

### ↘ [Requisitos previos:](#)

→ [Instalación de docker-ce :](#)

[https://github.com/NaturalHistoryMuseum/scratchpads2/wiki/Install-Docker-and-Docker-Compose-\(Centos-7\)](https://github.com/NaturalHistoryMuseum/scratchpads2/wiki/Install-Docker-and-Docker-Compose-(Centos-7))

### ↘ [Configurar 'insecure-registries', firewall y enrutamiento.](#)

```
[labs@hp ~]$ sudo tee /etc/docker/daemon.json<<EOF
```

```
{  
  "insecure-registries": [  
    "172.30.0.0/16"  
  ]  
}
```

```
[labs@hp ~]$ sudo tee /etc/containers/registries.conf<<EOF
```

```
[registries.insecure]  
registries = ['172.30.0.0/16']  
EOF
```

```
[labs@hp ~]$ sudo systemctl daemon-reload
```

```
[labs@hp ~]$ sudo systemctl restart docker
```

```
[labs@hp ~]$ echo "net.ipv4.ip_forward = 1" | sudo tee -a /etc/sysctl.conf
```

```
[labs@hp ~]$ sudo sysctl -p
```

```
[labs@hp ~]$ DOCKER_BRIDGE=`docker network inspect -f "{{range .IPAM.Config }}  
{{ .Subnet }}{{end}}" bridge`
```

```
[labs@hp ~]$ echo $DOCKER_BRIDGE  
172.17.0.0/16
```

```
[labs@hp ~]$ sudo firewall-cmd --permanent --new-zone dockerc
```

```
[labs@hp ~]$ sudo firewall-cmd --permanent --zone dockerc --add-source
```

```
$DOCKER_BRIDGE
```

```
[labs@hp ~]$ sudo firewall-cmd --permanent --zone dockerc --add-port={80,443,8443}/tcp
```

```
[labs@hp ~]$ sudo firewall-cmd --permanent --zone dockerc --add-port={53,8053}/udp
```

```
[labs@hp ~]$ sudo firewall-cmd --reload
```

```
[labs@hp ~]$ sudo firewall-cmd --list-all --zone=dockerc
```

```
dockerc (active)
```

```
target: default
```

```
icmp-block-inversion: no
```

```
interfaces:
```

```
sources: 172.17.0.0/16
```

```
services:
```

```
ports: 80/tcp 443/tcp 8443/tcp 53/udp 8053/udp
```

```
protocols:
```

masquerade: no  
forward-ports:  
source-ports:  
icmp-blocks:  
rich rules:

↘ [Instalar requerimientos software para 'OpenShift 3,9', y 'oc'.](#)

```
[labs@hp ~]$ sudo yum install centos-release-openshift-origin39.noarch -y  
[labs@hp ~]$ sudo yum install origin-clients.x86_64 -y  
[labs@hp ~]$ sudo yum install bash-completion -y  
[labs@hp ~]$ oc completion bash >> /etc/bash_completion.d/oc_completion
```

↘ ['UP' Cluster → 'openshift v3.9'.](#)

```
[labs@hp ~]$ oc cluster up --version=v3.9.0  
Pulling image openshift/origin:v3.9.0  
Pulled 1/4 layers, 26% complete  
Pulled 1/4 layers, 31% complete  
Pulled 1/4 layers, 33% complete  
Pulled 1/4 layers, 38% complete  
Pulled 1/4 layers, 44% complete  
Pulled 1/4 layers, 51% complete  
Pulled 1/4 layers, 58% complete  
Pulled 1/4 layers, 63% complete  
Pulled 1/4 layers, 68% complete  
Pulled 1/4 layers, 73% complete  
Pulled 1/4 layers, 77% complete  
Pulled 1/4 layers, 81% complete  
Pulled 2/4 layers, 84% complete  
Pulled 3/4 layers, 90% complete  
Pulled 3/4 layers, 93% complete  
Pulled 3/4 layers, 96% complete  
Pulled 3/4 layers, 99% complete  
Pulled 4/4 layers, 100% complete  
Extracting  
Image pull complete  
WARNING: Binding DNS on port 8053 instead of 53, which may not be resolvable from all clients.  
Using nsenter mounter for OpenShift volumes  
Using 127.0.0.1 as the server IP  
Starting OpenShift using openshift/origin:v3.9.0 ...  
OpenShift server started.
```

The server is accessible via web console at:

<https://127.0.0.1:8443>

You are logged in as:

**User:** developer

Password: <any value>

To login as administrator:

```
oc login -u system:admin
```

↘ [loguear el cluster → 'system:admin' → 'developer:any', y con visibilidad web.](#)

```
[labs@hp ~]$ oc login -u system:admin
```

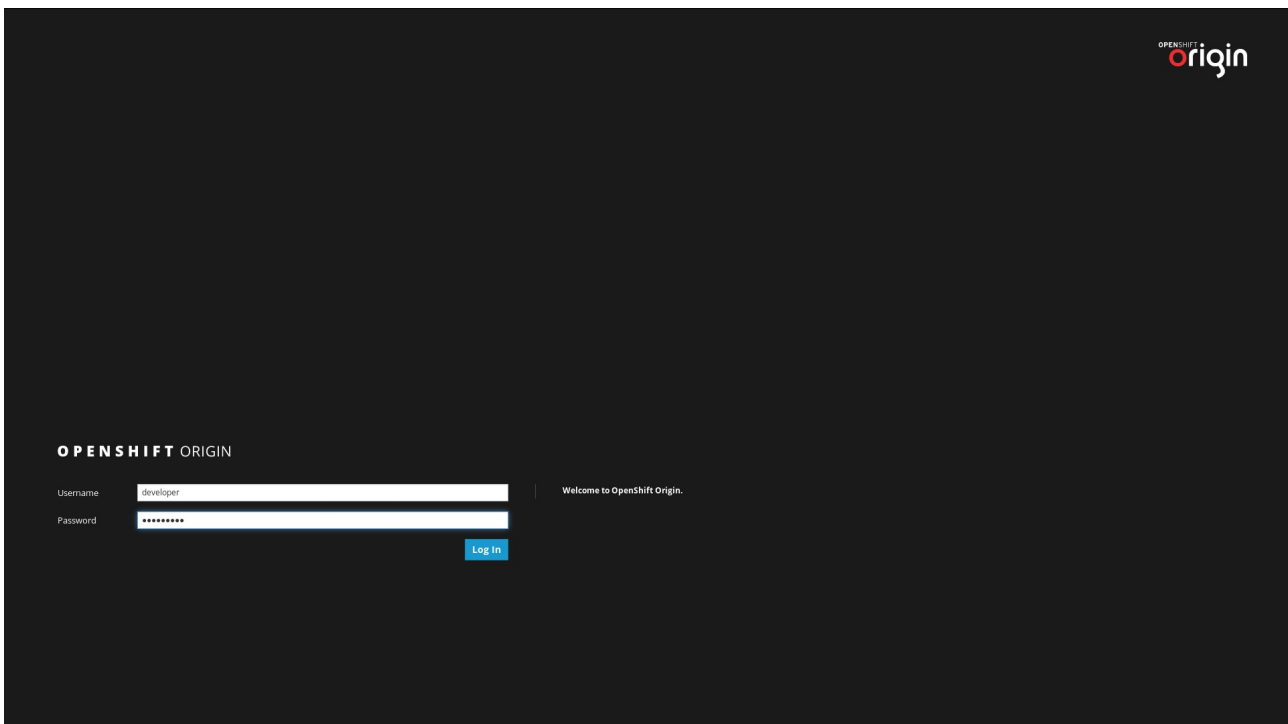
Logged into "https://127.0.0.1:8443" as "system:admin" using existing credentials.

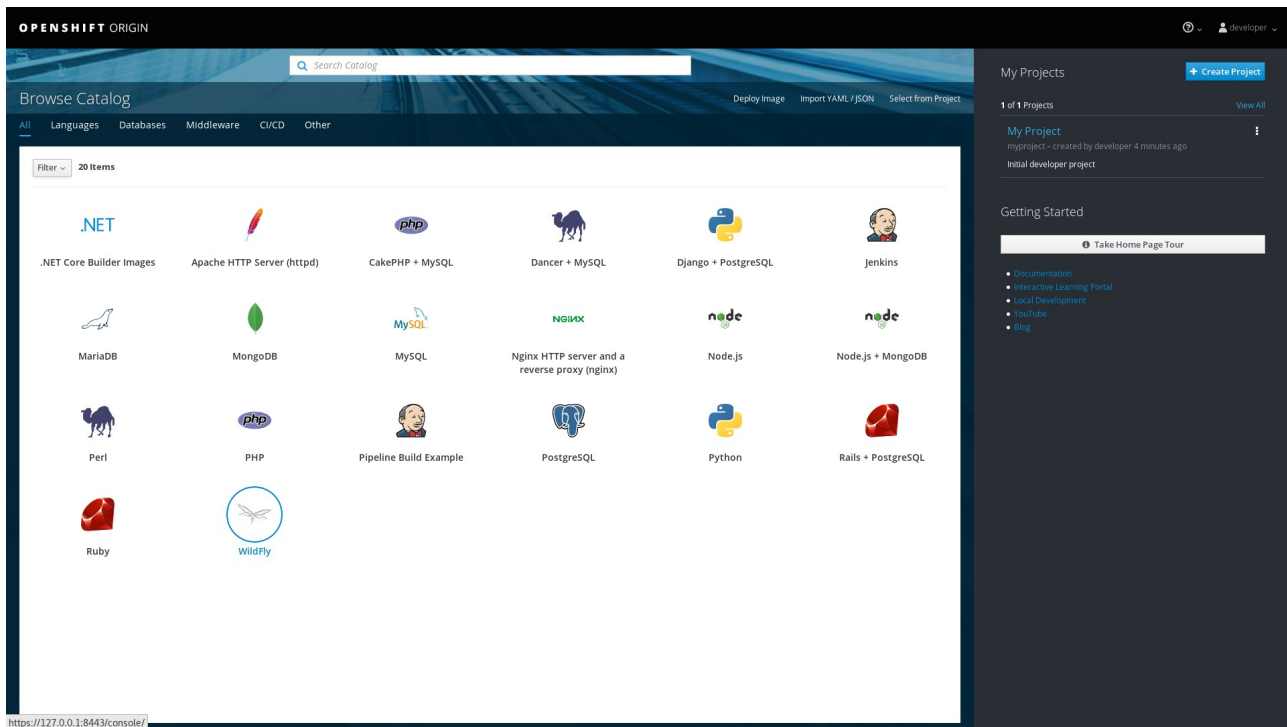
You have access to the following projects and can switch between them with 'oc project <projectname>':

```
default
kube-public
kube-system
* myproject
openshift
openshift-infra
openshift-node
openshift-web-console
```

Using project "myproject".

<https://127.0.0.1:8443>





### ↘ Containers 'k8's', y 'pods' en Ejecución.

```
[labs@hp ~]$ docker ps
CONTAINER ID   IMAGE                                COMMAND                                CREATED
STATUS        PORTS          NAMES
1dee9aaf1504  openshift/origin-haproxy-router    "/usr/bin/openshift-..."  9 minutes ago   Up
9 minutes     k8s_router_router-1-kfjjk_default_339a3e6b-9a3e-11e9-a17d-98e7f45add2a_0
6a7081a99781  openshift/origin-docker-registry   "/bin/sh -c '/usr/bi..."  10 minutes ago   Up
10 minutes    k8s_registry_docker-registry-1-n748f_default_325f38ab-9a3e-11e9-a17d-98e7f45add2a_0
fcfeac82e298  openshift/origin-web-console       "/usr/bin/origin-web..."  10 minutes ago   Up
10 minutes    k8s_webconsole_webconsole-7dfbfd44d-qtt6s_openshift-web-console_20c922a2-9a3e-11e9-a17d-98e7f45add2a_0
060684ace21d  openshift/origin-pod:v3.9.0        "/usr/bin/pod"              11 minutes ago   Up 11
minutes      k8s_POD_router-1-kfjjk_default_339a3e6b-9a3e-11e9-a17d-98e7f45add2a_0
078792f4562a  openshift/origin-pod:v3.9.0        "/usr/bin/pod"              11 minutes ago   Up 11
minutes      k8s_POD_docker-registry-1-n748f_default_325f38ab-9a3e-11e9-a17d-98e7f45add2a_0
bc3b58c69d2a  openshift/origin-pod:v3.9.0        "/usr/bin/pod"              11 minutes ago   Up 11
minutes      k8s_POD_webconsole-7dfbfd44d-qtt6s_openshift-web-console_20c922a2-9a3e-11e9-a17d-98e7f45add2a_0
50fad8a9319b  openshift/origin:v3.9.0            "/usr/bin/openshift ..."  12 minutes ago   Up 12
minutes      origin
```

↘ Imágenes disponibles, y descripciones.

```
[labs@hp ~]$ docker images
```

REPOSITORY	TAG	IMAGE ID	CREATED	SIZE
...				
openshift/origin-web-console	v3.9.0	aa12a2fc57f7	12 months ago	495MB
openshift/origin-docker-registry	v3.9.0	8e6f7a854d66	12 months ago	465MB
openshift/origin-haproxy-router	v3.9.0	448cc9658480	12 months ago	1.28GB
openshift/origin-deployer	v3.9.0	39ee47797d2e	12 months ago	1.26GB
openshift/origin	v3.9.0	4ba9c8c8f42a	12 months ago	1.26GB
openshift/origin-pod	v3.9.0	6e08365fbba9	12 months ago	223MB

```
[labs@hp ~]$ oc cluster status
```

Web console URL: <https://127.0.0.1:8443/console/>

Config is at host directory /var/lib/origin/openshift.local.config

Volumes are at host directory /var/lib/origin/openshift.local.volumes

Persistent volumes are at host directory /var/lib/origin/openshift.local.pv

Data will be discarded when cluster is destroyed

```
[labs@hp ~]$ oc get nodes
```

NAME	STATUS	ROLES	AGE	VERSION
localhost	Ready	<none>	19m	v1.9.1+a0ce1bc657

```
[labs@hp ~]$ oc describe node localhost
```

```
Name:          localhost
Roles:         <none>
Labels:        beta.kubernetes.io/arch=amd64
               beta.kubernetes.io/os=linux
               kubernetes.io/hostname=localhost
Annotations:   volumes.kubernetes.io/controller-managed-attach-detach=true
Taints:        <none>
CreationTimestamp: Sat, 29 Jun 2019 09:18:19 +0200
Conditions:
  Type          Status LastHeartbeatTime          LastTransitionTime          Reason
  ----          -
  OutOfDisk     False  Sat, 29 Jun 2019 09:43:56 +0200  Sat, 29 Jun 2019 09:18:19 +0200
  KubeletHasSufficientDisk  kubelet has sufficient disk space available
  MemoryPressure False  Sat, 29 Jun 2019 09:43:56 +0200  Sat, 29 Jun 2019 09:18:19 +0200
  KubeletHasSufficientMemory kubelet has sufficient memory available
  DiskPressure  False  Sat, 29 Jun 2019 09:43:56 +0200  Sat, 29 Jun 2019 09:18:19 +0200
  KubeletHasNoDiskPressure  kubelet has no disk pressure
  Ready         True   Sat, 29 Jun 2019 09:43:56 +0200  Sat, 29 Jun 2019 09:18:29 +0200
  KubeletReady  kubelet is posting ready status
Addresses:
  InternalIP: 192.168.100.250
  Hostname:   localhost
```

## Capacity:

cpu: 8  
memory: 12024840Ki  
pods: 80

## Allocatable:

cpu: 8  
memory: 11922440Ki  
pods: 80

## System Info:

Machine ID: 1f841164098446aeb429af8c25492829  
System UUID: 36444335-3734-3935-3944-98E7F45ADD2A  
Boot ID: afb4cab4-0abb-4f1d-ab84-269147a40149  
Kernel Version: 3.10.0-957.21.3.el7.x86\_64  
OS Image: CentOS Linux 7 (Core)  
Operating System: linux  
Architecture: amd64  
Container Runtime Version: docker://18.9.7  
Kubelet Version: v1.9.1+a0ce1bc657  
Kube-Proxy Version: v1.9.1+a0ce1bc657

ExternalID: localhost

Non-terminated Pods: (3 in total)

Namespace	Name	CPU Requests	CPU Limits	Memory Requests
-----------	------	--------------	------------	-----------------

## Memory Limits

default	docker-registry-1-n748f	100m (1%)	0 (0%)	256Mi (2%)	0 (0%)
default	router-1-kfjjk	100m (1%)	0 (0%)	256Mi (2%)	0 (0%)
openshift-web-console	webconsole-7dfbfd44d-qtt6s	100m (1%)	0 (0%)	100Mi (0%)	0 (0%)

## Allocated resources:

(Total limits may be over 100 percent, i.e., overcommitted.)

CPU Requests	CPU Limits	Memory Requests	Memory Limits
--------------	------------	-----------------	---------------

300m (3%)	0 (0%)	612Mi (5%)	0 (0%)
-----------	--------	------------	--------

## Events:

Type	Reason	Age	From	Message
Normal	Starting	25m	kubelet, localhost	Starting kubelet.
Normal	NodeHasSufficientDisk	25m (x2 over 25m)	kubelet, localhost	Node localhost status is now: NodeHasSufficientDisk
Normal	NodeHasSufficientMemory	25m (x2 over 25m)	kubelet, localhost	Node localhost status is now: NodeHasSufficientMemory
Normal	NodeHasNoDiskPressure	25m (x2 over 25m)	kubelet, localhost	Node localhost status is now: NodeHasNoDiskPressure
Normal	NodeAllocatableEnforced	25m	kubelet, localhost	Updated Node Allocatable limit across pods
Normal	NodeReady	25m	kubelet, localhost	Node localhost status is now: NodeReady

```
[labs@hp ~]$ oc login
Authentication required for https://127.0.0.1:8443 (openshift)
Username: developer
Password:
Login successful.
```

You have one project on this server: "myproject"

Using project "myproject".

```
[labs@hp ~]$ oc whoami
developer
```

↘ [Creación de Proyectos: → 'proyecto-01'](#).

```
[labs@hp ~]$ oc new-project proyecto-01 --display-name="Proyecto-01" --
description="Proyecto de Prueba 01"
Now using project "proyecto-01" on server "https://127.0.0.1:8443".
```

You can add applications to this project with the 'new-app' command. For example, try:

```
oc new-app centos/ruby-22-centos7~https://github.com/openshift/ruby-ex.git
```

to build a new example application in Ruby.

↘ [deployment's → 'deployment-example'](#).

```
[labs@hp ~]$ oc tag --source=docker openshift/deployment-example:v2 deployment-
example:latest
Tag deployment-example:latest set to openshift/deployment-example:v2.
```

```
[labs@hp ~]$ oc new-app deployment-example
--> Found image da61bb2 (3 years old) in image stream "proyecto-01/deployment-example" under
tag "latest" for "deployment-example"
```

- \* This image will be deployed in deployment config "deployment-example"
- \* Port 8080/tcp will be load balanced by service "deployment-example"
- \* Other containers can access this service through the hostname "deployment-example"
- \* WARNING: Image "proyecto-01/deployment-example:latest" runs as the 'root' user which may not be permitted by your cluster administrator

```
--> Creating resources ...
deploymentconfig "deployment-example" created
service "deployment-example" created
--> Success
```

Application is not exposed. You can expose services to the outside world by executing one or more of the commands below:

```
'oc expose svc/deployment-example'
```

Run 'oc status' to view your app.

```
[labs@hp ~]$ oc get all
```

```
NAME                                REVISION  DESIRED  CURRENT  TRIGGERED BY
deploymentconfigs/deployment-example 1          1        1        config,image(deployment-example:latest)
```

```
NAME                                DOCKER REPO                                TAGS  UPDATED
imagestreams/deployment-example 172.30.1.1:5000/proyecto-01/deployment-example  latest  2
minutes ago
```

```
NAME                                READY  STATUS  RESTARTS  AGE
po/deployment-example-1-lzwvf 1/1    Running  0          1m
```

```
NAME                                DESIRED  CURRENT  READY  AGE
rc/deployment-example-1 1          1        1        1m
```

```
NAME                                TYPE      CLUSTER-IP  EXTERNAL-IP  PORT(S)  AGE
svc/deployment-example  ClusterIP  172.30.254.149 <none>      8080/TCP  1m
```

```
[labs@hp ~]$ oc get svc
```

```
NAME                                TYPE      CLUSTER-IP  EXTERNAL-IP  PORT(S)  AGE
deployment-example  ClusterIP  172.30.254.149 <none>      8080/TCP  3m
```

```
[labs@hp ~]$ oc describe svc deployment-example
```

```
Name:          deployment-example
Namespace:     proyecto-01
Labels:        app=deployment-example
Annotations:   openshift.io/generated-by=OpenShiftNewApp
Selector:      app=deployment-example,deploymentconfig=deployment-example
Type:          ClusterIP
IP:            172.30.254.149
Port:          8080-tcp 8080/TCP
TargetPort:    8080/TCP
Endpoints:     172.17.0.3:8080
Session Affinity: None
Events:        <none>
```

↘ ['curl-ings' del servicio desplegado.](#)

```
[labs@hp ~]$ curl 172.30.254.149:8080
```

```
<!DOCTYPE html>
<html lang="en">
<head>
  <meta charset="utf-8">
  <title>Deployment Demonstration</title>
  <meta name="viewport" content="width=device-width, initial-scale=1.0">
  <style>
```



```
HTML{height:100%;}
BODY{font-family:Helvetica,Arial;display:flex;display:-webkit-flex;align-items:center;justify-
content:center;-webkit-align-items:center;-webkit-box-align:center;-webkit-justify-
content:center;height:100%;}
.box{background:#b5d4a8;color:white;text-align:center;border-radius:10px;display:inline-
block;}
H1{font-size:10em;line-height:1.5em;margin:0 0.5em;}
H2{margin-top:0;}
</style>
</head>
<body>
<div class="box"><h1>v2</h1><h2></h2></div>
</body>
```

<http://172.30.254.149:8080/>



```
[labs@hp ~]$ oc get pods
```

NAME	READY	STATUS	RESTARTS	AGE
deployment-example-1-lzwwf	1/1	Running	0	9m

```
[labs@hp ~]$ oc edit deploymentconfig
```

```
...
selfLink: /apis/apps.openshift.io/v1/namespaces/proyecto-01/deploymentconfigs/deployment-
example
```

```
uid: a75ab310-9a4c-11e9-a17d-98e7f45add2a
```

```
spec:
```

```
  replicas: 3
```

```
  revisionHistoryLimit: 10
```

```
  selector:
```

```
...
```

```
[labs@hp ~]$ oc get pods
```

NAME	READY	STATUS	RESTARTS	AGE
deployment-example-1-d4rgp	1/1	Running	0	1m
deployment-example-1-dtpr4	1/1	Running	0	1m

deployment-example-1-lzwwf 1/1    Running 0    12m

The screenshot shows the OpenShift Origin interface for a project named 'Proyecto-01'. The 'Pods' section is active, displaying a table with the following data:

Name	Status	Containers Ready	Container Restarts	Age
deployment-example-1-djpr4	Running	1/1	0	19 minutes
deployment-example-1-d4rgp	Running	1/1	0	19 minutes
deployment-example-1-lzwwf	Running	1/1	0	31 minutes

### ↘ Nuevo despliegue de 'app'.

```
[labs@hp ~]$ oc new-app centos/ruby-22-centos7~https://github.com/openshift/ruby-ex.git
```

```
[labs@hp ~]$ oc get all
```

```
NAME                                REFERENCE                                TARGETS    MINPODS
MAXPODS REPLICAS AGE
hpa/deployment-example-1  ReplicationController/deployment-example-1  <unknown> / 80%  1
4      0      20m
```

```
NAME                                REVISION  DESIRED  CURRENT  TRIGGERED BY
deploymentconfigs/deployment-example  2         3        3        config,image(deployment-example:latest)
deploymentconfigs/ruby-ex            0         1        0        config,image(ruby-ex:latest)
```

```
NAME                                TYPE  FROM  LATEST
buildconfigs/ruby-ex  Source  Git  1
```

```
NAME                                TYPE  FROM  STATUS  STARTED  DURATION
builds/ruby-ex-1  Source  Git@c00ecd7  Running  About a minute ago
```

```
NAME                                DOCKER REPO                                TAGS  UPDATED
imagestreams/deployment-example  172.30.1.1:5000/proyecto-01/deployment-example  latest
39 minutes ago
```

imagestreams/ruby-22-centos7 172.30.1.1:5000/proyecto-01/ruby-22-centos7 latest About a minute ago

imagestreams/ruby-ex 172.30.1.1:5000/proyecto-01/ruby-ex

NAME	READY	STATUS	RESTARTS	AGE
po/deployment-example-2-8d9bv	1/1	Running	0	2m
po/deployment-example-2-gxpbp	1/1	Running	0	2m
po/deployment-example-2-tr85c	1/1	Running	0	2m
po/ruby-ex-1-build	1/1	Running	0	1m

NAME	DESIRED	CURRENT	READY	AGE
rc/deployment-example-1	0	0	0	38m
rc/deployment-example-2	3	3	3	2m

NAME	TYPE	CLUSTER-IP	EXTERNAL-IP	PORT(S)	AGE
svc/deployment-example	ClusterIP	172.30.254.149	<none>	8080/TCP	38m
svc/ruby-ex	ClusterIP	172.30.200.85	<none>	8080/TCP	1m

#### ↘ Eliminación del despliegue 'app'.

```
[labs@hp ~]$ oc delete all -l app=deployment-example
deploymentconfig "deployment-example" deleted
pod "deployment-example-2-8d9bv" deleted
pod "deployment-example-2-gxpbp" deleted
pod "deployment-example-2-tr85c" deleted
service "deployment-example" deleted
```

## REFERENCIAS:

<https://computingforgeeks.com/setup-openshift-origin-local-cluster-on-centos/>  
**Learn Openshift – Pack Publishing – Denis Zuev, Aertemii Kropachev (2018)**

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