DEVOPS WORLD
by CloudBees

On Demand Testing Environment

Tidhar Klein Orbach

Senior Release Engineer, Taboola

September 2021

Who Am I

Tidhar Klein Orbach

@tizkiko

tidharko

Tidhar Klein Orbach

DEVOPSWORLD
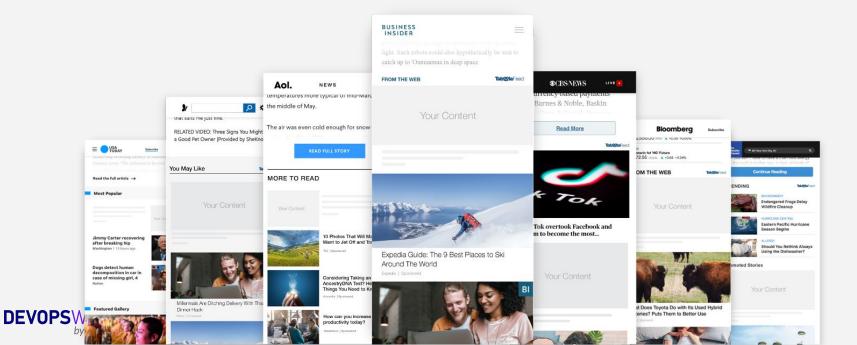by CloudBees

Taboola

DEVOPSWORLD
by CloudBees

Taboola

Taboola's Scale

Taboola

+500M
Daily active users

+3.0B
Page views/day

500K
HTTP req/sec

100M
Unique metrics

+100TB
A Day

What we deal with, RnD-wise?

70K
Unit tests

8000
Environments/week

15M
Lines of code

350
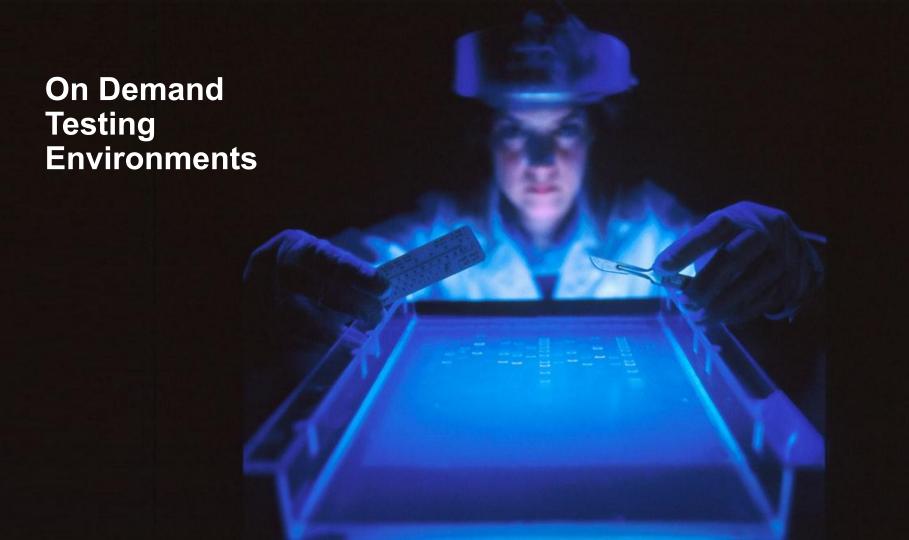Builds/day

45
Deployments of services/day

On Demand Testing Environments
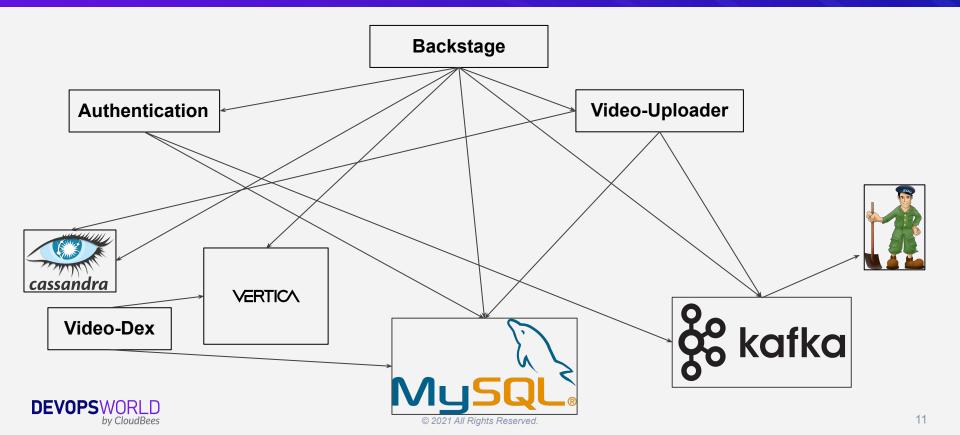
What? | Why? | How?

DEVOPSWORLD
by CloudBees

On Demand Testing Environments

Backstage Environment

Use Cases

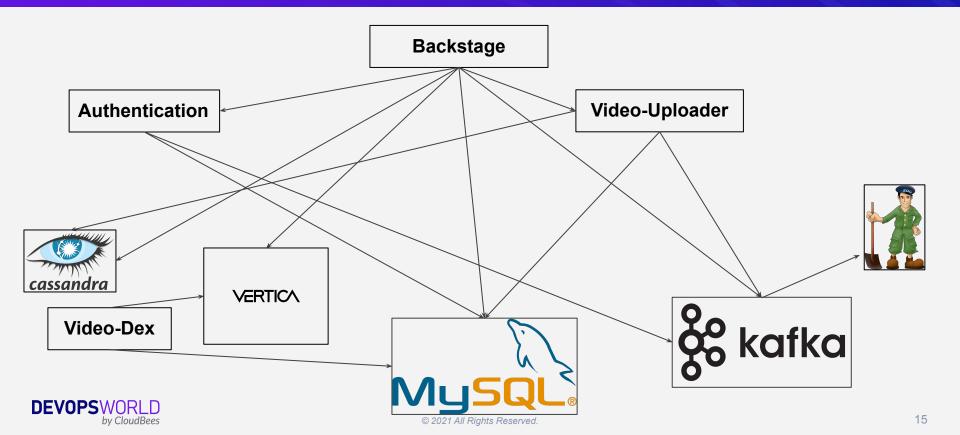- Manual Tests

- Automated Tests

- Tutorials & Hands-On

- Demos

Why on demand?

Why On Demand?

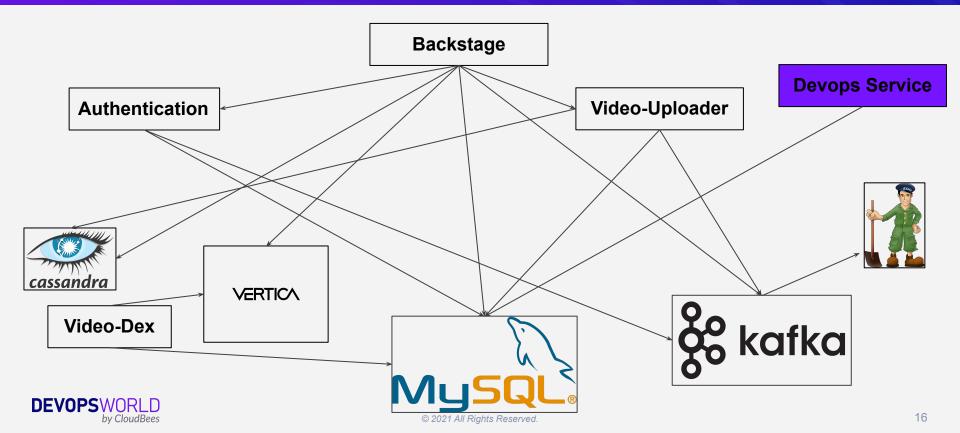- Increased demand

- Waste of resources

- Startup time

DEVOPSWORLD
by CloudBees
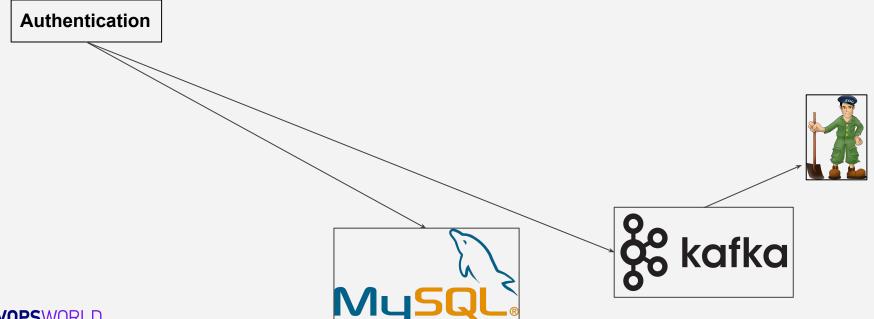
Backstage Environment

Backstage Environment

Authentication Environment

Authentication

Mysql Environment

ODE stack
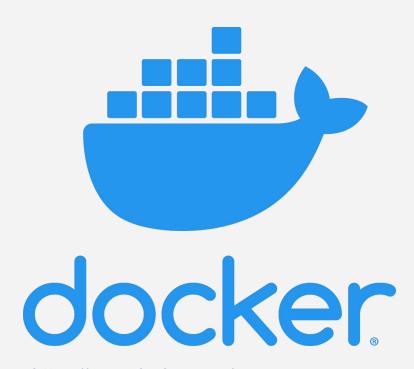
- Docker

- K8s

- Jenkins

- Helm

- IntelliJ

DEVOPSWORLD
by CloudBees

Docker

- Image per service

- Build process

https://www.docker.com/

DEVOPSWORLD
by CloudBees

k8s

- On premise

- Dedicated namespace

https://kubernetes.io/

DEVOPSWORLD
by CloudBees

k8s

- Pod per service

```
[tidhar@tidhar-ubuntu] ~
❯ kubectl get pods | grep tidhar
qa-tidhar-20210711-28-5541-authentication-846bcd76d8-qwm2l    1/1    Running      1    11m
qa-tidhar-20210711-28-5541-backstage-76d9d95497-b67k6         2/2    Running      2    11m
qa-tidhar-20210711-28-5541-cassandra-57574c648d-fqj6d         1/1    Running      0    11m
qa-tidhar-20210711-28-5541-client-properties-z4w84            0/1    Completed    0    11m
qa-tidhar-20210711-28-5541-kafka-6d69f79cb8-rt7p9             1/1    Running      2    11m
qa-tidhar-20210711-28-5541-mysql-75447cc685-c2xc4             1/1    Running      0    11m
qa-tidhar-20210711-28-5541-vertica-764c7b7c96-4t4fd           1/1    Running      0    11m
qa-tidhar-20210711-28-5541-video-api-7bcf76bff9-c69lm         1/1    Running      0    11m
qa-tidhar-20210711-28-5541-video-upload-57c4b4c8c8-dvv8h      1/1    Running      1    11m
qa-tidhar-20210711-28-5541-zookeeper-65c959dcc6-mfjs8         1/1    Running      0    11m
```

helm

- Deploys environments

- Umbrella Chart

https://helm.sh/

DEVOPSWORLD
by CloudBees

helm

Requirement.yaml

```yaml
- name: video-upload
  repository: file://charts/video-upload
  version: 0.1.0
  condition: services.video-upload.enabled

- name: authentication
  repository: file://charts/authentication
  version: 0.1.0
  condition: services.authentication.enabled

- name: backstage
  repository: file://charts/backstage
  version: 0.1.0
  condition: services.backstage.enabled
```

helm

Backstage deployment.yaml

```yaml
spec:
 priorityClassName: low-priority
 containers:
   - name: {{ .Values.global.envName }}-backstage
     image: "{{ .Values.image }}:{{ .Values.global.kitVersion }}"
     imagePullPolicy: IfNotPresent
     resources:
       limits:
         cpu: {{ .Values.resources.limits.cpu }}
         memory: {{ .Values.resources.limits.mem }}
       requests:
         cpu: {{ .Values.resources.requests.cpu }}
         memory: {{ .Values.resources.requests.mem }}
     ports:
       - name: backstage
         containerPort: {{ .Values.global.ports.backstagePort }}
```

DEVOPSWORLD
by CloudBees

helm

```
helm install --name=qa-tidhar-o-pr-37454-5387 --namespace=on-demand --set owner="tidhar.o" --set
global.podExpiration="3600" --set global.envName="qa-tidhar-o-pr-37454-5387"
--set  global.kitVersion="20210707.3 b2-PR-37454-DEV-90752-create-ads-screen-321c-SNAPSHOT"
--set global.configServer.Label="master" --set global.envMode="ON DEMAND"
--set global.triggerSource="https://jenkins/job/Create.On.Demand.Testing.Environment/25387/"
--set global.prometheusScrape="true"

... --set services.mysql.enabled="true" --set services.kafka.enabled="true" --set
services.ads-console-gateway.enabled="true" --set services.video-upload.enabled="true" --set
services.cassandra-3.enabled="true"  --set services.vertica.enabled="true" --set
services.zookeeper.enabled="true" --set services.backstage.enabled="true"  --set
services.authentication.enabled="true" --set services.client-properties.enabled="true"

 ... --set backstage.consoleLogLevel="DEBUG" -set video-upload.consoleLogLevel="ERROR"
--set mysql.resources.requests.cpu="4"
```

DEVOPSWORLD
by CloudBees

helm

```
helm install --name=qa-tidhar-o-pr-37454-5387 --namespace=on-demand --set owner="tidhar.o" --set
global.podExpiration="3600" --set global.envName="qa-tidhar-o-pr-37454-5387"
--set  global.kitVersion="20210707.3 b2-PR-37454-DEV-90752-create-ads-screen-321c-SNAPSHOT"
--set global.configServer.Label="master" --set global.envMode="ON DEMAND"
--set global.triggerSource="https://jenkins/job/Create.On.Demand.Testing.Environment/25387/"
--set global.prometheusScrape="true"
```

```
... --set services.mysql.enabled="true" --set services.kafka.enabled="true" --set
services.ads-console-gateway.enabled="true" --set services.video-upload.enabled="true" --set
services.cassandra-3.enabled="true"  --set services.vertica.enabled="true" --set
services.zookeeper.enabled="true" --set services.backstage.enabled="true"  --set
services.authentication.enabled="true" --set services.client-properties.enabled="true"
```

```
 ... --set backstage.consoleLogLevel="DEBUG" -set video-upload.consoleLogLevel="ERROR"
--set mysql.resources.requests.cpu="4"
```

DEVOPSWORLD
by CloudBees

helm

```
helm install --name=qa-tidhar-o-pr-37454-5387 --namespace=on-demand --set owner="tidhar.o" --set
global.podExpiration="3600" --set global.envName="qa-tidhar-o-pr-37454-5387"
--set  global.kitVersion="20210707.3 b2-PR-37454-DEV-90752-create-ads-screen-321c-SNAPSHOT"
--set global.configServer.Label="master" --set global.envMode="ON DEMAND"
--set global.triggerSource="https://jenkins/job/Create.On.Demand.Testing.Environment/25387/"
--set global.prometheusScrape="true"
```

```
... --set services.mysql.enabled="true" --set services.kafka.enabled="true" --set
services.ads-console-gateway.enabled="true" --set services.video-upload.enabled="true" --set
services.cassandra-3.enabled="true"  --set services.vertica.enabled="true" --set
services.zookeeper.enabled="true" --set services.backstage.enabled="true"  --set
services.authentication.enabled="true" --set services.client-properties.enabled="true"
```

```
 ... --set backstage.consoleLogLevel="DEBUG" -set video-upload.consoleLogLevel="ERROR"
--set mysql.resources.requests.cpu="4"
```

DEVOPSWORLD
by CloudBees

helm

```
helm install --name=qa-tidhar-o-pr-37454-5387 --namespace=on-demand --set owner="tidhar.o" --set
global.podExpiration="3600" --set global.envName="qa-tidhar-o-pr-37454-5387"
--set  global.kitVersion="20210707.3 b2-PR-37454-DEV-90752-create-ads-screen-321c-SNAPSHOT"
--set global.configServer.Label="master" --set global.envMode="ON DEMAND"
--set global.triggerSource="https://jenkins/job/Create.On.Demand.Testing.Environment/25387/"
--set global.prometheusScrape="true"
```

```
... --set services.mysql.enabled="true" --set services.kafka.enabled="true" --set
services.ads-console-gateway.enabled="true" --set services.video-upload.enabled="true" --set
services.cassandra-3.enabled="true"  --set services.vertica.enabled="true" --set
services.zookeeper.enabled="true" --set services.backstage.enabled="true"  --set
services.authentication.enabled="true" --set services.client-properties.enabled="true"
```

```
 ... --set backstage.consoleLogLevel="DEBUG" -set video-upload.consoleLogLevel="ERROR"
--set mysql.resources.requests.cpu="4"
```

DEVOPSWORLD
by CloudBees

helm

```
helm install --name=qa-tidhar-o-pr-37454-5387 --namespace=on-demand --set owner="tidhar.o" --set
global.podExpiration="3600" --set global.envName="qa-tidhar-o-pr-37454-5387"
--set  global.kitVersion="20210707.3 b2-PR-37454-DEV-90752-create-ads-screen-321c-SNAPSHOT"
--set global.configServer.Label="master" --set global.envMode="ON DEMAND"
--set global.triggerSource="https://jenkins/job/Create.On.Demand.Testing.Environment/25387/"
--set global.prometheusScrape="true"
```

```
... --set services.mysql.enabled="true" --set services.kafka.enabled="true" --set
services.ads-console-gateway.enabled="true" --set services.video-upload.enabled="true" --set
services.cassandra-3.enabled="true"  --set services.vertica.enabled="true" --set
services.zookeeper.enabled="true" --set services.backstage.enabled="true"  --set
services.authentication.enabled="true" --set services.client-properties.enabled="true"
```
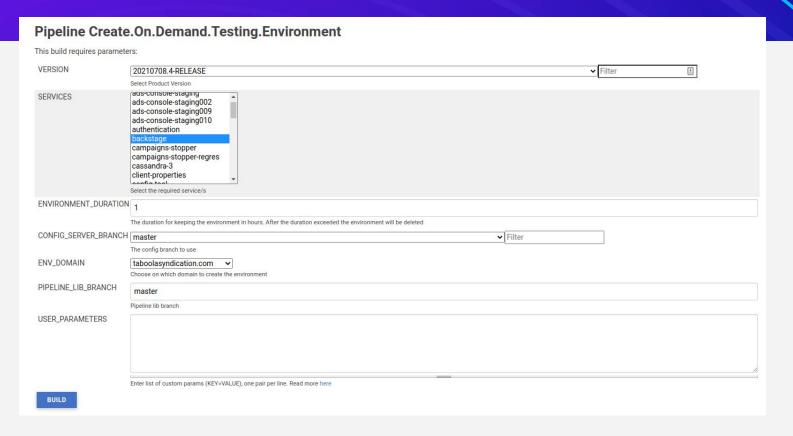
```
 ... --set backstage.consoleLogLevel="DEBUG" -set video-upload.consoleLogLevel="ERROR"
--set mysql.resources.requests.cpu="4"
```

DEVOPSWORLD
by CloudBees

Jenkins

- User interface

- The "brain" of the framework

Jenkins

Pipeline Create.On.Demand.Testing.Environment

This build requires parameters:

VERSION   `20210708.4-RELEASE`   `Filter`

Select Product Version

SERVICES
```
ads-console-staging
ads-console-staging002
ads-console-staging009
ads-console-staging010
authentication
backstage
campaigns-stopper
campaigns-stopper-regres
cassandra-3
client-properties
config-tool
```
Select the required service/s

ENVIRONMENT_DURATION   `1`

The duration for keeping the environment in hours. After the duration exceeded the environment will be deleted

CONFIG_SERVER_BRANCH   `master`   `Filter`

The config branch to use

ENV_DOMAIN   `taboolasyndication.com`

Choose on which domain to create the environment

PIPELINE_LIB_BRANCH   `master`

Pipeline lib branch

USER_PARAMETERS

Enter list of custom params (KEY=VALUE), one pair per line. Read more here

BUILD

Jenkins

```
stages {
    stage("Initialize job") {
        steps {
            script {
                deleteDir()
                createOnDemandEnvironmentPipeline.init()
            }
        }
    }
    stage("Prepare Environment Properties") {
        steps {
            script {
                createOnDemandEnvironmentPipeline.prepareEnvironmentProperties()
            }
        }
    }
    stage("Build Environment") {
        steps {
            script {
                createOnDemandEnvironmentPipeline.createEnvironment()
            }
        }
    }
}
```

Jenkins

```
stage("Initialize job")
```

Dependencies.yaml

```yaml
authentication:
 - authentication
 - mysql
 - kafka
backstage:
 - backstage
 - mysql
 - vertica
 - cassandra-3
 - kafka
 - video-upload
 - authentication
 - client-properties
 - video-dex-api-server
```

```yaml
devops-service:
 - devops-service
 - mysql
```

Jenkins

```
stage("Prepare Environment Properties")
```

- Environment name = user + version + build number

- Helm - context, namepsace, name

- Environment details - version, duration, services, properties

DEVOPSWORLD
by CloudBees

Jenkins

```
post {
    aborted {
        script {
            createOnDemandEnvironmentPipeline.handleAborted()
        }
    }
    failure {
        script {
            createOnDemandEnvironmentPipeline.handleFailed()
        }
    }
}
```

Jenkins

qa-tidhar-o-pr-37454-5387-ads-console-gateway_prev_restart.txt
qa-tidhar-o-pr-37454-5387-ads-console-gateway.txt
qa-tidhar-o-pr-37454-5387-ads-console-gateway-58cc95685-6ssdd_describe.txt
qa-tidhar-o-pr-37454-5387-ads-console-nginx_prev_restart.txt
qa-tidhar-o-pr-37454-5387-ads-console-nginx.txt
qa-tidhar-o-pr-37454-5387-authentication.txt
qa-tidhar-o-pr-37454-5387-authentication-74b78fb7b5-s4njg_describe.txt
qa-tidhar-o-pr-37454-5387-backstage.txt
qa-tidhar-o-pr-37454-5387-backstage-55f6bc74b9-9lphb_describe.txt
qa-tidhar-o-pr-37454-5387-cassandra.txt
qa-tidhar-o-pr-37454-5387-cassandra-774d799bd4-d5jxz_describe.txt

qa-tidhar-o-pr-37454-5387-cassandra.txt
qa-tidhar-o-pr-37454-5387-cassandra-774d799bd4-d5jxz_describe.txt
qa-tidhar-o-pr-37454-5387-client-properties.txt
qa-tidhar-o-pr-37454-5387-client-properties-rb2zs_describe.txt
qa-tidhar-o-pr-37454-5387-kafka.txt
qa-tidhar-o-pr-37454-5387-kafka-659cd458b-kp2dr_describe.txt
qa-tidhar-o-pr-37454-5387-mysql.txt
qa-tidhar-o-pr-37454-5387-mysql-5fd4467bb5-nfncf_describe.txt
qa-tidhar-o-pr-37454-5387-nginx-backstage.txt
qa-tidhar-o-pr-37454-5387-vertica.txt
qa-tidhar-o-pr-37454-5387-vertica-57dfb7d9bd-l6m79_describe.txt
qa-tidhar-o-pr-37454-5387-video-api.txt
qa-tidhar-o-pr-37454-5387-video-api-76c6d59bf8-cjb9v_describe.txt
qa-tidhar-o-pr-37454-5387-video-upload.txt
qa-tidhar-o-pr-37454-5387-video-upload-7b9d9c45bc-6zz2g_describe.txt
qa-tidhar-o-pr-37454-5387-zookeeper.txt
qa-tidhar-o-pr-37454-5387-zookeeper-6484c55cf8-dqhqj_describe.txt

DEVOPSWORLD
by CloudBees

Jenkins

Jenkins

- Regressions tests job

- Single / multiple environments

- Release version auto testing

Jenkins
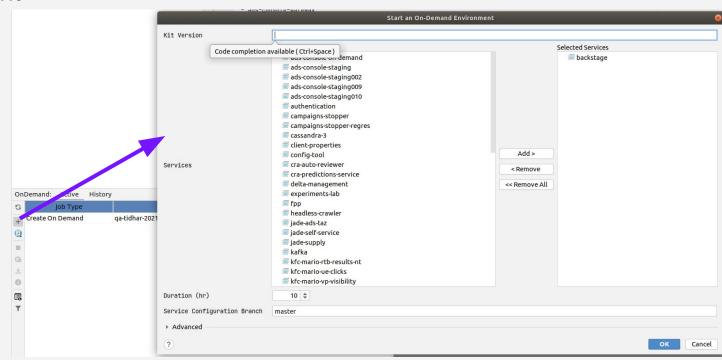
Policies:

- Limited environment duration

    - Automatic cleanup
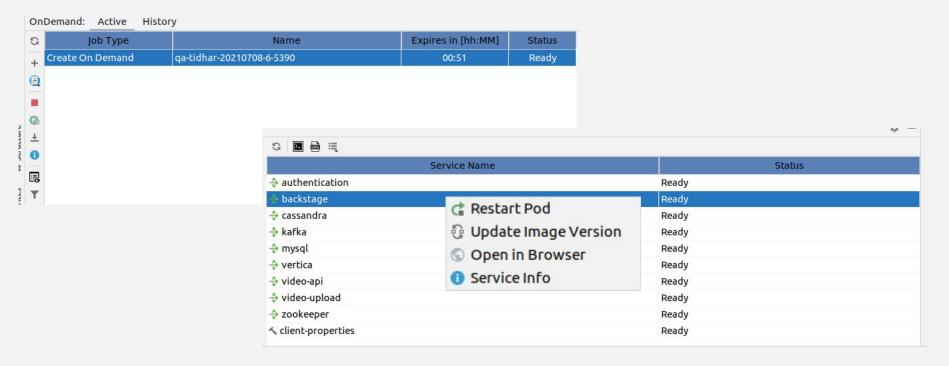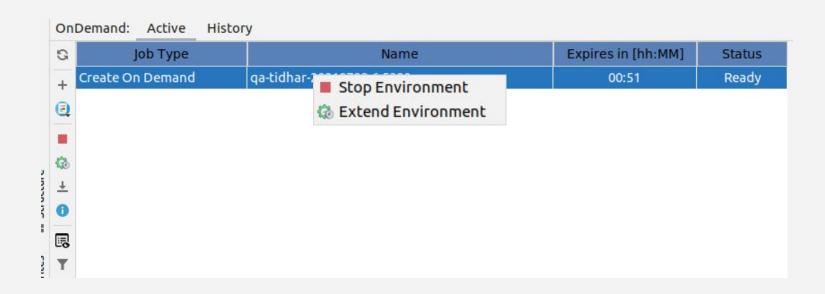
- Limited environments per user

DEVOPSWORLD
by CloudBees

IntelliJ + Local experience

Create Environment

IntelliJ + Local experience

OnDemand: **Active** History

	Job Type	Name	Expires in [hh:MM]	Status
	Create On Demand	qa-tidhar-20210708-6-5390	00:51	Ready

Service Name	Status
authentication	Ready
backstage	Ready
cassandra	Ready
kafka	Ready
mysql	Ready
vertica	Ready
video-api	Ready
video-upload	Ready
zookeeper	Ready
client-properties	Ready

- Restart Pod
- Update Image Version
- Open in Browser
- Service Info

DEVOPSWORLD
by CloudBees

IntelliJ + Local experience

Stop / Extend Environment

IntelliJ + Local experience

Hybrid environment = Local + Remote

DEVOPSWORLD
by CloudBees

Recap

- E2E Ownership

- Developer Experience

- Taboola Implementations

  - Jenkins, docker, K8s +

    helm and IntelliJ

Thanks!

Taboola

Tidhar Klein Orbach

@tizkiko

tidharko

Tidhar Klein Orbach