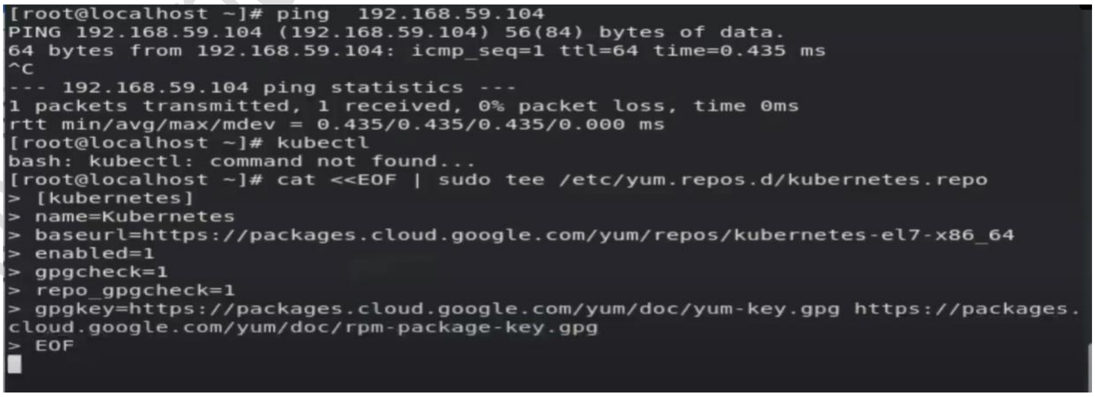
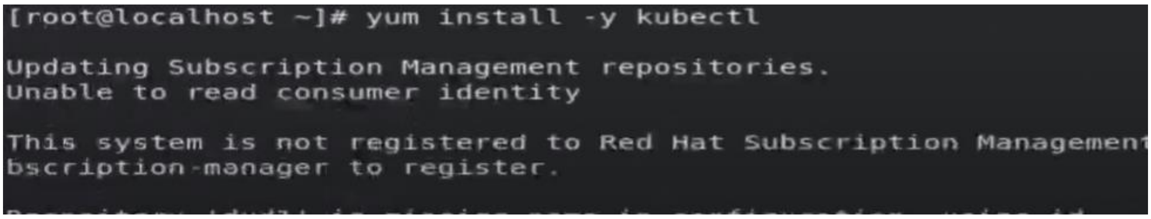
Summary

- Revision of namespaces from the previous lecture
- To make the client for the Kubernetes system minimum requirement is they should have connectivity
- Few things required for making a client are
  - Client software
  - Client username
  - Client password
  - Server address
- API server works as a gateway that collects the request from the client and sends the request to the internal programs
- If we want to do authentication and instead of username & password we want to use key base authentication then there we have to use a certificate & the key
- Practical:- Making RHEL-8 client for Kubernetes
  - Configuring yum for kubectl command



```
[root@localhost ~]# ping  192.168.59.104
PING 192.168.59.104 (192.168.59.104) 56(84) bytes of data.
64 bytes from 192.168.59.104: icmp_seq=1 ttl=64 time=0.435 ms
^C
--- 192.168.59.104 ping statistics ---
1 packets transmitted, 1 received, 0% packet loss, time 0ms
rtt min/avg/max/mdev = 0.435/0.435/0.435/0.000 ms
[root@localhost ~]# kubectl
bash: kubectl: command not found...
[root@localhost ~]# cat <<EOF | sudo tee /etc/yum.repos.d/kubernetes.repo
> [kubernetes]
> name=Kubernetes
> baseurl=https://packages.cloud.google.com/yum/repos/kubernetes-el7-x86_64
> enabled=1
> gpgcheck=1
> repo_gpgcheck=1
> gpgkey=https://packages.cloud.google.com/yum/doc/yum-key.gpg https://packages.
cloud.google.com/yum/doc/rpm-package-key.gpg
> EOF
```

  - Installing the kubectl command

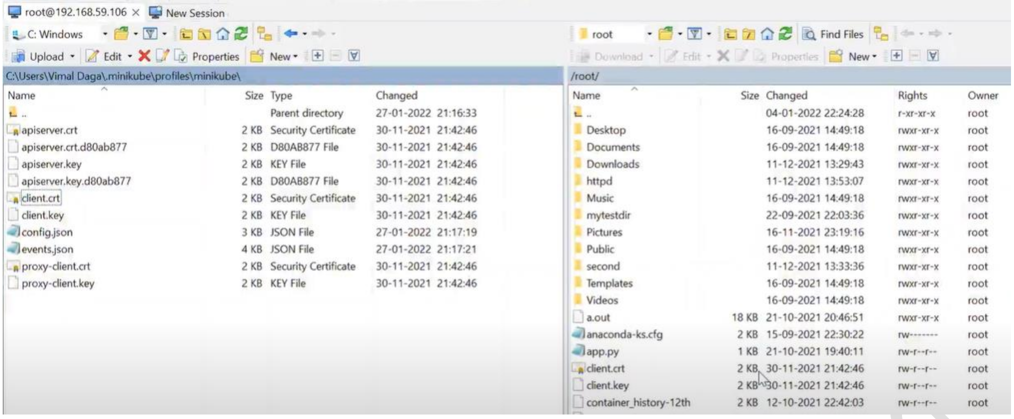


```
[root@localhost ~]# yum install -y kubectl

Updating Subscription Management repositories.
Unable to read consumer identity

This system is not registered to Red Hat Subscription Management
bscription-manager to register.
```

  - Transferring key & certificate to the client



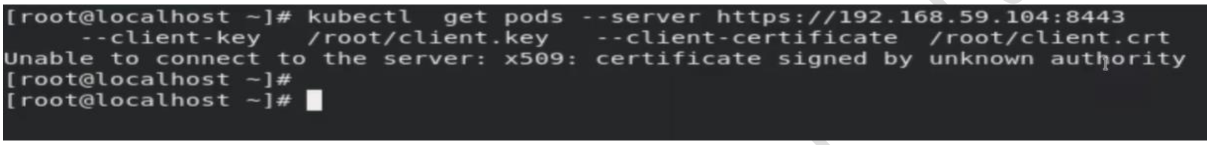
C:\Users\Vimal Daga\.minikube\profiles\minikube\

Name	Size	Type	Changed
..		Parent directory	27-01-2022 21:16:33
apiserver.crt	2 KB	Security Certificate	30-11-2021 21:42:46
apiserver.crt.d80ab877	2 KB	D80AB877 File	30-11-2021 21:42:46
apiserver.key	2 KB	KEY File	30-11-2021 21:42:46
apiserver.key.d80ab877	2 KB	D80AB877 File	30-11-2021 21:42:46
client.crt	2 KB	Security Certificate	30-11-2021 21:42:46
client.key	2 KB	KEY File	30-11-2021 21:42:46
config.json	3 KB	JSON File	27-01-2022 21:17:19
events.json	4 KB	JSON File	27-01-2022 21:17:21
proxy-client.crt	2 KB	Security Certificate	30-11-2021 21:42:46
proxy-client.key	2 KB	KEY File	30-11-2021 21:42:46

/root/

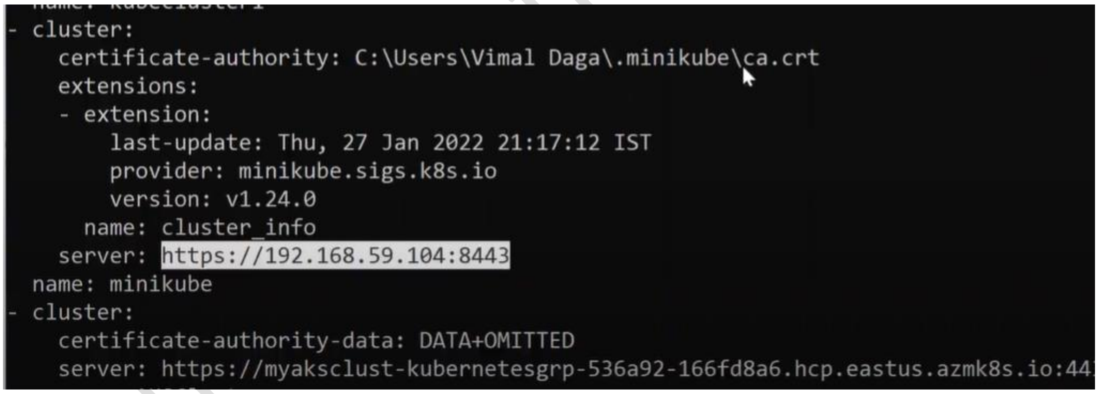
Name	Size	Changed	Rights	Owner
..		04-01-2022 22:24:28	r-xr-xr-x	root
Desktop		16-09-2021 14:49:18	rwxr-xr-x	root
Documents		16-09-2021 14:49:18	rwxr-xr-x	root
Downloads		11-12-2021 13:29:43	rwxr-xr-x	root
httpd		11-12-2021 13:53:07	rwxr-xr-x	root
Music		16-09-2021 14:49:18	rwxr-xr-x	root
mytestdir		22-09-2021 22:03:36	rwxr-xr-x	root
Pictures		16-11-2021 23:19:16	rwxr-xr-x	root
Public		16-09-2021 14:49:18	rwxr-xr-x	root
second		11-12-2021 13:33:36	rwxr-xr-x	root
Templates		16-09-2021 14:49:18	rwxr-xr-x	root
Videos		16-09-2021 14:49:18	rwxr-xr-x	root
a.out	18 KB	21-10-2021 20:46:51	rwxr-xr-x	root
anaconda-ks.cfg	2 KB	15-09-2021 22:30:22	rw-------	root
app.py	1 KB	21-10-2021 19:40:11	rw-r--r--	root
client.crt	2 KB	30-11-2021 21:42:46	rw-r--r--	root
client.key	2 KB	30-11-2021 21:42:46	rw-r--r--	root
container_history-12th	2 KB	12-10-2021 22:42:03	rw-r--r--	root

- If CA signs the certificate then only it is valid



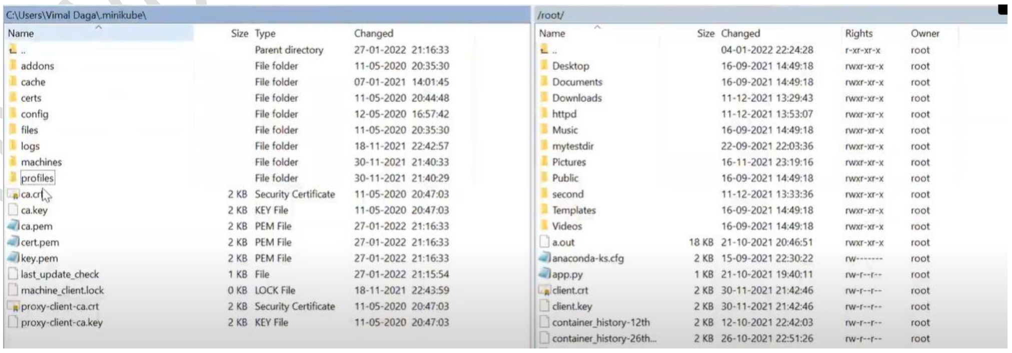
```
[root@localhost ~]# kubectl  get pods --server https://192.168.59.104:8443
     --client-key   /root/client.key   --client-certificate  /root/client.crt
Unable to connect to the server: x509: certificate signed by unknown authority
[root@localhost ~]#
[root@localhost ~]#
```

  - We need the certificate signed by the CA authority
    - Command:- kubectl config view



```
- cluster:
    certificate-authority: C:\Users\Vimal Daga\.minikube\ca.crt
    extensions:
    - extension:
        last-update: Thu, 27 Jan 2022 21:17:12 IST
        provider: minikube.sigs.k8s.io
        version: v1.24.0
      name: cluster_info
    server: https://192.168.59.104:8443
  name: minikube
- cluster:
    certificate-authority-data: DATA+OMITTED
    server: https://myaksclust-kubernetesgrp-536a92-166fd8a6.hcp.eastus.azmk8s.io:44
```

  - Transferring the CA certificate



C:\Users\Vimal Daga\.minikube\

Name	Size	Type	Changed
..		Parent directory	27-01-2022 21:16:33
addons		File folder	11-05-2020 20:35:30
cache		File folder	07-01-2021 14:01:45
certs		File folder	11-05-2020 20:44:48
config		File folder	12-05-2020 16:57:42
files		File folder	11-05-2020 20:35:30
logs		File folder	18-11-2021 22:42:57
machines		File folder	30-11-2021 21:40:33
profiles		File folder	30-11-2021 21:40:29
ca.crt	2 KB	Security Certificate	11-05-2020 20:47:03
ca.key	2 KB	KEY File	11-05-2020 20:47:03
ca.pem	2 KB	PEM File	27-01-2022 21:16:33
cert.pem	2 KB	PEM File	27-01-2022 21:16:33
key.pem	2 KB	PEM File	27-01-2022 21:16:33
last_update_check	1 KB	File	27-01-2022 21:15:54
machine_client.lock	0 KB	LOCK File	18-11-2021 22:43:59
proxy-client-ca.crt	2 KB	Security Certificate	11-05-2020 20:47:03
proxy-client-ca.key	2 KB	KEY File	11-05-2020 20:47:03

/root/

Name	Size	Changed	Rights	Owner
..		04-01-2022 22:24:28	r-xr-xr-x	root
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httpd		11-12-2021 13:53:07	rwxr-xr-x	root
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mytestdir		22-09-2021 22:03:36	rwxr-xr-x	root
Pictures		16-11-2021 23:19:16	rwxr-xr-x	root
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second		11-12-2021 13:33:36	rwxr-xr-x	root
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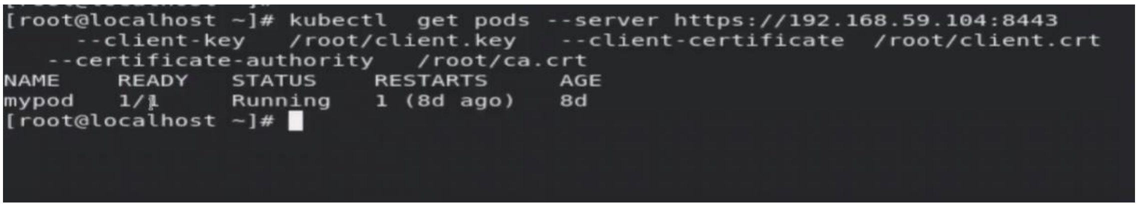
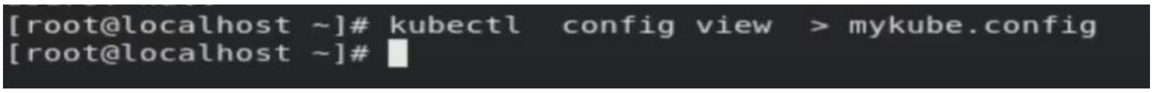
client.key	2 KB	30-11-2021 21:42:46	rw-r--r--	root
container_history-12th	2 KB	12-10-2021 22:42:03	rw-r--r--	root
container_history-26th...	2 KB	26-10-2021 22:51:26	rw-r--r--	root

  - Authenticating & accessing the pods



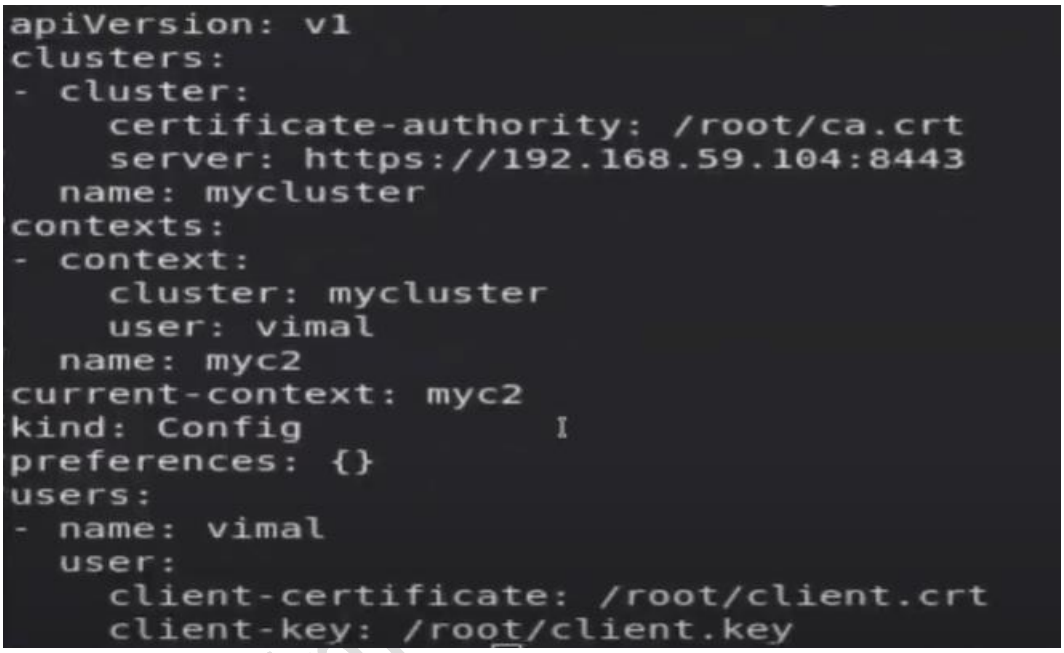
```
[root@localhost ~]# kubectl  get pods --server https://192.168.59.104:8443
     --client-key   /root/client.key   --client-certificate  /root/client.crt
   --certificate-authority   /root/ca.crt
NAME     READY   STATUS    RESTARTS      AGE
mypod    1/1     Running   1 (8d ago)    8d
[root@localhost ~]#
```

- Whenever we run the kubectl command it looks for the **.**kube config file in the home directory
- Practical:- Creating the config file for authentication
    - Creating the config file



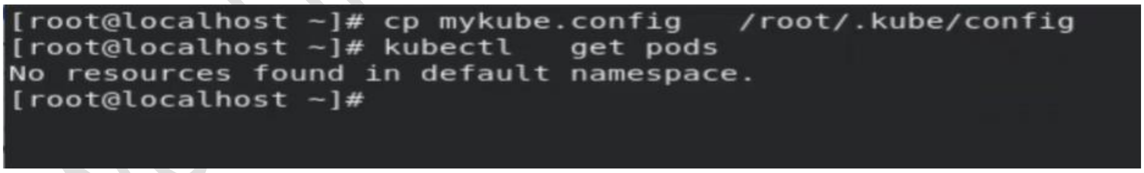
```
[root@localhost ~]# kubectl  config view  > mykube.config
[root@localhost ~]# 
```

    - Manifest file for config



```
apiVersion: v1
clusters:
- cluster:
    certificate-authority: /root/ca.crt
    server: https://192.168.59.104:8443
  name: mycluster
contexts:
- context:
    cluster: mycluster
    user: vimal
  name: myc2
current-context: myc2
kind: Config
preferences: {}
users:
- name: vimal
  user:
    client-certificate: /root/client.crt
    client-key: /root/client.key
```

    - Copying the file in the home directory of the client



```
[root@localhost ~]# cp mykube.config   /root/.kube/config
[root@localhost ~]# kubectl   get pods
No resources found in default namespace.
[root@localhost ~]#
```