



GO, GO, KUBERNETES



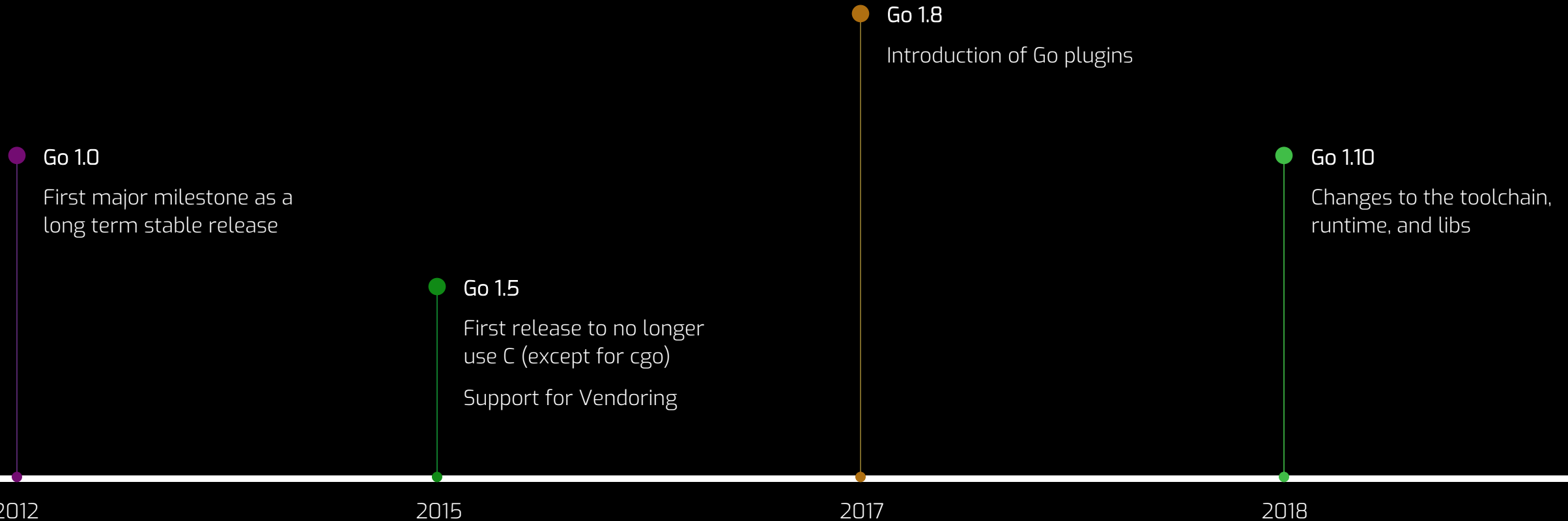
Building a Kubernetes Powered Central Go
Modules Repository



LET'S GO ON A TRIP THROUGH HISTORY



A QUICK HISTORY OF GO



ONE THING MISSING



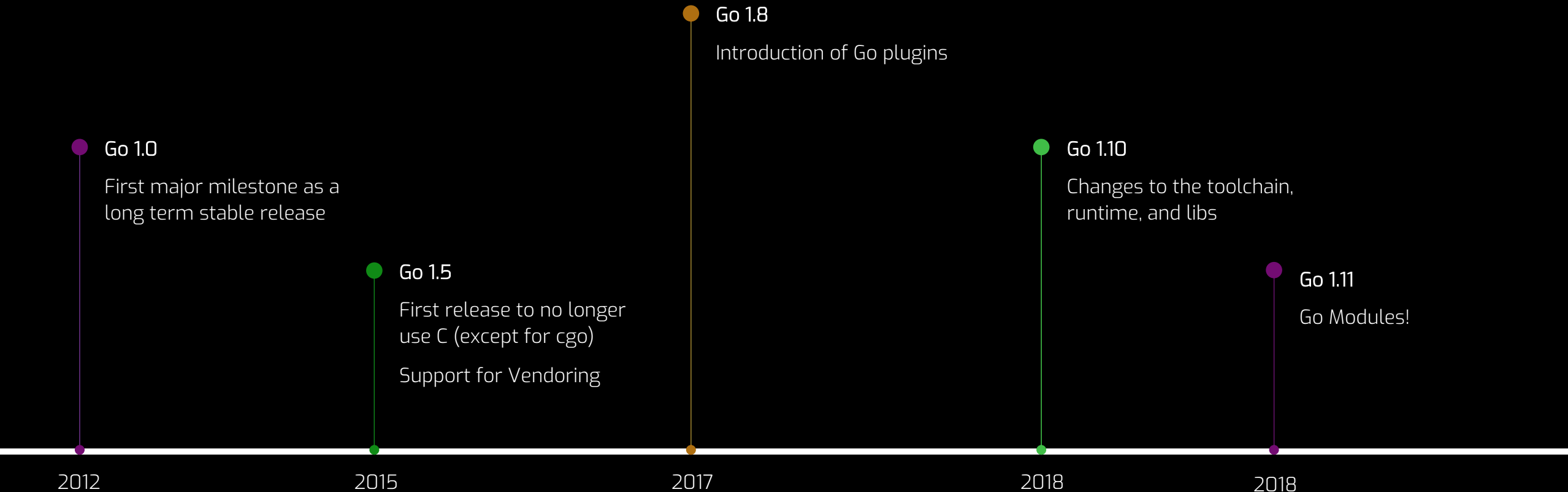
Dependency Management...

*“Tis impossible to be sure of anything
but Death and Taxes”*

- Christopher Bullock



A QUICK HISTORY OF GO



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

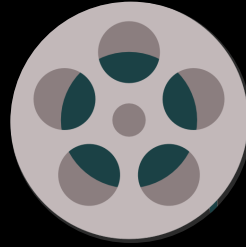


- Head of Developer Relations
- Chief Sticker Officer

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

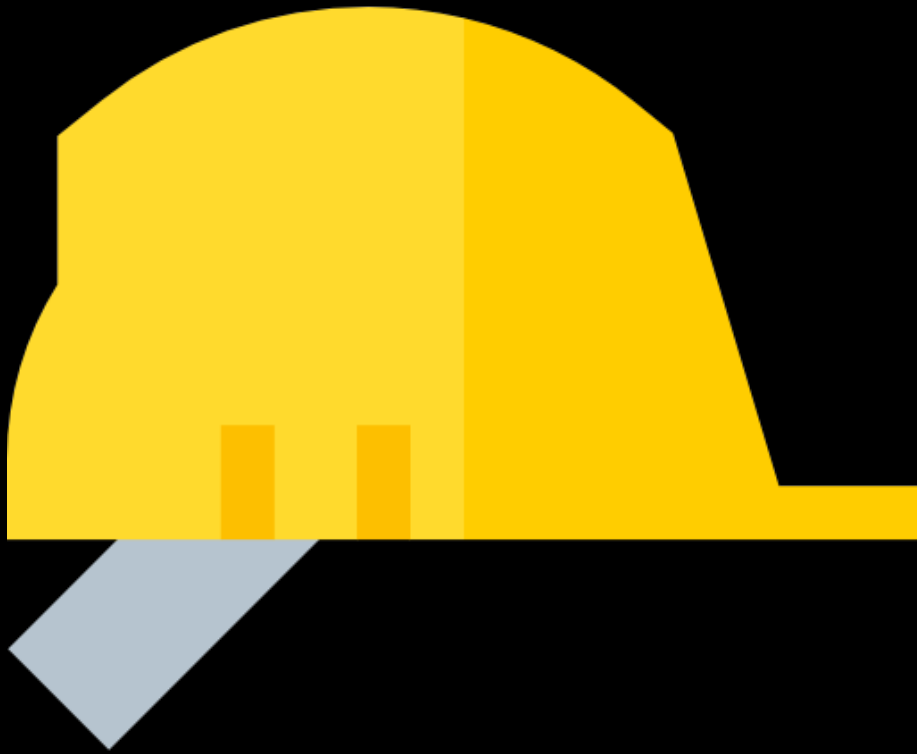


A glowing lightbulb is positioned inside a large, hand-drawn chalk thought bubble on a black background. Several smaller, empty chalk circles are scattered around the main bubble. The text "BUT WE DIDN'T BUILD EVERYTHING OURSELVES" is written in green, bold, sans-serif capital letters across the middle of the image, partially overlapping the lightbulb and the thought bubble.

BUT WE DIDN'T BUILD EVERYTHING OURSELVES



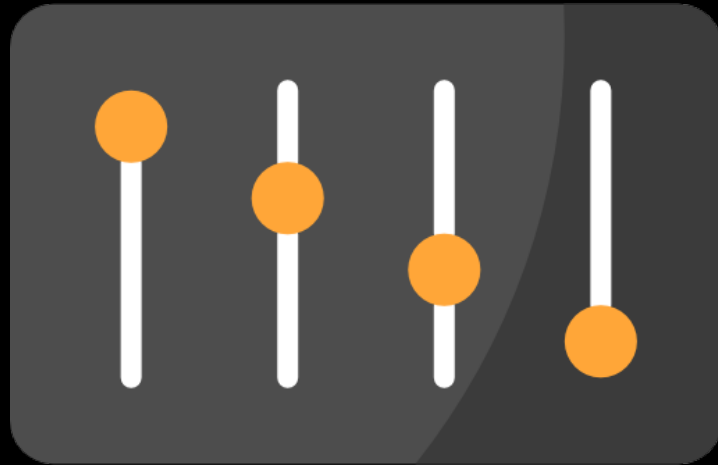
DEPLOYMENTS USING HELM



- 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



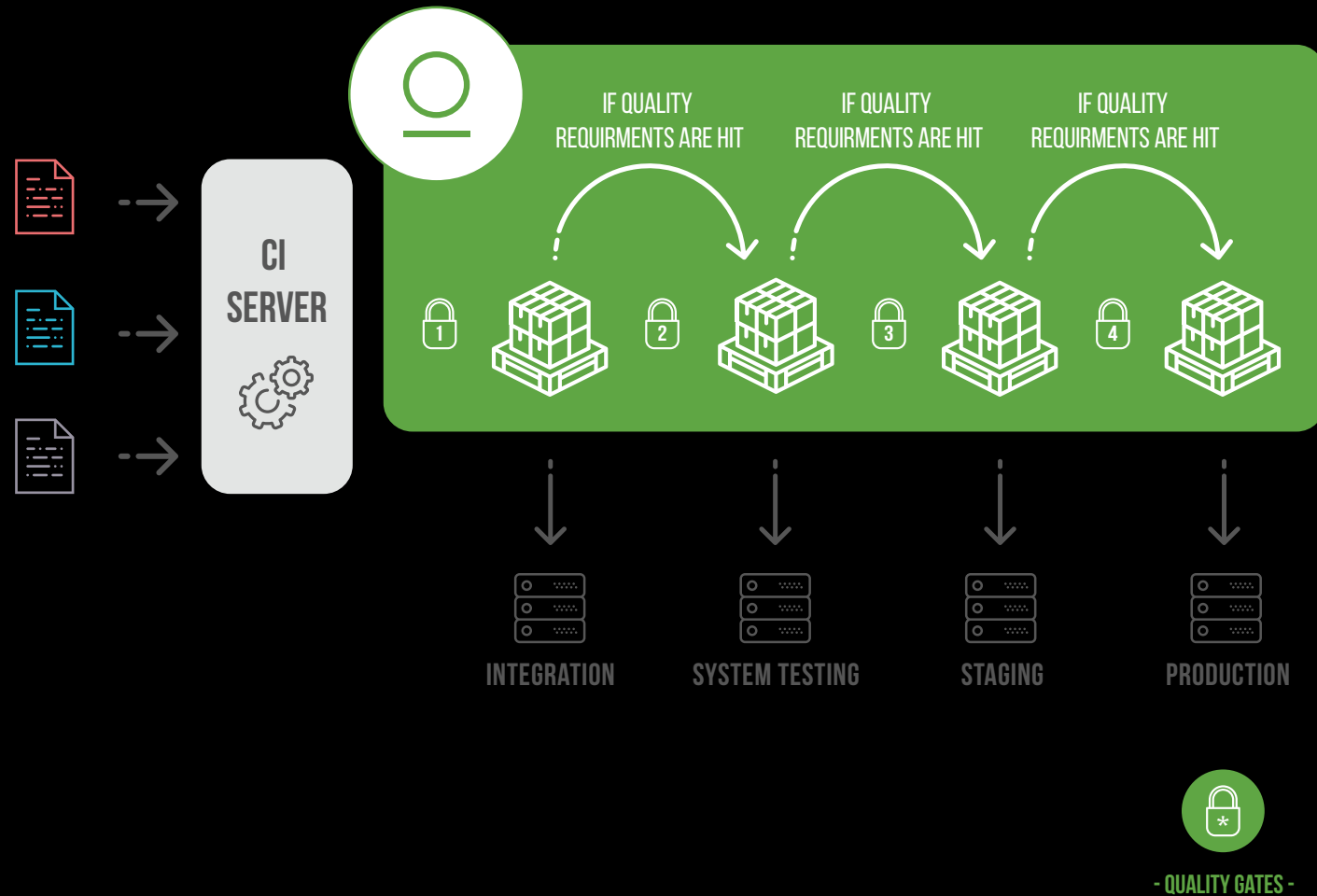
Namespaces & Clusters



#3

HOW WE BUILT OUR INFRASTRUCTURE

WE'RE BIG ON THOSE PIPELINES AND PROMOTIONS CONCEPTS



**NUMBER OF CLUSTERS
CURRENTLY RUNNING**

5

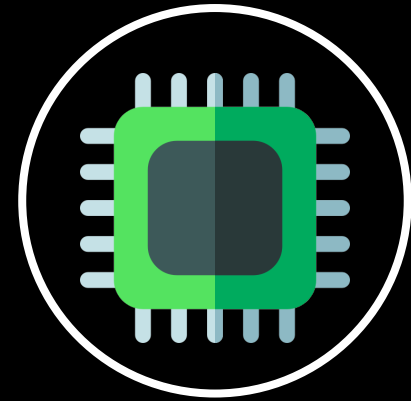
RUNNING A FEW MICROSERVICES



Discovery



Notifier



Processor



RUNNING A FEW MICROSERVICES



Validator



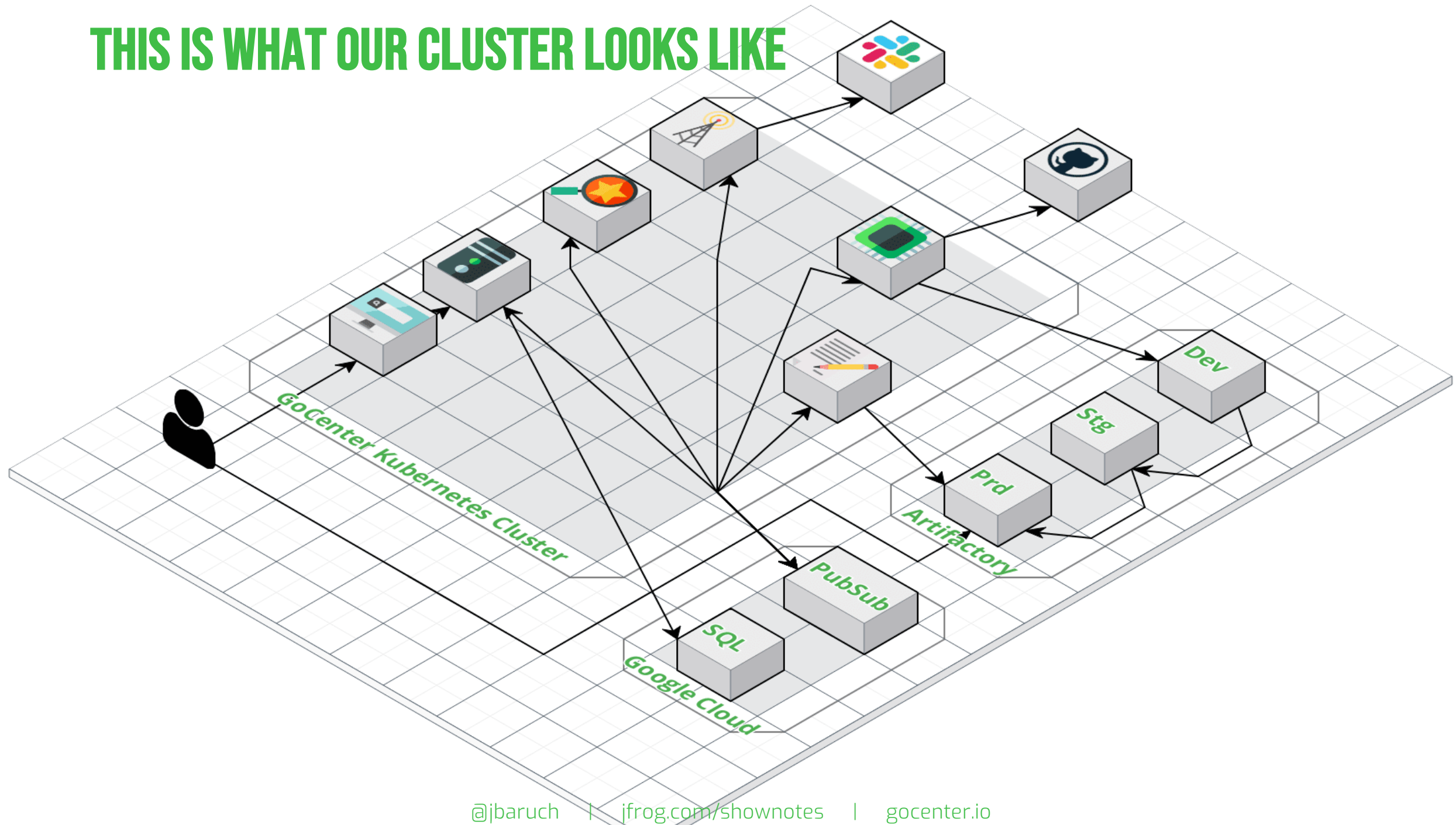
UI Backend



UI



THIS IS WHAT OUR CLUSTER LOOKS LIKE

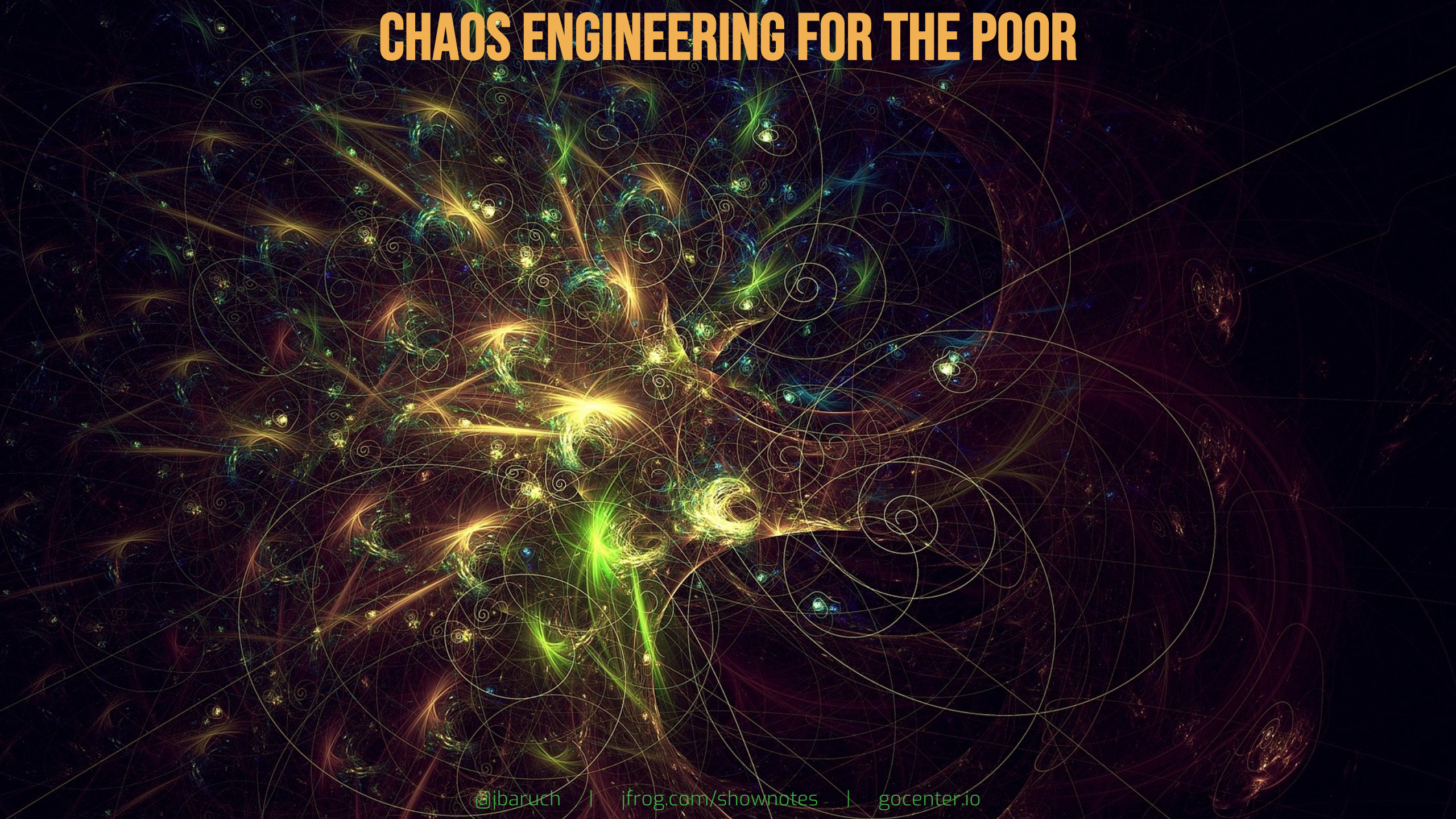


LOAD TESTING

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



CHAOS ENGINEERING FOR THE POOR



#4

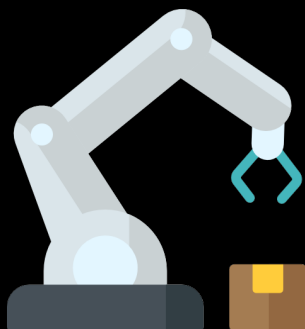
RUNNING AT SCALE



NODE POOLS, CAUSE EVEN NODES HAVE TO RELAX?

DEPLOYMENTS USING HELM

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



```
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](#)



SOMETIMES IT'S GOOD TO BRING A FRIEND ALONG



WE KEEP IN TOUCH WITH OUR NODES



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]

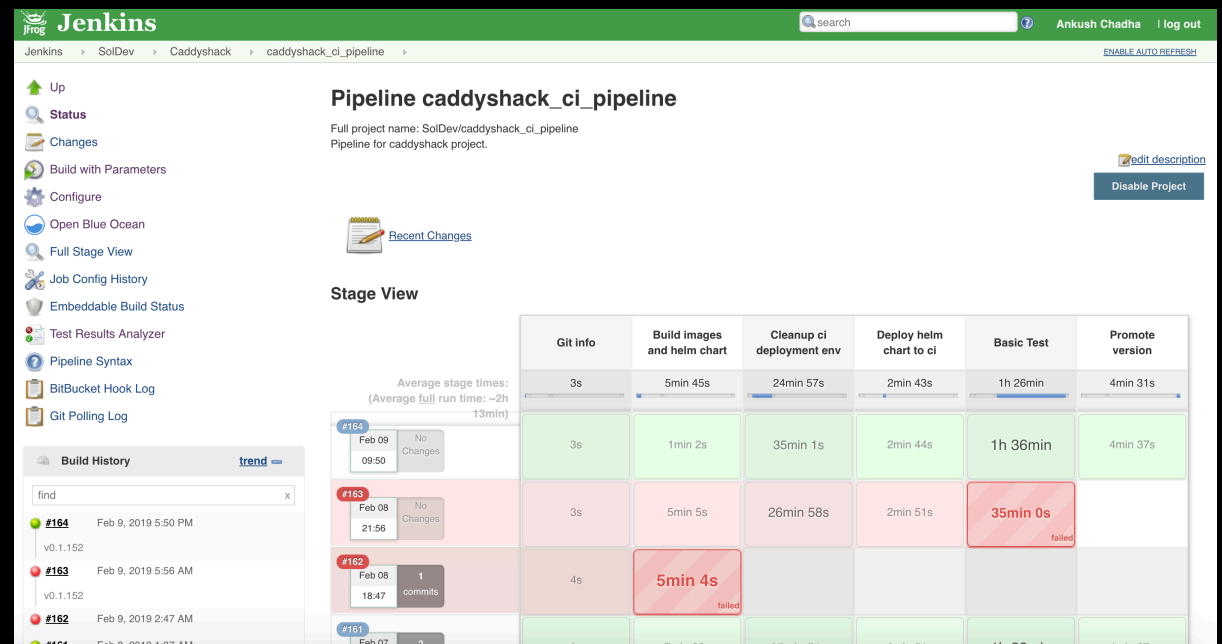
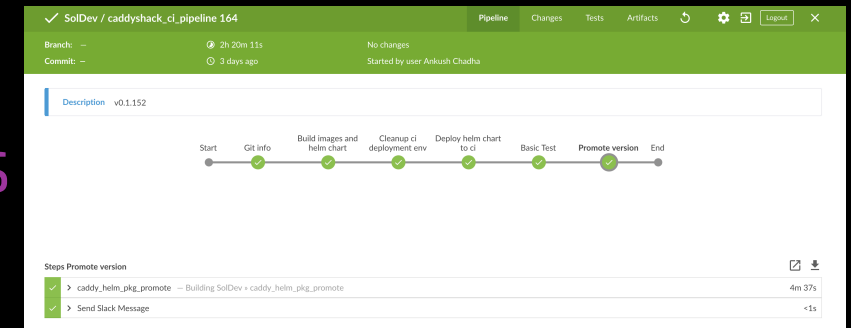
Pod is ready

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.



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

jfrog.com/shownotes

[@jbaruch](https://twitter.com/jbaruch)

gocenter.io

