Backing up the Etcd Cluster Data

Course-end Project 2

Task (Activities)
1. Backing up the etcd cluster data
2. Creating and verifying the namespaces
3. Generating a certificate and private key in the worker node
4. Upgrading the Kubernetes cluster with the latest version

Task 1. Backing up the Etcd Cluster Data

Step1:we need to install etcd-client

labsuser@master:~/cluster-admin1$ etcdctl
sudo snap install etcd

sudo apt install etcd-client

sudo chmod a+rw -R /etc/kubernetes/pki

Step 2: backup data

```
labsuser@master:~/cluster-admin1$ ETCDCTL_API=3 etcdctl
--endpoints=https://172.31.31.207:2379 \
--cert=/etc/kubernetes/pki/etcd/server.crt \
--key=/etc/kubernetes/pki/etcd/server.key \
--cacert=/etc/kubernetes/pki/etcd/ca.crt \
snapshot save /tmp/myback
2024-02-12 00:49:04.001225 I | clientv3: opened snapshot stream; downloading
2024-02-12 00:49:04.430909 I | clientv3: completed snapshot read; closing
Snapshot saved at /tmp/myback
```

Step3 .Giving a permission

sudo chmod a+rw -R /etc/kubernetes/pki

```
labsuser@master:~/cluster-admin1$ ETCDCTL_API=3 etcdctl --endpoints=https://172.31.31.207:2379 \
--cert=/etc/kubernetes/pki/etcd/server.crt \
--key=/etc/kubernetes/pki/etcd/server.key \
--cacert=/etc/kubernetes/pki/etcd/ca.crt \
snapshot save /tmp/myback
2024-02-12 00:49:04.001225 I | clientv3: opened snapshot stream; downloading
2024-02-12 00:49:04.430909 I | clientv3: completed snapshot read; closing
Snapshot saved at /tmp/myback
labsuser@master:~/cluster-admin1$
```

```
labsuser@master:~$ ls /tmp
myback
myback.db.part
```

```
labsuser@master:~$ ls /tmp
dcv-pcscd-0
myback
myback.db.part
```

Step 5.Lets check a size
ls -lta

Verifying the snapshot

labsuser@master:~$ ETCDCTL_API=3 etcdctl --endpoints=https://172.31.31.207:2379 --cert=/etc/kubernetes/pki/etcd/server.crt --key=/etc/kubernetes/pki/etcd/server.key --cacert=/etc/kubernetes/pki/etcd/ca.crt snapshot status /tmp/myback
8e0e676c, 451960, 2058, 24 MB

```
labsuser@master:~$ ETCDCTL_API=3 etcdctl --endpoints=https://172.31.31.207:2379 --cert=/etc/kuberne
ubernetes/pki/etcd/ca.crt snapshot status /tmp/myback
8e0e676c, 451960, 2058, 24 MB
```

Task 2. Creating and verifying the namespaces

To create a namespace called cep-project2 with a network policy that allows all Pods in the same namespace to access one another, you can use Kubernetes YAML manifests. Below are the YAML manifests for creating the namespace and the network policy:

```
labsuser@master:~$ kubectl apply -f cep-project2-namespace.yaml
namespace/cep-project2 unchanged
```

```
# cep-project2-namespace.yaml
apiVersion: v1
kind: Namespace
metadata:
  name: cep-project2
```

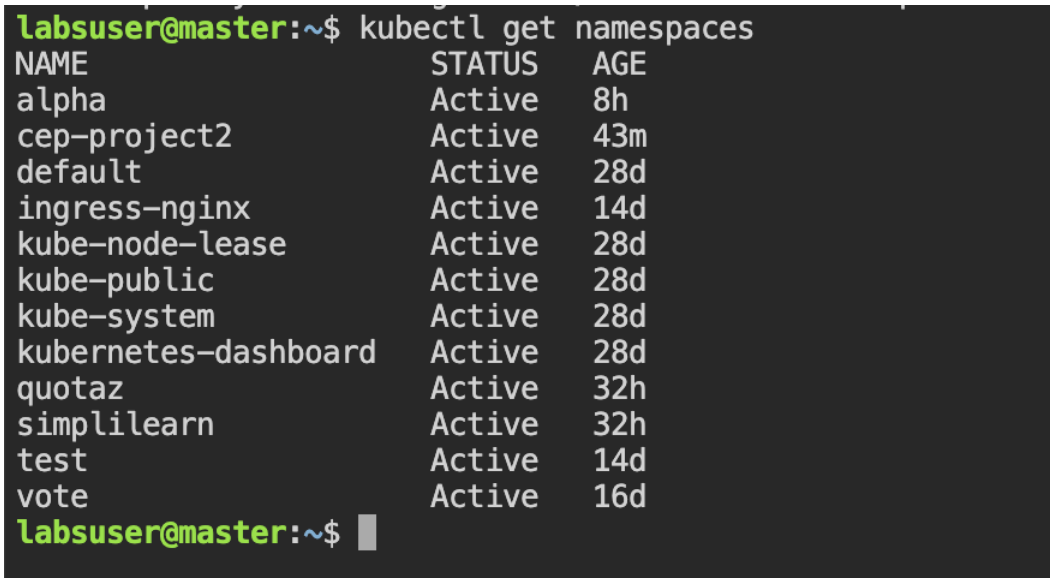
```
# cep-project2-network-policy.yaml
apiVersion: networking.k8s.io/v1
kind: NetworkPolicy
metadata:
  name: allow-intra-namespace
  namespace: cep-project2
spec:
  podSelector: {}
  policyTypes:
  - Ingress
  - Egress
```

```
kubectl apply -f cep-project2-namespace.yaml
kubectl apply -f cep-project2-network-policy.yaml

labsuser@master:~$
kubectl apply -f cep-project2-network-policy.yaml
networkpolicy.networking.k8s.io/allow-intra-namespace created
```

To verify the creation of the namespace, you can run:

```
labsuser@master:~$ kubectl get namespaces
```

```
NAME                   STATUS   AGE
alpha                  Active   8h
cep-project2           Active   43m
default                Active   28d
ingress-nginx          Active   14d
kube-node-lease        Active   28d
kube-public            Active   28d
kube-system            Active   28d
kubernetes-dashboard   Active   28d
quotaz                 Active   32h
simplilearn            Active   32h
test                   Active   14d
vote                   Active   16
```



this will list all the namespaces in your Kubernetes cluster, and you should see cep-project2 among them.

To verify the creation of the network policy, you can run:

This command will list all the network policies in the cep-project2 namespace, and you should see allow-intra-namespace among them.

```
labsuser@master:~$ kubectl get networkpolicies -n cep-project2
NAME                   POD-SELECTOR   AGE
```

allow-intra-namespace <none> 3m28s

```
labsuser@master:~$ kubectl get networkpolicies -n cep-project2
NAME                     POD-SELECTOR   AGE
allow-intra-namespace    <none>         3m28s
labsuser@master:~$
```

Task 3: Making sure to have a namespace called cep-project2 with a network policy configured in such a way that all the Pods in the same namespace should access each other. Any other Pods from the non cep-project2 should not access the Pods. Configure a Kubernetes client on worker node 3 in such a way that user4 should have only view access to cep-project2

Now creating a NetworkPolicy to restrict access between Pods in the cep-project2 namespace and then configure RBAC (Role-Based Access Control) to provide limited access to the cep-project2 namespace for user4. Below are the steps to accomplish this:

1. Create a NetworkPolicy for the cep-project2 namespace to allow Pods within the namespace to communicate with each other:

```
apiVersion: networking.k8s.io/v1
kind: NetworkPolicy
metadata:
  name: allow-same-namespace
  namespace: cep-project2
spec:
  podSelector: {}
  policyTypes:
  - IntraNamespace
```

kubectl apply -f network-policy.yaml

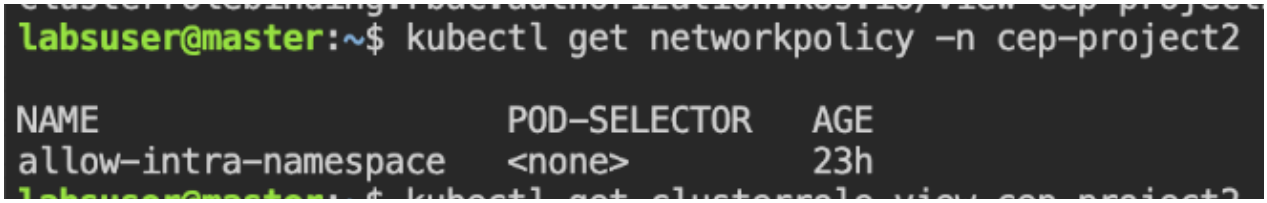
Create a ClusterRole that grants view access to resources in the cep-project2 namespace:

```
kind: ClusterRole
apiVersion: rbac.authorization.k8s.io/v1
metadata:
  name: view-cep-project2
rules:
- apiGroups: [""]
  resources: ["pods", "services", "configmaps", "secrets"]
  resourceNames: [""] # empty string means all resources
  verbs: ["get", "list", "watch"]
```

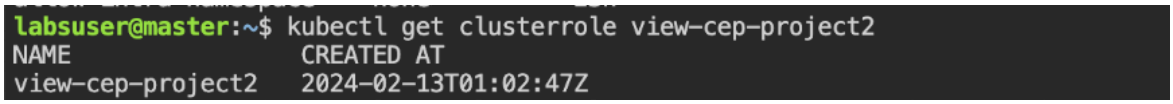
```
apiVersion: rbac.authorization.k8s.io/v1
kind: ClusterRoleBinding
metadata:
  name: view-cep-project2-binding
subjects:
- kind: User
  name: user4
  apiGroup: rbac.authorization.k8s.io
roleRef:
  kind: ClusterRole
  name: view-cep-project2
  apiGroup: rbac.authorization.k8s.io
```

After applying these configurations, you can verify the NetworkPolicy and the RBAC settings using the following commands:

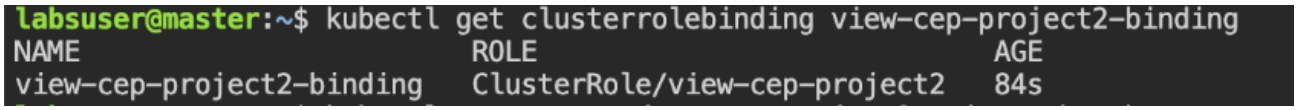
kubectl get networkpolicy -n cep-project2



kubectl get clusterrole view-cep-project2



kubectl get clusterrolebinding view-cep-project2-binding



Verify NetworkPolicy:
verifying whether the NetworkPolicy is applied correctly and is restricting access between Pods in the cep-project2 namespace and Pods outside the namespace. To do this, create two test Pods, one within the cep-project2 namespace and another outside the namespace, and try to establish connections between them.

Creating test Pod within cep-project2 namespace
kubectl run test-pod -n cep-project2 --image=busybox --restart=Never -- sleep 3600

Creating test Pod outside cep-project2 namespace
kubectl run test-pod-outside -n default --image=busybox --restart=Never -- sleep 3600

Try to establish a connection from test-pod to test-pod-outside
kubectl exec -n cep-project2 -it test-pod -- wget -qO- http://test-pod-outside.default

```
view-cep-project2-binding   ClusterRole/view-cep-project2   84s
labsuser@master:~$ kubectl run test-pod -n cep-project2 --image=busybox --restart=Never -- sleep 3600
pod/test-pod created
labsuser@master:~$ kubectl run test-pod-outside -n default --image=busybox --restart=Never -- sleep 3600
pod/test-pod-outside created
labsuser@master:~$ kubectl exec -n cep-project2 -it test-pod -- wget -qO- http://test-pod-outside.default
wget: bad address 'test-pod-outside.default'
command terminated with exit code 1
```

Verify RBAC:
To verify RBAC settings, you can try accessing resources within the cep-project2 namespace using user4 credentials.

Switch to user4 context (assuming you have kubeconfig with user4 credentials)
kubectl config use-context user4-context

List Pods within cep-project2 namespace
kubectl get pods -n cep-project2

```
labsuser@master:~$ kubectl get pods -n cep-project2
NAME       READY   STATUS    RESTARTS   AGE
test-pod   1/1     Running   0          109s
labsuser@master:~$
```

Task 4. Upgrading the Kubernetes cluster with the latest version

Steps to do:

1.Upgrade control plane to v1.28.6

2.Upgrade worker node to v1.28.6

3.Validate upgrade, by creating a pod

Step 1: Upgrade control plane to v1.28.5

First step is you need to find what is the version

labsuser@master:~$ sudo apt update

sudo apt-cache madison kubeadm

```
labsuser@master:~$ sudo apt update
sudo apt-cache madison kubeadm
Hit:1 http://us-west-2.ec2.archive.ubuntu.com/ubuntu jammy InRelease
Get:2 http://us-west-2.ec2.archive.ubuntu.com/ubuntu jammy-updates InRelease [119 kB]
Get:3 http://us-west-2.ec2.archive.ubuntu.com/ubuntu jammy-backports InRelease [109 kB]
Get:4 http://security.ubuntu.com/ubuntu jammy-security InRelease [110 kB]
Hit:5 https://prod-cdn.packages.k8s.io/repositories/isv:/kubernetes:/core:/stable:/v1.28/deb  InRelease
Get:6 http://us-west-2.ec2.archive.ubuntu.com/ubuntu jammy-updates/main amd64 Packages [1366 kB]
Get:7 http://us-west-2.ec2.archive.ubuntu.com/ubuntu jammy-updates/main Translation-en [272 kB]
Get:8 http://us-west-2.ec2.archive.ubuntu.com/ubuntu jammy-updates/restricted amd64 Packages [1412 kB]
Get:9 http://us-west-2.ec2.archive.ubuntu.com/ubuntu jammy-updates/restricted Translation-en [233 kB]
Get:10 http://us-west-2.ec2.archive.ubuntu.com/ubuntu jammy-updates/universe amd64 Packages [1043 kB]
Get:11 http://us-west-2.ec2.archive.ubuntu.com/ubuntu jammy-updates/universe Translation-en [235 kB]
Get:12 https://ppa.launchpadcontent.net/mozillateam/ppa/ubuntu jammy InRelease [23.8 kB]
Get:13 http://us-west-2.ec2.archive.ubuntu.com/ubuntu jammy-backports/universe amd64 Packages [24.3 kB]
Get:14 http://security.ubuntu.com/ubuntu jammy-security/main amd64 Packages [1142 kB]
Get:15 http://security.ubuntu.com/ubuntu jammy-security/main Translation-en [211 kB]
Get:16 http://security.ubuntu.com/ubuntu jammy-security/restricted amd64 Packages [1366 kB]
Get:17 http://security.ubuntu.com/ubuntu jammy-security/restricted Translation-en [224 kB]
Get:18 http://security.ubuntu.com/ubuntu jammy-security/universe amd64 Packages [839 kB]
Get:19 http://security.ubuntu.com/ubuntu jammy-security/universe Translation-en [160 kB]
Get:20 https://ppa.launchpadcontent.net/mozillateam/ppa/ubuntu jammy/main amd64 Packages [34.2 kB]
Fetched 8922 kB in 3s (3440 kB/s)
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
74 packages can be upgraded. Run 'apt list --upgradable' to see them.
   kubeadm | 1.28.6-1.1 | https://pkgs.k8s.io/core:/stable:/v1.28/deb  Packages
   kubeadm | 1.28.5-1.1 | https://pkgs.k8s.io/core:/stable:/v1.28/deb  Packages
   kubeadm | 1.28.4-1.1 | https://pkgs.k8s.io/core:/stable:/v1.28/deb  Packages
   kubeadm | 1.28.3-1.1 | https://pkgs.k8s.io/core:/stable:/v1.28/deb  Packages
   kubeadm | 1.28.2-1.1 | https://pkgs.k8s.io/core:/stable:/v1.28/deb  Packages
   kubeadm | 1.28.1-1.1 | https://pkgs.k8s.io/core:/stable:/v1.28/deb  Packages
   kubeadm | 1.28.0-1.1 | https://pkgs.k8s.io/core:/stable:/v1.28/deb  Packages
labsuser@master:~$
```

This is listed all available versions

We are going to select latest version

kubeadm | 1.28.6-1.1 | https://pkgs.k8s.io/core:/stable:/v1.28/deb Packages

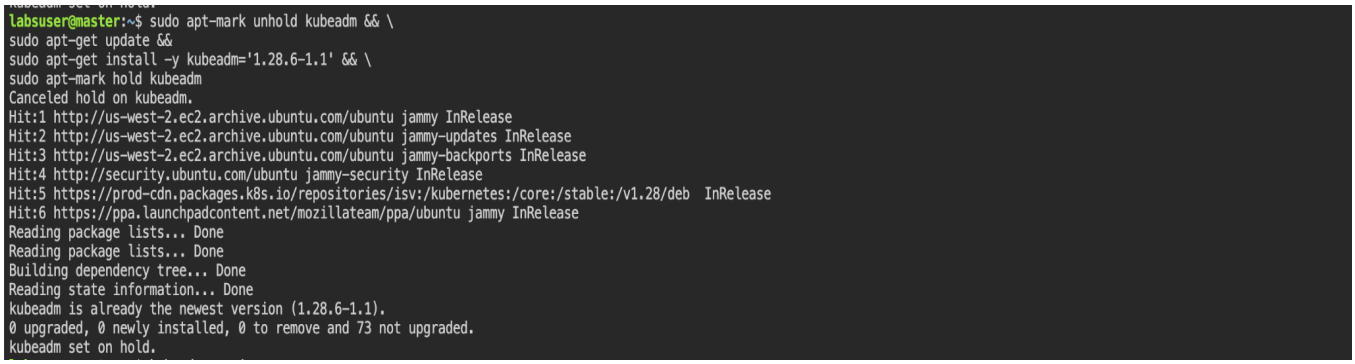
Upgrading control plane

1.Upgrade kubeadm:

```
sudo apt-mark unhold kubeadm && \
```

```
sudo apt-get update &&
```

```
sudo apt-get install -y kubeadm='1.28.6-1.1' && \
sudo apt-mark hold kubeadm
```



2.Verify that the download works and has the expected version:

labsuser@master:~$ kubeadm version

kubeadm version: &version.Info{Major:"1", Minor:"28", GitVersion:"v1.28.6",

GitCommit:"be3af46a4654bdf05b4838fe94e95ec8c165660c", GitTreeState:"clean",

BuildDate:"2024-01-17T13:47:00Z", GoVersion:"go1.20.13", Compiler:"gc",

Platform:"linux/amd64"}

3.Verify the upgrade plan:

`sudo kubeadm upgrade plan`

`absuser@master:~$ sudo kubeadm upgrade plan`

```
labsuser@master:~$ sudo kubeadm upgrade plan
[upgrade/config] Making sure the configuration is correct:
[upgrade/config] Reading configuration from the cluster...
[upgrade/config] FYI: You can look at this config file with 'kubectl -n kube-system get cm kubeadm-config -o yaml'
[preflight] Running pre-flight checks.
[upgrade] Running cluster health checks
[upgrade] Fetching available versions to upgrade to
[upgrade/versions] Cluster version: v1.28.5
[upgrade/versions] kubeadm version: v1.28.6
I0212 06:02:16.598366   37793 version.go:256] remote version is much newer: v1.29.1; falling back to: stable-1.28
[upgrade/versions] Target version: v1.28.6
[upgrade/versions] Latest version in the v1.28 series: v1.28.6

Components that must be upgraded manually after you have upgraded the control plane with 'kubeadm upgrade apply':
COMPONENT   CURRENT       TARGET
kubelet     3 x v1.28.5   v1.28.6

Upgrade to the latest version in the v1.28 series:

COMPONENT                 CURRENT   TARGET
kube-apiserver            v1.28.5   v1.28.6
kube-controller-manager   v1.28.5   v1.28.6
kube-scheduler            v1.28.5   v1.28.6
kube-proxy                v1.28.5   v1.28.6
CoreDNS                   v1.10.1   v1.10.1
etcd                      3.5.9-0   3.5.10-0

You can now apply the upgrade by executing the following command:

        kubeadm upgrade apply v1.28.6

_____________________________________________________________________


The table below shows the current state of component configs as understood by this version of kubeadm.
Configs that have a "yes" mark in the "MANUAL UPGRADE REQUIRED" column require manual config upgrade or
resetting to kubeadm defaults before a successful upgrade can be performed. The version to manually
upgrade to is denoted in the "PREFERRED VERSION" column.

API GROUP                 CURRENT VERSION   PREFERRED VERSION   MANUAL UPGRADE REQUIRED
kubeproxy.config.k8s.io   v1alpha1          v1alpha1            no
kubelet.config.k8s.io     v1beta1           v1beta1             no
_____________________________________________________________________
```

4. Choose a version to upgrade to, and run the appropriate command.

`sudo kubeadm upgrade apply v1.28.6`

labsuser@master:~$ sudo kubeadm upgrade apply v1.28.6

Once the command finishes we wiil see:

```
[bootstrap-token] Configured RBAC rules to allow Node Bootstrap tokens to post CSRs in order for nodes to get long term certificate credentials
[bootstrap-token] Configured RBAC rules to allow the csrapprover controller automatically approve CSRs from a Node Bootstrap Token
[bootstrap-token] Configured RBAC rules to allow certificate rotation for all node client certificates in the cluster
[addons] Applied essential addon: CoreDNS
[addons] Applied essential addon: kube-proxy

[upgrade/successful] SUCCESS! Your cluster was upgraded to "v1.28.6". Enjoy!

[upgrade/kubelet] Now that your control plane is upgraded, please proceed with upgrading your kubelets if you haven't already done so.
labsuser@master:~$
```

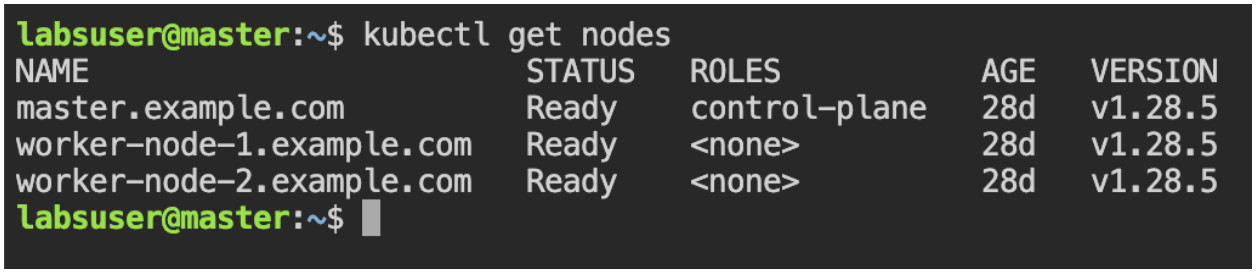
labsuser@master:~$ kubectl get nodes

NAME STATUS ROLES AGE VERSION

master.example.com Ready control-plane 28d v1.28.5

worker-node-1.example.com Ready <none> 28d v1.28.5

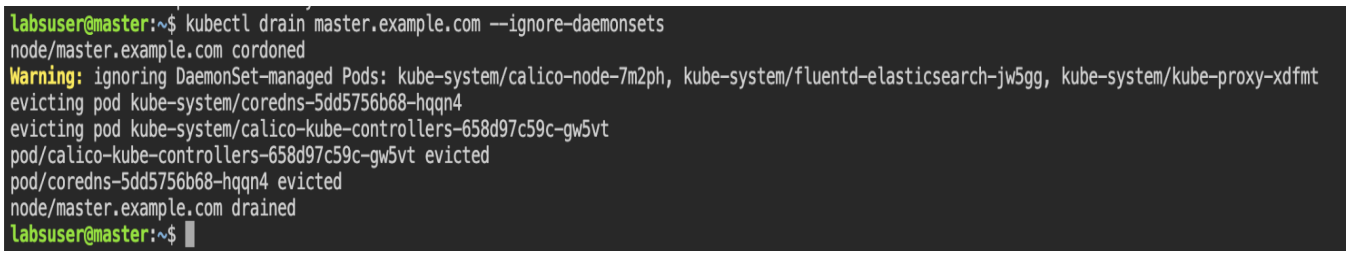
worker-node-2.example.com Ready <none> 28d v1.28.5



Drain the node

Prepare the node for maintenance by marking it unschedulable and evicting the workloads:

labsuser@master:~$ kubectl drain master.example.com --ignore-daemonsets



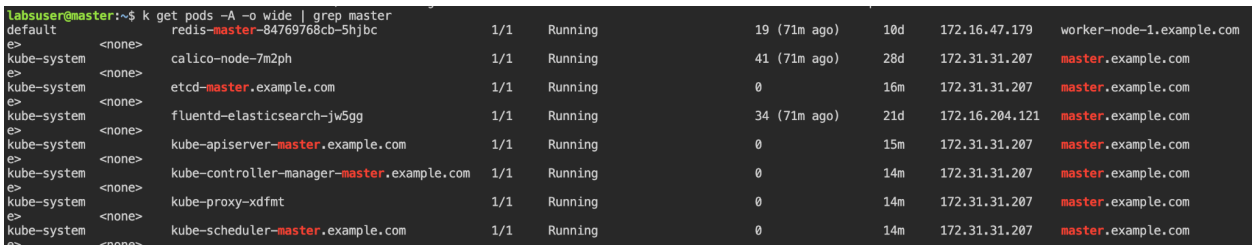
labsuser@master:~$ k get pod -n kube-system -o wide | grep coredns

coredns-5dd5756b68-7n5n2 1/1 Running 19 (69m ago) 10d 172.16.47.171 worker-node-1.example.com <none> <none>

coredns-5dd5756b68-m9lws 1/1 Running 0 6m34s 172.16.232.227 worker-node-2.example.com <none> <none>

To see which pods running on control plane

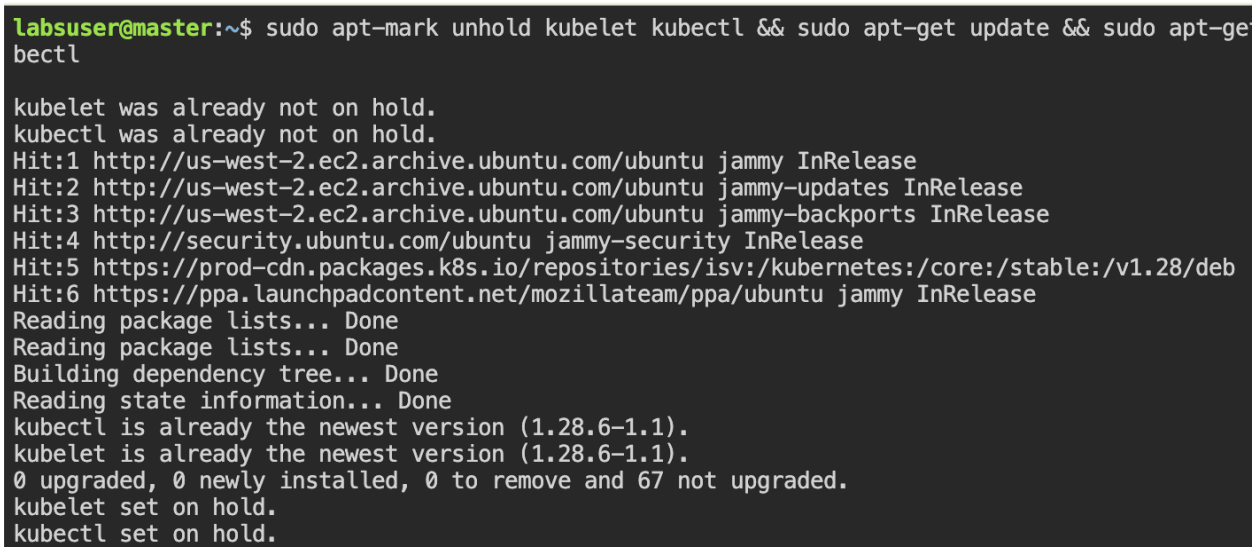
labsuser@master:~$ k get pods -A -o wide | grep master



Upgrade kubelet and kubectl

1. Upgrade the kubelet and kubectl:

sudo apt-mark unhold kubelet kubectl && sudo apt-get update && sudo apt-get install -y kubelet='`1.28.6-1.1`' kubectl='`1.28.6-1.1`' && sudo apt-mark hold kubelet kubectl



2.Restart the kubelet:

```
sudo systemctl daemon-reload
```

```
sudo systemctl restart kubelet
```

Now the particular node is disabled for scheduling

```
labsuser@master:~$ kubectl get nodes
```

```
labsuser@master:~$ kubectl get nodes
NAME                       STATUS                     ROLES           AGE   VERSION
master.example.com         Ready,SchedulingDisabled   control-plane   28d   v1.28.6
worker-node-1.example.com  Ready                      <none>          28d   v1.28.5
worker-node-2.example.com  Ready                      <none>          28d   v1.28.5
labsuser@master:~$
```

Uncordon the node

Bring the node back online by marking it schedulable:

```
labsuser@master:~$ kubectl uncordon master.example.com
```

```
node/master.example.com uncordoned
```

And Now

```
labsuser@master:~$ kubectl get nodes
NAME                       STATUS   ROLES           AGE   VERSION
master.example.com         Ready    control-plane   28d   v1.28.6
worker-node-1.example.com  Ready    <none>          28d   v1.28.5
worker-node-2.example.com  Ready    <none>          28d   v1.28.5
```

Upgrading worker nodes

Upgrade kubeadm

```
labsuser@worker-node-1:~$ sudo apt-mark unhold kubeadm && \
```

```
sudo apt-get update &&
```

```
sudo apt-get install -y kubeadm='1.28.6-1.1' && \
```

```
sudo apt-mark hold kubeadm
```

Call "kubeadm upgrade"

For worker nodes this upgrades the local kubelet configuration:

```
sudo kubeadm upgrade node
```

```
labsuser@worker-node-1:~$ sudo kubeadm upgrade node
```

Drain the node

Prepare the node for maintenance by marking it unschedulable and evicting the workloads:

```
# execute this command on a control plane node
```

```
labsuser@master:~$ kubectl drain worker-node-1.example.com --ignore-daemonsets
```

kubectl drain worker-node-1.example.com --ignore-daemonsets --force --delete-emptydir-data

```
pod/mysql-79c547d7fb-qbxrs evicted
pod/postgres-7d97467c58-9w28k evicted
pod/redis-master-84769768cb-5hjbc evicted
pod/secret-pod evicted
pod/task-pv-pod evicted
pod/test-mysql-6cd89db584-p8sld evicted
pod/wordpress-78cbf57fdb-nt5f5 evicted
pod/coredns-5dd5756b68-7n5n2 evicted
pod/envar-demo evicted
pod/dapi-test-pod02 evicted
pod/liveness-exec evicted
pod/readiness-exec evicted
node/worker-node-1.example.com drained
labsuser@master:~$
```

```
labsuser@master:~$ kubectl get pods -A -o wide | grep worker-node-1 | wc -l
```

```
3
```

```
These are demonset pod
```

Upgrade kubelet and kubectl

1. Upgrade the kubelet and kubectl:

sudo apt-mark unhold kubelet kubectl && sudo apt-get update && sudo apt-get install -y kubelet='1.28.6-1.1' kubectl='1.28.6-1.1' && sudo apt-mark hold kubelet kubectl

```
labsuser@worker-node-1:~$ sudo apt-mark unhold kubelet kubectl && sudo apt-get update && sudo apt-get install -y kubelet='1.28.6-1.1' kubectl='1.28.6-1.1' && sudo apt-mark hold kubelet kubectl
```

2. Restart the kubelet:

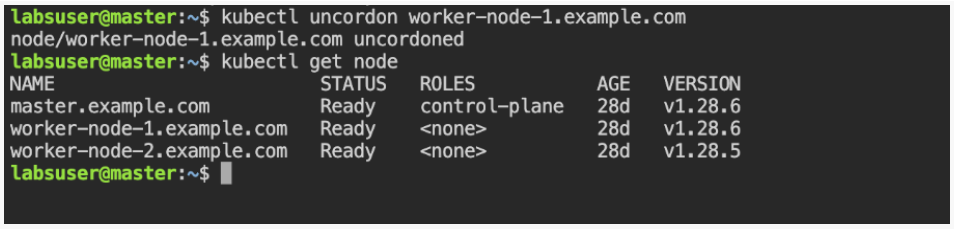
```
sudo systemctl daemon-reload

sudo systemctl restart kubelet

labsuser@master:~$ kubectl get nodes

NAME                          STATUS                     ROLES           AGE
VERSION

master.example.com            Ready                      control-plane   28d
v1.28.6

worker-node-1.example.com     Ready,SchedulingDisabled   <none>          28d
v1.28.6

worker-node-2.example.com     Ready                      <none>          28d
v1.28.5
```

Uncordon the node

Bring the node back online by marking it schedulable:

```
labsuser@master:~$ kubectl uncordon worker-node-1.example.com

node/worker-node-1.example.com uncordoned

labsuser@master:~$ kubectl get node

NAME                          STATUS   ROLES           AGE   VERSION
```

```
master.example.com           Ready    control-plane   28d   v1.28.6

worker-node-1.example.com    Ready    <none>          28d   v1.28.6

worker-node-2.example.com    Ready    <none>          28d   v1.28.5
```




```
Now our control plane and worker node both are upgraded
```

Now will do for worker node 2

```
labsuser@worker-node-2:~$ sudo apt-mark unhold kubeadm && sudo apt-get update &&
sudo apt-get install -y kubeadm='1.28.6-1.1' && sudo apt-mark hold kubeadm
```

```
labsuser@master:~$ kubectl drain worker-node-2.example.com --ignore-daemonsets
```

absuser@master:~$ kubectl drain worker-node-2.example.com --ignore-daemonsets --delete-emptydir-data

labsuser@worker-node-2:~$ sudo kubeadm upgrade node

labsuser@master:~$ kubectl get node

NAME STATUS ROLES AGE VERSION

master.example.com Ready control-plane 28d v1.28.6

worker-node-1.example.com Ready <none> 28d v1.28.6

worker-node-2.example.com Ready,SchedulingDisabled <none> 28d v1.28.6

Uncordon

labsuser@master:~$ kubectl uncordon worker-node-2.example.com

node/worker-node-2.example.com uncordoned

labsuser@master:~$ kubectl get nodes

NAME STATUS ROLES AGE VERSION

master.example.com Ready control-plane 28d v1.28.6

worker-node-1.example.com Ready <none> 28d v1.28.6

worker-node-2.example.com Ready <none> 28d v1.28.6

```
labsuser@master:~$ kubectl uncordon worker-node-2.example.com
node/worker-node-2.example.com uncordoned
labsuser@master:~$ kubectl get nodes
NAME                       STATUS   ROLES           AGE   VERSION
master.example.com         Ready    control-plane   28d   v1.28.6
worker-node-1.example.com  Ready    <none>          28d   v1.28.6
worker-node-2.example.com  Ready    <none>          28d   v1.28.6
```

Task 5. Generating a certificate and private key in the worker node.

1.To generate a certificate and private key on a worker node, you can use tools like OpenSSL. Here are the general steps to generate a self-signed certificate and private key:

Installing OpenSSL

sudo apt-get install openssl

labsuser@master:~$ sudo apt-get install openssl

```
labsuser@master:~$ sudo apt-get install openssl
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
openssl is already the newest version (3.0.2-0ubuntu1.14).
openssl set to manually installed.
0 upgraded, 0 newly installed, 0 to remove and 67 not upgraded.
labsuser@master:~$
```

2.Generate a Private Key:

openssl genrsa -out worker.key 2048

labsuser@master:~$ openssl genrsa -out worker.key 2048

This command generates a 2048-bit RSA private key and saves it in a file named **`worker.key`**.

3.Generate a Certificate Signing Request (CSR):

labsuser@master:~$ openssl req -new -key worker.key -out worker.csr

```
labsuser@master:~$ openssl req -new -key worker.key -out worker.csr
You are about to be asked to enter information that will be incorporated
into your certificate request.
What you are about to enter is what is called a Distinguished Name or a DN.
There are quite a few fields but you can leave some blank
For some fields there will be a default value,
If you enter '.', the field will be left blank.
-----
Country Name (2 letter code) [AU]:
State or Province Name (full name) [Some-State]:
Locality Name (eg, city) []:
Organization Name (eg, company) [Internet Widgits Pty Ltd]:
Organizational Unit Name (eg, section) []:
Common Name (e.g. server FQDN or YOUR name) []:
Email Address []:

Please enter the following 'extra' attributes
to be sent with your certificate request
A challenge password []:
An optional company name []:
```

labsuser@master:~$ openssl x509 -req -days 365 -in worker.csr -signkey

worker.key -out worker.crt

Certificate request self-signature ok

subject=C = AU, ST = Some-State, O = Internet Widgits Pty Ltd

```
labsuser@master:~$ openssl x509 -req -days 365 -in worker.csr -signkey worker.key -out worker.crt
Certificate request self-signature ok
subject=C = AU, ST = Some-State, O = Internet Widgits Pty Ltd
```

creating a valid Kubernetes configuration file named myconfig,

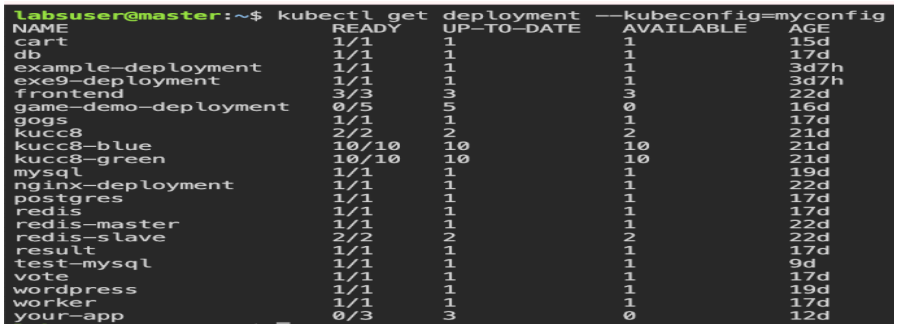
kubectl config view --minify --flatten > myconfig

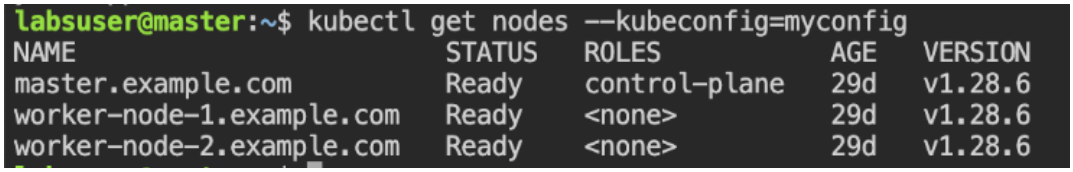
Verify Configuration File:

- Once the command is executed, verify that the myconfig file has been created in your current directory. You can use the ls command to list the files in the directory.

ls

kubectl get pods --kubeconfig=myconfig




labsuser@master:~$ kubectl get nodes --kubeconfig=myconfig
NAME STATUS ROLES AGE VERSION
master.example.com Ready control-plane 29d v1.28.6
worker-node-1.example.com Ready <none> 29d v1.28.6
worker-node-2.example.com Ready <none> 29d v1.28.6