

Environnement : Ubuntu 18.04 - connexion en SSH – OPENVPN

A- Connection au Datacenter Aws avec Openvpn + ping

A-1 Création de lien openvpn

```
survivor@Tkheletet: ~
File Edit View Search Terminal Help
survivor@Tkheletet:~$ systemctl enable openvpn@client.service
Created symlink /etc/systemd/system/multi-user.target.wants/openvpn@client.service → /lib/systemd/system/openvpn@.service.
survivor@Tkheletet:~$
```

A-2 Redémarrage de openvpn et test de ping vers : 10.151.32.1

```
survivor@Tkheletet:~$ systemctl enable openvpn@client.service
survivor@Tkheletet:~$ systemctl daemon-reload
survivor@Tkheletet:~$ systemctl restart openvpn
survivor@Tkheletet:~$ ping 10.151.32.1
PING 10.151.32.1 (10.151.32.1) 56(84) bytes of data.
^C
--- 10.151.32.1 ping statistics ---
13 packets transmitted, 0 received, 100% packet loss, time 12274ms
```

A-3 changement de Nom de fichier ==> Belhadj.config et test de ping; ping is fine

```
survivor@Tkheletet:/etc/openvpn$ sudo mv Belhadj.ovpn Belhadj.conf
survivor@Tkheletet:/etc/openvpn$ ping 10.151.32.1
PING 10.151.32.1 (10.151.32.1) 56(84) bytes of data.
64 bytes from 10.151.32.1: icmp_seq=1 ttl=64 time=15.6 ms
64 bytes from 10.151.32.1: icmp_seq=2 ttl=64 time=15.9 ms
64 bytes from 10.151.32.1: icmp_seq=3 ttl=64 time=15.7 ms
64 bytes from 10.151.32.1: icmp_seq=4 ttl=64 time=16.4 ms
64 bytes from 10.151.32.1: icmp_seq=5 ttl=64 time=16.9 ms
64 bytes from 10.151.32.1: icmp_seq=6 ttl=64 time=15.8 ms
^C
--- 10.151.32.1 ping statistics ---
6 packets transmitted, 6 received, 0% packet loss, time 5006ms
rtt min/avg/max/mdev = 15.601/16.088/16.919/0.467 ms
survivor@Tkheletet:/etc/openvpn$
```

B- Installation de Docker sur tous le serveur:

```
survivor@Tkheletet:~$ curl https://releases.rancher.com/install-docker/19.03.sh | sh
  % Total    % Received % Xferd  Average Speed   Time     Time      Current
                                             Dload  Upload Total   Spent    Left  Speed
100 17251  100 17251    0     0  84980      0 --:--:-- --:--:-- --:--:--  84980
+ sudo -E sh -c apt-get update
Hit:1 http://download.virtualbox.org/virtualbox/debian bionic InRelease
Hit:2 http://ppa.launchpad.net/bluetooth/bluez/ubuntu bionic InRelease
survivor@Tkheletet:~$
```

B-3 Attribution des droits d'exécution sur le fichier

```
survivor@Tkheletet:~$ sudo chmod 600 key.pem
survivor@Tkheletet:~$ ls -l
total 108
-rw-rw-r-- 1 survivor survivor 12752 Nov  9 11:08 Belayali.ovpn
-rwxr-xr-x 1 root     root      227 Jul  1 11:24 clearcache.sh
drwxr-xr-x 2 survivor survivor  4096 Oct 30 01:09 Desktop
drwxr-xr-x 2 survivor survivor  4096 Oct 18 20:09 Documents
drwxr-xr-x 7 survivor survivor 20480 Nov  9 10:34 Downloads
-rw-r--r-- 1 survivor survivor  8980 Mar 15 2017 examples.desktop
drwxr-xr-x 3 survivor survivor  4096 Nov  8 21:49 fromroo
-rw----- 1 root     root     1675 Nov  9 11:54 key.pem
```

C- Installation de Rancher

C-1 connexion en ssh sur les machines

```

survivor@Tkheletet:~$ sudo ssh -i key.pem root@10.152.165.77
The authenticity of host '10.152.165.77 (10.152.165.77)' can't be established.
ECDSA key fingerprint is SHA256:XUS9K6pG9FHOrFgoIzCnjHS+JPNqDbLooD18C/6eBVU.
Are you sure you want to continue connecting (yes/no)? yes
Warning: Permanently added '10.152.165.77' (ECDSA) to the list of known hosts.
Last login: Sun Sep 20 12:14:14 2020 from ip-10-69-9-1.eu-west-3.compute.internal
[root@ip-10-152-165-77 ~]# root@ip-10-152-165-73:~
```

File Edit View Search Terminal Tabs Help

```

survivor@Tkheletet:~$ sudo ssh -i key.pem root@10.152.165.73
[sudo] password for survivor:
The authenticity of host '10.152.165.73 (10.152.165.73)' can't be established.
ECDSA key fingerprint is SHA256:XUS9K6pG9FHOrFgoIzCnjHS+JPNqDbLooD18C/6eBVU.
Are you sure you want to continue connecting (yes/no)? yes
Warning: Permanently added '10.152.165.73' (ECDSA) to the list of known hosts.
Last login: Sun Sep 20 12:14:14 2020 from ip-10-69-9-1.eu-west-3.compute.internal
[root@ip-10-152-165-73 ~]# curl https://releases.rancher.com/install-docker/19.03.sh
| sh
% Total    % Received % Xferd  Average Speed   Time     Time      Time  Current
          Dload  Upload   Total  Spent   Left  Speed
100 17251  100 17251    0      0  68112      0 ---:-- --:--:-- 67917
+ sh -c 'yum install -y -q yum-utils iptables'
Package yum-utils-1.1.31-54.el7_8.noarch already installed and latest version
Package iptables-1.4.21-34.el7.x86_64 already installed and latest version
```

```

survivor@Tkheletet:~$ sudo ssh -i key.pem root@10.152.165.75
[sudo] password for survivor:
The authenticity of host '10.152.165.75 (10.152.165.75)' can't be established.
ECDSA key fingerprint is SHA256:XUS9K6pG9FHOrFgoIzCnjHS+JPNqDbLooD18C/6eBVU.
Are you sure you want to continue connecting (yes/no)? yes
Warning: Permanently added '10.152.165.75' (ECDSA) to the list of known hosts.
Last login: Sun Sep 20 12:14:14 2020 from ip-10-69-9-1.eu-west-3.compute.internal
[root@ip-10-152-165-75 ~]# curl https://releases.rancher.com/install-docker/19.03.sh
| sh
% Total    % Received % Xferd  Average Speed   Time     Time      Time  Current
          Dload  Upload   Total  Spent   Left  Speed
100 17251  100 17251    0      0  117k      0 ---:-- --:--:-- 117k
+ sh -c 'yum install -y -q yum-utils iptables'
```

## C-2 Lancement de rancher

```

[root@ip-10-152-165-77 ~]# sudo docker run -d --privileged --restart=unless-stopped --net=host -v /etc/kubernetes:/etc/kubernetes -v /var/run:/var/run rancher/rancher-agent:v2.4.8 --server https://10.152.165.73 --token 6wglpw6kwm4mghtgx7gcch6mq7gftpq7srjwvd6sqh5qh86qf8xhk --ca-checksum d6cf66d064bafbdade5df1e5a6521f660b171260bb1df0b1438e8305ce6f3626 --etcd --controlplane --worker
3dc44aa6eee28765e53210b2aa449ef92618fc1640ee858b38e6ed07f3e36b6f
[root@ip-10-152-165-77 ~]#
```

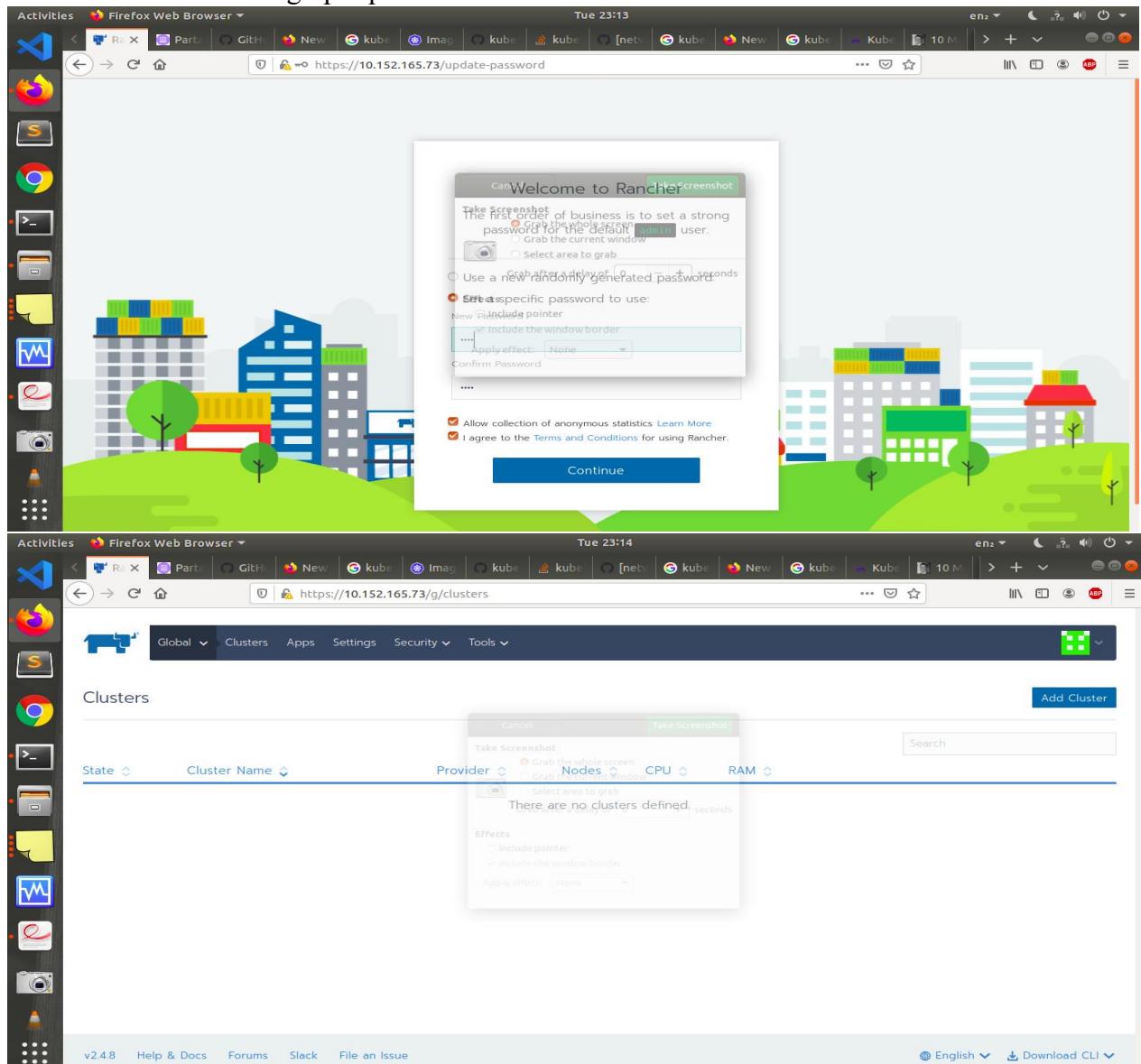
```

[root@ip-10-152-165-75 ~]# sudo docker run -d --privileged --restart=unless-stopped --net=host -v /etc/kubernetes:/etc/kubernetes -v /var/run:/var/run rancher/rancher-agent:v2.4.8 --server https://10.152.165.73 --token 6wglpw6kwm4mghtgx7gcch6mq7gftpq7srjwvd6sqh5qh86qf8xhk --ca-checksum d6cf66d064bafbdade5df1e5a6521f660b171260bb1df0b1438e8305ce6f3626 --etcd --controlplane --worker
fac569f72144d0134ee9ffd5767277d8eb0c4524f33368ebcb9eb9ff0fd93b46
[root@ip-10-152-165-75 ~]#
```

```

[root@ip-10-152-165-73 ~]# sudo docker run -d --privileged --restart=unless-stopped --net=host -v /etc/kubernetes:/etc/kubernetes -v /var/run:/var/run rancher/rancher-agent:v2.4.8 --server https://10.152.165.73 --token 6wglpw6kwm4mghtgx7gcch6mq7gftpq7srjwvd6sqh5qh86qf8xhk --ca-checksum d6cf66d064bafbdade5df1e5a6521f660b171260bb1df0b1438e8305ce6f3626 --etcd --controlplane --worker
e7017a681c9a0f460b17476ac84db097a7fb38523bebb7a0e89360efa02badb
[root@ip-10-152-165-73 ~]#
```

## Connexion à l'interface graphique :



## Rancher Server URL

What URL should be used for this Rancher installation? All the nodes in your clusters will need to be able to reach this.

### URL

<https://10.152.165.73>



Are you sure all the hosts you will create will be able to reach [10.152.165.73](https://10.152.165.73)?  
It looks like a private IP or local network.

[Save URL](#)

## D-1 Installation du cluster Kubernetes:

D- 1 Check l'installation de docker: docker -v, docker inspect name\_de\_rancher

```
[root@ip-10-152-165-73 ~]# docker ps
CONTAINER ID        IMAGE               COMMAND             CREATED            STATUS              PORTS
 NAMES
3b2dc2e35310      rancher/rancher:v2.4.8   "entrypoint.sh"    43 seconds ago   Up
tcp/beautiful_jackson
[root@ip-10-152-165-73 ~]# docker -v
Docker version 19.03.13, build 4484c46d9d
[root@ip-10-152-165-73 ~]# echo $?
0
[root@ip-10-152-165-73 ~]# docker ps
CONTAINER ID        IMAGE               COMMAND             CREATED            STATUS              PORTS
 NAMES
3b2dc2e35310      rancher/rancher:v2.4.8   "entrypoint.sh"    13 minutes ago   Up
tcp/beautiful_jackson
[root@ip-10-152-165-73 ~]# docker container inspect <container-name> || docker run...
-bash: syntax error near unexpected token `|'
[root@ip-10-152-165-73 ~]# docker container inspect beautiful_jackson || docker run...
[
  {
    "Id": "3b2dc2e35310bfa676d2a0873719f15737dad292931a578ad034efc26b099a12",
    "Created": "2020-11-09T11:24:58.559019958Z",
    "Path": "entrypoint.sh",
    "Args": [],
    "State": {
      "Status": "running",
      "Running": true
    }
  }
]
```

C-2 Ajout d'un cluster

Add Cluster - Custom

Cluster Name \*

cluster-wbe

1 Node Options

Choose what roles the node will have in the cluster

Node Role

etcd     Control Plane     Worker

Show advanced options

2 Run this command on one or more existing machines already running a supported version of Docker.

```
sudo docker run -d --privileged --restart=unless-stopped --net=host -v /etc/kubernetes:/etc/kubernetes -v /var/run:/var/run rancher/rancher-agent:v2.4.8 --server https://10.152.165.73 --token bvk6zjr48vpf9pckqdc89cstg9b7jpdppqt8jbc2rwhjlmwkhz6rct --ca-checksum 869b7abe2b43926fe27077e0214d0288c94aaa09ab3315065691ac3c6e73ae64 --etcd --controlplane --worker
```

Done

```
[root@ip-10-152-165-77 ~]# sudo docker run -d --privileged --restart=unless-stopped --net=host -v /etc/kubernetes:/etc/kubernetes -v /var/run:/var/run rancher/rancher-agent:v2.4.8 --server https://10.152.165.73 --token bvk6zjr48vpf9pckqdc89cstg9b7jpdppqt8jbc2rwhjlmwkhz6rct --ca-checksum 869b7abe2b43926fe27077e0214d0288c94aaa09ab3315065691ac3c6e73ae64 --etcd --controlplane --worker
5eb34964939952d89b350ee34f621a514b336094a513fa6a7062d5ba802bd42f
[root@ip-10-152-165-77 ~]#
[root@ip-10-152-165-75 ~]# sudo docker run -d --privileged --restart=unless-stopped --net=host -v /etc/kubernetes:/etc/kubernetes -v /var/run:/var/run rancher/rancher-agent:v2.4.8 --server https://10.152.165.73 --token bvk6zjr48vpf9pckqdc89cstg9b7jpdppqt8jbc2rwhjlmwkhz6rct --ca-checksum 869b7abe2b43926fe27077e0214d0288c94aaa09ab3315065691ac3c6e73ae64 --etcd --controlplane --worker
856391262bdd0a2693d06ae69c802b8aafc55cedc4241ab07e126ee0e9a0181f
[root@ip-10-152-165-75 ~]#
```

```
[root@ip-10-152-165-73 ~]# sudo docker run -d --privileged --restart=unless-stopped --net=host -v /etc/kubernetes:/etc/kubernetes -v /var/run/rancher/rancher-agent:v2.4.8 --server https://10.152.165.73 --token bvk6zjr48vpf9pcqdc89cstg9b7jpdppqt8jbc2rwhjlmwkhz6rct --ca-checksum 869b7abe2b43926fe27077e0214d0288c94aaa09ab3315065691ac3c6e73ae64 --etcd --controlplane --worker
2d40939ac69cfcb187ec8723f022653048997283165324cbf2f42796737f4338
[root@ip-10-152-165-73 ~]#
```

Q1a. Que ce passe t'il ? patientez 5 minutes ...

Le processus de création de cluster avec nécessite le lancement du rancher avec les droits nécessaires (--privileged) sur notre serveur 10.152.165.73 avec les attributions des ressources nécessaires (CPU- Storage...) aux nodes créés dans ce cluster dans les fichiers.

....

Résultat de docker ps:

CONTAINER ID	IMAGE	COMMAND	CREATED	STATUS	PORTS
c7100d99ed68	rancher/pause:3.1	"/pause"	2 seconds ago	Up 1 second	
k8s_POD_kube-api-auth-ckwfz_cattle-system_c4e134dd-8d76-4ae6-a9c-d6a461995c_0	rancher/pause:3.1	"/pause"	2 seconds ago	Up 1 second	
baf4568234fb4	rancher/pause:3.1	"/pause"	2 seconds ago	Up 1 second	
860718b655f4	rancher/coreos-flannel	/opt/bin/flanneld ...	34 seconds ago	Up 33 seconds	
fecfc51df241f	rancher/calico-node	"start_runit"	38 seconds ago	Up 37 seconds	
860718b655f4	k8s_kube-flannel_canal-v5pns_kube-system_61a21aa0-30bf-4d25-93db-a2d7b7bfd9fe_0	"run.sh"	+59 seconds ago	Up 58 seconds	
a8217c2a1838	k8s_agent_cattle-node-agent-8f7t6_cattle-system_e5571169-ef56-4ab9-8987-b7c878629310_0	"/pause"	59 seconds ago	Up 58 seconds	
4ab1c9cd0659	rancher/pause:3.1	"/pause"	59 seconds ago	Up 58 seconds	
5c25a46e465b	rancher/hyperkube:v1.18.10-rancher1	/opt/rke-tools/entr...	59 seconds ago	Up 58 seconds	
6faaa18ba206	rancher/proxy	"run.sh"	59 seconds ago	Up 58 seconds	
12ffb9d13eb3	k8s_POD_canal-v5pns_kube-system_61a21aa0-30bf-4d25-93db-a2d7b7bfd9fe_0	"run.sh"	About a minute ago	Up About a minute	
2a51060ca44e	rancher/hyperkube:v1.18.10-rancher1	/opt/rke-tools/entr...	About a minute ago	Up About a minute	
436aecf2fdbb	rancher/hyperkube:v1.18.10-rancher1	/opt/rke-tools/entr...	About a minute ago	Up About a minute	
ae224f2b90b0	rancher/hyperkube:v1.18.10-rancher1	/opt/rke-tools/entr...	About a minute ago	Up About a minute	
2709454baabe	rancher/coreos-etcd:v3.4.3-rancher1	/usr/local/bin/etcd...	About a minute ago	Up About a minute	
3b2dc2e35310	rancher/rancher:v2.4.8	"entrypoint.sh"	31 minutes ago	Up 31 minutes	0.0.0.0:80->80/tcp
[root@ip-10-152-165-73 ~]#					
CONTAINER ID	IMAGE	COMMAND	CREATED	STATUS	PORTS
3f90c5d07651	rancher/hyperkube:v1.18.10-rancher1	/opt/rke-tools/entr...	29 minutes ago	Up 29 minutes	
f303310f78a3	rancher/coreos-etcd:v3.4.3-rancher1	/usr/local/bin/etcd...	26 minutes ago	Up 26 minutes	
1e5c95670881	6c3b998b4acf	"run.sh"	26 minutes ago	Up 26 minutes	
a0b997e35c72	rancher/metrics-server	"/metrics-server" "-k..."	26 minutes ago	Up 26 minutes	
3a1381ad3da3	rancher/nginx-ingress-controller-defaultbackend	"/server"	28 minutes ago	Up 28 minutes	
bf324fd21834	rancher/cluster-proportional-autoscaler	"/cluster-proportion..."	28 minutes ago	Up 28 minutes	
be2b1bac6c9d	rancher/coredns-coredns	"coredns -conf /etc..."	28 minutes ago	Up 28 minutes	
8574b5e2343d	rancher/coreos-flannel	/opt/bin/flanneld ...	28 minutes ago	Up 28 minutes	
c5af05ddad1f	k8s_kube-flannel_canal-d9tb2_kube-system_8c0d2ec6-1b12-4852-8212-044c32d46b38_0	"run.sh"	28 minutes ago	Up 28 minutes	
2db335e41521	k8s_POD_metrics-server-697746ff48-5c8hw_kube-system_957f197a-f7a4-449b-988f-61bf2a516794_8	"bin/sh -c 'kube-ap...'	28 minutes ago	Up 28 minutes	
aa3719715194	k8s_kube-api-auth_kube-api-auth-8sxgf_cattle-system_4e529d51-f00f-438f-b4bd-34b9cd774d6_0	"/pause"	28 minutes ago	Up 28 minutes	
e2142e73279e	k8s_POD_default-http-backend-598b7d7bdb-t7g89_ingress-nginx_f7a8e5b7-71b5-4b97-a1c2-cf0808df6faa_6	"start_runit"	28 minutes ago	Up 28 minutes	
885f42ec4239	k8s_calico-node_canal-d9tb2_kube-system_8c0d2ec6-1b12-4852-8212-044c32d46b38_0	"run.sh"	28 minutes ago	Up 28 minutes	
701a2e4a1c2c	k8s_POD_pause:3.1	"run.sh"	28 minutes ago	Up 28 minutes	
c3e0768f90bb	rancher/rancher-agent:v2.4.8	"run.sh"	28 minutes ago	Up 28 minutes	
0ac23771fe3d	rancher/nginx-ingress-controller	/usr/bin/dumb-init ...	28 minutes ago	Up 28 minutes	
	k8s_nginx-ingress-controller_nginx-ingress-controller-cfwfd6_nginx-ingress-nginx_f17e5b33-8cd3-4c6e-b190-d95cfa026e89_0	"run.sh --server htt..."	28 minutes ago	Up 28 minutes	

```

root@ip-10-152-165-73:~# Status: Downloaded newer image for rancher/rancher-agent:v2.4.8
a0e4677f56f5f4820743e5d7d77386e9804ce54666f5aa6737fa8105aa6bc0_0
[root@ip-10-152-165-77 ~]# docker ps
CONTAINER ID        IMAGE               COMMAND             CREATED            STATUS              PORTS
5b8e8c66e621        rancher/nginx-ingress-controller   "/usr/bin/dumb-init ..."   24 minutes ago     Up 24 minutes
k8s_nginx-ingress-controller_rancher_nginx-ingress-controller-wxdjs_nginx_nginx_8db02339-2235-4143-907a-8001bc51eac0_0
47ddac43523         rancher/kube-api-auth      "/bin/sh -c 'kube-ap..."   24 minutes ago     Up 24 minutes
k8s_kube-api-auth_kube-api-auth-fzdqt_cattle-system_a88c5c49-bc9c-4e36-bccb-6a787f1042a5_0
342cc0ce44cd        rancher/coreos-flannel    "/opt/bin/flanneld ..."   24 minutes ago     Up 24 minutes
k8s_kube-flannel_canal-vklgb_kube-system_0555cd95-dee2-4d58-9e33-38e64c1b1380_0
1165e29ca617        rancher/pause:3.1       "/pause"           24 minutes ago     Up 24 minutes
k8s_POD_nginx-ingress-controller-wxdjs_nginx_nginx_8db02339-2235-4143-907a-8001bc51eac0_0
afa7552b2fe0        rancher/pause:3.1       "/pause"           24 minutes ago     Up 24 minutes
k8s_POD_kube-api-auth-fzdqt_cattle-system_a88c5c49-bc9c-4e36-bccb-6a787f1042a5_0
9f238c80af87        rancher/calico-node    "start_runit"[*]   + 24 minutes ago     Up 24 minutes
k8s_calico-node_canal-vklgb_kube-system_0555cd95-dee2-4d58-9e33-38e64c1b1380_0
f12a16bb561a        rancher/hyperkube:v1.18.10-rancher1 "/opt/rke-tools/entr..."  25 minutes ago     Up 25 minutes
kube-proxy          rancher/pause:3.1       "/pause"           25 minutes ago     Up 25 minutes
k8s_POD_canal-vklgb_kube-system_0555cd95-dee2-4d58-9e33-38e64c1b1380_0
52e1e775a7d2        rancher/pause:3.1       "/pause"           25 minutes ago     Up 25 minutes
k8s_agent_cattle-node-agent-g76vt_cattle-system_b0a88f66-428f-4367-9de8-16d0214d2538_0
65ca873348d6        rancher/pause:3.1       "/pause"           25 minutes ago     Up 25 minutes
k8s_POD_cattle-node-agent-g76vt_cattle-system_b0a88f66-428f-4367-9de8-16d0214d2538_0
b1f84d0e3802        rancher/hyperkube:v1.18.10-rancher1 "/opt/rke-tools/entr..."  25 minutes ago     Up 25 minutes
kubelet              rancher/hyperkube:v1.18.10-rancher1 "/opt/rke-tools/entr..."  25 minutes ago     Up 25 minutes
kube-scheduler       rancher/hyperkube:v1.18.10-rancher1 "/opt/rke-tools/entr..."  25 minutes ago     Up 25 minutes
7dd66835bafe        rancher/hyperkube:v1.18.10-rancher1 "/opt/rke-tools/entr..."  25 minutes ago     Up 25 minutes
kube-controller-manager
24b1e31a09e1        rancher/hyperkube:v1.18.10-rancher1 "/opt/rke-tools/entr..."  25 minutes ago     Up 25 minutes
kube-apiserver       rancher/hyperkube:v1.18.10-rancher1 "/opt/rke-tools/entr..."  25 minutes ago     Up 25 minutes
etcfd               rancher/coreos-etcd:v3.4.3-rancher1 "/usr/local/bin/etc..."  27 minutes ago     Up 27 minutes
[root@ip-10-152-165-77 ~]#

```

**Q-1-b- Que se passe cote interface rancher** Le processus de création des nœuds nécessite un bon temps afin de configurer les fichiers de chaque nœud avec les CPU Storage Network attribues à chaque nœud de cluster 73, 75 et 77 .

**Q-1-c- Etat du cluster :** Active après un bon moment d'attention (processing).

Provider	Nodes	CPU	RAM
Custom v1.18.12	3	1/6 Cores 16%	0.2/10.7 GiB 2%

### Nodes

Cordon	Drain	Delete
State	Name	
Active	ip-10-152-165-73 10.152.165.73	
Active	ip-10-152-165-75 10.152.165.75	
Active	ip-10-152-165-77 10.152.165.77	

Y'a de containers qui tournent dans le cluster cluster-wbe machine 73 : 14 containers , 75; 17 containers, 77 : 15 containers.  
(La commande `docker ps` en haut)

**Installation de l'outil de ligne de commande Kubectl**

```

[root@ip-10-152-165-73 ~]# curl -LO "https://storage.googleapis.com/kubernetes-release/release/$(curl -s https://storage.googleapis.com/kubernetes-release/release/stable.txt)/bin/linux/amd64/kubectl"
  % Total    % Received % Xferd  Average Speed   Time      Time      Time  Current
                                         Dload  Upload   Total  Spent   Left  Speed
100 41.0M  100 41.0M    0     0  28.5M      0  0:00:01  0:00:01  --:--:-- 28.5M
[root@ip-10-152-165-73 ~]# █
[root@ip-10-152-165-75 ~]# curl -LO "https://storage.googleapis.com/kubernetes-release/release/$(curl -s https://storage.googleapis.com/kubernetes-release/release/stable.txt)/bin/linux/amd64/kubectl"
  % Total    % Received % Xferd  Average Speed   Time      Time      Time  Current
                                         Dload  Upload   Total  Spent   Left  Speed
100 41.0M  100 41.0M    0     0  16.6M      0  0:00:02  0:00:02  --:--:-- 16.6M
[root@ip-10-152-165-75 ~]# █

[root@ip-10-152-165-77 ~]# curl -LO "https://storage.googleapis.com/kubernetes-release/release/$(curl -s https://storage.googleapis.com/kubernetes-release/release/stable.txt)/bin/linux/amd64/kubectl"
  % Total    % Received % Xferd  Average Speed   Time      Time      Time  Current
                                         Dload  Upload   Total  Spent   Left  Speed
100 41.0M  100 41.0M    0     0  6559k      0  0:00:06  0:00:06  --:--:-- 9301k
[root@ip-10-152-165-77 ~]# █

```

Droits d'exécution :

```
[root@ip-10-152-165-73 ~]# chmod +x kubectl
[root@ip-10-152-165-73 ~]# █
```

Changement d'emplacement et ouverture de fichier config pour la modification

```
[root@ip-10-152-165-77 ~]# ls
anaconda-ks.cfg  kubectl  original-ks.cfg
[root@ip-10-152-165-77 ~]# chmod +x kubectl
[root@ip-10-152-165-77 ~]# mv ./kubectl /usr/local/bin/kubectl
mv: overwrite '/usr/local/bin/kubectl'? yes
[root@ip-10-152-165-77 ~]# mkdir -p ~/.kube/
[root@ip-10-152-165-77 ~]# vim ~/.kube/config
[root@ip-10-152-165-77 ~]# vim ~/.kube/config
```

Contenu	du	fichier	config
	root@ip-10-152-165-73:~	x	root@ip-10-152-165-75:~
<pre>apiVersion: v1 kind: Config clusters: - name: "cluster-wbe"   cluster:     server: "https://10.152.165.73/k8s/clusters/c-2d9kx"     certificate-authority-data: "LS0tLS1CRUDJTibDRVJUSUZJQ0FURS0tLS0tCk1JSUJoekNDQ\VM2Z0F3SUJBZ0lCQURBS0JnZ3Foa2pPUFFRREFqQTdNUnd3R2dZRFZRUUtFeE5rZVc1aGJXbGoKY\kdseRHVNvaWEloYjNkbk1Sc3dHUVlEVlFRREV4SmtlVzVoYldsamJhbHpkR1Z1WhJdFkyRXdIa\GNOTWpBeApNVEE1TVRFeU5USTJxaGNOTXpBeE1U0TNNVEV5TlRJMldqQTdNUnd3R2dZRFZRUUtFe\ESrZVc1aGJXbGpiR2x6CmRHVNvaWEloYjNkbk1Sc3dHUVlEVlFRREV4SmtlVzVoYldsamJhbHpkR1Z1WhJdFkyRXdXVEFUQmdjcwkrak8KUFFJQkJnZ3Foa2pPUFFNQkJ3TkNBQVNrTGFJaVFTaTlTa\DJuZURKcEtWWUFMaFg3YUs1aUxvdDJwN1BabklmWgpBUXVicjVzdU1wQmYwbjZtTnArNkpJdllielTFzTmVpc3Iyek13RmtzcVZMY295TXdJVEFPQmdOVkhROEJBZhFCKjBTUNbcVF3RHdZRFZSMFRBU\UgvQkFVd0F3RUIvekFLQmdncWhrak9QUVFEQwdOSEFEQkVbaUEzSVlJcytVQm8KVXYranRJaRtY\lduRmhwl2U1My9CK25KZmxucERKSULvUUlWS9ZcnhqOE9FV2R0NTA5bXg2TVFsdjhmmMTdCcgpRS\0Z2TkhYN0s4N2tpVG9Ci0tLS0tRU5EIEFULRjRk1DQVRFLS0tLS0="</pre>			
- name: "cluster-wbe-ip-10-152-165-73"   cluster:     server: "https://10.152.165.73:6443"			

```

root@ip-10-152-165-73:~ root@ip-10-152-165-75:~ root@ip-10-152-165-77:~ survivor@Tkhelet: ~
File Edit View Search Terminal Tabs Help
- name: "cluster-wbe-ip-10-152-165-73"
  cluster:
    server: "https://10.152.165.73:6443"
certificate-authority-data: "LS0tLS1CRUdJTiBDRVJUSUZJQ0FURS0tLS0tCk1JSUN3akNDQ\WFxZ0F3SUJBZ0lCQURBTkJna3Foa2lHOXcwQkFRc0ZBREFTTVJBd0RnWURWUVFERXdKcmRXSmwKT\FdoaE1CNfHxEVE13TVRFd09URxh0VEF3TkzvWERUTxDNVEV3TnpFeE5UQxd0Rm93RwpfUU1BNEdBM\VVFQXhNSAphM1ZpwlMxalluQ0NBu0l3RFFZSktrWklodmNOQVFQkJRQRnZ0VQQURDQ0FRb0NnZ\0VCQUpOVHg3d3zNw93CndES3FVRmdRaljxWhh1Mu9iZmRpTjZ2dGpKaEhFSzJLWG5mK2QwcDZRU\DC2Ritpa0xGd0d3RFNnM1Nwcyt5QXIKckR6N1AzVe0xVe16REJxYXJPSFdLQTb4amIyc2x6U1ArV\DQ2NHlsK25IdWs4TFMzb9i5VZEaGVZ3A4TghTywpsK2s1MXdoKzdMTJvak9xK0ZwQvpLdw1iM\2tlejFWVnZGUGNOUULjs09ybW1wbFDZExtnp0aeI5VktzNW9JcjkTyxlZTlzVzBCWW4weTz6R\DzomeJQQXulZ0l3dg82y0tjTDh3cGxu0xd0Mjk3UXLw0kvchhYzRxm0vieVIKwmErU3JSSXYrT\3ltdxLTbTBSTmk4c2JucG83eDlzQzJVQzRTYwvzSuqrnu41Mw1rZFZ3RW9Tzk1isuhSalR4Sqpob\HZedwt0ZuxFY0Nb0dVBQWFNa1DRxdEZ1leVliwuefrsc9CQVFEQwdla01BOEdBMVvkrxdFQi93U\UZNQU1CCkFm0HdEUvlks29aSwH2Y05BUUVMQlFBRGdnRujBQXnlbdJTRVVZwsVShYrMlJaR3hzC\095cVNoSEpsQXY1cXYKNGNET3BweHNxeXhrUelsdTbKumh1TvKzmg10b01BQZTzPzF5K1U5Vjlgv\Hd1RjFBT1ZubTBBQStURfhTSkrZUwpKUFh4ejBu2lNSC9sNhh0a0j5a2ZzsnlOK1Ngrw5dszhze\DNnoENHTENZQnhDR3ZLZnd5aE5LYUswblpTY2RTCKRzchNxadREYVaRnljRVXFONlh0aDU1bwVnc\mhnL3yzL0l6Vvc0enFSYutrmjNEVXJaVUQ0NmZ6U1g1WVNUTXYKTndxWHNPQnZpUDM4c1lJdvhSb\Xg3enA50Vdzu8yMkd2Q0E4a0Nqa3V1Tla40u9PQJkQWN5QnpBylFlbEnhRwpCnkyrNm9JWDRza\zJGREJ2VS8yeDlwcu9KNjF3WvgvNTRubnB00DLMNLf6cHRVY0ltWvu9ci0tLS0tRUEIEFNfUJRJ\kldQvrfls0tLS0k"
- name: "cluster-wbe-ip-10-152-165-77"
  cluster:
    server: "https://10.152.165.77:6443"
certificate-authority-data: "LS0tLS1CRUdJTiBDRVJUSUZJQ0FURS0tLS0tCk1JSUN3akNDQ\WFxZ0F3SUJBZ0lCQURBTkJna3Foa2lHOXcwQkFRc0ZBREFTTVJBd0RnWURWUVFERXdKcmRXSmwKT\FdoaE1CNfHxEVE13TVRFd09URxh0VEF3TkzvWERUTxDNVEV3TnpFeE5UQxd0Rm93RwpfUU1BNEdBM\VVFQXhNSAphM1ZpwlMxalluQ0NBu0l3RFFZSktrWklodmNOQVFQkJRQRnZ0VQQURDQ0FRb0NnZ\0VCQUpOVHg3d3zNw93CndES3FVRmdRaljxWhh1Mu9iZmRpTjZ2dGpKaEhFSzJLWG5mK2QwcDZRU\DC2Ritpa0xGd0d3RFNnM1Nwcyt5QXIKckR6N1AzVe0xVe16REJxYXJPSFdLQTb4amIyc2x6U1ArV\DQ2NHlsK25IdWs4TFMzb9i5VZEaGVZ3A4TghTywpsK2s1MXdoKzdMTJvak9xK0ZwQvpLdw1iM\2tlejFWVnZGUGNOUULjs09ybW1wbFDZExtnp0aeI5VktzNW9JcjkTyxlZTlzVzBCWW4weTz6R\DzomeJQQXulZ0l3dg82y0tjTDh3cGxu0xd0Mjk3UXLw0kvchhYzRxm0vieVIKwmErU3JSSXYrT\3ltdxLTbTBSTmk4c2JucG83eDlzQzJVQzRTYwvzSuqrnu41Mw1rZFZ3RW9Tzk1isuhSalR4Sqpob\HZedwt0ZuxFY0Nb0dVBQWFNa1DRxdEZ1leVliwuefrsc9CQVFEQwdla01BOEdBMVvkrxdFQi93U\UZNQU1CCkFm0HdEUvlks29aSwH2Y05BUUVMQlFBRGdnRujBQXnlbdJTRVVZwsVShYrMlJaR3hzC\095cVNoSEpsQXY1cXYKNGNET3BweHNxeXhrUelsdTbKumh1TvKzmg10b01BQZTzPzF5K1U5Vjlgv\Hd1RjFBT1ZubTBBQStURfhTSkrZUwpKUFh4ejBu2lNSC9sNhh0a0j5a2ZzsnlOK1Ngrw5dszhze\DNnoENHTENZQnhDR3ZLZnd5aE5LYUswblpTY2RTCKRzchNxadREYVaRnljRVXFONlh0aDU1bwVnc\mhnL3yzL0l6Vvc0enFSYutrmjNEVXJaVUQ0NmZ6U1g1WVNUTXYKTndxWHNPQnZpUDM4c1lJdvhSb\Xg3enA50Vdzu8yMkd2Q0E4a0Nqa3V1Tla40u9PQJkQWN5QnpBylFlbEnhRwpCnkyrNm9JWDRza\zJGREJ2VS8yeDlwcu9KNjF3WvgvNTRubnB00DLMNLf6cHRVY0ltWvu9ci0tLS0tRUEIEFNfUJRJ\kldQvrfls0tLS0k"
- name: "cluster-wbe-ip-10-152-165-77"
  cluster:
    server: "https://10.152.165.77:6443"
certificate-authority-data: "LS0tLS1CRUdJTiBDRVJUSUZJQ0FURS0tLS0tCk1JSUN3akNDQ\WFxZ0F3SUJBZ0lCQURBTkJna3Foa2lHOXcwQkFRc0ZBREFTTVJBd0RnWURWUVFERXdKcmRXSmwKT\FdoaE1CNfHxEVE13TVRFd09URxh0VEF3TkzvWERUTxDNVEV3TnpFeE5UQxd0Rm93RwpfUU1BNEdBM\VVFQXhNSAphM1ZpwlMxalluQ0NBu0l3RFFZSktrWklodmNOQVFQkJRQRnZ0VQQURDQ0FRb0NnZ\0VCQUpOVHg3d3zNw93CndES3FVRmdRaljxWhh1Mu9iZmRpTjZ2dGpKaEhFSzJLWG5mK2QwcDZRU\DC2Ritpa0xGd0d3RFNnM1Nwcyt5QXIKckR6N1AzVe0xVe16REJxYXJPSFdLQTb4amIyc2x6U1ArV\DQ2NHlsK25IdWs4TFMzb9i5VZEaGVZ3A4TghTywpsK2s1MXdoKzdMTJvak9xK0ZwQvpLdw1iM\2tlejFWVnZGUGNOUULjs09ybW1wbFDZExtnp0aeI5VktzNW9JcjkTyxlZTlzVzBCWW4weTz6R\DzomeJQQXulZ0l3dg82y0tjTDh3cGxu0xd0Mjk3UXLw0kvchhYzRxm0vieVIKwmErU3JSSXYrT\3ltdxLTbTBSTmk4c2JucG83eDlzQzJVQzRTYwvzSuqrnu41Mw1rZFZ3RW9Tzk1isuhSalR4Sqpob\HZedwt0ZuxFY0Nb0dVBQWFNa1DRxdEZ1leVliwuefrsc9CQVFEQwdla01BOEdBMVvkrxdFQi93U\UZNQU1CCkFm0HdEUvlks29aSwH2Y05BUUVMQlFBRGdnRujBQXnlbdJTRVVZwsVShYrMlJaR3hzC\095cVNoSEpsQXY1cXYKNGNET3BweHNxeXhrUelsdTbKumh1TvKzmg10b01BQZTzPzF5K1U5Vjlgv\Hd1RjFBT1ZubTBBQStURfhTSkrZUwpKUFh4ejBu2lNSC9sNhh0a0j5a2ZzsnlOK1Ngrw5dszhze\DNnoENHTENZQnhDR3ZLZnd5aE5LYUswblpTY2RTCKRzchNxadREYVaRnljRVXFONlh0aDU1bwVnc\mhnL3yzL0l6Vvc0enFSYutrmjNEVXJaVUQ0NmZ6U1g1WVNUTXYKTndxWHNPQnZpUDM4c1lJdvhSb\Xg3enA50Vdzu8yMkd2Q0E4a0Nqa3V1Tla40u9PQJkQWN5QnpBylFlbEnhRwpCnkyrNm9JWDRza\zJGREJ2VS8yeDlwcu9KNjF3WvgvNTRubnB00DLMNLf6cHRVY0ltWvu9ci0tLS0tRUEIEFNfUJRJ\kldQvrfls0tLS0k"
- name: "cluster-wbe-ip-10-152-165-77"
  cluster:
    server: "https://10.152.165.77:6443"
certificate-authority-data: "LS0tLS1CRUdJTiBDRVJUSUZJQ0FURS0tLS0tCk1JSUN3akNDQ\WFxZ0F3SUJBZ0lCQURBTkJna3Foa2lHOXcwQkFRc0ZBREFTTVJBd0RnWURWUVFERXdKcmRXSmwKT\FdoaE1CNfHxEVE13TVRFd09URxh0VEF3TkzvWERUTxDNVEV3TnpFeE5UQxd0Rm93RwpfUU1BNEdBM\VVFQXhNSAphM1ZpwlMxalluQ0NBu0l3RFFZSktrWklodmNOQVFQkJRQRnZ0VQQURDQ0FRb0NnZ\0VCQUpOVHg3d3zNw93CndES3FVRmdRaljxWhh1Mu9iZmRpTjZ2dGpKaEhFSzJLWG5mK2QwcDZRU\DC2Ritpa0xGd0d3RFNnM1Nwcyt5QXIKckR6N1AzVe0xVe16REJxYXJPSFdLQTb4amIyc2x6U1ArV\DQ2NHlsK25IdWs4TFMzb9i5VZEaGVZ3A4TghTywpsK2s1MXdoKzdMTJvak9xK0ZwQvpLdw1iM\2tlejFWVnZGUGNOUULjs09ybW1wbFDZExtnp0aeI5VktzNW9JcjkTyxlZTlzVzBCWW4weTz6R\DzomeJQQXulZ0l3dg82y0tjTDh3cGxu0xd0Mjk3UXLw0kvchhYzRxm0vieVIKwmErU3JSSXYrT\3ltdxLTbTBSTmk4c2JucG83eDlzQzJVQzRTYwvzSuqrnu41Mw1rZFZ3RW9Tzk1isuhSalR4Sqpob\HZedwt0ZuxFY0Nb0dVBQWFNa1DRxdEZ1leVliwuefrsc9CQVFEQwdla01BOEdBMVvkrxdFQi93U\UZNQU1CCkFm0HdEUvlks29aSwH2Y05BUUVMQlFBRGdnRujBQXnlbdJTRVVZwsVShYrMlJaR3hzC\095cVNoSEpsQXY1cXYKNGNET3BweHNxeXhrUelsdTbKumh1TvKzmg10b01BQZTzPzF5K1U5Vjlgv\Hd1RjFBT1ZubTBBQStURfhTSkrZUwpKUFh4ejBu2lNSC9sNhh0a0j5a2ZzsnlOK1Ngrw5dszhze\DNnoENHTENZQnhDR3ZLZnd5aE5LYUswblpTY2RTCKRzchNxadREYVaRnljRVXFONlh0aDU1bwVnc\mhnL3yzL0l6Vvc0enFSYutrmjNEVXJaVUQ0NmZ6U1g1WVNUTXYKTndxWHNPQnZpUDM4c1lJdvhSb\Xg3enA50Vdzu8yMkd2Q0E4a0Nqa3V1Tla40u9PQJkQWN5QnpBylFlbEnhRwpCnkyrNm9JWDRza\zJGREJ2VS8yeDlwcu9KNjF3WvgvNTRubnB00DLMNLf6cHRVY0ltWvu9ci0tLS0tRUEIEFNfUJRJ\kldQvrfls0tLS0k"

```

```

root@ip-10-152-165-73:~ root@ip-10-152-165-75:~ root@ip-10-152-165-77:~ survivor@Tkeltet: ~
kldQVRFLS0tLSOK"

users:
- name: "cluster-wbe"
  user:
    token: "kubeconfig-user-pl7k8.c-2d9kx:5qjgxksphhltfkdr5ts8gxpfv6tlgwf46dszckl65x84tprx2gf8nm"

contexts:
- name: "cluster-wbe"
  context:
    user: "cluster-wbe"
    cluster: "cluster-wbe"
- name: "cluster-wbe-ip-10-152-165-73"
  context:
    user: "cluster-wbe"
    cluster: "cluster-wbe-ip-10-152-165-73"
- name: "cluster-wbe-ip-10-152-165-77"
  context:
    user: "cluster-wbe"
    cluster: "cluster-wbe-ip-10-152-165-77"
- name: "cluster-wbe-ip-10-152-165-75"
  context:

```

105,1 94%

**Tests des commandes :** vérifie que kubectl fonctionne correctement, si on voit un lien c'est le line qui nous permet d'accéder à notre cluster en ligne

```
[root@ip-10-152-165-75 ~]# kubectl cluster-info
Kubernetes master is running at https://10.152.165.73/k8s/clusters/c-nlbm7
CoreDNS is running at https://10.152.165.73/k8s/clusters/c-nlbm7/api/v1/namespaces/kube-system/services/kube-dns:dns/proxy
```

To further debug and diagnose cluster problems, use 'kubectl cluster-info dump'.

```
[root@ip-10-152-165-75 ~]# 
```

```
[root@ip-10-152-165-73 .kube]# kubectl cluster-info
Kubernetes master is running at https://10.152.165.73/k8s/clusters/c-nlbm7
CoreDNS is running at https://10.152.165.73/k8s/clusters/c-nlbm7/api/v1/namespaces/kube-system/services/kube-dns:dns/proxy
```

To further debug and diagnose cluster problems, use 'kubectl cluster-info dump'.

```
[root@ip-10-152-165-73 .kube]# 
```

```
[root@ip-10-152-165-77 ~]# vim ~/.kube/config
[root@ip-10-152-165-77 ~]# kubectl cluster-info
Kubernetes master is running at https://10.152.165.73/k8s/clusters/c-nlbm7
CoreDNS is running at https://10.152.165.73/k8s/clusters/c-nlbm7/api/v1/namespaces/kube-system/services/kube-dns:dns/proxy
```

To further debug and diagnose cluster problems, use 'kubectl cluster-info dump'.

```
[root@ip-10-152-165-77 ~]# 
```

```
[root@ip-10-152-165-73 .kube]# kubectl get nodes
NAME           STATUS   ROLES      AGE     VERSION
ip-10-152-165-73 Ready    controlplane,etcd,worker   148m   v1.18.12
ip-10-152-165-75 Ready    controlplane,etcd,worker   140m   v1.18.12
ip-10-152-165-77 Ready    controlplane,etcd,worker   141m   v1.18.12
[root@ip-10-152-165-73 .kube]# 
```

**La commande: kubectl get nodes :** Cette commande sert à lister les noeuds de notre cluster avec leurs noms (exp: ip-10-152-165-73), leurs status (**Ready** veut dire en état marche, le cas contraire **NotReady** )

Ready; **True** si le noeud est sain et prêt à accepter des pods, **False** si le noeud n'est pas sain et n'accepte pas de pods, et Unknown si le contrôleur de noeud n'a pas reçu d'information du noeud depuis node-monitor-grace-period (la valeur par défaut est de 40 secondes)

**Roles:** Soit **master** soit **worker**(ici dans notre cas ils sont tous workers ) après veut dire Les

composants de nœud (**Node components**) s'exécutent sur chaque nœud, en maintenant **les pods** en exécution et en fournissant l'environnement d'exécution **Kubernetes**.  
**Age** : depuis quand les nœuds ont été créés **140**, **141** et **148** minutes  
**Version:** la version de kubernetes ici c'est **v1.18.12**

```
[root@ip-10-152-165-73 ~]# kubectl get nodes
NAME           STATUS   ROLES      AGE     VERSION
ip-10-152-165-73   Ready    controlplane,etcd,worker   148m   v1.18.12
ip-10-152-165-75   Ready    controlplane,etcd,worker   140m   v1.18.12
ip-10-152-165-77   Ready    controlplane,etcd,worker   141m   v1.18.12
[root@ip-10-152-165-73 ~]#
```

La commande : **kubectl get pods --all-namespaces**

```
[root@ip-10-152-165-73 ~]# kubectl get pods --all-namespaces
NAMESPACE     NAME          READY   STATUS        RESTARTS   AGE
cattle-system cattle-cluster-agent-765fc4fcc4-685r2   1/1    Running      0          23m
cattle-system cattle-node-agent-4mjsg      1/1    Running      0          23m
cattle-system cattle-node-agent-pzhsq      1/1    Running      0          23m
cattle-system cattle-node-agent-tvnk6      1/1    Running      0          23m
cattle-system kube-api-auth-kfg2k      1/1    Running      0          23m
cattle-system kube-api-auth-wzhsg      1/1    Running      0          23m
cattle-system kube-api-auth-xfjbp      1/1    Running      0          23m
ingress-nginx default-http-backend-598b7d7dbd-6kpbg   1/1    Running      0          26m
ingress-nginx nginx-ingress-controller-74h7p      0/1    CrashLoopBackOff 9          26m
ingress-nginx nginx-ingress-controller-dfshr      1/1    Running      0          23m
ingress-nginx nginx-ingress-controller-stvwm      1/1    Running      0          23m
kube-system   canal-6hwpq      2/2    Running      0          26m
kube-system   canal-n24bv      2/2    Running      1          24m
kube-system   canal-qdllb      2/2    Running      0          24m
kube-system   coredns-849545576b-f7dff      1/1    Running      0          23m
kube-system   coredns-849545576b-p88vr      1/1    Running      0          26m
kube-system   coredns-autoscaler-5dc6d76cbd-bl685   1/1    Running      0          26m
kube-system   metrics-server-697746ff48-4qc5c      1/1    Running      0          26m
kube-system   rke-coredns-addon-deploy-job-9zwft    0/1    Completed    0          26m
kube-system   rke-ingress-controller-deploy-job-w7mp9  0/1    Completed    0          26m
kube-system   rke-metrics-addon-deploy-job-2br9w      0/1    Completed    0          26m
kube-system   rke-network-plugin-deploy-job-jf9bc    0/1    Completed    0          26m
[root@ip-10-152-165-73 ~]#
```

**kubectl get pods --all-namespaces** : répertorie toutes les images de conteneur pour les pods s'exécutant dans un cluster.

**Namespaces:** ici veut dire les clusters virtuels présents sur le même cluster physique

**Names** : les noms de chaque pod dans le cluster.

**Ready:** 1/1 veut dire actif 0/1 non actif 1 aussi veut dire combien d'instance ou de réplications parfois on trouve 2/2 veut dire que deux instances de ce cluster sont actives

**Status:** peut avoir plusieurs valeurs : parmi, **Running**, **Evicted** (dégagé du cluster physique, ), Un **CrashloopBackOff** signifie qu'un pod qui démarre, plante, redémarre, puis plante à nouveau.

**Age** : veut dire depuis combien de temps l'image a été créé.

**Restart** : veut dire combien de fois le pod a été redémarré. 0 veut dire aucune fois.

**Déploiement de containers docker sur notre Cluster Kubernetes.**

Création de la **registry** coté serveur **rancher** :

```
[root@ip-10-152-165-73 ~]# docker run -d -p 5000:5000 --restart=always --name registry registry:2
e633229dc65e3b84f4202ebbd2fb91d270631bf1baa774a9c853d9ab17d36f02
[root@ip-10-152-165-73 ~]#
```

Configurer la registry privée sur les nœuds kubernetes

```
[root@ip-10-152-165-77 ~]# vim /etc/docker/daemon.json
[root@ip-10-152-165-77 ~]# sudo systemctl restart docker
[root@ip-10-152-165-77 ~]#
```

```
root@ip-10-152-165-77:~
```

File Edit View Search Terminal Help

```
{
  "insecure-registries": ["10.152.165.73:5000"]
}
```

```
privée
root@ip-10-152-165-77:~
```

File Edit View Search Terminal Tabs Help

```
root@ip-10-152-165-73:~ × root@ip-10-152-165-75:~ × root@ip-10-152-165-77:~ ×
```

```
[
  "insecure-registries": ["10.152.165.73:5000"]
]
```

```
privée
root@ip-10-152-165-75:~
```

File Edit View Search Terminal Tabs Help

```
root@ip-10-152-165-73:~ × root@ip-10-152-165-75:~ × root@ip-10-152-165-77:~ ×
```

```
{
  "insecure-registries": ["10.152.165.73:5000"]
}
```

```
[root@ip-10-152-165-77 ~]# vim /etc/docker/daemon.json
[root@ip-10-152-165-77 ~]# sudo systemctl restart docker
[root@ip-10-152-165-77 ~]#
```

Récupération d'une image docker

```
[root@ip-10-152-165-73 tmp]# git clone https://github.com/GoogleCloudPlatform/kubernetes-engine-samples
Cloning into 'kubernetes-engine-samples'...
remote: Enumerating objects: 66, done.
remote: Counting objects: 100% (66/66), done.
remote: Compressing objects: 100% (62/62), done.
remote: Total 829 (delta 16), reused 17 (delta 3), pack-reused 763
Receiving objects: 100% (829/829), 478.21 KiB | 0 bytes/s, done.
Resolving deltas: 100% (361/361), done.
[root@ip-10-152-165-73 tmp]#
root@ip-10-152-165-73 hello-app]# docker tag hello-app:v1 10.152.165.73:5000/hello-app:v1
root@ip-10-152-165-73 hello-app]# docker push 10.152.165.73:5000/hello-app:v1
The push refers to repository [10.152.165.73:5000/hello-app]
get https://10.152.165.73:5000/v2/: http: server gave HTTP response to HTTPS client
root@ip-10-152-165-73 hello-app]#
[root@ip-10-152-165-73 hello-app]# curl -X GET http://10.152.165.73:5000/v2/_catalog
{"repositories":[]}
[root@ip-10-152-165-73 hello-app]#
```

Q-3-a

Que

vois-je?

Le registre a été bien créé mais il ne contient encore aucun dépôt.

```
[root@ip-10-152-165-73 hello-app]# kubectl create deployment hello-app --image=10.152.165.73:5000/hello-app:v1
deployment.apps/hello-app created
[root@ip-10-152-165-73 hello-app]#
```

**Q-3-b Explique brièvement ce que fait cette commande :**

Cette commande Kubernetes, **kubectl create deployment**, crée un déploiement nommé **hello-app**. Le pod de déploiement exécute l'image du container **hello-app**.

Dans cette commande :

**--image:** spécifie une image de container à déployer. Dans ce cas, La commande extrait l'image d'exemple d'un Registre des conteneurs , **/hello-app:v1** indique la version d'image spécifique à extraire. Si on ne spécifie pas de version, la dernière version est utilisée. **Le port** spécifie le chemin d'échange local 5000. Le résultat nous confirme que la bonne création du déploiement

```
[root@ip-10-152-165-73 hello-app]# kubectl get pods
NAME                  READY   STATUS    RESTARTS   AGE
hello-app-88f49b59c-xk6dc   1/1     Running   0          43s
[root@ip-10-152-165-73 hello-app]#
```

**Q-3-c Que je vois:**

Cette commande renvoie le pod qu'on vient de créer dans la commande précédente., et le pod a pour nom **hello-app-88...** son **ready** 1/1 prêt à rouler **status Running** en état run et le pod a été créé il y'a 43 secondes et il n'a jamais redémarré.

**Q-3-d cote interface rancher:**

The screenshot shows the Rancher interface for managing workloads. At the top, there are tabs for Workloads, Load Balancing, Service Discovery, and Volumes. Below these are buttons for Redeploy, Pause Orchestration, Download YAML, and Delete. There are also filters for State (set to Active) and Name (set to 'hello'). A summary section shows 'Namespace: default' and lists a single deployment named 'hello-app'. The deployment details show 'Name: hello' and 'Namespace: \*' set to 'default'. There are buttons for 'Add a Description' and 'Add to a new namespace'.

The screenshot shows two identical configurations for a workload named 'hello-app'. Both configurations are set to port 8080 and target the 'hello' service. The top configuration is labeled 'hello.default.10.152.165.75.xip.io > hello-app' and the bottom one is labeled 'hello.default.152.165.75.xip.io > hello-app'. The 'hello' service is an L7 Ingress type.

Target	Port *
hello-app	8080

Workloads    Load Balancing    Service Discovery    Volumes

Download YAML    Delete

State ▾    Name ▾    Targets

Namespace: default

Active	hello	hello.default.10.152.165.75.xip.io > hello-app
	L7 Ingress	

Target	Port *
hello-app	8080

Workloads    Load Balancing    Service Discovery    Volumes

Download YAML    Delete

State ▾    Name ▾    Targets

Namespace: default

Active	hello	hello.default.152.165.75.xip.io > hello-app
	L7 Ingress	

**Commentaire sur l'interface launcher sur le navigateur :**

On vient de déployer une charge de travail, qui est un objet qui comprend des pods ainsi que d'autres fichiers et informations nécessaires pour déployer notre application, cette dernière est en état active et exposée sur le port **8080** comme définis dans le guide de création précédent.

**Résultat :** l'application reçoit une adresse **hello.default.152.165.75.xip.io** pour son exposition.

Le remplissage peut prendre une minute ou deux.

On peut accéder à cette application à travers cette dernière adresse.

Lien vers la charge de travail: on cliquant sur ce lien il nous amène dans une page externe dont le lien est : **hello.default:152.165.75.xip.io**, mielleusement j'ai perdu la capture que j'avais prise pour cette étape, alors qu'on devait avoir une page similaire à celle ci-dessous:



Mise à jour de l'application main.go

```
// hello responds to the request with a plain-text "Hello, world" message.
func hello(w http.ResponseWriter, r *http.Request) {
    log.Printf("Serving request: %s", r.URL.Path)
    host, _ := os.Hostname()
    fmt.Fprintf(w, "Hello World !\n")
    fmt.Fprintf(w, "Message: je suis la nouvelle version!\n")
    fmt.Fprintf(w, "Version: 2.0.0\n")
    fmt.Fprintf(w, "Hostname: %s\n", host)
}

-- INSERT --
```

## Building

```
[root@ip-10-152-165-73 hello-app]# docker build . -t 10.152.165.73:5000/hello-app:v2
Sending build context to Docker daemon 13.82kB
Step 1/7 : FROM golang:1.8-alpine
1.8-alpine: Pulling from library/golang
550fe1bea624: Pull complete
cbc8da23026a: Pull complete
9b35aaa06d7a: Pull complete
46ca6ce0ffd1: Pull complete
7a270aebe80a: Pull complete
8695117c367e: Pull complete
Digest: sha256:693568f2ab0dae1e19f44b41628d2aea148fac65974cf18f83cb9863ab1a177
Status: Downloaded newer image for golang:1.8-alpine
--> 4cb86d3661bf
Step 2/7 : ADD . /go/src/hello-app
--> 7a329b8de712
Step 3/7 : RUN go install hello-app
--> Running in b6d1f7cbf6c4
Removing intermediate container b6d1f7cbf6c4
--> a456f94907b1
Step 4/7 : FROM alpine:latest
latest: Pulling from library/alpine
Digest: sha256:c0e9560cda118f9ec63ddefb4a173a2b2a0347082d7dff7dc14272e7841a5b5a
Status: Downloaded newer image for alpine:latest
--> d6e46aa2470d
Step 5/7 : COPY --from=0 /go/bin/hello-app .
--> d5af1a675696
Step 6/7 : ENV PORT 8080
--> Running in 034b11e4bc8c
Removing intermediate container 034b11e4bc8c
--> 3dd7feb17279
Step 7/7 : CMD ["./hello-app"]
--> Running in 5d39f0d37d92
Removing intermediate container 5d39f0d37d92
--> 5524938ce449
Successfully built 5524938ce449
Successfully tagged 10.152.165.73:5000/hello-app:v2
[root@ip-10-152-165-73 hello-app]#
```

```
[root@ip-10-152-165-73 hello-app]# docker push 10.152.165.73:5000/hello-app:v2
The push refers to repository [10.152.165.73:5000/hello-app]
Get https://10.152.165.73:5000/v2/: http: server gave HTTP response to HTTPS client
[root@ip-10-152-165-73 hello-app]#
```

Mise à jour de notre version

```
[root@ip-10-152-165-73 hello-app]# kubectl set image deployment/hello-app hello-ap
p="10.152.165.73:5000/hello-app:v2"
deployment.apps/hello-app image updated
[root@ip-10-152-165-73 hello-app]# deployment.apps/netto-app image updated
[root@ip-10-152-165-73 hello-app]# kubectl get pod
NAME          READY   STATUS      RESTARTS   AGE
hello-app-6f66498bd4-j8gsj   0/1     ImagePullBackOff   0          2m31s
hello-app-88f49b59c-22twm   0/1     Evicted    0          4m31s
hello-app-88f49b59c-22xbs   0/1     Evicted    0          4m29s
hello-app-88f49b59c-79d4d   0/1     Evicted    0          4m22s
hello-app-88f49b59c-7sr68   0/1     Evicted    0          4m25s
hello-app-88f49b59c-8bj5f   0/1     Evicted    0          4m30s
hello-app-88f49b59c-9sc9r   0/1     Evicted    0          4m32s
hello-app-88f49b59c-bqm4p   0/1     Evicted    0          4m23s
hello-app-88f49b59c-h4kk4   0/1     Evicted    0          4m32s
hello-app-88f49b59c-hlrq4   0/1     Evicted    0          4m27s
hello-app-88f49b59c-j46cv   0/1     Evicted    0          4m29s
hello-app-88f49b59c-jlzcs   0/1     Evicted    0          4m23s
hello-app-88f49b59c-pz2xq   0/1     Evicted    0          4m31s
hello-app-88f49b59c-r9dsj   0/1     ImagePullBackOff 0          4m22s
hello-app-88f49b59c-tk6vx   0/1     Evicted    0          4m26s
hello-app-88f49b59c-tljm7   0/1     Evicted    0          4m31s
hello-app-88f49b59c-v57sl   0/1     Evicted    0          4m30s
hello-app-88f49b59c-wnsqq   0/1     Evicted    0          4m28s
hello-app-88f49b59c-xk6dc   0/1     Evicted    0          46m
[root@ip-10-152-165-73 hello-app]# hello-app-88f49b59c-xk6dc   0/1     Evicted    0          46m
[root@ip-10-152-165-73 hello-app]# kubectl describe pod hello-app-88f49b59c-xk6dc
Name:           hello-app-88f49b59c-xk6dc
Namespace:      default
Priority:       0
Node:           ip-10-152-165-73/
Start Time:     Wed, 18 Nov 2020 00:12:47 +0000
Labels:         app=hello-app
                pod-template-hash=88f49b59c
Annotations:    workloadID_ingress-e8cd83642498a4e26f6fb7cc3e289f53=true
                cni.projectcalico.org/podIP: 10.42.0.8/32
                cni.projectcalico.org/podIPs: 10.42.0.8/32
Status:         Failed
Reason:         Evicted
Message:        The node was low on resource: ephemeral-storage. Container hello-a
pp was using 16Ki, which exceeds its request of 0.
IP:
IPs:            <none>
Controlled By: ReplicaSet/hello-app-88f49b59c
```

#### **Q-4-a Que je constate ?**

Toutes les charges de travaux déployées tout à l'heure ont eu des updates soit un arrêt forcé ou dégagé ou supprimé carrément de l'image **hello-app**

Je constate que ce pod que je viens de sélectionner et demander au serveur de me le décrire que ce pod (sélectionné) une seule instance a été créé, et cette instance est en état d'arrêt, en plus, ce pod a été dégagé du la charge qu'on a créée (**Status : Evicted** = dégagé) faites une capture ou décrivez ce que vous observez hello-app a été expulsé et je ne peux pas y accéder depuis l'interface graphique du cluster

Dans la capture de **kubectl describe pod**, la commande retourne une fiche technique du pod sélectionné, avec son nom et l'endroit où il est (default) ainsi d'autres informations comme son **path** et son adresse **Ip** et enfin son status qui est failed parce qu'il a été dégagé et à la fin un message nous explique que la raison pour laquelle la node 10.152.165.73 a arrêté son running suite à une constation de limite de ressources cpu et memory pour cette charge de travail (workload)

## 503 Service Temporarily Unavailable

nginx/1.19.2

### Workload: hello-app

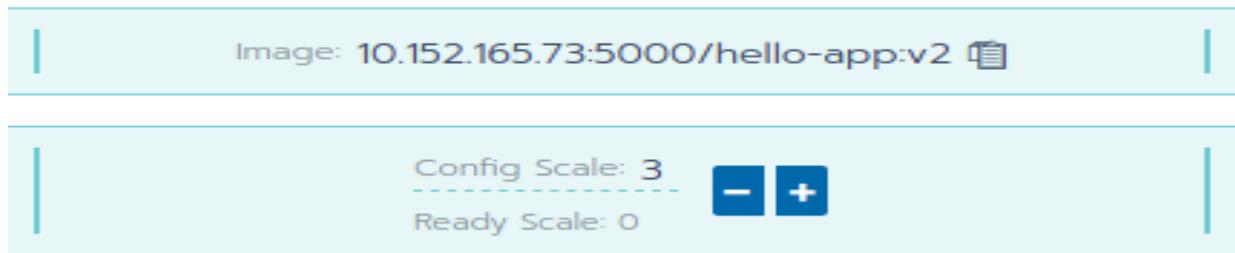
Deployment does not have minimum availability.

Scaling	des	containers	Haute	disponibilité
<pre>[root@ip-10-152-165-73 hello-app]# kubectl get deployment NAME      READY   UP-TO-DATE   AVAILABLE   AGE hello-app  0/1     1           0           54m [root@ip-10-152-165-73 hello-app]#</pre>				

**Q-5-a** L'image créé tout à l'heure est en état d'arrêt 0/1 une seule instance crée et elle est en état d'arrêt. Le paramètre : on peut faire aussi à l'aide de la commande : **kubectl scale replicationcontroller app-hello --replicas=3**

Kubectl	edit	deployment	hello-app
<pre>spec:   progressDeadlineSeconds: 600   replicas: 3   revisionHistoryLimit: 10   selector:     matchLabels:       app: hello-app   strategy:</pre>			

Sur l'interface :



Workload: hello-app

Deployment does not have minimum availability.

		Name
<input type="checkbox"/>	Unavailable	hello-app-88f49b59c-r9dsj
		ImagePullBackOff: Back-off pulling image "10.152.165.73:5000/hello-app:v1"
<input type="checkbox"/>	Unavailable	hello-app-6f66498bd4-qcpnx
		ImagePullBackOff: Back-off pulling image "10.152.165.73:5000/hello-app:v2"
<input type="checkbox"/>	Unavailable	hello-app-6f66498bd4-ms6f9
		ImagePullBackOff: Back-off pulling image "10.152.165.73:5000/hello-app:v2"
<input type="checkbox"/>	Unavailable	hello-app-6f66498bd4-j8gsj
		ImagePullBackOff: Back-off pulling image "10.152.165.73:5000/hello-app:v2"

## Containers with unready status: [hello-app]

Namespace: default		
Pod IP: 10.42.2.5		

Activities Firefox Web Browser ▾ Wed 02:46

ReplicaSet "hello-app-6f66498bd4" has timed out progressing; Deployment does not have minimum availability.

Namespace: default	Image: 10.152.165.73:5000/hello-app:v2	Workload Type: Deployment
Endpoints: 80/http	Config Scale: 3 - + Ready Scale: 0	Created: 112 AM Pod Restarts: 0
Pods	Take Screenshot	Expand All
Pods in this workload	Grab the whole screen Grab the current window Select area to grab Grab after a delay of 0 - 4 seconds	
State	Name	Node
<input type="checkbox"/> Unavailable	hello-app-88f49b59c-r9dsj	ip-10-152-165-75 10.152.165.75
	ImagePullBackOff: Back-off pulling image "10.152.165.73:5000/hello-app:v1"	
<input type="checkbox"/> Unavailable	hello-app-6f66498bd4-qcpnx	ip-10-152-165-75 10.152.165.75
	ImagePullBackOff: Back-off pulling image "10.152.165.73:5000/hello-app:v2"	
<input type="checkbox"/> Unavailable	hello-app-6f66498bd4-ms6f9	ip-10-152-165-77 10.152.165.77
	ImagePullBackOff: Back-off pulling image "10.152.165.73:5000/hello-app:v2"	
<input type="checkbox"/> Unavailable	hello-app-6f66498bd4-j8gsj	ip-10-152-165-77 10.152.165.77
	ImagePullBackOff: Back-off pulling image "10.152.165.73:5000/hello-app:v2"	

Find in page

**Q-5-b Constat :** Les réplications qu'on vient de créer ont pas de ressources nécessaires de cpu et de momery , donc l'image dans le cluster n'a pas pu satisfaire les ressources demandées et nécessaires pour les nouvelles réplications, ils deviennent pour le coup indisponible et inutilisable il faut donc rajouter encore des ressources.

## Cordon

### Nodes

		<b>Cordon</b>	<b>Uncordon</b>	<b>Drain</b>	<b>Delete</b>	1 Node				
<input type="checkbox"/>	<b>State</b>	<b>Name</b>								
<input type="checkbox"/>	<b>Active</b>	ip-10-152-165-73 10.152.165.73				<input type="checkbox"/>				
node.kubernetes.io/disk-pressure:NoSchedule										
Kubelet has disk pressure										
<input type="checkbox"/>	<b>Active</b>	ip-10-152-165-75 10.152.165.75				<input type="checkbox"/>				
<input checked="" type="checkbox"/>	<b>Cordoned</b>	ip-10-152-165-77 10.152.165.77				<input type="checkbox"/>				
node.kubernetes.io/unschedulable:NoSchedule										

**Q-6-a** Les nodes semblent avoir plus de ressources de plus par rapport à avant ou la première avait des pressions sur la demande de ressources memory et cpu tous les nodes sont actives normalement

### Nodes

		<b>Cordon</b>	<b>Drain</b>	<b>Delete</b>	
<input type="checkbox"/>	<b>State</b>	<b>Name</b>		<b>Roles</b>	
<input type="checkbox"/>	<b>Active</b>	ip-10-152-165-73 10.152.165.73	<input type="checkbox"/>	All	<input type="checkbox"/>
<input type="checkbox"/>	<b>Active</b>	ip-10-152-165-75 10.152.165.75	<input type="checkbox"/>	All	<input type="checkbox"/>
<input type="checkbox"/>	<b>Active</b>	ip-10-152-165-77 10.152.165.77	<input type="checkbox"/>	All	<input type="checkbox"/>

**Q-6-b Nombre de pods qui tournent sur ce nod: 8 over 110 pods.**

```
[root@ip-10-152-165-73 hello-app]# kubectl describe node ip-10-152-165-77
Name:           ip-10-152-165-77
Roles:          controlplane,etcfd,worker
Labels:         beta.kubernetes.io/arch=amd64
                beta.kubernetes.io/os=linux
                kubernetes.io/arch=amd64
                kubernetes.io/hostname=ip-10-152-165-77
                kubernetes.io/os=linux
                node-role.kubernetes.io/controlplane=true
                node-role.kubernetes.io/etcfd=true
                node-role.kubernetes.io/worker=true
Annotations:   flannel.alpha.coreos.com/backend-data: {"VtepMAC":"be:bf:70:01:5b:7d"}
                flannel.alpha.coreos.com/backend-type: vxlan
                flannel.alpha.coreos.com/kube-subnet-manager: true
                flannel.alpha.coreos.com/public-ip: 10.152.165.77
                node.alpha.kubernetes.io/ttl: 0
                projectcalico.org/IPv4IPIPTunnelAddr: 10.42.1.1
                rke.cattle.io/external-ip: 10.152.165.77
                rke.cattle.io/internal-ip: 10.152.165.77
                volumes.kubernetes.io/controller-managed-attach-detach: true
CreationTimestamp: Tue, 17 Nov 2020 22:20:20 +0000
Taints:          node.kubernetes.io/unschedulable:NoSchedule
Unschedulable:   true
Lease:
Conditions:
  Type        Status  LastHeartbeatTime           LastTransitionTime        Reason
  ----        -----  -----                    -----                  -----
  NetworkUnavailable  False   Tue, 17 Nov 2020 23:20:57 +0000  Tue, 17 Nov 2020 23:20:57 +0000  FlannelIsUp
  MemoryPressure    False   Wed, 18 Nov 2020 01:52:20 +0000  Tue, 17 Nov 2020 22:20:19 +0000  KubeletHasSufficientMemory
  DiskPressure      False   Wed, 18 Nov 2020 01:52:20 +0000  Tue, 17 Nov 2020 22:20:19 +0000  KubeletHasNoDiskPressure
  PIDPressure       False   Wed, 18 Nov 2020 01:52:20 +0000  Tue, 17 Nov 2020 22:20:19 +0000  KubeletHasSufficientPID
  Ready            True    Wed, 18 Nov 2020 01:52:20 +0000  Tue, 17 Nov 2020 23:20:50 +0000  KubeletReady
Addresses:
  InternalIP: 10.152.165.77
```

```

Allocatable:
cpu:                      2
ephemeral-storage: 11586012346
hugepages-1Gi:            0
hugepages-2Mi:            0
memory:                  3728764Ki
pods:                     110

System Info:
Machine ID:                a8eb6cac33e701ae867269db5ce80e7f
System UUID:                EC27A88B-23AB-25D0-1DE2-71C067D7C23B
Boot ID:                   a3682c6c-d1bc-4b65-80dd-0153462f31f5
Kernel Version:             3.10.0-1127.19.1.el7.x86_64
OS Image:                  CentOS Linux 7 (Core)
Operating System:           linux
Architecture:               amd64
Container Runtime Version: docker://19.3.13
Kubelet Version:             v1.18.12
Kube-Proxy Version:          v1.18.12
PodCIDR:                   10.42.1.0/24
PodCIDRs:                  10.42.1.0/24
Non-terminated Pods:        (8 in total)

      CPU Requests  CPU Limits  Memory Requests  Memory Limits AGE
-----  -----  -----  -----  -----
0 (0%)    0 (0%)    0 (0%)    0 (0%)    0 (0%) 3h32m
0 (0%)    0 (0%)    0 (0%)    0 (0%)    0 (0%) 3h32m
0 (0%)    0 (0%)    0 (0%)    0 (0%)    0 (0%) 3h32m
0 (0%)    0 (0%)    0 (0%)    0 (0%)    0 (0%) 57m
0 (0%)    0 (0%)    0 (0%)    0 (0%)    0 (0%) 19m
0 (0%)    0 (0%)    0 (0%)    0 (0%)    0 (0%) 3h33m
250m (12%) 0 (0%)    0 (0%)    0 (0%)    0 (0%) 3h33m
0 (0%)    0 (0%)    0 (0%)    0 (0%)    0 (0%) 152m

```

```

PodCIDR:                   10.42.1.0/24
PodCIDRs:                  10.42.1.0/24
Non-terminated Pods:        (8 in total)

  Namespace          Name
-----  -----
cattle-system   cattle-cluster-agent-765fc4fcc4-685r
cattle-system   cattle-node-agent-tvnk6
cattle-system   kube-api-auth-xfjbp
default         hello-app-6f66498bd4-j8gsj
default         hello-app-6f66498bd4-ms6f9
ingress-nginx   nginx-ingress-controller-stvwm
kube-system     canal-n24bv
kube-system     metrics-server-697746ff48-wplpl

Allocated resources:
(Total limits may be over 100 percent, i.e., overcommitted.)
Resource       Requests  Limits
-----  -----
Allocated resources:
(Total limits may be over 100 percent, i.e., overcommitted.)
Resource       Requests  Limits
-----  -----
cpu            250m (12%) 0 (0%)
memory         0 (0%)    0 (0%)
ephemeral-storage 0 (0%)    0 (0%)
hugepages-1Gi  0 (0%)    0 (0%)
hugepages-2Mi  0 (0%)    0 (0%)
Events:
Type    Reason          Age   From      Message
-----  -----  -----  -----
Normal  NodeNotSchedulable  5m45s  kubelet  Node ip-10-152-165-77 status is now: NodeNotSchedulable
root@ip-10-152-165-77:~# 
```

## Nodes

Cordon Uncordon Drain Delete 1 Node

State	Name
Active	ip-10-152-165-73 10.152.165.73
node.kubernetes.io/disk-pressure:NoSchedule	
Kubelet has disk pressure	
Active	ip-10-152-165-75 10.152.165.75
Cordoned	ip-10-152-165-77 10.152.165.77
node.kubernetes.io/unschedulable:NoSchedule	

**Changement de nombre de réplications à 6 :**  
Avec la commande **kubectl get deployment** retourne l'image app-hello avec 6/6 d'instance ready

progressDeadlineSeconds: 600  
replicas: 6  
revisionHistoryLimit: 10  
selector:

This is the system project which has all Kubernetes and Rancher system namespaces. Changes made to resource

Workloads Load Balancing Service Discovery Volumes

State	Name	Targets	Create
There are no ingress rules defined			

Nombre de pods qui tourne sur le noeud 3\*\* : Sur l'interface Rancher le nombre de pods sur noeud 3 reste inchangé.  
Le nombre de pods active sur les deux autres nodes est devenu 10 au lieu de 8 avant les réplications.

```
[root@ip-10-152-165-73 hello-app]# kubectl get pods
NAME                               READY   STATUS            RESTARTS   AGE
hello-app-6f66498bd4-5b49q        0/1    ImagePullBackOff  0          13m
hello-app-6f66498bd4-6j6jg        0/1    ImagePullBackOff  0          13m
hello-app-6f66498bd4-7rwwb       0/1    Evicted           0          21m
hello-app-6f66498bd4-7th9r       0/1    ImagePullBackOff  0          18m
hello-app-6f66498bd4-gmgwz       0/1    ImagePullBackOff  0          18m
hello-app-6f66498bd4-jdg52       0/1    Evicted           0          21m
hello-app-6f66498bd4-mpx2v       0/1    ImagePullBackOff  0          21m
hello-app-6f66498bd4-qcpnx       0/1    ImagePullBackOff  0          57m
hello-app-88f49b59c-9t8r9        0/1    Evicted           0          21m
hello-app-88f49b59c-r9dsj        0/1    ImagePullBackOff  0          98m
hello-app-88f49b59c-xsct2       0/1    ImagePullBackOff  0          18m
[root@ip-10-152-165-73 hello-app]#
```

## -7- Drain

**Q-7-a** Que se passe : on a nettoyé la node avec l'option Drain il doit être vider de ses pods et containers.

### Nodes

	Cordon	Drain	Delete
	State	Name	Roles
<input type="checkbox"/>	Active	ip-10-152-165-73 10.152.165.73	All
<input type="checkbox"/>	Active	ip-10-152-165-75 10.152.165.75	All
<input type="checkbox"/>	Active	ip-10-152-165-77 10.152.165.77	All

```
[root@ip-10-152-165-73 ~]# reboot
Connection to 10.152.165.77 closed by remote host.
Connection to 10.152.165.77 closed.
survivor@Tkheletet:~$ sudo ssh -i key.pem root@10.152.165.77
Last login: Wed Nov 18 02:18:56 2020 from ip-10-151-32-78.eu-west-3.compute.internal
[root@ip-10-152-165-77 ~]#
```

**Q-7-b** après le reboot notre cluster ne fonctionne pas correction à cause de problèmes sur le nœud

3

Après avoir redémarrer le service docker tout revient à l'état normale.

## Rupture de service involontaire

```

root@ip-10-152-165-73:/tmp/kubernetes-engine-samples/hello-app
Events:
  Type    Reason     Age   From      Message
  ----  -----   ---  ----      -----
  Normal  NodeHasNoDiskPressure  10m (x8 over 97m)  kubelet  Node ip-10-152-165-73 status is now: NodeHasNoDiskPressure
  Warning EvictionThresholdMet  2m26s (x79 over 91m)  kubelet  Attempting to reclaim ephemeral-storage
[root@ip-10-152-165-73 hello-app]# docker ps
CONTAINER ID        IMAGE               COMMAND             CREATED            STATUS              PORTS
54a155722282      rancher/metrics-server "/metrics-server -k..." 6 minutes ago      Up 6 minutes
2b53ff1dcdb8      rancher/pause:3.1    "/pause"           6 minutes ago      Up 6 minutes
76b185667ea0      6c3b998b4acf   "k8s_cluster-register_cattle-cluster-agent-765fc4fcc4-mrzgx_cattle-system_11c38c8d-fa7c-4884-9ea4-95c31
9439e9e_0          137580a368e4    "rancher/pause:3.1  "/pause"           6 minutes ago      Up 6 minutes
407724ef5cab      4e797b323460   "k8s_POD_coredns_coredns-849545576b-pqlp_kube-system_ba59c5bd-e33d-4905-8e1d-6a05537b927d_0
f93522f81878      rancher/pause:3.1    "/pause"           3 hours ago       Up 3 hours
9bb186692eb0      4e9f801d2217   "k8s_POD_coredns-849545576b-pqlp_kube-system_ba59c5bd-e33d-4905-8e1d-6a05537b927d_0
3ce8321bc12d      c91d49e6f044    "k8s_kube-flannel_canal-6hwpq_kube-system_ffdee2b3-5849-4000-81d9-ac41732ab30c_1
f4ffd7c00509      rancher/pause:3.1    "/pause"           3 hours ago       Up 3 hours
e633229dc65e      registry:2       "registry"         "/entrypoint.sh /etc..."  4 hours ago       Up 3 hours
0->5000/tcp        rancher/hyperkube:v1.18.12-rancher1  "/opt/rke-tools/entr..."  4 hours ago       Up 3 hours
a8dccbb7a9bf      rancher/coreos-etcd:v3.4.3-rancher1  "/usr/local/bin/etc..."  4 hours ago       Up 3 hours
0ddcd76c6b12e      rancher/hyperkube:v1.18.12-rancher1  "/opt/rke-tools/entr..."  4 hours ago       Up 3 hours

```

## Watch

```

Every 2.0s: kubectl get pods
Thu Nov 19 00:09:02 2020

```

NAME	READY	STATUS	RESTARTS	AGE
hello-app	0/1	ImagePullBackOff	0	21h
hello-app-6f66498bd4-5b49q	0/1	ImagePullBackOff	0	21h
hello-app-6f66498bd4-6j6jq	0/1	ImagePullBackOff	0	21h
hello-app-6f66498bd4-7th9r	0/1	ImagePullBackOff	0	21h
hello-app-6f66498bd4-gmgwz	0/1	ImagePullBackOff	0	21h
hello-app-6f66498bd4-mpx2v	0/1	ImagePullBackOff	0	21h
hello-app-6f66498bd4-qcpnx	0/1	ImagePullBackOff	0	22h
hello-app-88f49b59c-r9dsj	0/1	ImagePullBackOff	0	23h
hello-app-88f49b59c-xsct2	0/1	ImagePullBackOff	0	21h

Puis tapez reboot : Patientez bien 5 minutes avant d'emmètre votre constat :

Q8a Que se passe t'il, quel est l'état de votre cluster et votre application

```

[root@ip-10-152-165-75 ~]# reboot
Connection to 10.152.165.75 closed by remote host.
Connection to 10.152.165.75 closed.
survivor@Tkhetet:~$ 

```

Sur l'interface on voit que le nœud 2 devient indisponible à cause de l'arrêt de service docker

<input type="checkbox"/>	Active	ip-10-152-165-73 10.152.165.73	All
node.kubernetes.io/disk-pressure:NoSchedule			
Kubelet has disk pressure			
<input type="checkbox"/>	Unavailable	ip-10-152-165-75 10.152.165.75	All
node.kubernetes.io/unreachable:NoExecute node.kubernetes.io/unreachable:NoSchedule			
Kubelet stopped posting node status.			

Entre pullbackoff and terminating

```

survivor@Tkheltet:~$ sudo ssh -i key.pem root@10.152.
[sudo] password for survivor:
Last login: Thu Nov 19 00:17:07 2020 from ip-10-151-3
rnal
[root@ip-10-152-165-75 ~]# service docker restart
Redirecting to /bin/systemctl restart docker.service
[root@ip-10-152-165-75 ~]#

```

root@ip-10-152-165-73:~	root@ip-10-152-165-75:~	root@ip-10-152-165-77:~
Every 2.0s: kubectl get pods		Thu Nov 19 00:21:53
NAME          READY   STATUS      RESTARTS   AGE hello-app     0/1     ImagePullBackoff 0          21h hello-app-6f66498bd4-7r5kh 0/1     ImagePullBackoff 0          4m34s hello-app-6f66498bd4-hlk7z 0/1     ImagePullBackoff 0          4m34s hello-app-6f66498bd4-m52fd 0/1     ImagePullBackoff 0          4m34s hello-app-6f66498bd4-mlnlv 0/1     ImagePullBackoff 0          4m34s hello-app-6f66498bd4-pkj9p 0/1     ImagePullBackoff 0          4m34s hello-app-6f66498bd4-slg6m 0/1     ImagePullBackoff 0          4m34s hello-app-88f49b59c-l8rqb 0/1     ImagePullBackoff 0          4m34s hello-app-88f49b59c-xc95j 0/1     ImagePullBackoff 0          4m34s		

On voit que les pods viennent de s'arrêter à cause de l'arrêt de service docker.

<input type="checkbox"/>	State	Name
<input type="checkbox"/>	Active	ip-10-152-165-73 10.152.165.73
node.kubernetes.io/disk-pressure:NoSchedule		
Kubelet has disk pressure		
<input type="checkbox"/>	Active	ip-10-152-165-75 10.152.165.75
<input type="checkbox"/>	Active	ip-10-152-165-77 10.152.165.77

Q-8-b Après avoir redémarrer le service docker on remarque que les nœuds reviennent à l'état normale active. Quelques pods ne figurent plus dans watch.  
Q-8-c cette Solution est très pratique, elle nous a permis de faire des manipulation sur les nodes orchestrées et gérer les ressources de façon optimale  
Le mode master-worker marche bien pour les petites comme pour les grandes boites afin d'allouer des ressources et faciliter la gestion de ces ressources en fonction de la demande.