Kubernetes 1 - Assignment

Problem Statement:

You work for the xyz organization. Your organization uses Kubernetes for container orchestration. Your organization has recently created pods from which data was being lost. Now they require volume mounts which preserve data and save a password called "xyzIsthebest" and this has to be put on a particular node of your choice.

You have been asked to:

1. Create a persistent volume
2. create a persistent volume claim
3. create a secret "xyzIsthebest"
4. Taint one of the nodes of the cluster

https://us-east-1.console.aws.amazon.com/ec2/v2/home?region=us-east-1#Instances:sort=instanceId

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	Name	Instance ID	Instance Type	Availability Zone	Instance State	Status Checks	Alarm Status	Public DNS (IPv4)
☑	Kuber-worker	i-06a83eac22b9803a2	t2.medium	us-east-1d	🟢 running	✅ 2/2 checks ...	None	ec2-184-72-107-113.co...
☐	ubuntujenkins	i-0717ac4271550cb0f	t2.micro	us-east-1d	🔴 stopped		None	
☑	Kuber-master	i-09c6ddd37a95911c2	t2.medium	us-east-1d	🟢 running	✅ 2/2 checks ...	None	ec2-52-201-231-27.com...
	prod-server	i-09f4339ed6d4625c6	t2.micro	us-east-1c	stopped		None	

Instances: | i-06a83eac22b9803a2 (Kuber-worker), | i-09c6ddd37a95911c2 (Kuber-master)

Description   Status Checks   Monitoring   Tags

- i-06a83eac22b9803a2: ec2-184-72-107-113.compute-1.amazonaws.com
- i-09c6ddd37a95911c2: ec2-52-201-231-27.compute-1.amazonaws.com

17:53
30/03/2022

```
root@ip-172-31-25-208:~# ls
external-storage   persistent.yml   redis.yml   snap   website
root@ip-172-31-25-208:~#
```

```
root@ip-172-31-25-208:~# vi persistent.yml
root@ip-172-31-25-208:~# kubectl apply -f persistent.yml
persistentvolume/counterapp created
persistentvolumeclaim/counterapp created
pod/pod-ais created
root@ip-172-31-25-208:~# kubectl get deploy
NAME                  READY   UP-TO-DATE   AVAILABLE   AGE
kubernetes-bootcamp   1/1     1            1           24m
root@ip-172-31-25-208:~# kubectl get pods
NAME                                   READY   STATUS    RESTARTS   AGE
kubernetes-bootcamp-59d54f7f6f-gj9hl   1/1     Running   0          24m
pod-ais                                1/1     Running   0          2m25s
root@ip-172-31-25-208:~# kubectl exec -it pod-ais bash
kubectl exec [POD] [COMMAND] is DEPRECATED and will be removed in a future version. Use kubectl exec [POD] -- [COMMAND] in
stead.
root@pod-ais:/data# ls -alrt
total 8
drwxr-xr-x 2 redis root 4096 Mar 30 11:55 .
drwxr-xr-x 1 root  root 4096 Mar 30 11:55 ..
root@pod-ais:/data# redis-cli
127.0.0.1:6379> set name mohit
OK
127.0.0.1:6379> get name
"mohit"
127.0.0.1:6379> save
OK
127.0.0.1:6379> exit
root@pod-ais:/data# ls -alrt
total 12
drwxr-xr-x 1 root  root   4096 Mar 30 11:55 ..
-rw-r--r-- 1 redis redis   109 Mar 30 12:02 dump.rdb
drwxr-xr-x 2 redis root   4096 Mar 30 12:02 .
root@pod-ais:/data# exit
```

```
root@ip-172-31-25-208:~# vi persistent.yml
apiVersion: v1
kind: PersistentVolume
metadata:
  name: counterapp
  labels:
    type: hostpath
spec:
  capacity:
    storage: 2Gi
  accessModes:
    - ReadWriteMany
  storageClassName: ""
  persistentVolumeReclaimPolicy: Delete
  hostPath:
    type: DirectoryOrCreate
    path: "/opt/counterapp"

---

kind: PersistentVolumeClaim
apiVersion: v1
metadata:
  name: counterapp
spec:
  accessModes:
    - ReadWriteMany
  storageClassName: ""
  resources:
    requests:
      storage: 500Mi

---
```

```yaml
---

kind: PersistentVolumeClaim
apiVersion: v1
metadata:
  name: counterapp
spec:
  accessModes:
    - ReadWriteMany
  storageClassName: ""
  resources:
    requests:
      storage: 500Mi

---

apiVersion: v1
kind: Pod
metadata:
  name: pod-ais
spec:
  containers:
    - name: countainer
      image: redis
      volumeMounts:
      - mountPath:  /data
        name: redis-data
  volumes:
    - name: redis-data
      persistentVolumeClaim:
        claimName: counterapp
```

48,14   Bot

```
root@ip-172-31-25-208:~# vi redis.yml
root@ip-172-31-25-208:~# kubectl get pods
NAME                                    READY    STATUS     RESTARTS    AGE
kubernetes-bootcamp-59d54f7f6f-gj9hl    1/1      Running    0           37m
pod-ais                                 1/1      Running    0           15m
root@ip-172-31-25-208:~# kubectl delete pod pod-ais
pod "pod-ais" deleted
root@ip-172-31-25-208:~# kubectl get pods
NAME                                    READY    STATUS     RESTARTS    AGE
kubernetes-bootcamp-59d54f7f6f-gj9hl    1/1      Running    0           40m
root@ip-172-31-25-208:~# kubectl apply -f redis.yml
pod/pod-ais created
root@ip-172-31-25-208:~# kubectl get pods
NAME                                    READY    STATUS     RESTARTS    AGE
kubernetes-bootcamp-59d54f7f6f-gj9hl    1/1      Running    0           41m
pod-ais                                 1/1      Running    0           18s
root@ip-172-31-25-208:~# kubectl exec -it pod-ais bash
kubectl exec [POD] [COMMAND] is DEPRECATED and will be removed in a future version. Use kubectl exec [POD] -- [COMMAND] in
stead.
root@pod-ais:/data# redis-cli
127.0.0.1:6379> get name
(nil)
127.0.0.1:6379> exit
root@pod-ais:/data# exit
exit
root@ip-172-31-25-208:~# kubectl get pods
NAME                                    READY    STATUS     RESTARTS    AGE
kubernetes-bootcamp-59d54f7f6f-gj9hl    1/1      Running    0           44m
pod-ais                                 1/1      Running    0           3m34s
root@ip-172-31-25-208:~# kubectl delete pod pod-ais
pod "pod-ais" deleted
root@ip-172-31-25-208:~# vi redis.yml
root@ip-172-31-25-208:~# kubectl apply -f redis.yml
```

```yaml
apiVersion: v1
kind: Pod
metadata:
  name: pod-ais
spec:
  containers:
    - name: countainer
      image: redis
```

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"redis.yml" 15L, 277C   15,29   All

```
127.0.0.1:6379> get name
(nil)
127.0.0.1:6379> exit
root@pod-ais:/data# exit
exit
root@ip-172-31-25-208:~# kubectl get pods
NAME                                    READY    STATUS     RESTARTS    AGE
kubernetes-bootcamp-59d54f7f6f-gj9hl    1/1      Running    0           44m
pod-ais                                 1/1      Running    0           3m34s
root@ip-172-31-25-208:~# kubectl delete pod pod-ais
pod "pod-ais" deleted
root@ip-172-31-25-208:~# vi redis.yml
root@ip-172-31-25-208:~# kubectl apply -f redis.yml
pod/pod-ais created
root@ip-172-31-25-208:~# kubectl get pods
NAME                                    READY    STATUS     RESTARTS    AGE
kubernetes-bootcamp-59d54f7f6f-gj9hl    1/1      Running    0           46m
pod-ais                                 1/1      Running    0           7s
root@ip-172-31-25-208:~# kubectl exec -it pod-ais bash
kubectl exec [POD] [COMMAND] is DEPRECATED and will be removed in a future version. Use kubectl exec [POD] -- [COMMAND] in
stead.
root@pod-ais:/data# redis-cli
127.0.0.1:6379> get name
"mohit"
127.0.0.1:6379> exit
root@pod-ais:/data# ls -alrt
total 12
-rw-r--r-- 1 redis redis   109 Mar 30 12:13 dump.rdb
drwxr-xr-x 2 redis root    4096 Mar 30 12:13 .
drwxr-xr-x 1 root  root    4096 Mar 30 12:19 ..
root@pod-ais:/data# exit
exit
root@ip-172-31-25-208:~#
```

```
root@ip-172-31-25-208:~# vi redis.yml
apiVersion: v1
kind: Pod
metadata:
  name: pod-ais
spec:
  containers:
    - name: countainer
      image: redis
      volumeMounts:
      - mountPath:  /data
        name: redis-data
  volumes:
    - name: redis-data
      persistentVolumeClaim:
        claimName: counterapp
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```

```
root@ip-172-31-25-208:~# vi secret.yml
apiVersion: v1
kind: Secret
metadata:
  name: secret-basic-auth
type: kubernetes.io/basic-auth
stringData:
  username: admin
  password: t0p-Secret

---

apiVersion: v1
kind: Secret
metadata:
  name: mysecret
type: Opaque
stringData:
  config.yaml: |
    apiUrl: "https://my.api.com/api/v1"
    username: admin
    password: secretpassword

---

apiVersion: v1
kind: Pod
metadata:
  name: mypod
spec:
  containers:
  - name: mypod
    image: redis
```
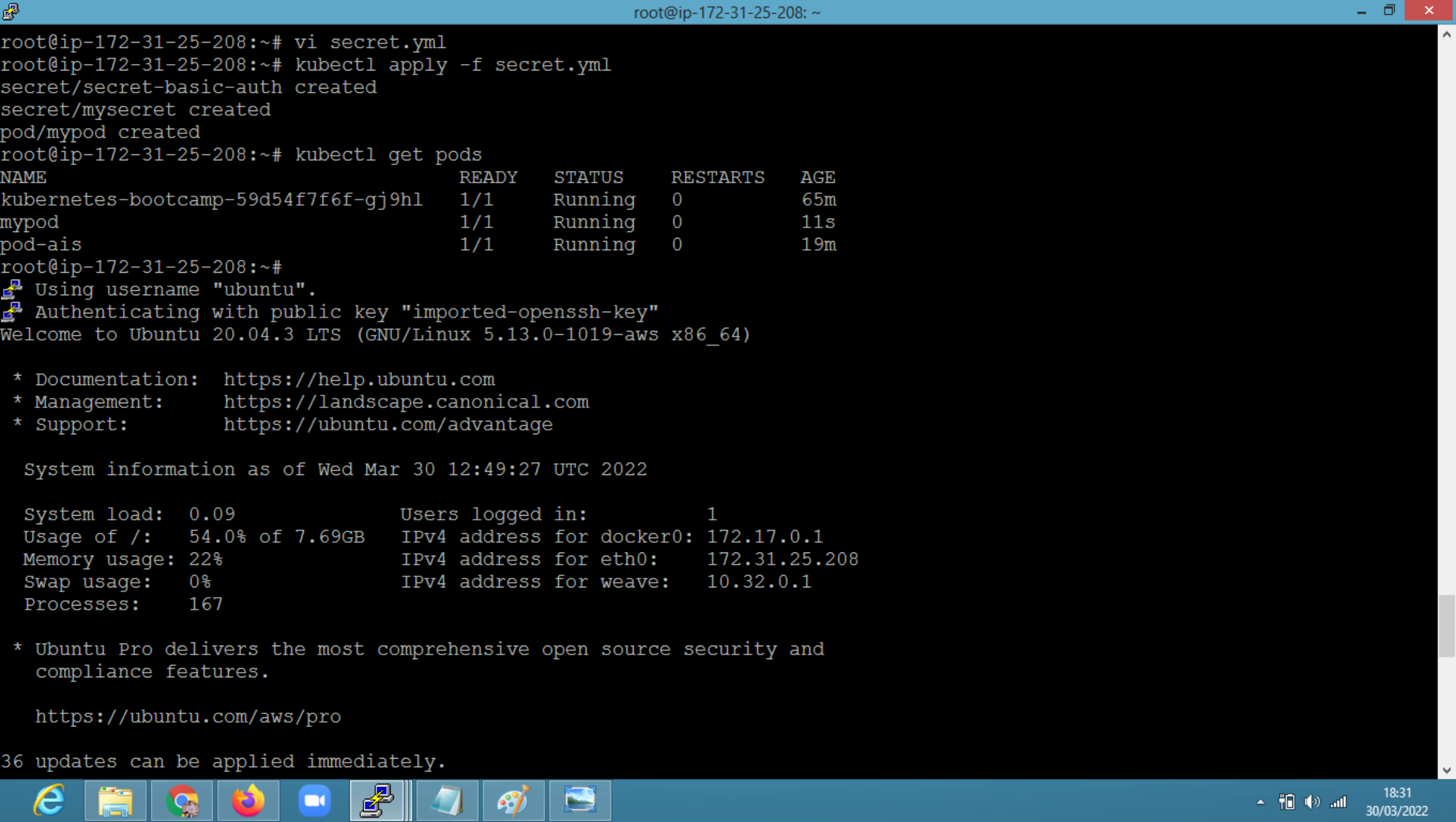
```yaml
---

apiVersion: v1
kind: Secret
metadata:
  name: mysecret
type: Opaque
stringData:
  config.yaml: |
    apiUrl: "https://my.api.com/api/v1"
    username: admin
    password: secretpassword

---

apiVersion: v1
kind: Pod
metadata:
  name: mypod
spec:
  containers:
  - name: mypod
    image: redis
    volumeMounts:
    - name: secret-volume
      mountPath: "/config"
      readOnly: true
  volumes:
  - name: secret-volume
    secret:
      secretName: mysecret
```
-- INSERT --   40,14   Bot

```
root@ip-172-31-25-208:~# vi secret.yml
root@ip-172-31-25-208:~# kubectl apply -f secret.yml
secret/secret-basic-auth created
secret/mysecret created
pod/mypod created
root@ip-172-31-25-208:~# kubectl get pods
NAME                                   READY   STATUS    RESTARTS   AGE
kubernetes-bootcamp-59d54f7f6f-gj9hl   1/1     Running   0          65m
mypod                                  1/1     Running   0          11s
pod-ais                                1/1     Running   0          19m
root@ip-172-31-25-208:~#
```
Using username "ubuntu".
Authenticating with public key "imported-openssh-key"
Welcome to Ubuntu 20.04.3 LTS (GNU/Linux 5.13.0-1019-aws x86_64)

 * Documentation: https://help.ubuntu.com
 * Management: https://landscape.canonical.com
 * Support: https://ubuntu.com/advantage

  System information as of Wed Mar 30 12:49:27 UTC 2022
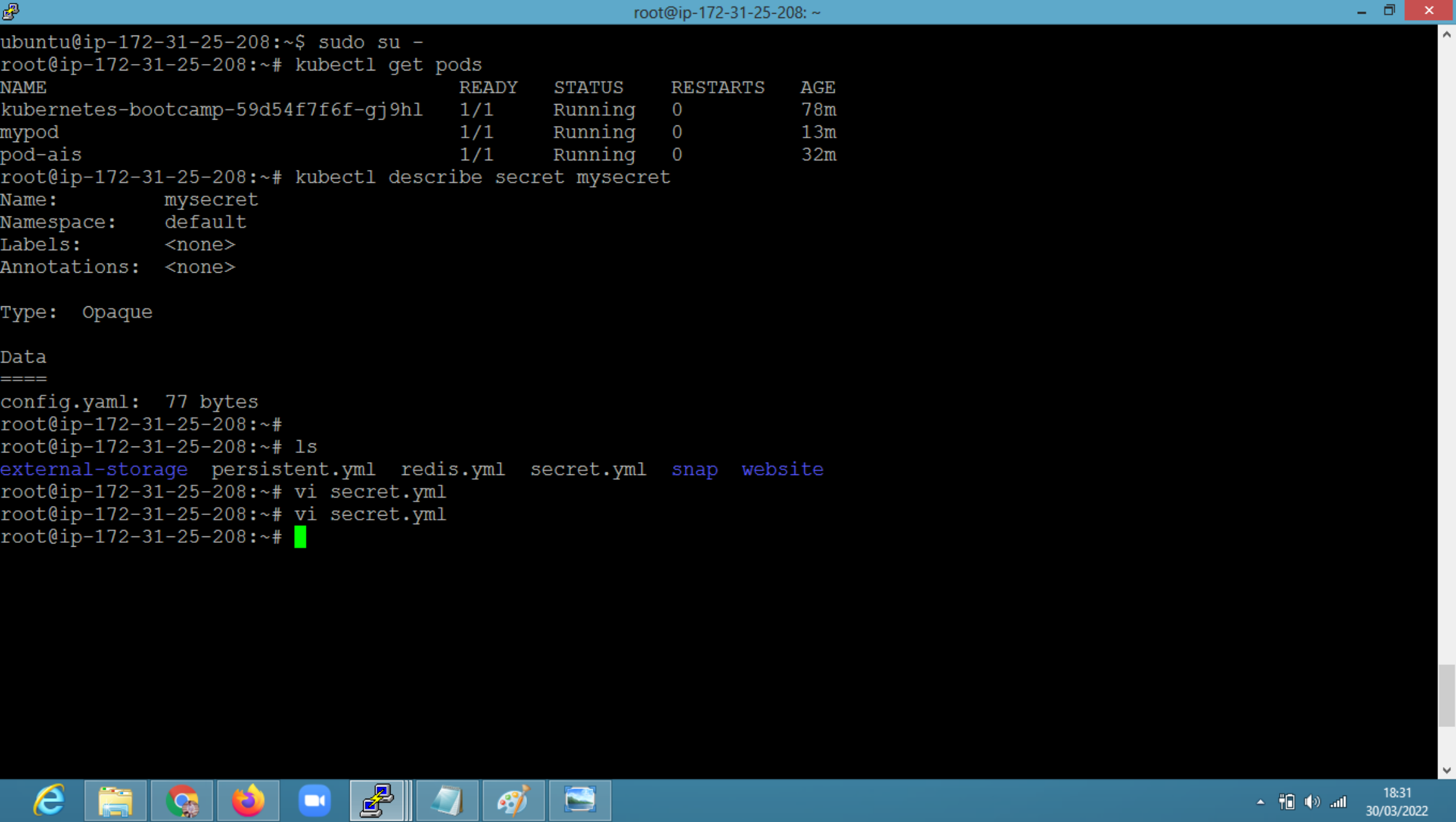
  System load: 0.09   Users logged in: 1
  Usage of /:   54.0% of 7.69GB   IPv4 address for docker0: 172.17.0.1
  Memory usage: 22%   IPv4 address for eth0:   172.31.25.208
  Swap usage: 0%   IPv4 address for weave: 10.32.0.1
  Processes: 167

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   compliance features.

   https://ubuntu.com/aws/pro

36 updates can be applied immediately.

```
ubuntu@ip-172-31-25-208:~$ sudo su -
root@ip-172-31-25-208:~# kubectl get pods
NAME                                  READY   STATUS    RESTARTS   AGE
kubernetes-bootcamp-59d54f7f6f-gj9hl  1/1     Running   0          78m
mypod                                 1/1     Running   0          13m
pod-ais                               1/1     Running   0          32m
root@ip-172-31-25-208:~# kubectl describe secret mysecret
Name:         mysecret
Namespace:    default
Labels:       <none>
Annotations:  <none>

Type:  Opaque

Data
====
config.yaml:  77 bytes
root@ip-172-31-25-208:~#
root@ip-172-31-25-208:~# ls
external-storage  persistent.yml  redis.yml  secret.yml  snap  website
root@ip-172-31-25-208:~# vi secret.yml
root@ip-172-31-25-208:~# vi secret.yml
root@ip-172-31-25-208:~#
```
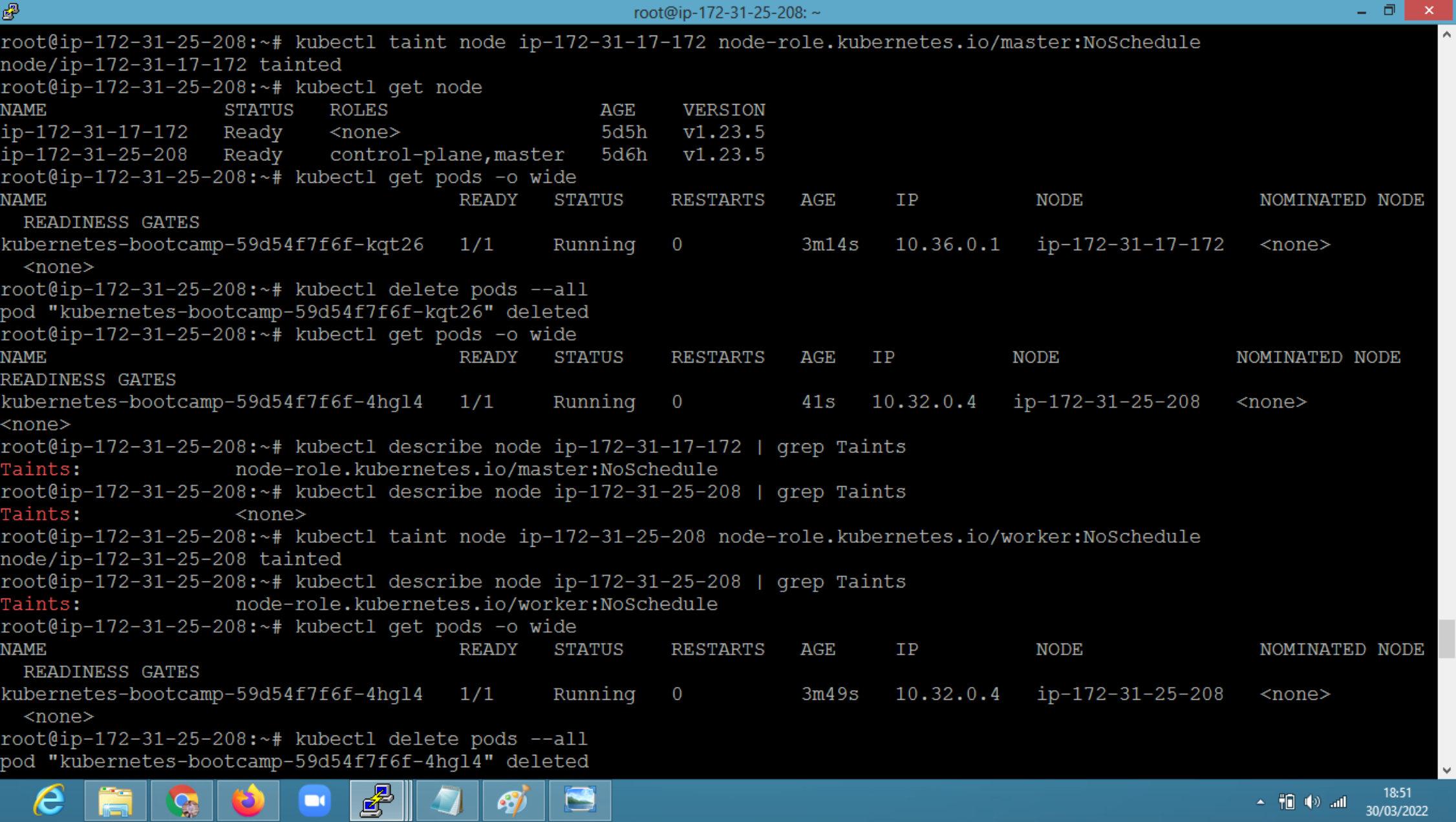
```
root@ip-172-31-25-208:~# kubectl taint node ip-172-31-17-172 node-role.kubernetes.io/master:NoSchedule
node/ip-172-31-17-172 tainted
root@ip-172-31-25-208:~# kubectl get node
NAME                STATUS    ROLES                 AGE      VERSION
ip-172-31-17-172    Ready     <none>                5d5h     v1.23.5
ip-172-31-25-208    Ready     control-plane,master  5d6h     v1.23.5
root@ip-172-31-25-208:~# kubectl get pods -o wide
NAME                                  READY    STATUS     RESTARTS   AGE     IP          NODE                NOMINATED NODE
  READINESS GATES
kubernetes-bootcamp-59d54f7f6f-kqt26  1/1      Running    0          3m14s   10.36.0.1   ip-172-31-17-172    <none>
  <none>
root@ip-172-31-25-208:~# kubectl delete pods --all
pod "kubernetes-bootcamp-59d54f7f6f-kqt26" deleted
root@ip-172-31-25-208:~# kubectl get pods -o wide
NAME                                  READY    STATUS     RESTARTS   AGE     IP          NODE                NOMINATED NODE
READINESS GATES
kubernetes-bootcamp-59d54f7f6f-4hgl4  1/1      Running    0          41s     10.32.0.4   ip-172-31-25-208    <none>
<none>
root@ip-172-31-25-208:~# kubectl describe node ip-172-31-17-172 | grep Taints
Taints:             node-role.kubernetes.io/master:NoSchedule
root@ip-172-31-25-208:~# kubectl describe node ip-172-31-25-208 | grep Taints
Taints:             <none>
root@ip-172-31-25-208:~# kubectl taint node ip-172-31-25-208 node-role.kubernetes.io/worker:NoSchedule
node/ip-172-31-25-208 tainted
root@ip-172-31-25-208:~# kubectl describe node ip-172-31-25-208 | grep Taints
Taints:             node-role.kubernetes.io/worker:NoSchedule
root@ip-172-31-25-208:~# kubectl get pods -o wide
NAME                                  READY    STATUS     RESTARTS   AGE     IP          NODE                NOMINATED NODE
  READINESS GATES
kubernetes-bootcamp-59d54f7f6f-4hgl4  1/1      Running    0          3m49s   10.32.0.4   ip-172-31-25-208    <none>
  <none>
root@ip-172-31-25-208:~# kubectl delete pods --all
pod "kubernetes-bootcamp-59d54f7f6f-4hgl4" deleted
```