Installing a User-Provisioned Openshift cluster on bare metal

Pre-requisites:

8 Machines:

RHEL image:

MACHINE	NAME	TOTAL
Jumphost	bastion.vcet.citiuscloud.com	1
Nginx	{nginx} *(Load balance)*	1

Rest all are RHCOS image:

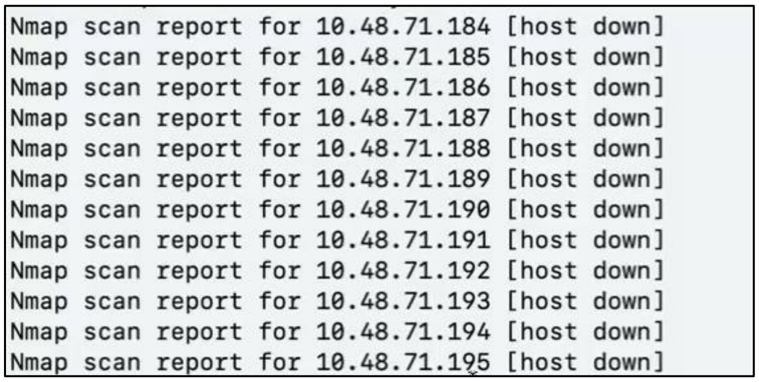
MACHINE	NAME	TOTAL
Master	master1.vcet.citiuscloud.com master2.vcet.citiuscloud.com master3.vcet.citiuscloud.com	3
Worker	worker1.vcet.citiuscloud.com worker2.vcet.citiuscloud.com	2
Bootstrap	bootstrap.vcet.citiuscloud.com	1 *(Temporary machine for booting)*

nmap -to get free ip

```
nmap -v -sn 10.48.70.0/23
```

Copy the free ips with big range.

Output:

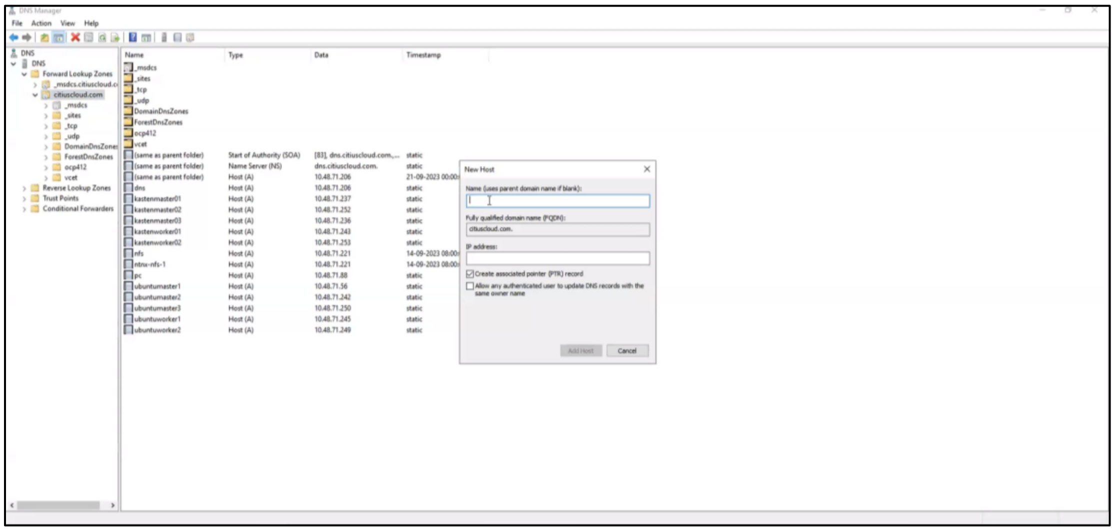


```
Nmap scan report for 10.48.71.184 [host down]
Nmap scan report for 10.48.71.185 [host down]
Nmap scan report for 10.48.71.186 [host down]
Nmap scan report for 10.48.71.187 [host down]
Nmap scan report for 10.48.71.188 [host down]
Nmap scan report for 10.48.71.189 [host down]
Nmap scan report for 10.48.71.190 [host down]
Nmap scan report for 10.48.71.191 [host down]
Nmap scan report for 10.48.71.192 [host down]
Nmap scan report for 10.48.71.193 [host down]
Nmap scan report for 10.48.71.194 [host down]
Nmap scan report for 10.48.71.195 [host down]
```

ENTRIES IN DNS

10.48.71.184 | bastion.vcet.citiuscloud.com
10.48.71.185 | bootstrap.vcet.citiuscloud.com
10.48.71.186 | master1.vcet.citiuscloud.com
10.48.71.187 | master2.vcet.citiuscloud.com
10.48.71.188 | master3.vcet.citiuscloud.com
10.48.71.189 | worker1.vcet.citiuscloud.com
10.48.71.190 | worker2.vcet.citiuscloud.com
10.48.71.191 | *.apps.vcet -> type this on DNS server *(nginx)*
10.48.71.191 | api.vcet -> type this on DNS server *(nginx)*
10.48.71.191 | api-int.vcet -> type this on DNS server *(nginx)*

1. Login to your DNS Server and go to DNS Manager
2. Right click on the domain name and click on add host(A AAAA)
3. Enter all the entries of all the machines.



Name	Type	Data	Timestamp
_msdcs			
_sites			
_tcp			
_udp			
DomainDnsZones			
ForestDnsZones			
ocp412			
vcet			
(same as parent folder)	Start of Authority (SOA)	[83], dns.citiuscloud.com.,...	static
(same as parent folder)	Name Server (NS)	dns.citiuscloud.com.	static
(same as parent folder)	Host (A)	10.48.71.206	21-09-2023 00:00:
dns	Host (A)	10.48.71.206	static
kastenmaster01	Host (A)	10.48.71.237	static
kastenmaster02	Host (A)	10.48.71.252	static
kastenmaster03	Host (A)	10.48.71.236	static
kastenworker01	Host (A)	10.48.71.243	static
kastenworker02	Host (A)	10.48.71.253	static
nfs	Host (A)	10.48.71.221	14-09-2023 08:00:
ntnx-nfs-1	Host (A)	10.48.71.221	14-09-2023 08:00:
pc	Host (A)	10.48.71.88	static
ubuntumaster1	Host (A)	10.48.71.56	static
ubuntumaster2	Host (A)	10.48.71.242	static
ubuntumaster3	Host (A)	10.48.71.250	static
ubuntuworker1	Host (A)	10.48.71.245	static
ubuntuworker2	Host (A)	10.48.71.249	static

New Host

Name (uses parent domain name if blank):

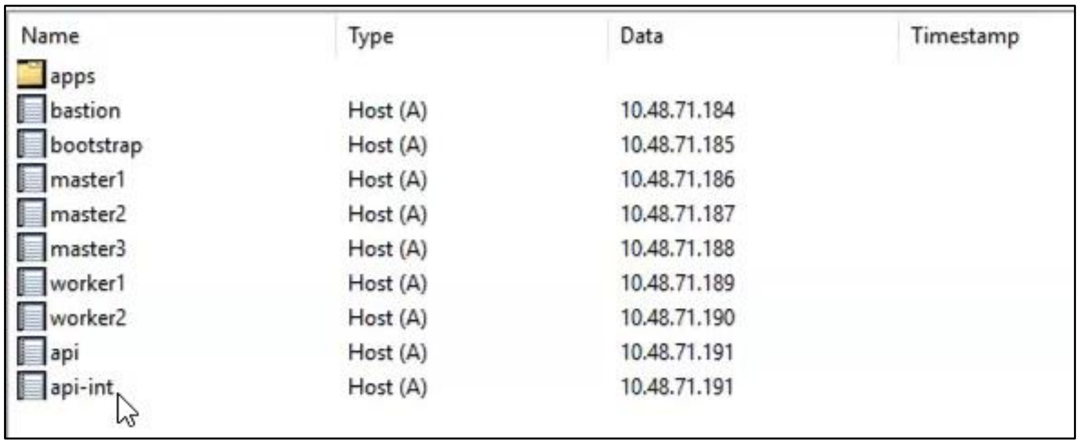
Fully qualified domain name (FQDN): citiuscloud.com.

IP address:

[✓] Create associated pointer (PTR) record

[ ] Allow any authenticated user to update DNS records with the same owner name

4. At last, the DNS Manager will consist of these many entries.

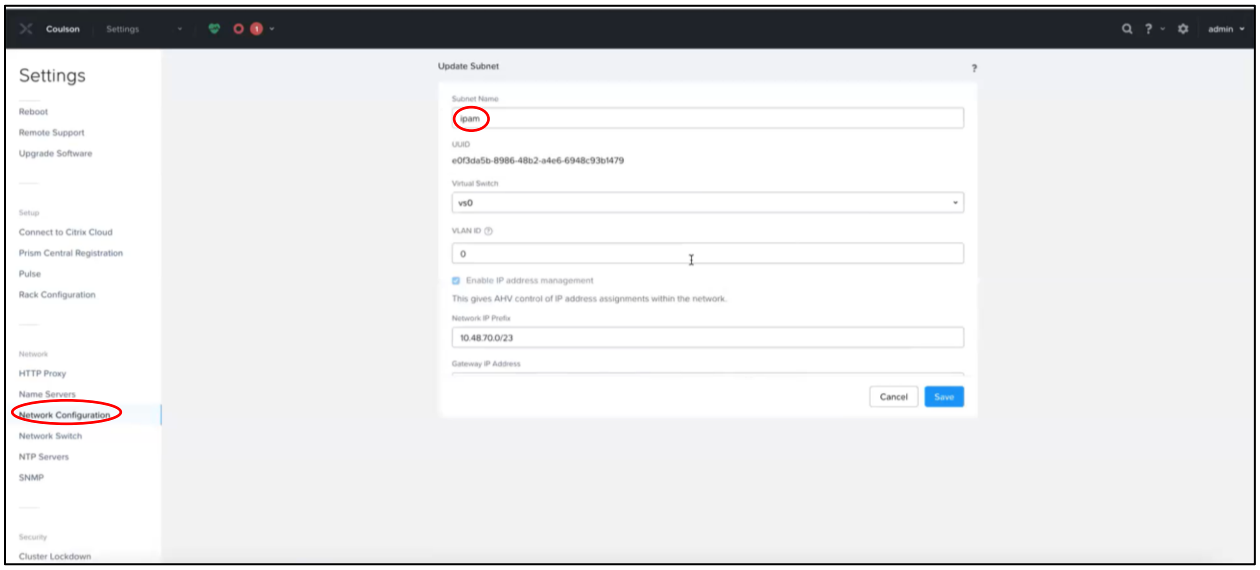


Name	Type	Data	Timestamp
apps			
bastion	Host (A)	10.48.71.184	
bootstrap	Host (A)	10.48.71.185	
master1	Host (A)	10.48.71.186	
master2	Host (A)	10.48.71.187	
master3	Host (A)	10.48.71.188	
worker1	Host (A)	10.48.71.189	
worker2	Host (A)	10.48.71.190	
api	Host (A)	10.48.71.191	
api-int	Host (A)	10.48.71.191	

Make virtual machines on prism dashboard

Let’s configure ipam(IP Address Management) first,

1. Go to prism Central and login using your credentials.
2. Once logged in, click on settings and go to Network Configuration.
3. Click on edit ipam and scroll down to create new pool.
4. Click on create pool and add the Ip range of your cluster and click on submit.



Update Subnet

Subnet Name: ipam

UUID: e0f3da5b-8986-48b2-a4e6-6948c93b1479

Virtual Switch: vs0

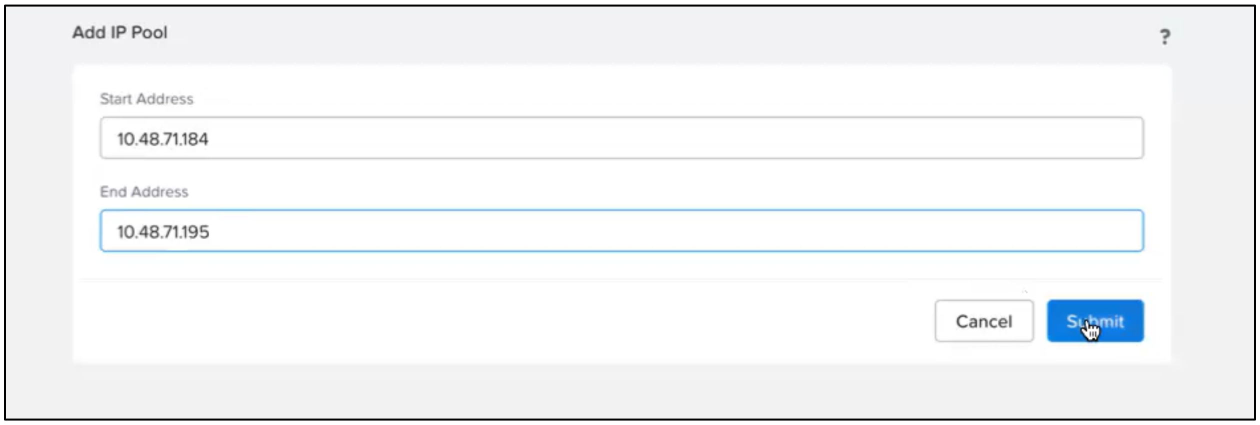
VLAN ID: 0

[✓] Enable IP address management

This gives AHV control of IP address assignments within the network.

Network IP Prefix: 10.48.70.0/23

Gateway IP Address



Add IP Pool

Start Address: 10.48.71.184

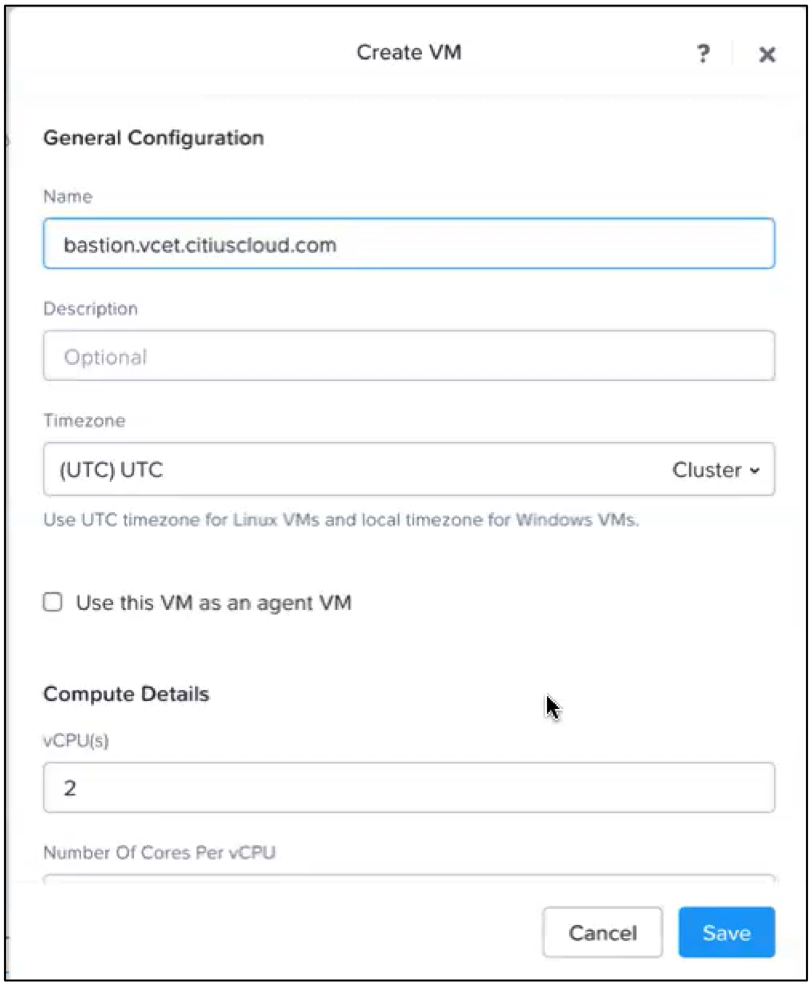
End Address: 10.48.71.195

Creating virtual machines on Prism Central

1. Click on Home, drop down menu will be appeared
2. Click on VM and click on create VM

Role	Operating System	vCPU	Cores per Vcpu	Memory	Storage
Bastion	RHEL	2	2	16	250GB
Nginx	RHEL	2	2	16	250GB
Bootstrap	RHCOS	2	2	16	250GB
Master*3	RHCOS	2	2	16	250GB
Worker*2	RHCOS	2	2	16	250GB

- Firstly, we will make only two machines: Bastion and Bootstrap. (*Make sure you select the correct OS image for both the machines.*)



General Configuration

Name: bastion.vcet.citiuscloud.com

Description: Optional

Timezone: (UTC) UTC — Cluster

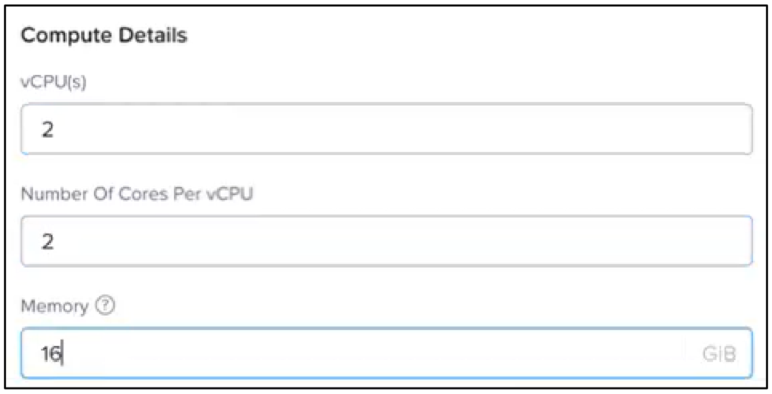
Use UTC timezone for Linux VMs and local timezone for Windows VMs.

☐ Use this VM as an agent VM

Compute Details

vCPU(s): 2

Number Of Cores Per vCPU

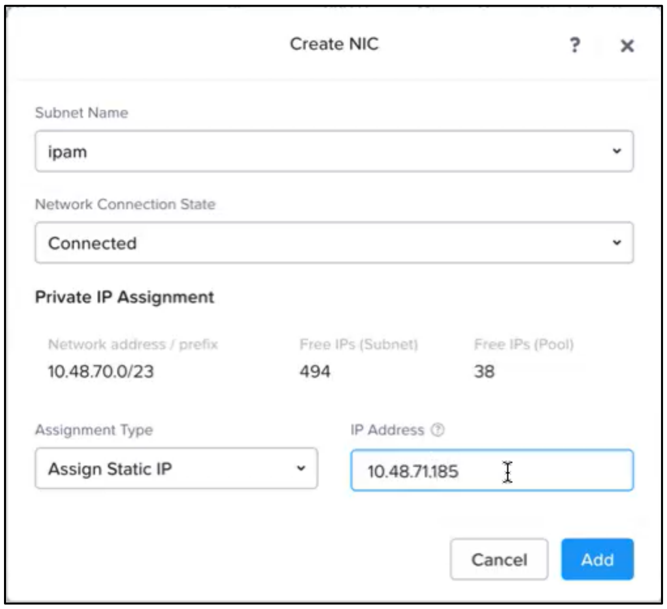


Compute Details

vCPU(s): 2

Number Of Cores Per vCPU: 2

Memory: 16 GIB



Create NIC

Subnet Name: ipam

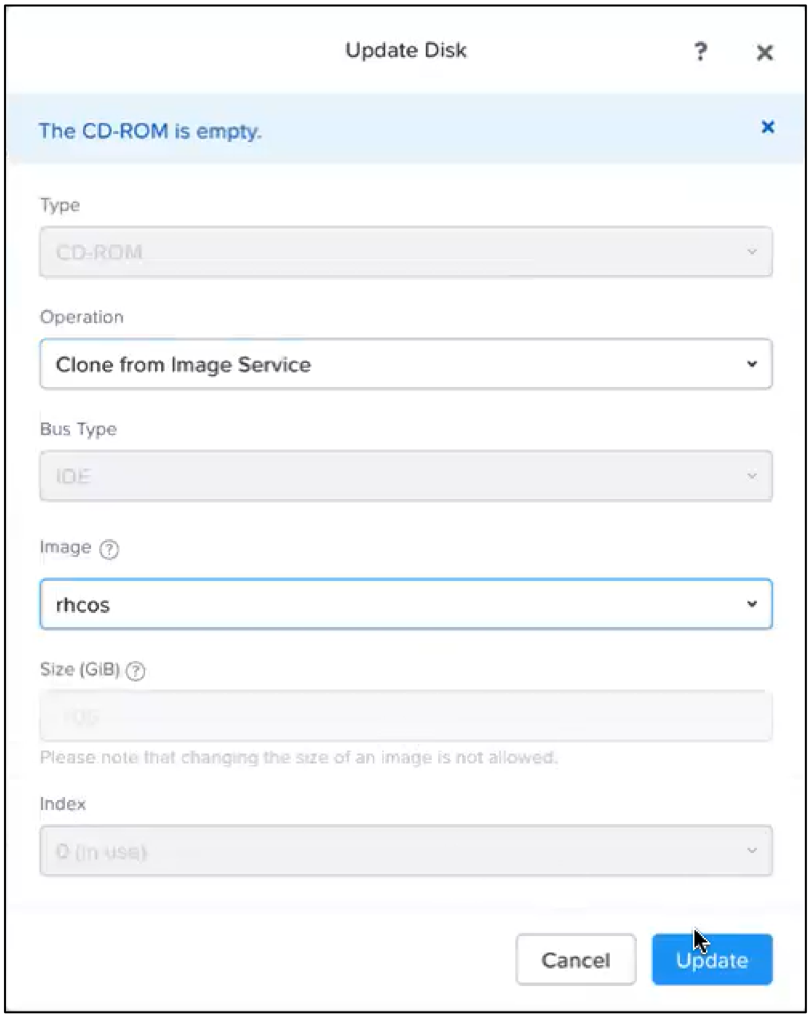
Network Connection State: Connected

Private IP Assignment

Network address / prefix	Free IPs (Subnet)	Free IPs (Pool)
10.48.70.0/23	494	38

Assignment Type: Assign Static IP

IP Address: 10.48.71.185



Update Disk

The CD-ROM is empty.

Type: CD-ROM

Operation: Clone from Image Service

Bus Type: IDE

Image: rhcos

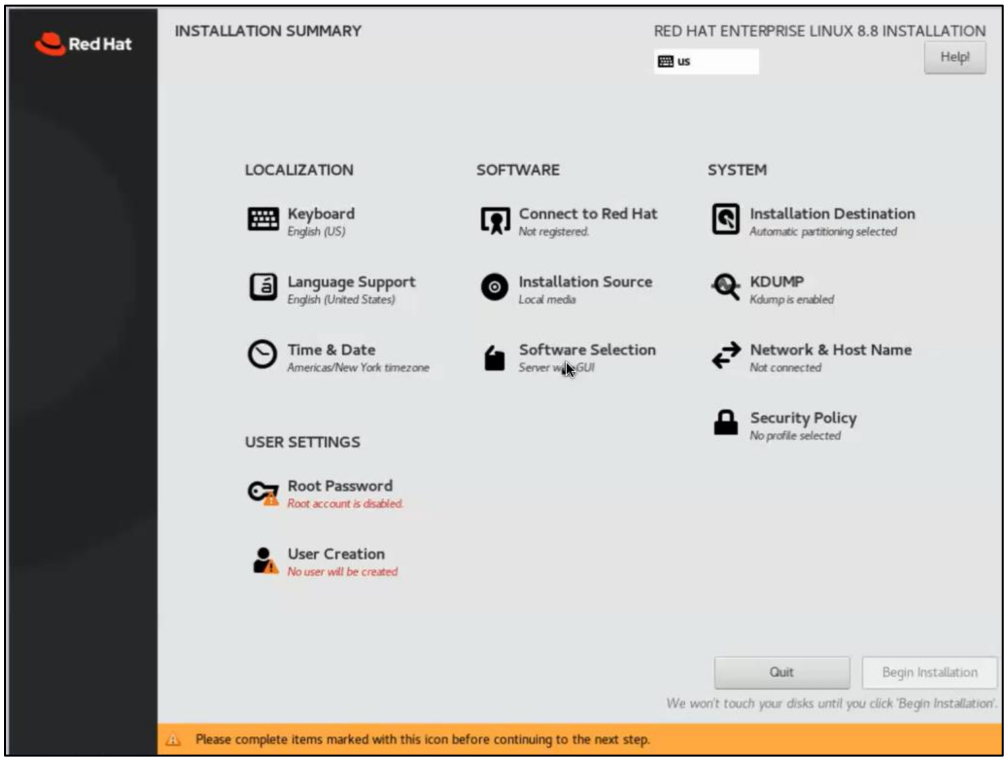
Size (GiB): 106

Please note that changing the size of an image is not allowed.

Index: 0 (in use)

- Once both the machines are ready, clone bootstrap machine to create 3 master and 2 worker machines.
- After the machine creation, edit the name and assign required IPs to it.

Let's now power on the bastion machine and do the necessary installation:


INSTALLATION SUMMARY

RED HAT ENTERPRISE LINUX 8.8 INSTALLATION

LOCALIZATION
- Keyboard: English (US)
- Language Support: English (United States)
- Time & Date: Americas/New York timezone

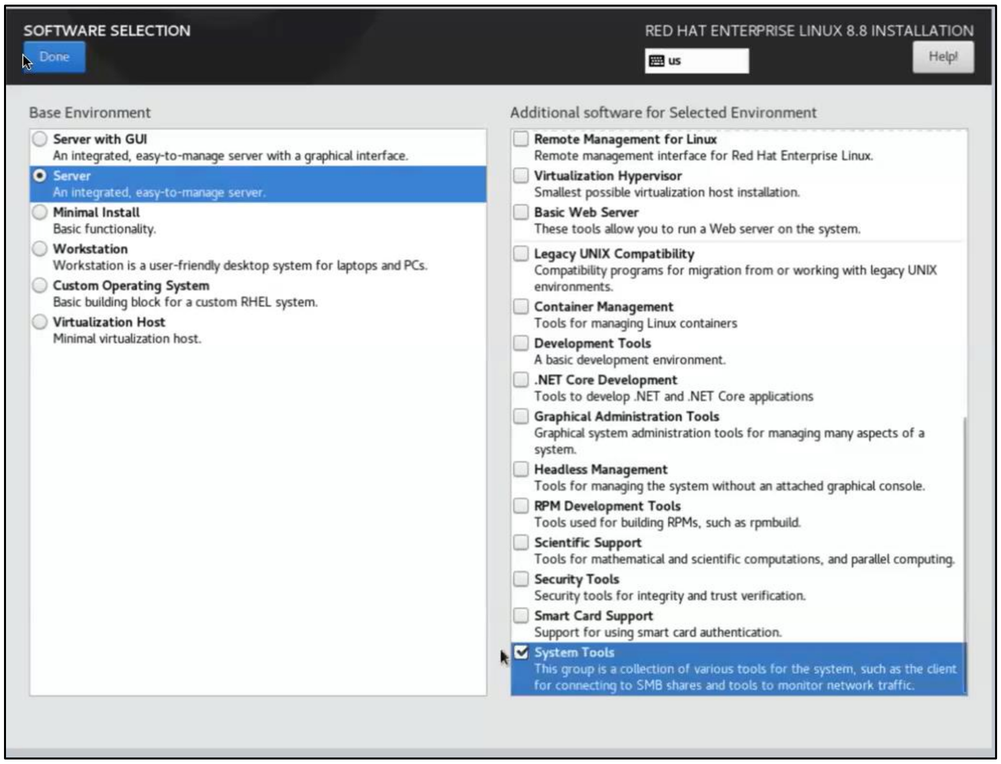
SOFTWARE
- Connect to Red Hat: Not registered.
- Installation Source: Local media
- Software Selection: Server with GUI

SYSTEM
- Installation Destination: Automatic partitioning selected
- KDUMP: Kdump is enabled
- Network & Host Name: Not connected
- Security Policy: No profile selected

USER SETTINGS
- Root Password: Root account is disabled.
- User Creation: No user will be created

We won't touch your disks until you click 'Begin Installation'.

Please complete items marked with this icon before continuing to the next step.

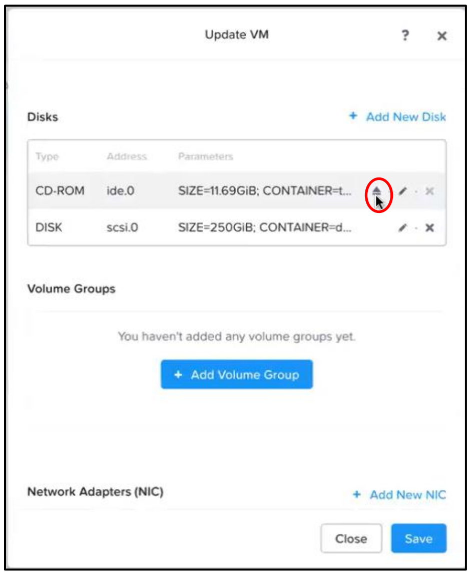

SOFTWARE SELECTION

RED HAT ENTERPRISE LINUX 8.8 INSTALLATION

Base Environment
- Server with GUI: An integrated, easy-to-manage server with a graphical interface.
- [✓ Server]: An integrated, easy-to-manage server.
- Minimal Install: Basic functionality.
- Workstation: Workstation is a user-friendly desktop system for laptops and PCs.
- Custom Operating System: Basic building block for a custom RHEL system.
- Virtualization Host: Minimal virtualization host.

Additional software for Selected Environment
- Remote Management for Linux: Remote management interface for Red Hat Enterprise Linux.
- Virtualization Hypervisor: Smallest possible virtualization host installation.
- Basic Web Server: These tools allow you to run a Web server on the system.
- Legacy UNIX Compatibility: Compatibility programs for migration from or working with legacy UNIX environments.
- Container Management: Tools for managing Linux containers
- Development Tools: A basic development environment.
- .NET Core Development: Tools to develop .NET and .NET Core applications
- Graphical Administration Tools: Graphical system administration tools for managing many aspects of a system.
- Headless Management: Tools for managing the system without an attached graphical console.
- RPM Development Tools: Tools used for building RPMs, such as rpmbuild.
- Scientific Support: Tools for mathematical and scientific computations, and parallel computing.
- Security Tools: Security tools for integrity and trust verification.
- Smart Card Support: Support for using smart card authentication.
- [✓ System Tools]: This group is a collection of various tools for the system, such as the client for connecting to SMB shares and tools to monitor network traffic.

- Before rebooting unmount the disk.

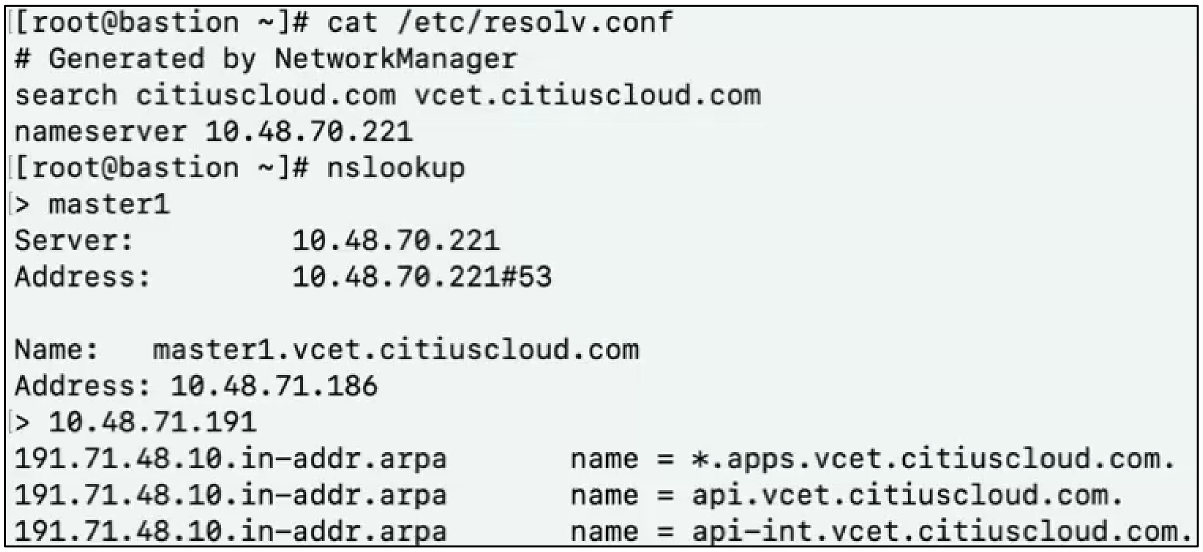


- Now clone the Bastion machine for nginx machine

➢ Go to CLI and run the following commands:

```
ssh root@<bastion-ip>

cat /etc/resolv.conf

nsloopup

> master1        OR        > 10.48.71.186        **See if the ip is resolved in nslookup
```

Output:



```
[root@bastion ~]# cat /etc/resolv.conf
# Generated by NetworkManager
search citiuscloud.com vcet.citiuscloud.com
nameserver 10.48.70.221
[root@bastion ~]# nslookup
> master1
Server:         10.48.70.221
Address:        10.48.70.221#53

Name:   master1.vcet.citiuscloud.com
Address: 10.48.71.186
> 10.48.71.191
191.71.48.10.in-addr.arpa       name = *.apps.vcet.citiuscloud.com.
191.71.48.10.in-addr.arpa       name = api.vcet.citiuscloud.com.
191.71.48.10.in-addr.arpa       name = api-int.vcet.citiuscloud.com.
```

#IF NOT: check for reverse backlookup or check if entries are correctly configured

ping all the machines and check if correct name is present in FQDN format

- Login to the nginx machine now

```
ssh root@<ngnix-ip>
```

Ping all the machines and check if correct name is present in FQDN format

- let's install nginx now:

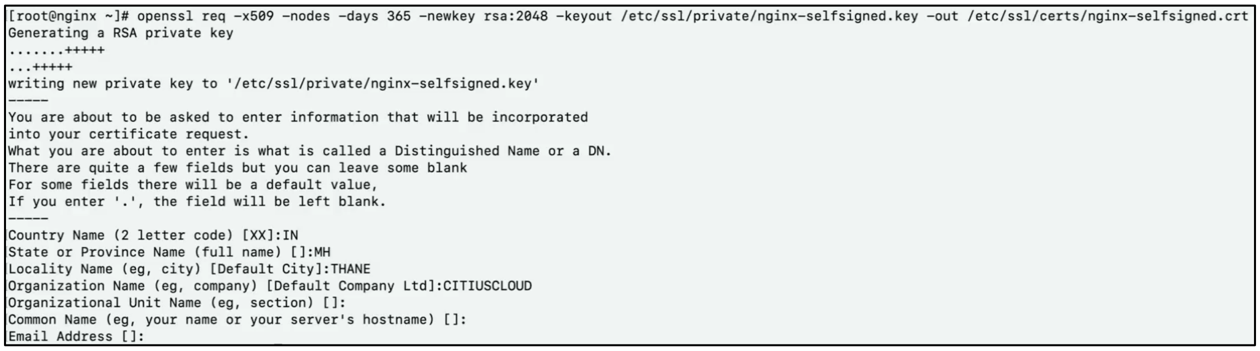
```
subscription-manager register

subscription-manager auto-attach

yum install nginx
```

```
systemctl restart nginx

systemctl status nginx          #should be running
```

Generate self-signed key for nginx and stored in /etc/ssl/private/:

```
mkdir /etc/ssl/private

openssl req -x509 -nodes -days 365 -newkey rsa:2048 -keyout /etc/ssl/private/nginx-selfsigned.key -out
/etc/ssl/certs/nginx-selfsigned.crt
```

<u>Output:</u>

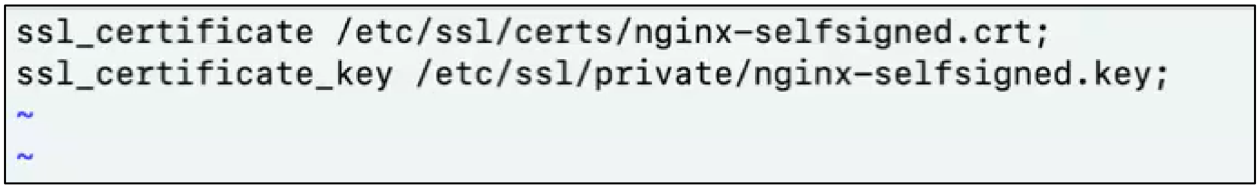


```
[root@nginx ~]# openssl req -x509 -nodes -days 365 -newkey rsa:2048 -keyout /etc/ssl/private/nginx-selfsigned.key -out /etc/ssl/certs/nginx-selfsigned.crt
Generating a RSA private key
.......+++++
...+++++
writing new private key to '/etc/ssl/private/nginx-selfsigned.key'
-----
You are about to be 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) [XX]:IN
State or Province Name (full name) []:MH
Locality Name (eg, city) [Default City]:THANE
Organization Name (eg, company) [Default Company Ltd]:CITIUSCLOUD
Organizational Unit Name (eg, section) []:
Common Name (eg, your name or your server's hostname) []:
Email Address []:
```

Then create a file self-signed.conf under /etc/nginx/snippets, and mention nginx Self-signed.crt and nginx-selfsigned.key path inside it.

```
mkdir /etc/nginx/snippets

vi /etc/nginx/snippets/self-signed.conf
```

```
ssl_certificate /etc/ssl/certs/nginx-selfsigned.crt;

ssl_certificate_key /etc/ssl/private/nginx-selfsigned.key;
```



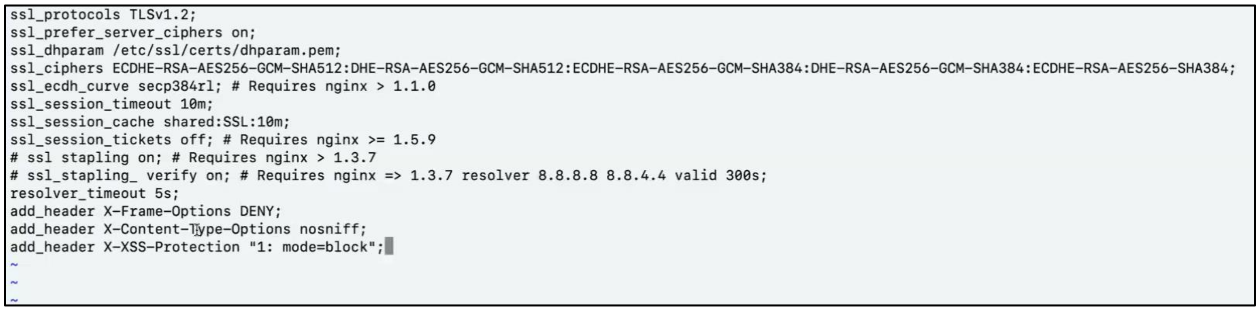
```
ssl_certificate /etc/ssl/certs/nginx-selfsigned.crt;
ssl_certificate_key /etc/ssl/private/nginx-selfsigned.key;
~
~
```

```
vi /etc/nginx/snippets/ssl-params.conf
```

#paste on notepad and format the documents

#Make sure proper intend are followed, no extra space must be present

```
ssl_protocols TLSv1.2;

ssl_prefer_server_ciphers on;

ssl_dhparam /etc/ssl/certs/dhparam.pem;

ssl_ciphers ECDHE-RSA-AES256-GCM-SHA512:DHE-RSA-AES256-GCM-SHA512:ECDHE-RSA-AES256-GCM-
SHA384:DHE-RSA-AES256-GCM-SHA384:ECDHE-RSA-AES256-SHA384;

ssl_ecdh_curve secp384rl; # Requires nginx > 1.1.0

ssl_session_timeout 10m;

ssl_session_cache shared:SSL:10m;

ssl_session_tickets off; # Requires nginx >= 1.5.9

# ssl stapling on; # Requires nginx > 1.3.7

# ssl_stapling_ verify on; # Requires nginx => 1.3.7 resolver 8.8.8.8 8.8.4.4 valid 300s;

resolver_timeout 5s;

add_header X-Frame-Options DENY;

add_header X-Content-Type-Options nosniff;

add_header X-XSS-Protection "1: mode=block";
```



```
ssl_protocols TLSv1.2;
ssl_prefer_server_ciphers on;
ssl_dhparam /etc/ssl/certs/dhparam.pem;
ssl_ciphers ECDHE-RSA-AES256-GCM-SHA512:DHE-RSA-AES256-GCM-SHA512:ECDHE-RSA-AES256-GCM-SHA384:DHE-RSA-AES256-GCM-SHA384:ECDHE-RSA-AES256-SHA384;
ssl_ecdh_curve secp384rl; # Requires nginx > 1.1.0
ssl_session_timeout 10m;
ssl_session_cache shared:SSL:10m;
ssl_session_tickets off; # Requires nginx >= 1.5.9
# ssl stapling on; # Requires nginx > 1.3.7
# ssl_stapling_ verify on; # Requires nginx => 1.3.7 resolver 8.8.8.8 8.8.4.4 valid 300s;
resolver_timeout 5s;
add_header X-Frame-Options DENY;
add_header X-Content-Type-Options nosniff;
add_header X-XSS-Protection "1: mode=block";
~
~
~
```

```
vim /etc/nginx/nginx.conf                    #edit the file
```

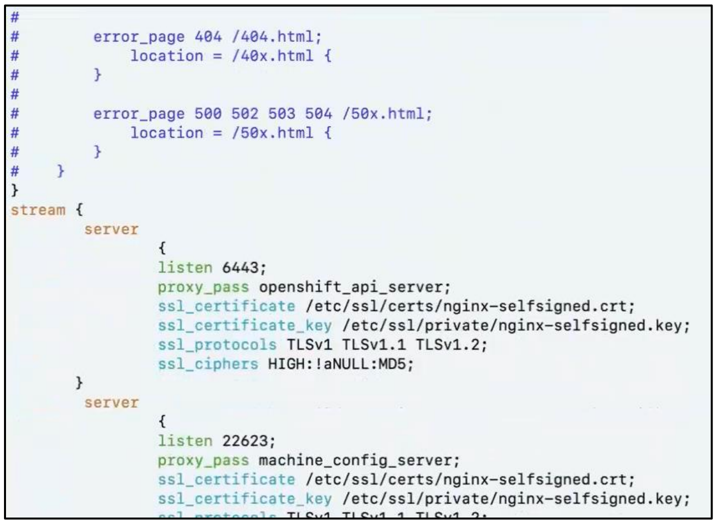
#paste on notepad and make changes in the file and paste it at the end of the file

#Make sure proper intend are followed, no extra space must be present

```
stream {
    server
        {
        listen 6443;
        proxy_pass openshift_api_server;
        ssl_certificate /etc/ssl/certs/nginx-selfsigned.crt;
        ssl_certificate_key /etc/ssl/private/nginx-selfsigned.key;
        ssl_protocols TLSv1 TLSv1.1 TLSv1.2;
        ssl_ciphers HIGH:!aNULL:MD5;
   }
    server
        {
        listen 22623;
        proxy_pass machine_config_server;
        ssl_certificate /etc/ssl/certs/nginx-selfsigned.crt;
        ssl_certificate_key /etc/ssl/private/nginx-selfsigned.key;
        ssl_protocols TLSv1 TLSv1.1 TLSv1.2;
        ssl_ciphers HIGH:!aNULL:MD5;
   }
    server
        {
```

```
        listen 80;

        proxy_pass ingress_http;

        ssl_certificate /etc/ssl/certs/nginx-selfsigned.crt;

        ssl_certificate_key /etc/ssl/private/nginx-selfsigned.key;

        ssl_protocols TLSv1 TLSv1.1 TLSv1.2;

        ssl_ciphers HIGH:!aNULL:MD5;

    }

    server

        {

        listen 443;

        proxy_pass ingress_https;

        ssl_certificate /etc/ssl/certs/nginx-selfsigned.crt;

        ssl_certificate_key /etc/ssl/private/nginx-selfsigned.key;

        ssl_protocols TLSv1 TLSv1.1 TLSv1.2;

        ssl_ciphers HIGH:!aNULL:MD5;

    }

    upstream openshift_api_server

        {

        server bootstrap.vcet.citiuscloud.com:6443;

        server master1.vcet.citiuscloud.com:6443;

        server master2.vcet.citiuscloud.com:6443;

        server master3.vcet.citiuscloud.com:6443;

        server worker1.vcet.citiuscloud.com:6443;

        server worker2.vcet.citiuscloud.com:6443;

    }

    upstream machine_config_server

        {

        server bootstrap.vcet.citiuscloud.com:22623;

        server master1.vcet.citiuscloud.com:22623;

        server master2.vcet.citiuscloud.com:22623;
```

```
            server master3.vcet.citiuscloud.com:22623;

            server worker1.vcet.citiuscloud.com:22623;

            server worker2.vcet.citiuscloud.com:22623;

      }

       upstream ingress_http

            {

            server bootstrap.vcet.citiuscloud.com:80;

            server master1.vcet.citiuscloud.com:80;

            server master2.vcet.citiuscloud.com:80;

            server master3.vcet.citiuscloud.com:80;

            server worker1.vcet.citiuscloud.com:80;

            server worker2.vcet.citiuscloud.com:80;

      }

       upstream ingress_https

            {

            server bootstrap.vcet.citiuscloud.com:443;

            server master1.vcet.citiuscloud.com:443;

            server master2.vcet.citiuscloud.com:443;

            server master3.vcet.citiuscloud.com:443;

            server worker1.vcet.citiuscloud.com:443;

            server worker2.vcet.citiuscloud.com:443;

      }

}
```

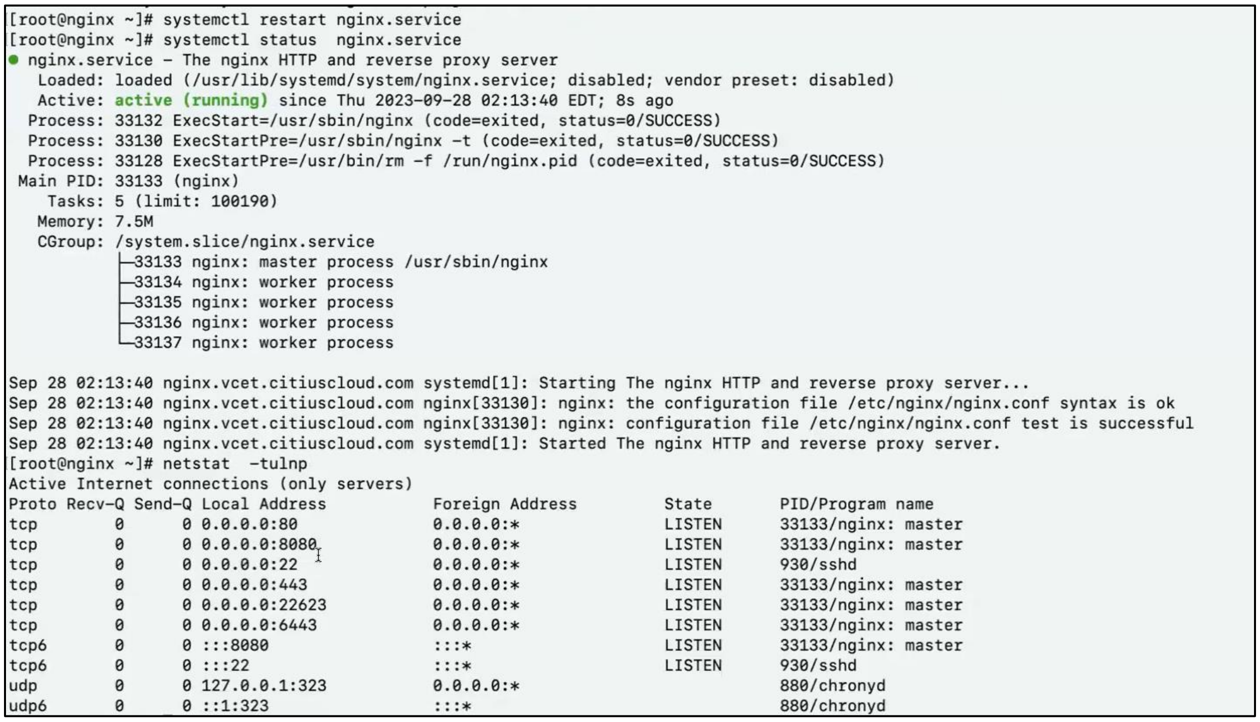


```
#
#        error_page 404 /404.html;
#            location = /40x.html {
#        }
#
#        error_page 500 502 503 504 /50x.html;
#            location = /50x.html {
#        }
#    }
}
stream {
        server
                {
                listen 6443;
                proxy_pass openshift_api_server;
                ssl_certificate /etc/ssl/certs/nginx-selfsigned.crt;
                ssl_certificate_key /etc/ssl/private/nginx-selfsigned.key;
                ssl_protocols TLSv1 TLSv1.1 TLSv1.2;
                ssl_ciphers HIGH:!aNULL:MD5;
       }
        server
                {
                listen 22623;
                proxy_pass machine_config_server;
                ssl_certificate /etc/ssl/certs/nginx-selfsigned.crt;
                ssl_certificate_key /etc/ssl/private/nginx-selfsigned.key;
```

sed -i 's/<old-text>/<new-text>/g' <filename> # to change certain words in the file by using sed command

```
setenforce 0
systemctl stop firewalld.service
systemctl disable firewalld.service
systemctl restart nginx.service
```

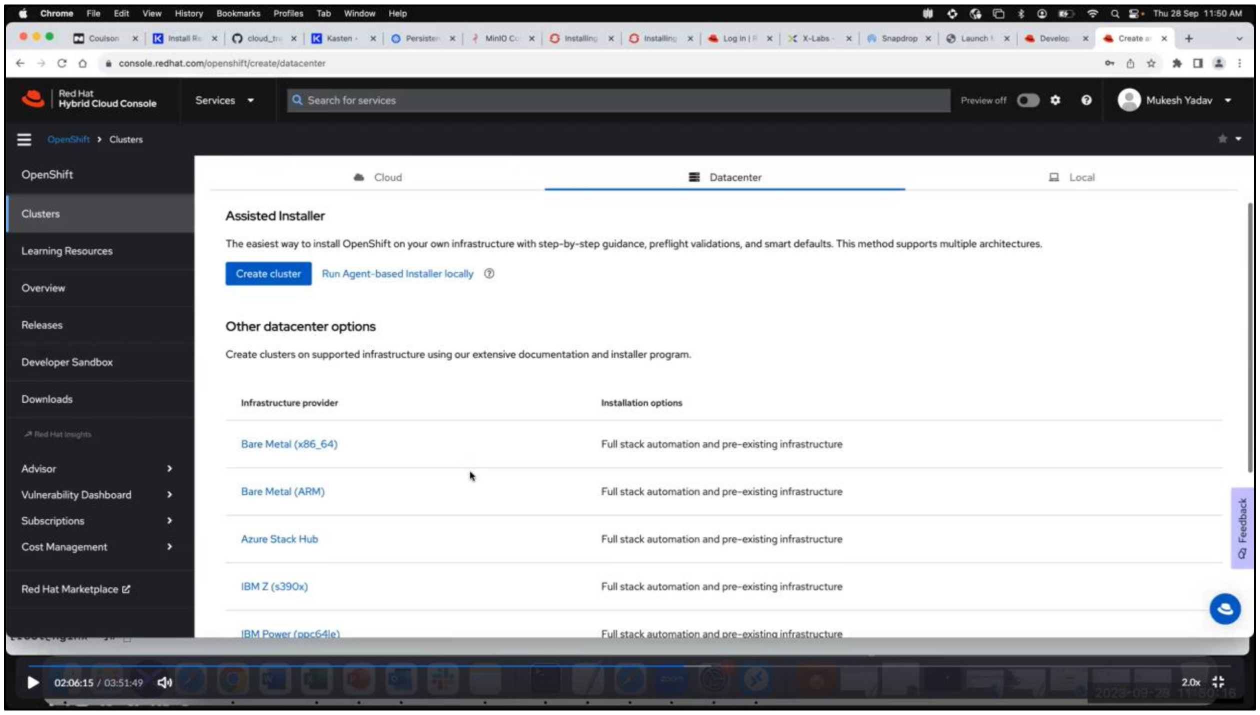
netstat -tulnp   *#to see if ports are listening*



```
[root@nginx ~]# systemctl restart nginx.service
[root@nginx ~]# systemctl status  nginx.service
● nginx.service - The nginx HTTP and reverse proxy server
   Loaded: loaded (/usr/lib/systemd/system/nginx.service; disabled; vendor preset: disabled)
   Active: active (running) since Thu 2023-09-28 02:13:40 EDT; 8s ago
  Process: 33132 ExecStart=/usr/sbin/nginx (code=exited, status=0/SUCCESS)
  Process: 33130 ExecStartPre=/usr/sbin/nginx -t (code=exited, status=0/SUCCESS)
  Process: 33128 ExecStartPre=/usr/bin/rm -f /run/nginx.pid (code=exited, status=0/SUCCESS)
 Main PID: 33133 (nginx)
    Tasks: 5 (limit: 100190)
   Memory: 7.5M
   CGroup: /system.slice/nginx.service
           ├─33133 nginx: master process /usr/sbin/nginx
           ├─33134 nginx: worker process
           ├─33135 nginx: worker process
           ├─33136 nginx: worker process
           └─33137 nginx: worker process

Sep 28 02:13:40 nginx.vcet.citiuscloud.com systemd[1]: Starting The nginx HTTP and reverse proxy server...
Sep 28 02:13:40 nginx.vcet.citiuscloud.com nginx[33130]: nginx: the configuration file /etc/nginx/nginx.conf syntax is ok
Sep 28 02:13:40 nginx.vcet.citiuscloud.com nginx[33130]: nginx: configuration file /etc/nginx/nginx.conf test is successful
Sep 28 02:13:40 nginx.vcet.citiuscloud.com systemd[1]: Started The nginx HTTP and reverse proxy server.
[root@nginx ~]# netstat  -tulnp
Active Internet connections (only servers)
Proto Recv-Q Send-Q Local Address           Foreign Address         State       PID/Program name
tcp        0      0 0.0.0.0:80              0.0.0.0:*               LISTEN      33133/nginx: master
tcp        0      0 0.0.0.0:8080            0.0.0.0:*               LISTEN      33133/nginx: master
tcp        0      0 0.0.0.0:22              0.0.0.0:*               LISTEN      930/sshd
tcp        0      0 0.0.0.0:443             0.0.0.0:*               LISTEN      33133/nginx: master
tcp        0      0 0.0.0.0:22623           0.0.0.0:*               LISTEN      33133/nginx: master
tcp        0      0 0.0.0.0:6443            0.0.0.0:*               LISTEN      33133/nginx: master
tcp6       0      0 :::8080                 :::*                    LISTEN      33133/nginx: master
tcp6       0      0 :::22                   :::*                    LISTEN      930/sshd
udp        0      0 127.0.0.1:323           0.0.0.0:*                           880/chronyd
udp6       0      0 ::1:323                 :::*                                880/chronyd
```

Go to https://cloud.redhat.com/ and login to the console

1. Click on service, drop down menu will be visible
2. Now, click on Infrastructure and click on Cluster
3. All the clusters can be accessed through the dashboard
4. Now, click on create cluster, in the datacenter section
5. Choose any Baremetal and select any of the installation type, here we are using Full control.



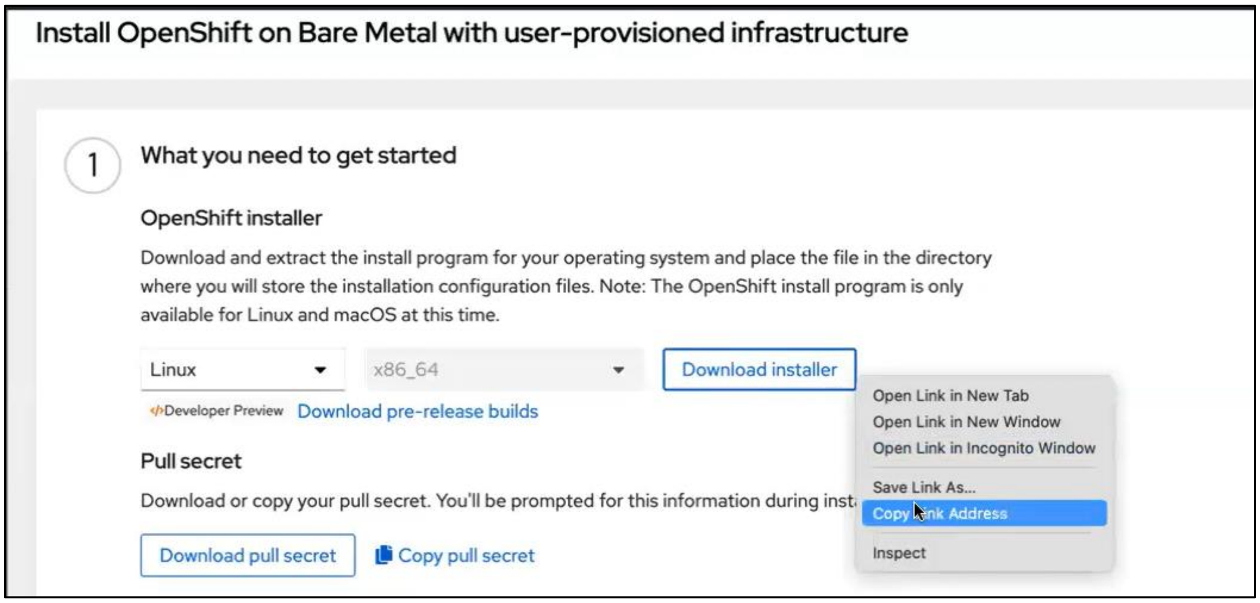
Assisted Installer

The easiest way to install OpenShift on your own infrastructure with step-by-step guidance, preflight validations, and smart defaults. This method supports multiple architectures.

Other datacenter options

Create clusters on supported infrastructure using our extensive documentation and installer program.

Infrastructure provider	Installation options
Bare Metal (x86_64)	Full stack automation and pre-existing infrastructure
Bare Metal (ARM)	Full stack automation and pre-existing infrastructure
Azure Stack Hub	Full stack automation and pre-existing infrastructure
IBM Z (s390x)	Full stack automation and pre-existing infrastructure
IBM Power (ppc64le)	Full stack automation and pre-existing infrastructure



Install OpenShift on Bare Metal with user-provisioned infrastructure

1 What you need to get started

OpenShift installer

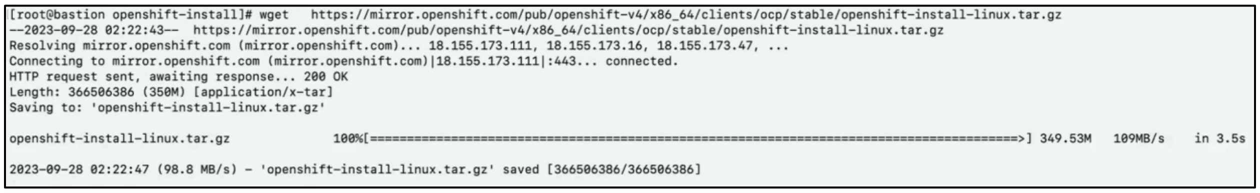
Download and extract the install program for your operating system and place the file in the directory where you will store the installation configuration files. Note: The OpenShift install program is only available for Linux and macOS at this time.

Pull secret

Download or copy your pull secret. You'll be prompted for this information during inst

- ➢ Go to bastion machine

```
mkdir openshift-install

mkdir openshift-deployment

cd openshift-install

wget <installer link which we copied before>
```



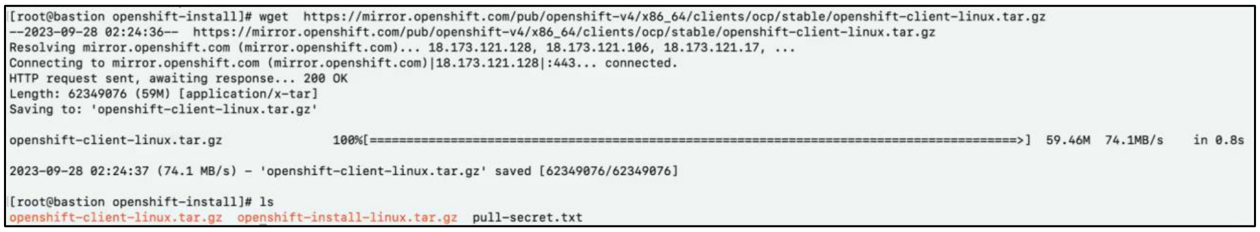
```
[root@bastion openshift-install]# wget   https://mirror.openshift.com/pub/openshift-v4/x86_64/clients/ocp/stable/openshift-install-linux.tar.gz
--2023-09-28 02:22:43--  https://mirror.openshift.com/pub/openshift-v4/x86_64/clients/ocp/stable/openshift-install-linux.tar.gz
Resolving mirror.openshift.com (mirror.openshift.com)... 18.155.173.111, 18.155.173.16, 18.155.173.47, ...
Connecting to mirror.openshift.com (mirror.openshift.com)|18.155.173.111|:443... connected.
HTTP request sent, awaiting response... 200 OK
Length: 366506386 (350M) [application/x-tar]
Saving to: 'openshift-install-linux.tar.gz'

openshift-install-linux.tar.gz            100%[==========================================================================================>] 349.53M   109MB/s    in 3.5s

2023-09-28 02:22:47 (98.8 MB/s) - 'openshift-install-linux.tar.gz' saved [366506386/366506386]
```

- ➢ Go to console again and copy pull secret
- ➢ Go to bastion machine

```
vim pull-secret.txt                    #paste the secret copied.
```

- ➢ Go to console again and copy command line tools installer address

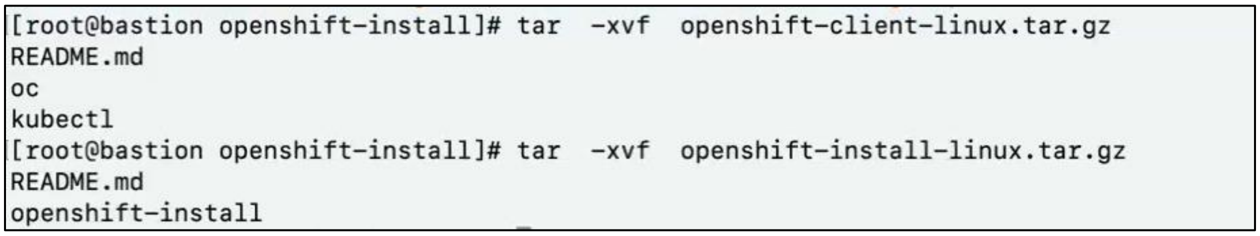
```
wget <installer link which we copied>
```



```
[root@bastion openshift-install]# wget  https://mirror.openshift.com/pub/openshift-v4/x86_64/clients/ocp/stable/openshift-client-linux.tar.gz
--2023-09-28 02:24:36--  https://mirror.openshift.com/pub/openshift-v4/x86_64/clients/ocp/stable/openshift-client-linux.tar.gz
Resolving mirror.openshift.com (mirror.openshift.com)... 18.173.121.128, 18.173.121.106, 18.173.121.17, ...
Connecting to mirror.openshift.com (mirror.openshift.com)|18.173.121.128|:443... connected.
HTTP request sent, awaiting response... 200 OK
Length: 62349076 (59M) [application/x-tar]
Saving to: 'openshift-client-linux.tar.gz'

openshift-client-linux.tar.gz            100%[==========================================================================================>]  59.46M  74.1MB/s    in 0.8s

2023-09-28 02:24:37 (74.1 MB/s) - 'openshift-client-linux.tar.gz' saved [62349076/62349076]

[root@bastion openshift-install]# ls
openshift-client-linux.tar.gz  openshift-install-linux.tar.gz  pull-secret.txt
```

- ➢ Go to bastion machine

```
ls

tar -xvf openshift-client-linux.tar.gz

tar -xvf openshift-install-linux.tar.gz
```



```
[root@bastion openshift-install]# tar  -xvf  openshift-client-linux.tar.gz
README.md
oc
kubectl
[root@bastion openshift-install]# tar  -xvf  openshift-install-linux.tar.gz
README.md
openshift-install
```

```
mv oc kubectl /usr/local/bin
```

```
oc version
```

***search on google >> rhcos iso -> ..miror > select required version of rhcos if needed*

openshift upi installation bare metal: https://docs.openshift.com/container-platform/4.13/installing/installing_bare_metal/installing-bare-metal.html#installation-bare-metal-config-yaml_installing-bare-metal

##MAKE SURE YOU ARE SELECTING CORRECT VERSION

Make changes in the file according to our requirements: {baseDomain, metadata(vcet), keep rest default}

copy and paste pull secrets in

```
>> pullsecret: '{<your-secret-file>}'
```

```
ssh keygen -t rsa

cat /root/.ssh/id-rsa.conf
```

copy the contents and paste in the same file in

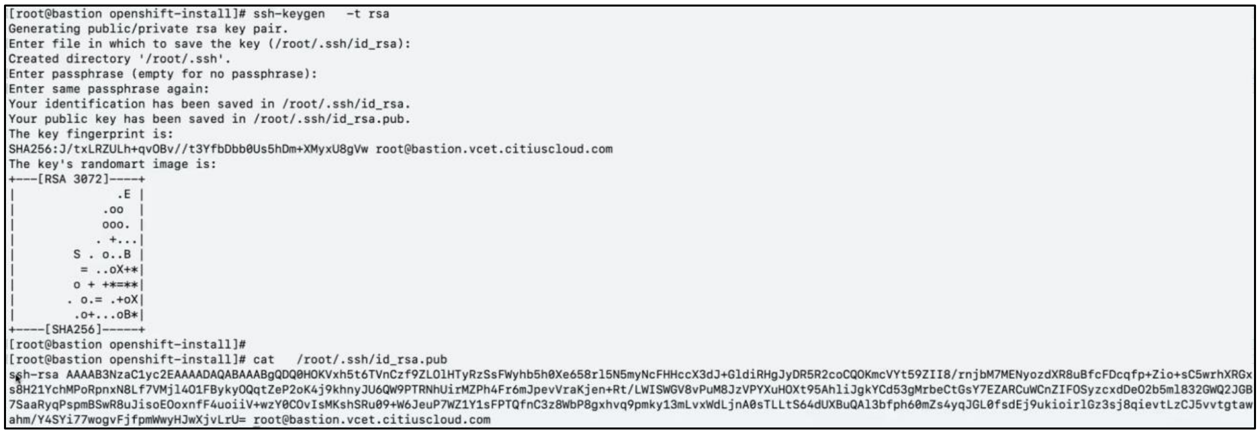
```
>> sshKey: '<your-ssh-key>
```

copy sample install-config.yaml and make the file in the openshift-install folder with the same name(install-config.yaml)

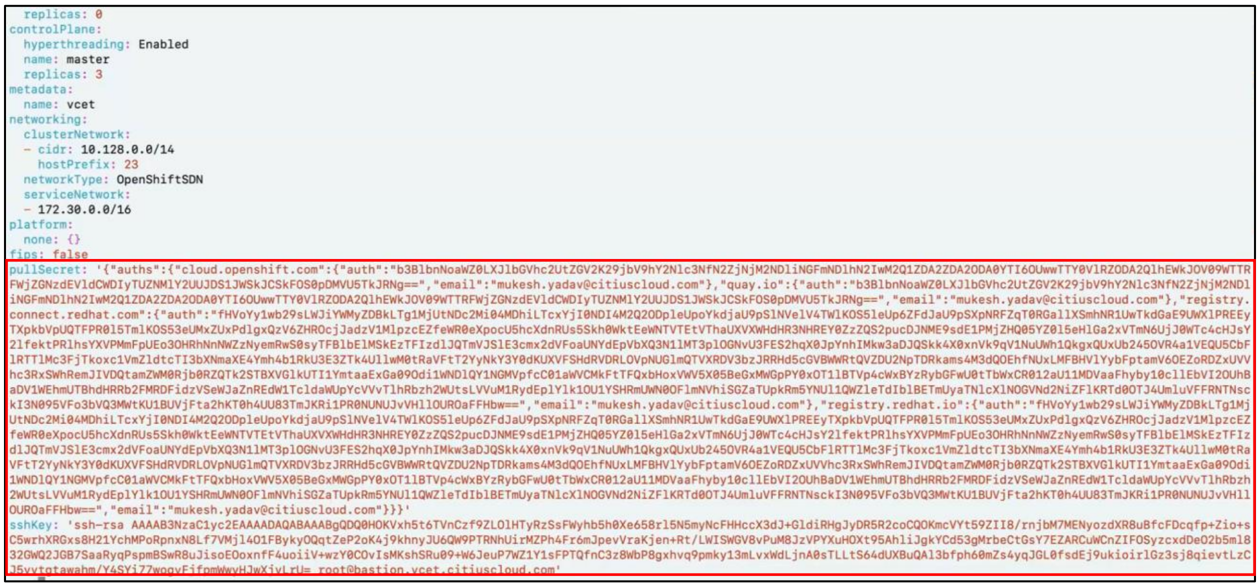
```
apiVersion: v1
baseDomain: example.com   #change according to your domain
compute:
- hyperthreading: Enabled
  name: worker
  replicas: 0
controlPlane:
  hyperthreading: Enabled
  name: master
  replicas: 3
metadata:
  name: test   #your sub-domain here
networking:
  clusterNetwork:
```

```
  - cidr: 10.128.0.0/14

    hostPrefix: 23

  networkType: OpenShiftSDN

  serviceNetwork:

  - 172.30.0.0/16

platform:

  none: {}

fips: false

pullSecret: '<your pull secret file contents here>'

sshKey: ‘<paste public key contents here>’
```

→To get the public key:



```
[root@bastion openshift-install]# ssh-keygen   -t rsa
Generating public/private rsa key pair.
Enter file in which to save the key (/root/.ssh/id_rsa):
Created directory '/root/.ssh'.
Enter passphrase (empty for no passphrase):
Enter same passphrase again:
Your identification has been saved in /root/.ssh/id_rsa.
Your public key has been saved in /root/.ssh/id_rsa.pub.
The key fingerprint is:
SHA256:J/txLRZULh+qvOBv//t3YfbDbb0Us5hDm+XMyxU8gVw root@bastion.vcet.citiuscloud.com
The key's randomart image is:
+---[RSA 3072]----+
|              .E |
|            .oo  |
|            ooo. |
|           . +...|
|        S . o..B |
|         = ..oX+*|
|        o + +*=**|
|       . o.= .+oX|
|        .o+...oB*|
+----[SHA256]-----+
[root@bastion openshift-install]#
[root@bastion openshift-install]# cat   /root/.ssh/id_rsa.pub
ssh-rsa AAAAB3NzaC1yc2EAAAADAQABAAABgQDQ0HOKVxh5t6TVnCzf9ZLOlHTyRzSsFWyhb5h0Xe658rl5N5myNcFHHccX3dJ+GldiRHgJyDR5R2coCQOKmcVYt59ZII8/rnjbM7MENyozdXR8uBfcFDcqfp+Zio+sC5wrhXRGx
s8H21YchMPoRpnxN8Lf7VMjl4O1FBykyOQqtZeP2oK4j9khnyJU6QW9PTRNhUirMZPh4Fr6mJpevVraKjen+Rt/LWISWGV8vPuM8JzVPYXuHOXt95AhliJgkYCd53gMrbeCtGsY7EZARCuWCnZIFOSyzcxdDeO2b5ml832GWQ2JGB
7SaaRyqPspmBSwR8uJisoEOoxnfF4uoiiV+wzY0COvIsMKshSRu09+W6JeuP7WZ1Y1sFPTQfnC3z8WbP8gxhvq9pmky13mLvxWdLjnA0sTLLtS64dUXBuQAl3bfph60mZs4yqJGL0fsdEj9ukioirlGz3sj8qievtLzCJ5vvtgtaw
ahm/Y4SYi77wogvFjfpmWwyHJwXjvLrU= root@bastion.vcet.citiuscloud.com
```

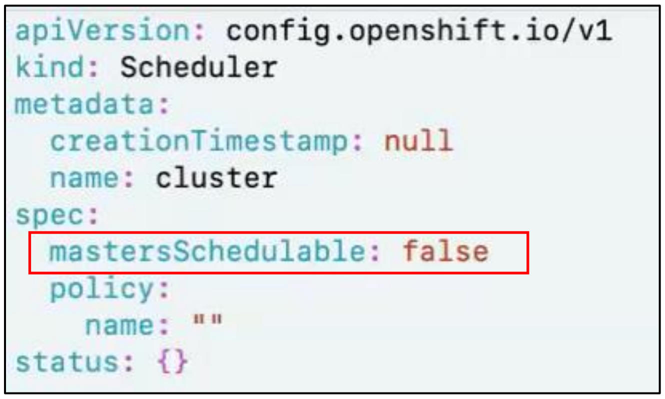


```
  replicas: 0
controlPlane:
  hyperthreading: Enabled
  name: master
  replicas: 3
metadata:
  name: vcet
networking:
  clusterNetwork:
  - cidr: 10.128.0.0/14
    hostPrefix: 23
  networkType: OpenShiftSDN
  serviceNetwork:
  - 172.30.0.0/16
platform:
  none: {}
fips: false
pullSecret: '{"auths":{"cloud.openshift.com":{"auth":"b3BlbnNoaWZ0LXJlbGVhc2UtZGV2K29jbV9hY2Nlc3NfN2ZjNjM2NDliNGFmNDlhN2IwM2Q1ZDA2ZDA2ODA0YTI6OUwwTTY0VlRZODA2QlhEWkJOV09WTTR
FWjZGNzdEVldCWDIyTUZNMlY2UUJDS1JWSkJCSkFOS0pDMVU5TkJRNg==","email":"mukesh.yadav@citiuscloud.com"},"quay.io":{"auth":"b3BlbnNoaWZ0LXJlbGVhc2UtZGV2K29jbV9hY2Nlc3NfN2ZjNjM2NDl
iNGFmNDlhN2IwM2Q1ZDA2ZDA2ODA0YTI6OUwwTTY0VlRZODA2QlhEWkJOV09WTTRFWjZGNzdEVldCWDIyTUZNMlY2UUJDS1JWSkJCSkFOS0pDMVU5TkJRNg==","email":"mukesh.yadav@citiuscloud.com"},"registry.
connect.redhat.com":{"auth":"fHVoYy1wb29sLWJiYWMyZDBkLTg1MjUtNDc2Mi04MDhiLTcxYjI0NDI4M2Q2ODpleUpoYkdjaU9pSlNVelV4TWlKOS5leUp6ZFdJaU9pSXpNRFZqT0RGallXSmhNR1UwTkdGaE9UWXlPREEy
TXpkbVpUQTFPR0l5TmlKOS53eUMxZUxPdlgxQzV6ZHROcjJadzV1MlpzcEZfeWR0eXpocU5hcXdnRUs5Skh0WktEeWNTVTEtVThaUXVXWHdHR3NHREY0ZzZQS2pucDJNME9sdE1PMjZHQ05YZ0l5eHlGa2xVTmN6UjJ0WTc4cHJsY
2lfektPRlhsYXVPMmFpUEo3OHRhNnNWZzNyemRwS0syTFBlbElMSkEzTFIzdlJQTmVJSlE3cmx2dVFoaUNYdEpVbXQ3N1lMT3plOGNvU3FES2hqX0JpYnhIMkw3aDJQSkk4X0xnVk9qV1NuUWh1QkgxQUxUb245OVR4a1VEQU5CbF
lRTTlMc3FjTkoxc1VmZldtcTI3bXNmaXE4Ymh4b1RkU3E3ZTk4UllwM0tRaVFtT2YyNkY3Y0dKUXVFSHdRVDRLOVpNUGlmQTVXRDV3bzJRRHd5cGVBWWRtQVZDU2NpTDRkams4M3dQOEhfNUxLMFBHVlYybFptamV6OEZoRDZxUVV
hc3RxSWhRemJIVDQtamZWM0Rjb0RZQTk2STBXVGlkUTI1YmtaaExGa09Odi1WNDlQY1NGMVpfcC01aWVCMkFtTFQxbHoxVWV5X05BeGxMWGpPY0xOT1lBTVp4cWxBYzRybGFwU0tTbWxCR012aU11MDVaaFhyby10cllEbVI2OUhB
aDV1WEhmUTBhdHRRb2FMRDFidzVSeWJaZnREdW1TcldaWUpYcVVvTlhRbzh2WUtsLVVuM1RydEplYlk1OU1YSHRmUWN0OFlmNVhiSGZaTUpkRm5YNUl1QWZleTdIblBETmUyaTNlcXlNOGVNd2NiZFlKRTd0OTJ4UmluVFFRNTNsc
kI3N095VFo3bVQ3MWtKU1BUVjFta2hKT0h4UU83TmJKRi1PR0NUNUJvVHllOUROaFFHbw==","email":"mukesh.yadav@citiuscloud.com"},"registry.redhat.io":{"auth":"fHVoYy1wb29sLWJiYWMyZDBkLTg1Mj
UtNDc2Mi04MDhiLTcxYjI0NDI4M2Q2ODpleUpoYkdjaU9pSlNVelV4TWlKOS5leUp6ZFdJaU9pSXpNRFZqT0RGallXSmhNR1UwTkdGaE9UWXlPREEyTXpkbVpUQTFPR0l5TmlKOS53eUMxZUxPdlgxQzV6ZHROcjJadzV1MlpzcEZ
feWR0eXpocU5hcXdnRUs5Skh0WktEeWNTVTEtVThaUXVXWHdHR3NHREY0ZzZQS2pucDJNME9sdE1PMjZHQ05YZ0l5eHlGa2xVTmN6UjJ0WTc4cHJsY2lfektPRlhsYXVPMmFpUEo3OHRhNnNWZzNyemRwS0syTFBlbElMSkEzTFIz
dlJQTmVJSlE3cmx2dVFoaUNYdEpVbXQ3N1lMT3plOGNvU3FES2hqX0JpYnhIMkw3aDJQSkk4X0xnVk9qV1NuUWh1QkgxQUxUb245OVR4a1VEQU5CbFlRTTlMc3FjTkoxc1VmZldtcTI3bXNmaXE4Ymh4b1RkU3E3ZTk4UllwM0tRa
VFtT2YyNkY3Y0dKUXVFSHdRVDRLOVpNUGlmQTVXRDV3bzJRRHd5cGVBWWRtQVZDU2NpTDRkams4M3dQOEhfNUxLMFBHVlYybFptamV6OEZoRDZxUVVhc3RxSWhRemJIVDQtamZWM0Rjb0RZQTk2STBXVGlkUTI1YmtaaExGa09Odi
1WNDlQY1NGMVpfcC01aWVCMkFtTFQxbHoxVWV5X05BeGxMWGpPY0xOT1lBTVp4cWxBYzRybGFwU0tTbWxCR012aU11MDVaaFhyby10cllEbVI2OUhBaDV1WEhmUTBhdHRRb2FMRDFidzVSeWJaZnREdW1TcldaWUpYcVVvTlhRbzh
2WUtsLVVuM1RydEplYlk1OU1YSHRmUWN0OFlmNVhiSGZaTUpkRm5YNUl1QWZleTdIblBETmUyaTNlcXlNOGVNd2NiZFlKRTd0OTJ4UmluVFFRNTNsckI3N095VFo3bVQ3MWtKU1BUVjFta2hKT0h4UU83TmJKRi1PR0NUNUJvVHll
OUROaFFHbw==","email":"mukesh.yadav@citiuscloud.com"}}}'
sshKey: 'ssh-rsa AAAAB3NzaC1yc2EAAAADAQABAAABgQDQ0HOKVxh5t6TVnCzf9ZLOlHTyRzSsFWyhb5h0Xe658rl5N5myNcFHHccX3dJ+GldiRHgJyDR5R2coCQOKmcVYt59ZII8/rnjbM7MENyozdXR8uBfcFDcqfp+Zio+s
C5wrhXRGxs8H21YchMPoRpnxN8Lf7VMjl4O1FBykyOQqtZeP2oK4j9khnyJU6QW9PTRNhUirMZPh4Fr6mJpevVraKjen+Rt/LWISWGV8vPuM8JzVPYXuHOXt95AhliJgkYCd53gMrbeCtGsY7EZARCuWCnZIFOSyzcxdDeO2b5ml8
32GWQ2JGB7SaaRyqPspmBSwR8uJisoEOoxnfF4uoiiV+wzY0COvIsMKshSRu09+W6JeuP7WZ1Y1sFPTQfnC3z8WbP8gxhvq9pmky13mLvxWdLjnA0sTLLtS64dUXBuQAl3bfph60mZs4yqJGL0fsdEj9ukioirlGz3sj8qievtLzC
J5vvtgtawahm/Y4SYi77wogvFjfpmWwyHJwXjvLrU= root@bastion.vcet.citiuscloud.com'
```

```
cp install-config.yaml /root/openshift-deployment
```

```
./openshift-install create manifests --dir <openshift-deployment-directory>
```

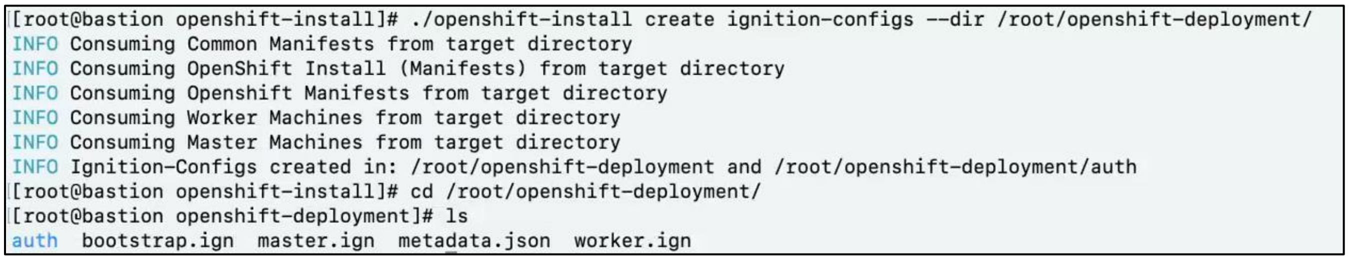
```
cd /root/openshift-deployment/openshift

ls -ltrh

cd ..

rm -rf openshift/99/_openshift-cluster-api_master-machines-*.yaml

rm -rf openshift/99/_openshift-cluster-api_worker-machineset-*.yaml

vim manifests/cluster-schedular-02-config.yaml                #make changes in the file.

>>masterScheduable: false
```



```
apiVersion: config.openshift.io/v1
kind: Scheduler
metadata:
  creationTimestamp: null
  name: cluster
spec:
  mastersSchedulable: false
  policy:
    name: ""
status: {}
```

3 Iginition Files - {Master, Worker, Bootstrap}

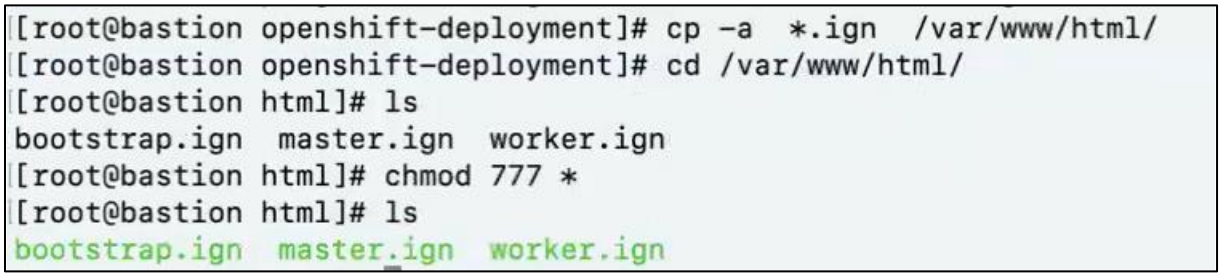
```
cd openshift-install

./openshift-install create iginition-configs --dir /root/openshift-deployment

cd openshift-deployment

ls
```



```
[root@bastion openshift-install]# ./openshift-install create ignition-configs --dir /root/openshift-deployment/
INFO Consuming Common Manifests from target directory
INFO Consuming OpenShift Install (Manifests) from target directory
INFO Consuming Openshift Manifests from target directory
INFO Consuming Worker Machines from target directory
INFO Consuming Master Machines from target directory
INFO Ignition-Configs created in: /root/openshift-deployment and /root/openshift-deployment/auth
[root@bastion openshift-install]# cd /root/openshift-deployment/
[root@bastion openshift-deployment]# ls
auth  bootstrap.ign  master.ign  metadata.json  worker.ign
```

- Bastion Machine:

```
subscription-manager register

subscription-manager auto-attach

yum install httpd*

cd openshift-deployment

cp -a *.ign /var/www/html/

cd /var/www/html/

ls

chmod 777 *

ls          #files displayed in green colour
```



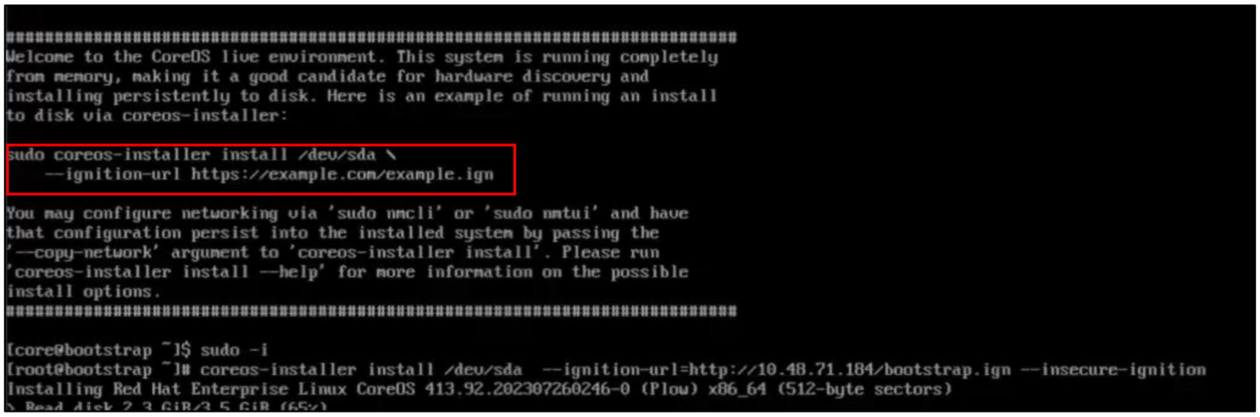
```
[root@bastion openshift-deployment]# cp -a  *.ign  /var/www/html/
[root@bastion openshift-deployment]# cd /var/www/html/
[root@bastion html]# ls
bootstrap.ign  master.ign  worker.ign
[root@bastion html]# chmod 777 *
[root@bastion html]# ls
bootstrap.ign  master.ign  worker.ign
```

```
setenforce 0

systemctl stop firewalld.service

systemctl disable firewalld.service

systemctl restart httpd.service

systemctl status httpd.service
```

➢ Go to Prism central and power on the bootstrap machine and launch console.

```
sudo -i

coreos-installer install /dev/sda --ignition-url=http://<bastion-ip>/bootstrap.ign --insecure-ignition
```

##The above command is already generated when we launch the console just modify it by adding bastion machine IP.



```
################################################################################
Welcome to the CoreOS live environment. This system is running completely
from memory, making it a good candidate for hardware discovery and
installing persistently to disk. Here is an example of running an install
to disk via coreos-installer:

sudo coreos-installer install /dev/sda \
    --ignition-url https://example.com/example.ign

You may configure networking via 'sudo nmcli' or 'sudo nmtui' and have
that configuration persist into the installed system by passing the
'--copy-network' argument to 'coreos-installer install'. Please run
'coreos-installer install --help' for more information on the possible
install options.
################################################################################

[core@bootstrap ~]$ sudo -i
[root@bootstrap ~]# coreos-installer install /dev/sda  --ignition-url=http://10.48.71.184/bootstrap.ign --insecure-ignition
Installing Red Hat Enterprise Linux CoreOS 413.92.202307260246-0 (Plow) x86_64 (512-byte sectors)
> Read disk 2.3 GiB/3.5 GiB (65%)
```

repeat same process for all the master node and worker node

FOR MASTER:

```
coreos-installer install /dev/sda --ignition-url=http://<bastion-ip>/master.ign --insecure-ignition
```

SHUTDOWN MACHINES AFTER INSTALLATION USING >> `shutdown -P now`

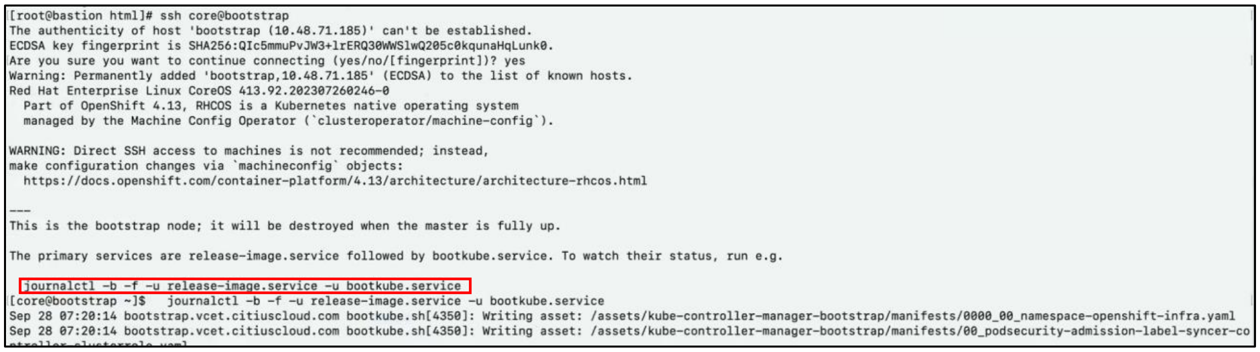
##after shutdown unmount the disk (CD-ROM)

Power on bootstrap machine

- Go to bastion machine

try to ping bootstrap from bastion machine, if pinged do the further steps

```
ssh core@bootstrap

journalctl -b -f -u release-image.service -u bootkube.service
```
{command in the output after ssh is done}



```
[root@bastion html]# ssh core@bootstrap
The authenticity of host 'bootstrap (10.48.71.185)' can't be established.
ECDSA key fingerprint is SHA256:QIc5mmuPvJW3+lrERQ30WWSlwQ205c0kqunaHqLunk0.
Are you sure you want to continue connecting (yes/no/[fingerprint])? yes
Warning: Permanently added 'bootstrap,10.48.71.185' (ECDSA) to the list of known hosts.
Red Hat Enterprise Linux CoreOS 413.92.202307260246-0
  Part of OpenShift 4.13, RHCOS is a Kubernetes native operating system
  managed by the Machine Config Operator (`clusteroperator/machine-config`).

WARNING: Direct SSH access to machines is not recommended; instead,
make configuration changes via `machineconfig` objects:
  https://docs.openshift.com/container-platform/4.13/architecture/architecture-rhcos.html

---
This is the bootstrap node; it will be destroyed when the master is fully up.

The primary services are release-image.service followed by bootkube.service. To watch their status, run e.g.

  journalctl -b -f -u release-image.service -u bootkube.service
[core@bootstrap ~]$   journalctl -b -f -u release-image.service -u bootkube.service
Sep 28 07:20:14 bootstrap.vcet.citiuscloud.com bootkube.sh[4350]: Writing asset: /assets/kube-controller-manager-bootstrap/manifests/0000_00_namespace-openshift-infra.yaml
Sep 28 07:20:14 bootstrap.vcet.citiuscloud.com bootkube.sh[4350]: Writing asset: /assets/kube-controller-manager-bootstrap/manifests/00_podsecurity-admission-label-syncer-co
```

after api is up power on all the master machines

→power on worker machine

```
sudo -i
```

FOR WORKER:

```
coreos-installer install /dev/sda --ignition-url=http://<bastion-ip>/worker.ign --insecure-ignition
```

SHUTDOWN MACHINES AFTER INSTALLATION USING >> `shutdown -P now`

##after shutdown unmount the disk (CD-ROM)

Go to redhat portal: https://docs.openshift.com/container-platform/4.13/installing/installing_bare_metal/installing-bare-metal.html#installation-bare-metal-config-yaml_installing-bare-metal

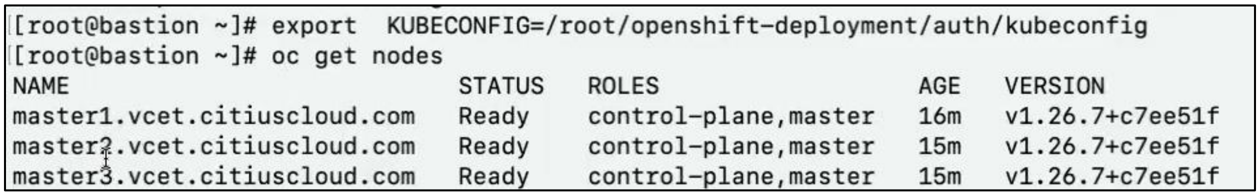
ctrl-f and search → wait-for.. {command}

- Go to bastion machine

```
cd openshift-install

./openshift-install --dir <openshift-deployment-directory>  wait-for bootstrap-complete --log-level=info
```

Add another tab for bastion machine

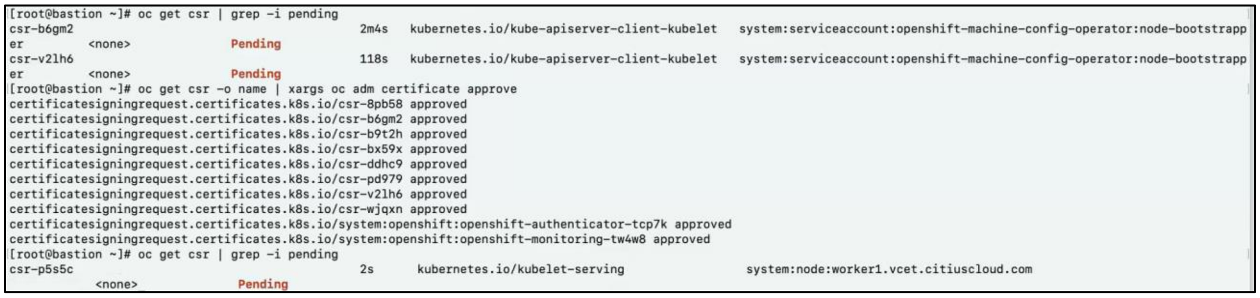
```
ssh core@master1

oc get node

sudo find / -name kubeconfig

export KUBECONFIG=/etc/kubernetes/kubeconfig

oc get node

exit
```



```
[root@bastion ~]# export  KUBECONFIG=/root/openshift-deployment/auth/kubeconfig
[root@bastion ~]# oc get nodes
NAME                          STATUS   ROLES                  AGE   VERSION
master1.vcet.citiuscloud.com  Ready    control-plane,master   16m   v1.26.7+c7ee51f
master2.vcet.citiuscloud.com  Ready    control-plane,master   15m   v1.26.7+c7ee51f
master3.vcet.citiuscloud.com  Ready    control-plane,master   15m   v1.26.7+c7ee51f
```

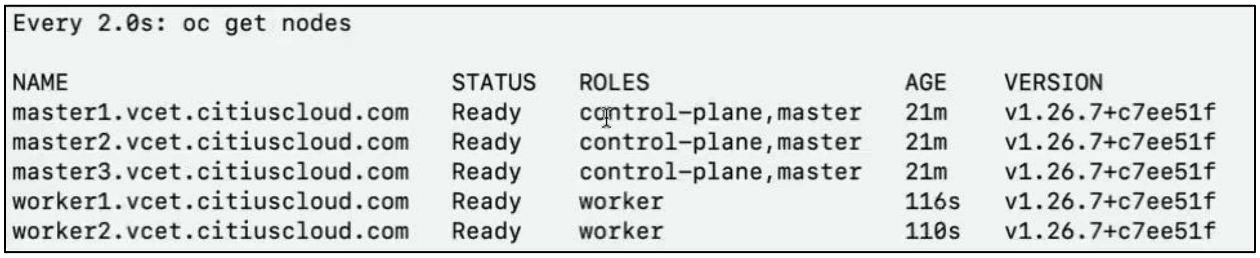
- Power on both the worker node
- Go to bastion machine

```
export KUBECONFIG=/root/openshift-deployment/auth/kubeconfig

oc get node

oc get co

oc get csr | grep -i pending

oc get csr -o name | xargs oc adm certificate approve              ##approve the pending request
```



```
[root@bastion ~]# oc get csr | grep -i pending
csr-b6gm2                                    2m4s    kubernetes.io/kube-apiserver-client-kubelet    system:serviceaccount:openshift-machine-config-operator:node-bootstrapp
er        <none>              Pending
csr-v2lh6                                    118s    kubernetes.io/kube-apiserver-client-kubelet    system:serviceaccount:openshift-machine-config-operator:node-bootstrapp
er        <none>              Pending
[root@bastion ~]# oc get csr -o name | xargs oc adm certificate approve
certificatesigningrequest.certificates.k8s.io/csr-8pb58 approved
certificatesigningrequest.certificates.k8s.io/csr-b6gm2 approved
certificatesigningrequest.certificates.k8s.io/csr-b9t2h approved
certificatesigningrequest.certificates.k8s.io/csr-bx59x approved
certificatesigningrequest.certificates.k8s.io/csr-ddhc9 approved
certificatesigningrequest.certificates.k8s.io/csr-pd979 approved
certificatesigningrequest.certificates.k8s.io/csr-v2lh6 approved
certificatesigningrequest.certificates.k8s.io/csr-wjqxn approved
certificatesigningrequest.certificates.k8s.io/system:openshift:openshift-authenticator-tcp7k approved
certificatesigningrequest.certificates.k8s.io/system:openshift:openshift-monitoring-tw4w8 approved
[root@bastion ~]# oc get csr | grep -i pending
csr-p5s5c                                    2s      kubernetes.io/kubelet-serving                  system:node:worker1.vcet.citiuscloud.com
          <none>              Pending
```

```
oc get nodes
```

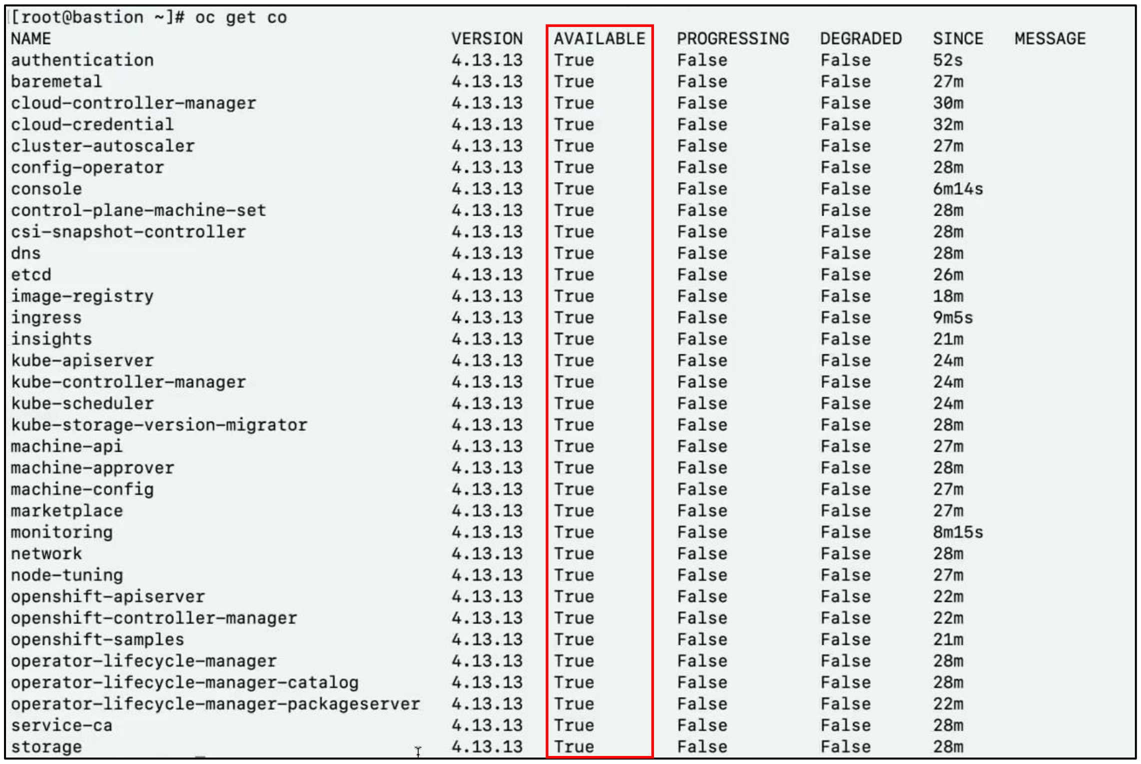


```
Every 2.0s: oc get nodes

NAME                           STATUS   ROLES                  AGE    VERSION
master1.vcet.citiuscloud.com   Ready    control-plane,master   21m    v1.26.7+c7ee51f
master2.vcet.citiuscloud.com   Ready    control-plane,master   21m    v1.26.7+c7ee51f
master3.vcet.citiuscloud.com   Ready    control-plane,master   21m    v1.26.7+c7ee51f
worker1.vcet.citiuscloud.com   Ready    worker                 116s   v1.26.7+c7ee51f
worker2.vcet.citiuscloud.com   Ready    worker                 110s   v1.26.7+c7ee51f
```

##kill the bootstrap cli process going on

- Go to Bastion machine

```
oc get node            #3 master 2 worker in ready condition

watch oc get co        #check if all are true in available column and wait till all are true
```



```
[root@bastion ~]# oc get co
NAME                                       VERSION   AVAILABLE   PROGRESSING   DEGRADED   SINCE   MESSAGE
authentication                             4.13.13   True        False         False      52s
baremetal                                  4.13.13   True        False         False      27m
cloud-controller-manager                   4.13.13   True        False         False      30m
cloud-credential                           4.13.13   True        False         False      32m
cluster-autoscaler                         4.13.13   True        False         False      27m
config-operator                            4.13.13   True        False         False      28m
console                                    4.13.13   True        False         False      6m14s
control-plane-machine-set                  4.13.13   True        False         False      28m
csi-snapshot-controller                    4.13.13   True        False         False      28m
dns                                        4.13.13   True        False         False      28m
etcd                                       4.13.13   True        False         False      26m
image-registry                             4.13.13   True        False         False      18m
ingress                                    4.13.13   True        False         False      9m5s
insights                                   4.13.13   True        False         False      21m
kube-apiserver                             4.13.13   True        False         False      24m
kube-controller-manager                    4.13.13   True        False         False      24m
kube-scheduler                             4.13.13   True        False         False      24m
kube-storage-version-migrator              4.13.13   True        False         False      28m
machine-api                                4.13.13   True        False         False      27m
machine-approver                           4.13.13   True        False         False      28m
machine-config                             4.13.13   True        False         False      27m
marketplace                                4.13.13   True        False         False      27m
monitoring                                 4.13.13   True        False         False      8m15s
network                                    4.13.13   True        False         False      28m
node-tuning                                4.13.13   True        False         False      27m
openshift-apiserver                        4.13.13   True        False         False      22m
openshift-controller-manager               4.13.13   True        False         False      22m
openshift-samples                          4.13.13   True        False         False      21m
operator-lifecycle-manager                 4.13.13   True        False         False      28m
operator-lifecycle-manager-catalog         4.13.13   True        False         False      28m
operator-lifecycle-manager-packageserver   4.13.13   True        False         False      22m
service-ca                                 4.13.13   True        False         False      28m
storage                                    4.13.13   True        False         False      28m
```

- Add another tab for bastion machine

```
Ssh root@<bastion-ip>

ssh core@<master-node>

sudo crictl pods

exit
```

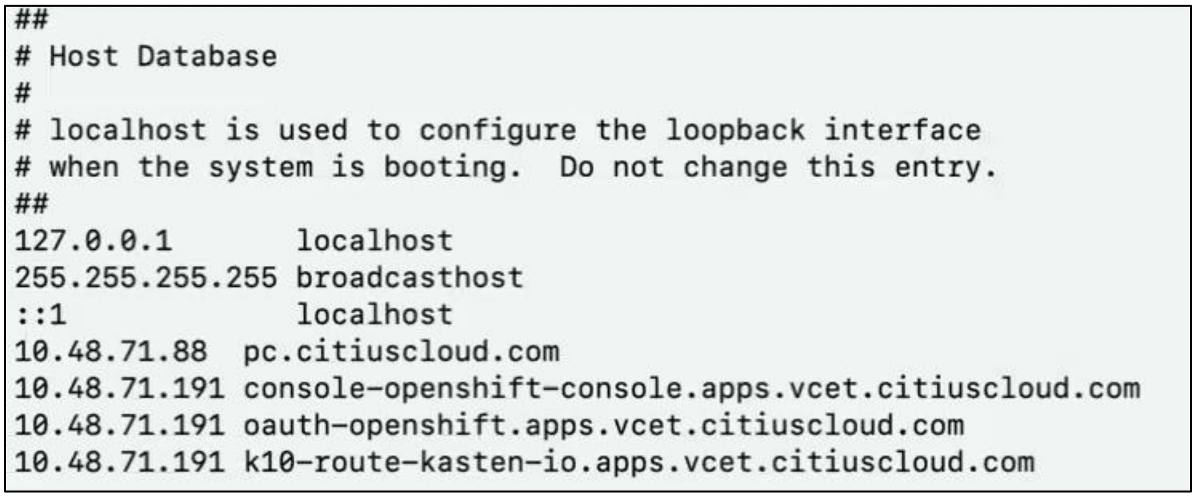
- Bastion machine:

```
oc get pods -n kube-system

oc get pods -A | grep api
```
openshift has their own dedicated namespace for the nodes same like how kubectl has kube-system,etc.

```
oc get routes -A
```

- Copy the console host/port link {console-openshift-console.apps.vcet.citiuscloud.com}
- Do the entry in the local machine to get dashboard access from the local machine

```
sudo vi /etc/hosts

<nginx-ip> console-openshift-console.apps.vcet.citiuscloud.com
```



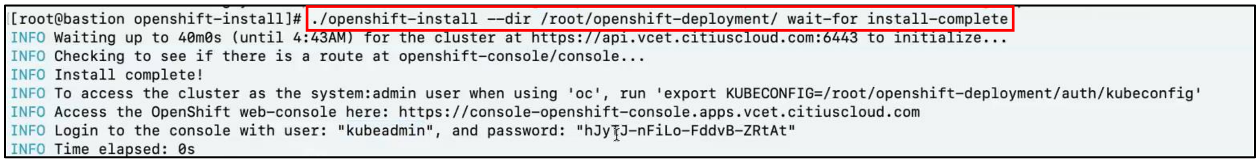
```
##
# Host Database
#
# localhost is used to configure the loopback interface
# when the system is booting.  Do not change this entry.
##
127.0.0.1       localhost
255.255.255.255 broadcasthost
::1             localhost
10.48.71.88   pc.citiuscloud.com
10.48.71.191 console-openshift-console.apps.vcet.citiuscloud.com
10.48.71.191 oauth-openshift.apps.vcet.citiuscloud.com
10.48.71.191 k10-route-kasten-io.apps.vcet.citiuscloud.com
```

➔Go to chrome and search >> console-openshift-console.apps.vcet.citiuscloud.com

#TO GET THE PASSWORD

→Go to bastion machine

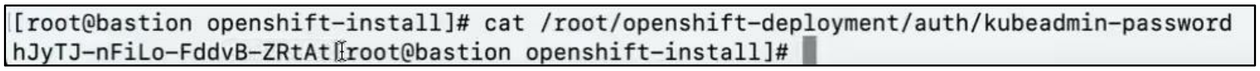
```
cd openshift-install

./openshift-install --dir <openshift-deployment-directory>  wait-for install-complete
```



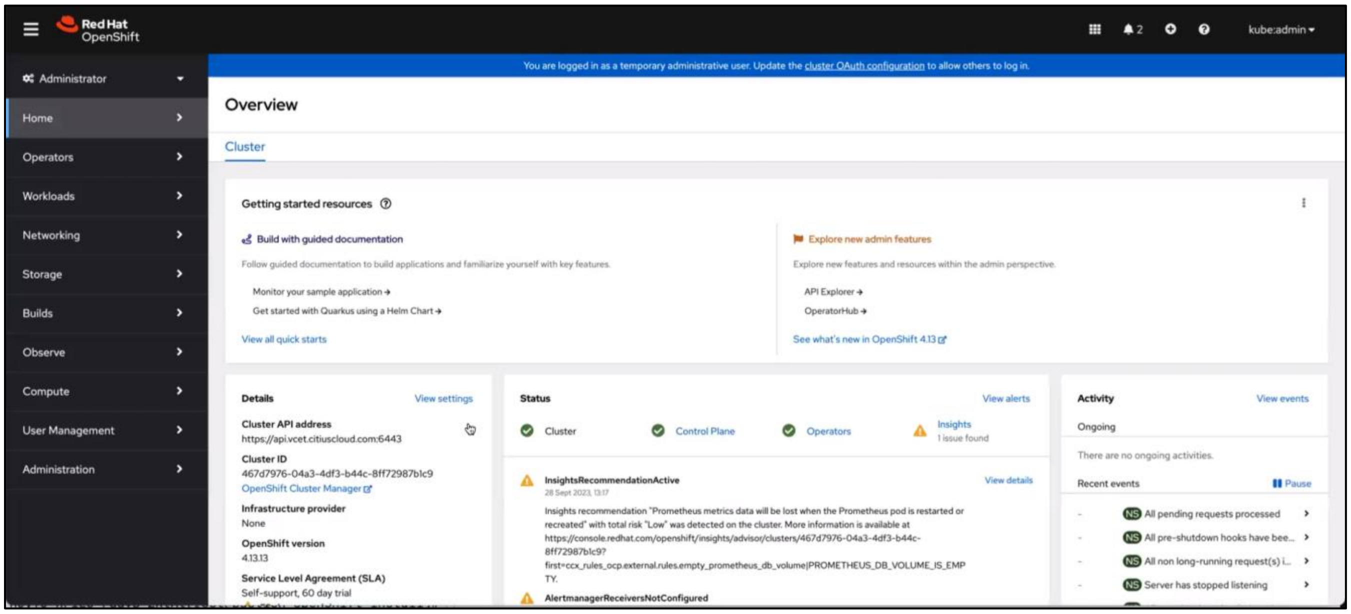
```
[root@bastion openshift-install]# ./openshift-install --dir /root/openshift-deployment/ wait-for install-complete
INFO Waiting up to 40m0s (until 4:43AM) for the cluster at https://api.vcet.citiuscloud.com:6443 to initialize...
INFO Checking to see if there is a route at openshift-console/console...
INFO Install complete!
INFO To access the cluster as the system:admin user when using 'oc', run 'export KUBECONFIG=/root/openshift-deployment/auth/kubeconfig'
INFO Access the OpenShift web-console here: https://console-openshift-console.apps.vcet.citiuscloud.com
INFO Login to the console with user: "kubeadmin", and password: "hJyTJ-nFiLo-FddvB-ZRtAt"
INFO Time elapsed: 0s
```

OR

```
cat /root/openshift-deployment/auth/kubeadmin-password
```



```
[root@bastion openshift-install]# cat /root/openshift-deployment/auth/kubeadmin-password
hJyTJ-nFiLo-FddvB-ZRtAt[root@bastion openshift-install]#
```



You are logged in as a temporary administrative user. Update the cluster OAuth configuration to allow others to log in.

Overview

Cluster

Getting started resources

Build with guided documentation

Follow guided documentation to build applications and familiarize yourself with key features.

Monitor your sample application →

Get started with Quarkus using a Helm Chart →

View all quick starts

Explore new admin features

Explore new features and resources within the admin perspective.

API Explorer →

OperatorHub →

See what's new in OpenShift 4.13

Details — View settings

Cluster API address
https://api.vcet.citiuscloud.com:6443

Cluster ID
467d7976-04a3-4df3-b44c-8ff72987b1c9
OpenShift Cluster Manager

Infrastructure provider
None

OpenShift version
4.13.13

Service Level Agreement (SLA)
Self-support, 60 day trial

Status — View alerts

Cluster | Control Plane | Operators | Insights 1 issue found

InsightsRecommendationActive — View details
28 Sept 2023, 13:17
Insights recommendation "Prometheus metrics data will be lost when the Prometheus pod is restarted or recreated" with total risk "Low" was detected on the cluster. More information is available at https://console.redhat.com/openshift/insights/advisor/clusters/467d7976-04a3-4df3-b44c-8ff72987b1c9?first=ccx_rules_ocp.external.rules.empty_prometheus_db_volume|PROMETHEUS_DB_VOLUME_IS_EMPTY.

AlertmanagerReceiversNotConfigured

Activity — View events

Ongoing

There are no ongoing activities.

Recent events — Pause

- NS All pending requests processed
- NS All pre-shutdown hooks have bee...
- NS All non long-running request(s) i...
- NS Server has stopped listening