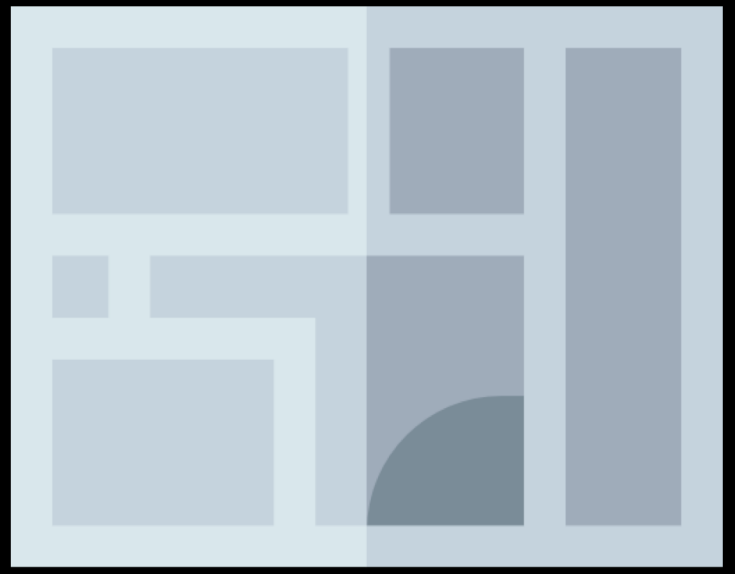
SOME BEST PRACTICES WE LEARNED WHILE BUILDING

Limits & Labels



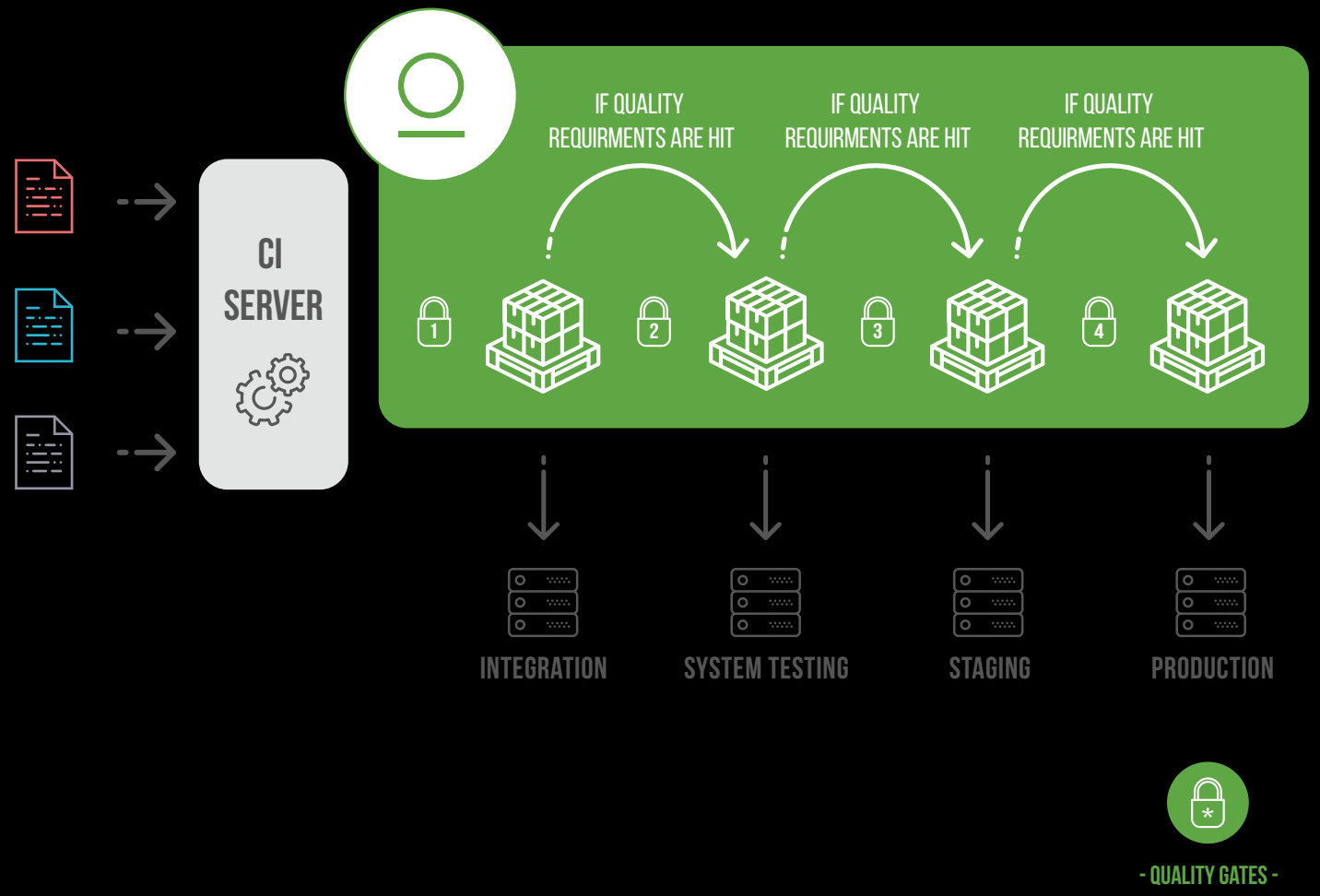
Secrets

Namespaces & Clusters



#3 HOW WE BUILT OUR INFRASTRUCTURE

WE'RE BIG ON THOSE PIPELINES AND PROMOTIONS CONCEPTS



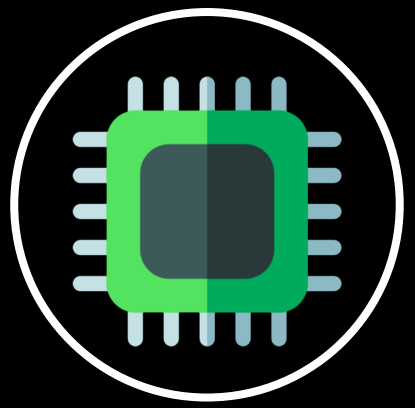
NUMBER OF CLUSTERS CURRENTLY RUNNING

5

RUNNING A FEW MICROSERVICES

Discovery

Notifier



Processor

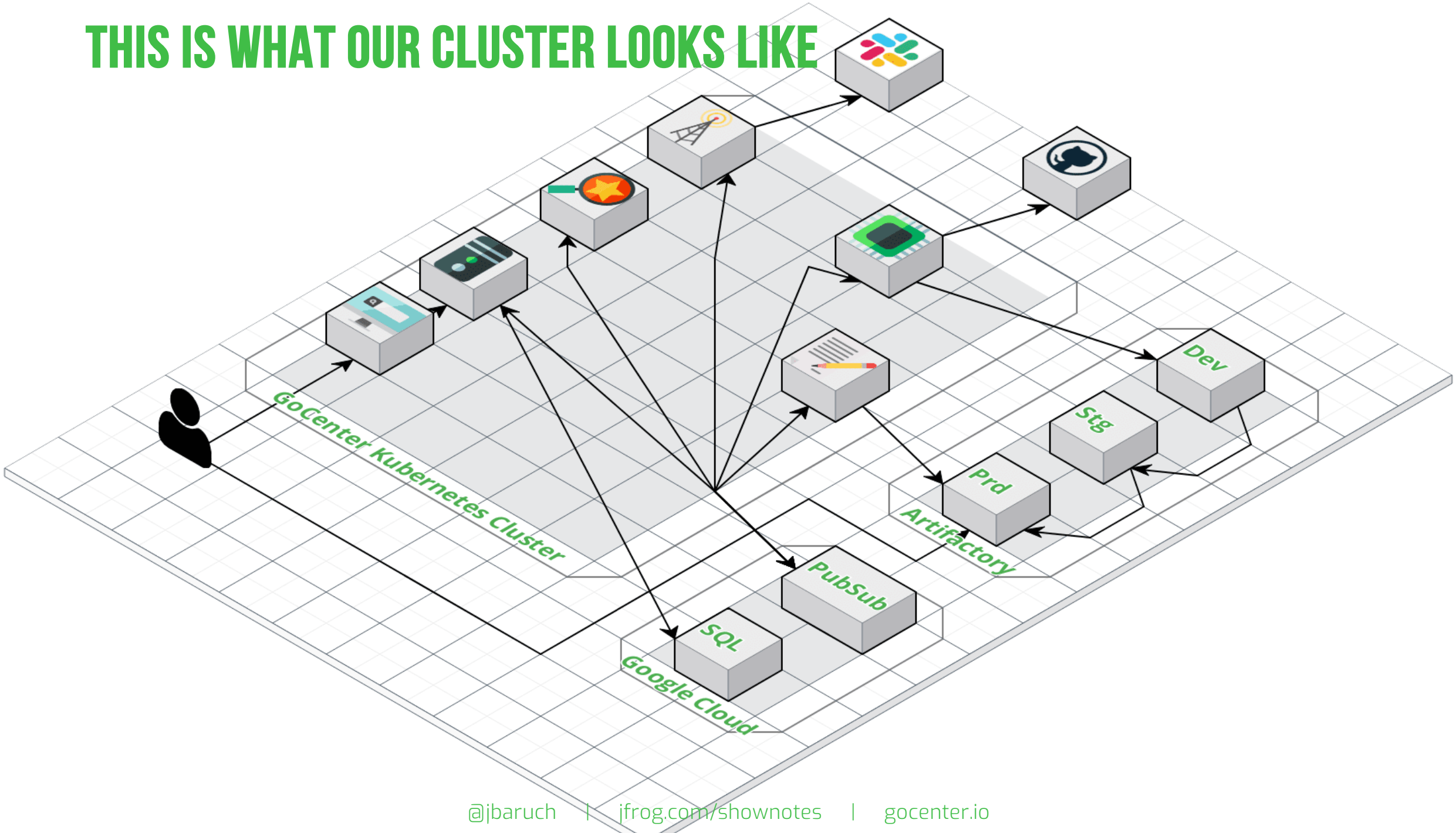
RUNNING A FEW MICROSERVICES

Validator

UI Backend

UI

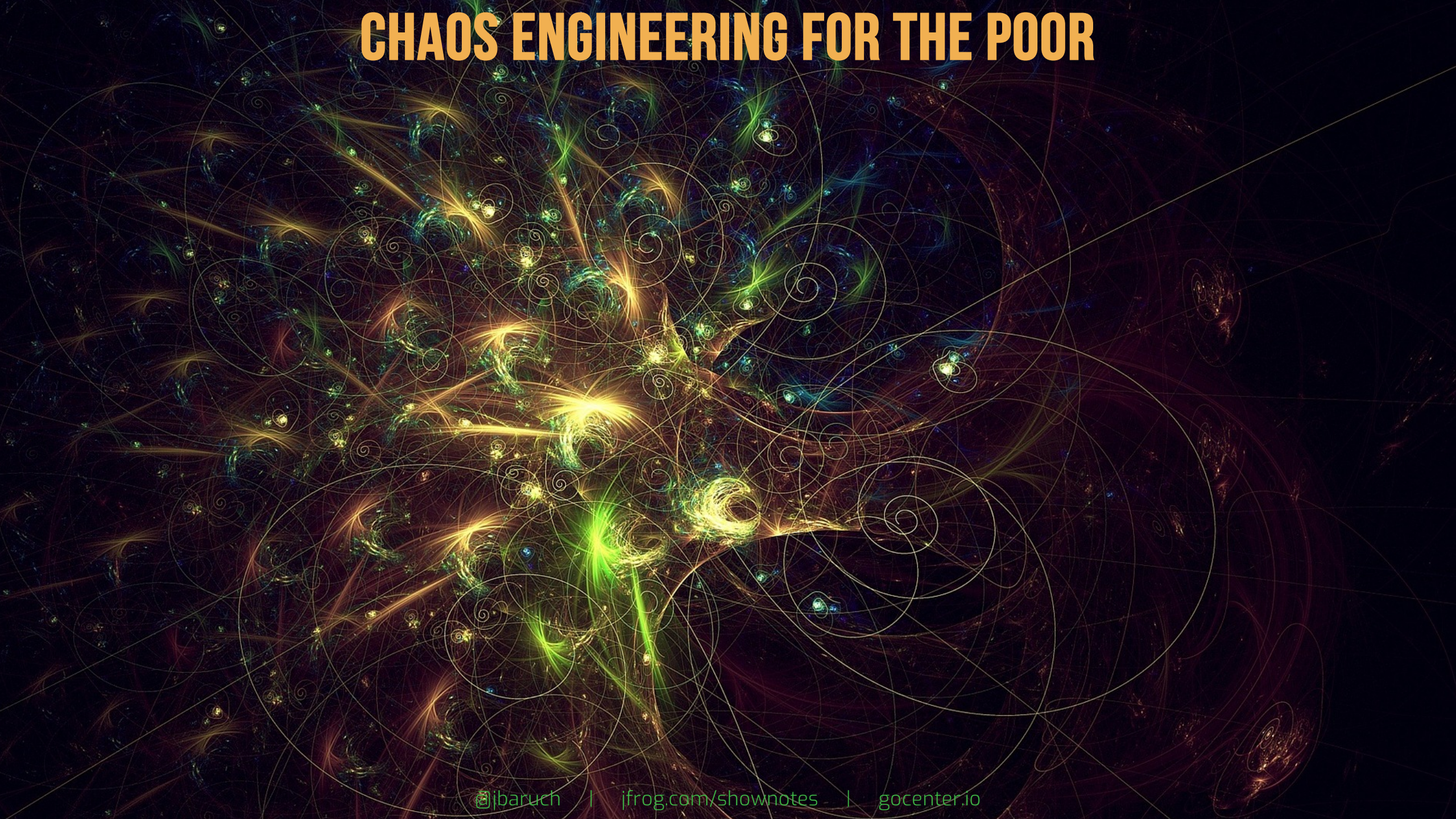
THIS IS WHAT OUR CLUSTER LOOKS LIKE



LOAD TESTING

- UI: 10K users with 100 requests per second
- Backend: Load 10K modules… twice

CHAOS ENGINEERING FOR THE POOR

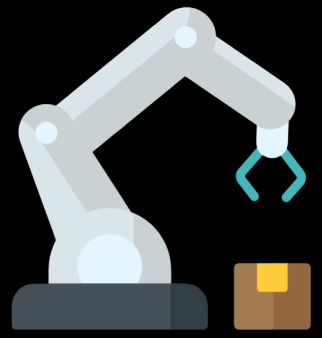


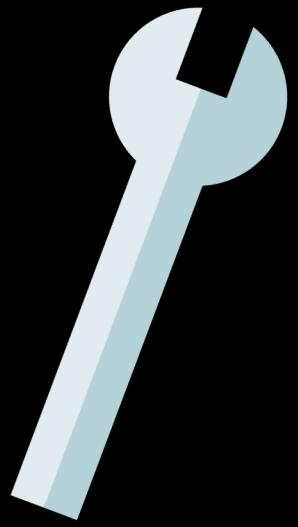
#4 RUNNING AT SCALE

NODE POOLS, CAUSE EVEN NODES HAVE TO RELAX?

DEPLOYMENTS USING HELM

```yaml
resources:
  limits:
    cpu: 800m
    memory: 2Gi
  requests:
    cpu: 800m
    memory: 1Gi
```





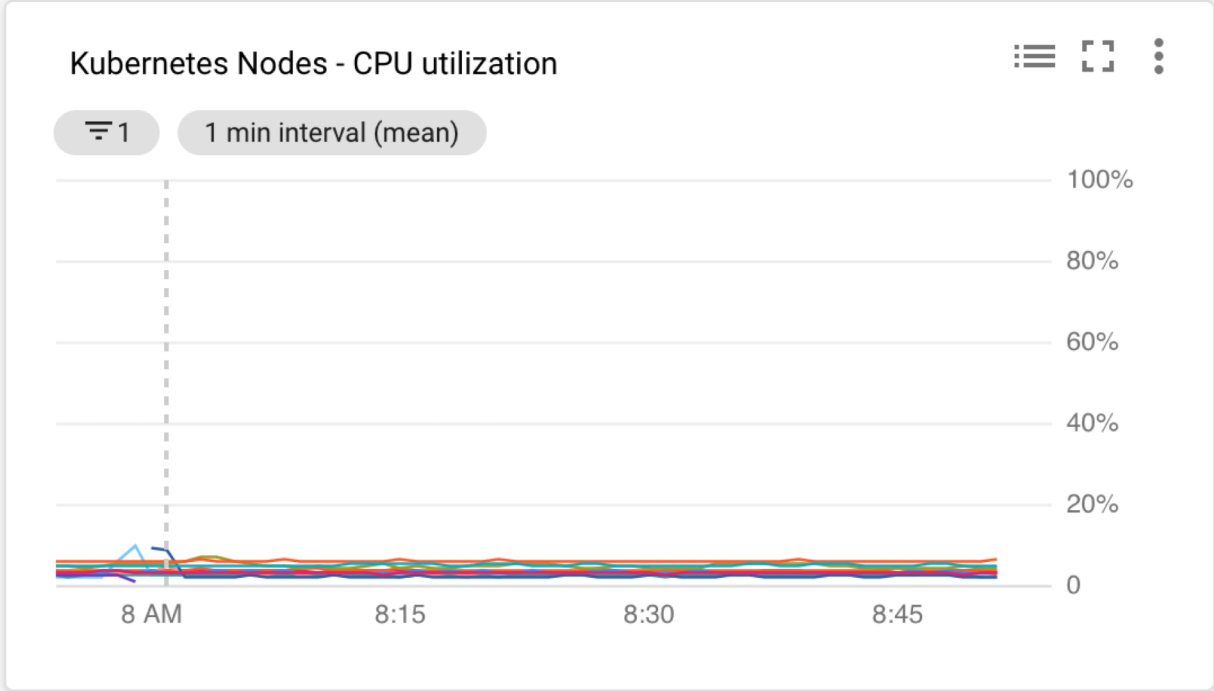
```yaml
spec:
  affinity:
    nodeAffinity:
      requiredDuringSchedulingIgnoredDuringExecution:
        nodeSelectorTerms:
        - matchExpressions:
          - key: node-pool
            operator: In
            values:
            - pvm-pool
    podAntiAffinity:
      requiredDuringSchedulingIgnoredDuringExecution:
      - labelSelector:
          matchExpressions:
          - key: app
            operator: In
            values:
            - discovery
        topologyKey: kubernetes.io/hostname
```

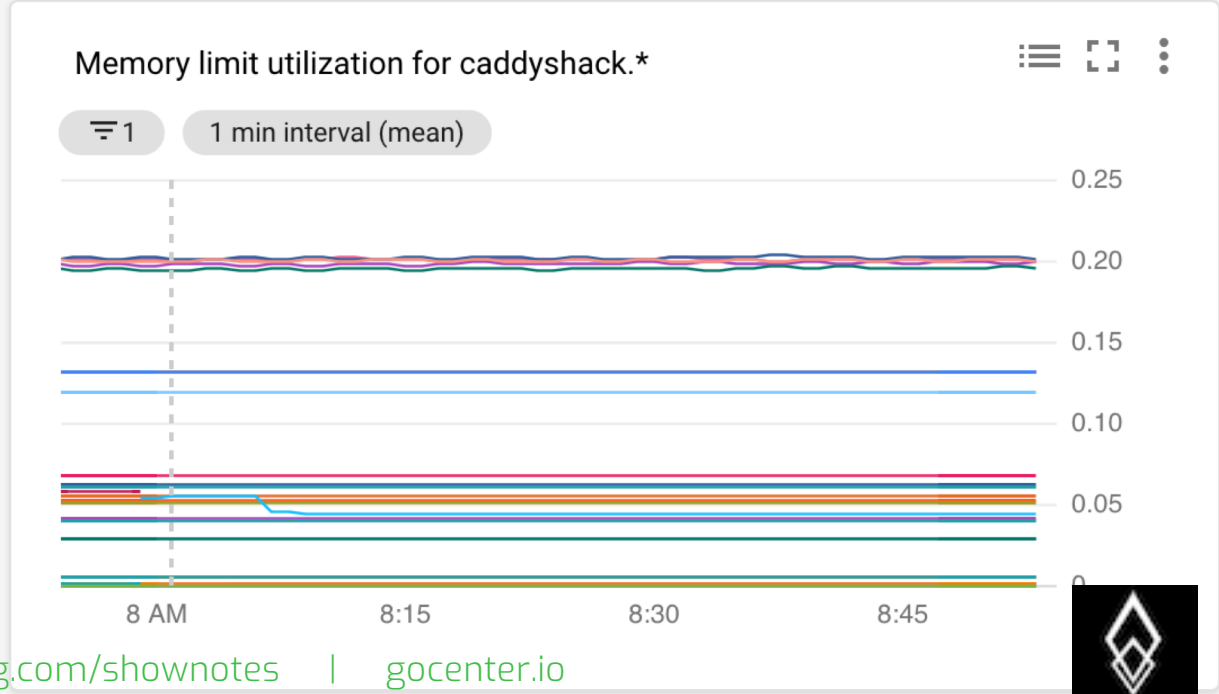
https://hub.helm.sh

KEEPING A CLOSE EYE ON CONTAINER HEALTH

- FluentD
- Prometheus
- Grafana

Live Dashboard





Logs

SOMETIMES IT'S GOOD TO BRING A FRIEND ALONG

WE KEEP IN TOUCH WITH OUR NODES

Kube-Slack

jenkins APP 7:24 AM
Started Job 'SolDev/caddyshack_deploy_prod' to deploy '0.1.147-2' on prod.

gocenter APP 7:25 AM
containers with unready status: [caddyshack-proxy]

caddyshack/caddyshack-webui-85d58dd497-t66lk: ContainersNotReady
containers with unready status: [caddyshack-proxy]

Pod is ready

caddyshack/caddyshack-webui-85d58dd497-t66lk: Pod is ready
Pod is ready

containers with unready status: [caddyshack-ui caddyshack-proxy]

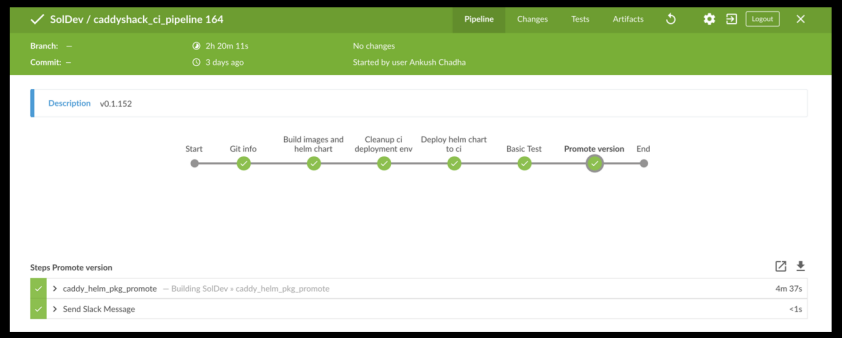
caddyshack/caddyshack-webui-85d58dd497-kjbs8: ContainersNotReady
containers with unready status: [caddyshack-ui caddyshack-proxy]

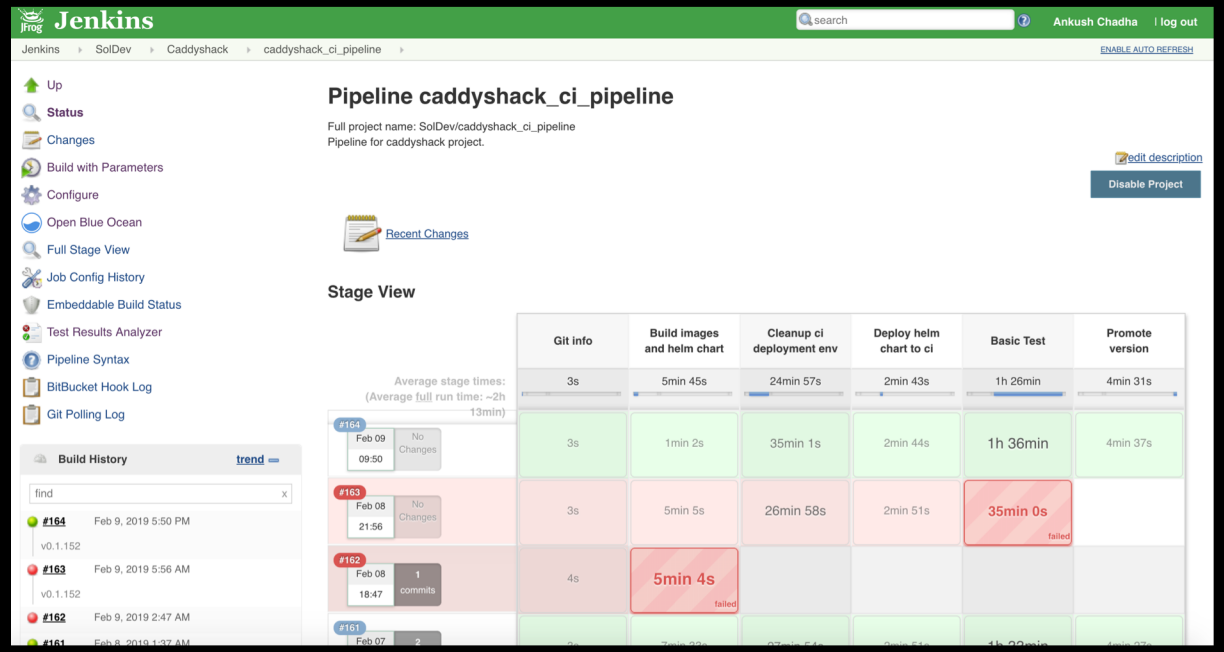
Pod is ready

caddyshack/caddyshack-webui-85d58dd497-kjbs8: Pod is ready
Pod is ready

jenkins APP 7:28 AM
Finished Job 'SolDev/caddyshack_deploy_prod'. Deployment '0.1.147-2' on prod.

Jenkins





Logs & Build, release, run

SCALING ON MANY LEVELS

Node

Provision nodes when needed

Compute

Run more microservices

Messaging

Scaling based on queue depth

Up and Down

What goes up must come down... usually

#5 DARE TO DREAM

WHAT'S NEXT FOR GOCENTER

ChatOps

Use Slack to let teams take more control

In-Cluster Artifactory

Making upgrades more seamless, but...

Your Feedback

We want to hear from you what we need to improve!

TWITTER ADS AND Q&A

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gocenter.io

Munich
#k8s
meetup