

Day 2

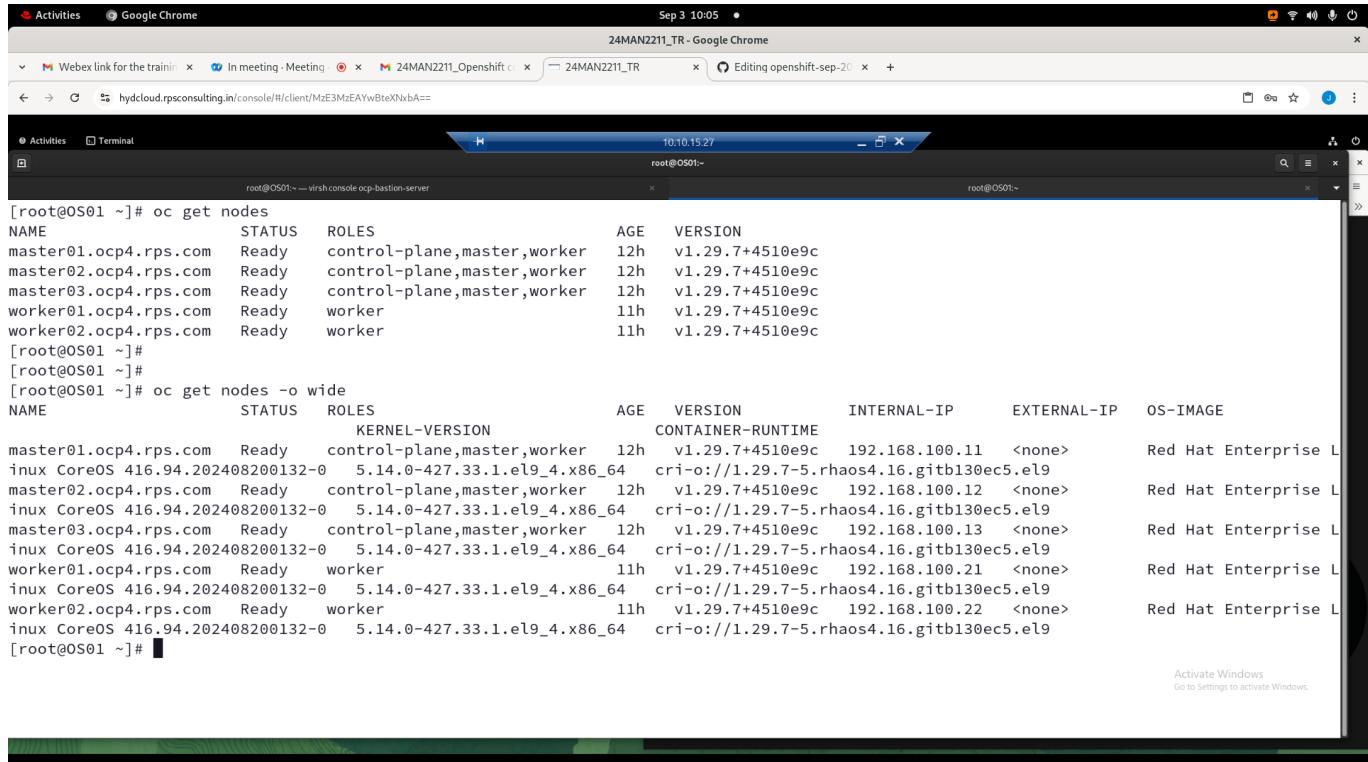
Info - Openshift Control Plane Components (Runs only in master nodes)

- API Server Pod
- etcd database Pod
- controller managers Pod
- scheduler Pod

Lab - List all the openshift nodes (as non-admin user)

```
oc get nodes
oc get nodes -o wide
oc version
kubectl version
```

Expected output



```
[root@OS01 ~]# oc get nodes
NAME      STATUS  ROLES
master01.ocp4.rps.com  Ready  control-plane,master,worker
master02.ocp4.rps.com  Ready  control-plane,master,worker
master03.ocp4.rps.com  Ready  control-plane,master,worker
worker01.ocp4.rps.com  Ready  worker
worker02.ocp4.rps.com  Ready  worker
[root@OS01 ~]#
[root@OS01 ~]#
[root@OS01 ~]# oc get nodes -o wide
NAME      STATUS  ROLES          KERNEL-VERSION   AGE  VERSION  INTERNAL-IP  EXTERNAL-IP  OS-IMAGE
master01.ocp4.rps.com  Ready  control-plane,master,worker  12h  v1.29.7+4510e9c  192.168.100.11  <none>  Red Hat Enterprise L
inx CoreOS 416.94.202408200132-0  5.14.0-427.33.1.el9_4.x86_64  cri-o://1.29.7-5.rhaos4.16.gitb130ec5.el9
master02.ocp4.rps.com  Ready  control-plane,master,worker  12h  v1.29.7+4510e9c  192.168.100.12  <none>  Red Hat Enterprise L
inx CoreOS 416.94.202408200132-0  5.14.0-427.33.1.el9_4.x86_64  cri-o://1.29.7-5.rhaos4.16.gitb130ec5.el9
master03.ocp4.rps.com  Ready  control-plane,master,worker  12h  v1.29.7+4510e9c  192.168.100.13  <none>  Red Hat Enterprise L
inx CoreOS 416.94.202408200132-0  5.14.0-427.33.1.el9_4.x86_64  cri-o://1.29.7-5.rhaos4.16.gitb130ec5.el9
worker01.ocp4.rps.com  Ready  worker          11h  v1.29.7+4510e9c  192.168.100.21  <none>  Red Hat Enterprise L
inx CoreOS 416.94.202408200132-0  5.14.0-427.33.1.el9_4.x86_64  cri-o://1.29.7-5.rhaos4.16.gitb130ec5.el9
worker02.ocp4.rps.com  Ready  worker          11h  v1.29.7+4510e9c  192.168.100.22  <none>  Red Hat Enterprise L
inx CoreOS 416.94.202408200132-0  5.14.0-427.33.1.el9_4.x86_64  cri-o://1.29.7-5.rhaos4.16.gitb130ec5.el9
[root@OS01 ~]#
```

```

Activities Google Chrome Sep 3 10:44
Webex link for the trainin... In meeting - Meeting 24MAN2211_OpenShift... 24MAN2211_TR - Google Chrome
hydcloud.rpsconsulting.in/console/#/client/MzE3MzEAYwBteXNxbA== openshift-sep-2024/Day + Activities Terminal 10.10.15.35 root@OS02-
root@OS02:~# oc get nodes
NAME STATUS ROLES AGE VERSION
master01.ocp4.rps.com Ready control-plane,master 167m v1.29.7+4510e9c
master02.ocp4.rps.com Ready control-plane,master 167m v1.29.7+4510e9c
master03.ocp4.rps.com Ready control-plane,master 167m v1.29.7+4510e9c
worker01.ocp4.rps.com Ready worker 152m v1.29.7+4510e9c
worker02.ocp4.rps.com Ready worker 152m v1.29.7+4510e9c
[root@OS02 ~]# oc edit schedulers.config.openshift.io cluster
scheduler.config.openshift.io/cluster edited
[root@OS02 ~]# oc get nodes
NAME STATUS ROLES AGE VERSION
master01.ocp4.rps.com Ready control-plane,master,worker 168m v1.29.7+4510e9c
master02.ocp4.rps.com Ready control-plane,master,worker 168m v1.29.7+4510e9c
master03.ocp4.rps.com Ready control-plane,master,worker 168m v1.29.7+4510e9c
worker01.ocp4.rps.com Ready worker 152m v1.29.7+4510e9c
worker02.ocp4.rps.com Ready worker 152m v1.29.7+4510e9c
[root@OS02 ~]# oc version
Client Version: 4.16.9
Kustomize Version: v5.0.4-0.20230601165947-6ce0bf390ce3
Server Version: 4.16.9
Kubernetes Version: v1.29.7+4510e9c
[root@OS02 ~]# kubectl version
Client Version: v1.29.7
Kustomize Version: v5.0.4-0.20230601165947-6ce0bf390ce3
Server Version: v1.29.7+4510e9c
[root@OS02 ~]#

```

Info - Troubleshooting web console

In case, you are able to list the nodes in the openshift cluster but the web console is not accessible.

```

oc -n openshift-console get service
oc -n openshift-console get pods

oc -n openshift-ingress get pod -o json |
  jq -r '.items[].metadata.name' |
  xargs oc -n openshift-ingress delete pod

oc -n openshift-console get pods -o wide -w
oc -n openshift-console get service
oc get route --all-namespaces | grep console
oc describe console -n openshift-console

```

Expected output

```

[jegan@tektutor.org ~]$ oc -n openshift-console get service
NAME      TYPE      CLUSTER-IP      EXTERNAL-IP      PORT(S)      AGE
console   ClusterIP  172.30.93.1   443/TCP       19h
downloads ClusterIP  172.30.113.169  80/TCP       19h

[jegan@tektutor.org ~]$ oc -n openshift-console get pods
NAME                  READY   STATUS    RESTARTS   AGE
console-7644f4994f-449vg 1/1    Running   0          19h
console-7644f4994f-gm8qk 1/1    Running   0          19h
downloads-86d9bcf76d-9tmjm 1/1    Running   0          19h
downloads-86d9bcf76d-xzkm2 1/1    Running   0          19h

```

```
[jegan@tektutor.org ~]$ oc -n openshift-ingress get pod -o json |
  jq -r '.items[].metadata.name' |
  xargs oc -n openshift-ingress delete pod

pod "router-default-6fbc577945-lrcj5" deleted
pod "router-default-6fbc577945-rhzv8" deleted
pod "router-default-6fbc577945-zfgwp" deleted

[jegan@tektutor.org ~]$ oc -n openshift-console get pods
NAME READY STATUS RESTARTS AGE
console-7644f4994f-449vg 0/1 ContainerCreating 1 19h
console-7644f4994f-gm8qk 0/1 ContainerCreating 1 19h
downloads-86d9bcf76d-9tmjm 0/1 ContainerCreating 1 19h
downloads-86d9bcf76d-xzkm2 0/1 ContainerCreating 1 19h

[jegan@tektutor.org ~]$ oc -n openshift-console get pods -w
NAME READY STATUS RESTARTS AGE
console-7644f4994f-449vg 0/1 ContainerCreating 1 19h
console-7644f4994f-gm8qk 0/1 ContainerCreating 1 19h
downloads-86d9bcf76d-9tmjm 0/1 ContainerCreating 1 19h
downloads-86d9bcf76d-xzkm2 0/1 ContainerCreating 1 19h
console-7644f4994f-449vg 0/1 Running 1 19h

[jegan@tektutor.org ~]$ oc -n openshift-console get pods -w -o wide
NAME READY STATUS RESTARTS AGE
IP NODE NOMINATED NODE READINESS
GATES
console-7644f4994f-449vg 0/1 Running 1 19h
10.130.0.23 master-3.ocp4.tektutor.org.labs
console-7644f4994f-gm8qk 0/1 ContainerCreating 1 19h
master-1.ocp4.tektutor.org.labs
downloads-86d9bcf76d-9tmjm 0/1 ContainerCreating 1 19h
master-1.ocp4.tektutor.org.labs
downloads-86d9bcf76d-xzkm2 0/1 ContainerCreating 1 19h
master-3.ocp4.tektutor.org.labs
console-7644f4994f-449vg 1/1 Running 1 19h
10.130.0.23 master-3.ocp4.tektutor.org.labs
console-7644f4994f-gm8qk 0/1 Running 1 19h
10.128.0.56 master-1.ocp4.tektutor.org.labs
console-7644f4994f-gm8qk 1/1 Running 1 19h
10.128.0.56 master-1.ocp4.tektutor.org.labs

[jegan@tektutor.org ~]$ oc -n openshift-console get service
NAME TYPE CLUSTER-IP EXTERNAL-IP PORT(S) AGE
console ClusterIP 172.30.93.1 443/TCP 19h
downloads ClusterIP 172.30.113.169 80/TCP 19h

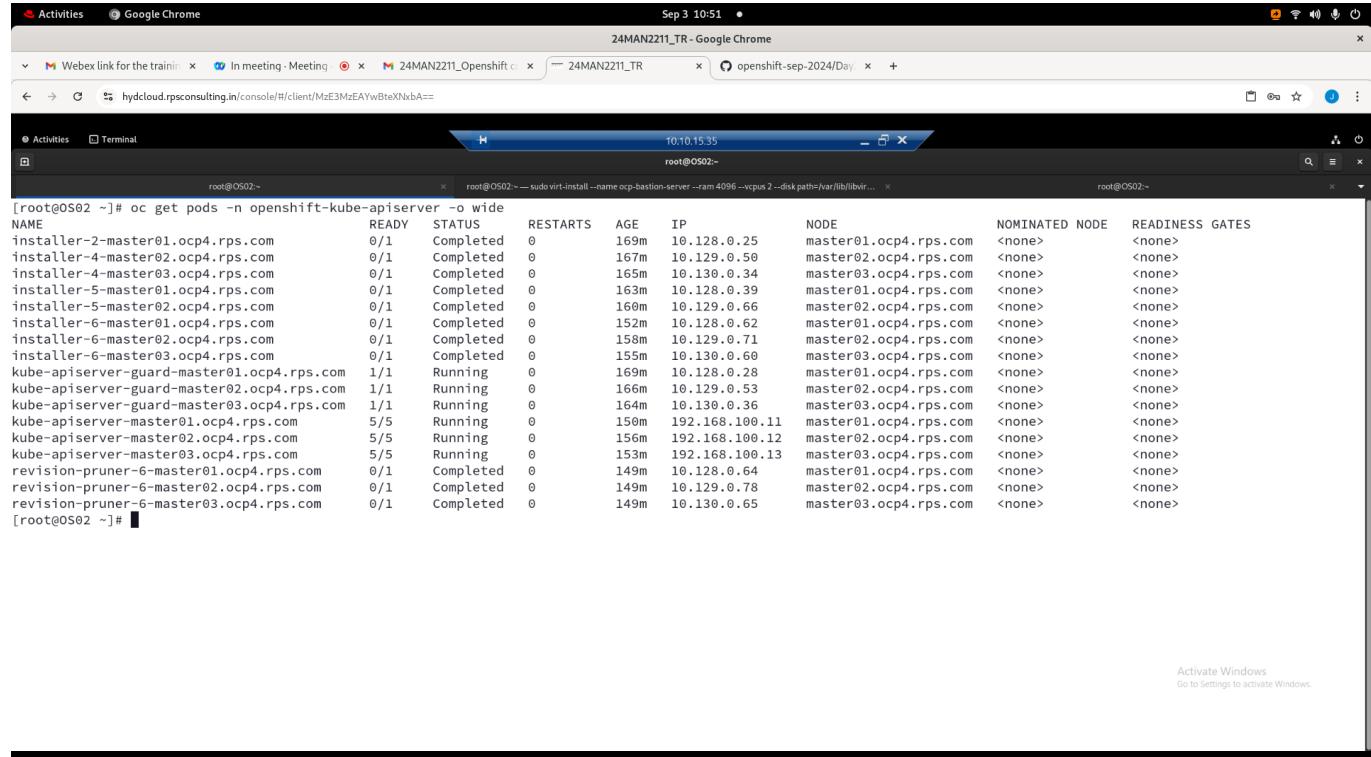
[jegan@tektutor.org ~]$ oc get route --all-namespaces | grep console
openshift-console          console          console-openshift-
console.apps.ocp4.tektutor.org.labs
console          https  reencrypt/Redirect  None
openshift-console          downloads        downloads-openshift-
```

```
console.apps.ocp4.tektutor.org.labs
downloads          http    edge/Redirect      None
```

Lab - List all API Servers from all the master nodes present in the openshift cluster

```
oc get pods -n openshift-kube-apiserver -o wide
```

Expected output

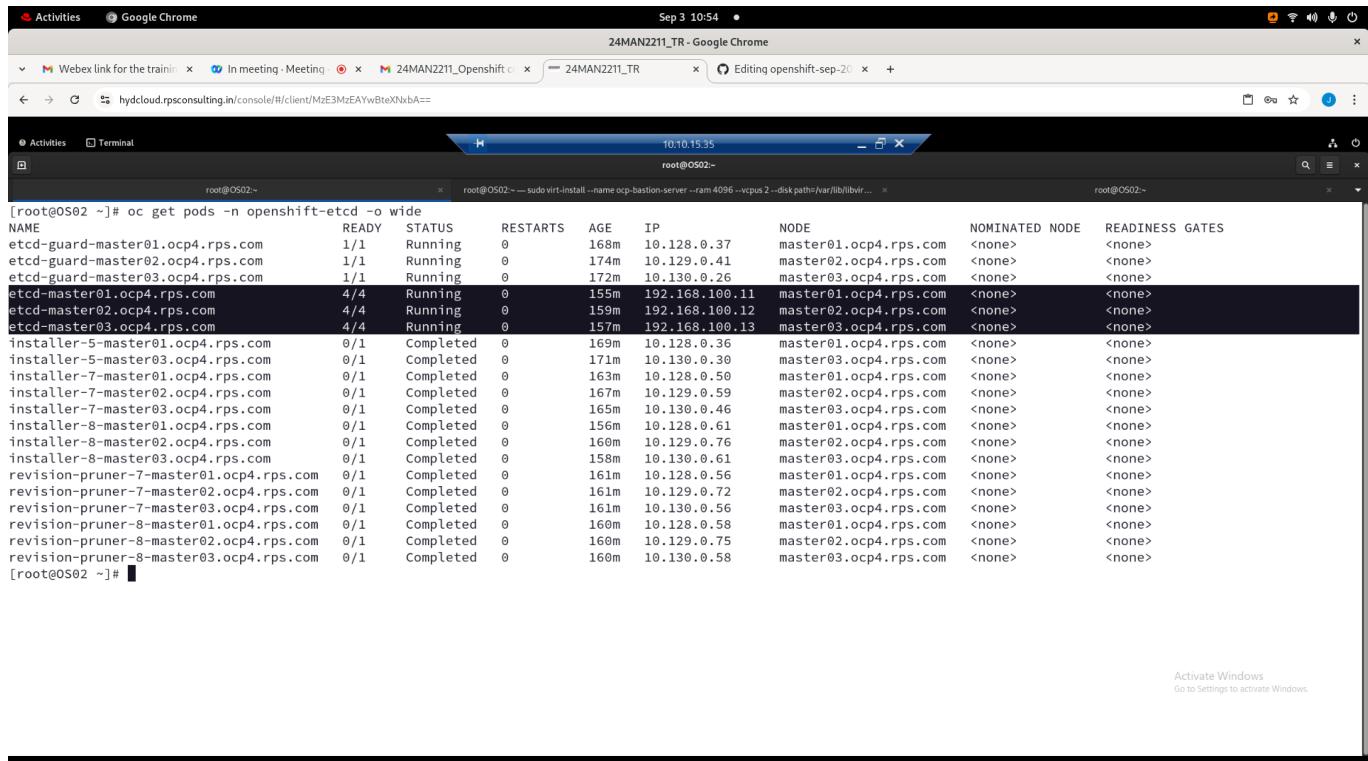


```
root@OS02 ~]# oc get pods -n openshift-kube-apiserver -o wide
NAME                      READY   STATUS    RESTARTS   AGE     IP           NODE      NOMINATED NODE   READINESS GATES
installer-2-master01.ocp4.rps.com  0/1    Completed   0          169m   10.128.0.25  master01.ocp4.rps.com  <none>    <none>
installer-4-master02.ocp4.rps.com  0/1    Completed   0          167m   10.129.0.50  master02.ocp4.rps.com  <none>    <none>
installer-4-master03.ocp4.rps.com  0/1    Completed   0          165m   10.130.0.34  master03.ocp4.rps.com  <none>    <none>
installer-5-master01.ocp4.rps.com  0/1    Completed   0          163m   10.128.0.39  master01.ocp4.rps.com  <none>    <none>
installer-5-master02.ocp4.rps.com  0/1    Completed   0          160m   10.129.0.66  master02.ocp4.rps.com  <none>    <none>
installer-6-master01.ocp4.rps.com  0/1    Completed   0          152m   10.128.0.62  master01.ocp4.rps.com  <none>    <none>
installer-6-master02.ocp4.rps.com  0/1    Completed   0          158m   10.129.0.71  master02.ocp4.rps.com  <none>    <none>
installer-6-master03.ocp4.rps.com  0/1    Completed   0          155m   10.130.0.60  master03.ocp4.rps.com  <none>    <none>
kube-apiserver-guard-master01.ocp4.rps.com  1/1  Running   0          169m   10.128.0.28  master01.ocp4.rps.com  <none>    <none>
kube-apiserver-guard-master02.ocp4.rps.com  1/1  Running   0          166m   10.129.0.53  master02.ocp4.rps.com  <none>    <none>
kube-apiserver-guard-master03.ocp4.rps.com  1/1  Running   0          164m   10.130.0.36  master03.ocp4.rps.com  <none>    <none>
kube-apiserver-master01.ocp4.rps.com  5/5  Running   0          150m   192.168.100.11 master01.ocp4.rps.com  <none>    <none>
kube-apiserver-master02.ocp4.rps.com  5/5  Running   0          156m   192.168.100.12 master02.ocp4.rps.com  <none>    <none>
kube-apiserver-master03.ocp4.rps.com  5/5  Running   0          153m   192.168.100.13 master03.ocp4.rps.com  <none>    <none>
revision-pruner-6-master01.ocp4.rps.com  0/1  Completed   0          149m   10.128.0.64  master01.ocp4.rps.com  <none>    <none>
revision-pruner-6-master02.ocp4.rps.com  0/1  Completed   0          149m   10.129.0.78  master02.ocp4.rps.com  <none>    <none>
revision-pruner-6-master03.ocp4.rps.com  0/1  Completed   0          149m   10.130.0.65  master03.ocp4.rps.com  <none>    <none>
[root@OS02 ~]#
```

Lab - List all etcd pods from all master nodes

```
oc get pods -n openshift-etcd
```

Expected output



```

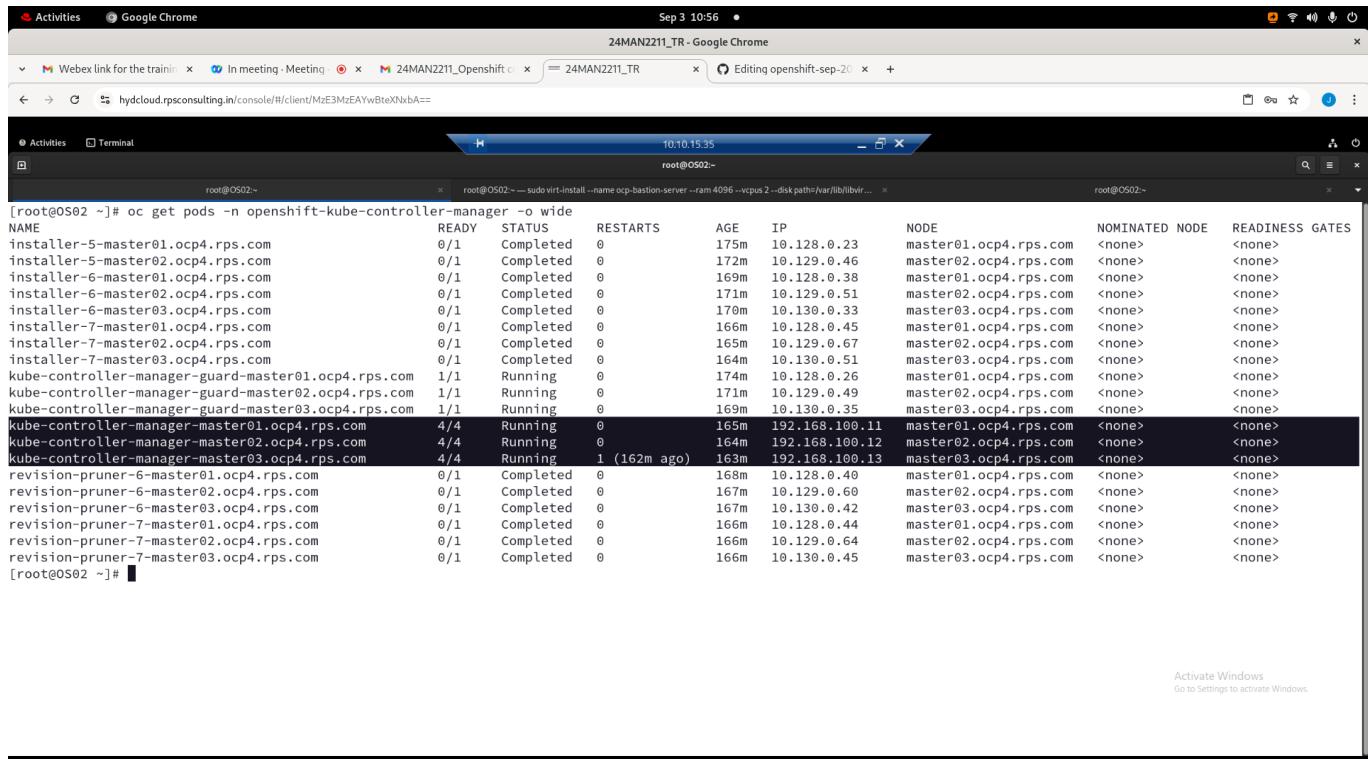
root@OS02 ~]# oc get pods -n openshift-etc -o wide
NAME          READY   STATUS    RESTARTS   AGE     IP           NODE      NOMINATED NODE   READINESS GATES
etcd-guard-master01.ocp4.rps.com   1/1     Running   0          168m   10.128.0.37  master01.ocp4.rps.com  <none>    <none>
etcd-guard-master02.ocp4.rps.com   1/1     Running   0          174m   10.129.0.41  master02.ocp4.rps.com  <none>    <none>
etcd-guard-master03.ocp4.rps.com   1/1     Running   0          172m   10.130.0.26  master03.ocp4.rps.com  <none>    <none>
etcd-master01.ocp4.rps.com        4/4     Running   0          155m   192.168.100.11  master01.ocp4.rps.com  <none>    <none>
etcd-master02.ocp4.rps.com        4/4     Running   0          159m   192.168.100.12  master02.ocp4.rps.com  <none>    <none>
etcd-master03.ocp4.rps.com        4/4     Running   0          157m   192.168.100.13  master03.ocp4.rps.com  <none>    <none>
installer-5-master01.ocp4.rps.com  0/1     Completed  0          169m   10.128.0.36  master01.ocp4.rps.com  <none>    <none>
installer-5-master03.ocp4.rps.com  0/1     Completed  0          171m   10.130.0.30  master03.ocp4.rps.com  <none>    <none>
installer-7-master01.ocp4.rps.com  0/1     Completed  0          163m   10.128.0.50  master01.ocp4.rps.com  <none>    <none>
installer-7-master02.ocp4.rps.com  0/1     Completed  0          167m   10.129.0.59  master02.ocp4.rps.com  <none>    <none>
installer-7-master03.ocp4.rps.com  0/1     Completed  0          165m   10.130.0.46  master03.ocp4.rps.com  <none>    <none>
installer-8-master01.ocp4.rps.com  0/1     Completed  0          156m   10.128.0.61  master01.ocp4.rps.com  <none>    <none>
installer-8-master02.ocp4.rps.com  0/1     Completed  0          160m   10.129.0.76  master02.ocp4.rps.com  <none>    <none>
installer-8-master03.ocp4.rps.com  0/1     Completed  0          158m   10.130.0.61  master03.ocp4.rps.com  <none>    <none>
revision-pruner-7-master01.ocp4.rps.com 0/1     Completed  0          161m   10.128.0.56  master01.ocp4.rps.com  <none>    <none>
revision-pruner-7-master02.ocp4.rps.com 0/1     Completed  0          161m   10.129.0.72  master02.ocp4.rps.com  <none>    <none>
revision-pruner-7-master03.ocp4.rps.com 0/1     Completed  0          161m   10.130.0.56  master03.ocp4.rps.com  <none>    <none>
revision-pruner-8-master01.ocp4.rps.com 0/1     Completed  0          160m   10.128.0.58  master01.ocp4.rps.com  <none>    <none>
revision-pruner-8-master02.ocp4.rps.com 0/1     Completed  0          160m   10.129.0.75  master02.ocp4.rps.com  <none>    <none>
revision-pruner-8-master03.ocp4.rps.com 0/1     Completed  0          160m   10.130.0.58  master03.ocp4.rps.com  <none>    <none>
[root@OS02 ~]#

```

Lab - List all controller manager pods from all master nodes

```
oc get pods -n openshift-kube-controller-manager -o wide
```

Expected output



```

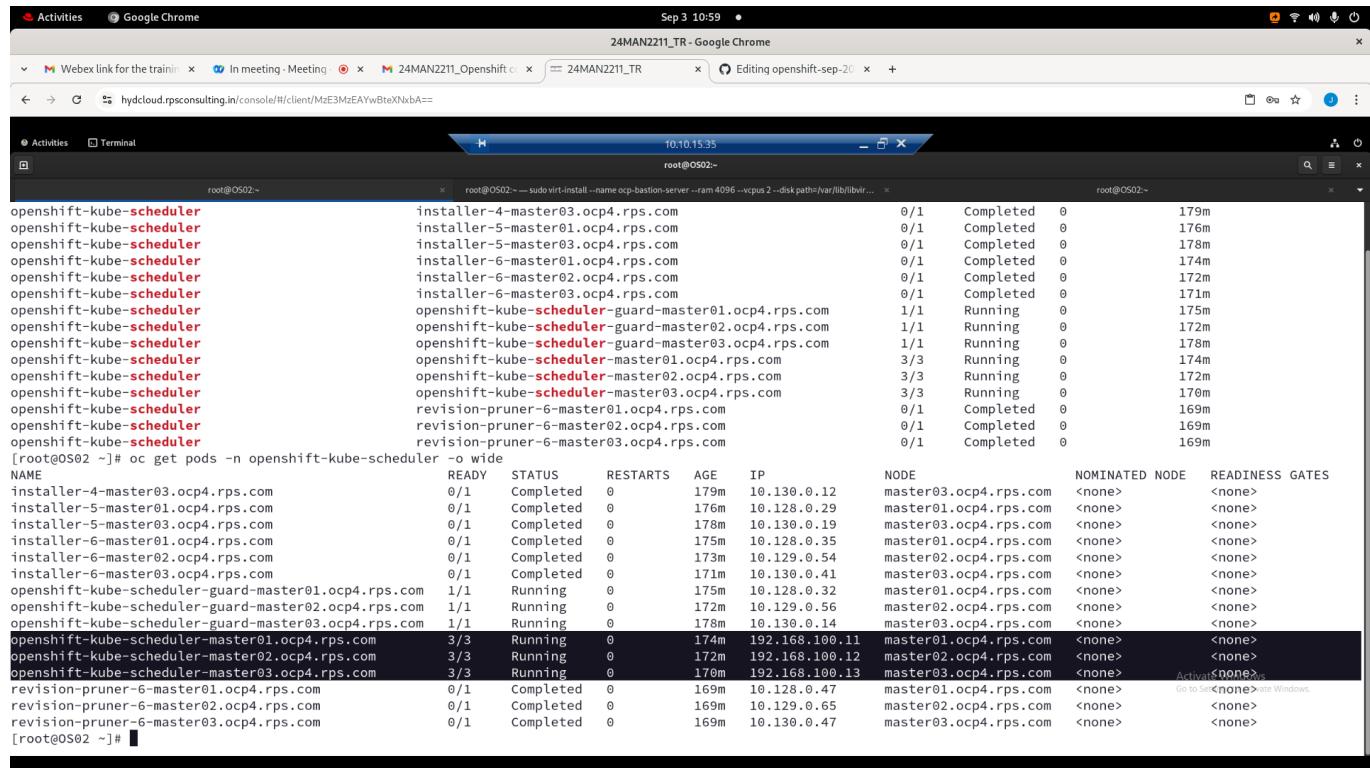
root@OS02 ~]# oc get pods -n openshift-kube-controller-manager -o wide
NAME          READY   STATUS    RESTARTS   AGE     IP           NODE      NOMINATED NODE   READINESS GATES
installer-5-master01.ocp4.rps.com  0/1     Completed  0          175m   10.128.0.23  master01.ocp4.rps.com  <none>    <none>
installer-5-master02.ocp4.rps.com  0/1     Completed  0          172m   10.129.0.46  master02.ocp4.rps.com  <none>    <none>
installer-6-master01.ocp4.rps.com  0/1     Completed  0          169m   10.128.0.38  master01.ocp4.rps.com  <none>    <none>
installer-6-master02.ocp4.rps.com  0/1     Completed  0          171m   10.129.0.51  master02.ocp4.rps.com  <none>    <none>
installer-6-master03.ocp4.rps.com  0/1     Completed  0          170m   10.130.0.33  master03.ocp4.rps.com  <none>    <none>
installer-7-master01.ocp4.rps.com  0/1     Completed  0          166m   10.128.0.45  master01.ocp4.rps.com  <none>    <none>
installer-7-master02.ocp4.rps.com  0/1     Completed  0          165m   10.129.0.67  master02.ocp4.rps.com  <none>    <none>
installer-7-master03.ocp4.rps.com  0/1     Completed  0          164m   10.130.0.51  master03.ocp4.rps.com  <none>    <none>
kube-controller-manager-guard-master01.ocp4.rps.com 1/1     Running   0          174m   10.128.0.26  master01.ocp4.rps.com  <none>    <none>
kube-controller-manager-guard-master02.ocp4.rps.com 1/1     Running   0          171m   10.129.0.49  master02.ocp4.rps.com  <none>    <none>
kube-controller-manager-guard-master03.ocp4.rps.com 1/1     Running   0          169m   10.130.0.35  master03.ocp4.rps.com  <none>    <none>
kube-controller-manager-master01.ocp4.rps.com        4/4     Running   0          165m   192.168.100.11  master01.ocp4.rps.com  <none>    <none>
kube-controller-manager-master02.ocp4.rps.com        4/4     Running   0          164m   192.168.100.12  master02.ocp4.rps.com  <none>    <none>
kube-controller-manager-master03.ocp4.rps.com        4/4     Running   1 (162m ago)  163m   192.168.100.13  master03.ocp4.rps.com  <none>    <none>
revision-pruner-6-master01.ocp4.rps.com 0/1     Completed  0          168m   10.128.0.40  master01.ocp4.rps.com  <none>    <none>
revision-pruner-6-master02.ocp4.rps.com 0/1     Completed  0          167m   10.129.0.60  master02.ocp4.rps.com  <none>    <none>
revision-pruner-6-master03.ocp4.rps.com 0/1     Completed  0          167m   10.130.0.42  master03.ocp4.rps.com  <none>    <none>
revision-pruner-7-master01.ocp4.rps.com 0/1     Completed  0          166m   10.128.0.44  master01.ocp4.rps.com  <none>    <none>
revision-pruner-7-master02.ocp4.rps.com 0/1     Completed  0          166m   10.129.0.64  master02.ocp4.rps.com  <none>    <none>
revision-pruner-7-master03.ocp4.rps.com 0/1     Completed  0          166m   10.130.0.45  master03.ocp4.rps.com  <none>    <none>
[root@OS02 ~]#

```

Lab - List all scheduler pods from all master nodes

```
oc get pods --all-namespaces | grep scheduler
oc get pods -n openshift-kube-scheduler
```

Expected output



```
root@OS02:~# oc get pods -n openshift-kube-scheduler -o wide
NAME                         READY   STATUS    RESTARTS   AGE     IP           NODE     NOMINATED NODE   READINESS GATES
installer-4-master03.ocp4.rps.com   0/1    Completed   0   179m   10.130.0.12   master03.ocp4.rps.com   <none>   <none>
installer-5-master01.ocp4.rps.com   0/1    Completed   0   176m   10.128.0.29   master01.ocp4.rps.com   <none>   <none>
installer-5-master03.ocp4.rps.com   0/1    Completed   0   178m   10.130.0.19   master03.ocp4.rps.com   <none>   <none>
installer-6-master01.ocp4.rps.com   0/1    Completed   0   174m   10.128.0.35   master01.ocp4.rps.com   <none>   <none>
installer-6-master02.ocp4.rps.com   0/1    Completed   0   172m   10.129.0.54   master02.ocp4.rps.com   <none>   <none>
installer-6-master03.ocp4.rps.com   0/1    Completed   0   173m   10.129.0.54   master03.ocp4.rps.com   <none>   <none>
installer-6-master03.ocp4.rps.com   0/1    Completed   0   171m   10.130.0.41   master03.ocp4.rps.com   <none>   <none>
openshift-kube-scheduler-guard-master01.ocp4.rps.com 1/1    Running    0   175m   10.128.0.32   master01.ocp4.rps.com   <none>   <none>
openshift-kube-scheduler-guard-master02.ocp4.rps.com 1/1    Running    0   172m   10.129.0.56   master02.ocp4.rps.com   <none>   <none>
openshift-kube-scheduler-guard-master03.ocp4.rps.com 1/1    Running    0   178m   10.130.0.14   master03.ocp4.rps.com   <none>   <none>
openshift-kube-scheduler-master01.ocp4.rps.com   3/3    Running    0   174m   192.168.100.11  master01.ocp4.rps.com   <none>   <none>
openshift-kube-scheduler-master02.ocp4.rps.com   3/3    Running    0   172m   192.168.100.12  master02.ocp4.rps.com   <none>   <none>
openshift-kube-scheduler-master03.ocp4.rps.com   3/3    Running    0   170m   192.168.100.13  master03.ocp4.rps.com   <none>   <none>
revision-pruner-6-master01.ocp4.rps.com 0/1    Completed   0   169m   10.128.0.47   master01.ocp4.rps.com   <none>   <none>
revision-pruner-6-master02.ocp4.rps.com 0/1    Completed   0   169m   10.129.0.65   master02.ocp4.rps.com   <none>   <none>
revision-pruner-6-master03.ocp4.rps.com 0/1    Completed   0   169m   10.130.0.47   master03.ocp4.rps.com   <none>   <none>
[root@OS02 ~]#
```

Lab - Listing all namespaces in openshift

- namespace/project is a way to segregate application deployments done by one user/team from other users/teams
- administrators can control which users has access to specific projects

```
oc get namespaces
oc get projects
```

Expected output

```

root@OS02 ~]# oc get namespaces
NAME        STATUS   AGE
default     Active   3h27m
jegan       Active   147m
kube-node-lease  Active   3h27m
kube-public   Active   3h27m
kube-system   Active   3h27m
openshift    Active   3h10m
openshift-apiserver Active   3h12m
openshift-apiserver-operator Active   3h26m
openshift-authentication Active   3h12m
openshift-authentication-operator Active   3h26m
openshift-cloud-controller-manager Active   3h26m
openshift-cloud-controller-manager-operator Active   3h26m
openshift-cloud-credential-operator Active   3h26m
openshift-cloud-network-config-controller Active   3h26m
openshift-cloud-platform-infra Active   3h25m
openshift-cluster-csi-drivers Active   3h26m
openshift-cluster-machine-approver Active   3h26m
openshift-cluster-node-tuning-operator Active   3h26m
openshift-cluster-samples-operator Active   3h26m
openshift-cluster-storage-operator Active   3h27m
openshift-cluster-version Active   3h25m
openshift-config Active   3h26m
openshift-config-managed Active   3h25m
openshift-config-operator Active   3h26m
openshift-console Active   3h4m
openshift-console-operator Active   3h4m
openshift-console-user-settings Active   3h4m
openshift-controller-manager Active   3h13m
openshift-controller-manager-operator Active   3h26m
openshift-dns Active   3h12m
openshift-dns-operator Active   3h26m
openshift-etc Active   3h26m

root@OS02 ~]# oc get projects
NAME        DISPLAY NAME   STATUS
default     Active
jegan       Active
kube-node-lease  Active
kube-public   Active
kube-system   Active
openshift    Active
openshift-apiserver Active
openshift-apiserver-operator Active
openshift-authentication Active
openshift-authentication-operator Active
openshift-cloud-controller-manager Active
openshift-cloud-controller-manager-operator Active
openshift-cloud-credential-operator Active
openshift-cloud-network-config-controller Active
openshift-cloud-platform-infra Active
openshift-cluster-csi-drivers Active
openshift-cluster-machine-approver Active
openshift-cluster-node-tuning-operator Active
openshift-cluster-samples-operator Active
openshift-cluster-storage-operator Active
openshift-cluster-version Active
openshift-config Active
openshift-config-managed Active
openshift-config-operator Active
openshift-console Active
openshift-console-operator Active
openshift-console-user-settings Active
openshift-controller-manager Active
openshift-controller-manager-operator Active
openshift-dns Active
openshift-dns-operator Active
openshift-etc Active

```

Lab - Creating a project for your application deployments

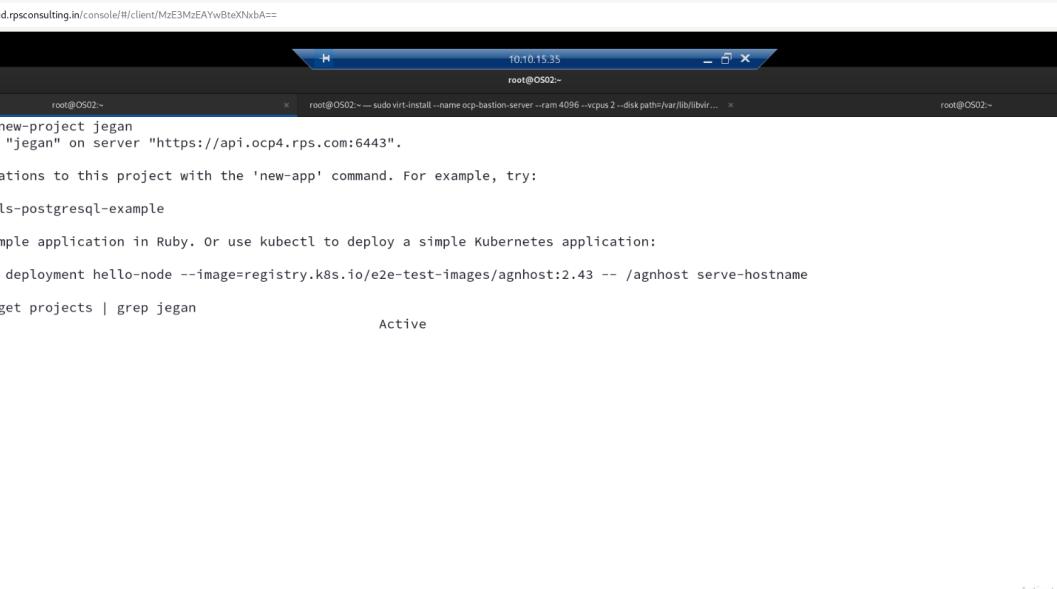
In the below command, replace 'jegan' with your name

```

oc new-project jegan
oc get projects | grep jegan

```

Expected output



Activities Google Chrome Sep 3 11:33 24MAN2211_TR - Google Chrome 24MAN2211_OpenShift 24MAN2211_TR openshift-sep-2024/Da hydcloud.rpsconsulting.in/console/#/client/MzE3MzEAYwBteXnbA== Activities Terminal 10.10.15.35 root@OS02:~ [root@OS02 ~]# oc new-project jegan Already on project "jegan" on server "https://api.ocp4.rps.com:6443". You can add applications to this project with the 'new-app' command. For example, try: oc new-app rails-postgresql-example to build a new example application in Ruby. Or use kubectl to deploy a simple Kubernetes application: kubectl create deployment hello-node --image=registry.k8s.io/e2e-test-images/agnhost:2.43 -- /agnhost serve-hostname [root@OS02 ~]# oc get projects | grep jegan jegan Active [root@OS02 ~]#

Lab - Switching between projects

```
oc project
oc project default
oc project
oc project jegan
```

Expected output



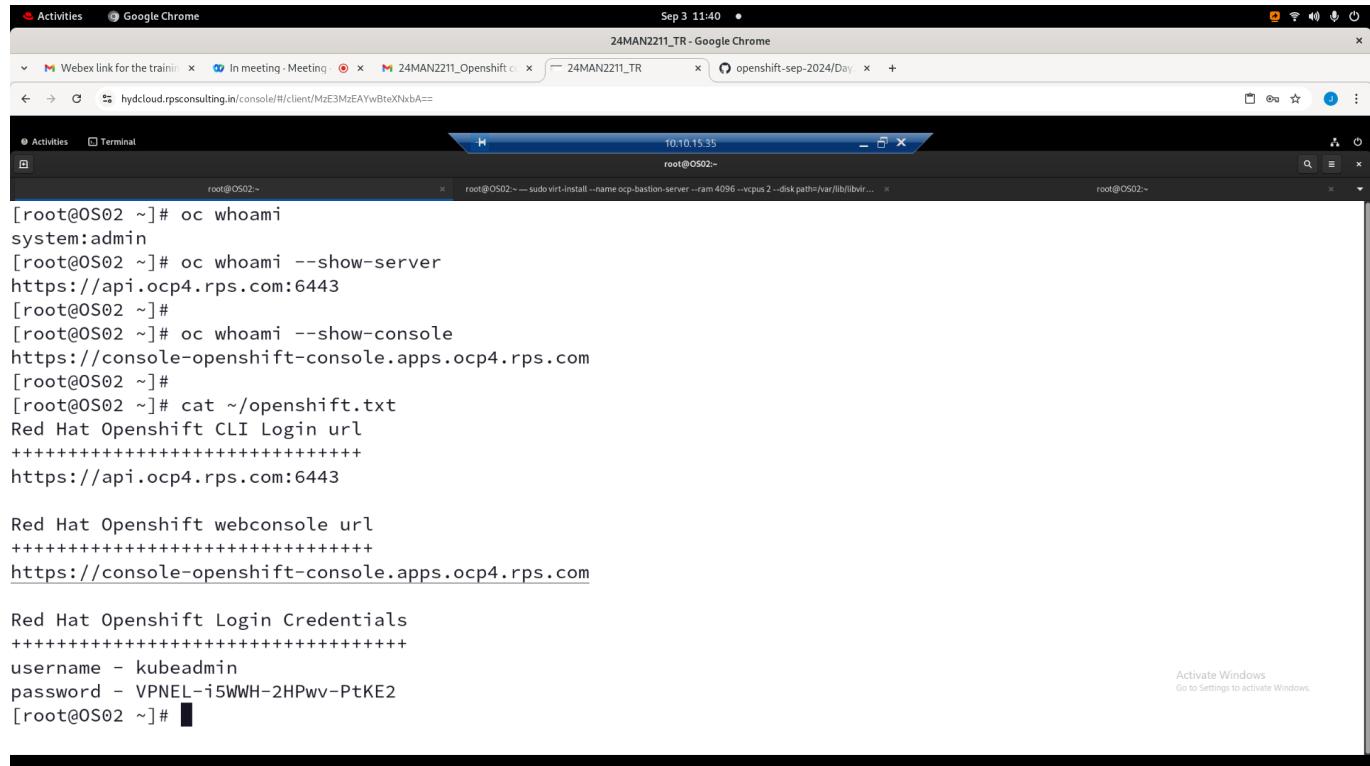
```
[root@OS02 ~]# # Find currently active project
[root@OS02 ~]# oc project
Using project "jegan" on server "https://api.ocp4.rps.com:6443".
[root@OS02 ~]# # Switching between projects
[root@OS02 ~]# oc project default
Now using project "default" on server "https://api.ocp4.rps.com:6443".
[root@OS02 ~]#
[root@OS02 ~]# # Check the currently active project
[root@OS02 ~]# oc project

Using project "default" on server "https://api.ocp4.rps.com:6443".
[root@OS02 ~]#
[root@OS02 ~]# # Switch to project 'jegan'
[root@OS02 ~]# oc project jegan
Now using project "jegan" on server "https://api.ocp4.rps.com:6443".
[root@OS02 ~]#
```

Lab - Finding you logged in as which user within openshift

```
oc whoami  
oc whoami --show-server  
oc whoami --show-console
```

Expected output



The screenshot shows a terminal window on a Linux desktop. The terminal title is 'root@OS02:~'. The window title is '10.10.15.35'. The terminal content displays the following command and its output:

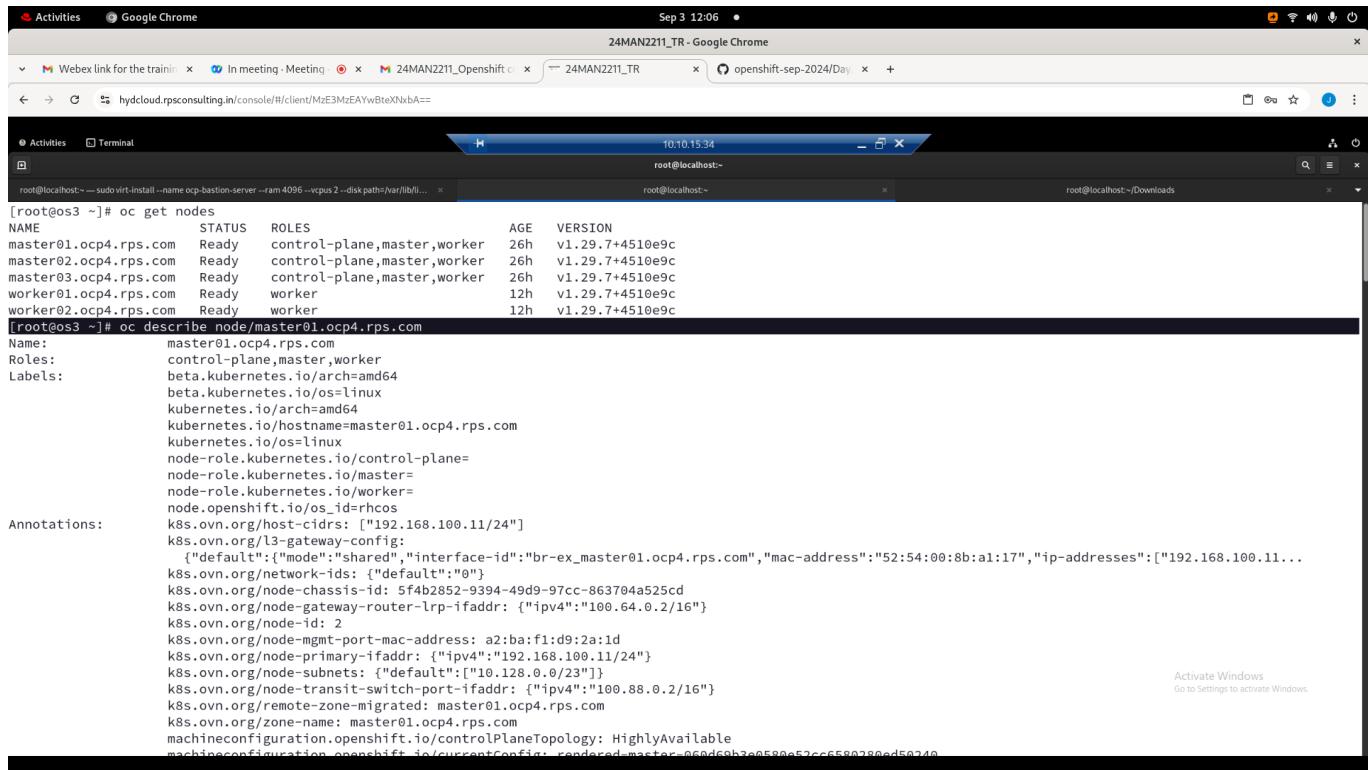
```
[root@OS02 ~]# oc whoami  
system:admin  
[root@OS02 ~]# oc whoami --show-server  
https://api.ocp4.rps.com:6443  
[root@OS02 ~]# oc whoami --show-console  
https://console-openshift-console.apps.ocp4.rps.com  
[root@OS02 ~]# cat ~/openshift.txt  
Red Hat Openshift CLI Login url  
+++++  
https://api.ocp4.rps.com:6443  
  
Red Hat Openshift webconsole url  
+++++  
https://console-openshift-console.apps.ocp4.rps.com  
  
Red Hat Openshift Login Credentials  
+++++  
username - kubeadmin  
password - VPNEL-i5WWh-2HPwv-PtKE2
```

The terminal window is part of a desktop environment with a taskbar at the top showing other open applications like Google Chrome and a file manager. A watermark for 'Activate Windows' is visible in the bottom right corner of the terminal window.

Lab - Find more details about a node

```
oc describe node/master01.ocp4.rps.com  
oc describe node/master02.ocp4.rps.com  
oc describe node/master03.ocp4.rps.com  
oc describe node/worker01.ocp4.rps.com  
oc describe node/worker02.ocp4.rps.com
```

Expected output

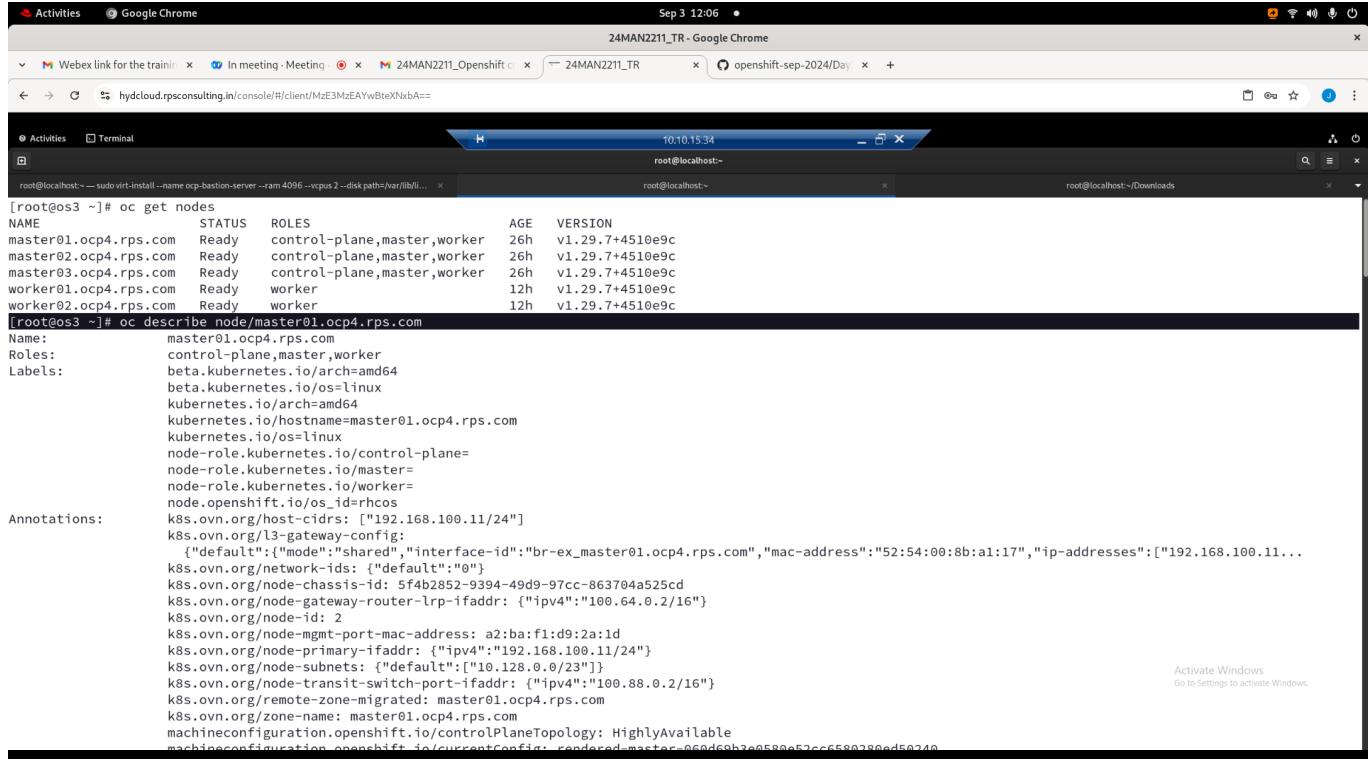


```

root@os3 ~]# oc get nodes
NAME      STATUS    ROLES          AGE   VERSION
master01.ocp4.rps.com   Ready    control-plane,master,worker  26h   v1.29.7+4510e9c
master02.ocp4.rps.com   Ready    control-plane,master,worker  26h   v1.29.7+4510e9c
master03.ocp4.rps.com   Ready    control-plane,master,worker  26h   v1.29.7+4510e9c
worker01.ocp4.rps.com   Ready    worker          12h   v1.29.7+4510e9c
worker02.ocp4.rps.com   Ready    worker          12h   v1.29.7+4510e9c

[root@os3 ~]# oc describe node/master01.ocp4.rps.com
Name:           master01.ocp4.rps.com
Roles:          control-plane,master,worker
Labels:         beta.kubernetes.io/arch=amd64
                beta.kubernetes.io/os=linux
                kubernetes.io/arch=amd64
                kubernetes.io/hostname=master01.ocp4.rps.com
                kubernetes.io/os=linux
Annotations:   k8s.vnn.org/host-cidrs: ["192.168.100.11/24"]
                k8s.vnn.org/l3-gateway-config:
                  {"default": {"mode": "shared", "interface-id": "br-ex_master01.ocp4.rps.com", "mac-address": "52:54:00:8b:a1:17", "ip-addresses": ["192.168.100.11..."]

```



```

root@os3 ~]# oc get nodes
NAME      STATUS    ROLES          AGE   VERSION
master01.ocp4.rps.com   Ready    control-plane,master,worker  26h   v1.29.7+4510e9c
master02.ocp4.rps.com   Ready    control-plane,master,worker  26h   v1.29.7+4510e9c
master03.ocp4.rps.com   Ready    control-plane,master,worker  26h   v1.29.7+4510e9c
worker01.ocp4.rps.com   Ready    worker          12h   v1.29.7+4510e9c
worker02.ocp4.rps.com   Ready    worker          12h   v1.29.7+4510e9c

[root@os3 ~]# oc describe node/master01.ocp4.rps.com
Name:           master01.ocp4.rps.com
Roles:          control-plane,master,worker
Labels:         beta.kubernetes.io/arch=amd64
                beta.kubernetes.io/os=linux
                kubernetes.io/arch=amd64
                kubernetes.io/hostname=master01.ocp4.rps.com
                kubernetes.io/os=linux
Annotations:   k8s.vnn.org/host-cidrs: ["192.168.100.11/24"]
                k8s.vnn.org/l3-gateway-config:
                  {"default": {"mode": "shared", "interface-id": "br-ex_master01.ocp4.rps.com", "mac-address": "52:54:00:8b:a1:17", "ip-addresses": ["192.168.100.11...

```

Lab - Deploying your first application within your project namespace

```

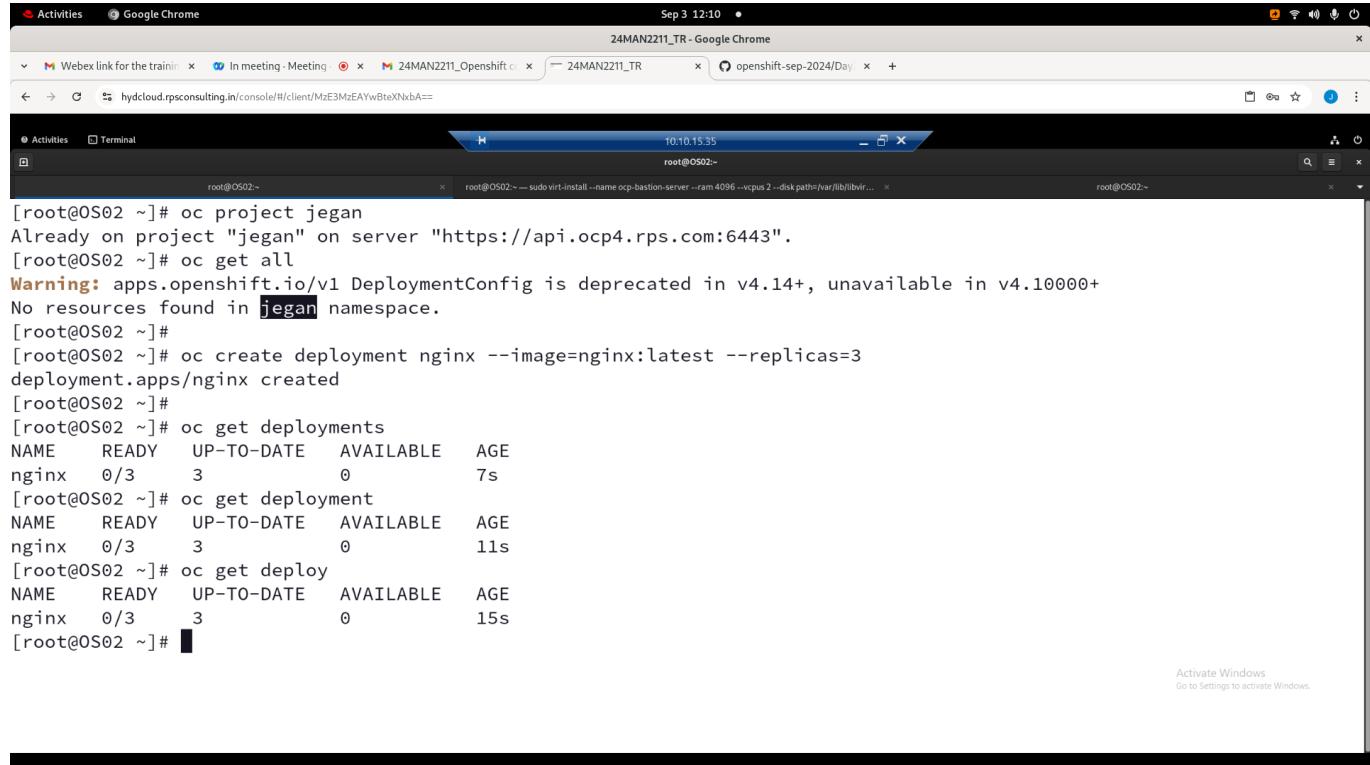
oc project jegan
oc create deployment nginx --image=nginx:latest --replicas=3

```

Listing the deployments

```
oc get deployments
oc get deployment
oc get deploy
```

Expected output



The screenshot shows a Linux desktop environment with a terminal window and a browser window. The terminal window is titled 'Activities' and shows a command-line session. The browser window is titled '24MAN2211_TR - Google Chrome' and shows the OpenShift interface with several tabs open, including 'Webex link for the trainin', 'In meeting - Meeting', '24MAN2211_Openshift', 'openshift-sep-2024/Day', and 'hydcloud.rpsconsulting.in/console/#/client/MzE3MzEAYwBtxXNbA=='. The terminal session includes the following commands and output:

```
[root@OS02 ~]# oc project jegan
Already on project "jegan" on server "https://api.ocp4.rps.com:6443".
[root@OS02 ~]# oc get all
Warning: apps.openshift.io/v1 DeploymentConfig is deprecated in v4.14+, unavailable in v4.10000+
No resources found in jegan namespace.
[root@OS02 ~]#
[root@OS02 ~]# oc create deployment nginx --image=nginx:latest --replicas=3
deployment.apps/nginx created
[root@OS02 ~]#
[root@OS02 ~]# oc get deployments
NAME      READY   UP-TO-DATE   AVAILABLE   AGE
nginx    0/3       3           0           7s
[root@OS02 ~]# oc get deployment
NAME      READY   UP-TO-DATE   AVAILABLE   AGE
nginx    0/3       3           0           11s
[root@OS02 ~]# oc get deploy
NAME      READY   UP-TO-DATE   AVAILABLE   AGE
nginx    0/3       3           0           15s
[root@OS02 ~]#
```

Activate Windows
Go to Settings to activate Windows.

Listing the replicaset

```
oc get replicaset
oc get replicaset
oc get rs
```

Expected output



Activities Google Chrome Sep 3 12:12 24MAN2211_TR - Google Chrome hydcloud.rpsconsulting.in/console/#/client/MzE3MzEAYwBteXNbA==

Activities Terminal 10.10.15.35 root@OS02:~

```
[root@OS02 ~]# [root@OS02 ~]# oc create deployment nginx --image=nginx:latest --replicas=3 deployment.apps/nginx created [root@OS02 ~]# [root@OS02 ~]# oc get deployments NAME READY UP-TO-DATE AVAILABLE AGE nginx 0/3 3 0 7s [root@OS02 ~]# oc get deployment NAME READY UP-TO-DATE AVAILABLE AGE nginx 0/3 3 0 11s [root@OS02 ~]# oc get deploy NAME READY UP-TO-DATE AVAILABLE AGE nginx 0/3 3 0 15s [root@OS02 ~]# oc get replicaset NAME DESIRED CURRENT READY AGE nginx-56fcf95486 3 3 0 2m5s [root@OS02 ~]# oc get replicaset NAME DESIRED CURRENT READY AGE nginx-56fcf95486 3 3 0 2m8s [root@OS02 ~]# oc get rs NAME DESIRED CURRENT READY AGE nginx-56fcf95486 3 3 0 2m12s [root@OS02 ~]#
```

Listing all the pods in your project namespace

```
oc get pods  
oc get pod  
oc get po
```

Expected output

Activities Google Chrome Sep 3 12:13 24MAN2211_TR - Google Chrome

Webex link for the trainin In meeting - Meeting 24MAN2211_Openshift 24MAN2211_TR Editing openshift-sep-20

hydcloud.rpsconsulting.in/console/#/client/MzE3MzEAYwBteXnbAa=

Activities Terminal 10:10:15:35 root@OS02:~

```
nginx-56fcf95486 3 3 0 2m5s
[root@OS02 ~]# oc get replicaset
NAME          DESIRED  CURRENT  READY  AGE
nginx-56fcf95486 3 3 0 2m8s
[root@OS02 ~]# oc get rs
NAME          DESIRED  CURRENT  READY  AGE
nginx-56fcf95486 3 3 0 2m12s
[root@OS02 ~]# oc get pods
NAME          READY  STATUS  RESTARTS  AGE
nginx-56fcf95486-8gsqk 0/1  CrashLoopBackOff  4 (52s ago)  2m50s
nginx-56fcf95486-8rwkz 0/1  CrashLoopBackOff  4 (51s ago)  2m50s
nginx-56fcf95486-mpb4m 0/1  CrashLoopBackOff  4 (45s ago)  2m50s
[root@OS02 ~]# oc get pod
NAME          READY  STATUS  RESTARTS  AGE
nginx-56fcf95486-8gsqk 0/1  CrashLoopBackOff  4 (54s ago)  2m52s
nginx-56fcf95486-8rwkz 0/1  CrashLoopBackOff  4 (53s ago)  2m52s
nginx-56fcf95486-mpb4m 0/1  CrashLoopBackOff  4 (47s ago)  2m52s
[root@OS02 ~]# oc get po
NAME          READY  STATUS  RESTARTS  AGE
nginx-56fcf95486-8gsqk 0/1  CrashLoopBackOff  4 (57s ago)  2m55s
nginx-56fcf95486-8rwkz 0/1  CrashLoopBackOff  4 (56s ago)  2m55s
nginx-56fcf95486-mpb4m 0/1  CrashLoopBackOff  4 (50s ago)  2m55s
[root@OS02 ~]#
```

Lab - Troubleshooting - checking pod logs

```
oc get po
oc logs pod/nginx-56fcf95486-mpb4m
```

Expected output

```
root@O502:~# oc get po
nginx-56fcf95486-8rkwz  0/1    CrashLoopBackOff  4 (53s ago)  2m52s
nginx-56fcf95486-mpb4m  0/1    CrashLoopBackOff  4 (47s ago)  2m52s
[root@O502 ~]# oc logs pod/nginx-56fcf95486-mpb4m
/docker-entrypoint.sh: /docker-entrypoint.d/ is not empty, will attempt to perform configuration
/docker-entrypoint.sh: Looking for shell scripts in /docker-entrypoint.d/
/docker-entrypoint.sh: Launching /docker-entrypoint.d/10-listen-on-ipv6-by-default.sh
10-listen-on-ipv6-by-default.sh: info: can not modify /etc/nginx/conf.d/default.conf (read-only file system?)
/docker-entrypoint.sh: Sourcing /docker-entrypoint.d/15-local-resolvers.envsh
/docker-entrypoint.sh: Launching /docker-entrypoint.d/20-envsubst-on-templates.sh
/docker-entrypoint.sh: Launching /docker-entrypoint.d/30-tune-worker-processes.sh
/docker-entrypoint.sh: Configuration complete; ready for start up
2024/09/03 06:52:25 [warn] 1#1: the "user" directive makes sense only if the master process runs with super-user privileges, ignored in /etc/nginx/nginx.conf:2
nginx: [warn] the "user" directive makes sense only if the master process runs with super-user privileges, ignored in /etc/nginx/nginx.conf:2
2024/09/03 06:52:25 [emerg] 1#1: mkdir() "/var/cache/nginx/client_temp" failed (13: Permission denied)
nginx: [emerg] mkdir() "/var/cache/nginx/client_temp" failed (13: Permission denied)
[root@O502 ~]#
```

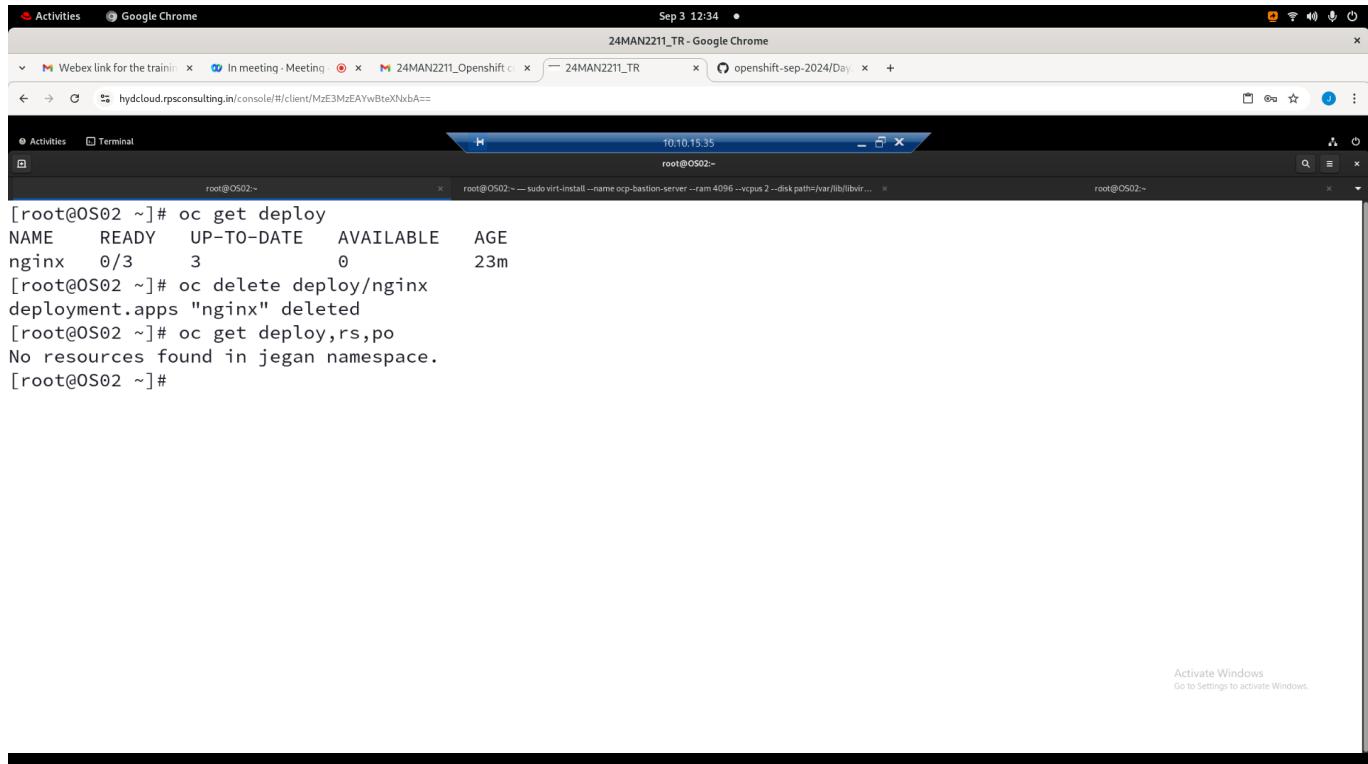
Things to note

- Openshift will not allow regular applications to run administrative tasks
- in the above logs, note that nginx.conf at line number 2, it seems to create a folder outside the home directory, which can be done only by an administrator
- as the application is running as non-admin user, due to permission issues the Pod is crashing
- the root cause is, the nginx:latest docker image doesn't seem to be following openshift standards, hence this kind of docker images must be avoided in openshift
- instead we could use bitnami/nginx:latest docker image that meets all the openshift best practices

Lab - Deleting a deployment under your project

```
oc project
oc get deploy
oc delete deploy/nginx
oc get deploy,rs,po
```

Expected output



```

Activities Google Chrome Sep 3 12:34 •
Webex link for the traini... In meeting - Meeting 24MAN2211_Openshift 24MAN2211_TR - Google Chrome
hydcloud.rpsconsulting.in/console/#/client/MzE3MzEAYwBteXNkbA==

Activities Terminal 10:10.15.35 root@OS02:~
root@OS02:~# oc get deploy
NAME READY UP-TO-DATE AVAILABLE AGE
nginx 0/3 3 0 23m
[root@OS02 ~]# oc delete deploy/nginx
deployment.apps "nginx" deleted
[root@OS02 ~]# oc get deploy,rs,po
No resources found in jegan namespace.
[root@OS02 ~]#

```

Activate Windows
Go to Settings to activate Windows.

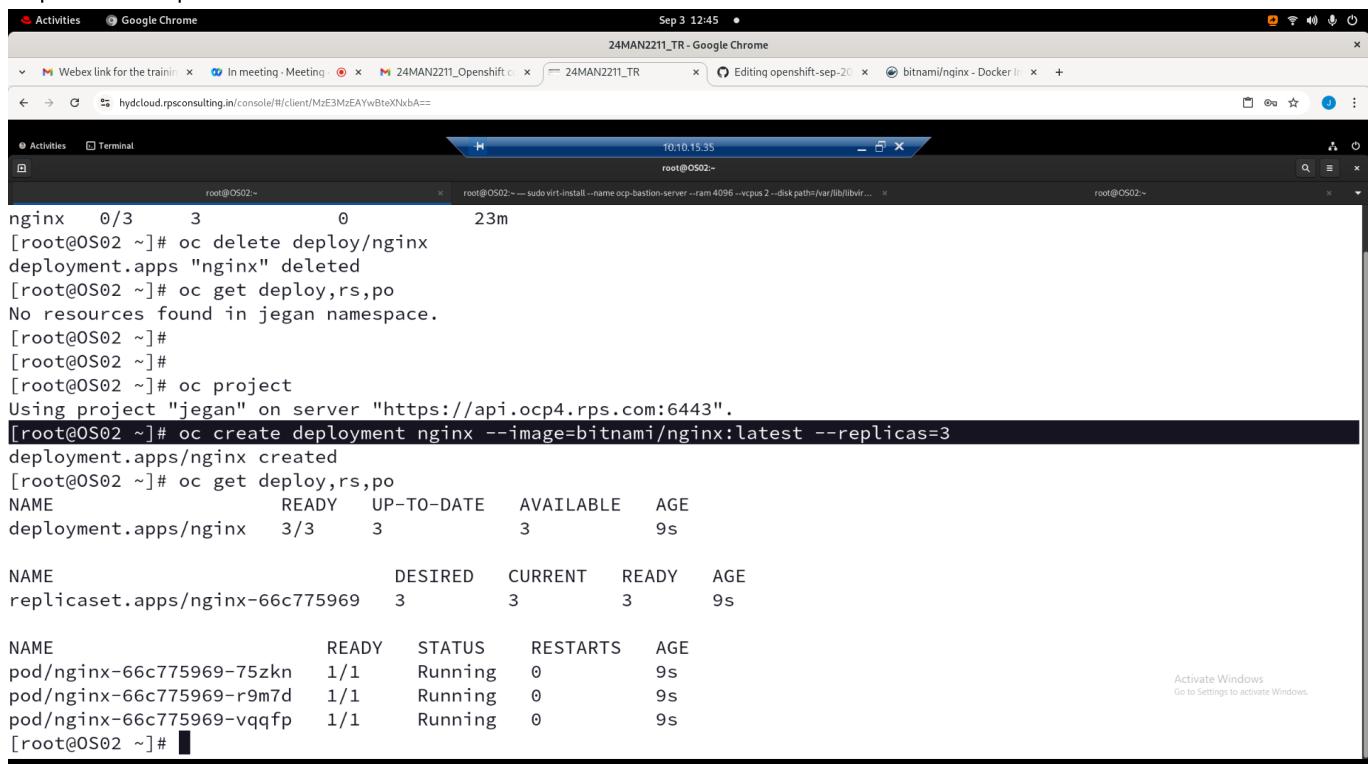
Lab - Deploying nginx web server using bitnami docker image

```

oc project
oc create deployment nginx --image=bitnami/nginx:latest --replicas=3
oc get deploy,rs,po

```

Expected output



```

Activities Google Chrome Sep 3 12:45 •
Webex link for the traini... In meeting - Meeting 24MAN2211_Openshift 24MAN2211_TR - Google Chrome
hydcloud.rpsconsulting.in/console/#/client/MzE3MzEAYwBteXNkbA==

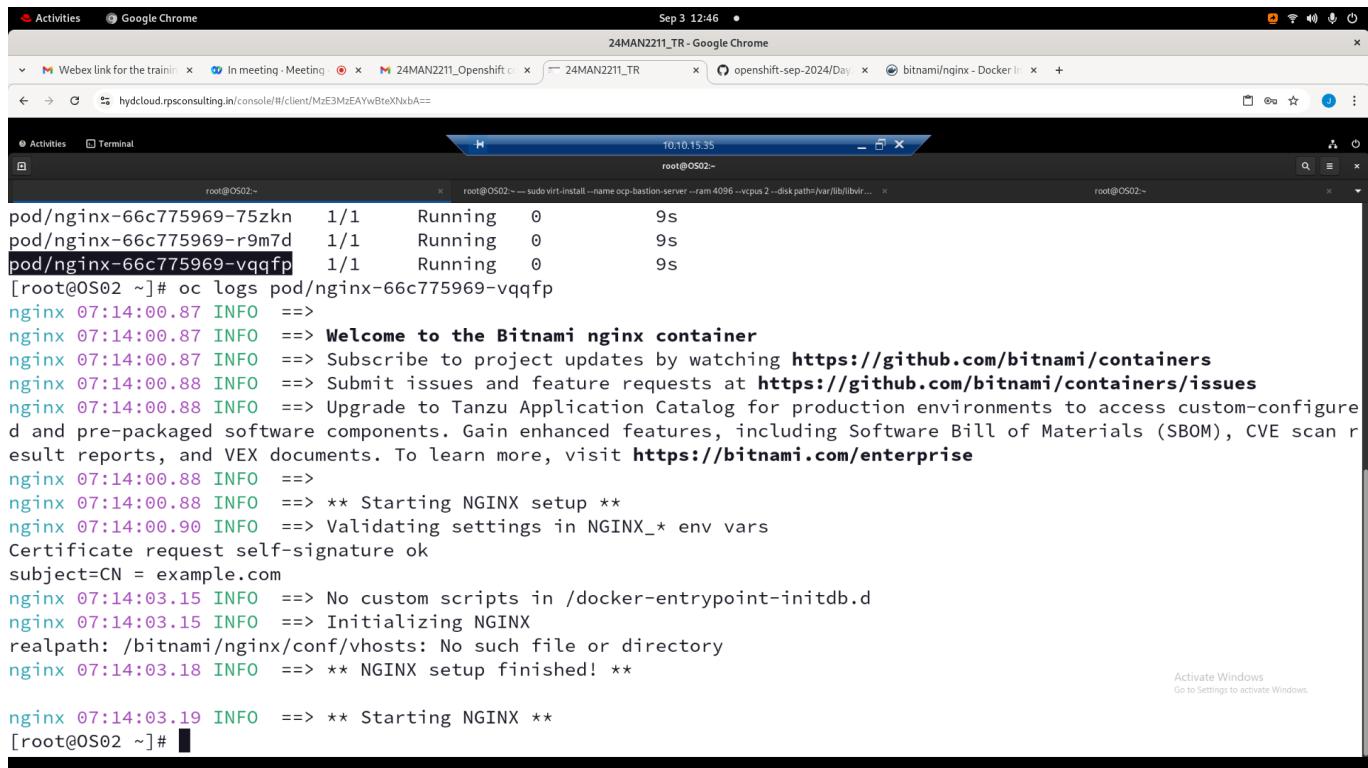
Activities Terminal 10:10.15.35 root@OS02:~
root@OS02:~# oc get deploy
NAME READY UP-TO-DATE AVAILABLE AGE
nginx 0/3 3 0 23m
[root@OS02 ~]# oc delete deploy/nginx
deployment.apps "nginx" deleted
[root@OS02 ~]# oc get deploy,rs,po
No resources found in jegan namespace.
[root@OS02 ~]#
[root@OS02 ~]#
[root@OS02 ~]# oc project
Using project "jegan" on server "https://api.ocp4.rps.com:6443".
[root@OS02 ~]# oc create deployment nginx --image=bitnami/nginx:latest --replicas=3
deployment.apps/nginx created
[root@OS02 ~]# oc get deploy,rs,po
NAME READY UP-TO-DATE AVAILABLE AGE
deployment.apps/nginx 3/3 3 3 9s

NAME DESIRED CURRENT READY AGE
replicaset.apps/nginx-66c775969 3 3 3 9s

NAME READY STATUS RESTARTS AGE
pod/nginx-66c775969-75zkn 1/1 Running 0 9s
pod/nginx-66c775969-r9m7d 1/1 Running 0 9s
pod/nginx-66c775969-vqqfp 1/1 Running 0 9s
[root@OS02 ~]#

```

Activate Windows
Go to Settings to activate Windows.



```

root@OS02:~# oc logs pod/nginx-66c775969-75zkn
pod/nginx-66c775969-75zkn 1/1 Running 0 9s
pod/nginx-66c775969-r9m7d 1/1 Running 0 9s
pod/nginx-66c775969-vqqfp 1/1 Running 0 9s
[root@OS02 ~]# oc logs pod/nginx-66c775969-vqqfp
nginx 07:14:00.87 INFO ==>
nginx 07:14:00.87 INFO ==> Welcome to the Bitnami nginx container
nginx 07:14:00.87 INFO ==> Subscribe to project updates by watching https://github.com/bitnami/containers
nginx 07:14:00.88 INFO ==> Submit issues and feature requests at https://github.com/bitnami/containers/issues
nginx 07:14:00.88 INFO ==> Upgrade to Tanzu Application Catalog for production environments to access custom-configured and pre-packaged software components. Gain enhanced features, including Software Bill of Materials (SBOM), CVE scan result reports, and VEX documents. To learn more, visit https://bitnami.com/enterprise
nginx 07:14:00.88 INFO ==>
nginx 07:14:00.88 INFO ==> ** Starting NGINX setup **
nginx 07:14:00.90 INFO ==> Validating settings in NGINX_* env vars
Certificate request self-signature ok
subject=CN = example.com
nginx 07:14:03.15 INFO ==> No custom scripts in /docker-entrypoint-initdb.d
nginx 07:14:03.15 INFO ==> Initializing NGINX
realpath: /bitnami/nginx/conf/vhosts: No such file or directory
nginx 07:14:03.18 INFO ==> ** NGINX setup finished! **

nginx 07:14:03.19 INFO ==> ** Starting NGINX **
[root@OS02 ~]#

```

Things to note

- bitnami images generally follows openshift or general industry best practices, hence almost all bitnami containers images are openshift compatible
- bitnami images also ensure that ports below 1024 aren't used as they are reserved by openshift for its internal use
- bitnami images are rootless, i.e they perform everything as non-admin users

Lab - Scaling up or down the pod instances count(replicas) in a deployment

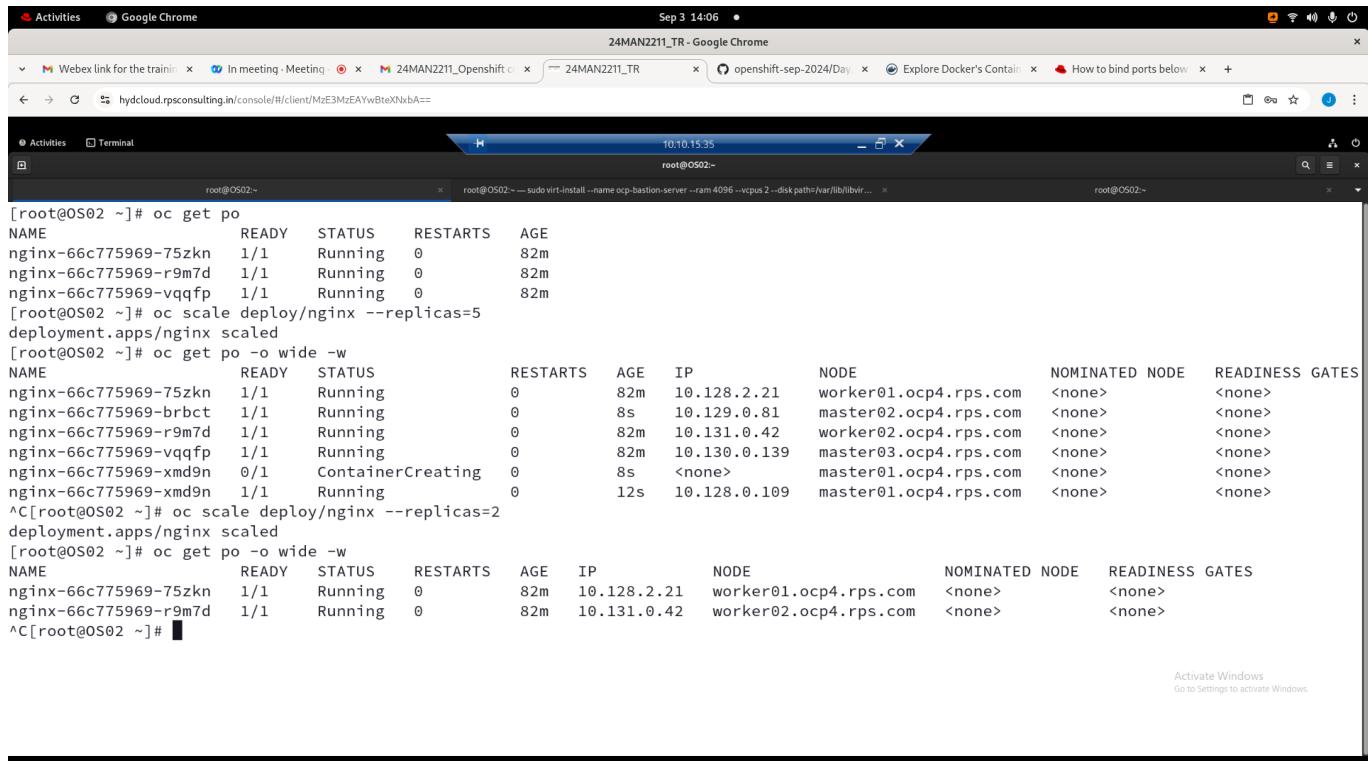
To come out of the watch mode,you need to press Ctrl + C

```

oc get deploy,rs,po
oc scale deploy/nginx --replicas=5
oc get po -o wide -w
oc scale deploy/nginx --replicas=2
oc get po

```

Expected output



Terminal window showing deployment scaling and status:

```

[root@OS02 ~]# oc get po
NAME      READY   STATUS    RESTARTS   AGE
nginx-66c775969-75zkn  1/1     Running   0          82m
nginx-66c775969-r9m7d  1/1     Running   0          82m
nginx-66c775969-vqqfp  1/1     Running   0          82m
[root@OS02 ~]# oc scale deploy/nginx --replicas=5
deployment.apps/nginx scaled
[root@OS02 ~]# oc get po -o wide -w
NAME      READY   STATUS    RESTARTS   AGE   IP           NODE      NOMINATED NODE   READINESS GATES
nginx-66c775969-75zkn  1/1     Running   0      82m   10.128.2.21  worker01.ocp4.rps.com  <none>        <none>
nginx-66c775969-brbct  1/1     Running   0      8s    10.129.0.81  master02.ocp4.rps.com  <none>        <none>
nginx-66c775969-r9m7d  1/1     Running   0      82m   10.131.0.42  worker02.ocp4.rps.com  <none>        <none>
nginx-66c775969-vqqfp  1/1     Running   0      82m   10.130.0.139 master03.ocp4.rps.com  <none>        <none>
nginx-66c775969-xmd9n  0/1     ContainerCreating   0      8s    <none>       master01.ocp4.rps.com  <none>        <none>
nginx-66c775969-xmd9n  1/1     Running   0      12s   10.128.0.109 master01.ocp4.rps.com  <none>        <none>
^C[root@OS02 ~]# oc scale deploy/nginx --replicas=2
deployment.apps/nginx scaled
[root@OS02 ~]# oc get po -o wide -w
NAME      READY   STATUS    RESTARTS   AGE   IP           NODE      NOMINATED NODE   READINESS GATES
nginx-66c775969-75zkn  1/1     Running   0      82m   10.128.2.21  worker01.ocp4.rps.com  <none>        <none>
nginx-66c775969-r9m7d  1/1     Running   0      82m   10.131.0.42  worker02.ocp4.rps.com  <none>        <none>
^C[root@OS02 ~]#

```

Activate Windows
Go to Settings to activate Windows.

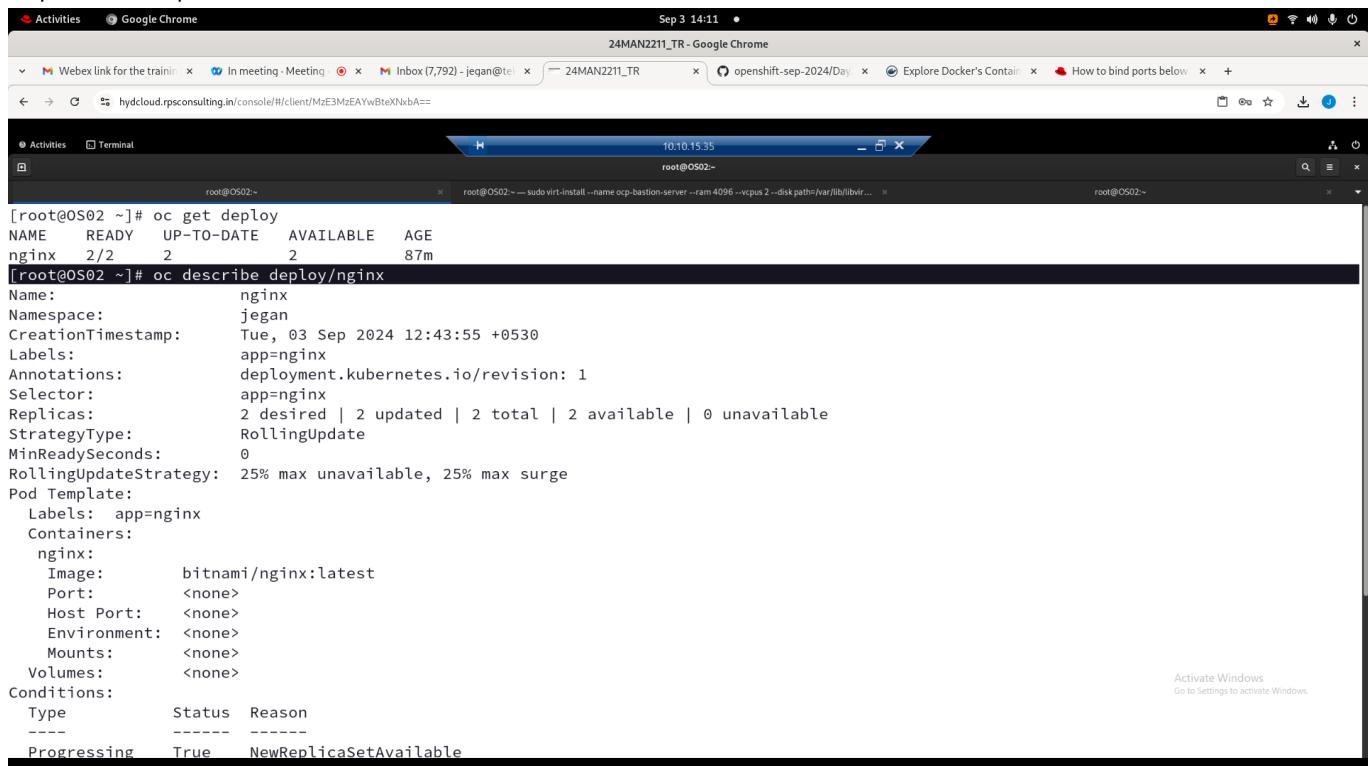
Lab - Finding more details about a deployment

```

oc get deploy
oc describe deploy/nginx

```

Expected output



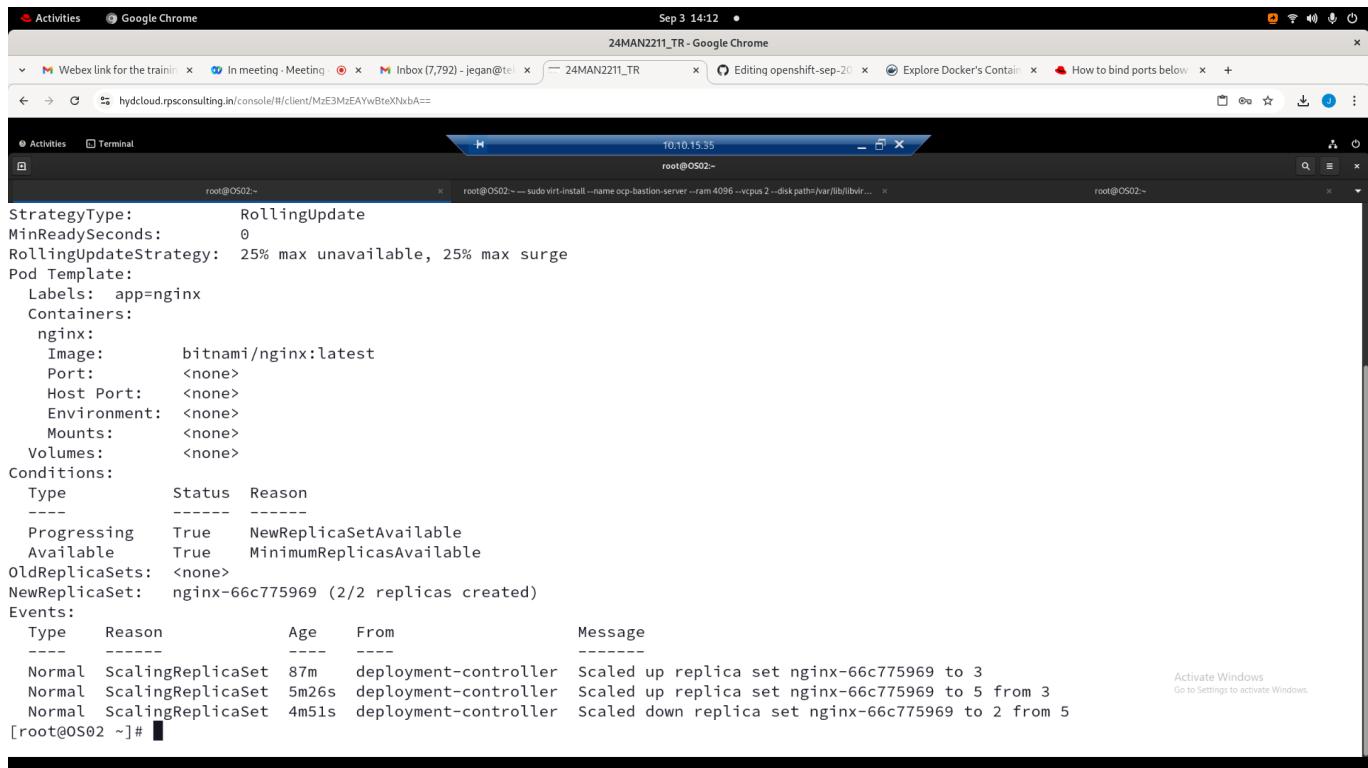
Terminal window showing deployment details:

```

[root@OS02 ~]# oc get deploy
NAME      UP-TO-DATE   AVAILABLE   AGE
nginx     2/2          2           87m
[root@OS02 ~]# oc describe deploy/nginx
Name:           nginx
Namespace:      jegan
CreationTimestamp:  Tue, 03 Sep 2024 12:43:55 +0530
Labels:          app=nginx
Annotations:    deployment.kubernetes.io/revision: 1
Selector:        app=nginx
Replicas:       2 desired | 2 updated | 2 total | 2 available | 0 unavailable
StrategyType:   RollingUpdate
MinReadySeconds: 0
RollingUpdateStrategy: 25% max unavailable, 25% max surge
Pod Template:
  Labels:  app=nginx
  Containers:
    nginx:
      Image:      bitnami/nginx:latest
      Port:       <none>
      Host Port: <none>
      Environment: <none>
      Mounts:     <none>
      Volumes:    <none>
  Conditions:
    Type      Status  Reason
    ----      ----  -----
    Progressing  True   NewReplicaSetAvailable

```

Activate Windows
Go to Settings to activate Windows.



```

Activities Google Chrome Sep 3 14:12 24MAN2211_TR - Google Chrome
Webex link for the trainin... In meeting - Meeting ... 24MAN2211_TR - Google Chrome
hydcloud.rpsconsulting.in/console/#/client/MzE3MzEAYwBteXNxbA==

Activities Terminal 10.10.15.35 root@OS02-
root@OS02:~# sudo virt-install --name ocp-bastion-server --ram 4096 --vcpus 2 --disk path=/var/lib/libvir...
root@OS02:~# 

StrategyType: RollingUpdate
MinReadySeconds: 0
RollingUpdateStrategy: 25% max unavailable, 25% max surge
Pod Template:
  Labels:  app=nginx
  Containers:
    nginx:
      Image:  bitnami/nginx:latest
      Port:  <none>
      Host Port: <none>
      Environment: <none>
      Mounts: <none>
      Volumes: <none>
  Conditions:
    Type Status Reason
    ---- ------
    Progressing True  NewReplicaSetAvailable
    Available True  MinimumReplicasAvailable
  OldReplicaSets: <none>
  NewReplicaSet:  nginx-66c775969 (2/2 replicas created)
Events:
  Type Reason Age From Message
  ---- ---- -- -- -----
  Normal ScalingReplicaSet 87m deployment-controller Scaled up replica set nginx-66c775969 to 3
  Normal ScalingReplicaSet 5m26s deployment-controller Scaled up replica set nginx-66c775969 to 5 from 3
  Normal ScalingReplicaSet 4m51s deployment-controller Scaled down replica set nginx-66c775969 to 2 from 5
[root@OS02 ~]# 

```

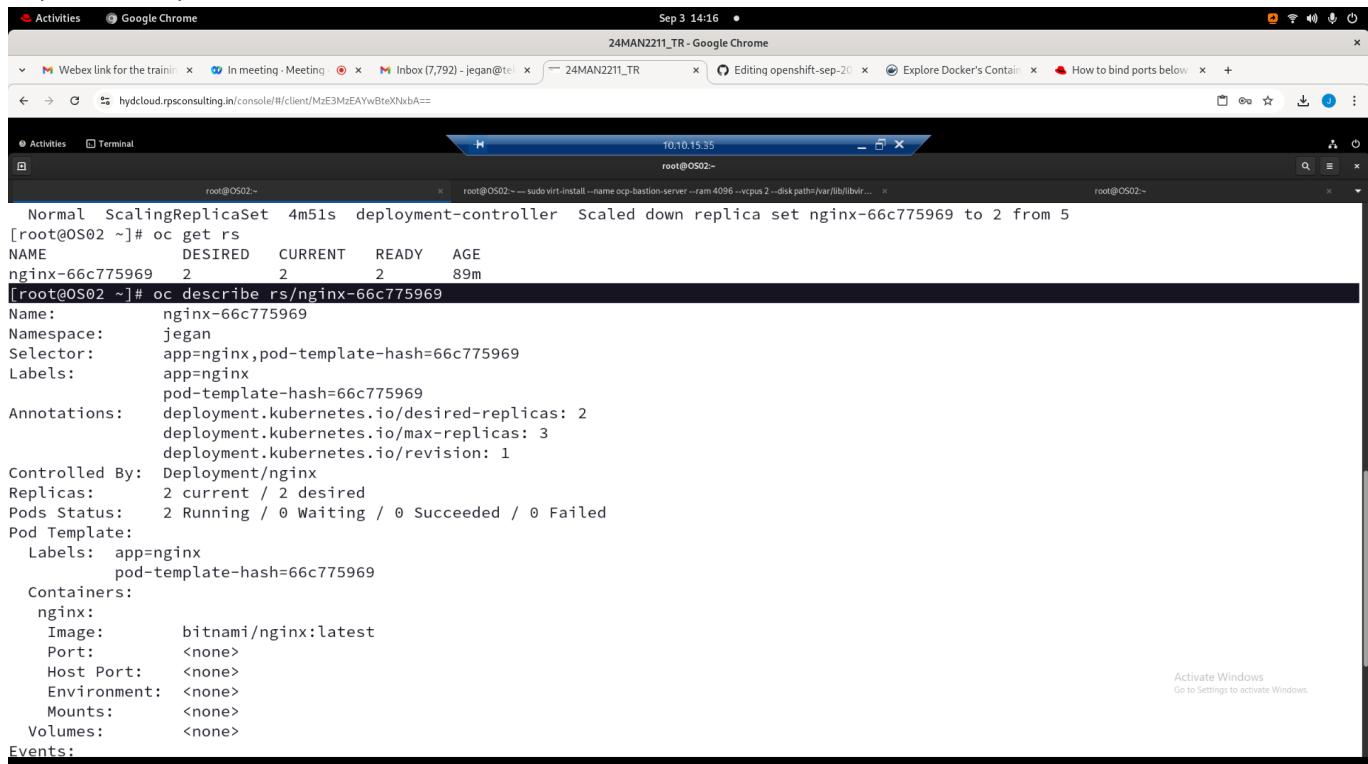
Lab - Finding more details about a replicaset

```

oc get rs
oc describe rs/nginx-

```

Expected output



```

Activities Google Chrome Sep 3 14:16 24MAN2211_TR - Google Chrome
Webex link for the trainin... In meeting - Meeting ... 24MAN2211_TR - Google Chrome
hydcloud.rpsconsulting.in/console/#/client/MzE3MzEAYwBteXNxbA==

Activities Terminal 10.10.15.35 root@OS02-
root@OS02:~# sudo virt-install --name ocp-bastion-server --ram 4096 --vcpus 2 --disk path=/var/lib/libvir...
root@OS02:~# 

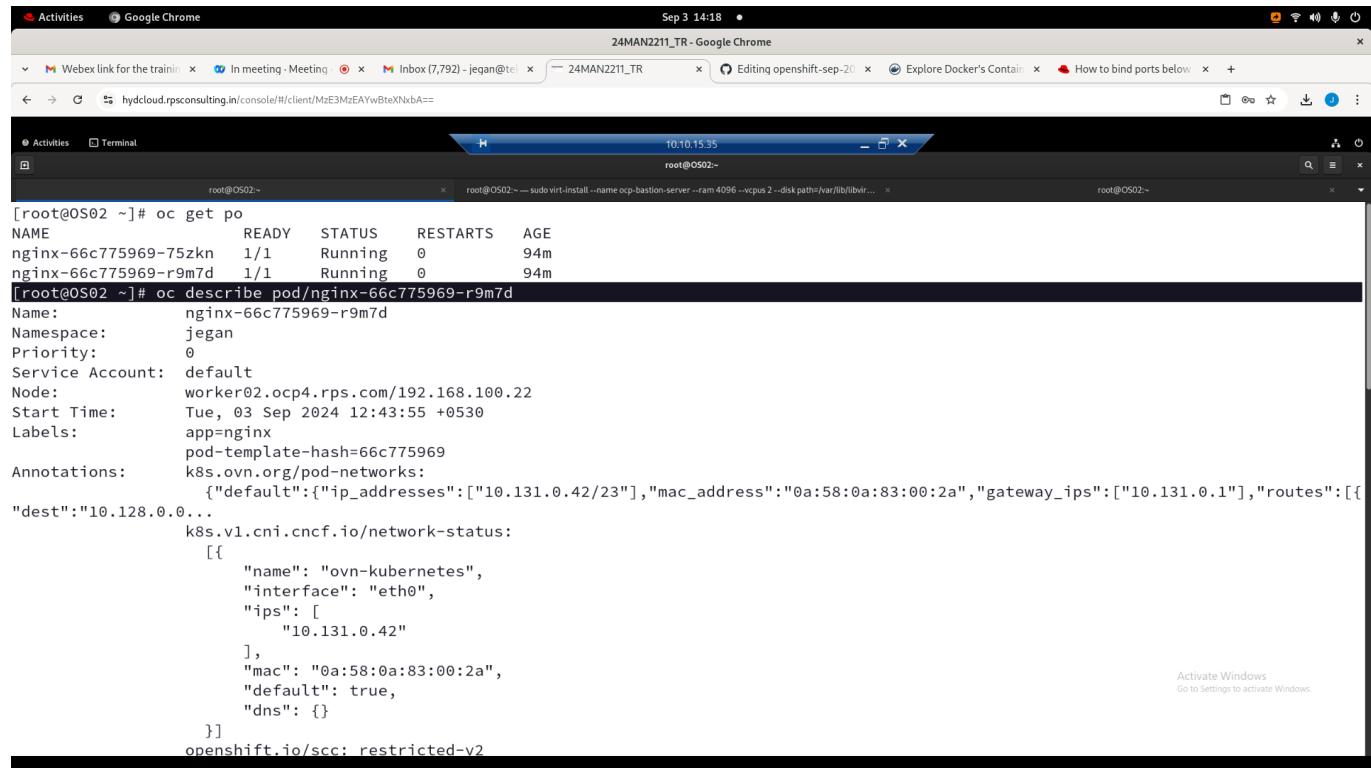
Normal ScalingReplicaSet 4m51s deployment-controller Scaled down replica set nginx-66c775969 to 2 from 5
[root@OS02 ~]# oc get rs
NAME      DESIRED   CURRENT   READY   AGE
nginx-66c775969  2         2         2         89m
[root@OS02 ~]# oc describe rs/nginx-66c775969
Name:          nginx-66c775969
Namespace:     jegan
Selector:      app=nginx, pod-template-hash=66c775969
Labels:        app=nginx
Annotations:   deployment.kubernetes.io/desired-replicas: 2
               deployment.kubernetes.io/max-replicas: 3
               deployment.kubernetes.io/revision: 1
Controlled By: Deployment/nginx
Replicas:      2 current / 2 desired
Pods Status:   2 Running / 0 Waiting / 0 Succeeded / 0 Failed
Pod Template:
  Labels:  app=nginx
          pod-template-hash=66c775969
  Containers:
    nginx:
      Image:  bitnami/nginx:latest
      Port:  <none>
      Host Port: <none>
      Environment: <none>
      Mounts: <none>
      Volumes: <none>
  Events:

```

Lab - Finding more details about a pod

```
oc get po
oc describe pod/
```

Expected output



The screenshot shows a Linux desktop environment with a terminal window open. The terminal window title is 'root@OS02:~' and the window title is 'root@OS02:~'. The terminal content displays the output of the 'oc get po' and 'oc describe pod' commands. The 'oc get po' command shows two pods: 'nginx-66c775969-75zkn' and 'nginx-66c775969-r9m7d'. The 'oc describe pod' command shows detailed information for the 'nginx-66c775969-r9m7d' pod, including its status, node, start time, labels, annotations, and network status. The annotations section includes a JSON object for the 'k8s.v1.cni.cncf.io/network-status' annotation. The terminal window is part of a desktop environment with other windows visible in the background, including a Google Chrome window and a terminal window titled '24MAN2211_TR - Google Chrome'.

```
NAME          READY   STATUS    RESTARTS   AGE
nginx-66c775969-75zkn  1/1     Running   0          94m
nginx-66c775969-r9m7d  1/1     Running   0          94m

[root@OS02 ~]# oc describe pod/nginx-66c775969-r9m7d
Name:           nginx-66c775969-r9m7d
Namespace:      jegan
Priority:       0
Service Account: default
Node:          worker02.ocp4.rps.com/192.168.100.22
Start Time:    Tue, 03 Sep 2024 12:43:55 +0530
Labels:         app=nginx
                pod-template-hash=66c775969
Annotations:   k8s.v1.cni.cncf.io/network-status:
                {"default":{"ip_addresses":["10.131.0.42/23"],"mac_address":"0a:58:0a:83:00:2a","gateway_ips":["10.131.0.1"],"routes":[{"dest":"10.128.0.0...","k8s.v1.cni.cncf.io/network-status:[{"name": "ovn-kubernetes", "interface": "eth0", "ips": [{"ips": "10.131.0.42"}], "mac": "0a:58:0a:83:00:2a", "default": true, "dns": {}}]}]}
                openshift.io/scc: restricted-v2

```

```

dest": "10.128.0.0...
    k8s.v1.cni.cncf.io/network-status:
    [
        {
            "name": "ovn-kubernetes",
            "interface": "eth0",
            "ips": [
                "10.131.0.42"
            ],
            "mac": "0a:58:0a:83:00:2a",
            "default": true,
            "dns": {}
        }
    ]
    openshift.io/scc: restricted-v2
    seccomp.security.alpha.kubernetes.io/pod: runtime/default
Status: Running
SeccompProfile: RuntimeDefault
IP: 10.131.0.42
IPS:
IP: 10.131.0.42
Controlled By: ReplicaSet/nginx-66c775969
Containers:
  nginx:
    Container ID: cri-o://e800da5686b09ea1d0544175f52ef5abf8771882d50596b51d7310b8bad0285d
    Image: bitnami/nginx:latest
    Image ID: docker.io/bitnami/nginx@sha256:8306a310c214576d55e7dfe05a58d9289c69ed46f25df3f0cda64127bead70bf
    Port: <none>
    Host Port: <none>
    State: Running

```



```

Initialized: True
Ready: True
ContainersReady: True
PodScheduled: True
Volumes:
  kube-api-access-55w68:
    Type: Projected (a volume that contains injected data from multiple sources)
    TokenExpirationSeconds: 3607
    ConfigMapName: kube-root-ca.crt
    ConfigMapOptional: <nil>
    DownwardAPI: true
    ConfigMapName: openshift-service-ca.crt
    ConfigMapOptional: <nil>
QoS Class: BestEffort
Node-Selectors: <none>
Tolerations: node.kubernetes.io/not-ready:NoExecute op=Exists for 300s
node.kubernetes.io/unreachable:NoExecute op=Exists for 300s
Events:
  Type Reason Age From Message
  ---- ---- -- -- -----
  Normal Scheduled 94m default-scheduler Successfully assigned jegan/nginx-66c775969-r9m7d to worker02.ocp4.rps.com
  Normal AddedInterface 94m multus Add eth0 [10.131.0.42/23] from ovn-kubernetes
  Normal Pulling 94m kubelet Pulling image "bitnami/nginx:latest"
  Normal Pulled 94m kubelet Successfully pulled image "bitnami/nginx:latest" in 5.48s (5.48s including waiting)
  Normal Created 94m kubelet Created container nginx
  Normal Started 94m kubelet Started container nginx

```

Lab - Getting inside a Pod shell

```

oc get po
oc rsh deploy/nginx
hostname
hostname -i
exit
oc exec -it pod/nginx-aabbccdd-1awefa
exit

```

Expected output

```

[root@OS02 ~]# oc get po
NAME      READY   STATUS    RESTARTS   AGE
nginx-66c775969-75zkn  1/1     Running   0          104m
nginx-66c775969-r9m7d  1/1     Running   0          104m
[root@OS02 ~]# oc rsh deploy/nginx
$ ls
50x.html  index.html
$ hostname
nginx-66c775969-r9m7d
$ hostname -i
10.131.0.42
$ curl localhost
/bin/sh: 4: curl: not found
$ exit
command terminated with exit code 127
[root@OS02 ~]# oc exec -it pod/nginx-66c775969-r9m7d sh
kubectl exec [POD] [COMMAND] is DEPRECATED and will be removed in a future version. Use kubectl exec [POD] -- [COMMAND] instead.
$ ls
50x.html  index.html
$ exit
[root@OS02 ~]#

```

Activate Windows
Go to Settings to activate Windows.

Lab - Finding a pod IP address

```
oc get po -o wide
```

Expected output

```

[root@OS02 ~]# oc get po
NAME      READY   STATUS    RESTARTS   AGE
nginx-66c775969-75zkn  1/1     Running   0          104m
nginx-66c775969-r9m7d  1/1     Running   0          104m
[root@OS02 ~]# oc rsh deploy/nginx
$ ls
50x.html  index.html
$ hostname
nginx-66c775969-r9m7d
$ hostname -i
10.131.0.42
$ curl localhost
/bin/sh: 4: curl: not found
$ exit
command terminated with exit code 127
[root@OS02 ~]# oc exec -it pod/nginx-66c775969-r9m7d sh
kubectl exec [POD] [COMMAND] is DEPRECATED and will be removed in a future version. Use kubectl exec [POD] -- [COMMAND] instead.
$ ls
50x.html  index.html
$ exit
[root@OS02 ~]#

```

```

[root@OS02 ~]# oc get po -o wide
NAME      READY   STATUS    RESTARTS   AGE     IP          NODE      NOMINATED NODE  READINESS GATES
nginx-66c775969-75zkn  1/1     Running   0          109m   10.128.2.21  worker01.ocp4.rps.com  <none>        <none>
nginx-66c775969-r9m7d  1/1     Running   0          109m   10.131.0.42  worker02.ocp4.rps.com  <none>        <none>
[root@OS02 ~]#

```

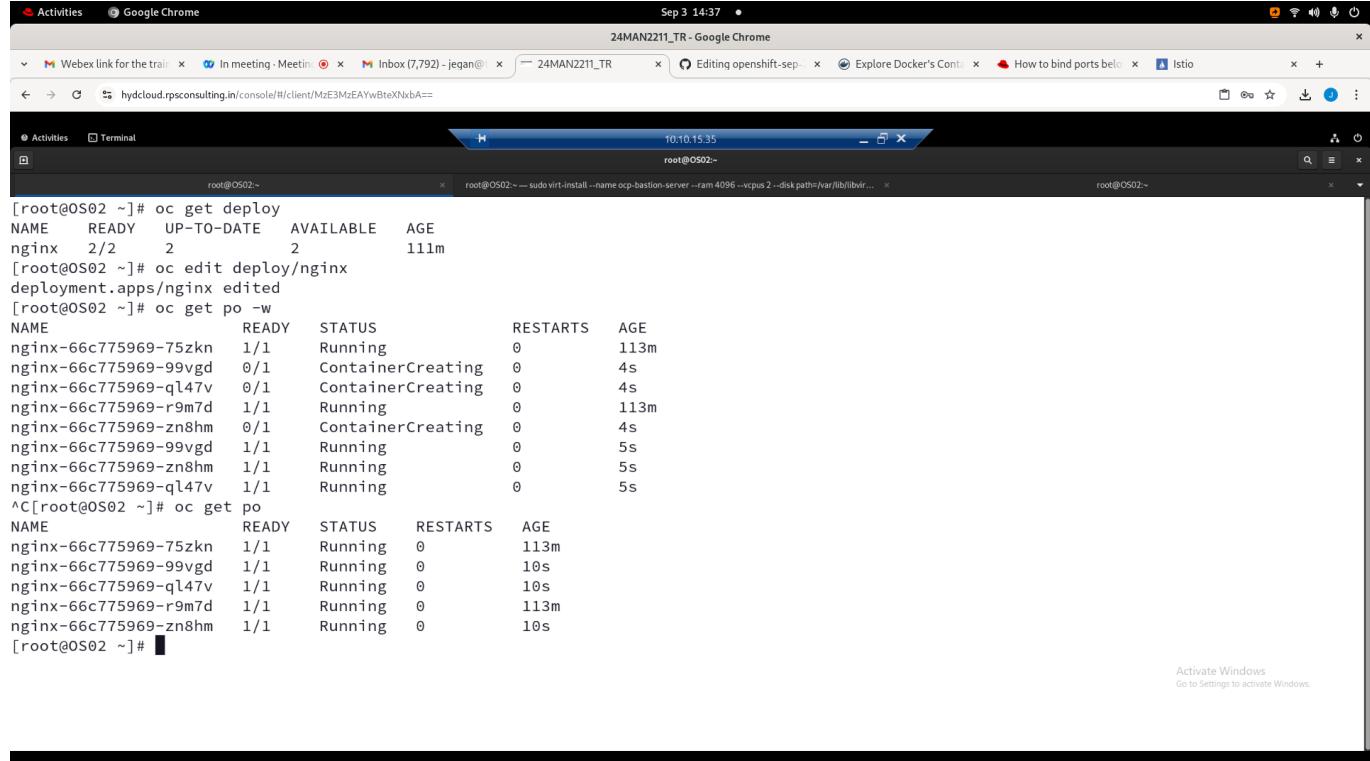
Activate Windows
Go to Settings to activate Windows.

Lab - Edit a deployment specification

Once you edit, you could update the replicas to 5, save and exit the file.

```
oc get deploy
oc edit deploy/nginx
oc get po -w
oc get po
```

Expected output



The screenshot shows a terminal window with a dark theme, running on a host with IP 10.10.15.35 and root user (root@OS02). The terminal displays the following command history:

```
[root@OS02 ~]# oc get deploy
NAME      READY  UP-TO-DATE   AVAILABLE   AGE
nginx    2/2      2           2           111m
[root@OS02 ~]# oc edit deploy/nginx
deployment.apps/nginx edited
[root@OS02 ~]# oc get po -w
NAME           READY  STATUS      RESTARTS   AGE
nginx-66c775969-75zkn  1/1    Running     0          113m
nginx-66c775969-99vgd  0/1    ContainerCreating   0          4s
nginx-66c775969-ql47v  0/1    ContainerCreating   0          4s
nginx-66c775969-r9m7d  1/1    Running     0          113m
nginx-66c775969-zn8hm  0/1    ContainerCreating   0          4s
nginx-66c775969-99vgd  1/1    Running     0          5s
nginx-66c775969-zn8hm  1/1    Running     0          5s
nginx-66c775969-ql47v  1/1    Running     0          5s
^C[root@OS02 ~]# oc get po
NAME           READY  STATUS      RESTARTS   AGE
nginx-66c775969-75zkn  1/1    Running     0          113m
nginx-66c775969-99vgd  1/1    Running     0          10s
nginx-66c775969-ql47v  1/1    Running     0          10s
nginx-66c775969-r9m7d  1/1    Running     0          113m
nginx-66c775969-zn8hm  1/1    Running     0          10s
[root@OS02 ~]#
```

The terminal window is part of a desktop environment, with a taskbar at the top showing various open browser tabs and system icons. A watermark for 'Activate Windows' is visible in the bottom right corner of the terminal window.



```

# Please edit the object below. Lines beginning with a '#' will be ignored,
# and an empty file will abort the edit. If an error occurs while saving this file will be
# reopened with the relevant failures.
#
apiVersion: apps/v1
kind: Deployment
metadata:
  annotations:
    deployment.kubernetes.io/revision: "1"
  creationTimestamp: "2024-09-03T07:13:55Z"
  generation: 3
  labels:
    app: nginx
    name: nginx
    namespace: jegan
    resourceVersion: "123602"
    uid: 76d05329-c876-4c08-b626-b7e428520623
spec:
  progressDeadlineSeconds: 600
  replicas: 2
  revisionHistoryLimit: 10
  selector:
    matchLabels:
      app: nginx
    strategy:
      rollingUpdate:
        /tmp/oc-edit-1089678174.yaml" 66L, 1786B
        1,1
        Top

```



```

# Please edit the object below. Lines beginning with a '#' will be ignored,
# and an empty file will abort the edit. If an error occurs while saving this file will be
# reopened with the relevant failures.
#
apiVersion: apps/v1
kind: Deployment
metadata:
  annotations:
    deployment.kubernetes.io/revision: "1"
  creationTimestamp: "2024-09-03T07:13:55Z"
  generation: 4
  labels:
    app: nginx
    name: nginx
    namespace: jegan
    resourceVersion: "132306"
    uid: 76d05329-c876-4c08-b626-b7e428520623
spec:
  progressDeadlineSeconds: 600
  replicas: 5
  revisionHistoryLimit: 10
  selector:
    matchLabels:
      app: nginx
    strategy:
      rollingUpdate:
        /tmp/oc-edit-3533766649.yaml" 66L, 1786B
        7,1
        Top

```

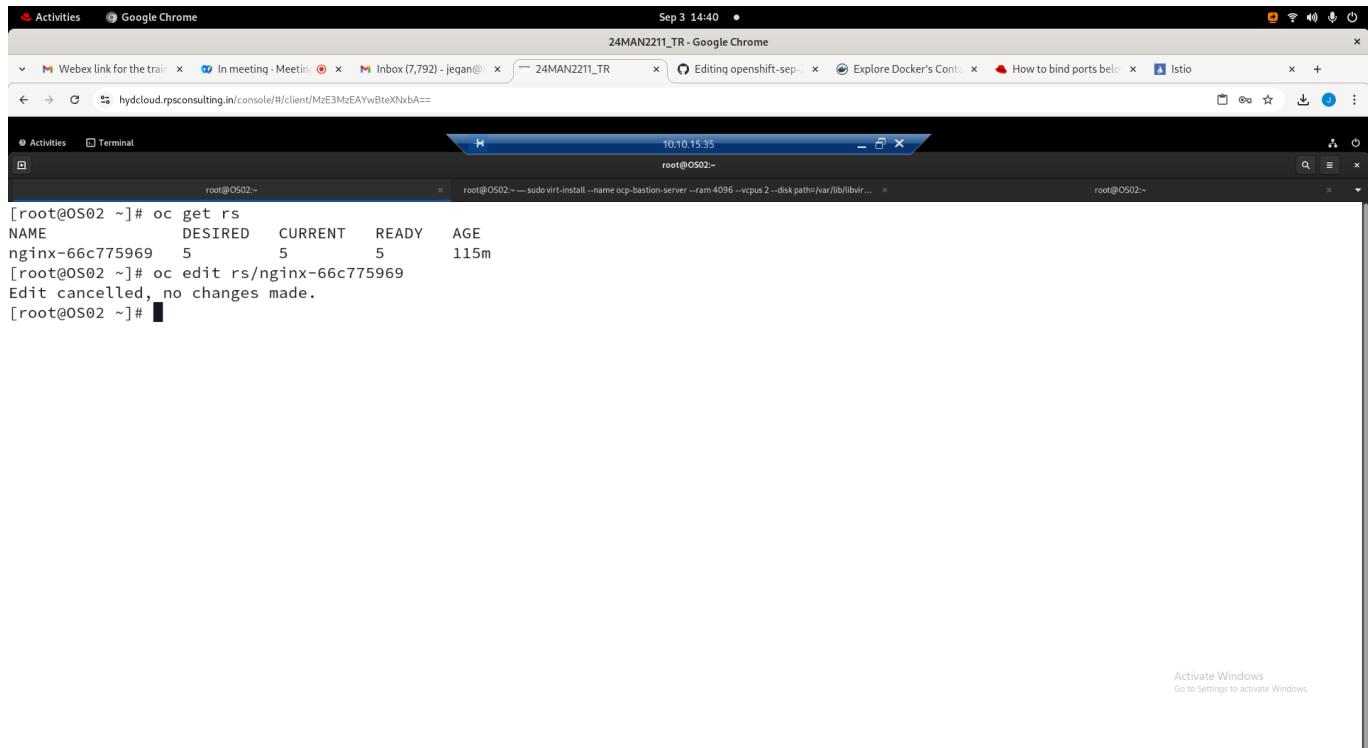
Lab - Edit a replicaset definition

```

oc get rs
oc edit rs/nginx-6677c75969

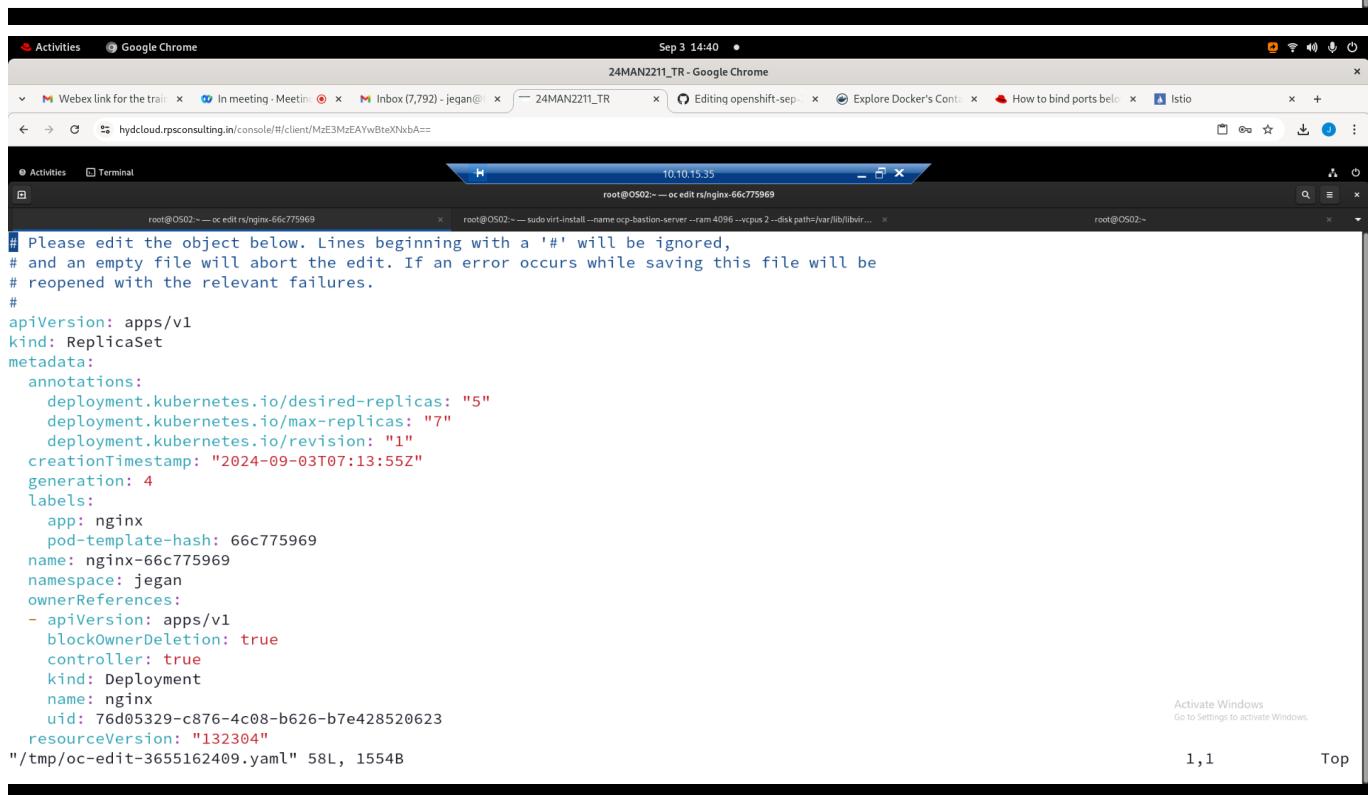
```

Expected output



```
[root@OS02 ~]# oc get rs
NAME        DESIRED   CURRENT   READY   AGE
nginx-66c775969  5         5         5     115m
[root@OS02 ~]# oc edit rs/nginx-66c775969
Edit cancelled, no changes made.
[root@OS02 ~]#
```

Activate Windows
Go to Settings to activate Windows.



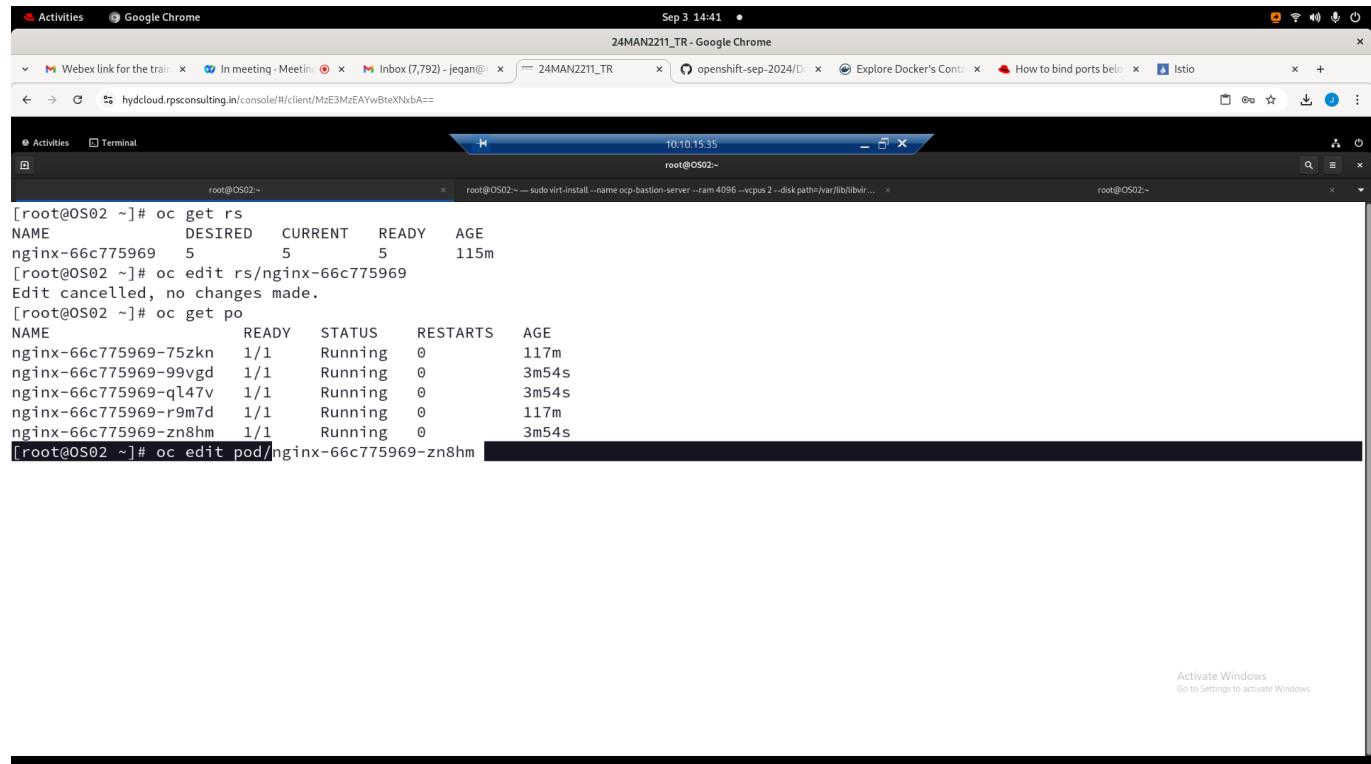
```
# Please edit the object below. Lines beginning with a '#' will be ignored,
# and an empty file will abort the edit. If an error occurs while saving this file will be
# reopened with the relevant failures.
#
apiVersion: apps/v1
kind: ReplicaSet
metadata:
  annotations:
    deployment.kubernetes.io/desired-replicas: "5"
    deployment.kubernetes.io/max-replicas: "7"
    deployment.kubernetes.io/revision: "1"
  creationTimestamp: "2024-09-03T07:13:55Z"
  generation: 4
  labels:
    app: nginx
    pod-template-hash: 66c775969
  name: nginx-66c775969
  namespace: jegan
  ownerReferences:
  - apiVersion: apps/v1
    blockOwnerDeletion: true
    controller: true
    kind: Deployment
    name: nginx
    uid: 76d05329-c876-4c08-b626-b7e428520623
  resourceVersion: "132304"
  "/tmp/oc-edit-3655162409.yaml" 58L, 1554B
```

Activate Windows
Go to Settings to activate Windows.

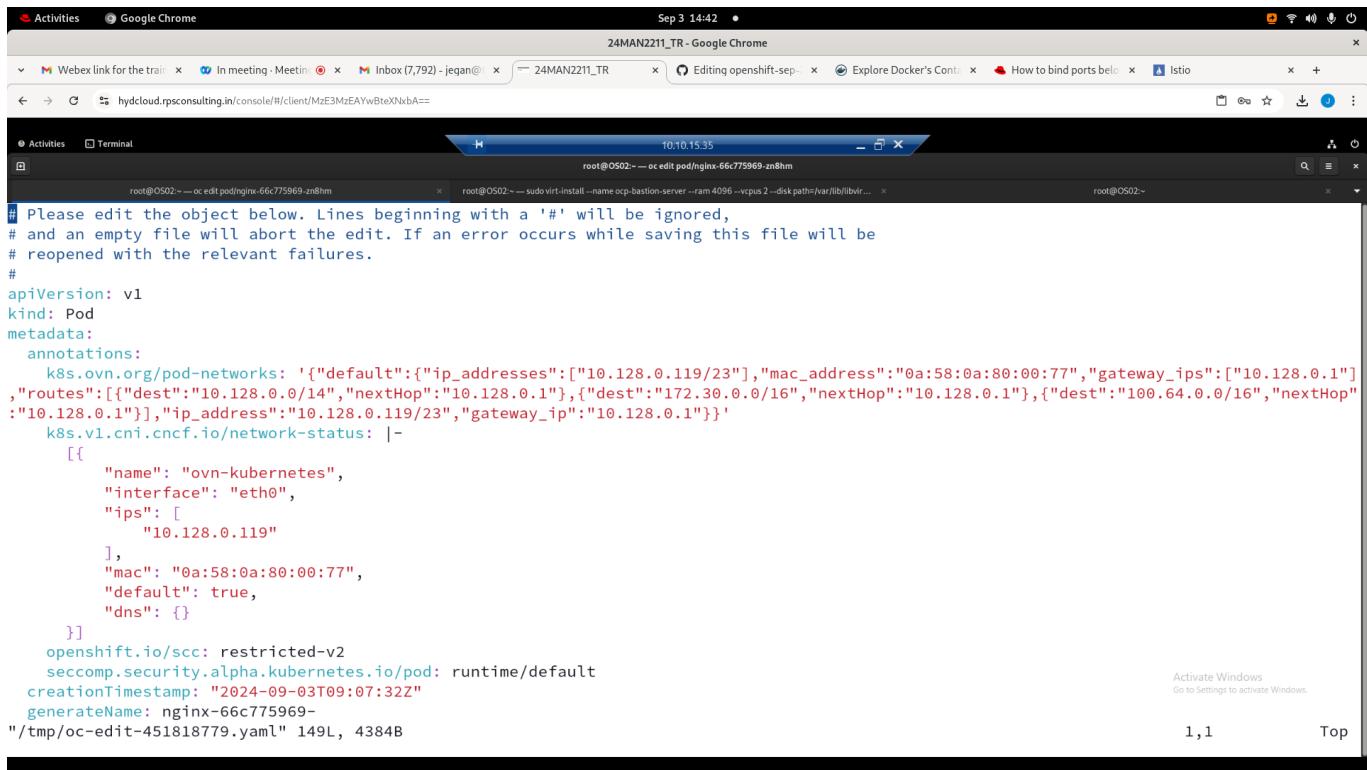
Lab - Editing a pod definition

```
oc get po
oc edit pod/nginx-aabbccdd-3453asf
```

Expected output

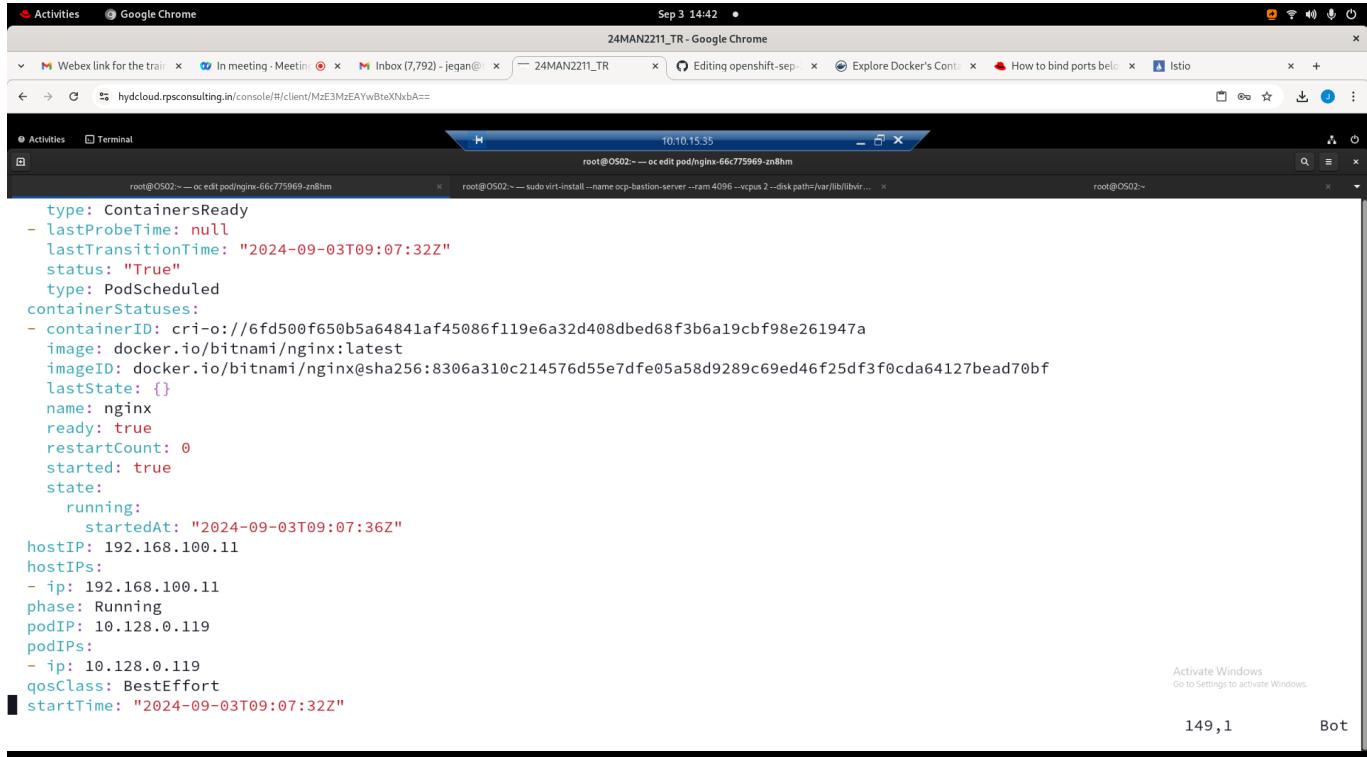


```
root@OS02 ~]# oc get rs
NAME      DESIRED   CURRENT   READY   AGE
nginx-66c775969   5         5         5     115m
[root@OS02 ~]# oc edit rs/nginx-66c775969
Edit cancelled, no changes made.
[root@OS02 ~]# oc get po
NAME          READY   STATUS    RESTARTS   AGE
nginx-66c775969-75zkn  1/1     Running   0          117m
nginx-66c775969-99vgd  1/1     Running   0          3m54s
nginx-66c775969-q147v  1/1     Running   0          3m54s
nginx-66c775969-r9m7d  1/1     Running   0          117m
nginx-66c775969-zn8hm  1/1     Running   0          3m54s
[root@OS02 ~]# oc edit pod/nginx-66c775969-zn8hm
```



```
# Please edit the object below. Lines beginning with a '#' will be ignored,
# and an empty file will abort the edit. If an error occurs while saving this file will be
# reopened with the relevant failures.
#
apiVersion: v1
kind: Pod
metadata:
  annotations:
    k8s.ovn.org/pod-networks: '[{"default":{"ip_addresses":["10.128.0.119/23"], "mac_address":"0a:58:0a:80:00:77", "gateway_ips":["10.128.0.1"]}}, {"routes":[{"dest":"10.128.0.0/14", "nextHop":"10.128.0.1"}, {"dest":"172.30.0.0/16", "nextHop":"10.128.0.1"}, {"dest":"100.64.0.0/16", "nextHop":"10.128.0.1"}], "ip_address":"10.128.0.119/23", "gateway_ip":"10.128.0.1"}'
    k8s.v1.cni.cncf.io/network-status: |-
      [
        {
          "name": "ovn-kubernetes",
          "interface": "eth0",
          "ips": [
            "10.128.0.119"
          ],
          "mac": "0a:58:0a:80:00:77",
          "default": true,
          "dns": {}
        }
      ]
  openshift.io/scc: restricted-v2
  seccomp.security.alpha.kubernetes.io/pod: runtime/default
  creationTimestamp: "2024-09-03T09:07:32Z"
  generateName: nginx-66c775969-
  /tmp/oc-edit-451818779.yaml" 149L, 4384B
```

Activate Windows
Go to Settings to activate Windows.



```
type: ContainersReady
- lastProbeTime: null
lastTransitionTime: "2024-09-03T09:07:32Z"
status: "True"
type: PodScheduled
containerStatuses:
- containerID: cri-o://6fd500f650b5a64841af45086f119e6a32d408dbed68f3b6a19cbf98e261947a
  image: docker.io/bitnami/nginx:latest
  imageID: docker.io/bitnami/nginx@sha256:8306a310c214576d55e7dfe05a58d9289c69ed46f25df3f0cda64127bead70bf
  lastState: {}
  name: nginx
  ready: true
  restartCount: 0
  started: true
  state:
    running:
      startedAt: "2024-09-03T09:07:36Z"
  hostIP: 192.168.100.11
  hostIPs:
  - ip: 192.168.100.11
    phase: Running
    podIP: 10.128.0.119
    podIPs:
    - ip: 10.128.0.119
      qosClass: BestEffort
  startTime: "2024-09-03T09:07:32Z"
```

Activate Windows
Go to Settings to activate Windows.

Lab - Testing a Pod using port forwarding (Not used in production)

Run the below command in one terminal tab

```
oc port-forward pod/nginx-aabcaadsf-r4acs34 9005:8080
```

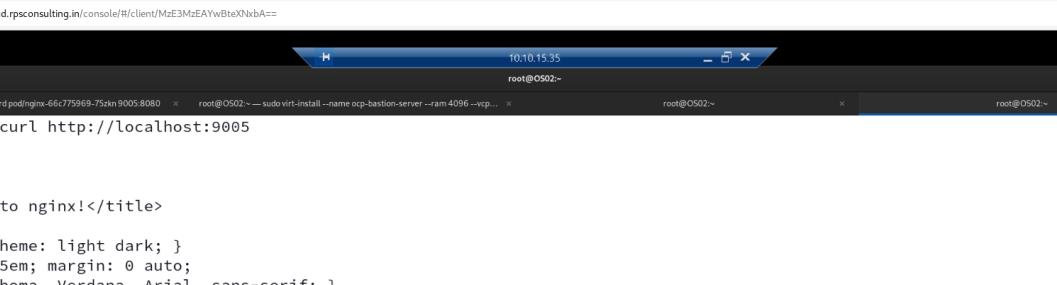
Expected output

```
Activities Google Chrome Sep 3 14:52 • 24MAN2211_TR - Google Chrome
Webex link for the train x In meeting - Meeting x Inbox (7,792) - jegan@ 24MAN2211_TR x openshift-sep-2024/D x Explore Docker's Cont x How to bind ports belo x Istio x + hydcloud.rpsconsulting.in/console/#/client/MzE3MzEAYwBtExNxbA== x Activities Terminal 10.10.15.35 x
root@OS02:~ oc port-forward pod/nginx-66c775969-75zkn 9005:8080 x root@OS02:~ sudo virt-install --name ocp-bastion-server --ram 4096 --vcp... x root@OS02:~ x root@OS02:~ x
[root@OS02 ~]# oc get po
NAME           READY   STATUS    RESTARTS   AGE
nginx-66c775969-75zkn  1/1    Running   0          127m
nginx-66c775969-99vgd  1/1    Running   0          13m
nginx-66c775969-ql47v  1/1    Running   0          13m
nginx-66c775969-r9m7d  1/1    Running   0          127m
nginx-66c775969-zn8hm  1/1    Running   0          13m
[root@OS02 ~]# oc get po -o wide
NAME           READY   STATUS    RESTARTS   AGE   IP           NODE   NOMINATED NODE   READINESS GATES
nginx-66c775969-75zkn  1/1    Running   0          127m  10.128.2.21  worker01.ocp4.rps.com  <none>        <none>
nginx-66c775969-99vgd  1/1    Running   0          13m   10.130.0.147  master03.ocp4.rps.com  <none>        <none>
nginx-66c775969-ql47v  1/1    Running   0          13m   10.129.0.84   master02.ocp4.rps.com  <none>        <none>
nginx-66c775969-r9m7d  1/1    Running   0          127m  10.131.0.42  worker02.ocp4.rps.com  <none>        <none>
nginx-66c775969-zn8hm  1/1    Running   0          13m   10.128.0.119  master01.ocp4.rps.com  <none>        <none>
[root@OS02 ~]# oc port-forward pod/nginx-66c775969-75zkn 9001:8080
Unable to listen on port 9001: Listeners failed to create with the following errors: [unable to create listener: Error listen tcp4 127.0.0.1:9001: bind: address already in use unable to create listener: Error listen tcp6 [:1]:9001: bind: address already in use]
error: unable to listen on any of the requested ports: [{9001 8080}]
[root@OS02 ~]# ps aux | grep 9001
user18  96505  0.5  0.0 7686048 108592 pts/2 Sl+ 14:51 0:00 oc port-forward pod/nginx-66c775969-qhq6l 9001:8080
root   96697  0.0  0.0 221664 2072 pts/0 S+ 14:51 0:00 grep --color=auto 9001
[root@OS02 ~]# oc port-forward pod/nginx-66c775969-75zkn 9005:8080
Forwarding from 127.0.0.1:9005 -> 8080
Forwarding from [:1]:9005 -> 8080
Activate Windows
Go to Settings to activate Windows.
```

From another terminal tab, you can access the web page served by the above pod as shown below

```
curl http://localhost:9005
```

Expected output



```
[root@OS02 ~]# curl http://localhost:9005
<!DOCTYPE html>
<html>
<head>
<title>Welcome to nginx!</title>
<style>
html { color-scheme: light dark; }
body { width: 35em; margin: 0 auto;
font-family: Tahoma, Verdana, Arial, sans-serif; }
</style>
</head>
<body>
<h1>Welcome to nginx!</h1>
<p>If you see this page, the nginx web server is successfully installed and
working. Further configuration is required.</p>

<p>For online documentation and support please refer to
<a href="http://nginx.org/">nginx.org</a>.<br/>
Commercial support is available at
<a href="http://nginx.com/">nginx.com</a>.</p>

<p><em>Thank you for using nginx.</em></p>
</body>
</html>
[root@OS02 ~]#
```

In order to quit the port-forward, go back the first tab and press **Ctrl+C**

Things to note

- port-forward is used primarily for testing purpose
- this is never used in production
- this is just a quick way to test if the application running within a Pod container is working fine
- hence must be avoid otherwise
- the port on the left side is opened up on your local machine
- the port on the right side 8080 is used by bitnami/nginx container within the Pod
- you can use any port which is not already used by some participant on that server, instead of 9005 you may try any other port

Info - Openshift/Kubernetes service

- service represents a group of load-balanced pods from a single deployment
- service can be given an unique name, it acquires an unique ip address which are stable
- anyone who wants to access the application Pods, they can access them via service name or its IP address
- services are of 2 types
 1. Internal service (accessible within openshift cluster - i.e pods)
 - ClusterIP service
 2. External service (accessible outside openshift cluster)
 - NodePort service
 - LoadBalancer service

Info - ClusterIP Service Overview

- is an internal service
- accessible only within the Pod shell, i.e inside openshift cluster only
- practical use-cases for ClusterIP service is to expose database for front-end application/microservice running with openshift
- internal load-balancing done kube-proxy pod that runs in every kubernetes/openshift node

Info - NodePort Service Overview

- is an external service
- accessible outside openshift cluster
- Kubernetes/Openshift has reserved ports in the range 30000-32767 for the purpose of node port services
- For each NodePort service we create for a deployment, a port in the range 30000-32767 will be allocated for the nodeport service
- the nodeport is opened by openshift in all the nodes present in the openshift cluster (master1, master2, master, worker1 and worker2)
- internal load-balancing done kube-proxy pod that runs in every

kubernetes/openshift node

- advantages of using NodePort service
 - it is an internal implementation of Kubernetes/OpenShift, hence even if you run your cluster in AWS/Azure it won't attract any extra charges when we create a NodePort service
- drawbacks
 - it is not user-friendly to access a node-port, it is not convenient
 - we will end up opening many ports in firewall for each node port service we create, this might attract security issues

Info - LoadBalancer Service Overview

- is an external service
- generally used in public cloud environments like AWS, Azure, GCP, Digital Ocean, etc.,
- can also be used in On-Prem Kubernetes/OpenShift setup like our lab setup
- in order to support load-balancer service in a local OpenShift setup, we need to install Metallb Operator and configure it
- this will create an external loadbalancer like ELB/ALB etc., in public cloud environments like AWS/Azure
- advantages
 - it is convenient to access as they tend to use user-friendly ports like 8080, etc.,
 - user-friendly
 - it is free, when it is used in a local Kubernetes/OpenShift setup with Metallb operator
- drawbacks
 - it will attract extra charges when used in EKS (AWS Elastic Kubernetes Service - Managed Kubernetes cluster in AWS)
 - it will attract extra charges when used in AKS (Azure Kubernetes Service - Managed Kubernetes cluster in Azure)
 - it will attract extra charges when used in ROSA (AWS Red Hat OpenShift - Managed OpenShift cluster in AWS)
 - it will attract extra charges when used in ARO (Azure Red Hat OpenShift - Managed OpenShift cluster from Azure)

Info - Ingress

- Ingress is a forwarding rule
- it is not a service
- it is a feature implemented by Kubernetes, also supported in OpenShift
- For Ingress to work, we need the below in OpenShift/Kubernetes Cluster
 - Load Balancer (e.g: Nginx LB or HA Proxy, etc)
 - Ingress Controller (e.g Nginx Ingress Controller or HAProxy Ingress Controller)
 - Ingress (Forwarding rule - user defined)
- Ingress can forward the calls to multiple different services based on rules we define

- Ingress provides a convenient public url to access the application externally

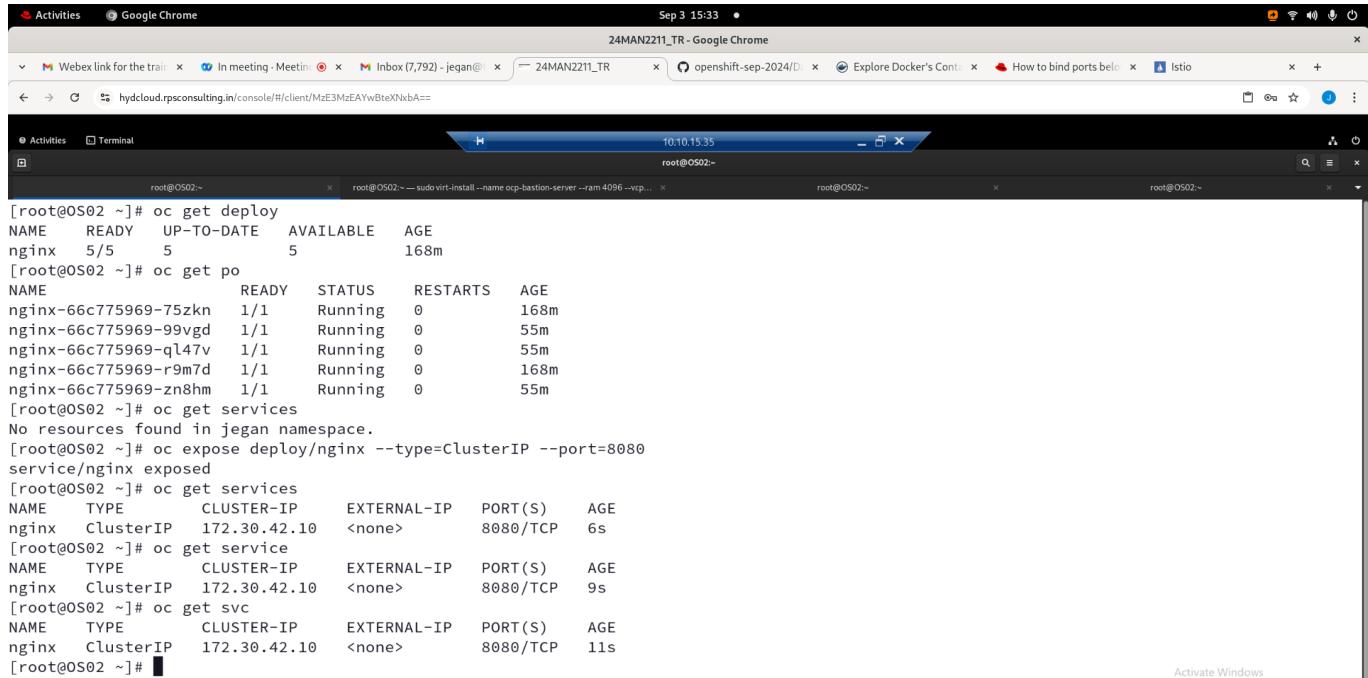
Info - Routes

- Route is a feature introduced in Red Hat OpenShift
- not supported in Kubernetes
- Route is implemented based on Kubernetes Ingress
- Route generally forward the call to a single Kubernetes/OpenShift Service (ClusterIP, NodePort or LoadBalancer service)
- Route provides a convenient public url to access the application externally
- gives the benefit of loadbalancer service without attracting any extra charges
- in general, OpenShift users don't use nodeport service at all instead they use Route
- Route is also a free alternate to LoadBalancer service

Lab - Creating an internal ClusterIP service in imperative style

```
oc get deploy
oc expose deploy/nginx --type=ClusterIP --port=8080
oc get services
oc get service
oc get svc
```

Expected output



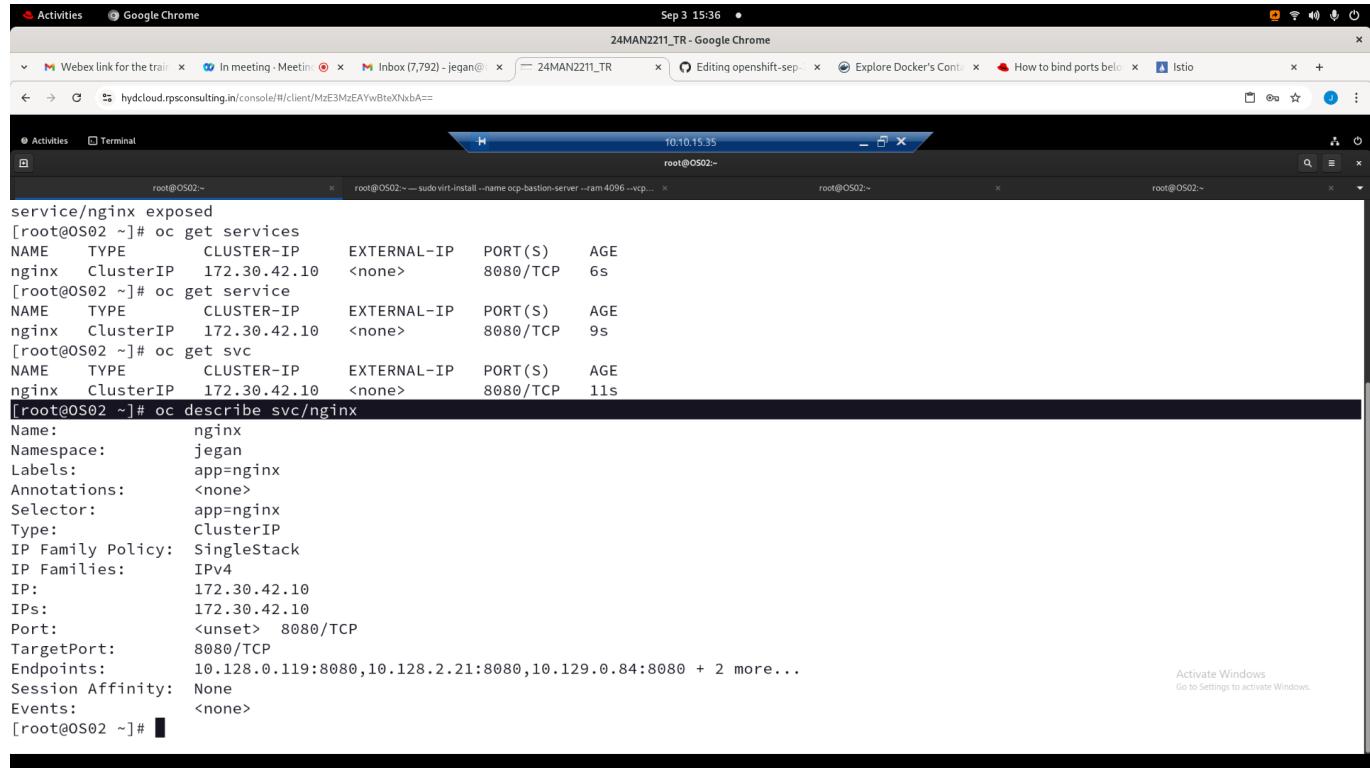
```
[root@OS02 ~]# oc get deploy
NAME      READY  UP-TO-DATE  AVAILABLE  AGE
nginx    5/5      5          5          168m
[root@OS02 ~]# oc get po
NAME          READY  STATUS  RESTARTS  AGE
nginx-66c775969-75zkn  1/1    Running  0          168m
nginx-66c775969-99vgd  1/1    Running  0          55m
nginx-66c775969-ql47v  1/1    Running  0          55m
nginx-66c775969-r9m7d  1/1    Running  0          168m
nginx-66c775969-zn8hm  1/1    Running  0          55m
[root@OS02 ~]# oc get services
No resources found in jegan namespace.
[root@OS02 ~]# oc expose deploy/nginx --type=ClusterIP --port=8080
service/nginx exposed
[root@OS02 ~]# oc get services
NAME      TYPE  CLUSTER-IP  EXTERNAL-IP  PORT(S)  AGE
nginx  ClusterIP  172.30.42.10  <none>    8080/TCP  6s
[root@OS02 ~]# oc get service
NAME      TYPE  CLUSTER-IP  EXTERNAL-IP  PORT(S)  AGE
nginx  ClusterIP  172.30.42.10  <none>    8080/TCP  9s
[root@OS02 ~]# oc get svc
NAME      TYPE  CLUSTER-IP  EXTERNAL-IP  PORT(S)  AGE
nginx  ClusterIP  172.30.42.10  <none>    8080/TCP  11s
```

Activate Windows
Go to Settings to activate Windows.

You can find more details about a service as shown below

```
oc describe svc/nginx
```

Expected output



```
service/nginx exposed
[root@OS02 ~]# oc get services
NAME      TYPE      CLUSTER-IP      EXTERNAL-IP      PORT(S)      AGE
nginx    ClusterIP   172.30.42.10   <none>        8080/TCP    6s
[root@OS02 ~]# oc get service
NAME      TYPE      CLUSTER-IP      EXTERNAL-IP      PORT(S)      AGE
nginx    ClusterIP   172.30.42.10   <none>        8080/TCP    9s
[root@OS02 ~]# oc get svc
NAME      TYPE      CLUSTER-IP      EXTERNAL-IP      PORT(S)      AGE
nginx    ClusterIP   172.30.42.10   <none>        8080/TCP    11s
[root@OS02 ~]# oc describe svc/nginx
Name:            nginx
Namespace:       jegan
Labels:          app=nginx
Annotations:    <none>
Selector:        app=nginx
Type:            ClusterIP
IP Family Policy: SingleStack
IP Families:    IPv4
IP:              172.30.42.10
IPs:             172.30.42.10
Port:            <unset>  8080/TCP
TargetPort:      8080/TCP
Endpoints:       10.128.0.119:8080,10.128.2.21:8080,10.129.0.84:8080 + 2 more...
Session Affinity: None
Events:          <none>
[root@OS02 ~]#
```

To access the nginx clusterip internal service, let's create a test-pod use service discovery(accessing service by its name)

```
oc run test-pod --image=tektutor/spring-ms:1.0
oc get po
oc exec -it pod/test-pod sh
curl http://nginx:8080
curl http://<service-name>:<service-port>
exit
```

In the above command

nginx - is the name of the nginx clusterip service
8080 - is the service port

Expected output

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hydcloud.rpsconsulting.in/console/#/client/MzE3MzEAYwBteXNbA==

Activities Terminal 10.10.15.35

root@OS02:~— oc exec -it test-pod sh

root@OS02:~— sudo virt-install --name ocp-bastion-server --ram 4096 --vcp... x

root@OS02:~

root@OS02:~

```
[root@OS02 ~]# oc get po
NAME READY STATUS RESTARTS AGE
nginx-66c775969-75zkn 1/1 Running 0 178m
nginx-66c775969-99vgd 1/1 Running 0 64m
nginx-66c775969-ql47v 1/1 Running 0 64m
nginx-66c775969-r9m7d 1/1 Running 0 178m
nginx-66c775969-zn8hm 1/1 Running 0 64m
[root@OS02 ~]# oc run test-pod --image=tektutor/spring-ms:1.0
Warning: would violate PodSecurity "restricted:v1.24": allowPrivilegeEscalation != false (container "test-pod" must set securityContext.allowPrivilegeEscalation=false), unrestricted capabilities (container "test-pod" must set securityContext.capabilities.drop=["ALL"]), runAsNonRoot != true (pod or container "test-pod" must set securityContext.runAsNonRoot=true), seccompProfile (pod or container "test-pod" must set securityContext.seccompProfile.type to "RuntimeDefault" or "Localhost")
pod/test-pod created
[root@OS02 ~]# oc get po
NAME READY STATUS RESTARTS AGE
nginx-66c775969-75zkn 1/1 Running 0 178m
nginx-66c775969-99vgd 1/1 Running 0 64m
nginx-66c775969-ql47v 1/1 Running 0 64m
nginx-66c775969-r9m7d 1/1 Running 0 178m
nginx-66c775969-zn8hm 1/1 Running 0 64m
test-pod 1/1 Running 0 4s
[root@OS02 ~]# oc exec -it test-pod sh
kubectl exec [POD] [COMMAND] is DEPRECATED and will be removed in a future version. Use kubectl exec [POD] -- [COMMAND] instead.
sh-4.4# curl http://nginx:8080
<!DOCTYPE html>
<html>
<head>
<title>Welcome to nginx!</title>
```

Activate Windows
Go to Settings to activate Windows.

Activities Google Chrome Sep 3 15:45 24MAN2211_TR - Google Chrome

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hydcloud.rpsconsulting.in/console/#/client/MzE3MzEAYwBteXNbA==

Activities Terminal 10.10.15.35

root@OS02:~— oc exec -it test-pod sh

root@OS02:~— sudo virt-install --name ocp-bastion-server --ram 4096 --vcp... x

root@OS02:~

root@OS02:~

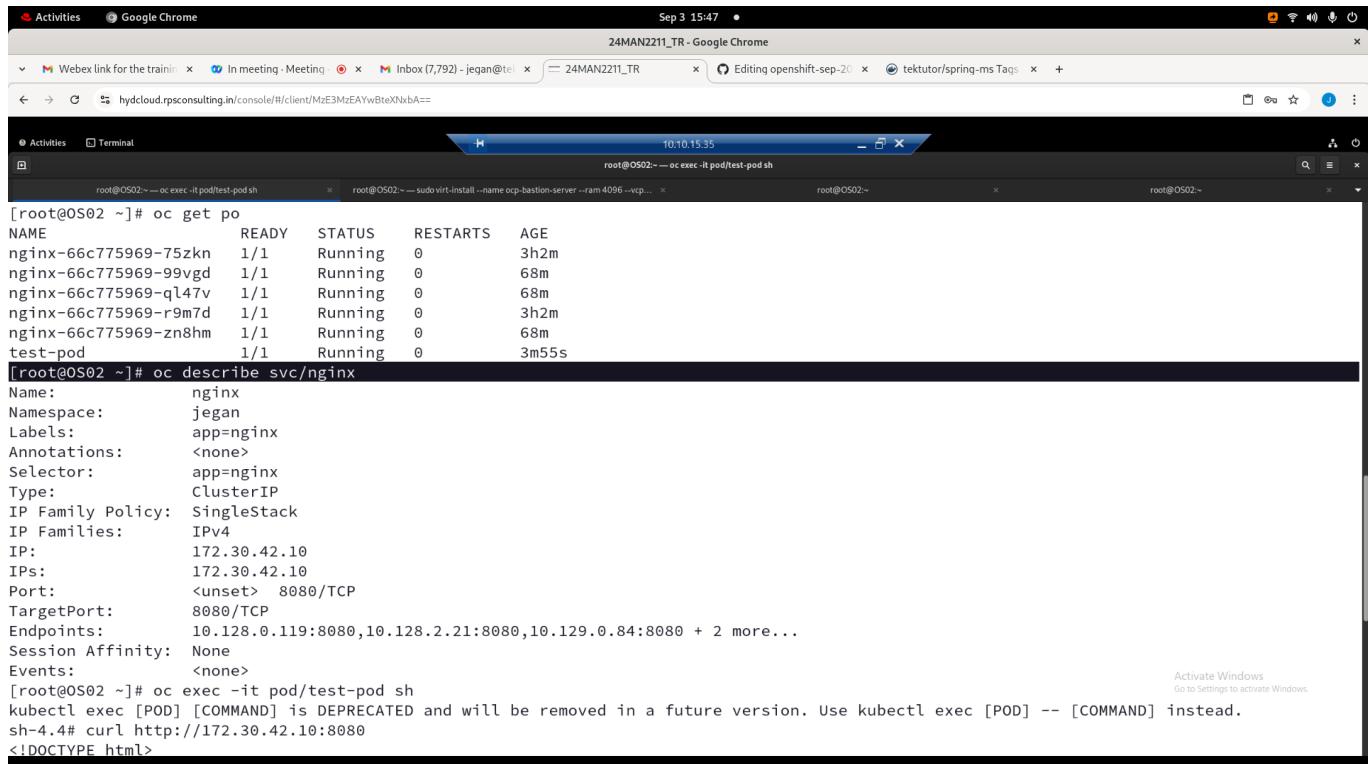
```
[root@OS02 ~]# oc exec -it test-pod sh
kubectl exec [POD] [COMMAND] is DEPRECATED and will be removed in a future version. Use kubectl exec [POD] -- [COMMAND] instead.
sh-4.4# curl http://nginx:8080
<!DOCTYPE html>
<html>
<head>
<title>Welcome to nginx!</title>
<style>
html { color-scheme: light dark; }
body { width: 35em; margin: 0 auto;
font-family: Tahoma, Verdana, Arial, sans-serif; }
</style>
</head>
<body>
<h1>Welcome to nginx!</h1>
<p>If you see this page, the nginx web server is successfully installed and
working. Further configuration is required.</p>
<p>For online documentation and support please refer to
<a href="http://nginx.org/">nginx.org</a>.<br/>
Commercial support is available at
<a href="http://nginx.com/">nginx.com</a>.</p>
<p><em>Thank you for using nginx.</em></p>
</body>
</html>
sh-4.4#
```

Activate Windows
Go to Settings to activate Windows.

You could also access the clusterip internal service as shown below

```
oc exec -it pod/test-pod sh  
curl http://172.30.40.10:8080  
curl http://<service-ip>:<service-port>
```

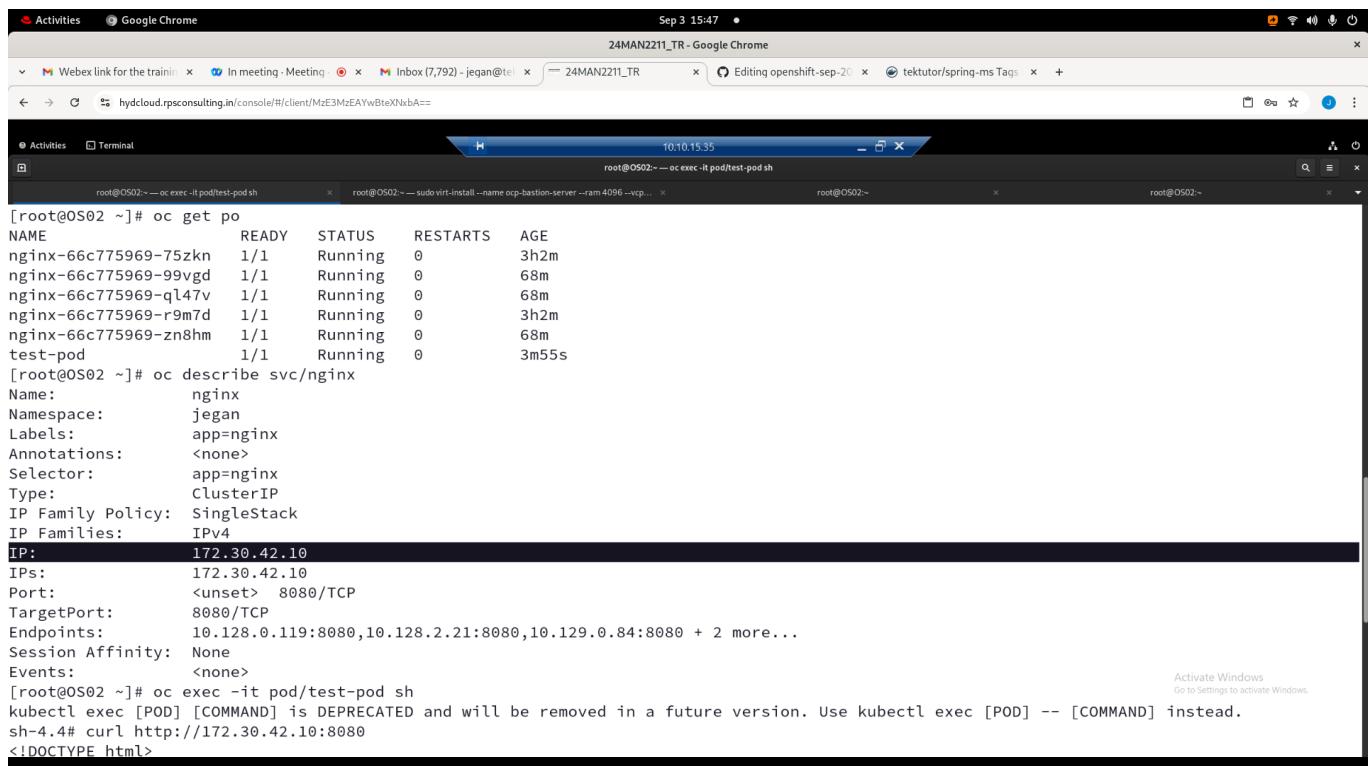
Expected output



```

Activities Google Chrome
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Activities Terminal
10:10:15:35
root@OS02:~# oc get po
NAME READY STATUS RESTARTS AGE
nginx-66c775969-75zkn 1/1 Running 0 3h2m
nginx-66c775969-99vgd 1/1 Running 0 68m
nginx-66c775969-ql47v 1/1 Running 0 68m
nginx-66c775969-r9m7d 1/1 Running 0 3h2m
nginx-66c775969-zn8hm 1/1 Running 0 68m
test-pod 1/1 Running 0 3m55s
[root@OS02 ~]# oc describe svc/nginx
Name: nginx
Namespace: jegan
Labels: app=nginx
Annotations: <none>
Selector: app=nginx
Type: ClusterIP
IP Family Policy: SingleStack
IP Families: IPv4
IP: 172.30.42.10
IPs: 172.30.42.10
Port: <unset> 8080/TCP
TargetPort: 8080/TCP
Endpoints: 10.128.0.119:8080,10.128.2.21:8080,10.129.0.84:8080 + 2 more...
Session Affinity: None
Events: <none>
[root@OS02 ~]# oc exec -it pod/test-pod sh
kubectl exec [POD] [COMMAND] is DEPRECATED and will be removed in a future version. Use kubectl exec [POD] -- [COMMAND] instead.
sh-4.4# curl http://172.30.42.10:8080
<!DOCTYPE html>

```



```

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Activities Terminal
10:10:15:35
root@OS02:~# oc get po
NAME READY STATUS RESTARTS AGE
nginx-66c775969-75zkn 1/1 Running 0 3h2m
nginx-66c775969-99vgd 1/1 Running 0 68m
nginx-66c775969-ql47v 1/1 Running 0 68m
nginx-66c775969-r9m7d 1/1 Running 0 3h2m
nginx-66c775969-zn8hm 1/1 Running 0 68m
test-pod 1/1 Running 0 3m55s
[root@OS02 ~]# oc describe svc/nginx
Name: nginx
Namespace: jegan
Labels: app=nginx
Annotations: <none>
Selector: app=nginx
Type: ClusterIP
IP Family Policy: SingleStack
IP Families: IPv4
IP: 172.30.42.10
IPs: 172.30.42.10
Port: <unset> 8080/TCP
TargetPort: 8080/TCP
Endpoints: 10.128.0.119:8080,10.128.2.21:8080,10.129.0.84:8080 + 2 more...
Session Affinity: None
Events: <none>
[root@OS02 ~]# oc exec -it pod/test-pod sh
kubectl exec [POD] [COMMAND] is DEPRECATED and will be removed in a future version. Use kubectl exec [POD] -- [COMMAND] instead.
sh-4.4# curl http://172.30.42.10:8080
<!DOCTYPE html>

```

Activities Google Chrome Sep 3 15:47 24MAN2211_TR - Google Chrome

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hydcloud.rpsconsulting.in/console/#/client/MzE3MzEAYwBteXNbA==

Activities Terminal 10.10.15.35

root@OS02:~ -- oc exec -it pod/test-pod sh

root@OS02:~ -- sudo virt-install --name ocp-bastion-server --ram 4096 --vcp... x

root@OS02:~

root@OS02:~

IP Family Policy: SingleStack

IP Families: IPv4

IP: 172.30.42.10

IPs: 172.30.42.10

Port: <unset> 8080/TCP

TargetPort: 8080/TCP

Endpoints: 10.128.0.119:8080,10.128.2.21:8080,10.129.0.84:8080 + 2 more...

Session Affinity: None

Events: <none>

[root@OS02 ~]# oc exec -it pod/test-pod sh

kubectl exec [POD] [COMMAND] is DEPRECATED and will be removed in a future version. Use kubectl exec [POD] -- [COMMAND] instead.

sh-4.4# curl http://172.30.42.10:8080

<!DOCTYPE html>

<html>

<head>

<title>Welcome to nginx!</title>

<style>

html { color-scheme: light dark; }

body { width: 35em; margin: 0 auto; font-family: Tahoma, Verdana, Arial, sans-serif; }

</style>

</head>

<body>

<h1>Welcome to nginx!</h1>

<p>If you see this page, the nginx web server is successfully installed and working. Further configuration is required.</p>

<p>For online documentation and support please refer to

Activate Windows Go to Settings to activate Windows.

Activities Google Chrome Sep 3 15:47 24MAN2211_TR - Google Chrome

Webex link for the trainin In meeting - Meeting Inbox (7,792) - jegan@tel 24MAN2211_TR Editing openshift-sep-20 tektutor/spring-ms Tags

hydcloud.rpsconsulting.in/console/#/client/MzE3MzEAYwBteXNbA==

Activities Terminal 10.10.15.35

root@OS02:~ -- oc exec -it pod/test-pod sh

root@OS02:~ -- sudo virt-install --name ocp-bastion-server --ram 4096 --vcp... x

root@OS02:~

root@OS02:~

IP Family Policy: SingleStack

IP Families: IPv4

IP: 172.30.42.10

IPs: 172.30.42.10

Port: <unset> 8080/TCP

TargetPort: 8080/TCP

Endpoints: 10.128.0.119:8080,10.128.2.21:8080,10.129.0.84:8080 + 2 more...

Session Affinity: None

Events: <none>

[root@OS02 ~]# oc exec -it pod/test-pod sh

kubectl exec [POD] [COMMAND] is DEPRECATED and will be removed in a future version. Use kubectl exec [POD] -- [COMMAND] instead.

sh-4.4# curl http://172.30.42.10:8080

<!DOCTYPE html>

<html>

<head>

<title>Welcome to nginx!</title>

<style>

html { color-scheme: light dark; }

body { width: 35em; margin: 0 auto; font-family: Tahoma, Verdana, Arial, sans-serif; }

</style>

</head>

<body>

<h1>Welcome to nginx!</h1>

<p>If you see this page, the nginx web server is successfully installed and working. Further configuration is required.</p>

<p>For online documentation and support please refer to

Activate Windows Go to Settings to activate Windows.

Lab - Creating an external nodeport service for nginx deployment

We need to delete the existing clusterip internal service

```
oc get svc  
oc delete svc/nqinx
```

Let's create an external nodeport service for nginx deployment

```
oc expose deploy/nginx --type=NodePort --port=8080
oc get svc
oc describe svc/nginx
curl http://192.168.100.11:32732
curl http://192.168.100.12:32732
curl http://192.168.100.13:32732
curl http://192.168.100.21:32732
curl http://192.168.100.22:32732
```

Expected output

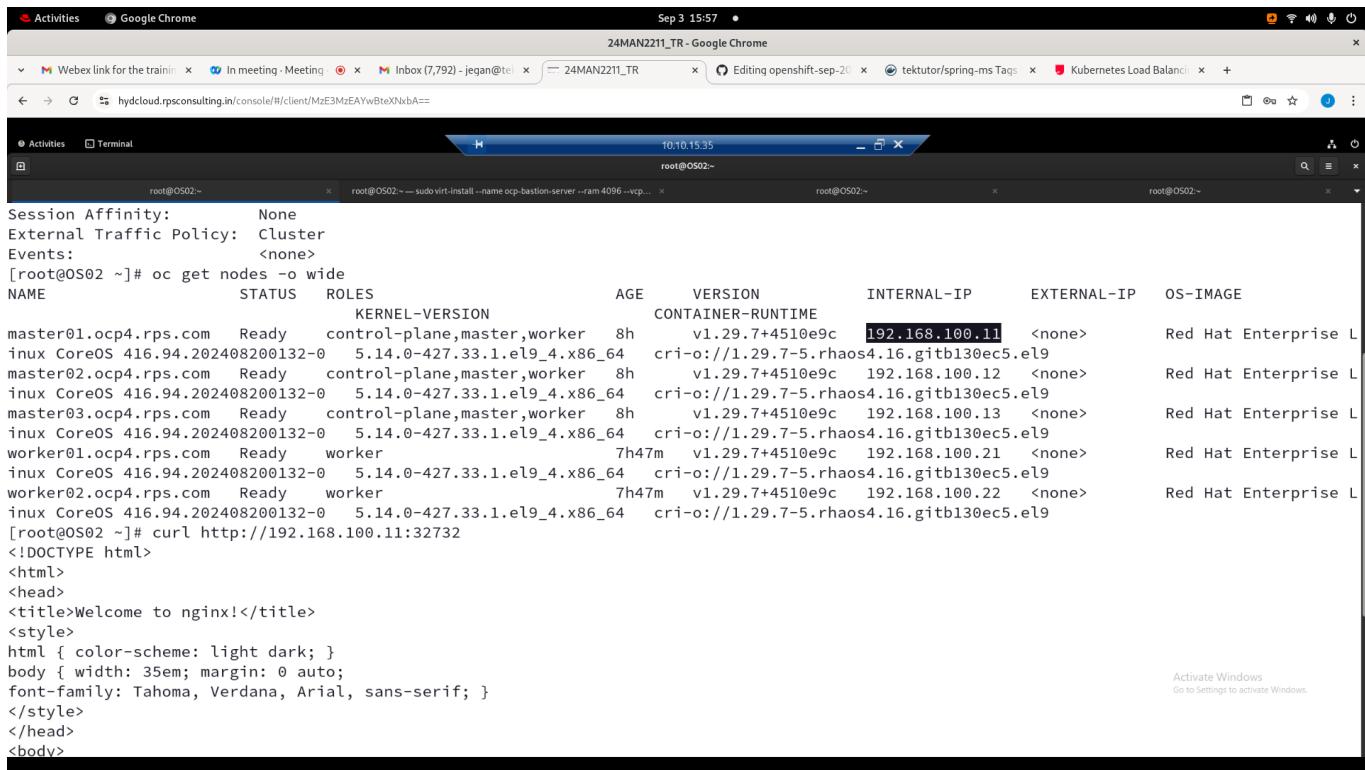


```
[root@OS02 ~]# oc expose deploy/nginx --type=NodePort --port=8080
oc get svc
oc describe svc/nginx
curl http://192.168.100.11:32732
curl http://192.168.100.12:32732
curl http://192.168.100.13:32732
curl http://192.168.100.21:32732
curl http://192.168.100.22:32732

[root@OS02 ~]# oc get svc
NAME      TYPE      CLUSTER-IP      EXTERNAL-IP      PORT(S)      AGE
nginx    ClusterIP  172.30.42.10    <none>        8080/TCP    20m
[root@OS02 ~]# oc delete svc/nginx
service "nginx" deleted
[root@OS02 ~]# oc expose deploy/nginx --type=NodePort --port=8080
service/nginx exposed
[root@OS02 ~]# oc get svc
NAME      TYPE      CLUSTER-IP      EXTERNAL-IP      PORT(S)      AGE
nginx    NodePort   172.30.24.102   <none>        8080:32732/TCP  2s
[root@OS02 ~]# oc describe svc/nginx
Name:            nginx
Namespace:       jegan
Labels:          app=nginx
Annotations:    <none>
Selector:        app=nginx
Type:            NodePort
IP Family Policy: SingleStack
IP Families:    IPv4
IP:              172.30.24.102
IPs:             172.30.24.102
Port:            <unset>  8080/TCP
TargetPort:      8080/TCP
NodePort:        <unset>  32732/TCP
Endpoints:       10.128.0.119:8080,10.128.2.21:8080,10.129.0.84:8080 + 2 more...
Session Affinity: None
External Traffic Policy: Cluster
Events:          <none>

[root@OS02 ~]# oc describe svc/nginx
Name:            nginx
Namespace:       jegan
Labels:          app=nginx
Annotations:    <none>
Selector:        app=nginx
Type:            NodePort
IP Family Policy: SingleStack
IP Families:    IPv4
IP:              172.30.24.102
IPs:             172.30.24.102
Port:            <unset>  8080/TCP
TargetPort:      8080/TCP
NodePort:        <unset>  32732/TCP
Endpoints:       10.128.0.119:8080,10.128.2.21:8080,10.129.0.84:8080 + 2 more...
Session Affinity: None
External Traffic Policy: Cluster
Events:          <none>

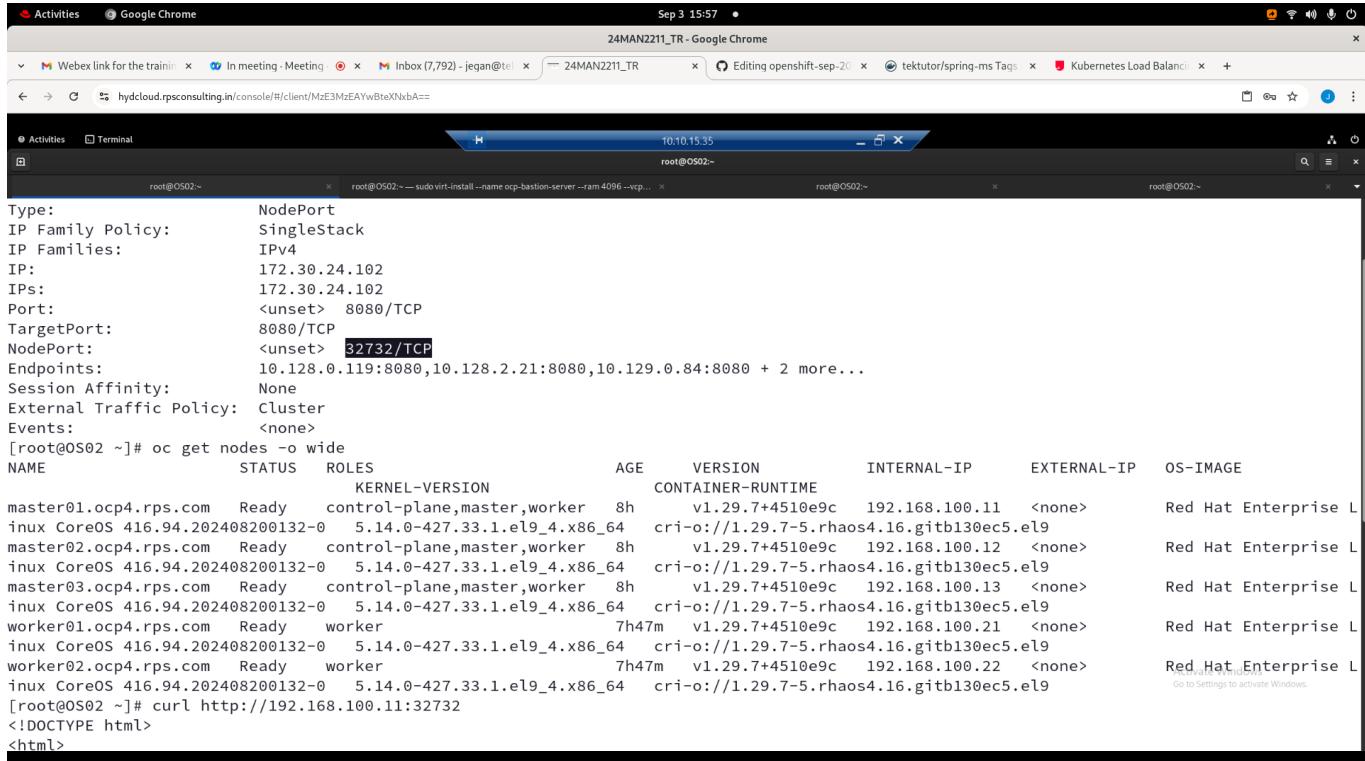
[root@OS02 ~]# oc get nodes -o wide
NAME           STATUS   ROLES      KERNEL-VERSION   AGE   VERSION   INTERNAL-IP   EXTERNAL-IP   OS-IMAGE
master01.ocp4.rps.com  Ready   control-plane,master,worker  8h    v1.29.7+4510e9c  192.168.100.11  <none>        Red Hat Enterprise L
inx CoreOS 416.94.202408200132-0  5.14.0-427.33.1.el9_4.x86_64  cri-o://1.29.7-5.rhaos4.16.gitb130ec5.e19
master02.ocp4.rps.com  Ready   control-plane,master,worker  8h    v1.29.7+4510e9c  192.168.100.12  <none>        Red Hat Enterprise L
inx CoreOS 416.94.202408200132-0  5.14.0-427.33.1.el9_4.x86_64  cri-o://1.29.7-5.rhaos4.16.gitb130ec5.e19
master03.ocp4.rps.com  Ready   control-plane,master,worker  8h    v1.29.7+4510e9c  192.168.100.13  <none>        Red Hat Enterprise L
inx CoreOS 416.94.202408200132-0  5.14.0-427.33.1.el9_4.x86_64  cri-o://1.29.7-5.rhaos4.16.gitb130ec5.e19
worker01.ocp4.rps.com Ready    worker          7h47m  v1.29.7+4510e9c  192.168.100.21  <none>        Red Hat Enterprise L
```



```

Session Affinity: None
External Traffic Policy: Cluster
Events: <none>
[root@OS02 ~]# oc get nodes -o wide
NAME           STATUS   ROLES          AGE    VERSION   INTERNAL-IP   EXTERNAL-IP   OS-IMAGE
master01.ocp4.rps.com   Ready   control-plane,master,worker   8h    v1.29.7+4510e9c  192.168.100.11  <none>   Red Hat Enterprise L
inx CoreOS 416.94.202408200132-0 5.14.0-427.33.1.el9_4.x86_64 cri-o://1.29.7-5.rhaos4.16.gitb130ec5.el9
master02.ocp4.rps.com   Ready   control-plane,master,worker   8h    v1.29.7+4510e9c  192.168.100.12  <none>   Red Hat Enterprise L
inx CoreOS 416.94.202408200132-0 5.14.0-427.33.1.el9_4.x86_64 cri-o://1.29.7-5.rhaos4.16.gitb130ec5.el9
master03.ocp4.rps.com   Ready   control-plane,master,worker   8h    v1.29.7+4510e9c  192.168.100.13  <none>   Red Hat Enterprise L
inx CoreOS 416.94.202408200132-0 5.14.0-427.33.1.el9_4.x86_64 cri-o://1.29.7-5.rhaos4.16.gitb130ec5.el9
worker01.ocp4.rps.com   Ready   worker          7h47m  v1.29.7+4510e9c  192.168.100.21  <none>   Red Hat Enterprise L
inx CoreOS 416.94.202408200132-0 5.14.0-427.33.1.el9_4.x86_64 cri-o://1.29.7-5.rhaos4.16.gitb130ec5.el9
worker02.ocp4.rps.com   Ready   worker          7h47m  v1.29.7+4510e9c  192.168.100.22  <none>   Red Hat Enterprise L
inx CoreOS 416.94.202408200132-0 5.14.0-427.33.1.el9_4.x86_64 cri-o://1.29.7-5.rhaos4.16.gitb130ec5.el9
[root@OS02 ~]# curl http://192.168.100.11:32732
<!DOCTYPE html>
<html>
<head>
<title>Welcome to nginx!</title>
<style>
html { color-scheme: light dark; }
body { width: 35em; margin: 0 auto;
font-family: Tahoma, Verdana, Arial, sans-serif; }
</style>
</head>
<body>

```



```

Type: NodePort
IP Family Policy: Singlestack
IP Families: IPv4
IP: 172.30.24.102
IPs: 172.30.24.102
Port: <unset> 8080/TCP
TargetPort: 8080/TCP
NodePort: <unset> 32732/TCP
Endpoints: 10.128.0.119:8080,10.128.2.21:8080,10.129.0.84:8080 + 2 more...
Session Affinity: None
External Traffic Policy: Cluster
Events: <none>
[root@OS02 ~]# oc get nodes -o wide
NAME           STATUS   ROLES          AGE    VERSION   INTERNAL-IP   EXTERNAL-IP   OS-IMAGE
master01.ocp4.rps.com   Ready   control-plane,master,worker   8h    v1.29.7+4510e9c  192.168.100.11  <none>   Red Hat Enterprise L
inx CoreOS 416.94.202408200132-0 5.14.0-427.33.1.el9_4.x86_64 cri-o://1.29.7-5.rhaos4.16.gitb130ec5.el9
master02.ocp4.rps.com   Ready   control-plane,master,worker   8h    v1.29.7+4510e9c  192.168.100.12  <none>   Red Hat Enterprise L
inx CoreOS 416.94.202408200132-0 5.14.0-427.33.1.el9_4.x86_64 cri-o://1.29.7-5.rhaos4.16.gitb130ec5.el9
master03.ocp4.rps.com   Ready   control-plane,master,worker   8h    v1.29.7+4510e9c  192.168.100.13  <none>   Red Hat Enterprise L
inx CoreOS 416.94.202408200132-0 5.14.0-427.33.1.el9_4.x86_64 cri-o://1.29.7-5.rhaos4.16.gitb130ec5.el9
worker01.ocp4.rps.com   Ready   worker          7h47m  v1.29.7+4510e9c  192.168.100.21  <none>   Red Hat Enterprise L
inx CoreOS 416.94.202408200132-0 5.14.0-427.33.1.el9_4.x86_64 cri-o://1.29.7-5.rhaos4.16.gitb130ec5.el9
worker02.ocp4.rps.com   Ready   worker          7h47m  v1.29.7+4510e9c  192.168.100.22  <none>   Red Hat Enterprise L
inx CoreOS 416.94.202408200132-0 5.14.0-427.33.1.el9_4.x86_64 cri-o://1.29.7-5.rhaos4.16.gitb130ec5.el9
[root@OS02 ~]# curl http://192.168.100.11:32732
<!DOCTYPE html>
<html>

```

Activities Google Chrome Sep 3 15:57 24MAN2211_TR - Google Chrome

Webex link for the trainin... In meeting - Meeting Inbox (7,792) - jegan@tel... 24MAN2211_TR Editing openshift-sep-20... tekutor/spring-ms Tags Kubernetes Load Balanc... +

Activities Terminal 10.10.15.35 root@OS02~

```
root@OS02~# curl http://192.168.100.11:32732
<!DOCTYPE html>
<html>
<head>
<title>Welcome to nginx!</title>
<style>
html { color-scheme: light dark; }
body { width: 35em; margin: 0 auto;
font-family: Tahoma, Verdana, Arial, sans-serif; }
</style>
</head>
<body>
<h1>Welcome to nginx!</h1>
<p>If you see this page, the nginx web server is successfully installed and
working. Further configuration is required.</p>

<p>For online documentation and support please refer to
<a href="http://nginx.org/">nginx.org</a>.<br/>
```

Activate Windows Go to Settings to activate Windows.

Activities Google Chrome Sep 3 15:59 24MAN2211_TR - Google Chrome

Webex link for the trainin... In meeting - Meeting Inbox (7,792) - jegan@tel... 24MAN2211_TR openshift-sep-2024/Day... tekutor/spring-ms Tags Kubernetes Load Balanc... +

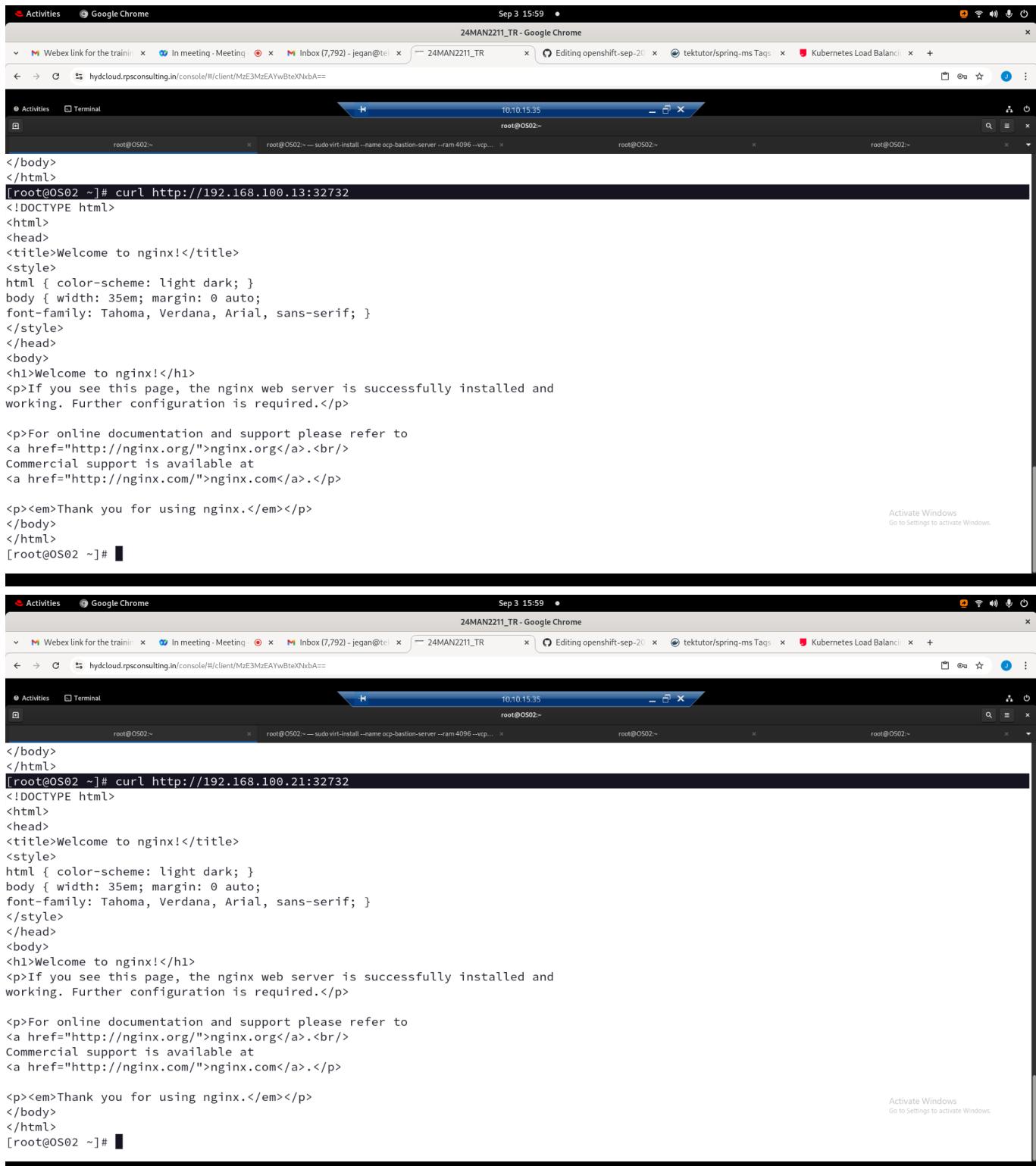
Activities Terminal 10.10.15.35 root@OS02~

```
</body>
</html>
[root@OS02 ~]# curl http://192.168.100.12:32732
<!DOCTYPE html>
<html>
<head>
<title>Welcome to nginx!</title>
<style>
html { color-scheme: light dark; }
body { width: 35em; margin: 0 auto;
font-family: Tahoma, Verdana, Arial, sans-serif; }
</style>
</head>
<body>
<h1>Welcome to nginx!</h1>
<p>If you see this page, the nginx web server is successfully installed and
working. Further configuration is required.</p>

<p>For online documentation and support please refer to
<a href="http://nginx.org/">nginx.org</a>.<br/>
Commercial support is available at
<a href="http://nginx.com/">nginx.com</a>.</p>

<p><em>Thank you for using nginx.</em></p>
</body>
</html>
[root@OS02 ~]#
```

Activate Windows Go to Settings to activate Windows.



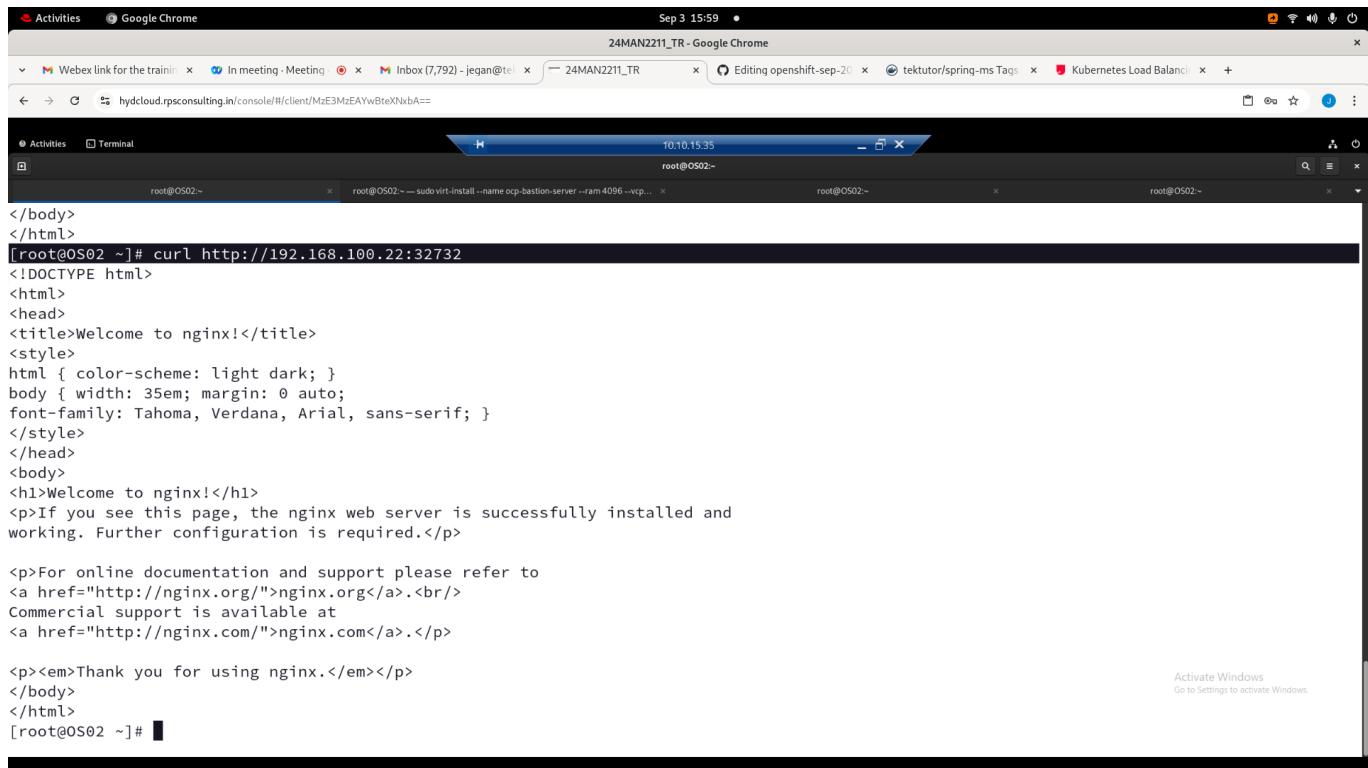
The image shows a Linux desktop environment with two terminal windows and a browser window. The browser window is displaying a curl command output, and the terminal windows show the command being run and its output.

Terminal 1 (Top):

```
root@OS02:~# curl http://192.168.100.13:32732
<!DOCTYPE html>
<html>
<head>
<title>Welcome to nginx!</title>
<style>
html { color-scheme: light dark; }
body { width: 35em; margin: 0 auto;
font-family: Tahoma, Verdana, Arial, sans-serif; }
</style>
</head>
<body>
<h1>Welcome to nginx!</h1>
<p>If you see this page, the nginx web server is successfully installed and
working. Further configuration is required.</p>
<p>For online documentation and support please refer to
<a href="http://nginx.org/">nginx.org</a>.<br/>
Commercial support is available at
<a href="http://nginx.com/">nginx.com</a>.</p>
<p><em>Thank you for using nginx.</em></p>
</body>
</html>
[root@OS02 ~]#
```

Terminal 2 (Bottom):

```
root@OS02:~# curl http://192.168.100.21:32732
<!DOCTYPE html>
<html>
<head>
<title>Welcome to nginx!</title>
<style>
html { color-scheme: light dark; }
body { width: 35em; margin: 0 auto;
font-family: Tahoma, Verdana, Arial, sans-serif; }
</style>
</head>
<body>
<h1>Welcome to nginx!</h1>
<p>If you see this page, the nginx web server is successfully installed and
working. Further configuration is required.</p>
<p>For online documentation and support please refer to
<a href="http://nginx.org/">nginx.org</a>.<br/>
Commercial support is available at
<a href="http://nginx.com/">nginx.com</a>.</p>
<p><em>Thank you for using nginx.</em></p>
</body>
</html>
[root@OS02 ~]#
```



```

Activities Google Chrome Sep 3 15:59 • 24MAN2211_TR - Google Chrome
Webex link for the trainin... In meeting -Meeting ... Inbox (7,792) - jejan@tel... 24MAN2211_TR - Google Chrome
hydcloud.rpsconsulting.in/console/#/client/MzE3MzEAYwBteXNxbA==

Activities Terminal 10.10.15.35 root@OS02-
root@OS02:~# sudo virt-install --name ccp-bastion-server --ram 4096 --cp...
root@OS02:~# curl http://192.168.100.22:32732
<!DOCTYPE html>
<html>
<head>
<title>Welcome to nginx!</title>
<style>
html { color-scheme: light dark; }
body { width: 35em; margin: 0 auto;
font-family: Tahoma, Verdana, Arial, sans-serif; }
</style>
</head>
<body>
<h1>Welcome to nginx!</h1>
<p>If you see this page, the nginx web server is successfully installed and
working. Further configuration is required.</p>
<p>For online documentation and support please refer to
<a href="http://nginx.org/">nginx.org</a>.<br/>
Commercial support is available at
<a href="http://nginx.com/">nginx.com</a>.</p>
<p><em>Thank you for using nginx.</em></p>
</body>
</html>
[root@OS02 ~]#

```

Demo - Installing Metallb operator

You may refer my medium blog for step by step instructions here

<https://medium.com/tektutor/using-metallb-loadbalancer-with-bare-metal-openshift-onprem-4230944bfa35>

Lab - Creating an external LoadBalancer service for nginx deployment

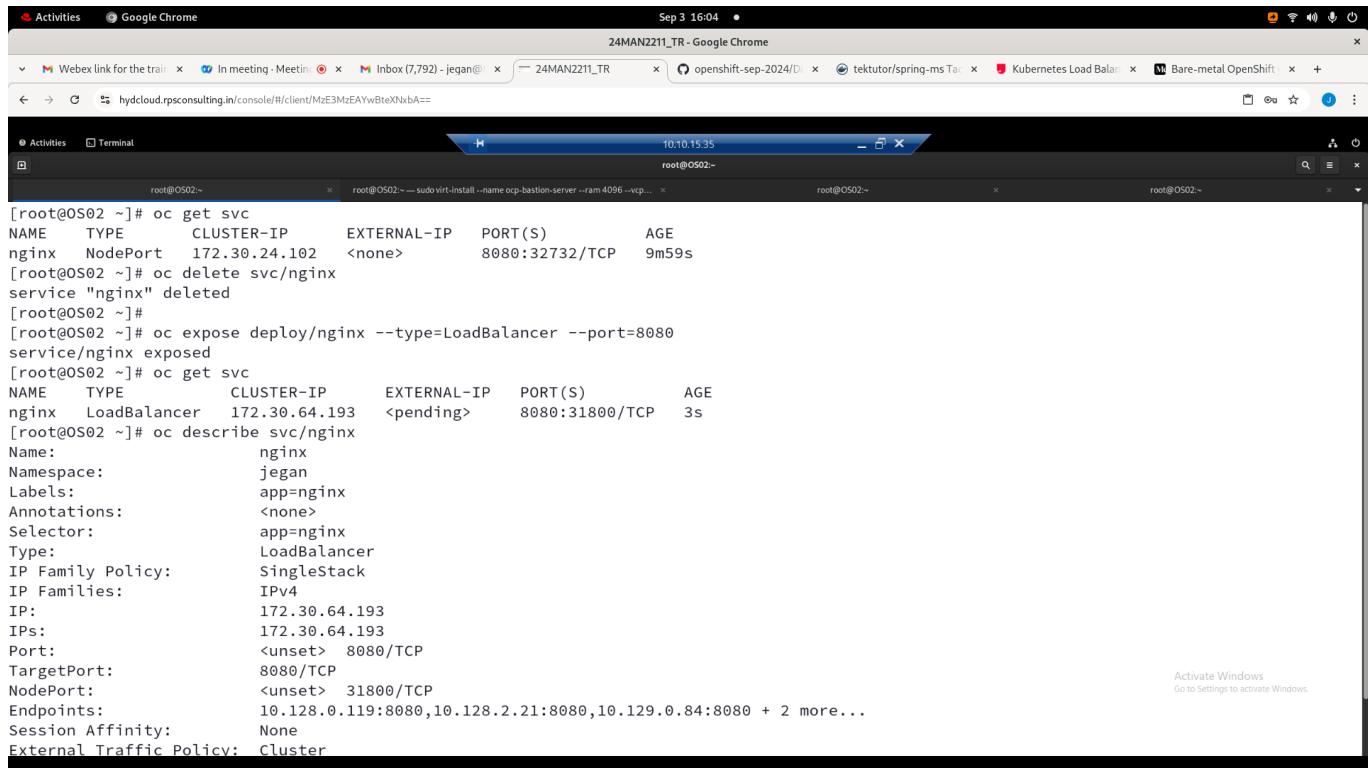
Let's delete the existing nodeport service

```
oc get svc
oc delete svc/nginx
```

Let's create the loadbalancer external service

```
oc expose deploy/nginx --type=LoadBalancer --port=8080
oc get svc
oc describe svc/nginx
```

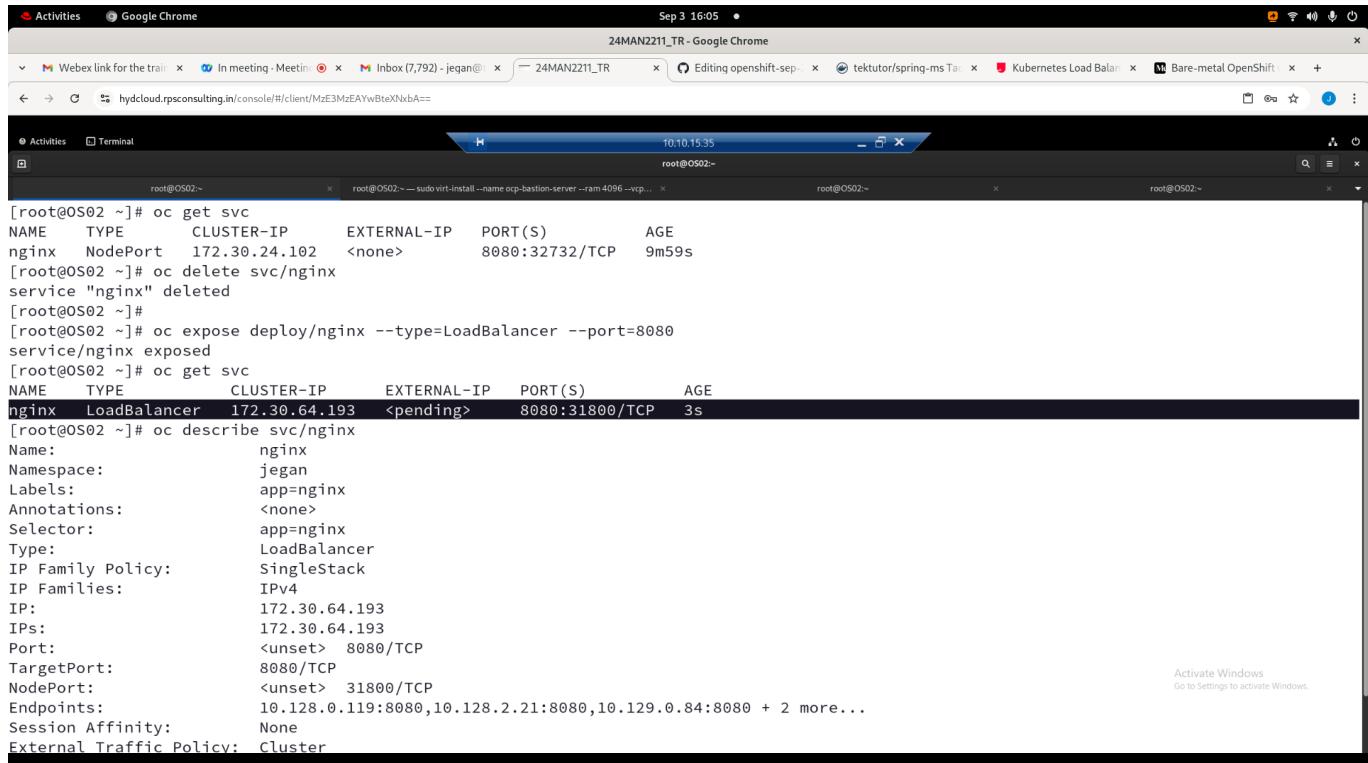
Expected output



The terminal window shows the following command and its output:

```
[root@OS02 ~]# oc get svc
NAME      TYPE      CLUSTER-IP      EXTERNAL-IP      PORT(S)      AGE
nginx    NodePort    172.30.24.102  <none>        8080:32732/TCP  9m59s
[root@OS02 ~]# oc delete svc/nginx
service "nginx" deleted
[root@OS02 ~]#
[root@OS02 ~]# oc expose deploy/nginx --type=LoadBalancer --port=8080
service/nginx exposed
[root@OS02 ~]# oc get svc
NAME      TYPE      CLUSTER-IP      EXTERNAL-IP      PORT(S)      AGE
nginx    LoadBalancer 172.30.64.193  <pending>      8080:31800/TCP  3s
[root@OS02 ~]# oc describe svc/nginx
Name:            nginx
Namespace:       jegan
Labels:          app=nginx
Annotations:    <none>
Selector:        app=nginx
Type:           LoadBalancer
IP Family Policy: SingleStack
IP Families:    IPv4
IP:              172.30.64.193
IPs:             172.30.64.193
Port:            <unset>  8080/TCP
TargetPort:      8080/TCP
NodePort:        <unset>  31800/TCP
Endpoints:      10.128.0.119:8080,10.128.2.21:8080,10.129.0.84:8080 + 2 more...
Session Affinity: None
External Traffic Policy: Cluster
```

LoadBalancer service is supposed to acquire an external IP automatically. Since, we are using a local openshift setup, it won't happen automatically. We need to install Metallb operator and configure to get it to working.



The terminal window shows the following command and its output:

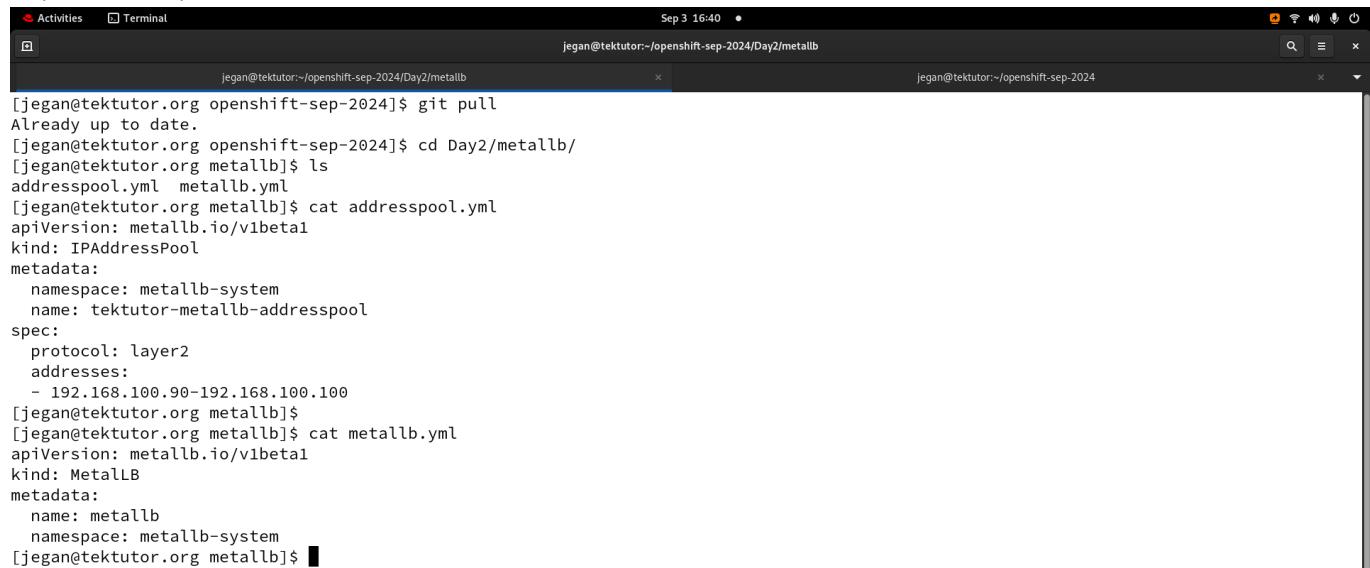
```
[root@OS02 ~]# oc get svc
NAME      TYPE      CLUSTER-IP      EXTERNAL-IP      PORT(S)      AGE
nginx    NodePort    172.30.24.102  <none>        8080:32732/TCP  9m59s
[root@OS02 ~]# oc delete svc/nginx
service "nginx" deleted
[root@OS02 ~]#
[root@OS02 ~]# oc expose deploy/nginx --type=LoadBalancer --port=8080
service/nginx exposed
[root@OS02 ~]# oc get svc
NAME      TYPE      CLUSTER-IP      EXTERNAL-IP      PORT(S)      AGE
nginx    LoadBalancer 172.30.64.193  <pending>      8080:31800/TCP  3s
[root@OS02 ~]# oc describe svc/nginx
Name:            nginx
Namespace:       jegan
Labels:          app=nginx
Annotations:    <none>
Selector:        app=nginx
Type:           LoadBalancer
IP Family Policy: SingleStack
IP Families:    IPv4
IP:              172.30.64.193
IPs:             172.30.64.193
Port:            <unset>  8080/TCP
TargetPort:      8080/TCP
NodePort:        <unset>  31800/TCP
Endpoints:      10.128.0.119:8080,10.128.2.21:8080,10.129.0.84:8080 + 2 more...
Session Affinity: None
External Traffic Policy: Cluster
```

Let's configure the address pool, i.e reserve some range IP addresses for openshift to assign to the load balancer created each time we create a load balancer service.

Clone the TekTutor openshift Training repository

```
cd ~
git clone https://github.com/tektutor/openshift-sep-2024.git
cd openshift-sep-2024
git pull
cd Day2/metallb
cat addresspool.yml
cat metallb.yml
```

Expected output

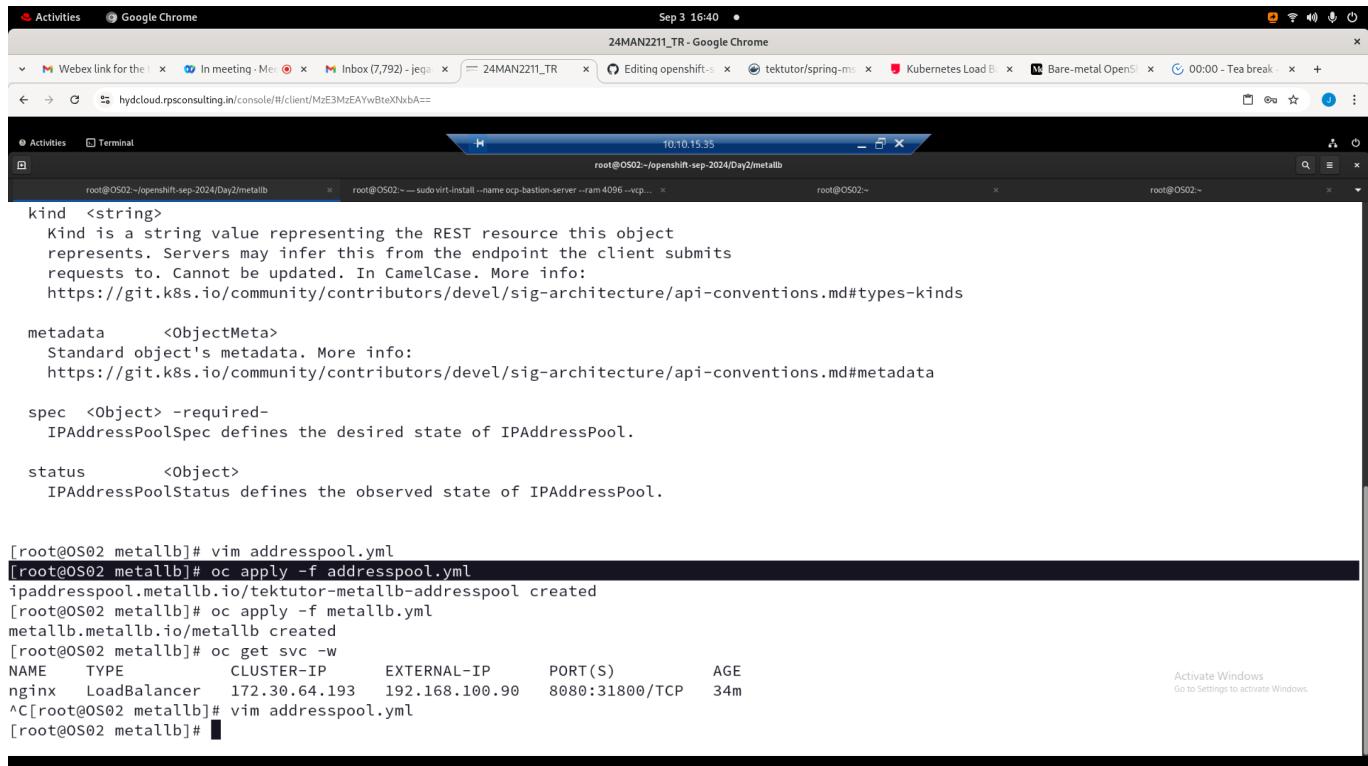


```
jegan@tektutor:~/openshift-sep-2024$ git pull
Already up to date.
[jegan@tektutor:~/openshift-sep-2024$ cd Day2/metallb/
[jegan@tektutor:~/openshift-sep-2024$ ls
addresspool.yml  metallb.yml
[jegan@tektutor:~/openshift-sep-2024$ cat addresspool.yml
apiVersion: metallb.io/v1beta1
kind: IPAddressPool
metadata:
  namespace: metallb-system
  name: tektutor-metallb-addresspool
spec:
  protocol: layer2
  addresses:
  - 192.168.100.90-192.168.100.100
[jegan@tektutor:~/openshift-sep-2024$ cat metallb.yml
apiVersion: metallb.io/v1beta1
kind: MetallB
metadata:
  name: metallb
  namespace: metallb-system
[jegan@tektutor:~/openshift-sep-2024$ ]
```

Let's reserve the address pool range for Metallb operator's use

```
cd ~/openshift-sep-2024
git pull
cd Day2/metallb
oc apply -f addresspool.yml
oc apply -f metallb.yml
```

Expected output



```

root@OS02 metallb]# vim addresspool.yml
[root@OS02 metallb]# oc apply -f addresspool.yml
ipaddresspool.metallb.io/tektutor-metallb-addresspool created
[root@OS02 metallb]# oc apply -f metallb.yml
metallb.metallb.io/metallb created
[root@OS02 metallb]# oc get svc -w
NAME      TYPE      CLUSTER-IP      EXTERNAL-IP      PORT(S)      AGE
nginx    LoadBalancer  172.30.64.193  192.168.100.90  8080:31800/TCP  34m
^C[root@OS02 metallb]# vim addresspool.yml
[root@OS02 metallb]#

```

Let's check if the loadbalancer service has acquired an external IP address from the reserved address pool we configured

```

oc get svc
curl http://192.168.100.90

```

Lab - Labels are used as a selector

```

oc get deploy --show-labels
oc get deploy -l app=nginx

oc describe deploy/nginx
oc get rs --show-labels
oc get rs -l app=nginx

oc get po --show-labels
oc get po -l app=nginx

```

Expected output

Activities Google Chrome Sep 3 17:13 24MAN2211_TR - Google Chrome

Webex link for the train In meeting - Meeting (1) Inbox (7,792) - jegan@... 24MAN2211_TR - Google Chrome Editing openshift-se... tekutor/spring-ms Ta... Configuring services to... Bare-metal OpenShift

hydcloud.rpsconsulting.in/console/#/client/MzE3MzEAYwBteXNxbA==

Activities Terminal 10.10.15.35 root@OS02~

```
[root@OS02 ~]# oc get deploy --show-labels
NAME READY UP-TO-DATE AVAILABLE AGE LABELS
nginx 5/5 5 5 4h25m app=nginx

[root@OS02 ~]# oc describe deploy/nginx
Name: nginx
Namespace: jegan
CreationTimestamp: Tue, 03 Sep 2024 12:43:55 +0530
Labels: app=nginx
Annotations: deployment.kubernetes.io/revision: 1
Selector: app=nginx
Replicas: 5 desired | 5 updated | 5 total | 5 available | 0 unavailable
StrategyType: RollingUpdate
MinReadySeconds: 0
RollingUpdateStrategy: 25% max unavailable, 25% max surge
Pod Template:
  Labels: app=nginx
  Containers:
    nginx:
      Image: bitnami/nginx:latest
      Port: <none>
      Host Port: <none>
      Environment: <none>
      Mounts: <none>
      Volumes: <none>
  Conditions:
    Type Status Reason
    ---- -----
    Progressing True   NewReplicaSetAvailable
```

Activate Windows
Go to Settings to activate Windows.

Activities Google Chrome Sep 3 17:13 24MAN2211_TR - Google Chrome

Webex link for the train In meeting - Meeting (1) Inbox (7,792) - jegan@... 24MAN2211_TR - Google Chrome Editing openshift-se... tekutor/spring-ms Ta... Configuring services to... Bare-metal OpenShift

hydcloud.rpsconsulting.in/console/#/client/MzE3MzEAYwBteXNxbA==

Activities Terminal 10.10.15.35 root@OS02~

```
root@OS02~ root@OS02~ sudo virt-install --name ocp-bastion-server --ram 4096 --cpu...
```

Conditions:

| Type | Status | Reason |
|-------------|--------|--------------------------|
| Progressing | True | NewReplicaSetAvailable |
| Available | True | MinimumReplicasAvailable |

OldReplicaSets: <none>

NewReplicaSets: nginx-66c775969 (5/5 replicas created)

Events:

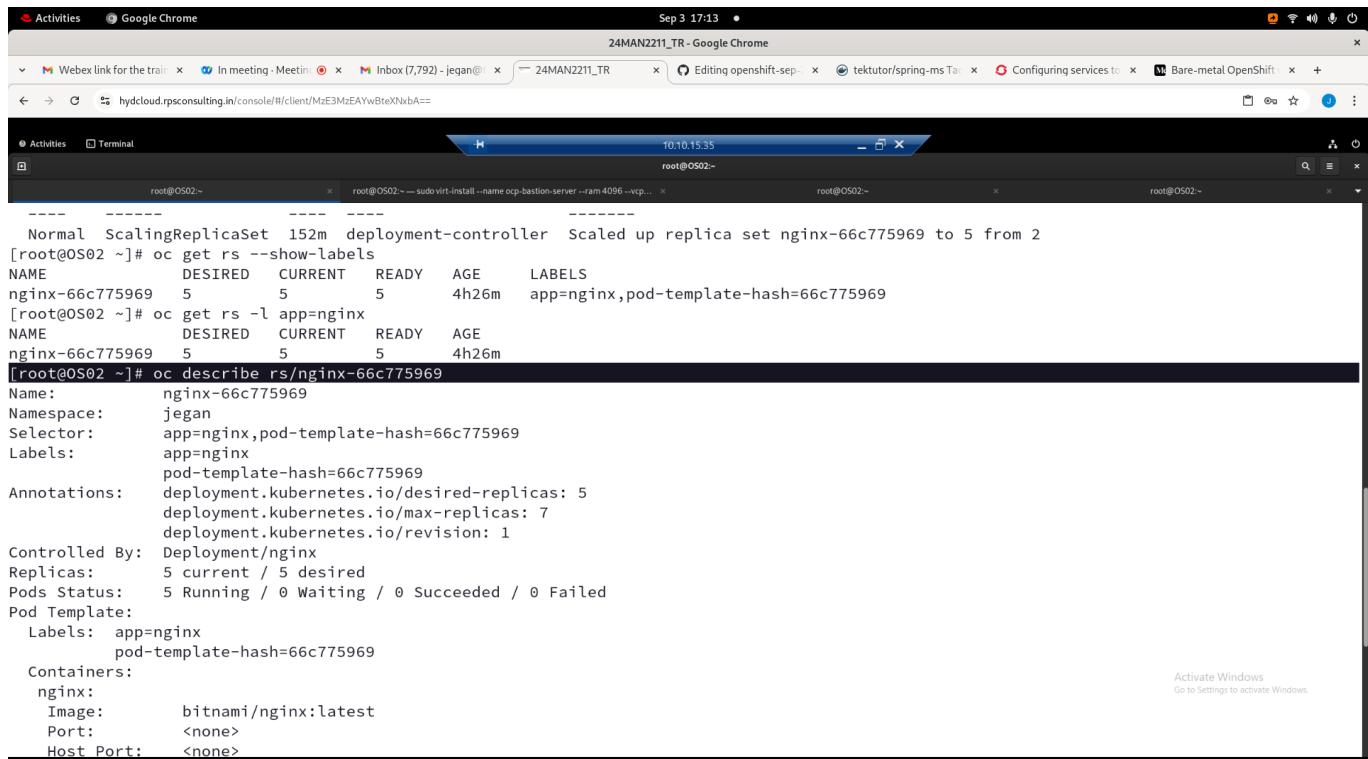
| Type | Reason | Age | From | Message |
|--------|-------------------|------|-----------------------|---|
| Normal | ScalingReplicaSet | 152m | deployment-controller | Scaled up replica set nginx-66c775969 to 5 from 2 |

```
[root@OS02 ~]# oc get rs --show-labels
NAME DESIRED CURRENT READY AGE LABELS
nginx-66c775969 5 5 5 4h26m app=nginx,pod-template-hash=66c775969

[root@OS02 ~]# oc get rs -l app=nginx
NAME DESIRED CURRENT READY AGE
nginx-66c775969 5 5 5 4h26m

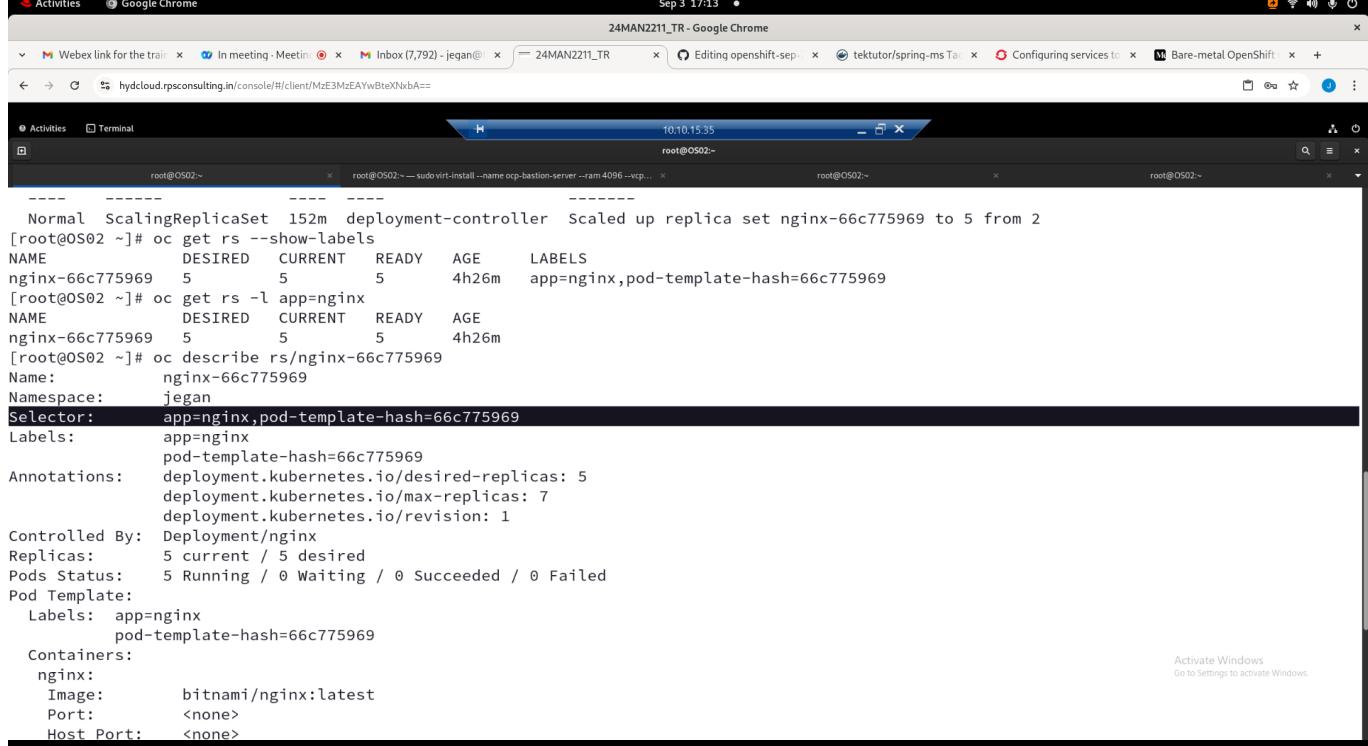
[root@OS02 ~]# oc describe rs/nginx-66c775969
Name: nginx-66c775969
Namespace: jegan
Selector: app=nginx,pod-template-hash=66c775969
Labels: app=nginx
pod-template-hash=66c775969
Annotations: deployment.kubernetes.io/desired-replicas: 5
deployment.kubernetes.io/max-replicas: 7
deployment.kubernetes.io/revision: 1
Controlled By: Deployment/nginx
Replicas: 5 current / 5 desired
```

Activate Windows
Go to Settings to activate Windows.



```
Normal ScalingReplicaSet 152m deployment-controller Scaled up replica set nginx-66c775969 to 5 from 2
[root@OS02 ~]# oc get rs --show-labels
NAME      DESIRED  CURRENT  READY   AGE      LABELS
nginx-66c775969  5        5        5      4h26m   app=nginx,pod-template-hash=66c775969
[root@OS02 ~]# oc get rs -l app=nginx
NAME      DESIRED  CURRENT  READY   AGE
nginx-66c775969  5        5        5      4h26m
[root@OS02 ~]# oc describe rs/nginx-66c775969
Name:           nginx-66c775969
Namespace:      jegan
Selector:       app=nginx,pod-template-hash=66c775969
Labels:         app=nginx
                pod-template-hash=66c775969
Annotations:    deployment.kubernetes.io/desired-replicas: 5
                deployment.kubernetes.io/max-replicas: 7
                deployment.kubernetes.io/revision: 1
Controlled By: Deployment/nginx
Replicas:       5 current / 5 desired
Pods Status:    5 Running / 0 Waiting / 0 Succeeded / 0 Failed
Pod Template:
  Labels:  app=nginx
          pod-template-hash=66c775969
  Containers:
    nginx:
      Image:      bitnami/nginx:latest
      Port:       <none>
      Host Port:  <none>

```



```
Normal ScalingReplicaSet 152m deployment-controller Scaled up replica set nginx-66c775969 to 5 from 2
[root@OS02 ~]# oc get rs --show-labels
NAME      DESIRED  CURRENT  READY   AGE      LABELS
nginx-66c775969  5        5        5      4h26m   app=nginx,pod-template-hash=66c775969
[root@OS02 ~]# oc get rs -l app=nginx
NAME      DESIRED  CURRENT  READY   AGE
nginx-66c775969  5        5        5      4h26m
[root@OS02 ~]# oc describe rs/nginx-66c775969
Name:           nginx-66c775969
Namespace:      jegan
Selector:       app=nginx,pod-template-hash=66c775969
Labels:         app=nginx
                pod-template-hash=66c775969
Annotations:    deployment.kubernetes.io/desired-replicas: 5
                deployment.kubernetes.io/max-replicas: 7
                deployment.kubernetes.io/revision: 1
Controlled By: Deployment/nginx
Replicas:       5 current / 5 desired
Pods Status:    5 Running / 0 Waiting / 0 Succeeded / 0 Failed
Pod Template:
  Labels:  app=nginx
          pod-template-hash=66c775969
  Containers:
    nginx:
      Image:      bitnami/nginx:latest
      Port:       <none>
      Host Port:  <none>
```

```
Activities Google Chrome Sep 3 17:13 • 24MAN2211_TR - Google Chrome
Webex link for the train x In meeting -Meeting x Inbox (7,792) - jegan@ 24MAN2211_TR x Editing openshift-se... x tekutor/spring-ms Ta... x Configuring services to... x Bare-metal OpenShift x + hydcloud.rpsconsulting.in/console/#/client/MzE3MzEAYwBteXnxbA==

Activities Terminal 10.10.15.35 root@OS02:~ root@OS02:~ — sudo virt-install --name ocp-bastion-server --ram 4096 --vcp... root@OS02:~ root@OS02:~ root@OS02:~ root@OS02:~

Replicas: 5 current / 5 desired
Pods Status: 5 Running / 0 Waiting / 0 Succeeded / 0 Failed
Pod Template:
  Labels: app=nginx
           pod-template-hash=66c775969
  Containers:
    nginx:
      Image:      bitnami/nginx:latest
      Port:       <none>
      Host Port: <none>
      Environment: <none>
      Mounts:      <none>
      Volumes:     <none>
  Events:
    Type      Reason     Age     From           Message
    ----      ----     --     --           -----
    Normal    SuccessfulCreate 153m   replicaset-controller  Created pod: nginx-66c775969-zn8hm
    Normal    SuccessfulCreate 153m   replicaset-controller  Created pod: nginx-66c775969-99vgd
    Normal    SuccessfulCreate 153m   replicaset-controller  Created pod: nginx-66c775969-ql47v
[root@OS02 ~]# oc get po -l app=nginx,pod-template-hash=66c775969
NAME          READY   STATUS    RESTARTS   AGE
nginx-66c775969-75zkn  1/1     Running   0          4h27m
nginx-66c775969-99vgd  1/1     Running   0          153m
nginx-66c775969-ql47v  1/1     Running   0          153m
nginx-66c775969-r9m7d  1/1     Running   0          4h27m
nginx-66c775969-zn8hm  1/1     Running   0          153m
[root@OS02 ~]#
```

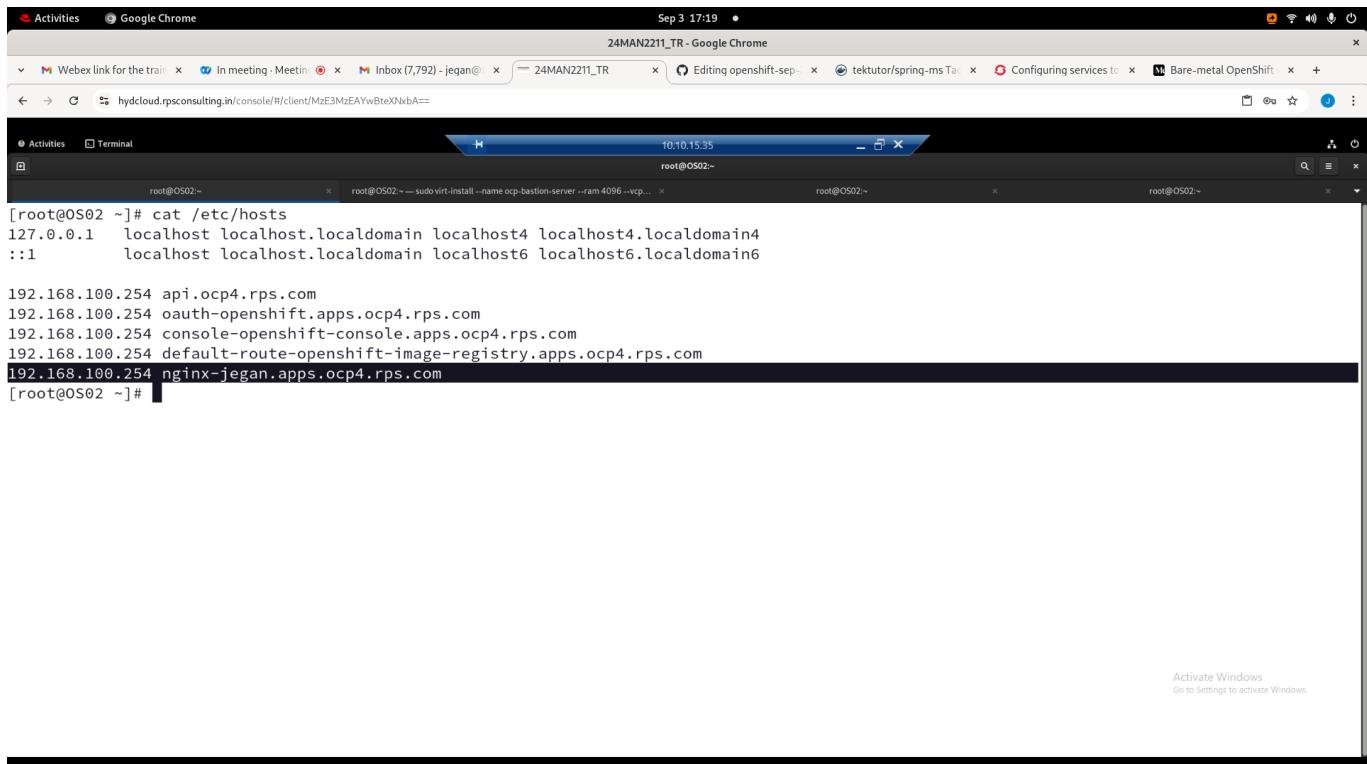
Lab - Create a route to expose an application for external access

```
oc delete svc/nginx
oc expose deploy/nginx --port=8080
oc get svc
oc expose svc/nginx
oc describe route/nginx

curl http://nginx-jegan.apps.ocp4.rps.com
```

We need to add the route url as shown below in the /etc/hosts. The bastion vm ip is 192.168.100.254, in that vm dns server is running, which will resolve the dns urls to respective IP address.

```
cat /etc/hosts
```



```

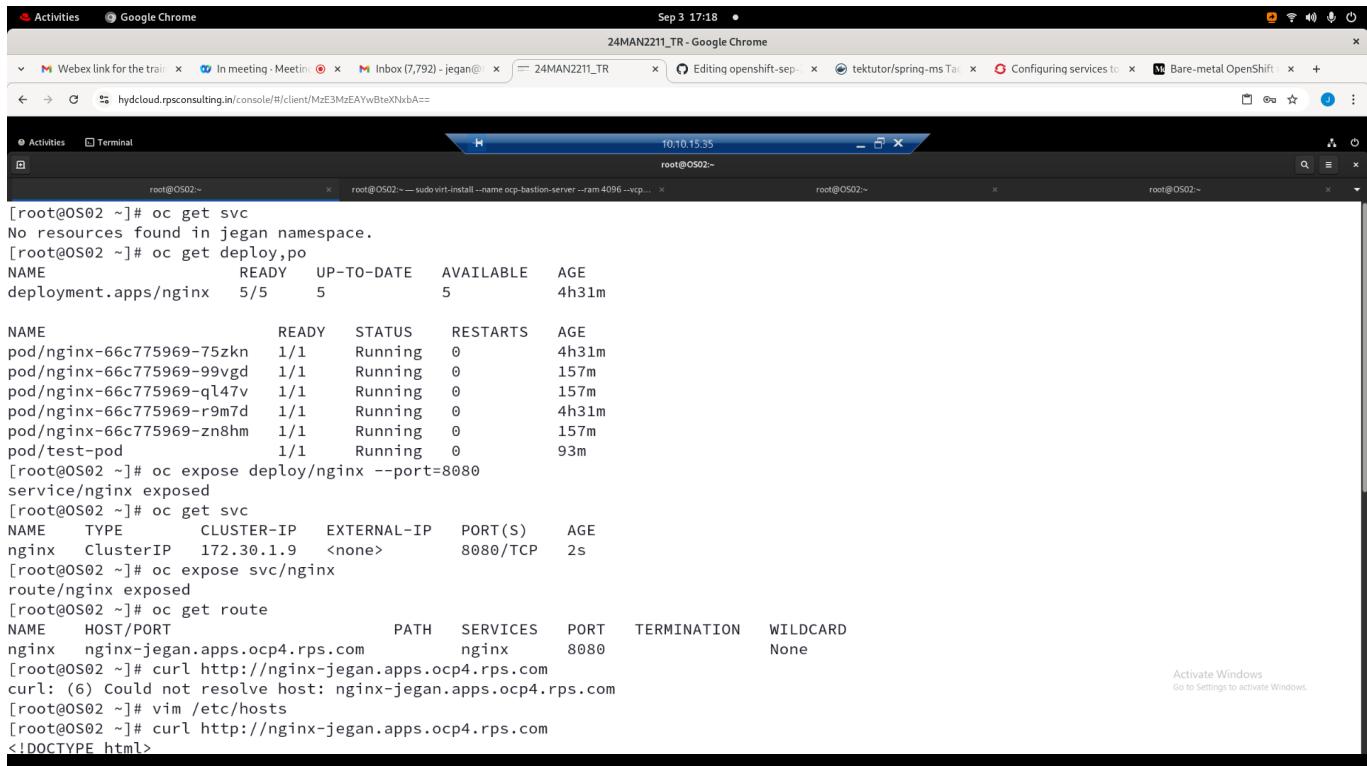
Sep 3 17:19 • 24MAN2211_TR - Google Chrome
Activities Google Chrome
Webex link for the train In meeting - Meeting - jegan@... 24MAN2211_TR - Google Chrome
Inbox (7,792) - jegan@... Editing openshift-se... tektrutor/spring-ms Ta... Configuring services to... Bare-metal OpenShift
hydcloud.rpsconsulting.in/console/#/client/MzE3MzEAYwBteXNxbA==

Activities Terminal 10.10.15.35 root@OS02-
root@OS02~ cat /etc/hosts
127.0.0.1 localhost.localdomain localhost4 localhost4.localdomain4
::1 localhost.localdomain localhost6 localhost6.localdomain6

192.168.100.254 api.ocp4.rps.com
192.168.100.254 oauth-openshift.apps.ocp4.rps.com
192.168.100.254 console-openshift-console.apps.ocp4.rps.com
192.168.100.254 default-route-openshift-image-registry.apps.ocp4.rps.com
192.168.100.254 nginx-jegan.apps.ocp4.rps.com
[root@OS02 ~]#

```

Expected output



```

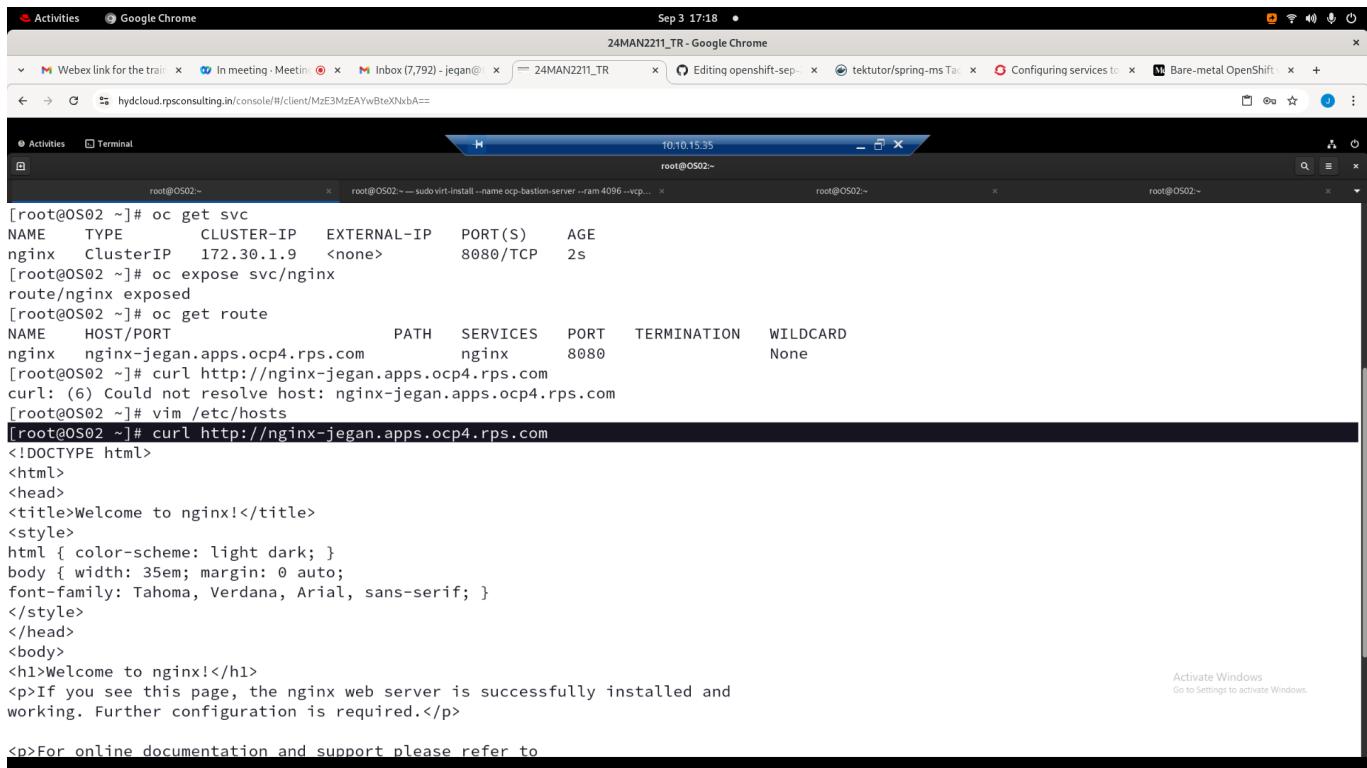
Sep 3 17:18 • 24MAN2211_TR - Google Chrome
Activities Google Chrome
Webex link for the train In meeting - Meeting - jegan@... 24MAN2211_TR - Google Chrome
Inbox (7,792) - jegan@... Editing openshift-se... tektrutor/spring-ms Ta... Configuring services to... Bare-metal OpenShift
hydcloud.rpsconsulting.in/console/#/client/MzE3MzEAYwBteXNxbA==

Activities Terminal 10.10.15.35 root@OS02-
root@OS02~ oc get svc
No resources found in jegan namespace.
[root@OS02 ~]# oc get deploy,po
NAME READY UP-TO-DATE AVAILABLE AGE
deployment.apps/nginx 5/5 5 5 4h31m

NAME READY STATUS RESTARTS AGE
pod/nginx-66c775969-75zkn 1/1 Running 0 4h31m
pod/nginx-66c775969-99vgd 1/1 Running 0 157m
pod/nginx-66c775969-ql47v 1/1 Running 0 157m
pod/nginx-66c775969-r9m7d 1/1 Running 0 4h31m
pod/nginx-66c775969-zn8hm 1/1 Running 0 157m
pod/test-pod 1/1 Running 0 93m

[root@OS02 ~]# oc expose deploy/nginx --port=8080
service/nginx exposed
[root@OS02 ~]# oc get svc
NAME TYPE CLUSTER-IP EXTERNAL-IP PORT(S) AGE
nginx ClusterIP 172.30.1.9 <none> 8080/TCP 2s
[root@OS02 ~]# oc expose svc/nginx
route/nginx exposed
[root@OS02 ~]# oc get route
NAME HOST/PORT PATH SERVICES PORT TERMINATION WILDCARD
nginx nginx-jegan.apps.ocp4.rps.com nginx 8080 None
[root@OS02 ~]# curl http://nginx-jegan.apps.ocp4.rps.com
curl: (6) Could not resolve host: nginx-jegan.apps.ocp4.rps.com
[root@OS02 ~]# vim /etc/hosts
[root@OS02 ~]# curl http://nginx-jegan.apps.ocp4.rps.com
<!DOCTYPE html>

```



```
root@OS02 ~]# oc get svc
NAME      TYPE      CLUSTER-IP      EXTERNAL-IP      PORT(S)      AGE
nginx    ClusterIP  172.30.1.9    <none>        8080/TCP    2s
[root@OS02 ~]# oc expose svc/nginx
route/nginx exposed
[root@OS02 ~]# oc get route
NAME      HOST/PORT      PATH      SERVICES      PORT      TERMINATION      WILDCARD
nginx    nginx-jegan.apps.ocp4.rps.com  nginx      8080      None
[root@OS02 ~]# curl http://nginx-jegan.apps.ocp4.rps.com
curl: (6) Could not resolve host: nginx-jegan.apps.ocp4.rps.com
[root@OS02 ~]# vim /etc/hosts
[root@OS02 ~]# curl http://nginx-jegan.apps.ocp4.rps.com
<!DOCTYPE html>
<html>
<head>
<title>Welcome to nginx!</title>
<style>
html { color-scheme: light dark; }
body { width: 35em; margin: 0 auto;
font-family: Tahoma, Verdana, Arial, sans-serif; }
</style>
</head>
<body>
<h1>Welcome to nginx!</h1>
<p>If you see this page, the nginx web server is successfully installed and
working. Further configuration is required.</p>
<p>For online documentation and support please refer to
<a href="http://nginx.org/">http://nginx.org/</p>
</body>
</html>
```

Activate Windows
Go to Settings to activate Windows.

Lab - Ingress

```
cd ~/openshift-sep-2024
git pull
cd Day2/ingress
oc get deploy
oc create deploy hello --image=tektutor/spring-ms:1.0 --replicas=3
oc expose deploy/hello --port=8080

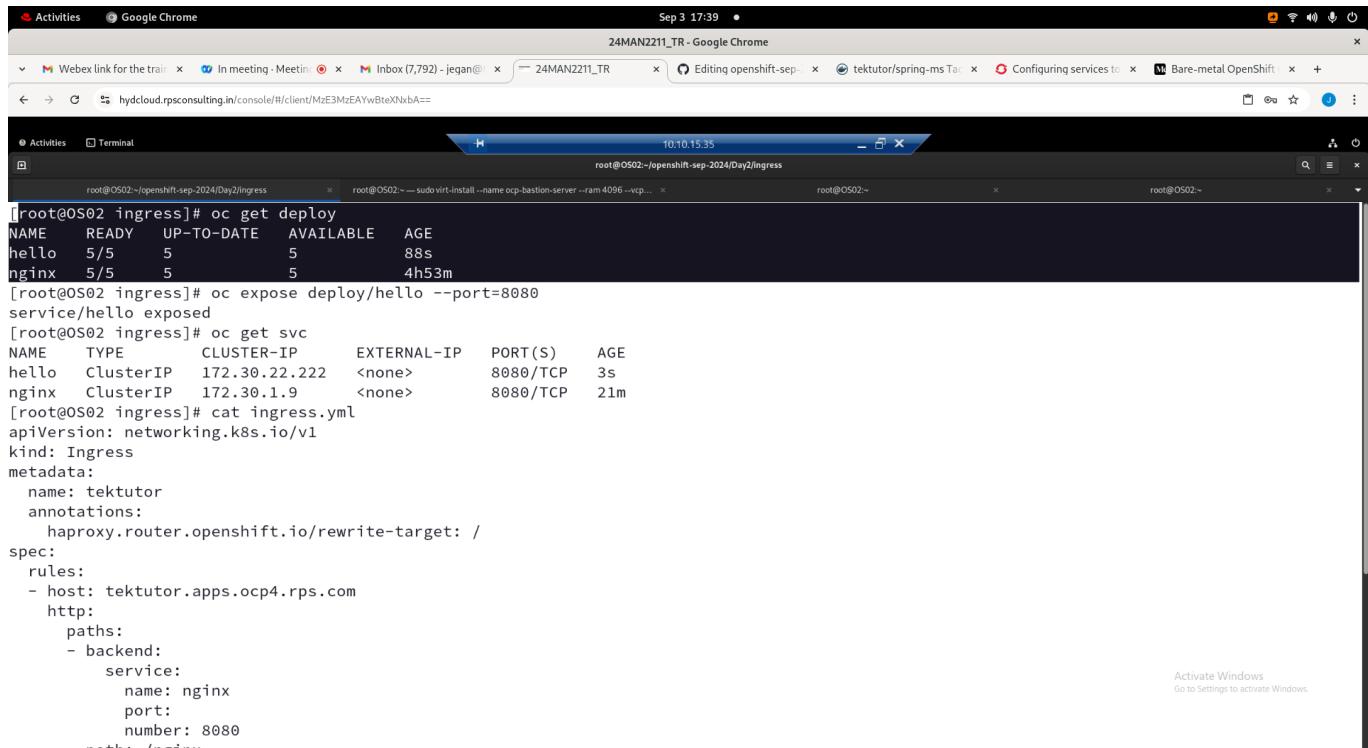
oc get svc

cat ingress.yml

oc apply -f ingress.yml

oc get ingress
oc describe ingress/tektutor
```

Expected output

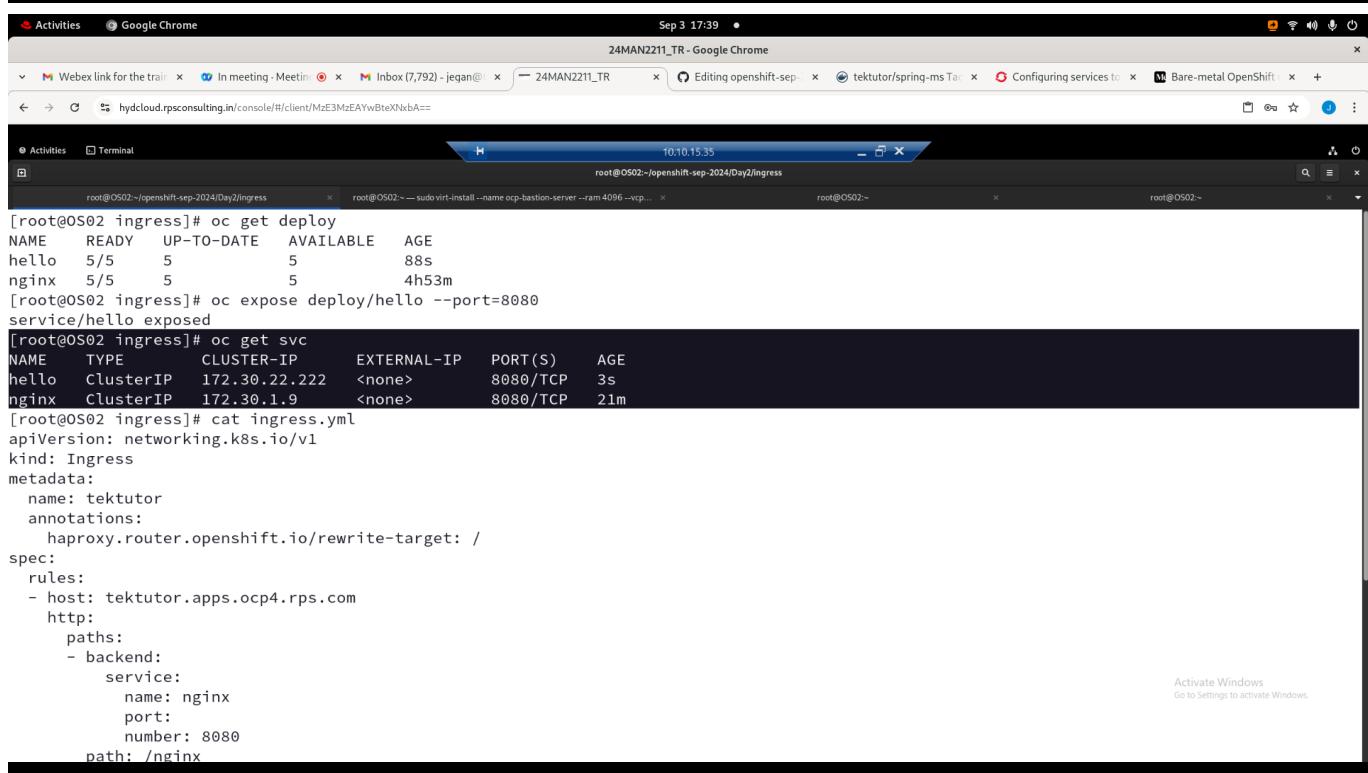


```
[root@OS02 ingress]# oc get deploy
NAME      READY   UP-TO-DATE   AVAILABLE   AGE
hello     5/5     5           5           88s
nginx    5/5     5           5           4h53m

[root@OS02 ingress]# oc expose deploy/hello --port=8080
service/hello exposed

[root@OS02 ingress]# oc get svc
NAME      TYPE        CLUSTER-IP      EXTERNAL-IP      PORT(S)        AGE
hello     ClusterIP   172.30.22.222  <none>          8080/TCP      3s
nginx    ClusterIP   172.30.1.9    <none>          8080/TCP      21m

[root@OS02 ingress]# cat ingress.yml
apiVersion: networking.k8s.io/v1
kind: Ingress
metadata:
spec:
  rules:
  - host: tekton.operators.ocp4.rps.com
    http:
      paths:
      - backend:
          service:
            name: nginx
            port:
              number: 8080
          path: /nginx
```

```
[root@OS02 ingress]# oc get deploy
NAME      READY   UP-TO-DATE   AVAILABLE   AGE
hello     5/5     5           5           88s
nginx    5/5     5           5           4h53m

[root@OS02 ingress]# oc expose deploy/hello --port=8080
service/hello exposed

[root@OS02 ingress]# oc get svc
NAME      TYPE        CLUSTER-IP      EXTERNAL-IP      PORT(S)        AGE
hello     ClusterIP   172.30.22.222  <none>          8080/TCP      3s
nginx    ClusterIP   172.30.1.9    <none>          8080/TCP      21m

[root@OS02 ingress]# cat ingress.yml
apiVersion: networking.k8s.io/v1
kind: Ingress
metadata:
spec:
  rules:
  - host: tekton.operators.ocp4.rps.com
    http:
      paths:
      - backend:
          service:
            name: nginx
            port:
              number: 8080
          path: /nginx
```

Activities Google Chrome Sep 3 17:40 24MAN2211_TR - Google Chrome

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hydcloud.rpsconsulting.in/console/#/client/MzE3MzEAYwBteXNxbA==

Activities Terminal 10.10.15.35

root@OS02:~/openshift-sep-2024/Day2/ingress -- vim ingress.yml

```
apiVersion: networking.k8s.io/v1
kind: Ingress
metadata:
  name: tektnator
  annotations:
    haproxy.router.openshift.io/rewrite-target: /
spec:
  rules:
  - host: tektnator.apps.ocp4.rps.com
    http:
      paths:
        - backend:
            service:
              name: nginx
              port:
                number: 8080
            path: /nginx
            pathType: Prefix

        - backend:
            service:
              name: hello
              port:
                number: 8080
            path: /hello
            pathType: Prefix
```

~

~

~

~

"ingress.yml" 28L, 522B written

Activate Windows Go to Settings to activate Windows.

24,14 All

Activities Google Chrome Sep 3 17:43 24MAN2211_TR - Google Chrome

Webex link for the train In meeting - Meeting - jejan@... 24MAN2211_TR - Google Chrome

hydcloud.rpsconsulting.in/console/#/client/MzE3MzEAYwBteXNxbA==

Activities Terminal 10.10.15.35

root@OS02:~/openshift-sep-2024/Day2/ingress

```
[root@OS02 ingress]# oc apply -f ingress.yml
ingress.networking.k8s.io/tektnator created
[root@OS02 ingress]#
[root@OS02 ingress]#
[root@OS02 ingress]# oc get ingress
NAME      CLASS      HOSTS      ADDRESS      PORTS      AGE
tektnator <none>    tektnator.apps.ocp4.rps.com  router-default.apps.ocp4.rps.com  80      6s
[root@OS02 ingress]#
[root@OS02 ingress]# oc describe ingress/tektnator
Name:              tektnator
Labels:             <none>
Namespace:          jegan
Address:            router-default.apps.ocp4.rps.com
Ingress class:     <none>
Default backend:   <default>
Rules:
  Host          Path  Backends
  ----          ----
  tektnator.apps.ocp4.rps.com
    /nginx      nginx:8080 (10.128.0.119:8080,10.128.2.21:8080,10.129.0.84:8080 + 2 more...)
    /hello      hello:8080 (10.128.0.138:8080,10.128.2.30:8080,10.129.0.86:8080 + 2 more...)
Annotations:        haproxy.router.openshift.io/rewrite-target: /
Events:             <none>
```

[root@OS02 ingress]# curl http://tektnator.apps.ocp4.rps.com/nginx
curl: (6) Could not resolve host: tektnator.apps.ocp4.rps.com
[root@OS02 ingress]# vim /etc/hosts
[root@OS02 ingress]# curl http://tektnator.apps.ocp4.rps.com/nginx
<!DOCTYPE html>
<html>
<head>
<title>Welcome to nginx!</title>
<style>
html { color-scheme: light dark; }

Activate Windows Go to Settings to activate Windows.

```

Activities Google Chrome Sep 3 17:43 24MAN2211_TR - Google Chrome
Webex link for the train In meeting - Meeting (6) Inbox (7,792) - jegan@... 24MAN2211_TR - Google Chrome
hydcloud.rpsconsulting.in/console/#/client/MzE3MzEAYwBteXNxbA==

Activities Terminal 10.10.15.35
root@OS02:~/openshift-sep-2024/Day2/ingress root@OS02:~ sudo virt-install --name ocp-bastion-server --ram 4096 --cp...
root@OS02:~ /nginx:8080 (10.128.0.119:8080,10.128.2.21:8080,10.129.0.84:8080 + 2 more...)
/hello hello:8080 (10.128.0.138:8080,10.128.2.30:8080,10.129.0.86:8080 + 2 more...)
Annotations: haproxy.router.openshift.io/rewrite-target: /
Events: <none>
[root@OS02 ingress]# curl http://tektutor.apps.ocp4.rps.com/nginx
curl: (6) Could not resolve host: tektutor.apps.ocp4.rps.com
[root@OS02 ingress]# vim /etc/hosts
[root@OS02 ingress]# curl http://tektutor.apps.ocp4.rps.com/nginx
<!DOCTYPE html>
<html>
<head>
<title>Welcome to nginx!</title>
<style>
html { color-scheme: light dark; }
body { width: 35em; margin: 0 auto;
font-family: Tahoma, Verdana, Arial, sans-serif; }
</style>
</head>
<body>
<h1>Welcome to nginx!</h1>
<p>If you see this page, the nginx web server is successfully installed and
working. Further configuration is required.</p>
<hr>
<p>For online documentation and support please refer to
<a href="http://nginx.org/">nginx.org</a>.<br/>
Commercial support is available at
<a href="http://nginx.com/">nginx.com</a>.</p>
<hr>
<p><em>Thank you for using nginx.</em></p>
</body>
</html>
[root@OS02 ingress]# curl http://tektutor.apps.ocp4.rps.com/hello
Greetings from Spring Boot![root@OS02 ingress]# 
```

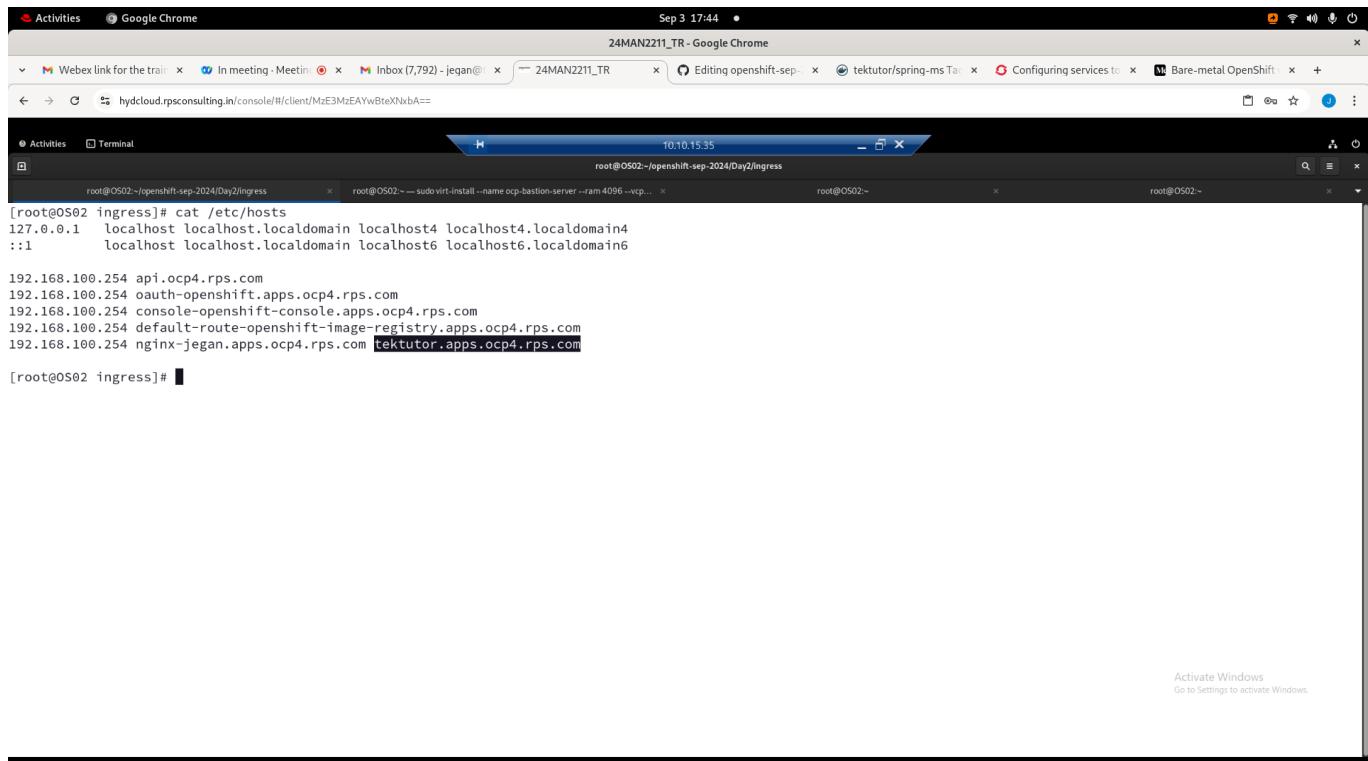
Activate Windows
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```

Activities Google Chrome Sep 3 17:43 24MAN2211_TR - Google Chrome
Webex link for the train In meeting - Meeting (6) Inbox (7,792) - jegan@... 24MAN2211_TR - Google Chrome
hydcloud.rpsconsulting.in/console/#/client/MzE3MzEAYwBteXNxbA==

Activities Terminal 10.10.15.35
root@OS02:~/openshift-sep-2024/Day2/ingress root@OS02:~ sudo virt-install --name ocp-bastion-server --ram 4096 --cp...
root@OS02:~ /nginx:8080 (10.128.0.119:8080,10.128.2.21:8080,10.129.0.84:8080 + 2 more...)
/hello hello:8080 (10.128.0.138:8080,10.128.2.30:8080,10.129.0.86:8080 + 2 more...)
Annotations: haproxy.router.openshift.io/rewrite-target: /
Events: <none>
[root@OS02 ingress]# curl http://tektutor.apps.ocp4.rps.com/nginx
curl: (6) Could not resolve host: tektutor.apps.ocp4.rps.com
[root@OS02 ingress]# vim /etc/hosts
[root@OS02 ingress]# curl http://tektutor.apps.ocp4.rps.com/nginx
<!DOCTYPE html>
<html>
<head>
<title>Welcome to nginx!</title>
<style>
html { color-scheme: light dark; }
body { width: 35em; margin: 0 auto;
font-family: Tahoma, Verdana, Arial, sans-serif; }
</style>
</head>
<body>
<h1>Welcome to nginx!</h1>
<p>If you see this page, the nginx web server is successfully installed and
working. Further configuration is required.</p>
<hr>
<p>For online documentation and support please refer to
<a href="http://nginx.org/">nginx.org</a>.<br/>
Commercial support is available at
<a href="http://nginx.com/">nginx.com</a>.</p>
<hr>
<p><em>Thank you for using nginx.</em></p>
</body>
</html>
[root@OS02 ingress]# curl http://tektutor.apps.ocp4.rps.com/hello
Greetings from Spring Boot![root@OS02 ingress]# 
```

Activate Windows
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Activities Google Chrome Sep 3 17:44 24MAN2211_TR - Google Chrome

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hydcloud.rpsconsulting.in/console/#/client/MzE3MzEAYwBteXNxbA==

Activities Terminal 10.10.15.35

root@OS02:~/openshift-sep-2024/Day2/ingress

```
[root@OS02 ingress]# cat /etc/hosts
127.0.0.1 localhost localhost.localdomain localhost4 localhost4.localdomain4
::1 localhost localhost.localdomain localhost6 localhost6.localdomain6

192.168.100.254 api.ocp4.rps.com
192.168.100.254 oauth-openshift.apps.ocp4.rps.com
192.168.100.254 console-openshift-console.apps.ocp4.rps.com
192.168.100.254 default-route-openshift-image-registry.apps.ocp4.rps.com
192.168.100.254 nginx-jegan.apps.ocp4.rps.com tektutor.apps.ocp4.rps.com
```

[root@OS02 ingress]#

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