



Spinnaker on Oracle Cloud

Mickey Boxell – Oracle Cloud Native Labs

Spinnaker

#OracleCloudNative cloudnative.oracle.com



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Who am I?

Mickey Boxell

Solution Architect, Developer Advocate, etc.



Oracle Cloud Native Labs

Build customer-deployable cloud native/container native solutions to bridge the gap between Oracle Cloud Infrastructure (OCI) and open source communities.

http://cloudnative.oracle.com/

Oracle Cloud Differentiators

- Public cloud with enterprise grade governance and security
- Virtual Machine and Bare Metal infrastructure same set of APIs used for both
- Managed Kubernetes: Container Engine for Kubernetes AKA OKE
- Image Registry: Oracle Cloud Infrastructure Registry AKA OCIR
- Non-oversubscribed network, low latency, high throughput,
 predictable network and CPU performance



Spinnaker on Oracle: Installation Options

- 1. Local installation using the Oracle Provider
- 2. Manifest-based distributed installation on Oracle Container

Engine for Kubernetes



What We've Done Already

Option 1: Local installation using the Oracle Provider

- Created an Ubuntu 18.04 VM VM.Standard2.1 (15 GB RAM, 1 OCPU, 50 GB storage)
- Installed Halyard

Option 2: Manifest-based distributed installation

- Created an Oracle Container Engine for Kubernetes cluster with 3 VM.Standard2.1 nodes (Oracle Linux 7.6)
- Installed Halyard and kubectl along with a kubeconfig file



Provider Credential Requirements

- Oracle Cloud IAM user
- Tenancy, user, and compartment OCIDs
- Home region
- RSA API signing key pair and public key fingerprint
- Object storage namespace and bucket



Oracle Cloud VM Installation

- 1. Install Halyard
- 2. Provider = Oracle Cloud Provider
- 3. Environment = local installation of Debian package
- 4. Storage provider = Oracle Storage Service
- 5. Deploy Spinnaker

Result: Deploy Spinnaker to a VM and Spinnaker will be used to

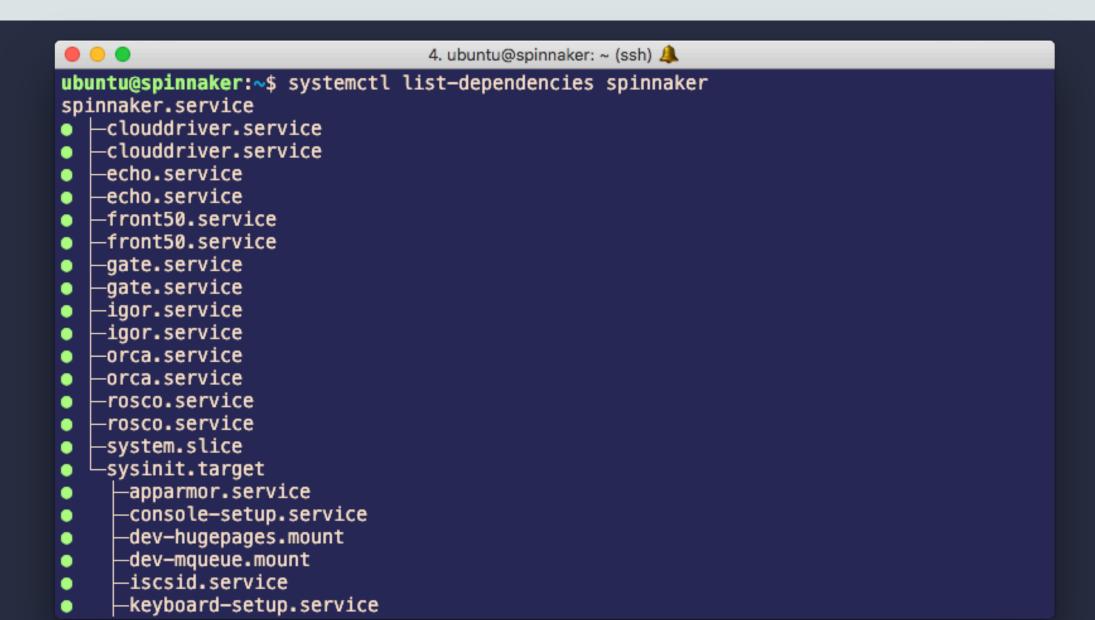
deploy applications onto Oracle Cloud Infrastructure



```
3. ubuntu@spinnaker: ~ (ssh)
ubuntu@spinnaker:~$ hal config provider oracle account add my-oci-acct \
      --compartment-id $COMPARTMENT_OCID \
      --fingerprint $API_KEY_FINGERPRINT \
      --region $REGION \
      --ssh-private-key-file-path $PRIVATE_KEY_FILE \
      --tenancyId $TENANCY_OCID \
      --user-id $USER_OCID
```

```
## Comparison of Comparis
```

```
3. ubuntu@spinnaker: ~ (ssh)
ubuntu@spinnaker:~$ hal config provider oracle bakery edit \
      --instance-shape $INSTANCE_SHAPE \
      --availability-domain $AVAILABILITY_DOMAIN \
      --subnet-id $SUBNET_ID
```



OKE Installation

- 1. Install Halyard locally
- 2. Provider = Kubernetes Provider V2 (Manifest Based)
- 3. Environment = distributed installation
- 4. Storage provider = Oracle Storage Service
- 5. Deploy Spinnaker

Result: Deploy distributed Spinnaker onto OKE and Spinnaker will be used to deploy applications onto OKE



```
3. bash
mboxell-mac:~ mboxell$ kubectl config current-context
context-czgiyrzgy2d
mboxell-mac:~ mboxell$ CONTEXT=$(kubectl config current-context)
mboxell-mac:~ mboxell$ hal config provider kubernetes account add my-k8s-v2-account \
     --provider-version v2 \
     --context $CONTEXT
```



3. ubuntu@spinnaker: ~ (bash)

<pre>mboxell-mac:~ mboxell\$ kubectl get</pre>	pods		
NAME	READY	STATUS	RESTARTS
spin-clouddriver-f5b8c5948-tvjbk	1/1	Running	0
spin-deck-67bc5f7f54-dpk8v	1/1	Running	0
spin-echo-8f8d957bb-tn67x	1/1	Running	0
spin-front50-66f94847dd-zvgkd	1/1	Running	0
spin-gate-7bbf9f6589-hnpzf	1/1	Running	0
spin-orca-5bbffdb94b-7c6ng	1/1	Running	0
spin-redis-d89658d48-psg5b	1/1	Running	0
spin-rosco-896fdd596-2gflk	1/1	Running	0
mboxell-mac:~ mboxell\$			

Example Pipeline

Example project:

A workflow which takes source code and builds and deploys to

test, has a manual review, and promotes it to production

This will be accomplished via 3 pipelines:

- 1. Bake & Deploy to Test
- 2. Validate Test
- 3. Promote to Prod & Destroy Test Cluster

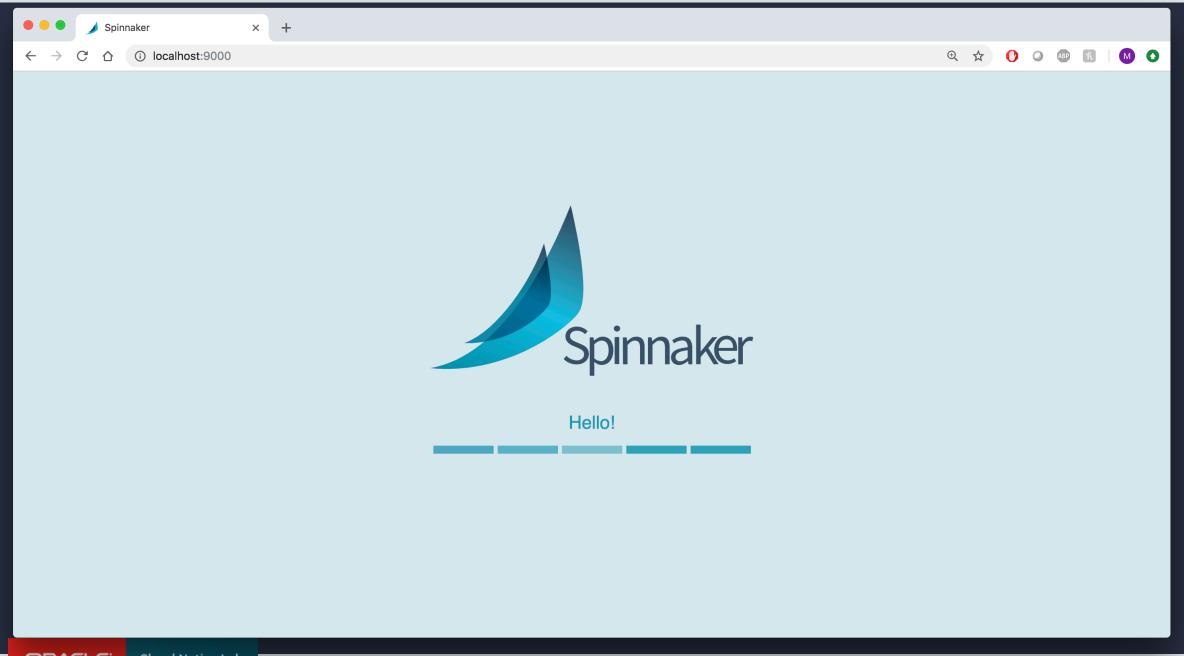


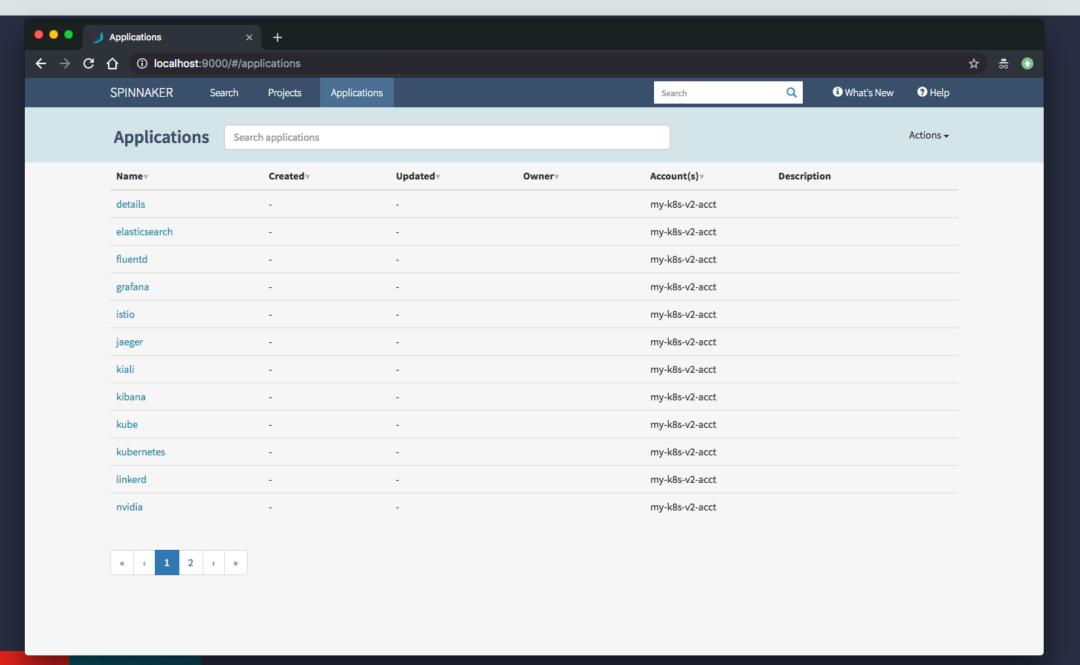
Example Pipeline Setup

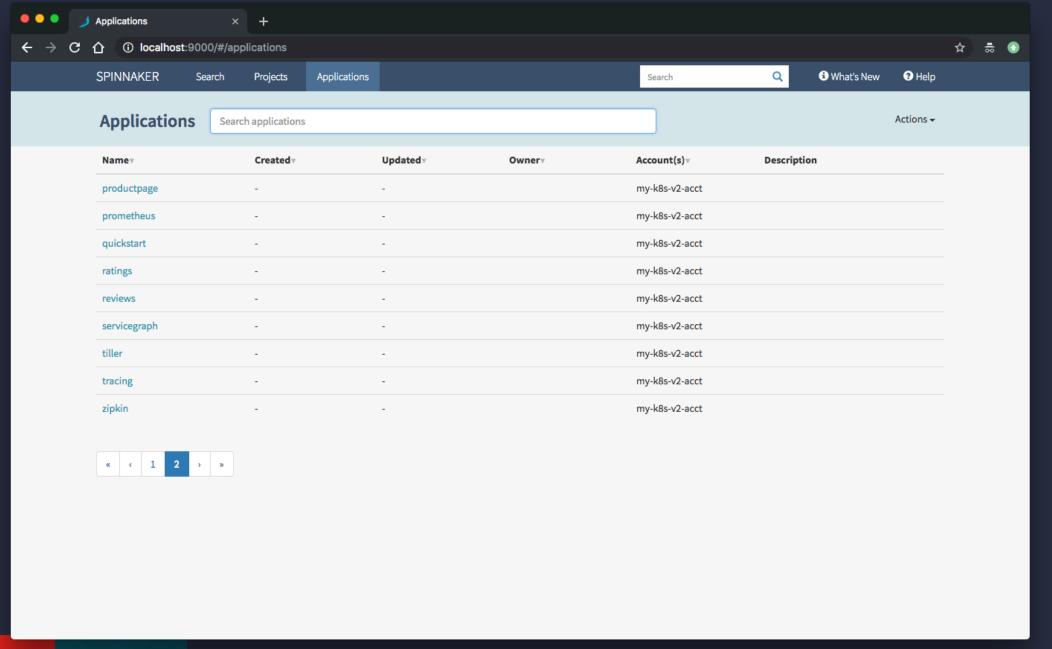
- Set up Oracle Cloud as your Spinnaker provider
- Set up Oracle Object Storage as your Spinnaker storage
- Set up Oracle Bakery as your image bakery
- Create a custom-baked image with HTTP access
- Create a virtual cloud network with appropriate ingress rules (80 and 8080)

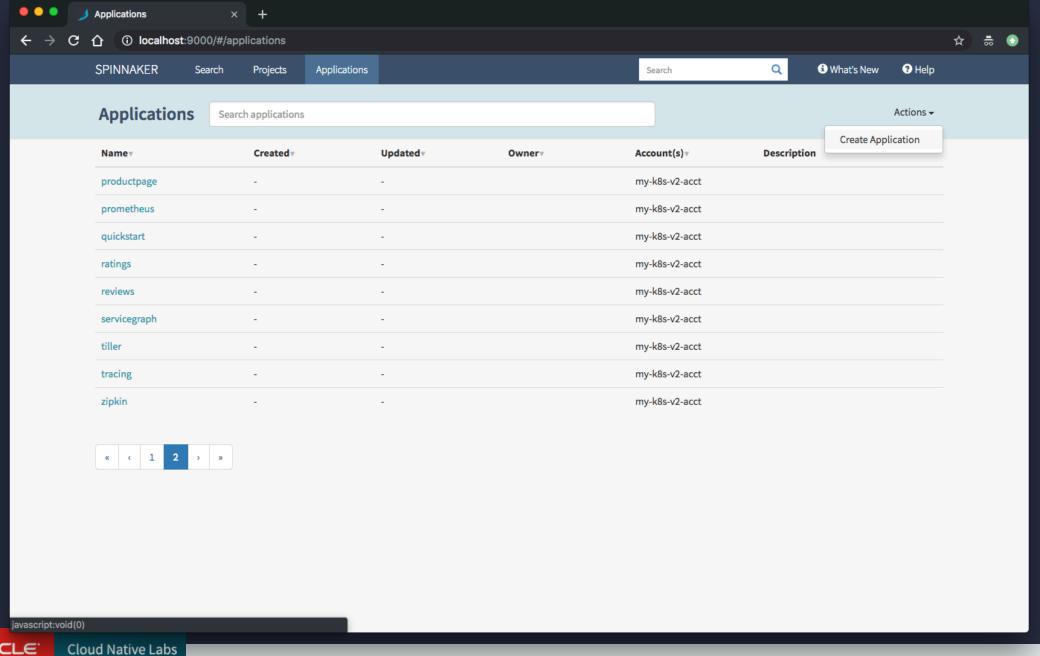


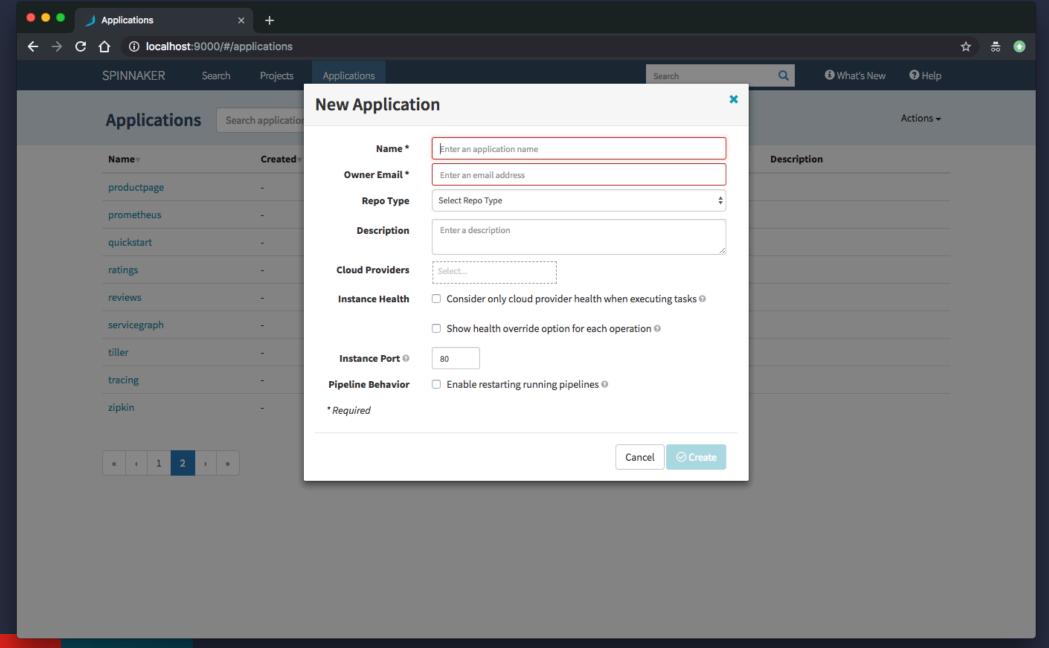
Deploying to Oracle Cloud Infrastructure: Part 1: Bake & deploy to test

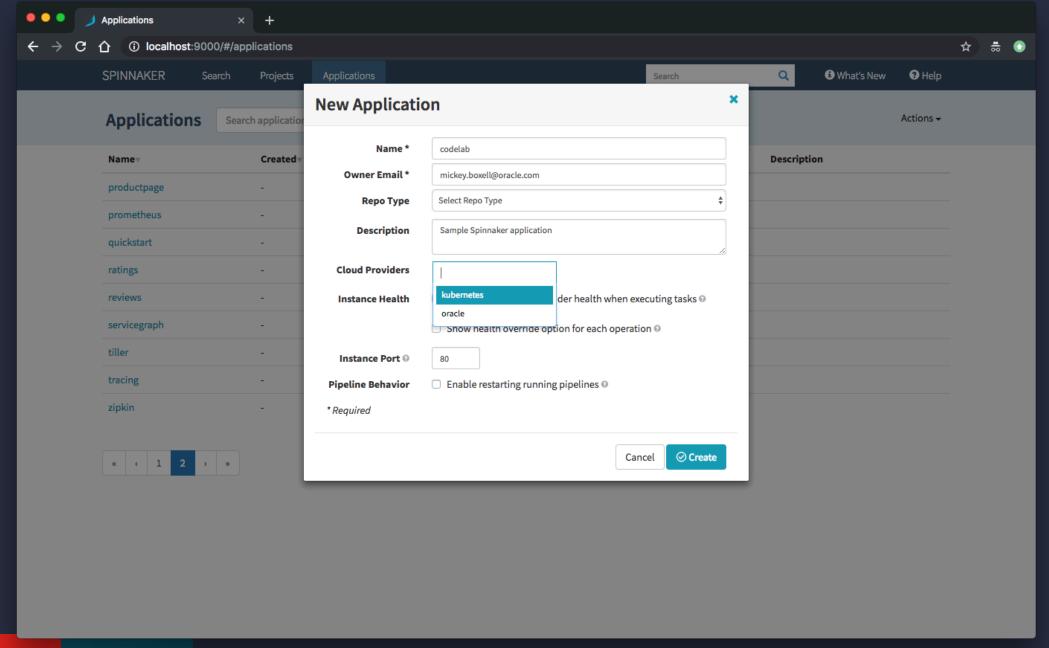


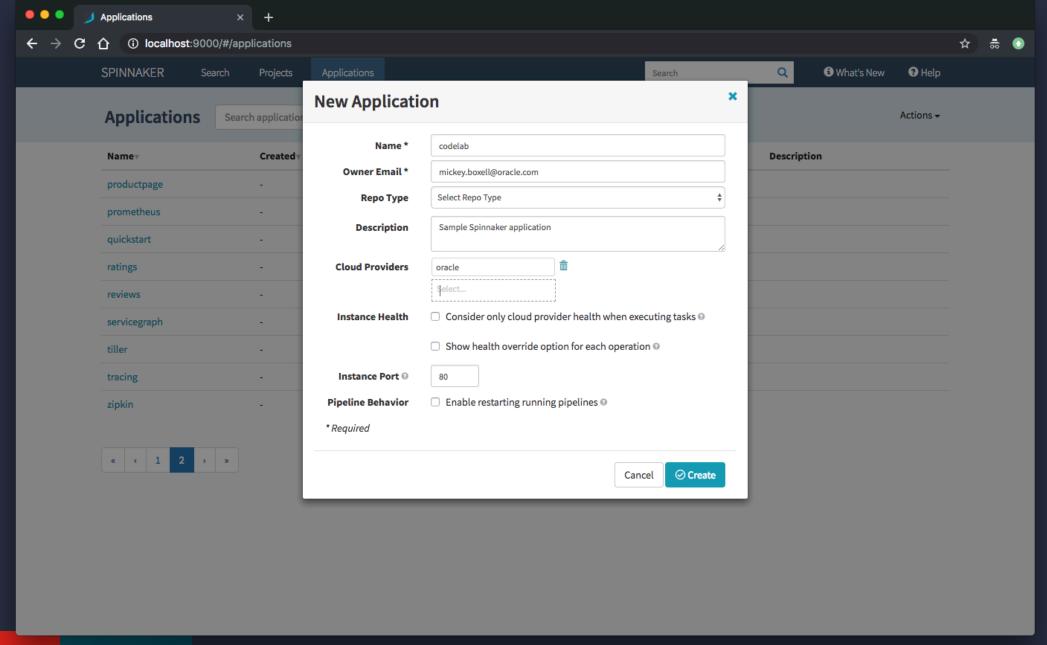


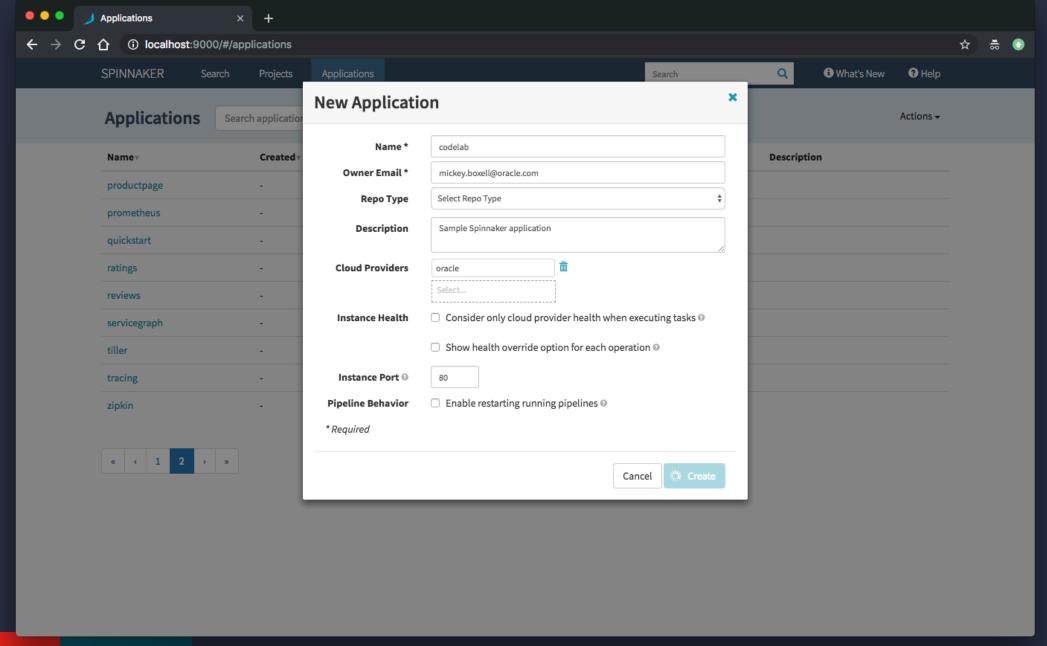


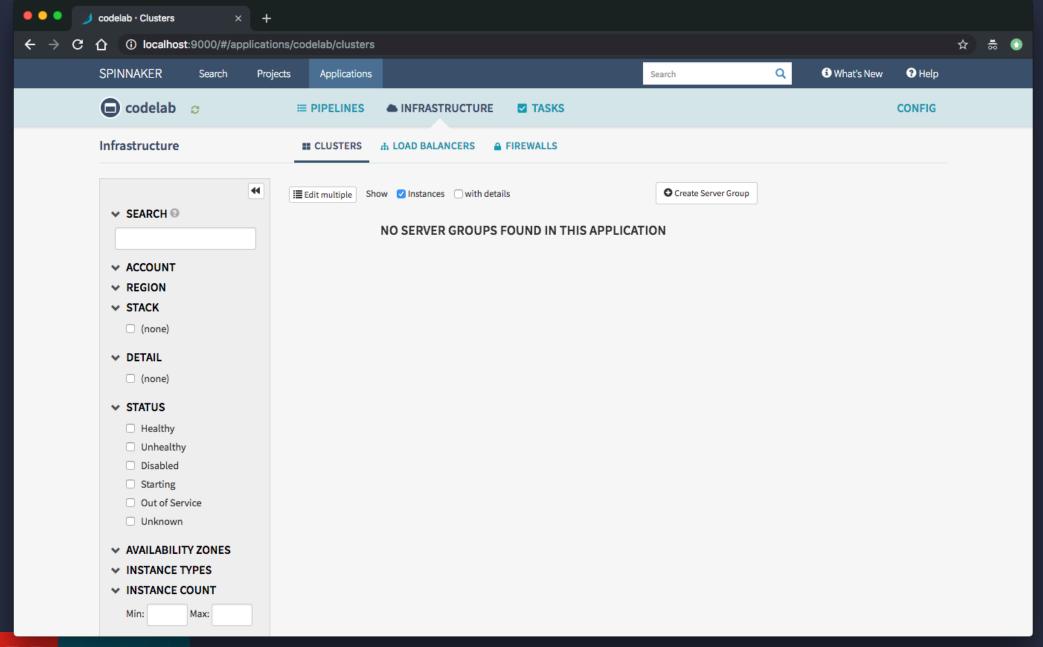


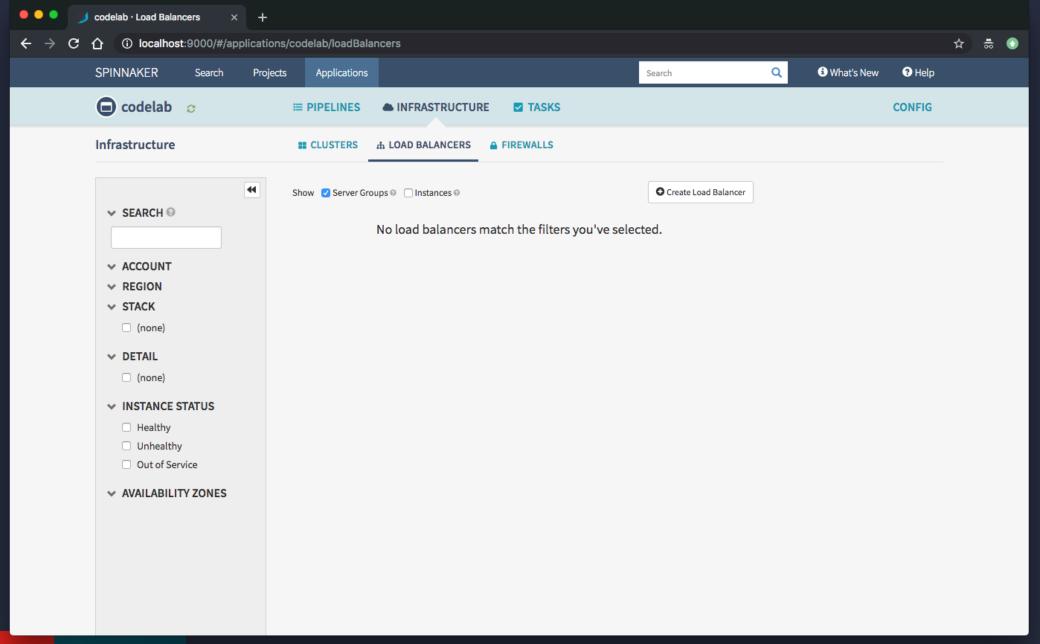


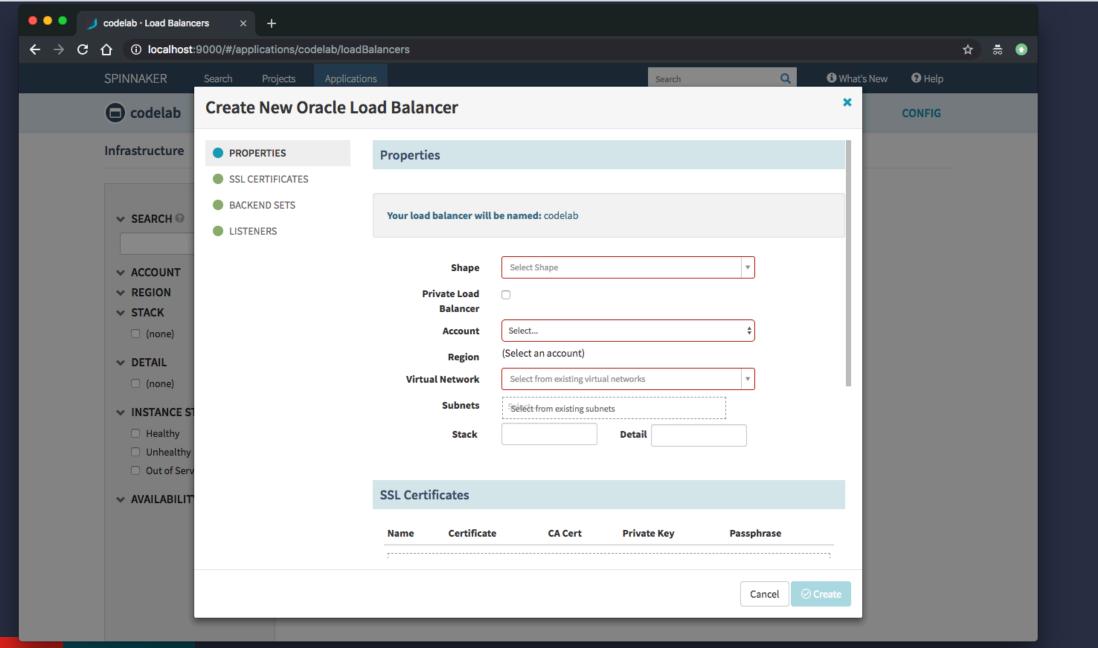


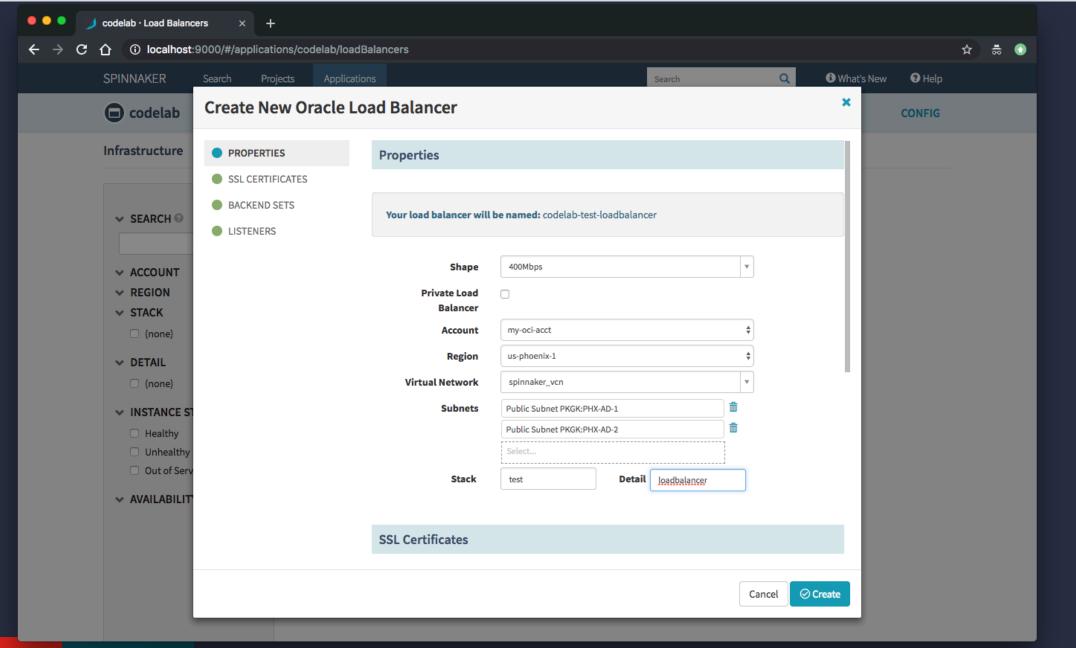


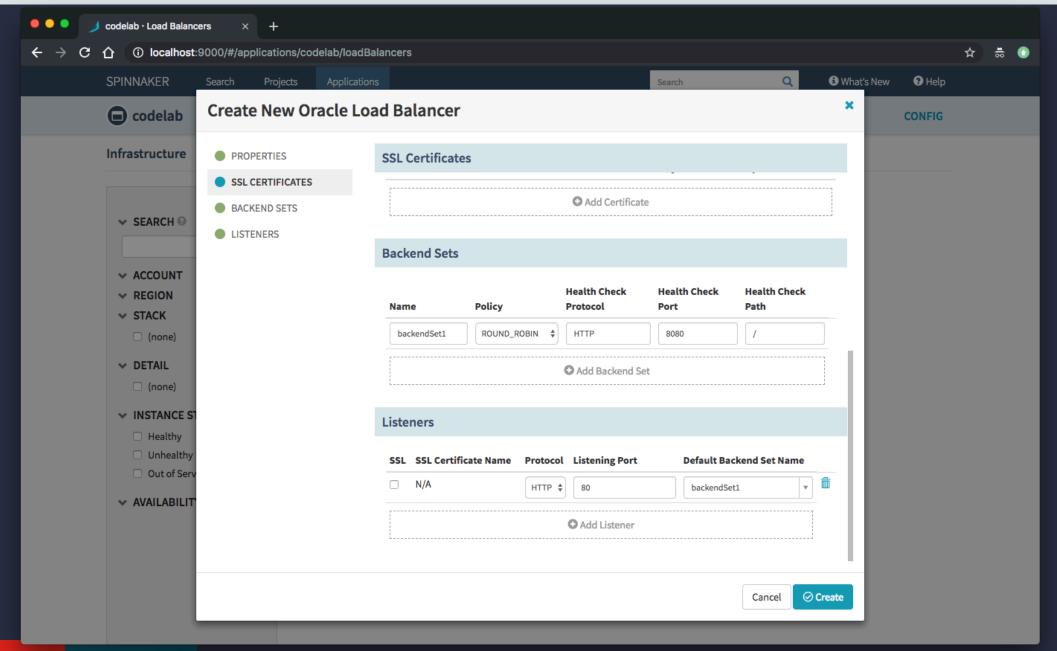


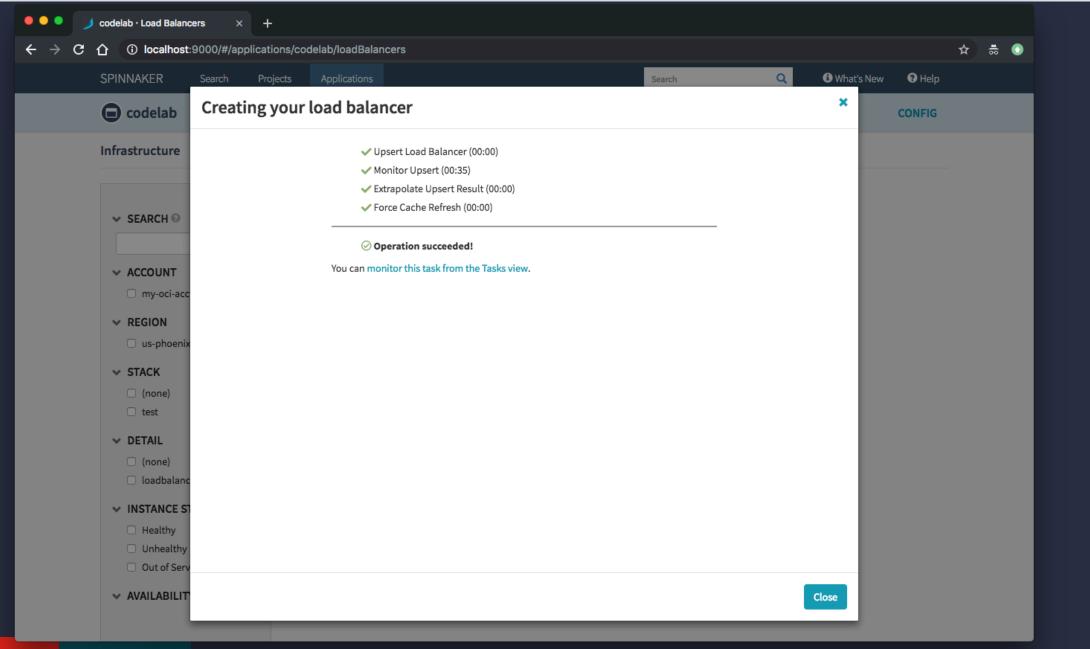


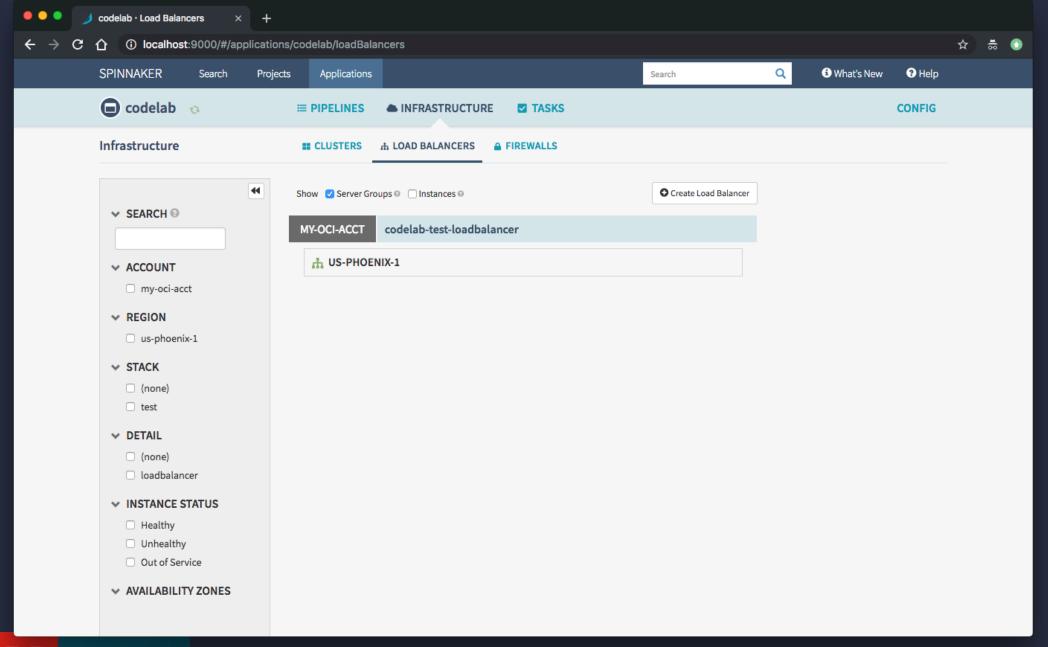


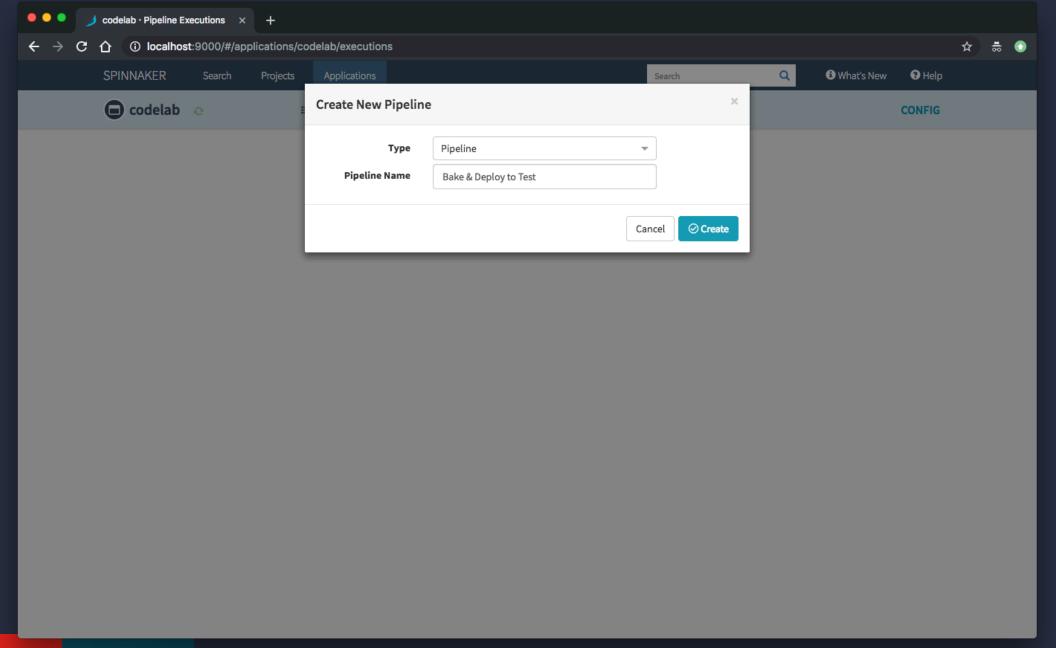


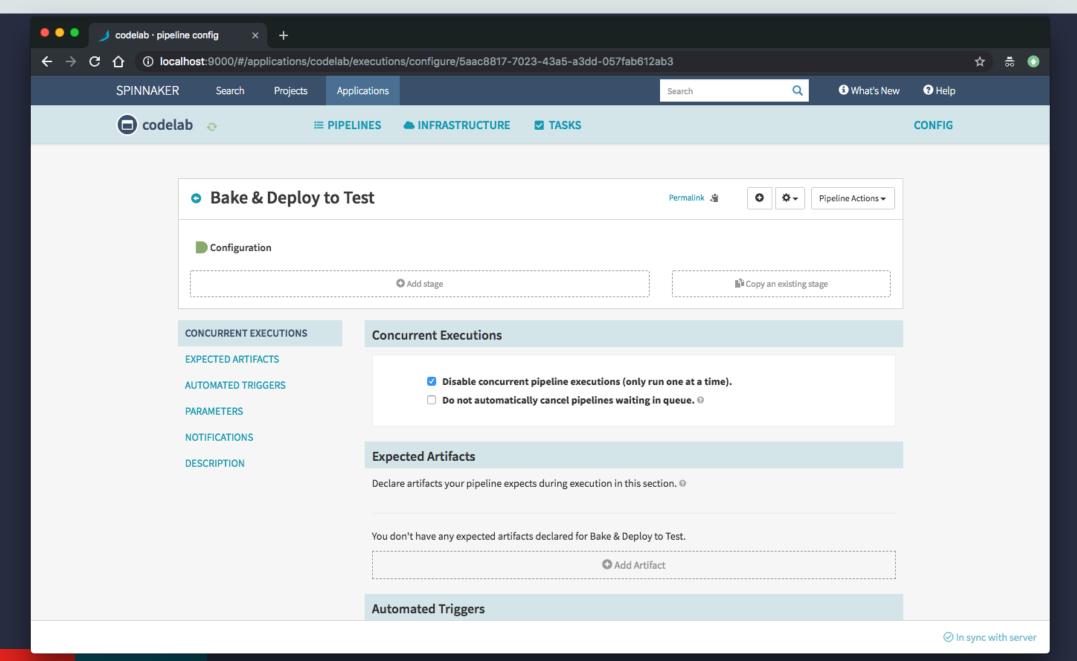


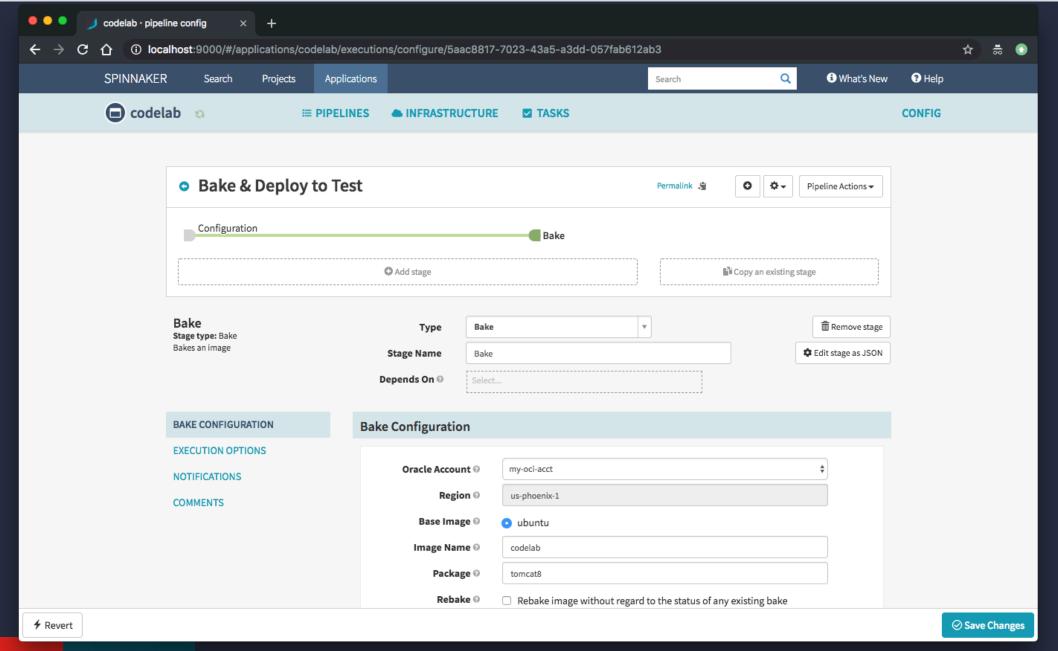


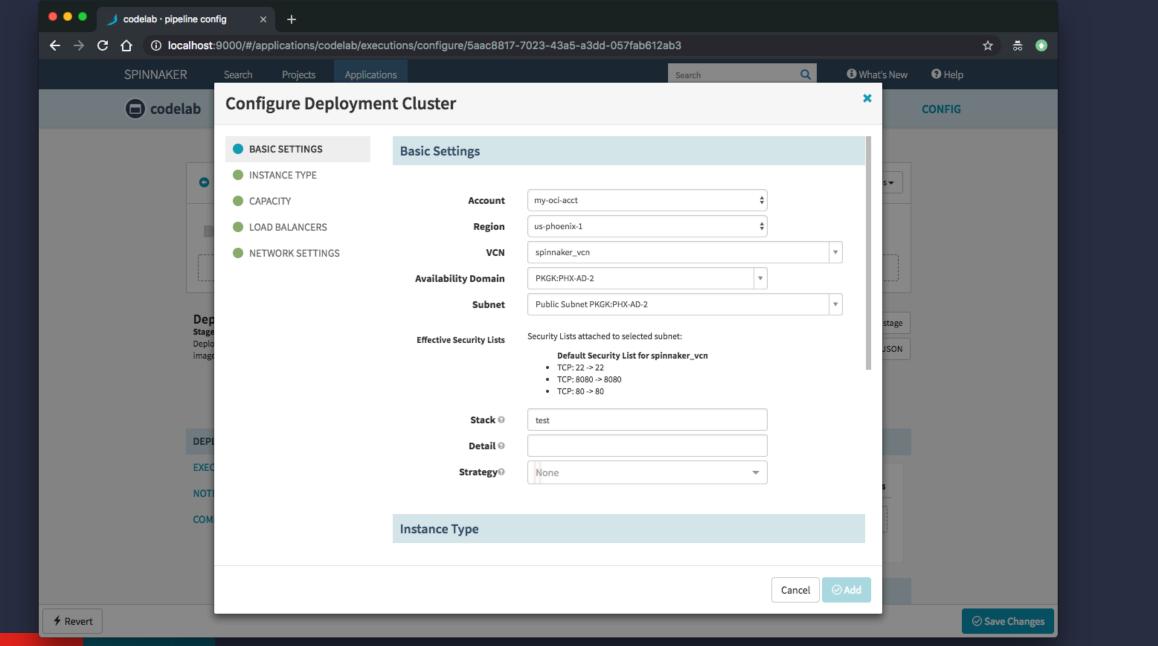


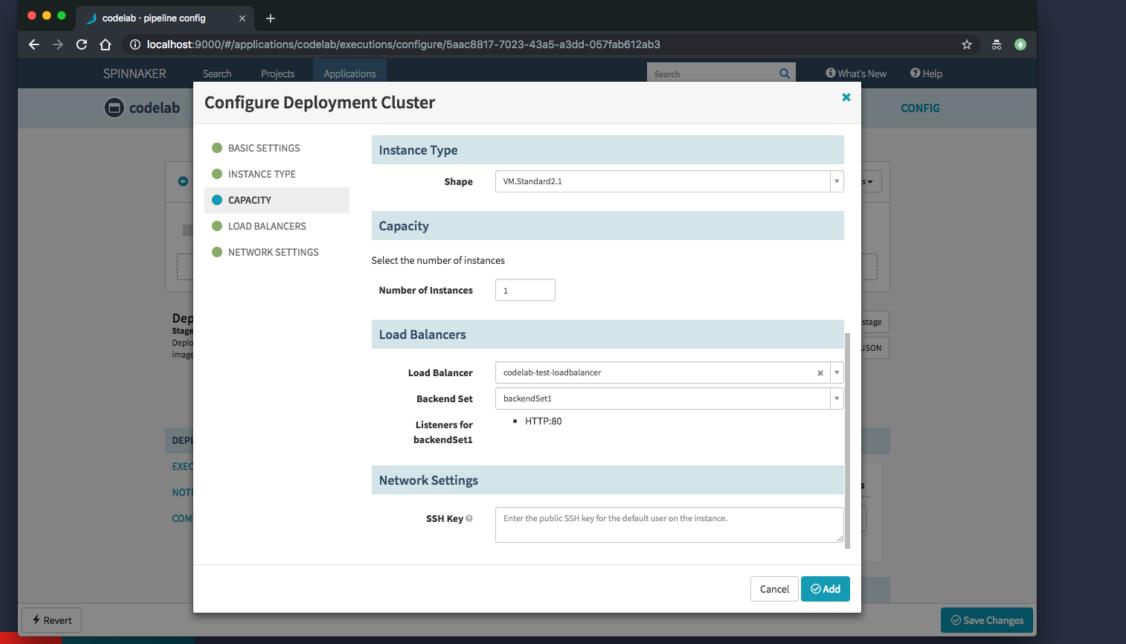


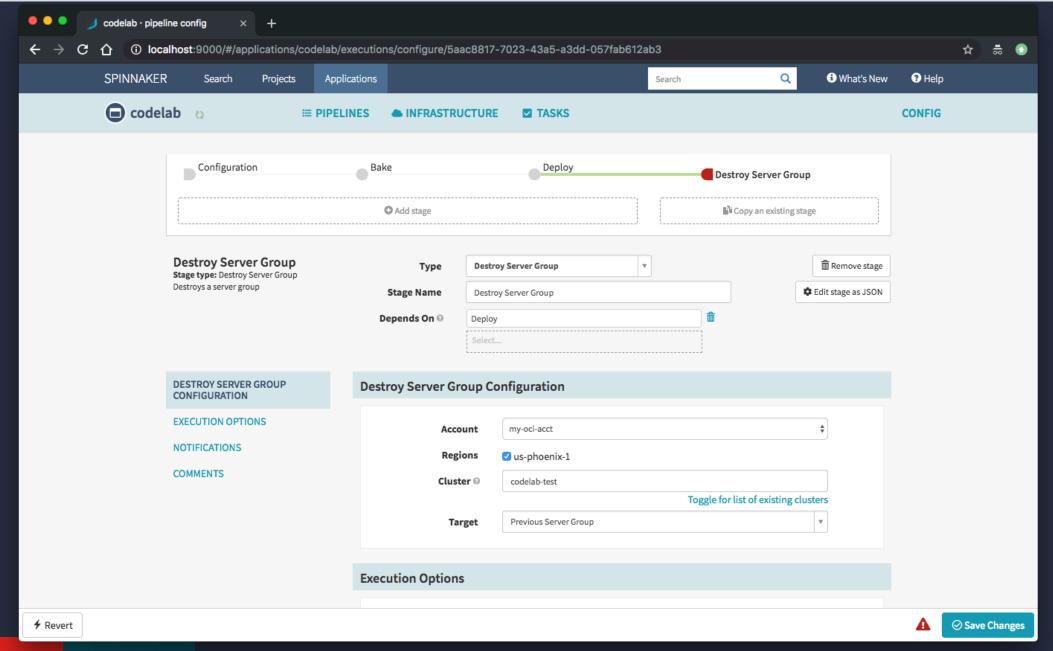


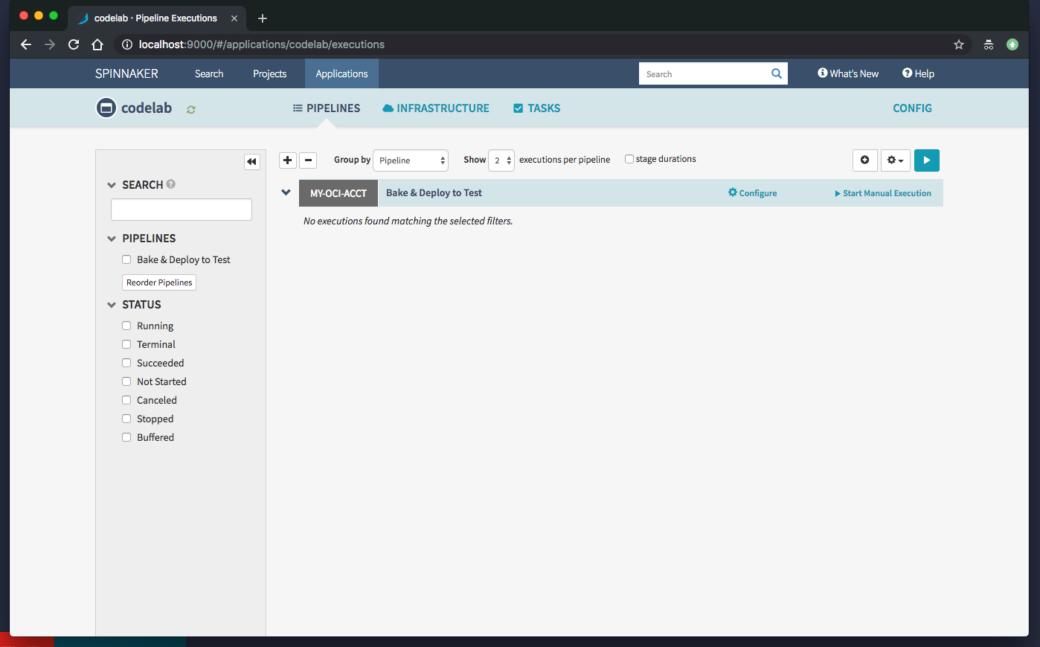


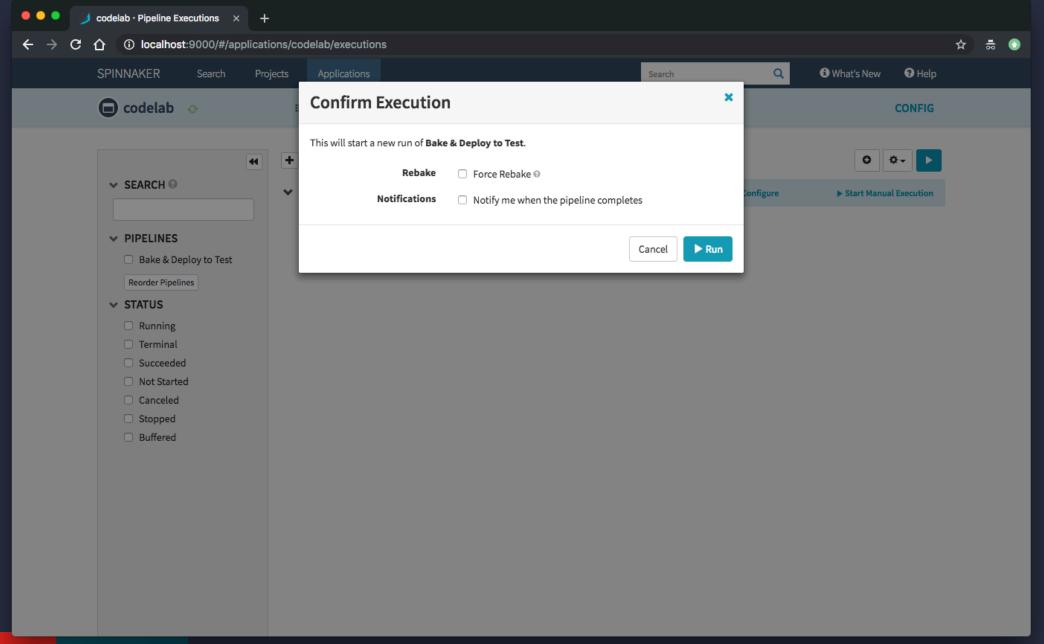


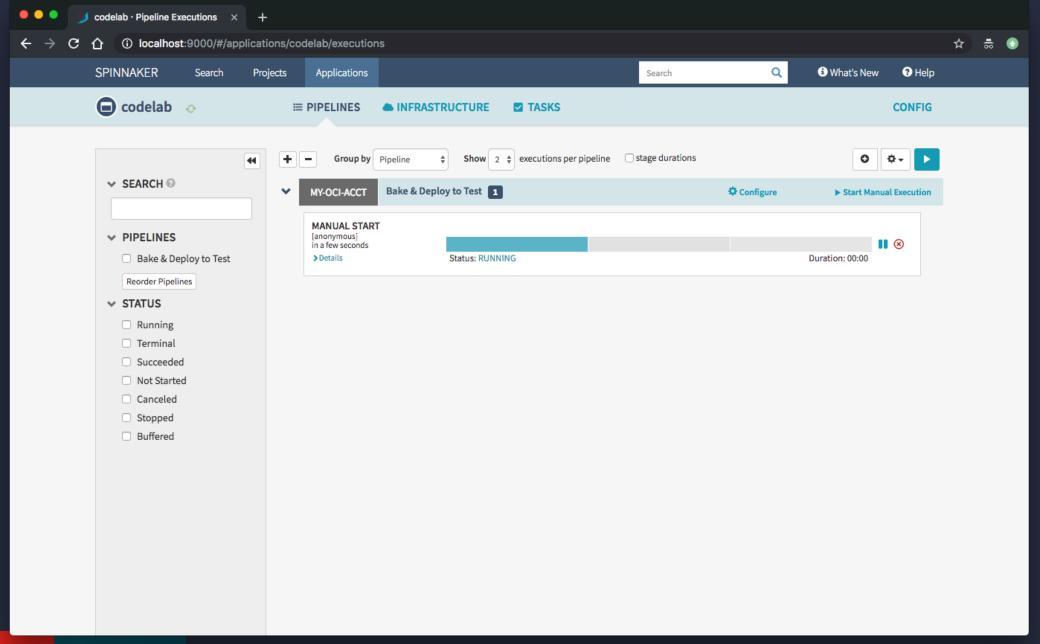


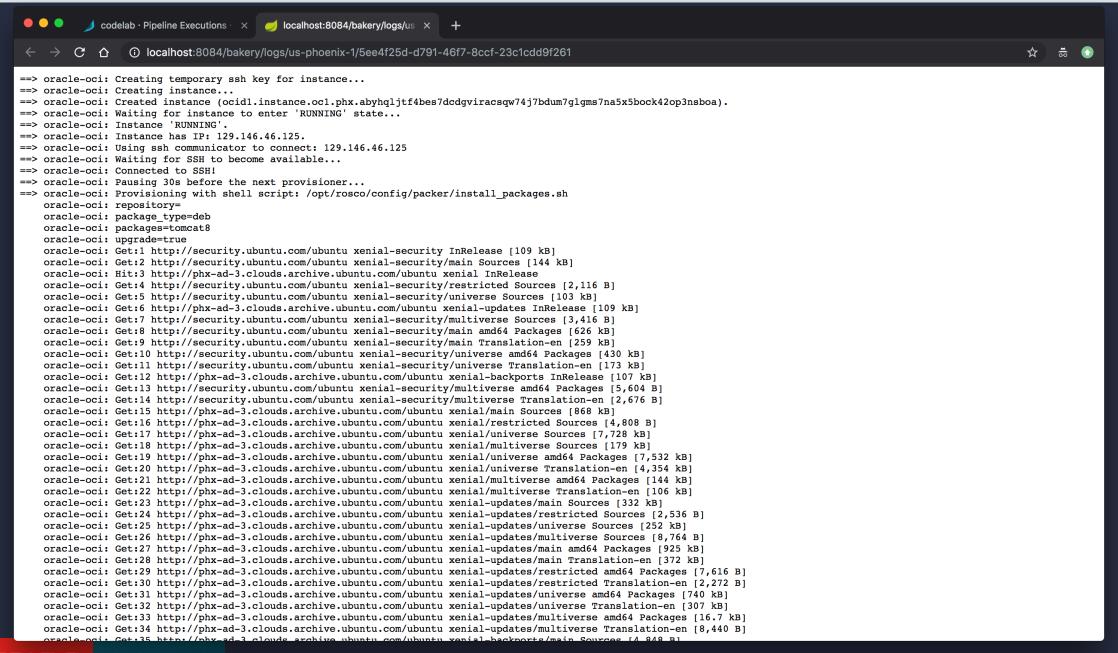






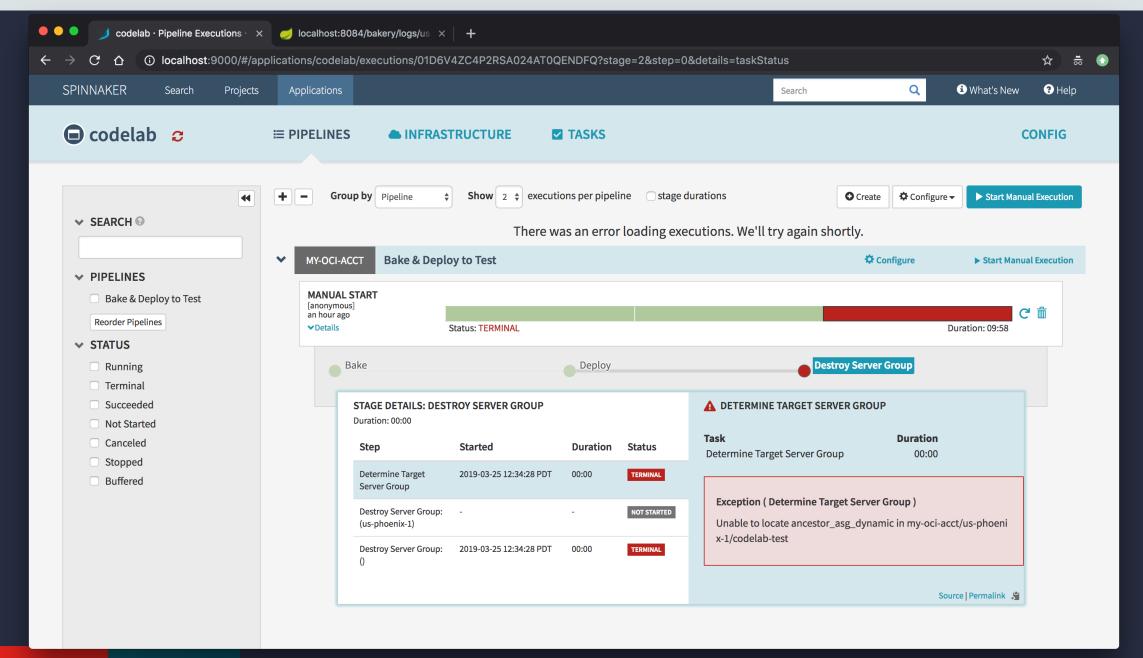






localhost:8084/bakery/logs/us-phoenix-1/5ee4f25d-d791-46f7-8ccf-23c1cdd9f261

oracle-oci: Adding debian: Hongkong Post Root CA 1.pem oracle-oci: Adding debian: QuoVadis Root CA 3.pem oracle-oci: Adding debian: Comodo Secure Services root.pem oracle-oci: Adding debian: Swisscom Root EV CA 2.pem oracle-oci: Adding debian:GeoTrust Universal CA 2.pem oracle-oci: Adding debian: OpenTrust Root CA G3.pem oracle-oci: Adding debian: D-TRUST Root Class 3 CA 2 2009.pem oracle-oci: Adding debian: AddTrust Qualified Certificates Root.pem oracle-oci: Adding debian: SwissSign Silver CA - G2.pem oracle-oci: Adding debian:GlobalSign_ECC_Root_CA_-_R5.pem oracle-oci: Adding debian:DST Root CA X3.pem oracle-oci: Adding debian: QuoVadis Root CA 1 G3.pem oracle-oci: Adding debian: Hellenic Academic and Research Institutions RootCA 2011.pem oracle-oci: Adding debian: CNNIC ROOT.pem oracle-oci: Adding debian: T-TeleSec GlobalRoot Class 3.pem oracle-oci: Adding debian: SecureTrust CA.pem oracle-oci: Adding debian: COMODO RSA Certification Authority.pem oracle-oci: Adding debian: ACCVRAIZ1.pem oracle-oci: Adding debian: USERTrust RSA Certification Authority.pem oracle-oci: Adding debian: TWCA Global Root CA.pem oracle-oci: Adding debian: VeriSign Class 3 Public Primary Certification Authority - G4.pem oracle-oci: Adding debian: Autoridad de Certificacion Firmaprofesional CIF A62634068.pem oracle-oci: Adding debian: GlobalSign Root CA - R3.pem oracle-oci: Adding debian: Staat der Nederlanden EV Root CA.pem oracle-oci: Adding debian: PSCProcert.pem oracle-oci: Adding debian: OISTE WISeKey Global Root GA CA.pem oracle-oci: done. oracle-oci: Setting up openjdk-8-jre-headless:amd64 (8u191-b12-2ubuntu0.16.04.1) ... oracle-oci: update-alternatives: using /usr/lib/jvm/java-8-openjdk-amd64/jre/bin/rmid to provide /usr/bin/rmid (rmid) in auto mode oracle-oci: update-alternatives: using /usr/lib/jvm/java-8-openjdk-amd64/jre/bin/java to provide /usr/bin/java (java) in auto mode oracle-oci: update-alternatives: using /usr/lib/jvm/java-8-openjdk-amd64/jre/bin/keytool to provide /usr/bin/keytool (keytool) in auto mode oracle-oci: update-alternatives: using /usr/lib/jvm/java-8-openjdk-amd64/jre/bin/jjs to provide /usr/bin/jjs (jjs) in auto mode oracle-oci: update-alternatives: using /usr/lib/jvm/java-8-openjdk-amd64/jre/bin/pack200 to provide /usr/bin/pack200 (pack200) in auto mode oracle-oci: update-alternatives: using /usr/lib/jvm/java-8-openjdk-amd64/jre/bin/rmiregistry to provide /usr/bin/rmiregistry (rmiregistry) in auto mode oracle-oci: update-alternatives: using /usr/lib/jvm/java-8-openjdk-amd64/jre/bin/unpack200 to provide /usr/bin/unpack200 (unpack200) in auto mode oracle-oci: update-alternatives: using /usr/lib/jvm/java-8-openjdk-amd64/jre/bin/orbd to provide /usr/bin/orbd (orbd) in auto mode oracle-oci: update-alternatives: using /usr/lib/jvm/java-8-openjdk-amd64/jre/bin/servertool to provide /usr/bin/servertool (servertool) in auto mode oracle-oci: update-alternatives: using /usr/lib/jvm/java-8-openjdk-amd64/jre/bin/tnameserv to provide /usr/bin/tnameserv (tnameserv) in auto mode oracle-oci: update-alternatives: using /usr/lib/jvm/java-8-openjdk-amd64/jre/lib/jexec to provide /usr/bin/jexec (jexec) in auto mode oracle-oci: Setting up default-jre-headless (2:1.8-56ubuntu2) ... oracle-oci: Setting up tomcat8-common (8.0.32-1ubuntul.9) ... oracle-oci: Setting up tomcat8 (8.0.32-1ubuntu1.9) ... oracle-oci: oracle-oci: Creating config file /etc/default/tomcat8 with new version oracle-oci: Adding system user `tomcat8' (UID 113) ... oracle-oci: Adding new user `tomcat8' (UID 113) with group `tomcat8' ... oracle-oci: Not creating home directory `/usr/share/tomcat8'. oracle-oci: oracle-oci: Creating config file /etc/logrotate.d/tomcat8 with new version





It works!

If you're seeing this page via a web browser, it means you've setup Tomcat successfully. Congratulations!

This is the default Tomcat home page. It can be found on the local filesystem at: /var/lib/tomcat8/webapps/ROOT/index.html

Tomcat8 veterans might be pleased to learn that this system instance of Tomcat is installed with CATALINA_HOME in /usr/share/tomcat8 and CATALINA_BASE in /var/lib/tomcat8, following the rules from /usr/share/doc/tomcat8-common/RUNNING.txt.gz.

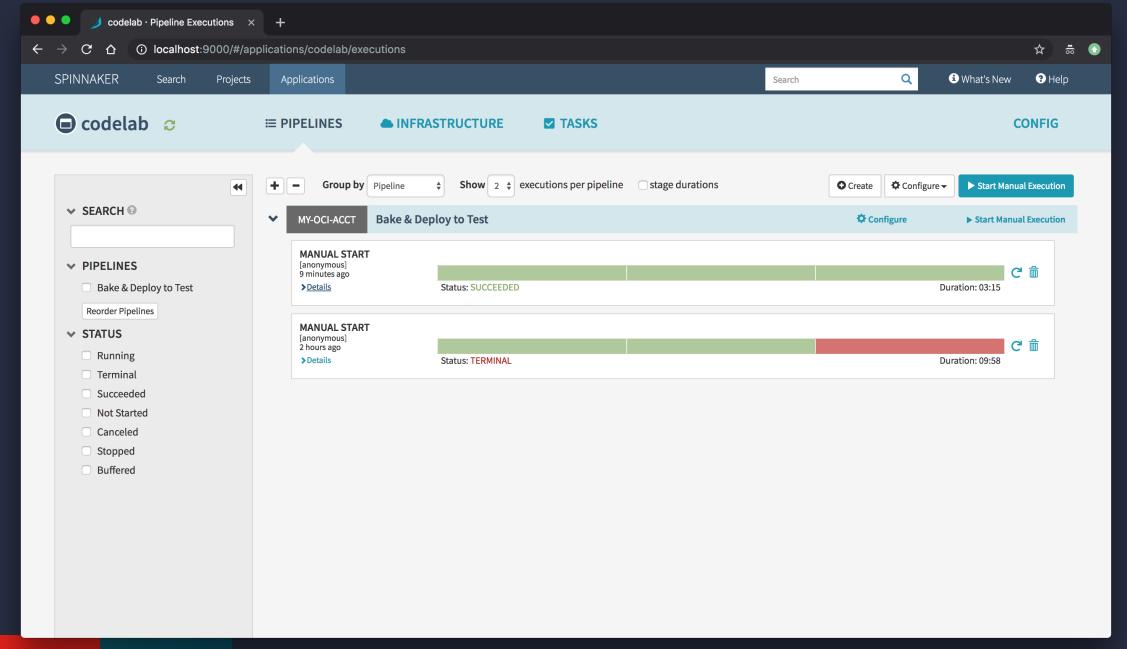
You might consider installing the following packages, if you haven't already done so:

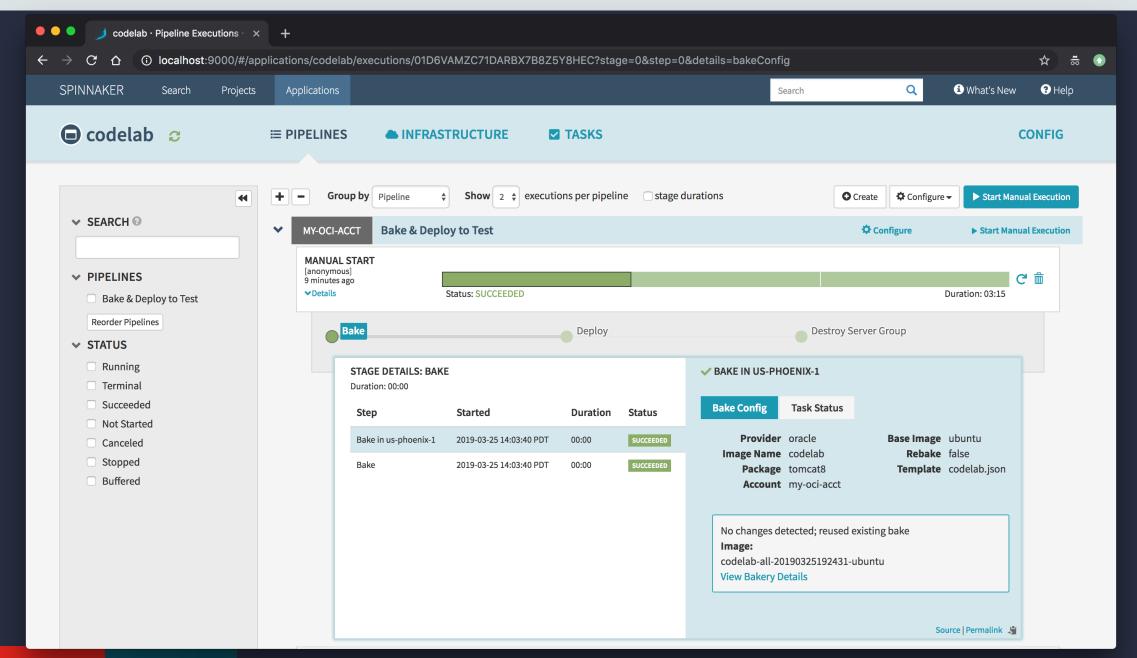
tomcat8-docs: This package installs a web application that allows to browse the Tomcat 8 documentation locally. Once installed, you can access it by clicking here.

tomcat8-examples: This package installs a web application that allows to access the Tomcat 8 Servlet and JSP examples. Once installed, you can access it by clicking here.

tomcat8-admin: This package installs two web applications that can help managing this Tomcat instance. Once installed, you can access the manager webapp and the host-manager webapp.

NOTE: For security reasons, using the manager webapp is restricted to users with role "manager-gui". The host-manager webapp is restricted to users with role "admin-gui". Users are defined in /etc/tomcat8/tomcat-users.xml.







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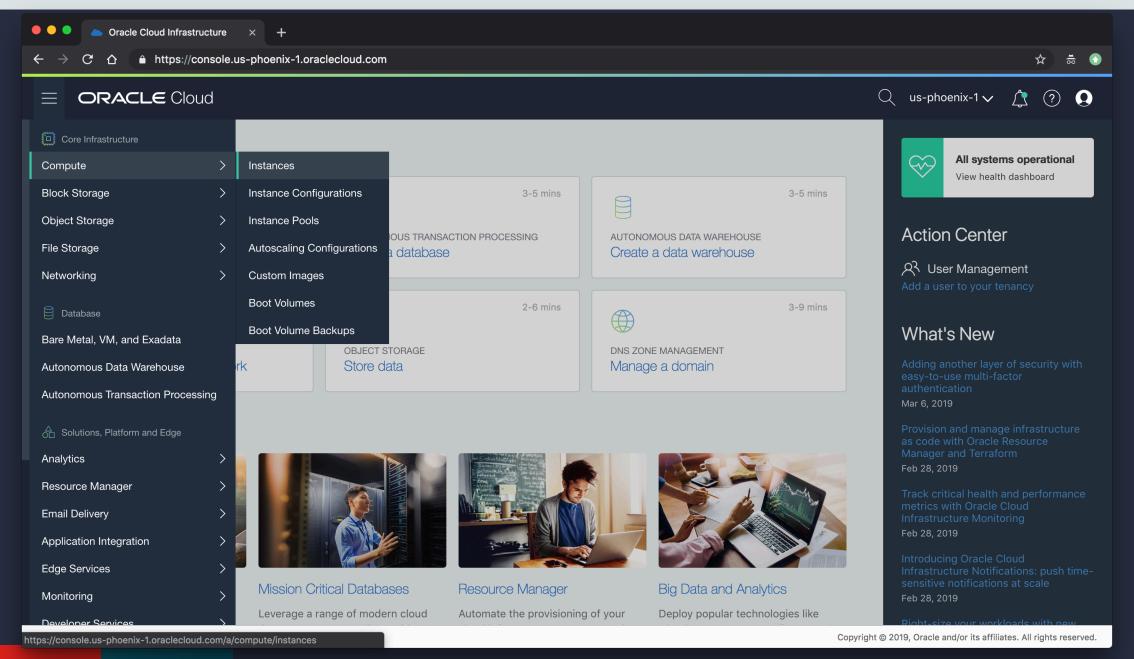
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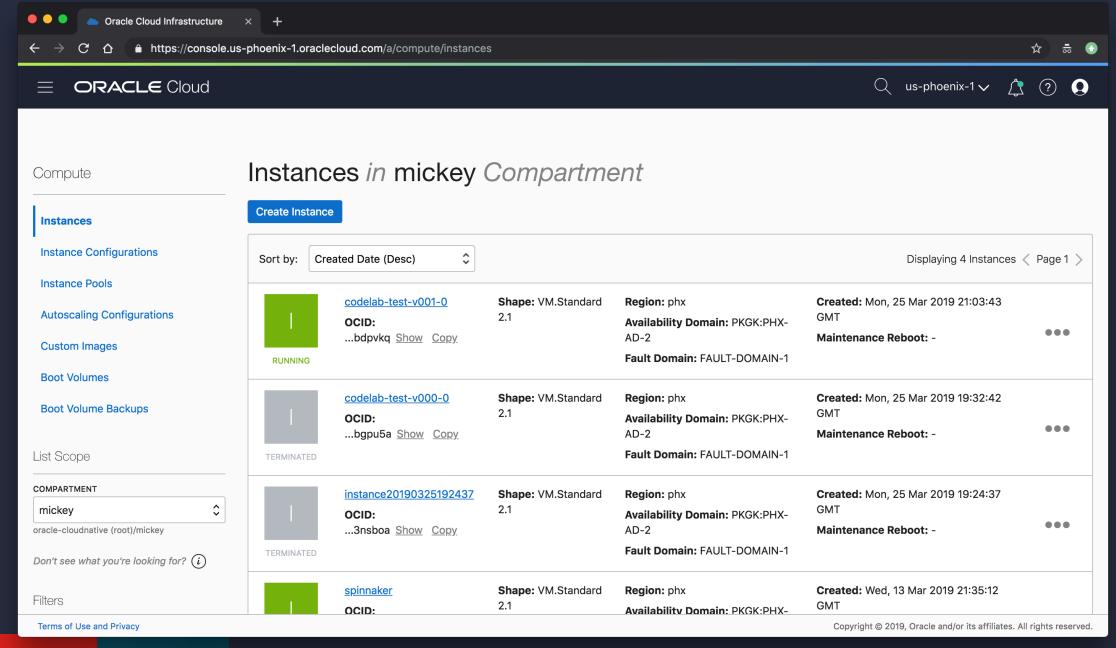
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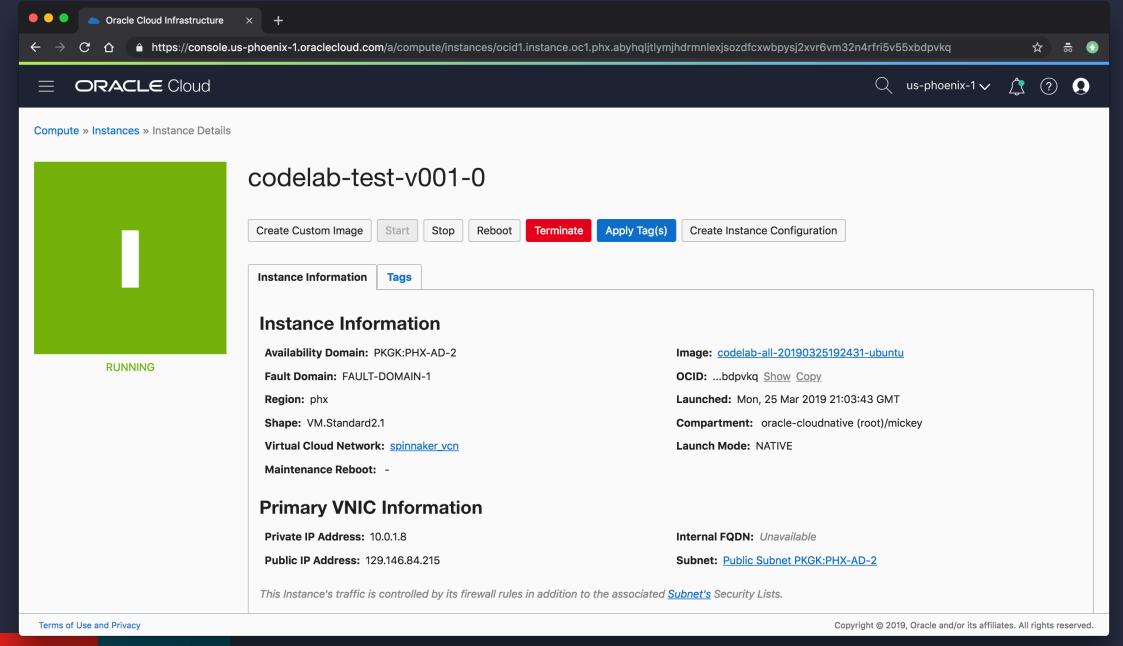
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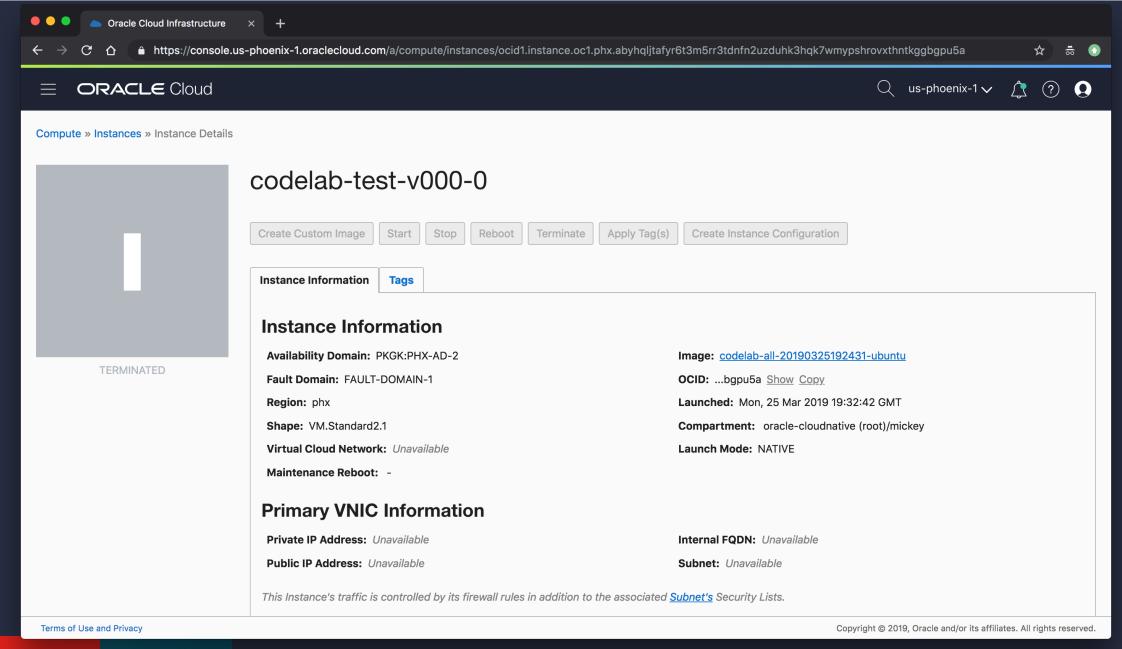
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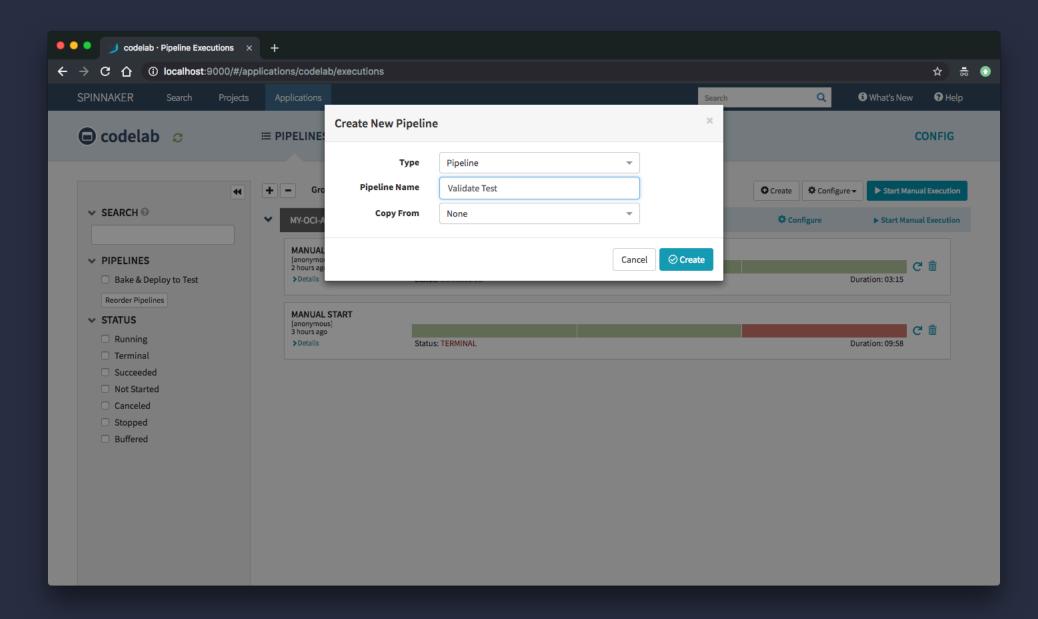


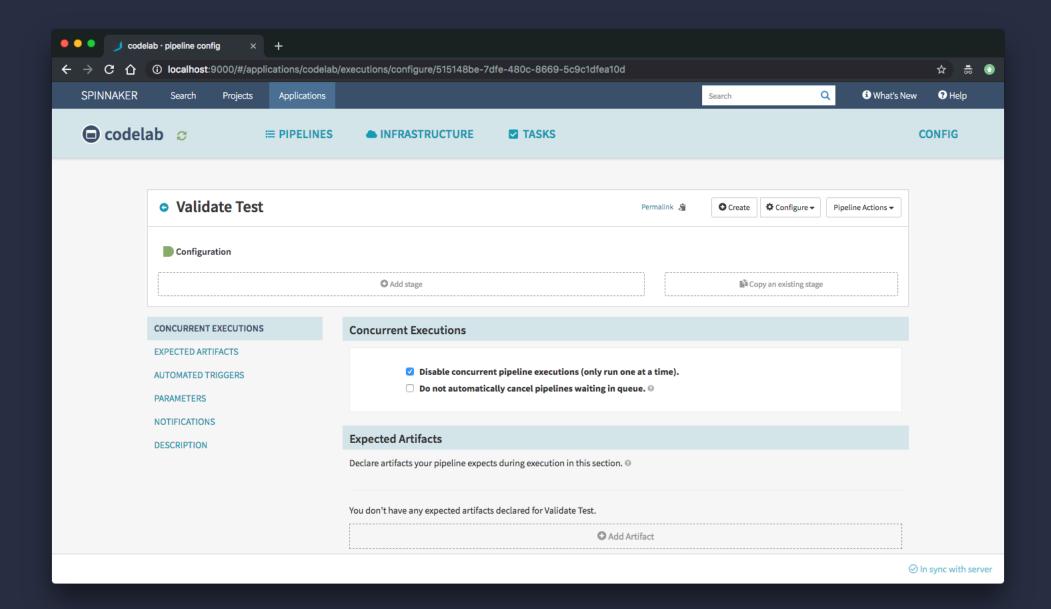


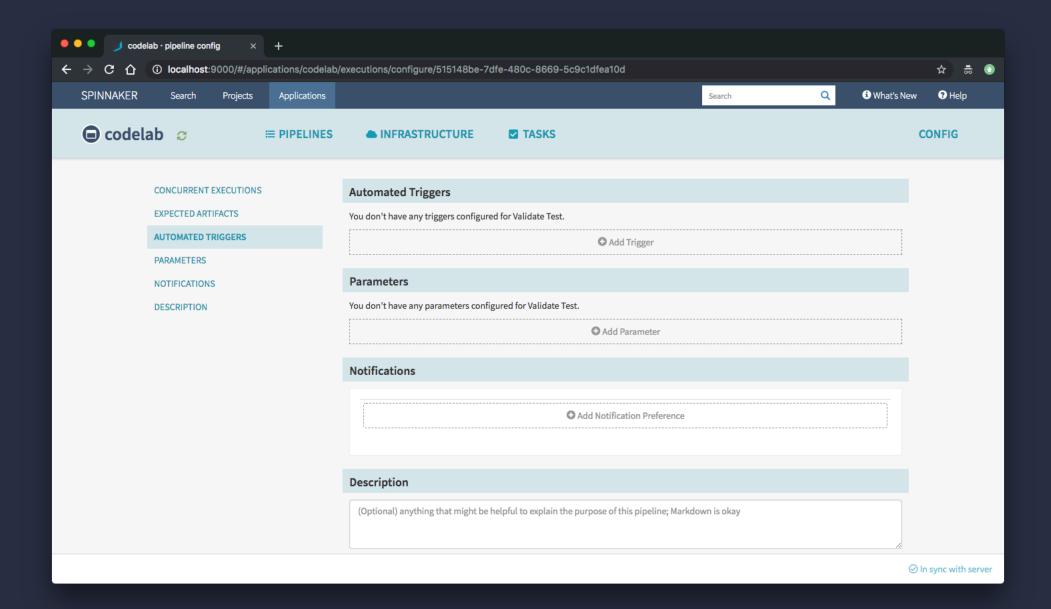


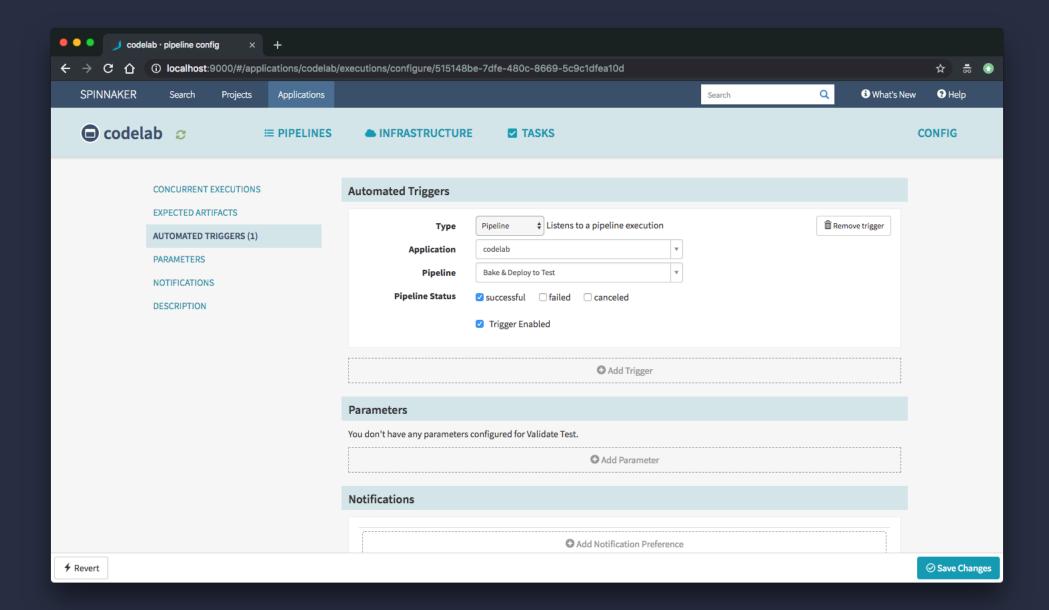


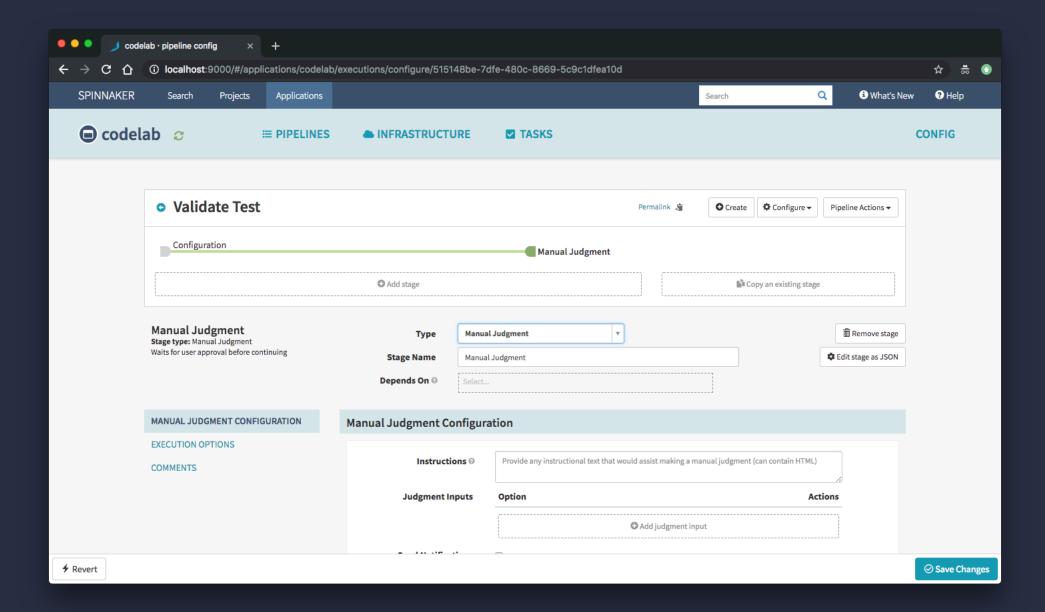
Deploying to Oracle Cloud Infrastructure: Part 2: Validate test

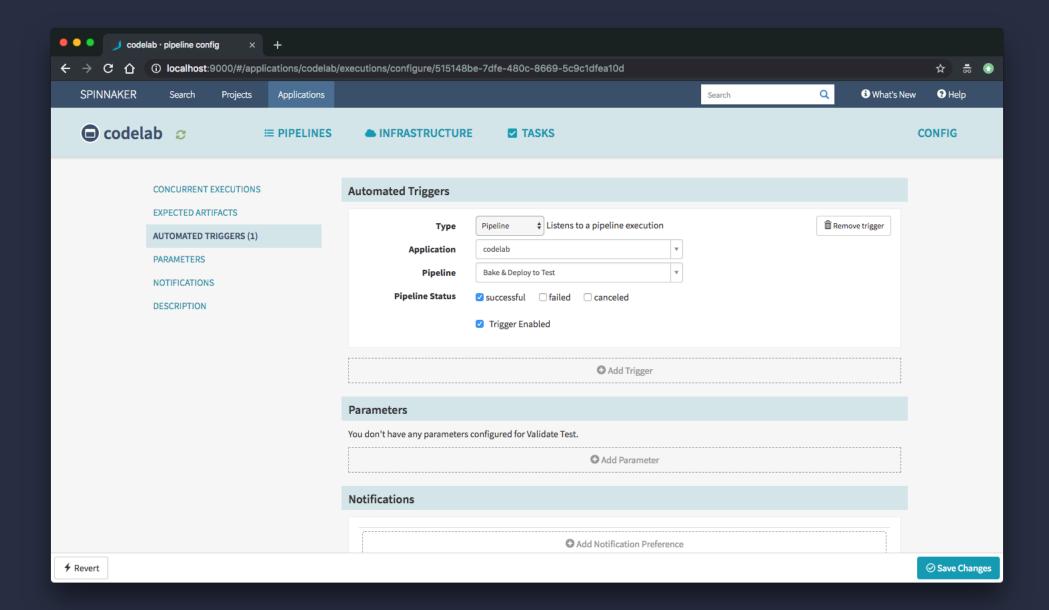


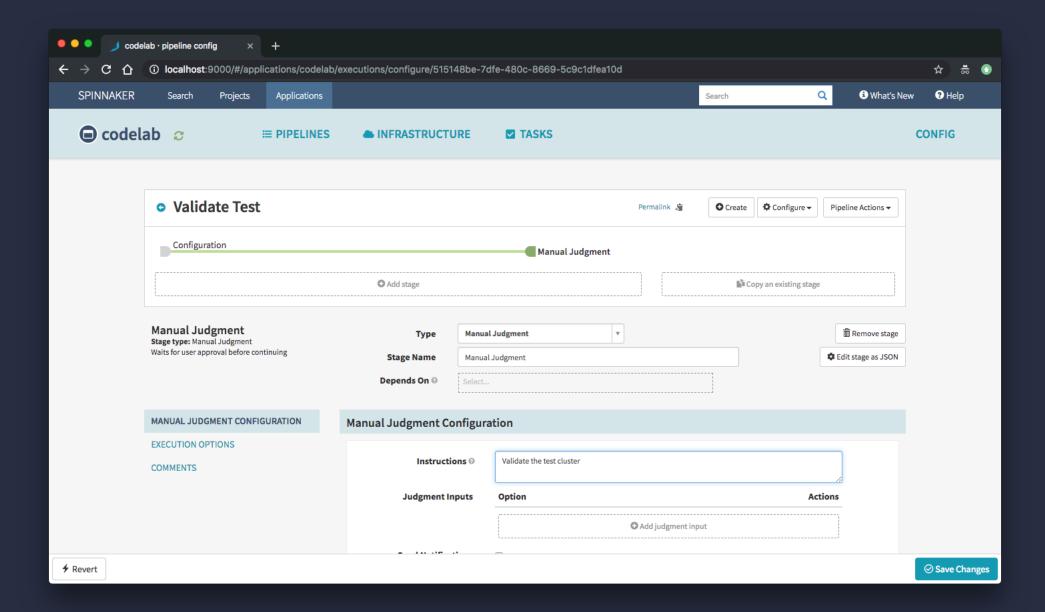




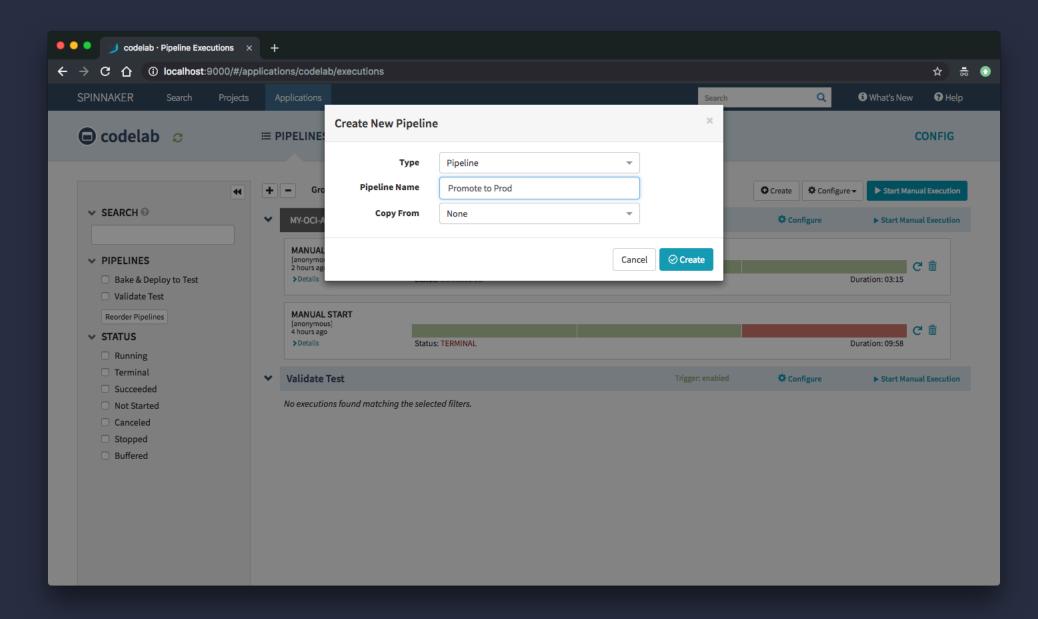


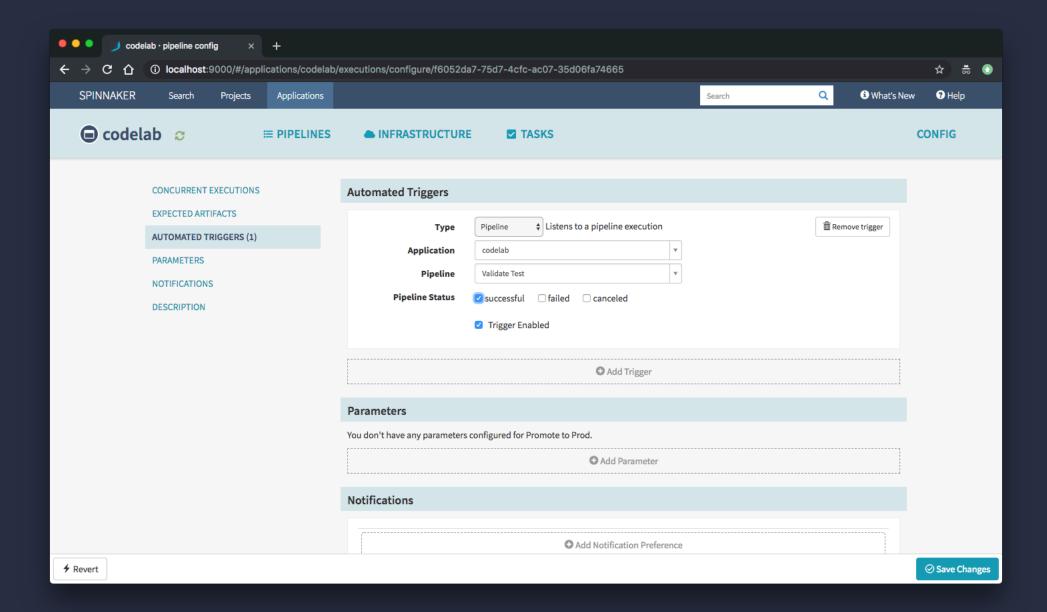


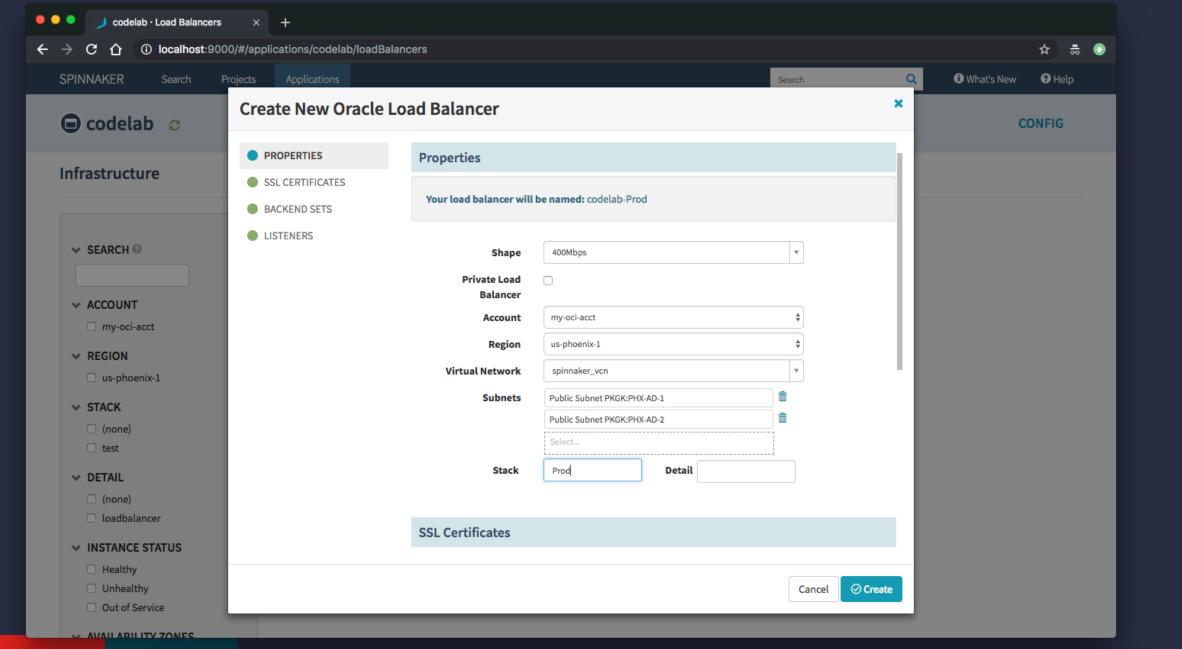


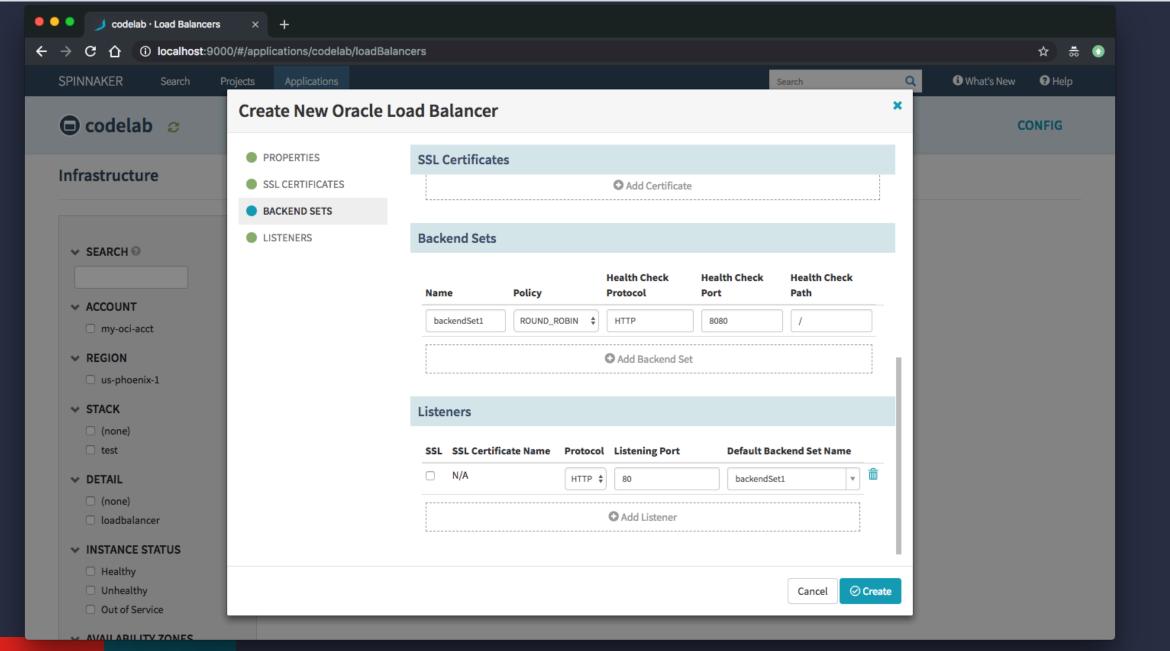


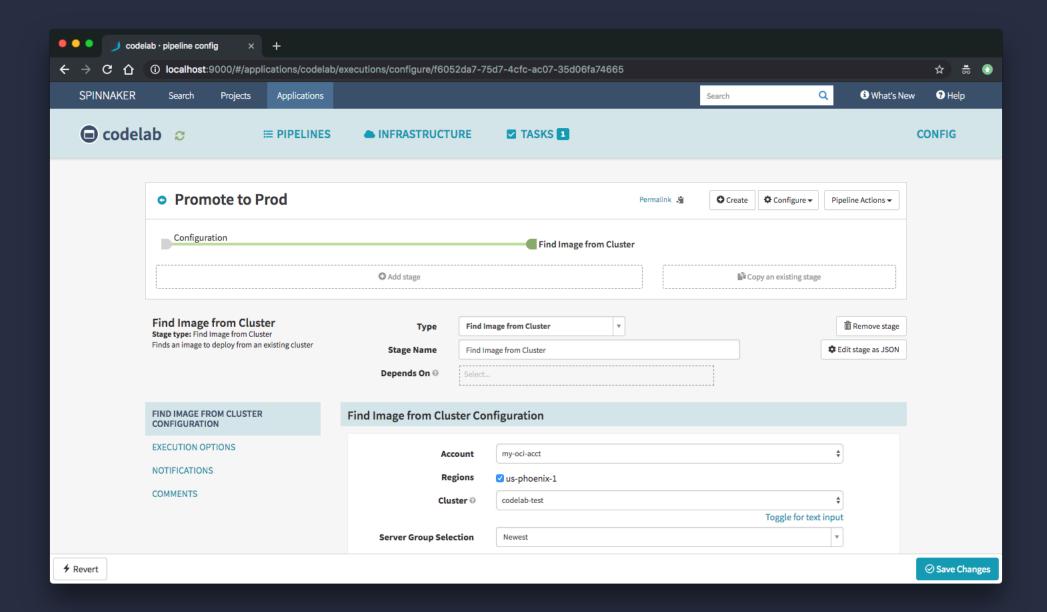
Deploying to Oracle Cloud Infrastructure: Part 3: Promote to prod

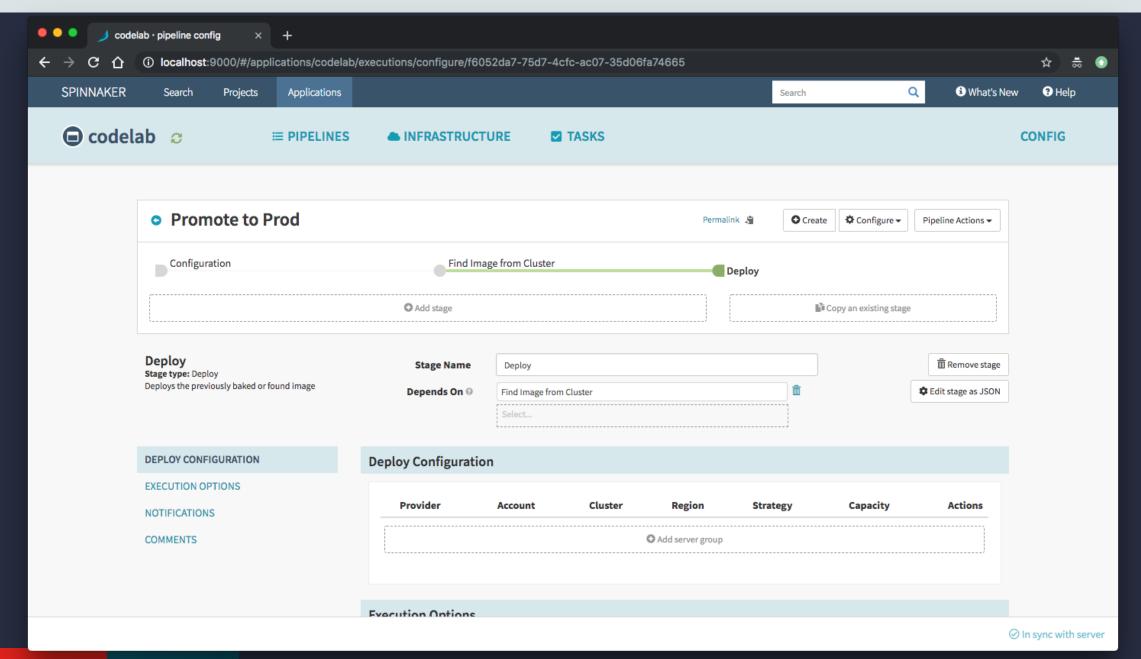


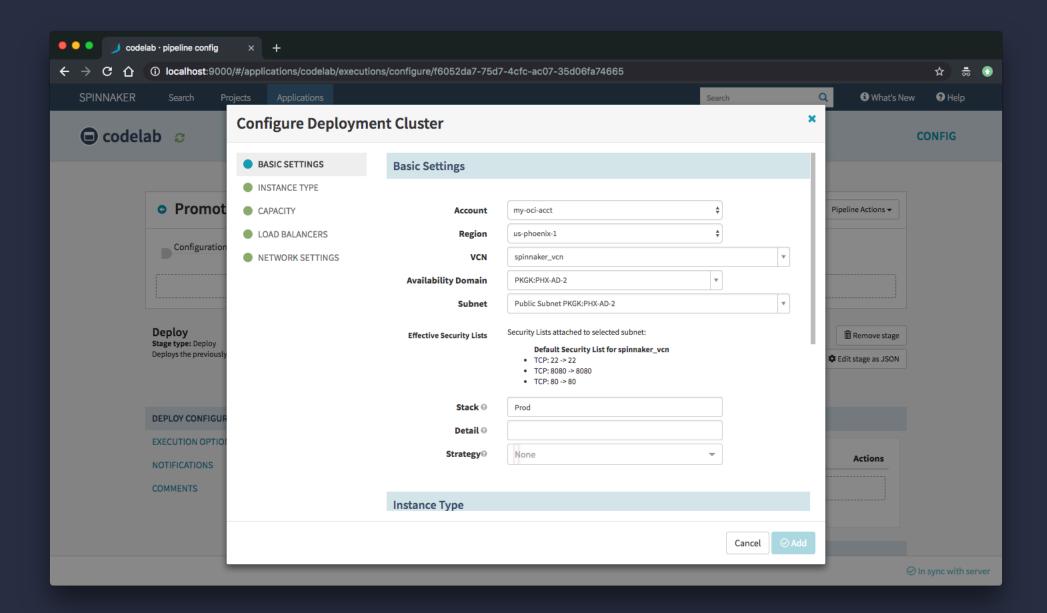


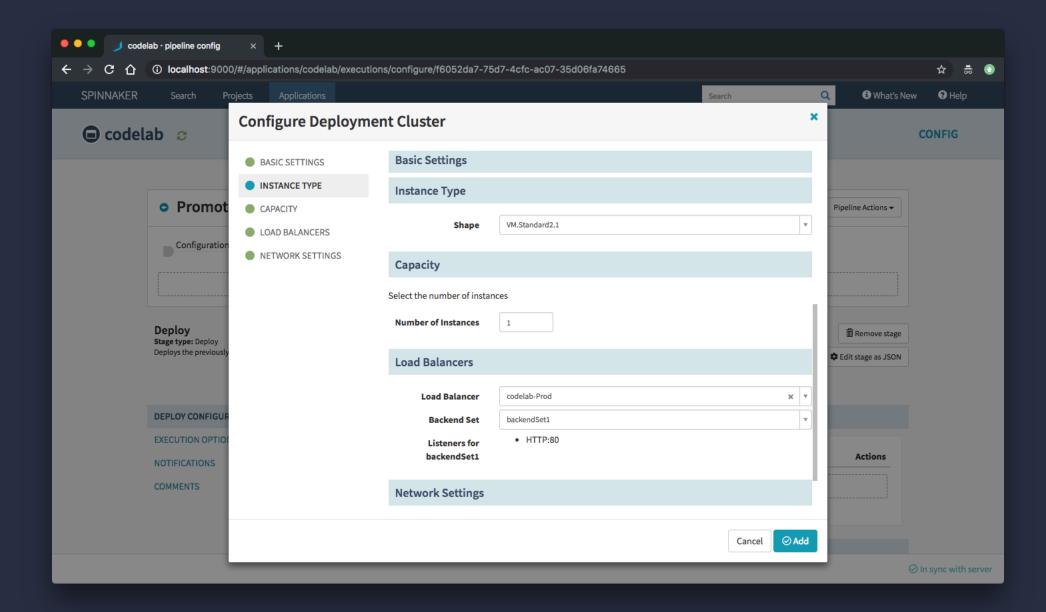


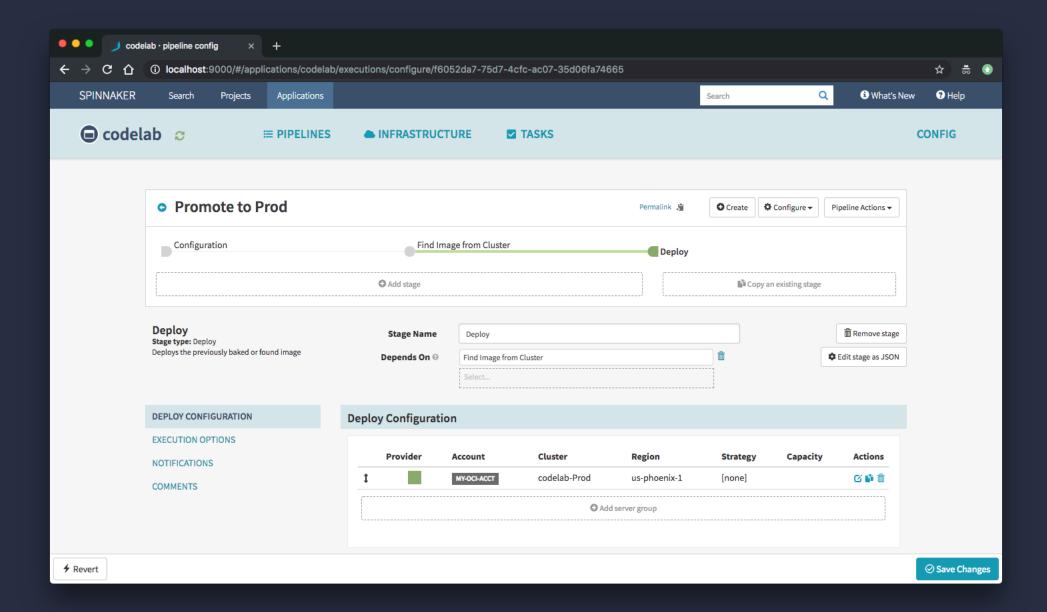


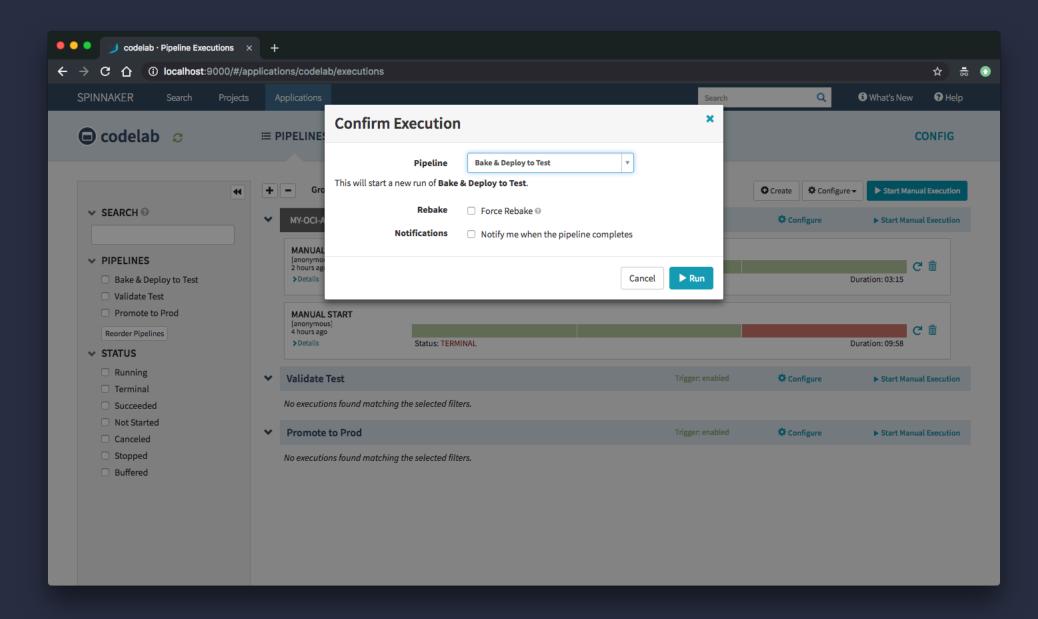


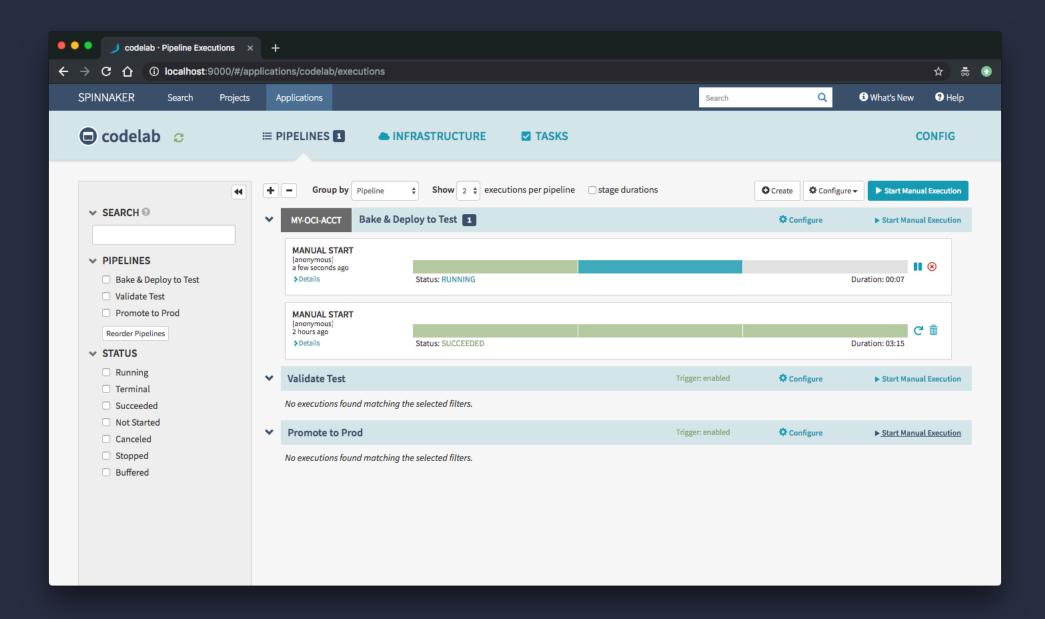


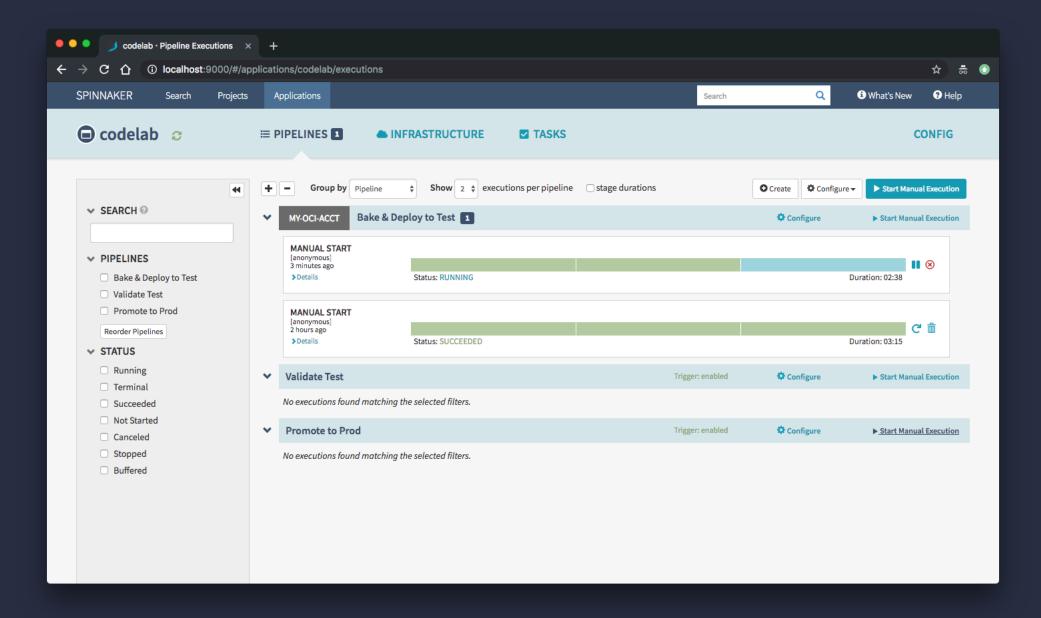


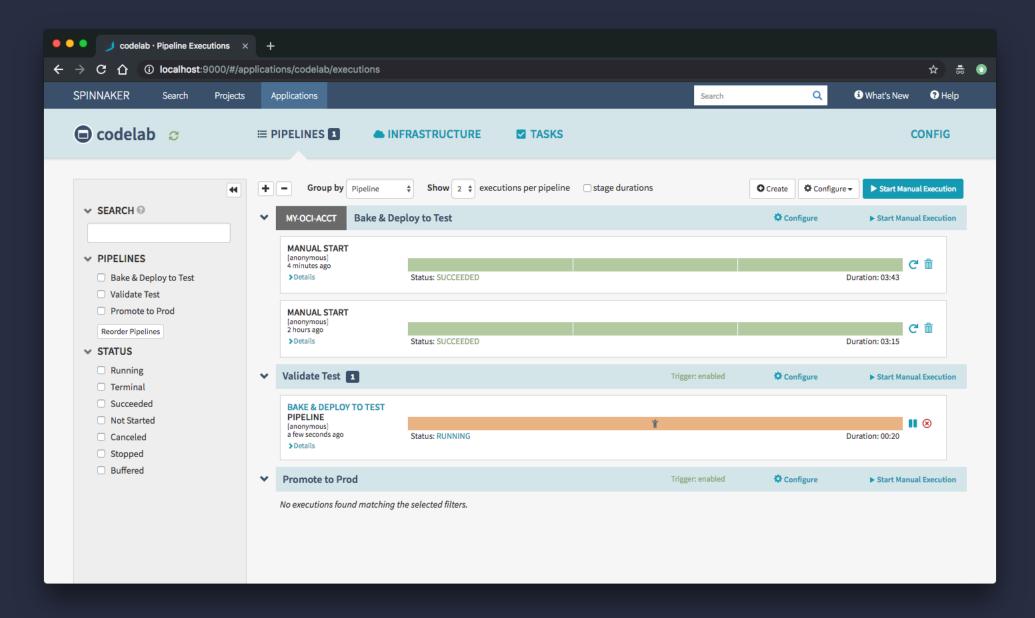


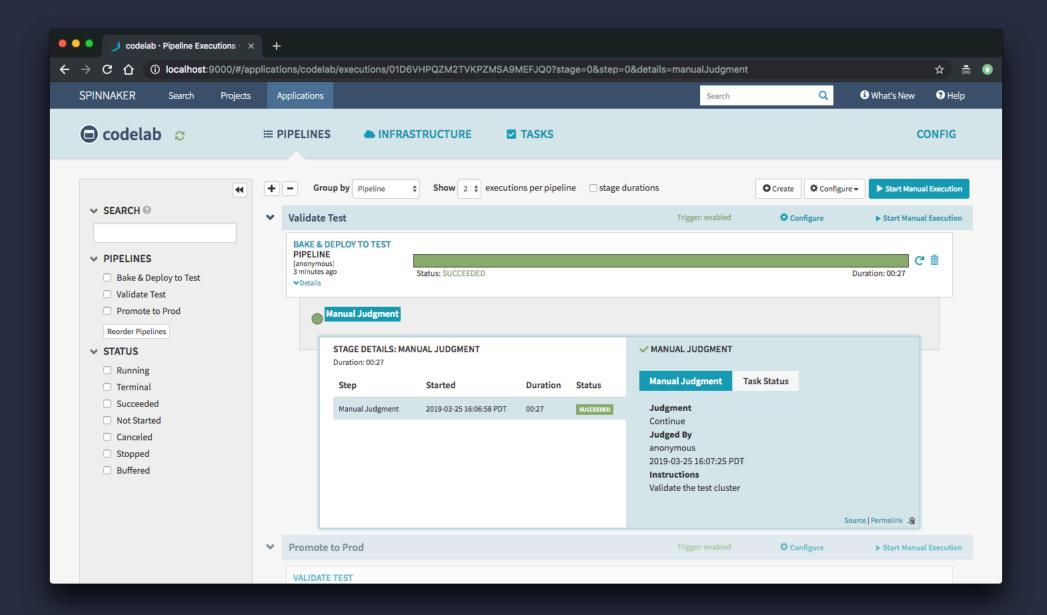


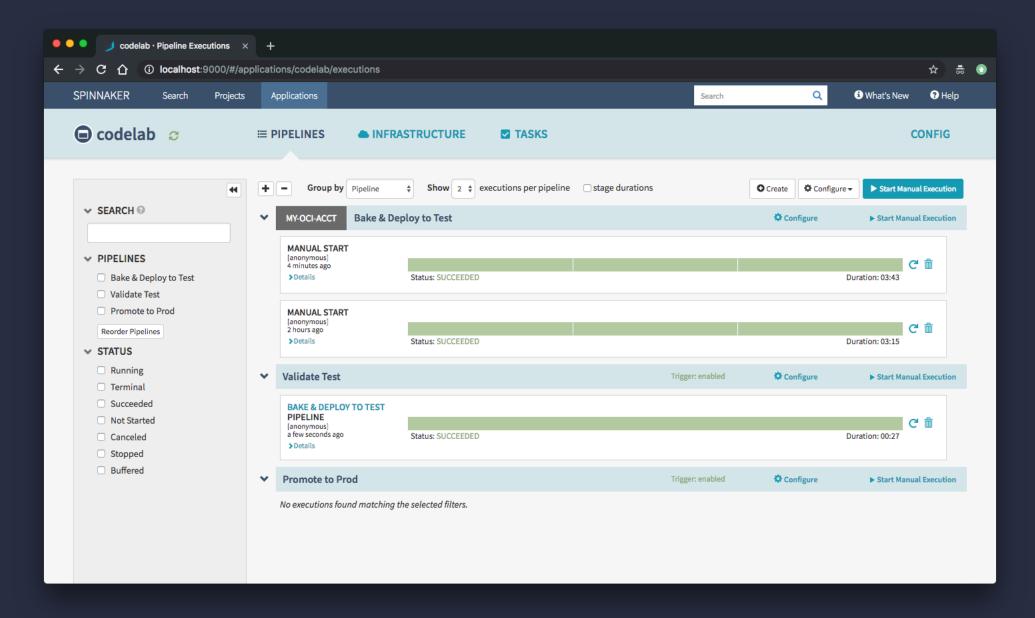


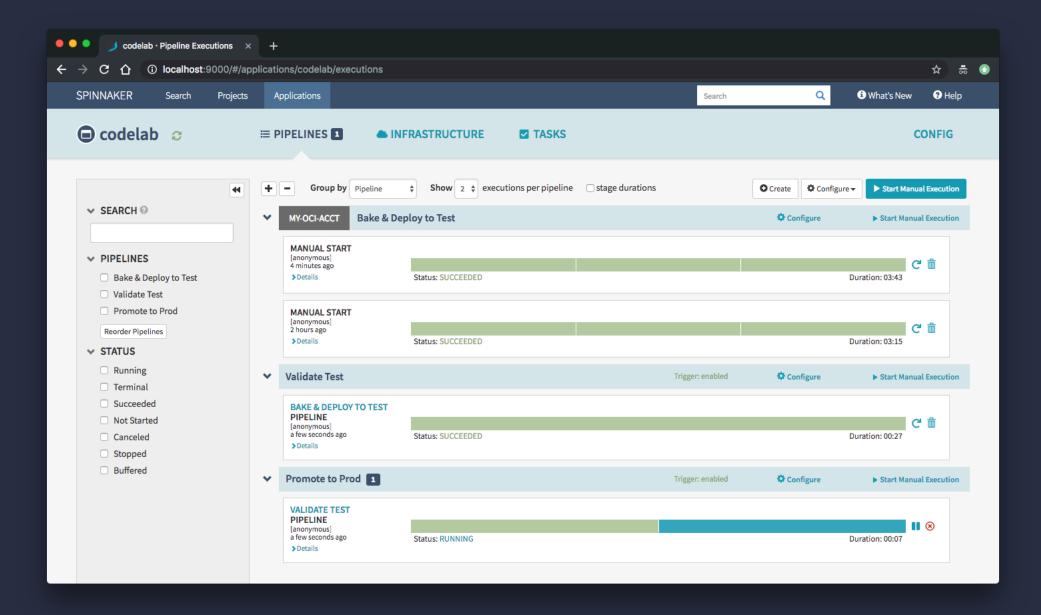


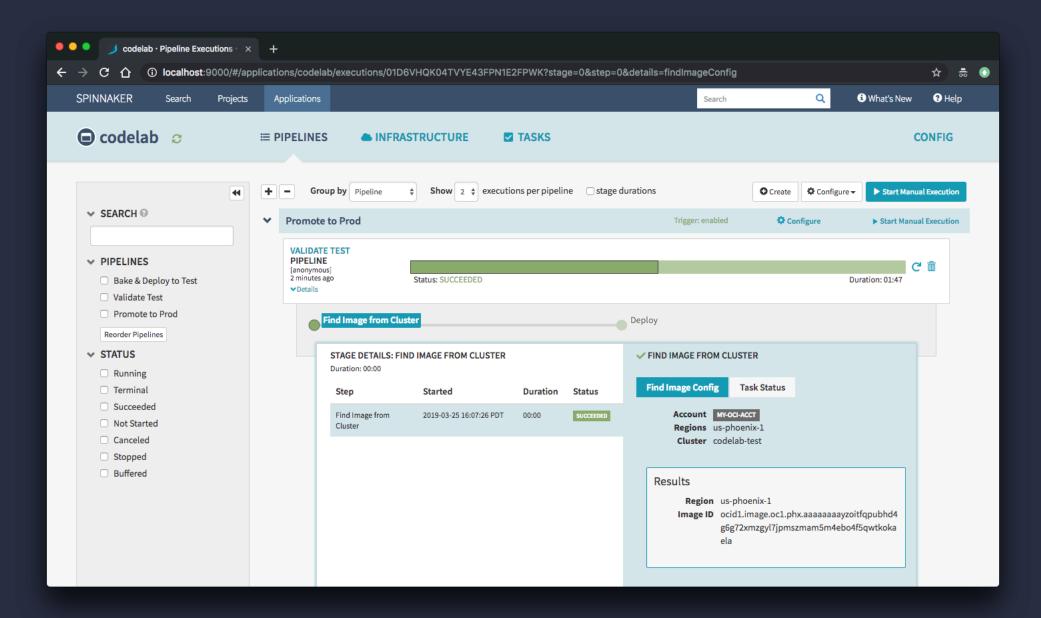


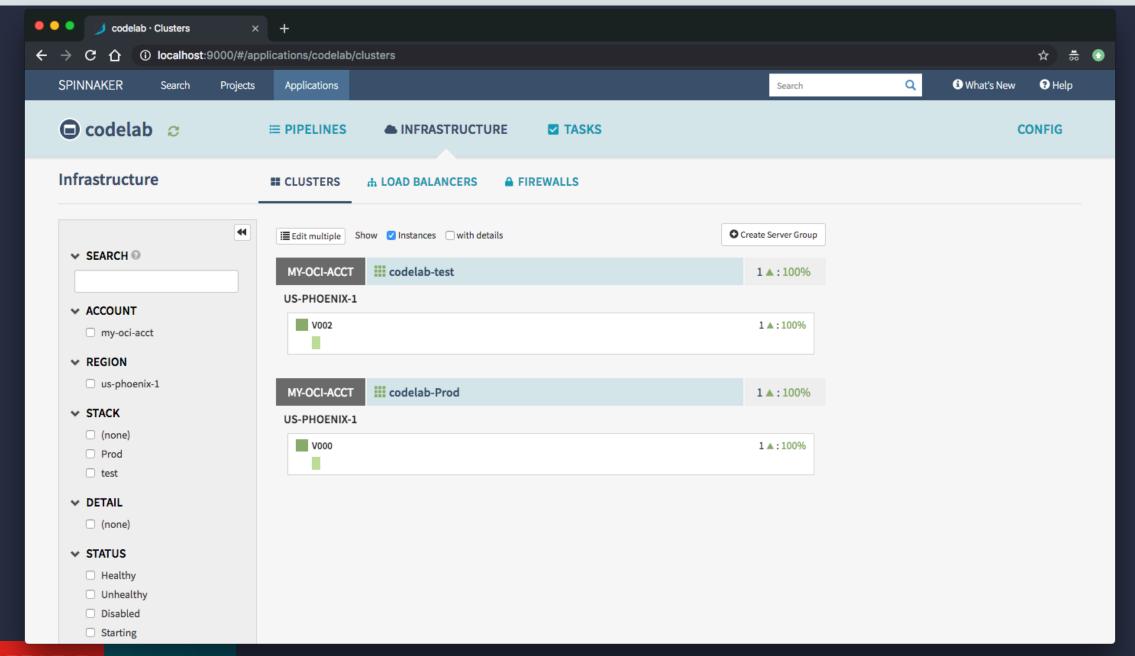


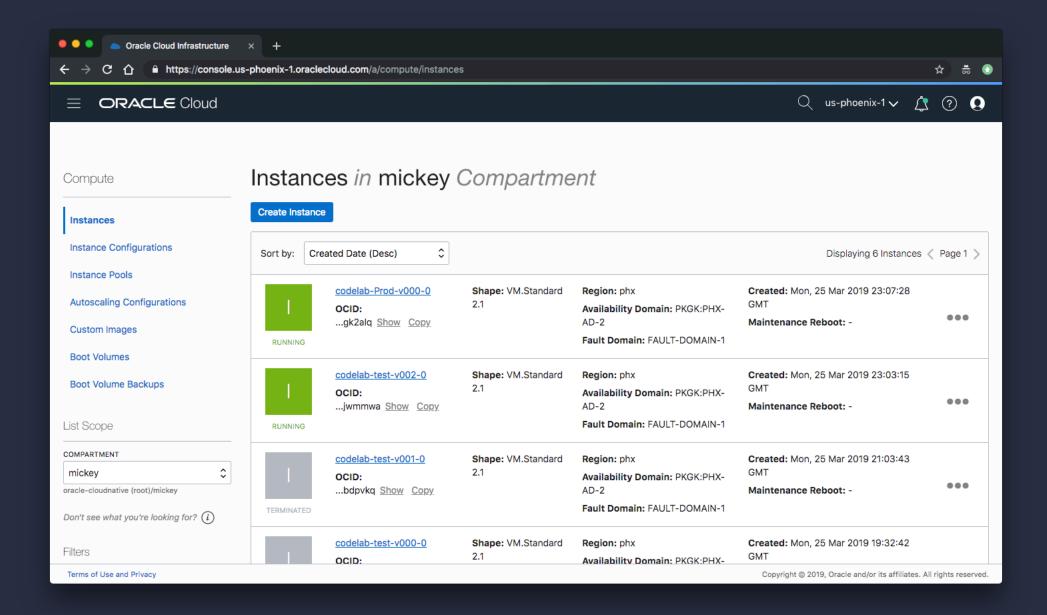




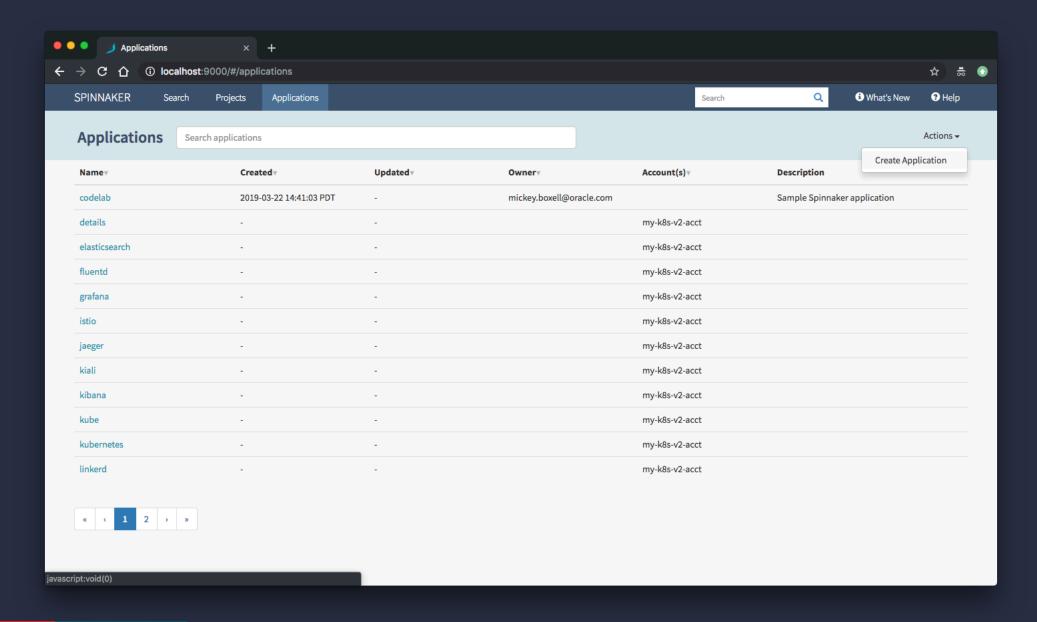


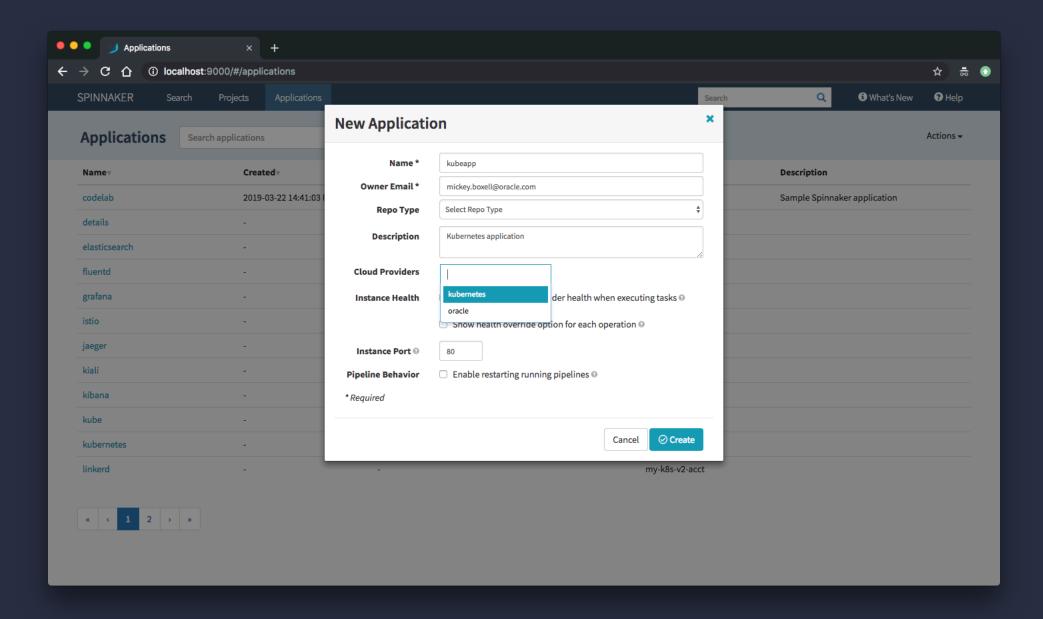














Registry

List Scope

COMPARTMENT

kube-1

oracle-cloudnative (root)/kube-1

Clusters Requirements:

NOTE: In order to use all features of this service, you must have the following minimum required privileges:

- List, Get, and Create VCNs
- · List, Get, and Create Subnets
- · List Availability Domains
- · Create Internet Gateways
- Create NAT Gateways
- Update Route Tables
- · Create Security Lists

Your tenancy must also have the following required policy statement defined in the root compartment of your tenancy here by a user with administrative privileges:

allow service OKE to manage all-resources in tenancy

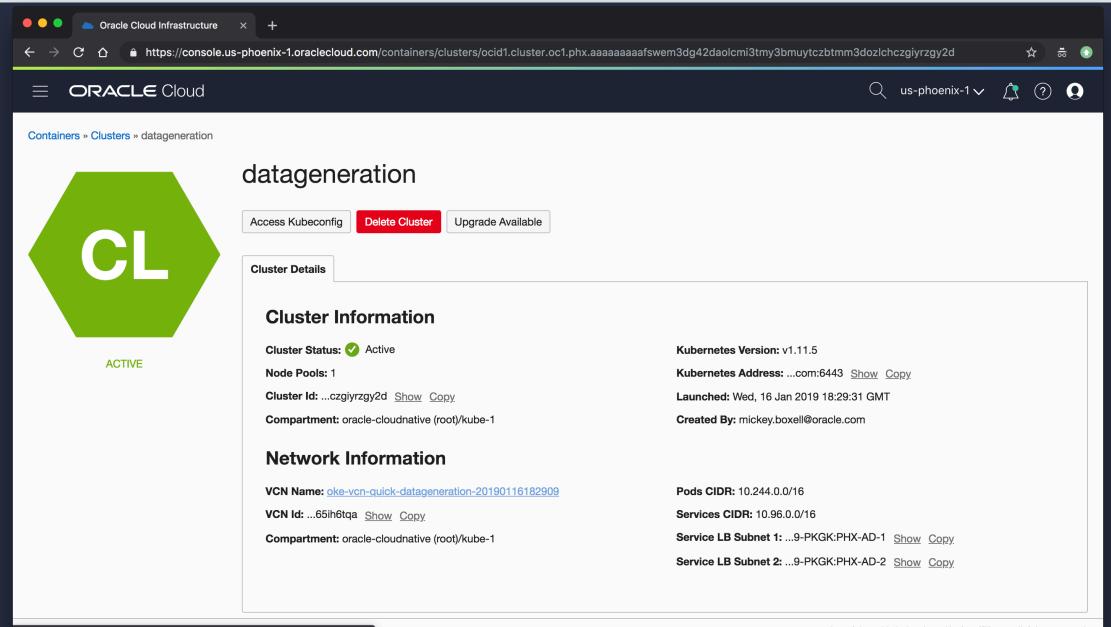
Without the above privileges and policies, various errors will be presented and the cluster service will not function correctly.

Learn more here



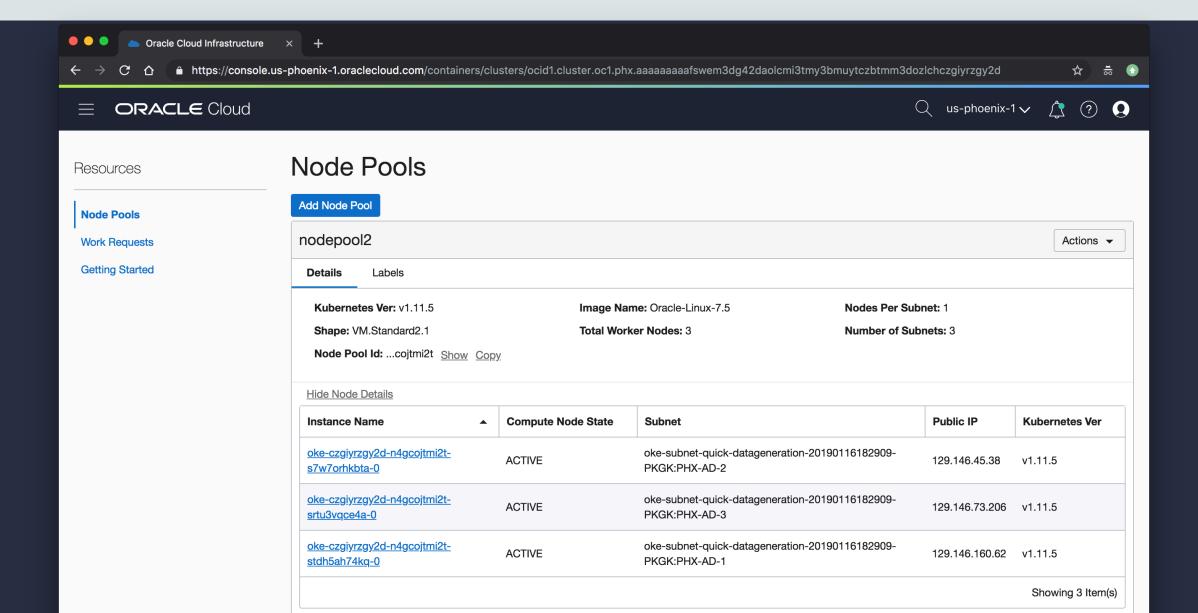
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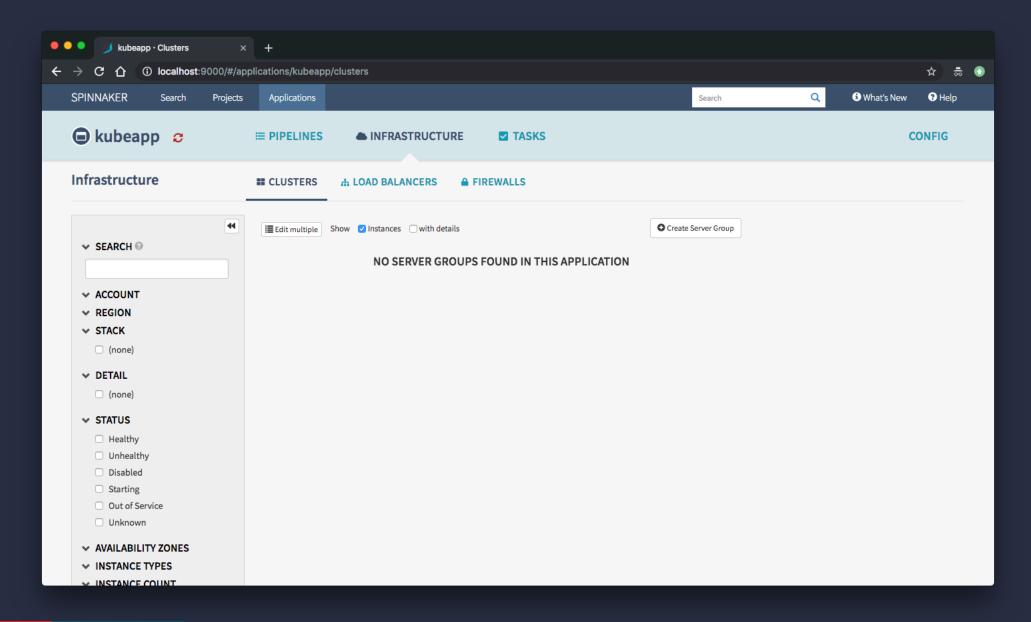
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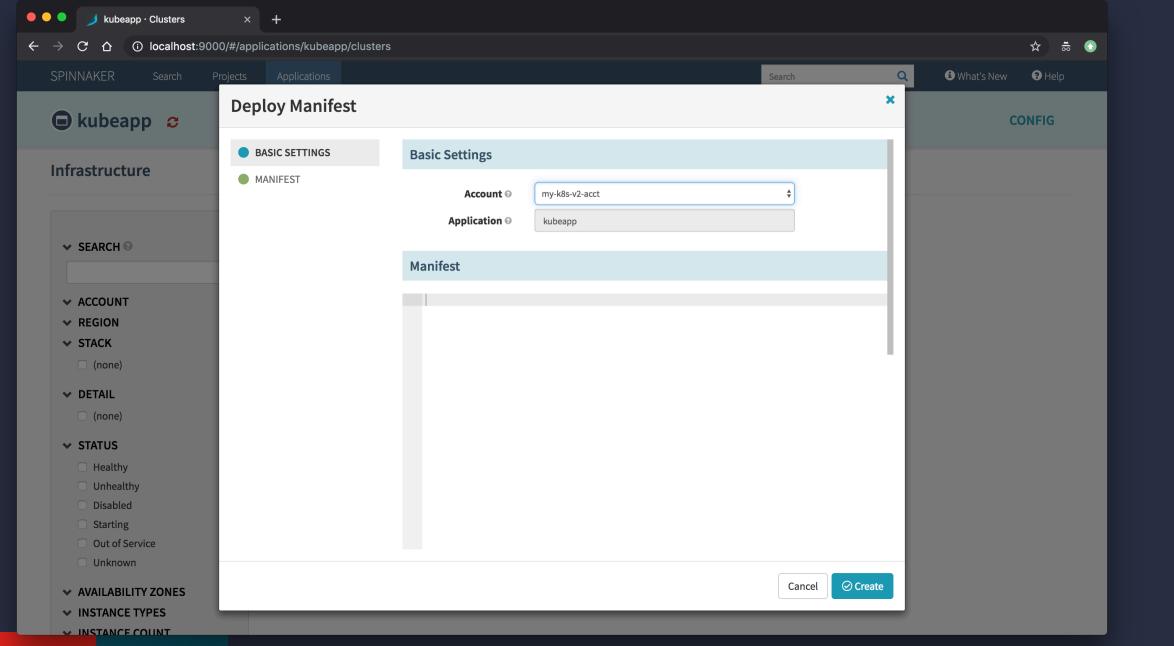
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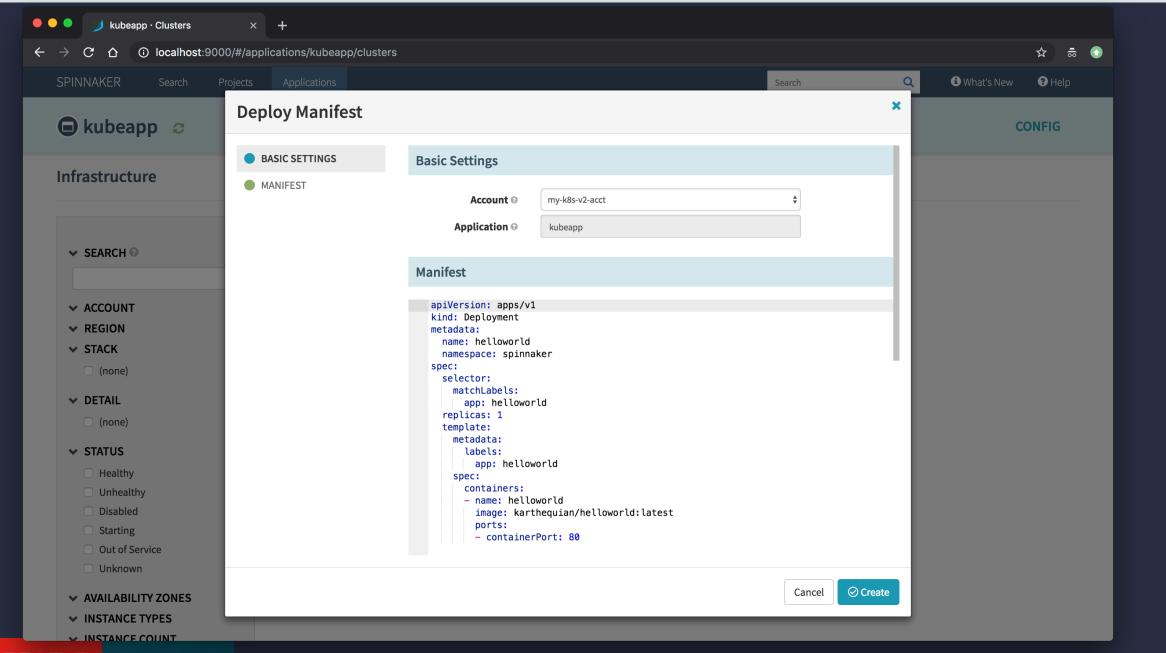


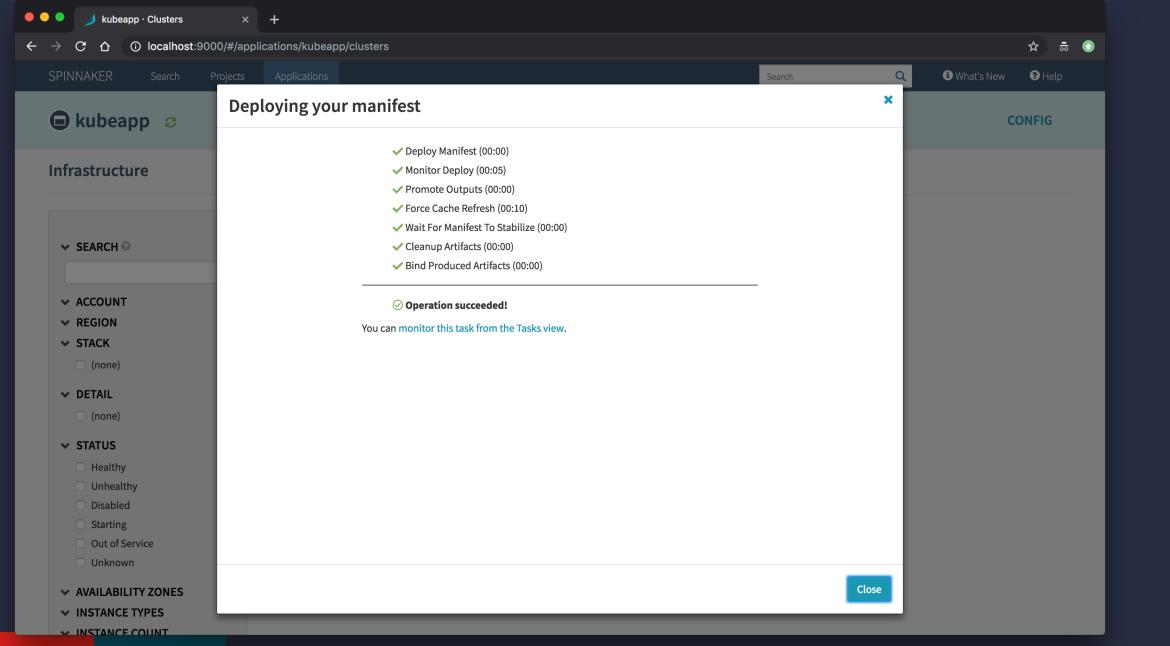
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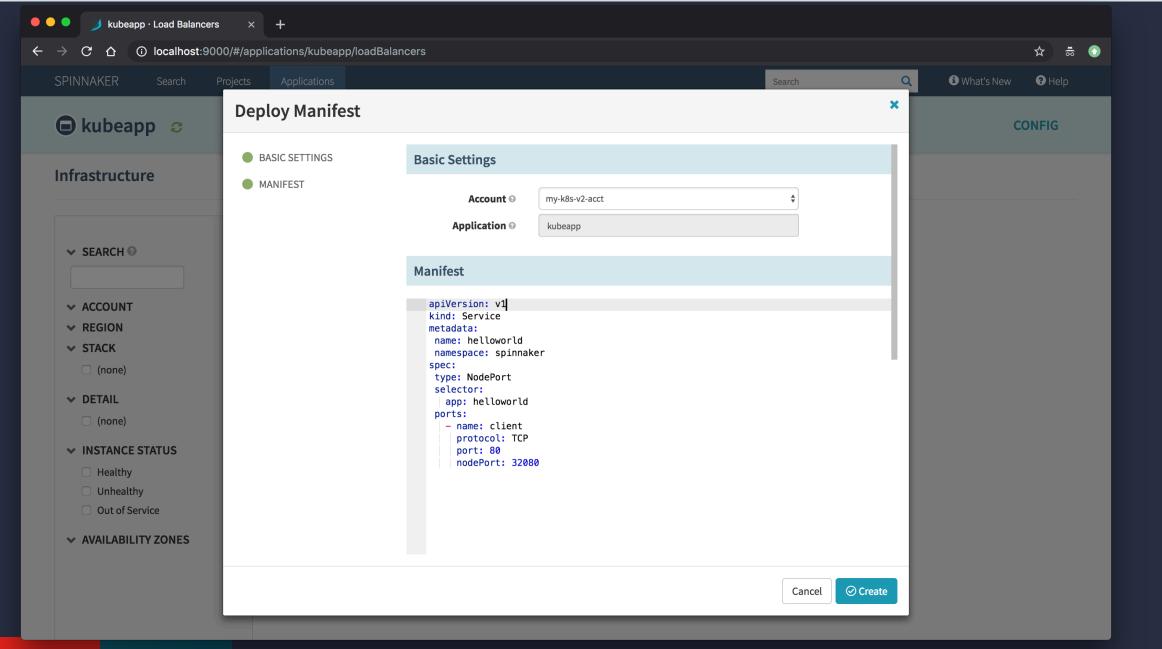


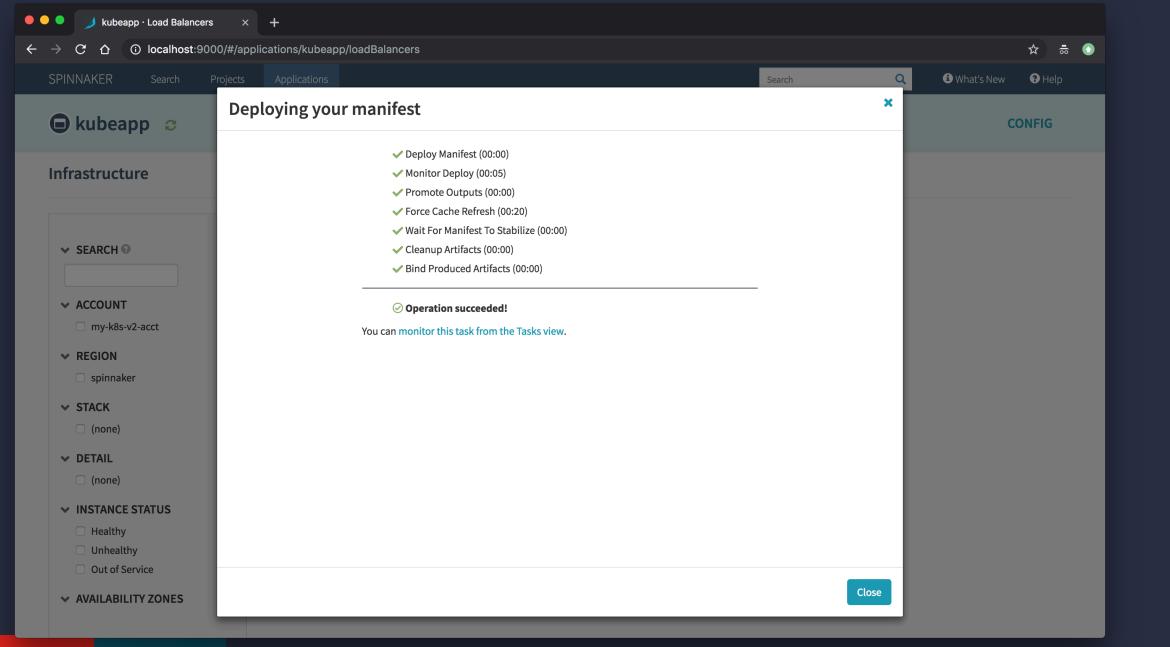




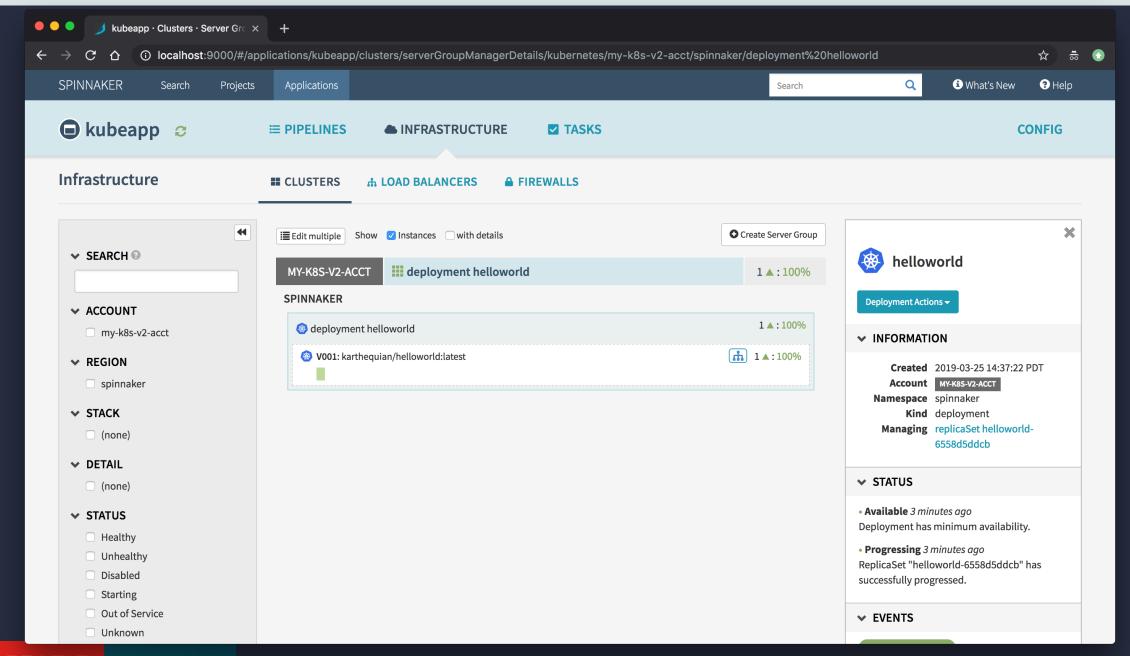


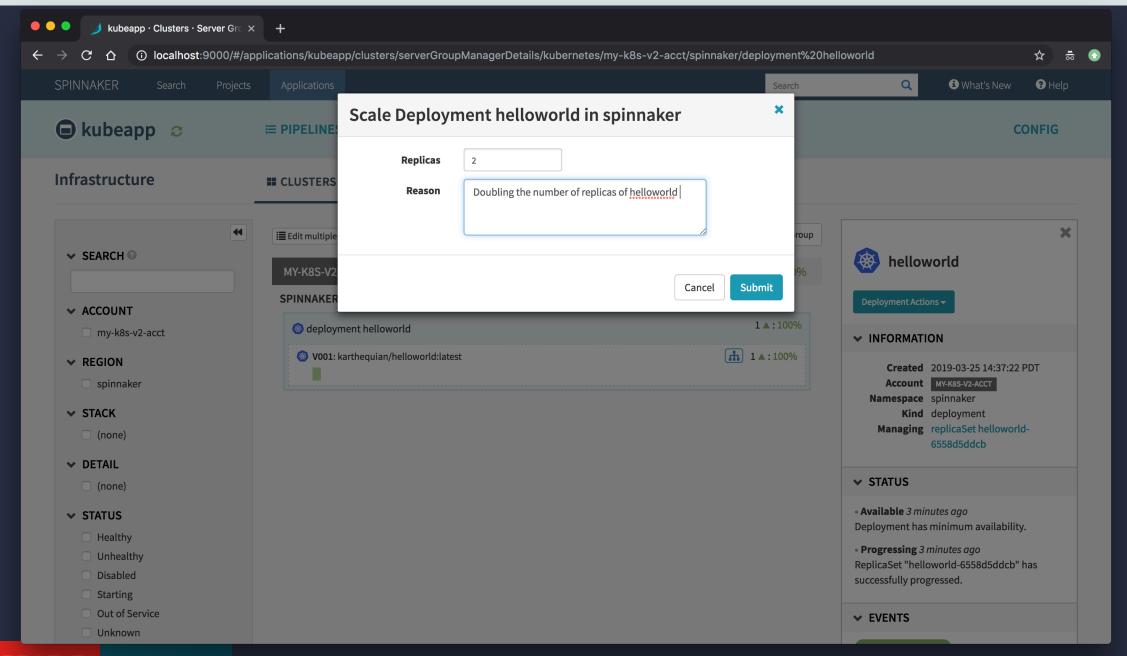
```
4. ubuntu@spinnaker: /opt/rosco/config/packer (bash)
(* |context-czgiyrzgy2d:spinnaker)mboxell-mac:~ mboxell$ kubectl get pods
NAME
                                     READY
                                               STATUS
                                                            RESTARTS
                                                                         AGE
helloworld-6558d5ddcb-qwv76 1/1 Running 0
(* |context-czgiyrzgy2d:spinnaker)mboxell-mac:~ mboxell$
                                                                          1m
```

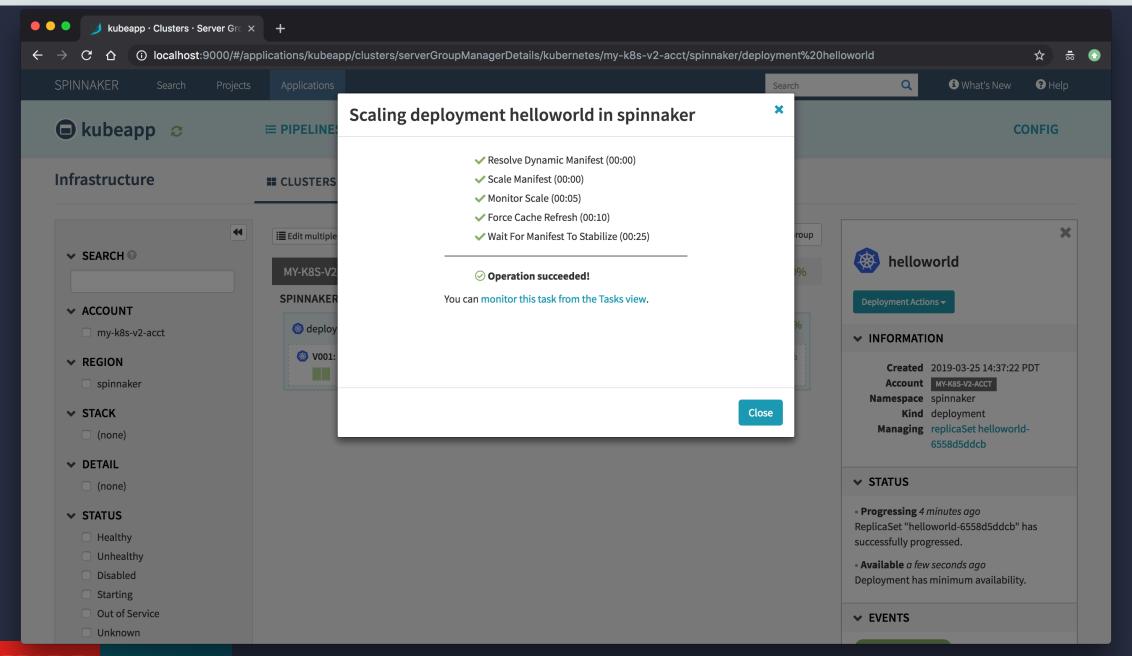




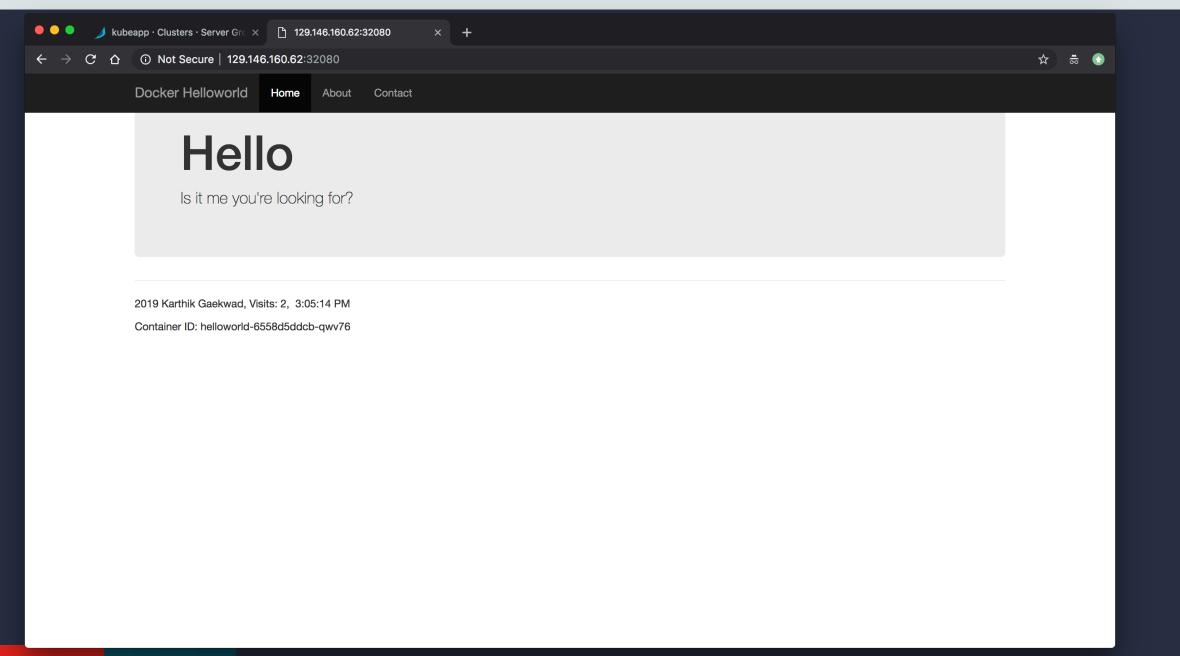
```
4. ubuntu@spinnaker: /opt/rosco/config/packer (bash)
(* |context-czgiyrzgy2d:spinnaker)mboxell-mac:~ mboxell$ kubectl get pods
NAME
                               READY STATUS
                                                  RESTARTS AGE
helloworld-6558d5ddcb-qwv76 1/1
                                        Running
                                                              1m
(* |context-czgiyrzgy2d:spinnaker)mboxell-mac:~ mboxell$ kubectl get services
NAME TYPE CLUSTER-IP EXTERNAL-IP PORT(S) AGE
NAME
helloworld NodePort 10.96.15.33 <none> 80:32080/TCP
                                                                       32s
(* |context-czgiyrzgy2d:spinnaker)mboxell-mac:~ mboxell$ ■
```







```
4. ubuntu@spinnaker: /opt/rosco/config/packer (bash)
(* |context-czgiyrzgv2d:spinnaker)mboxell-mac:~ mboxell$ kubectl get pods
NAME
                            READY
                                             RESTARTS
                                    STATUS
                                                        AGE
helloworld-6558d5ddcb-qwv76
                          1/1
                                    Running
                                                        1m
(* |context-czgiyrzgy2d:spinnaker)mboxell-mac:~ mboxell$ kubectl get services
          TYPE
                                    EXTERNAL-IP
                                                 PORT(S)
                                                                AGE
                    CLUSTER-IP
NAME
helloworld NodePort 10.96.15.33 <none>
                                                 80:32080/TCP
                                                                32s
(* |context-czgiyrzgy2d:spinnaker)mboxell-mac:~ mboxell$ kubectl get pods
NAME
                            READY
                                    STATUS
                                             RESTARTS
                                                        AGE
helloworld-6558d5ddcb-qwv76 1/1
                                    Running
                                                        4m
helloworld-6558d5ddcb-w5hfn 1/1
                                    Running
                                                        52s
(* |context-czgiyrzgy2d:spinnaker)mboxell-mac:~ mboxell$
```



Key Takeaways



Spinnaker can be deployed onto Oracle Cloud in two ways:

- 1. Local installation using the Oracle Provider
- 2. Distributed installation using the Kubernetes Provider

Thank you!



And special thanks to Armory for hosting this webinar!

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