



## Summary

- Quick revision of authentication & certificate
- Location of Kube-Apiserver file

```

$ sudo su - root
# cd /etc/kubernetes/manifests/
# ls
etcd.yaml          kube-controller-manager.yaml
kube-apiserver.yaml kube-scheduler.yaml
# vi kube-apiserver.yaml

```

- All Kubernetes services are also running inside the pods in the namespace Kube-system

```

C:\Users\Vimal Daga>kubectll get ns
NAME                STATUS  AGE
default             Active  64d
kube-node-lease     Active  64d
kube-public         Active  64d
kube-system         Active  64d
teama               Active  15d

C:\Users\Vimal Daga>kubectll get pods -n kube-system
NAME                                READY  STATUS   RESTARTS   AGE
coredns-78fcd69978-scd2p            1/1    Running  13 (46h ago)  64d
etcd-minikube                       1/1    Running  13 (46h ago)  64d
kube-apiserver-minikube             1/1    Running  13 (46h ago)  64d
kube-controller-manager-minikube    1/1    Running  13 (46h ago)  64d
kube-proxy-mvvggn                   1/1    Running  13 (46h ago)  64d
kube-scheduler-minikube             1/1    Running  13 (46h ago)  64d
storage-provisioner                 1/1    Running  17 (46h ago)  64d
C:\Users\Vimal Daga>

```

- Every CA has its private key

```

minikube [Running] - Oracle VM VirtualBox
# cd /var/lib/minikube/certs/
# pwd
/var/lib/minikube/certs
# ls
apiserver-etcd-client.crt      ca.key                        proxy-client-ca.key
apiserver-etcd-client.key      etcd                         proxy-client.crt
apiserver-kubelet-client.crt   front-proxy-ca.crt           proxy-client.key
apiserver-kubelet-client.key   front-proxy-ca.key           sa.key
apiserver.crt                  front-proxy-client.crt       sa.pub
apiserver.key                  front-proxy-client.key
ca.crt                         proxy-client-ca.crt
#

```

- Creating a private key

```

/var/lib/minikube/certs
# ls
apiserver-etcd-client.crt      ca.key                        proxy-client-ca.key
apiserver-etcd-client.key      etcd                         proxy-client.crt
apiserver-kubelet-client.crt   front-proxy-ca.crt          proxy-client.key
apiserver-kubelet-client.key   front-proxy-ca.key          sa.key
apiserver.crt                 front-proxy-client.crt      sa.pub
apiserver.key                 front-proxy-client.key
ca.crt                        proxy-client-ca.crt
# openssl genrsa -out vimal.key 1024
Generating RSA private key, 1024 bit long modulus (2 primes)
.....+++++
.....+++++
e is 65537 (0x010001)
# ls
apiserver-etcd-client.crt      ca.key                        proxy-client-ca.key
apiserver-etcd-client.key      etcd                         proxy-client.crt
apiserver-kubelet-client.crt   front-proxy-ca.crt          proxy-client.key
apiserver-kubelet-client.key   front-proxy-ca.key          sa.key
apiserver.crt                 front-proxy-client.crt      sa.pub
apiserver.key                 front-proxy-client.key      vimal.key
ca.crt                        proxy-client-ca.crt
#

```

- Creating CSR (Certificate signing request)

```

# openssl req -new -key vimal.key -out vimal.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]:IN
State or Province Name (full name) [Some-State]:raj
Locality Name (eg, city) []:jaipur
Organization Name (eg, company) [Internet Widgits Pty Ltd]:LW
Organizational Unit Name (eg, section) []:tech
Common Name (e.g. server FQDN or YOUR name) []:vimal
Email Address []:_

```

- Using CA to Sign CRT

```

# openssl x509 -req -in vimal.csr -CA ca.crt -CAkey ca.key
-out vimal.crt -days 365
Signature ok
subject=C = AN, ST = Some-State, O = Internet Widgits Pty Ltd, CN = vimal
Getting CA Private Key
ca.srl: No such file or directory
140683273156416:error:06067099:digital envelope routines:EVP_PKEY_copy_parameter
s:different parameters:crypto/evp/p_lib.c:93:
140683273156416:error:02001002:system library:fopen:No such file or directory:cr
ypto/bio/bss_file.c:69:fopen('ca.srl','r')
140683273156416:error:2006D080:BIO routines:BIO_new_file:no such file:crypto/bio
/bss_file.c:76:
#
#

```

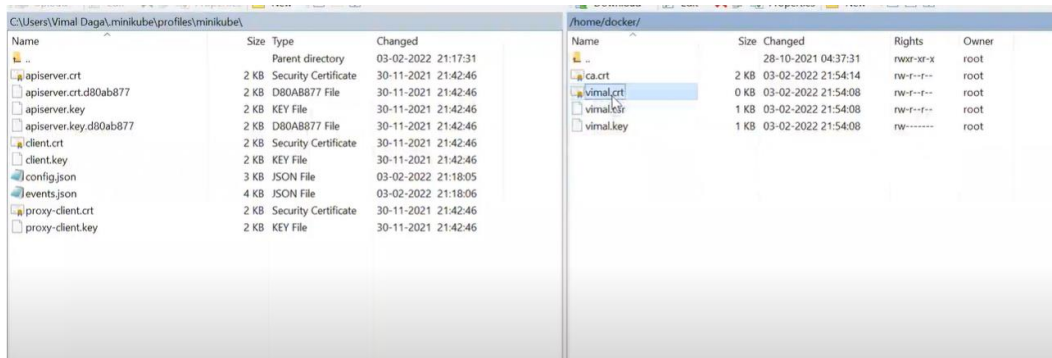
- Changing permission of key with chmod command

```

# sudo chmod o+r vimal.key
# ls -l
total 12
-rw-r--r-- 1 root root 1066 Feb  3 16:24 ca.crt
-rw-r--r-- 1 root root   0 Feb  3 16:24 vimal.crt
-rw-r--r-- 1 root root 623 Feb  3 16:24 vimal.csr
-rw----r-- 1 root root 887 Feb  3 16:24 vimal.key
#

```

- Transferring the key win WINSXP



- Creating config file from the command line

```
C:\Users\Vimal Daga\.minikube\profiles\minikube>kubectl config set-credentials vimal --client-certificate=vimal.crt --client-key=vimal.key
User "vimal" set.
```

- Creating context file from the command line

```
C:\Users\Vimal Daga\.minikube\profiles\minikube>kubectl config set-context mylocalc1 --user=vimal --cluster=minikube
Context "mylocalc1" created.
```

- Changing context file

```
C:\Users\Vimal Daga\.minikube\profiles\minikube>kubectl config use-context mylocalc1
Switched to context "mylocalc1".
```

- Role-based access control (RBAC) is a security control that ensures the user has only access to the resources required for his role
- Connecting the user to the role is called role-binding
- Roles in RBAC

```
C:\Users\Vimal Daga\.minikube\profiles\minikube>kubectl get clusterrole cluster-admin
NAME          CREATED AT
cluster-admin  2021-11-30T16:13:21Z

C:\Users\Vimal Daga\.minikube\profiles\minikube>kubectl describe clusterrole cluster-admin
Name:         cluster-admin
Labels:       kubernetes.io/bootstrapping=rbac-defaults
Annotations:  rbac.authorization.kubernetes.io/autoupdate: true
PolicyRule:
  Resources            Non-Resource URLs  Resource Names      Verbs
  -----
  *,*                  [*]                [*]                 [*]
  *,*                  [*]                [*]                 [*]

C:\Users\Vimal Daga\.minikube\profiles\minikube>
```

- Cluster role binding

```
C:\Users\Vimal Daga\.minikube\profiles\minikube>kubectl describe clusterrolebinding cluster-admin
Name:          cluster-admin
Labels:        kubernetes.io/bootstrapping=rbac-defaults
Annotations:   rbac.authorization.kubernetes.io/autoupdate: true
Role:
  Kind: ClusterRole
  Name: cluster-admin
Subjects:
  Kind  Name           Namespace
  ----  ---           -
  Group  system:masters
```

```
C:\Users\Vimal Daga\.minikube\profiles\minikube>kubectl get clusterrolebinding _
```