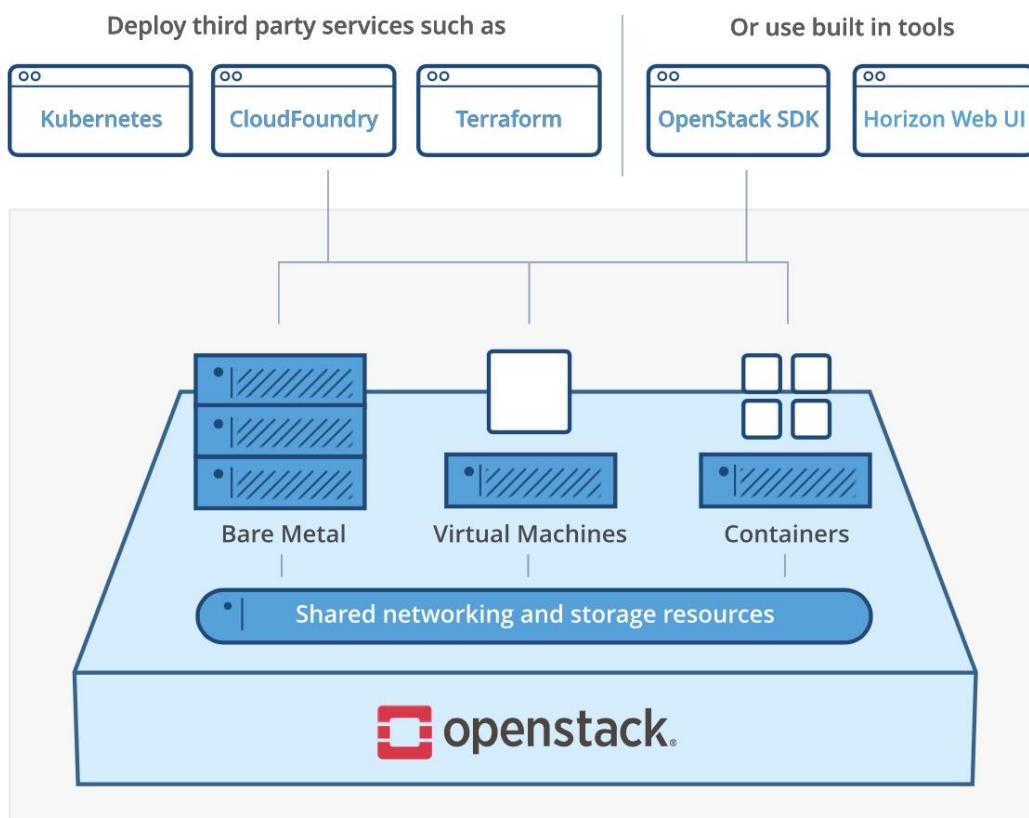


# Cloud Computing

## Creation d'une infrastructure Cloud par OpenStack Victoria



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## Introduction :

OpenStack Victoria est un outil puissant conçu pour créer et gérer une infrastructure cloud. En tant que l'une des plates-formes cloud open source les plus populaires disponibles, elle fournit une solution flexible et évolutive pour les entreprises et les organisations qui cherchent à créer leurs propres clouds privés ou publics.



OpenStack Victoria comprend un large éventail de fonctionnalités et de capacités qui en font un choix idéal pour créer une infrastructure cloud. Ceux-ci incluent des outils de gestion des machines virtuelles, du stockage, de la mise en réseau, de la sécurité, etc. Avec OpenStack Victoria, les utilisateurs peuvent facilement créer et déployer de nouvelles machines virtuelles, allouer des ressources selon les besoins et surveiller les performances du système en temps réel.

L'un des principaux avantages d'OpenStack Victoria est son architecture modulaire, qui permet aux utilisateurs de sélectionner uniquement les composants dont ils ont besoin et de créer une infrastructure cloud personnalisée adaptée à leurs besoins spécifiques. Cela en fait un outil extrêmement flexible et adaptable pour les organisations de toutes tailles.

En plus de ses fonctionnalités de base, OpenStack Victoria prend également en charge une large gamme de plugins et d'extensions, permettant aux utilisateurs de s'intégrer à une variété d'outils et de services tiers. Cela inclut l'intégration avec des plates-formes d'orchestration de conteneurs populaires telles que Kubernetes, ainsi que la prise en charge de technologies avancées de mise en réseau et de stockage.

Dans l'ensemble, OpenStack Victoria est un excellent choix pour les entreprises et les organisations qui cherchent à créer et à gérer leur propre infrastructure cloud. Avec ses fonctionnalités puissantes, son architecture modulaire et son vaste écosystème de plugins, il fournit une solution complète et flexible pour les organisations de toutes tailles.

## **0. Installation et configuration de CentOS 8**

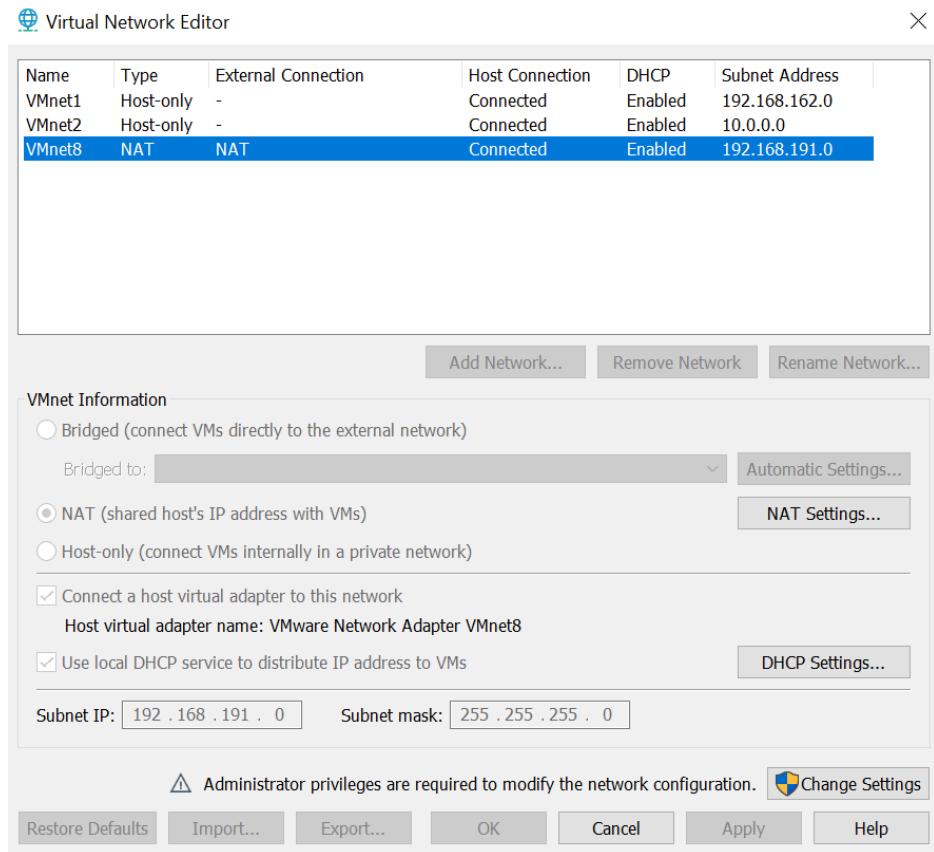
CentOS 8 est une distribution Linux gratuite et open source basée sur le code source de Red Hat Enterprise Linux 8 (RHEL 8). Elle offre une plateforme stable, fiable et sécurisée pour les entreprises et les organisations qui cherchent à exécuter des applications critiques dans un environnement informatique robuste.

CentOS 8 propose de nombreuses fonctionnalités innovantes, telles que la prise en charge de l'infrastructure de conteneurisation Docker, la virtualisation intégrée, les mises à jour et les correctifs de sécurité automatiques, ainsi qu'un support à long terme (LTS) de 10 ans.

En outre, CentOS 8 offre une grande flexibilité en termes de choix de logiciels, permettant aux utilisateurs de personnaliser leur environnement informatique en fonction de leurs besoins spécifiques. Elle dispose également d'une grande communauté de développeurs et de contributeurs qui fournissent une assistance technique et un support en cas de problème.

En somme, CentOS 8 est une distribution Linux de premier plan qui offre une base solide pour les entreprises et les organisations qui cherchent à développer et à déployer des applications critiques. Avec sa stabilité, sa fiabilité et sa sécurité, elle est une solution attrayante pour les professionnels de l'informatique qui cherchent à créer des environnements informatiques robustes et durables.

- Configuration d'adaptateur NAT



## Configuration d'adaptateur NAT

- Disabling firewall

```
[root@localhost ~]# systemctl stop firewalld
[root@localhost ~]# systemctl disable firewalld
Removed /etc/systemd/system/multi-user.target.wants/firewalld.service.
Removed /etc/systemd/system/dbus-org.fedoraproject.FirewallD1.service.
[root@localhost ~]# cd /etc/sysconfig/network-scripts/
[root@localhost network-scripts]#
```

- Setting up network scripts

```
root@localhost:/etc/sysconfig/network-scripts#
File Edit View Search Terminal Help
TYPE=Ethernet
PROXY_METHOD=none
BROWSER_ONLY=no
BOOTPROTO=static
IPADDR=10.0.0.30
NETMASK=255.255.255.0
GATEWAY=10.0.0.1
DEFROUTE=yes
IPV4_FAILURE_FATAL=no
IPV6INIT=yes
IPV6_AUTOCONF=yes
IPV6_DEFROUTE=yes
IPV6_FAILURE_FATAL=no
IPV6_ADDR_GEN_MODE=stable-privacy
NAME=ens192
UUID=e1190d24-7e21-435b-bfc8-1e9b8f46dal
DEVICE=ens192
ONBOOT=yes
~
~
~
~
~
-- INSERT --
```

- Configuration du hostname controller et le ping

```
root@localhost:/etc/sysconfig/network-scripts
File Edit View Search Terminal Help
We trust you have received the usual lecture from the local System
Administrator. It usually boils down to these three things:
#1) Respect the privacy of others.
#2) Think before you type.
#3) With great power comes great responsibility.

[sudo] password for yassine:
[root@localhost ~]# cd /etc/sys
sysconfig/ sysctl.d/ systemd/
[root@localhost ~]# cd /etc/sysconfig/network-scripts/
[root@localhost network-scripts]# ls
ifcfg-ens160 ifcfg-ens192
[root@localhost network-scripts]# vi /etc/h
host.conf hostname hosts hosts.allow hosts.deny hp/
[root@localhost network-scripts]# vi /etc/hostname
[root@localhost network-scripts]# vi /etc/hosts
[root@localhost network-scripts]# vi ifcfg-ens160
[root@localhost network-scripts]# vi ifcfg-ens1

[1]+ Stopped vi ifcfg-ens1
[root@localhost network-scripts]# vi ifcfg-ens192
[root@localhost network-scripts]#
```

```
root@localhost:/etc/sysconfig/network-scripts
File Edit View Search Terminal Help
[root@localhost network-scripts]# vi /etc/h
host.conf hostname hosts hosts.allow hosts.deny hp/
[root@localhost network-scripts]# vi /etc/hostname
[root@localhost network-scripts]# vi /etc/hosts
[root@localhost network-scripts]# vi ifcfg-ens160
[root@localhost network-scripts]# vi ifcfg-ens1

[1]+ Stopped vi ifcfg-ens1
[root@localhost network-scripts]# vi ifcfg-ens192
[root@localhost network-scripts]# ping controller
PING controller (10.0.0.30) 56(84) bytes of data.
64 bytes from controller (10.0.0.30): icmp_seq=1 ttl=64 time=0.120 ms
64 bytes from controller (10.0.0.30): icmp_seq=2 ttl=64 time=0.081 ms
64 bytes from controller (10.0.0.30): icmp_seq=3 ttl=64 time=0.117 ms
64 bytes from controller (10.0.0.30): icmp_seq=4 ttl=64 time=0.085 ms
64 bytes from controller (10.0.0.30): icmp_seq=5 ttl=64 time=0.076 ms
64 bytes from controller (10.0.0.30): icmp_seq=6 ttl=64 time=0.082 ms
64 bytes from controller (10.0.0.30): icmp_seq=7 ttl=64 time=0.143 ms
64 bytes from controller (10.0.0.30): icmp_seq=8 ttl=64 time=0.090 ms
64 bytes from controller (10.0.0.30): icmp_seq=9 ttl=64 time=0.059 ms
64 bytes from controller (10.0.0.30): icmp_seq=10 ttl=64 time=0.100 ms
64 bytes from controller (10.0.0.30): icmp_seq=11 ttl=64 time=0.153 ms
64 bytes from controller (10.0.0.30): icmp_seq=12 ttl=64 time=0.161 ms
```

```
root@localhost:/etc
File Edit View Search Terminal Help
systemd-detect-virt      systemd-stdio-bridge
systemd-escape            systemd-sysusers
systemd-firstboot         systemd-tmpfiles
systemd-hwdb              systemd-tty-ask-password-agent
systemd-inhibit           systemd-umount
systemd-machine-id-setup
[root@localhost network-scripts]# systemctl stop firewalld
[root@localhost network-scripts]# systemctl disable firewalld
Removed /etc/systemd/system/multi-user.target.wants/firewalld.service.
Removed /etc/systemd/system/dbus-org.fedoraproject.FirewallD1.service.
[root@localhost network-scripts]# cd /etc/sysconfig/network-scripts/
[root@localhost network-scripts]# cat ./etc/hosts
cat: ./etc/hosts: No such file or directory
[root@localhost network-scripts]# cat /etc/hosts/
cat: /etc/hosts/: Not a directory
[root@localhost network-scripts]# cd ..
[root@localhost sysconfig]# cd ..
[root@localhost etc]# cat hosts
127.0.0.1 localhost localhost.localdomain localhost4 localhost4.localdomain4
::1 localhost localhost.localdomain localhost6 localhost6.localdomain6
10.0.0.30 controller
[root@localhost etc]# cat hostname
controller
[root@localhost etc]#
```

## 1- OpenStack Victoria : Overview

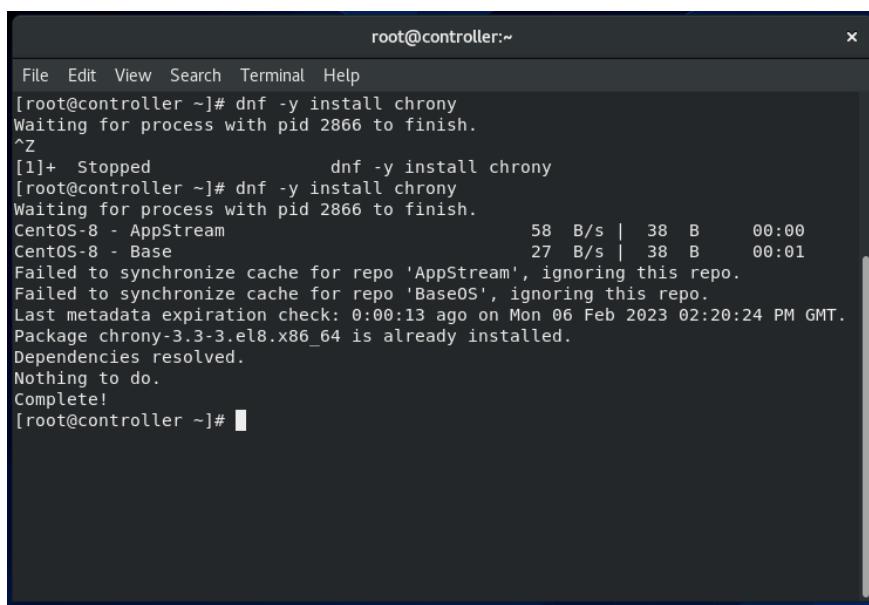
Ceci est l'exemple de la construction d'une infrastructure de Cloud Computing par OpenStack Victoria.

Service	Code Name	Description
Identity Service	Keystone	User Management
Compute Service	Nova	Virtual Machine Management
Image Service	Glance	Manages Virtual image like kernel image or disk image
Dashboard	Horizon	Provides GUI console via Web browser
Object Storage	Swift	Provides Cloud Storage feature
Block Storage	Cinder	Storage Management for Virtual Machine
Network Service	Neutron	Virtual Networking Management
Load Balancing Service	Octavia	Provides Load Balancing feature
Orchestration Service	Heat	Provides Orchestration feature for Virtual Machine
Metering Service	Ceilometer	Provides the feature of Usage measurement for accounting
Database Service	Trove	Database resource Management
Data Processing Service	Sahara	Provides Data Processing feature
Bare Metal Provisioning	Ironic	Provides Bare Metal Provisioning feature

## 2. OpenStack Victoria : Pre-Requirements

### 1. Installez le serveur NTP pour ajuster la date.

- Installation et Configuration de Chrony et verification.



The screenshot shows a terminal window titled "root@controller:~". The terminal output is as follows:

```
root@controller:~# dnf -y install chrony
Waiting for process with pid 2866 to finish.
^Z
[1]+  Stopped                  dnf -y install chrony
[root@controller ~]# dnf -y install chrony
Waiting for process with pid 2866 to finish.
CentOS-8 - AppStream           58 B/s | 38 B    00:00
CentOS-8 - Base                27 B/s | 38 B    00:01
Failed to synchronize cache for repo 'AppStream', ignoring this repo.
Failed to synchronize cache for repo 'BaseOS', ignoring this repo.
Last metadata expiration check: 0:00:13 ago on Mon 06 Feb 2023 02:20:24 PM GMT.
Package chrony-3.3-3.el8.x86_64 is already installed.
Dependencies resolved.
Nothing to do.
Complete!
[root@controller ~]#
```

```

root@controller:~ x
File Edit View Search Terminal Help
#hwtimestamp *

# Increase the minimum number of selectable sources required to adjust
# the system clock.
#minsources 2

# Allow NTP client access from local network.
#allow 10.0.0.0/16

# Serve time even if not synchronized to a time source.
#local stratum 10

# Specify file containing keys for NTP authentication.
keyfile /etc/chrony.keys

# Get TAI-UTC offset and leap seconds from the system tz database.
leapsectz right/UTC

# Specify directory for log files.
logdir /var/log/chrony

# Select which information is logged.
#log measurements statistics tracking

```

### Modification de /etc/chrony.conf

```

root@controller:~ x
File Edit View Search Terminal Help
[root@controller ~]# dnf -y install chrony
Waiting for process with pid 2866 to finish.
^Z
[1]+  Stopped                  dnf -y install chrony
[root@controller ~]# dnf -y install chrony
Waiting for process with pid 2866 to finish.
CentOS-8 - AppStream           58 B/s | 38 B    00:00
CentOS-8 - Base                27 B/s | 38 B    00:01
Failed to synchronize cache for repo 'AppStream', ignoring this repo.
Failed to synchronize cache for repo 'BaseOS', ignoring this repo.
Last metadata expiration check: 0:00:13 ago on Mon 06 Feb 2023 02:20:24 PM GMT.
Package chrony-3.3-3.el8.x86_64 is already installed.
Dependencies resolved.
Nothing to do.
Complete!
[root@controller ~]# vi /etc/chrony.conf
[root@controller ~]# vi /etc/chrony.conf
[root@controller ~]# systemctl enable --now chronyd
Created symlink /etc/systemd/system/multi-user.target.wants/chronyd.service → /u
sr/lib/systemd/system/chronyd.service.
[root@controller ~]#

```

```

root@controller:~ x
File Edit View Search Terminal Help
[root@controller ~]# chronyc sources
210 Number of sources = 8
MS Name/IP address      Stratum Poll Reach LastRx Last sample
=====
^? time.cloudflare.com   0    7    0    -    +0ns[    +0ns] +/-    0ns
^? ntp.marwan.ma         0    7    0    -    +0ns[    +0ns] +/-    0ns
^? 196.200.160.123       0    7    0    -    +0ns[    +0ns] +/-    0ns
^? time.cloudflare.com   0    7    0    -    +0ns[    +0ns] +/-    0ns
^? ntp.marwan.ma         0    6    0    -    +0ns[    +0ns] +/-    0ns
^? time.cloudflare.com   0    6    0    -    +0ns[    +0ns] +/-    0ns
^? time.cloudflare.com   0    6    0    -    +0ns[    +0ns] +/-    0ns
^? 2001:4310:f1::123     0    6    0    -    +0ns[    +0ns] +/-    0ns
[root@controller ~]#

```

Vérifiez qu'il fonctionne normalement

## 2. Installer MariaDB Server

- Installer MariaDB

```
root@controller:~  
File Edit View Search Terminal Help  
Verifying      : mariadb-backup-3:10.3.28-1.module_el8.3.0+757+d382 2/10  
Verifying      : mariadb-common-3:10.3.28-1.module_el8.3.0+757+d382 3/10  
Verifying      : mariadb-connector-c-3.1.11-2.el8_3.x86_64        4/10  
Verifying      : mariadb-connector-c-config-3.1.11-2.el8_3.noarch 5/10  
Verifying      : mariadb-errmsg-3:10.3.28-1.module_el8.3.0+757+d382 6/10  
Verifying      : mariadb-gssapi-server-3:10.3.28-1.module_el8.3.0+7 7/10  
Verifying      : mariadb-server-3:10.3.28-1.module_el8.3.0+757+d382 8/10  
Verifying      : mariadb-server-utils-3:10.3.28-1.module_el8.3.0+75 9/10  
Verifying      : perl-DBD-MySQL-4.046-3.module_el8.3.0+419+c2dec72b 10/10  
  
Installed:  
mariadb-server-3:10.3.28-1.module_el8.3.0+757+d382997d.x86_64  
mariadb-backup-3:10.3.28-1.module_el8.3.0+757+d382997d.x86_64  
mariadb-gssapi-server-3:10.3.28-1.module_el8.3.0+757+d382997d.x86_64  
mariadb-server-utils-3:10.3.28-1.module_el8.3.0+757+d382997d.x86_64  
mariadb-3:10.3.28-1.module_el8.3.0+757+d382997d.x86_64  
mariadb-common-3:10.3.28-1.module_el8.3.0+757+d382997d.x86_64  
mariadb-connector-c-3.1.11-2.el8_3.x86_64  
mariadb-connector-c-config-3.1.11-2.el8_3.noarch  
mariadb-errmsg-3:10.3.28-1.module_el8.3.0+757+d382997d.x86_64  
perl-DBD-MySQL-4.046-3.module_el8.3.0+419+c2dec72b.x86_64  
  
Complete!  
[root@controller ~]#
```

```
root@controller:~  
File Edit View Search Terminal Help  
# create new  
# set default charset  
# if not set, default is [latin1]  
# for the case of 4 bytes UTF-8, specify [utf8mb4]  
[mysqld]  
character-set-server = utf8mb4  
  
[client]  
default-character-set = utf8mb4  
~  
~
```

Creation de /etc/my.cnf.d/charset.cnf

```
root@controller:~  
File Edit View Search Terminal Help  
Verifying      : perl-DBD-MySQL-4.046-3.module_el8.3.0+419+c2dec72b 10/10  
  
Installed:  
mariadb-server-3:10.3.28-1.module_el8.3.0+757+d382997d.x86_64  
mariadb-backup-3:10.3.28-1.module_el8.3.0+757+d382997d.x86_64  
mariadb-gssapi-server-3:10.3.28-1.module_el8.3.0+757+d382997d.x86_64  
mariadb-server-utils-3:10.3.28-1.module_el8.3.0+757+d382997d.x86_64  
mariadb-3:10.3.28-1.module_el8.3.0+757+d382997d.x86_64  
mariadb-common-3:10.3.28-1.module_el8.3.0+757+d382997d.x86_64  
mariadb-connector-c-3.1.11-2.el8_3.x86_64  
mariadb-connector-c-config-3.1.11-2.el8_3.noarch  
mariadb-errmsg-3:10.3.28-1.module_el8.3.0+757+d382997d.x86_64  
perl-DBD-MySQL-4.046-3.module_el8.3.0+419+c2dec72b.x86_64  
  
Complete!  
[root@controller ~]# vi /etc/my.cnf.d/charset.cnf  
[root@controller ~]# systemctl enable --now mariadb  
Created symlink /etc/systemd/system/mysql.service → /usr/lib/systemd/system/mariadb.service.  
Created symlink /etc/systemd/system/mysqld.service → /usr/lib/systemd/system/mariadb.service.  
Created symlink /etc/systemd/system/multi-user.target.wants/mariadb.service → /usr/lib/systemd/system/mariadb.service.  
[root@controller ~]#
```

- Paramètres initiaux pour MariaDB.

```
root@controller:~ x
File Edit View Search Terminal Help

[root@controller ~]# mysql_secure_installation

NOTE: RUNNING ALL PARTS OF THIS SCRIPT IS RECOMMENDED FOR ALL MariaDB
      SERVERS IN PRODUCTION USE! PLEASE READ EACH STEP CAREFULLY!

In order to log into MariaDB to secure it, we'll need the current
password for the root user. If you've just installed MariaDB, and
you haven't set the root password yet, the password will be blank,
so you should just press enter here.

Enter current password for root (enter for none):
ERROR 1045 (28000): Access denied for user 'root'@'localhost' (using password: YES)
Enter current password for root (enter for none):
OK, successfully used password, moving on...

Setting the root password ensures that nobody can log into the MariaDB
root user without the proper authorisation.

Set root password? [Y/n] y
New password:
Re-enter new password:
```

```
root@controller:~ x
File Edit View Search Terminal Help

Remove anonymous users? [Y/n] y
... Success!

Normally, root should only be allowed to connect from 'localhost'. This
ensures that someone cannot guess at the root password from the network.

Disallow root login remotely? [Y/n] y
... Success!

By default, MariaDB comes with a database named 'test' that anyone can
access. This is also intended only for testing, and should be removed
before moving into a production environment.

Remove test database and access to it? [Y/n] y
- Dropping test database...
... Success!
- Removing privileges on test database...
... Success!

Reloading the privilege tables will ensure that all changes made so far
will take effect immediately.

Reload privilege tables now? [Y/n] y
```

```
root@controller:~ x
File Edit View Search Terminal Help

Reloading the privilege tables will ensure that all changes made so far
will take effect immediately.

Reload privilege tables now? [Y/n] y
... Success!

Cleaning up...

All done! If you've completed all of the above steps, your MariaDB
installation should now be secure.

Thanks for using MariaDB!
[root@controller ~]# mysql -u root -p
Enter password:
Welcome to the MariaDB monitor. Commands end with ; or \g.
Your MariaDB connection id is 20
Server version: 10.3.28-MariaDB MariaDB Server

Copyright (c) 2000, 2018, Oracle, MariaDB Corporation Ab and others.

Type 'help;' or '\h' for help. Type '\c' to clear the current input statement.

MariaDB [(none)]>
```

```

root@controller:~ x
File Edit View Search Terminal Help

Type 'help;' or '\h' for help. Type '\c' to clear the current input statement.

MariaDB [(none)]> select user,host,password from mysql.user;
+-----+-----+
| user | host      | password          |
+-----+-----+
| root | localhost | *375ED58C38359D5453FF99865EED0896F66A555B |
| root | 127.0.0.1 | *375ED58C38359D5453FF99865EED0896F66A555B |
| root | ::1       | *375ED58C38359D5453FF99865EED0896F66A555B |
+-----+-----+
3 rows in set (0.000 sec)

MariaDB [(none)]> show databases;
+-----+
| Database      |
+-----+
| information_schema |
| mysql          |
| performance_schema |
+-----+
3 rows in set (0.001 sec)

MariaDB [(none)]>

```

```

root@controller:~ x
File Edit View Search Terminal Help

MariaDB [(none)]> create database test_database;
Query OK, 1 row affected (0.001 sec)

MariaDB [(none)]> create table test_database.test_table (id int, name varchar(50)
), address varchar(50), primary key (id));
Query OK, 0 rows affected (0.009 sec)

MariaDB [(none)]> insert into test_database.test_table(id, name, address) values
('001', "CentOS", "Hiroshima");
Query OK, 1 row affected (0.003 sec)

MariaDB [(none)]> select * from test_database.test_table;
+-----+-----+
| id | name      | address        |
+-----+-----+
| 1  | CentOS    | Hiroshima    |
+-----+-----+
1 row in set (0.001 sec)

MariaDB [(none)]> drop database test_database;
Query OK, 1 row affected (0.009 sec)

MariaDB [(none)]>

```

- Ajoutez le référentiel d'Openstack Victoria et mettez également à niveau le système CentOS.

```

[root@controller ~]# dnf -y install centos-release-openstack-victoria
CentOS-8 - Advanced Virtualization           61 kB/s | 255 kB   00:04
CentOS-8 - Ceph Nautilus                     25 B/s | 38 B    00:01
CentOS-8 - RabbitMQ 38                        23 B/s | 38 B    00:01
CentOS-8 - NFV OpenvSwitch                   18 B/s | 38 B    00:02
CentOS-8 - OpenStack victoria                26 B/s | 38 B    00:01
Failed to synchronize cache for repo 'centos-ceph-nautilus', ignoring this repo.
Failed to synchronize cache for repo 'centos-rabbitmq-38', ignoring this repo.
Failed to synchronize cache for repo 'centos-nfv-openvswitch', ignoring this rep
o.
Failed to synchronize cache for repo 'centos-openstack-victoria', ignoring this
repo.
Package centos-release-openstack-victoria-1-2.el8.noarch is already installed.
Dependencies resolved.
Nothing to do.
Complete!
[root@controller ~]#

```

```
root@controller:~  
File Edit View Search Terminal Help  
Complete!  
[root@controller ~]# dnf -y install centos-release-openstack-victoria  
CentOS-8 - Advanced Virtualization           61 kB/s | 255 kB   00:04  
CentOS-8 - Ceph Nautilus                   25 B/s | 38 B    00:01  
CentOS-8 - RabbitMQ 38                      23 B/s | 38 B    00:01  
CentOS-8 - NFV OpenvSwitch                 18 B/s | 38 B    00:02  
CentOS-8 - OpenStack victoria              26 B/s | 38 B    00:01  
Failed to synchronize cache for repo 'centos-ceph-nautilus', ignoring this repo  
. Failed to synchronize cache for repo 'centos-rabbitmq-38', ignoring this repo.  
Failed to synchronize cache for repo 'centos-nfv-openvswitch', ignoring this repo.  
Failed to synchronize cache for repo 'centos-openstack-victoria', ignoring this repo.  
Package centos-release-openstack-victoria-1.2.el8.noarch is already installed.  
Dependencies resolved.  
Nothing to do.  
Complete!  
[root@controller ~]# sed -i -e "s/enabled=1/enabled=0/g" /etc/yum.repos.d/CentO  
S-OpenStack-victoria.repo  
[root@controller ~]# dnf --enablerepo=centos-openstack-victoria -y upgrade  
CentOS-8 - Ceph Nautilus                  4.2 B/s | 38 B    00:09  
CentOS-8 - RabbitMQ 38                     20 B/s | 38 B    00:01  
CentOS-8 - NFV OpenvSwitch                21 B/s | 38 B    00:01
```

```
root@controller:~  
File Edit View Search Terminal Help  
python3-webencodings-0.5.1-6.el8.noarch  
tracer-common-0.7.5-2.el8.noarch  
xorg-x11-drv-fbdev-0.5.0-2.el8.x86_64  
xorg-x11-drv-vesa-2.4.0-3.el8.x86_64  
centos-gpg-keys-1:8-3.el8.noarch  
centos-linux-repos-8-3.el8.noarch  
crda-3.18_2020.04.29-1.el8.noarch  
crypto-policies-scripts-20210617-1.gitc776d3e.el8.noarch  
fuse3-3.2.1-12.el8.x86_64  
grub2-tools-efi-1:2.02-106.el8.x86_64  
iw-4.14-5.el8.x86_64  
libbpf-0.4.0-1.el8.x86_64  
libmodulemd-2.13.0-1.el8.x86_64  
libssh-config-0.9.4-3.el8.noarch  
libxmlb-0.1.15-1.el8.x86_64  
libzstd-1.4.4-1.el8.x86_64  
lmbd-libs-0.9.24-1.el8.x86_64  
mozjs60-60.9.0-4.el8.x86_64  
python3-nftables-1:0.9.3-21.el8.x86_64  
python3-pip-wheel-9.0.3-20.el8.noarch  
python3-setuptools-wheel-39.2.0-6.el8.noarch  
  
Complete!  
[root@controller ~]#
```

- Installez RabbitMQ, Memcached.

```
root@controller:~  
File Edit View Search Terminal Help  
[root@controller ~]# dnf --enablerepo=powertools -y install rabbitmq-server mem  
cached  
Last metadata expiration check: 0:01:01 ago on Mon 06 Feb 2023 03:37:27 PM GMT.  
Error:  
Problem: cannot install the best candidate for the job  
- nothing provides erlang >= 25.0 needed by rabbitmq-server-3.11.8-1.el8.noar  
ch  
(try to add '--skip-broken' to skip uninstallable packages or '--nobest' to use  
not only best candidate packages)  
[root@controller ~]#
```

```
root@controller:~  
File Edit View Search Terminal Help  
#  
# These groups are read by MariaDB server.  
# Use it for options that only the server (but not clients) should see  
#  
# See the examples of server my.cnf files in /usr/share/mysql/  
#  
# this is read by the standalone daemon and embedded servers  
[server]  
  
# this is only for the mysqld standalone daemon  
# Settings user and group are ignored when systemd is used.  
# If you need to run mysqld under a different user or group,  
# customize your system unit file for mysqld/mariadb according to the  
# instructions in http://fedoraproject.org/wiki/Systemd  
[mysqld]  
datadir=/var/lib/mysql  
socket=/var/lib/mysql/mysql.sock  
log-error=/var/log/mariadb/mariadb.log  
pid-file=/run/mariadb/mariadb.pid  
max_connections=500  
  
#  
# * Galera-related settings  
#  
#/etc/my.cnf.d/mariadb-server.cnf" 55L, 1477C
```

### Modification de **/etc/my.cnf.d/mariadb-server.cnf**

```
root@controller:~  
File Edit View Search Terminal Help  
PORT="11211"  
USER="memcached"  
MAXCONN="1024"  
CACHESIZE="64"  
OPTIONS="-l 0.0.0.0,::"  
~  
~
```

### Modification de **/etc/sysconfig/memcached**

```
root@controller:~  
File Edit View Search Terminal Help  
directory /var/run/, updating /var/run/rabbitmq -> /run/rabbitmq; please update th  
e tmpfiles.d/ drop-in file accordingly.  
Verifying : rabbitmq-server-3.11.8-1.el8.noarch 1/1  
Installed:  
rabbitmq-server-3.11.8-1.el8.noarch  
Complete!  
[root@controller ~]# sudo vim /etc/yum.repos.d/rabbitmq_rabbitmq-server.repo  
[root@controller ~]# sudo yum install rabbitmq-server  
Last metadata expiration check: 0:03:19 ago on Mon 06 Feb 2023 04:48:28 PM GMT.  
Package rabbitmq-server-3.11.8-1.el8.noarch is already installed.  
Dependencies resolved.  
Nothing to do.  
Complete!  
[root@controller ~]# vi /etc/my.cnf.d/mariadb-server.cnf  
[root@controller ~]# systemctl restart mariadb rabbitmq-server memcached  
[root@controller ~]# systemctl enable mariadb rabbitmq-server memcached  
Created symlink /etc/systemd/system/multi-user.target.wants/rabbitmq-server.serv  
ice → /usr/lib/systemd/system/rabbitmq-server.service.  
Created symlink /etc/systemd/system/multi-user.target.wants/memcached.service →  
/usr/lib/systemd/system/memcached.service.  
[root@controller ~]#
```

```
[root@controller ~]# rabbitmqctl add_user openstack password
Adding user "openstack" ...
Done. Don't forget to grant the user permissions to some virtual hosts! See 'rabbitmqctl help set_permissions' to learn more.
[root@controller ~]# rabbitmqctl set_permissions openstack ".*" ".*" ".*"
Setting permissions for user "openstack" in vhost "/" ...
[root@controller ~]#
```

### Ajout d'utilisateur openstack

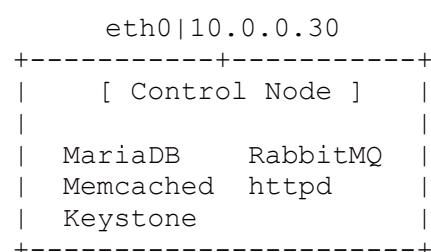
- Si SELinux est activé, modifiez la politique.

```
File Edit View Search Terminal Help
Last metadata expiration check: 0:03:19 ago on Mon 06 Feb 2023 04:48:28 PM GMT.
Package rabbitmq-server-3.11.8-1.el8.noarch is already installed.
Dependencies resolved.
Nothing to do.
Complete!
[root@controller ~]# vi /etc/my.cnf.d/mariadb-server.cnf
[root@controller ~]# systemctl restart mariadb rabbitmq-server memcached
[root@controller ~]# systemctl enable mariadb rabbitmq-server memcached
Created symlink /etc/systemd/system/multi-user.target.wants/rabbitmq-server.service → /usr/lib/systemd/system/rabbitmq-server.service.
Created symlink /etc/systemd/system/multi-user.target.wants/memcached.service → /usr/lib/systemd/system/memcached.service.
[root@controller ~]# rabbitmqctl add_user openstack password
Adding user "openstack" ...
Done. Don't forget to grant the user permissions to some virtual hosts! See 'rabbitmqctl help set_permissions' to learn more.
[root@controller ~]# rabbitmqctl set_permissions openstack ".*" ".*" ".*"
Setting permissions for user "openstack" in vhost "/" ...
[root@controller ~]# vi rabbitmqctl.te
[root@controller ~]# checkmodule -m -M -o rabbitmqctl.mod rabbitmqctl.te
[root@controller ~]# semodule_package --outfile rabbitmqctl.pp --module rabbitmqctl.mod
[root@controller ~]# semodule -i rabbitmqctl.pp
[root@controller ~]#
```

### Creation de rabbitmqctl.te

## 3. OpenStack Victoria : Configure Keystone #1

Installer et configurer le service d'identité OpenStack (Keystone).



- Ajoutez un utilisateur et une base de données sur MariaDB pour Keystone.

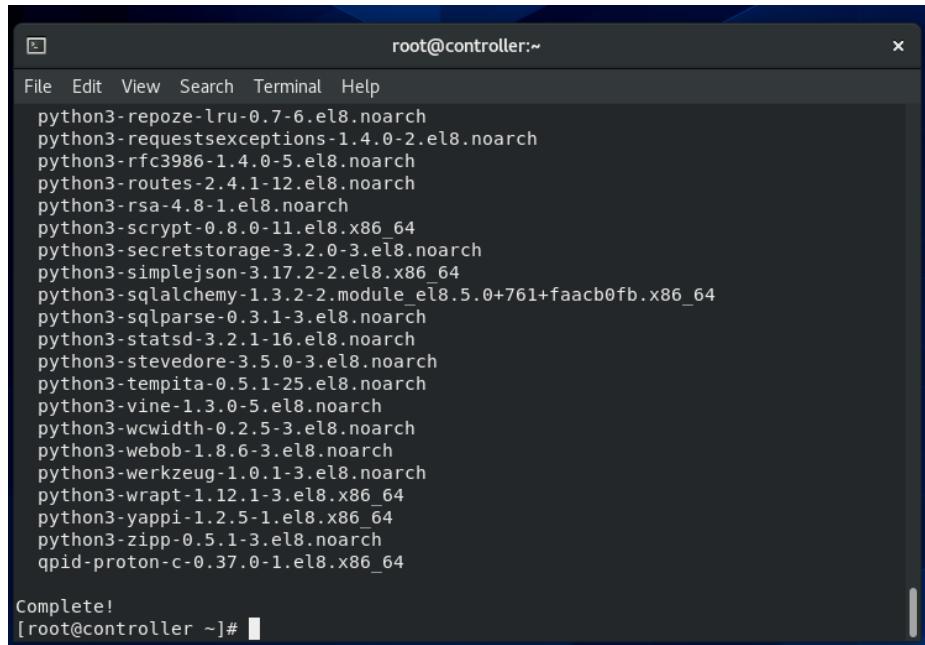
```
MariaDB [(none)]> create database keystone;grant all privileges on keystone.* to keystone@'localhost' identified by 'password';grant all privileges on keystone.* to keystone@'%' identified by 'password';flush privileges;
Query OK, 1 row affected (0.001 sec)

Query OK, 0 rows affected (0.002 sec)

Query OK, 0 rows affected (0.000 sec)

Query OK, 0 rows affected (0.001 sec)
```

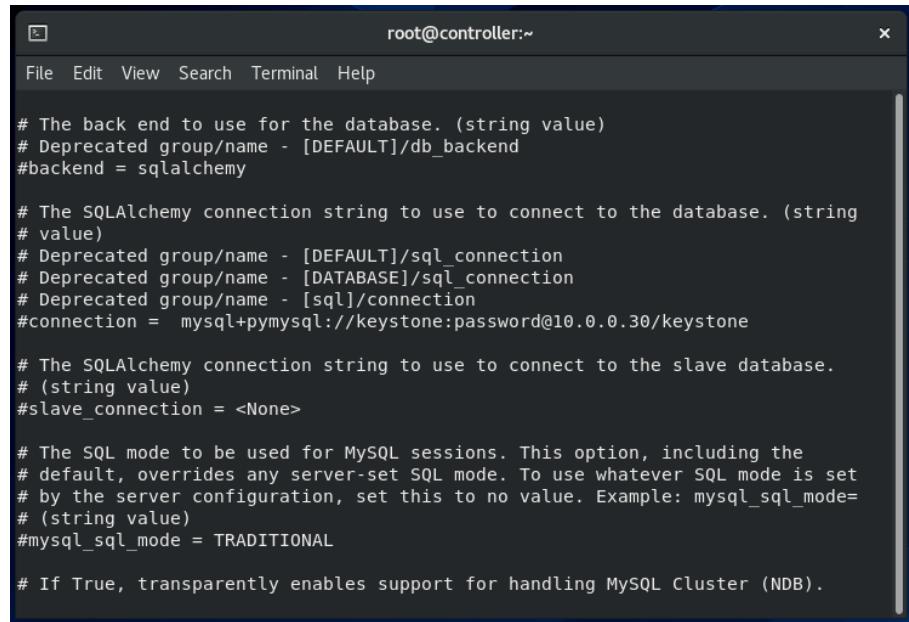
- Installer Keystone.



```
root@controller:~#
File Edit View Search Terminal Help
python3-repoze-lru-0.7-6.el8.noarch
python3-requestsexceptions-1.4.0-2.el8.noarch
python3-rfc3986-1.4.0-5.el8.noarch
python3-routes-2.4.1-12.el8.noarch
python3-rsa-4.8-1.el8.noarch
python3-scrypt-0.8.0-11.el8.x86_64
python3-secretstorage-3.2.0-3.el8.noarch
python3-simplejson-3.17.2-2.el8.x86_64
python3-sqlalchemy-1.3.2-2.module_el8.5.0+761+faacb0fb.x86_64
python3-sqlparse-0.3.1-3.el8.noarch
python3-statsd-3.2.1-16.el8.noarch
python3-stevedore-3.5.0-3.el8.noarch
python3-tempita-0.5.1-25.el8.noarch
python3-vine-1.3.0-5.el8.noarch
python3-wcwidth-0.2.5-3.el8.noarch
python3-webob-1.8.6-3.el8.noarch
python3-werkzeug-1.0.1-3.el8.noarch
python3-wrapt-1.12.1-3.el8.x86_64
python3-yappi-1.2.5-1.el8.x86_64
python3-zipp-0.5.1-3.el8.noarch
qpid-proton-c-0.37.0-1.el8.x86_64

Complete!
[root@controller ~]#
```

- Configurer Keystone.



```
root@controller:~#
File Edit View Search Terminal Help

# The back end to use for the database. (string value)
# Deprecated group/name - [DEFAULT]/db_backend
#backend = sqlalchemy

# The SQLAlchemy connection string to use to connect to the database. (string
# value)
# Deprecated group/name - [DEFAULT]/sql_connection
# Deprecated group/name - [DATABASE]/sql_connection
# Deprecated group/name - [sql]/connection
#connection = mysql+pymysql://keystone:password@10.0.0.30/keystone

# The SQLAlchemy connection string to use to connect to the slave database.
# (string value)
#slave_connection = <None>

# The SQL mode to be used for MySQL sessions. This option, including the
# default, overrides any server-set SQL mode. To use whatever SQL mode is set
# by the server configuration, set this to no value. Example: mysql_sql_mode=
# (string value)
#mysql_sql_mode = TRADITIONAL

# If True, transparently enables support for handling MySQL Cluster (NDB).
```

Modification de **/etc/keystone/keystone.conf**

```

root@controller:~#
File Edit View Search Terminal Help
python3-zipp-0.5.1-3.el8.noarch
qpid-proton-c-0.37.0-1.el8.x86_64

Complete!
[root@controller ~]# vi /etc/keystone/keystone.conf
[root@controller ~]# vi /etc/keystone/keystone.conf
[root@controller ~]# su -s /bin/bash keystone -c "keystone-manage db_sync"
[root@controller ~]# keystone-manage fernet_setup --keystone-user keystone --key
stone-group keystone
[root@controller ~]# keystone-manage credential_setup --keystone-user keystone -
--keystone-group keystone
[root@controller ~]# export controller=10.0.0.30
[root@controller ~]# keystone-manage bootstrap --bootstrap-password yassine \
--bootstrap-admin-url http://$controller:5000/v3/ \
--bootstrap-internal-url http:
//$controller:5000/v3/ \
--bootstrap-public-url http://$controller:5000/v3/ \
--bootstrap-region-id RegionOne
usage: keystone-manage [bootstrap|credential_migrate|credential_rotate|credentia
l_setup|db_sync|db_version|doctor|domain_config_upload|fernet_rotate|fernet_setu
p|create_jws_keypair|mapping_populate|mapping_purge|mapping_engine|receipt_rotat
e|receipt_setup|saml_idp_metadata|token_rotate|token_setup|trust_flush]
keystone-manage: error: unrecognized arguments: --bootstrap-admin-url http://10
.0.0.30:5000/v3/ --bootstrap-internal-url http://10.0.0.30:5000/v3/ --bootstra
p-public-url http://10.0.0.30:5000/v3/ --bootstrap-region-id RegionOne
[root@controller ~]#

```

### Initialize des keys, du host et bootstrap

- Si SELinux est activé, modifiez les paramètres booléens.

```

File Edit View Search Terminal Help
[root@controller ~]# setsebool -P httpd_use_openstack on
[root@controller ~]# setsebool -P httpd_can_network_connect on
[root@controller ~]# setsebool -P httpd_can_network_connect_db on
[root@controller ~]#

```

```

module keystone-httpd 1.0;

require {
    type httpd_t;
    type keystone_var_lib_t;
    type keystone_log_t;
    class file { create setattr ioctl open read write };
    class dir { add_name create write };
}

===== httpd_t =====
allow httpd_t keystone_var_lib_t:dir { add_name create write };
allow httpd_t keystone_var_lib_t:file { create open write setattr ioctl open rea
d };
allow httpd_t keystone_log_t:dir { add_name write };
allow httpd_t keystone_log_t:file create;#

```

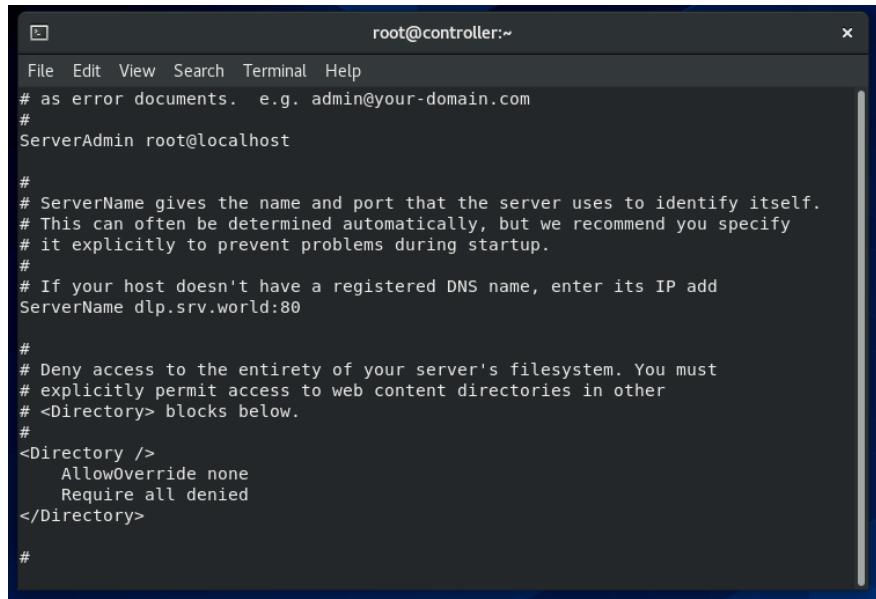
### Creation de `keystone-httpd.te`

```

[root@controller ~]# setsebool -P httpd_use_openstack on
[root@controller ~]# setsebool -P httpd_can_network_connect on
[root@controller ~]# setsebool -P httpd_can_network_connect_db on
[root@controller ~]# vi keystone-httpd.te
[root@controller ~]# checkmodule -m -M -o keystone-httpd.mod keystone-httpd.te
[root@controller ~]# semodule_package --outfile keystone-httpd.pp --module keyst
one-httpd.mod
[root@controller ~]# semodule -i keystone-httpd.pp

```

- Activez les paramètres pour Keystone et démarrez Apache httpd.

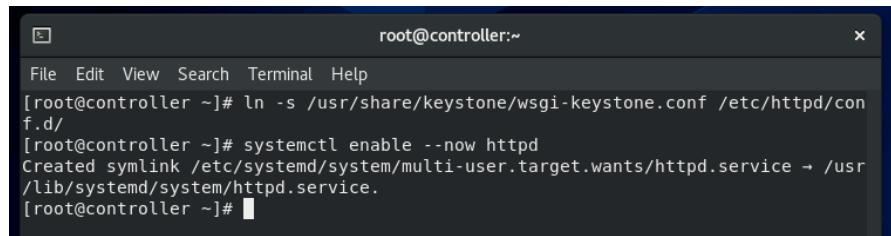


```
root@controller:~#
File Edit View Search Terminal Help
# as error documents. e.g. admin@your-domain.com
#
# ServerAdmin root@localhost
#
# ServerName gives the name and port that the server uses to identify itself.
# This can often be determined automatically, but we recommend you specify
# it explicitly to prevent problems during startup.
#
# If your host doesn't have a registered DNS name, enter its IP add
ServerName dlp.srv.world:80

#
# Deny access to the entirety of your server's filesystem. You must
# explicitly permit access to web content directories in other
# <Directory> blocks below.
#
<Directory />
    AllowOverride none
    Require all denied
</Directory>

#
```

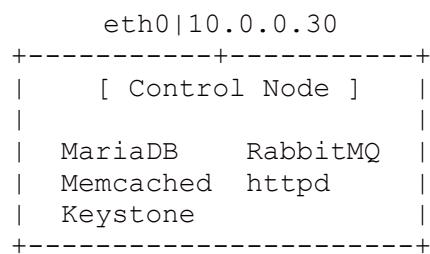
### Modification de `/etc/httpd/conf/httpd.conf`



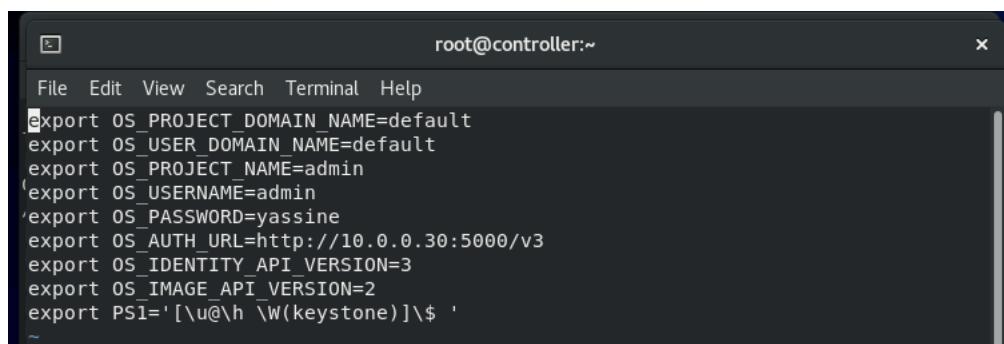
```
root@controller:~#
File Edit View Search Terminal Help
[root@controller ~]# ln -s /usr/share/keystone/wsgi-keystone.conf /etc/httpd/con
f.d/
[root@controller ~]# systemctl enable --now httpd
Created symlink /etc/systemd/system/multi-user.target.wants/httpd.service → /usr
/lib/systemd/system/httpd.service.
[root@controller ~]#
```

## 4. OpenStack Victoria : Configure Keystone #2

Ajouter des projets sur Keystone.



- Créer et charger un fichier de variables d'environnement.



```
root@controller:~#
File Edit View Search Terminal Help
export OS_PROJECT_DOMAIN_NAME=default
export OS_USER_DOMAIN_NAME=default
export OS_PROJECT_NAME=admin
export OS_USERNAME=admin
export OS_PASSWORD=yassine
export OS_AUTH_URL=http://10.0.0.30:5000/v3
export OS_IDENTITY_API_VERSION=3
export OS_IMAGE_API_VERSION=2
export PS1='[\u@\h \W(keystone)]\$ '
```

### Modification de `~/kestonerc`

```
root@controller:~# ln -s /usr/share/keystone/wsgi-keystone.conf /etc/httpd/con
f.d/
[root@controller ~]# systemctl enable --now httpd
Created symlink /etc/systemd/system/multi-user.target.wants/httpd.service → /usr
/lib/systemd/system/httpd.service.
[root@controller ~]# vi ~/kestonerc
[root@controller ~]# chmod 600 ~/kestonerc
[root@controller ~]# source ~/kestonerc
[root@controller ~(keystone)]# ^C
[root@controller ~(keystone)]# quit
bash: quit: command not found...
Similar command is: 'quot'
[root@controller ~(keystone)]# echo "source ~/kestonerc " >> ~/.bash_profile
[root@controller ~(keystone)]# openstack project create --domain default --descr
iption "Service Project" service
```

- Créer des projets.

```
root@controller:~# echo "source ~/kestonerc " >> ~/.bash_profile
[root@controller ~(keystone)]# openstack project create --domain default --descr
iption "Service Project" service
+-----+
| Field      | Value
+-----+
| description | Service Project
| domain_id   | default
| enabled     | True
| id          | a7a06046fdef4b1cb1e026fecb275d7e
| is_domain   | False
| name        | service
| options     | {}
| parent_id   | default
| tags        | []
+-----+
[root@controller ~(keystone)]# openstack project list
+-----+-----+
| ID           | Name   |
+-----+-----+
| 8324da5ab3d6474ba54ff7f3a46c59805 | admin  |
| a7a06046fdef4b1cb1e026fecb275d7e | service |
+-----+-----+
[root@controller ~(keystone)]#
```

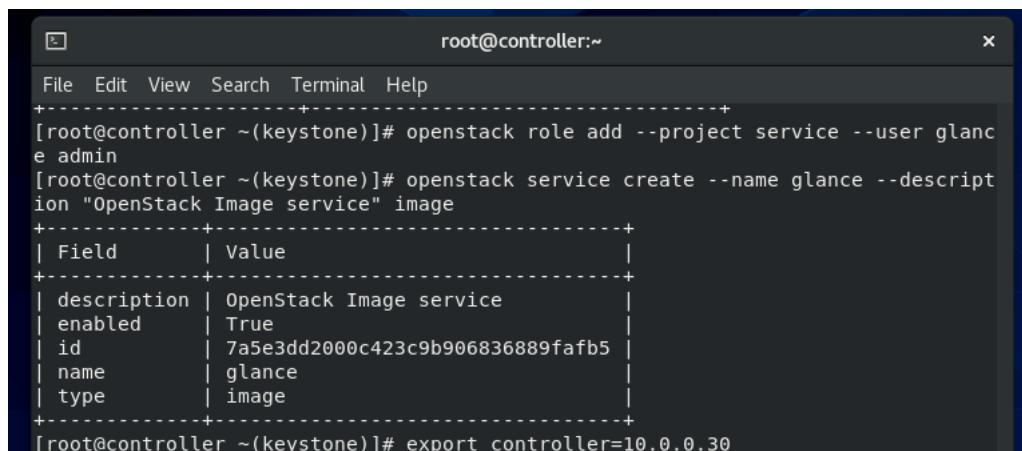
## 5. OpenStack Victoria : Configure Glance

Installer et configurer le service d'image OpenStack (Glance).

```
eth0|10.0.0.30
+-----+-----+
|      [ Control Node ]      |
|                               |
|      MariaDB      RabbitMQ  |
|      Memcached    httpd     |
|      Keystone     Glance    |
+-----+
```

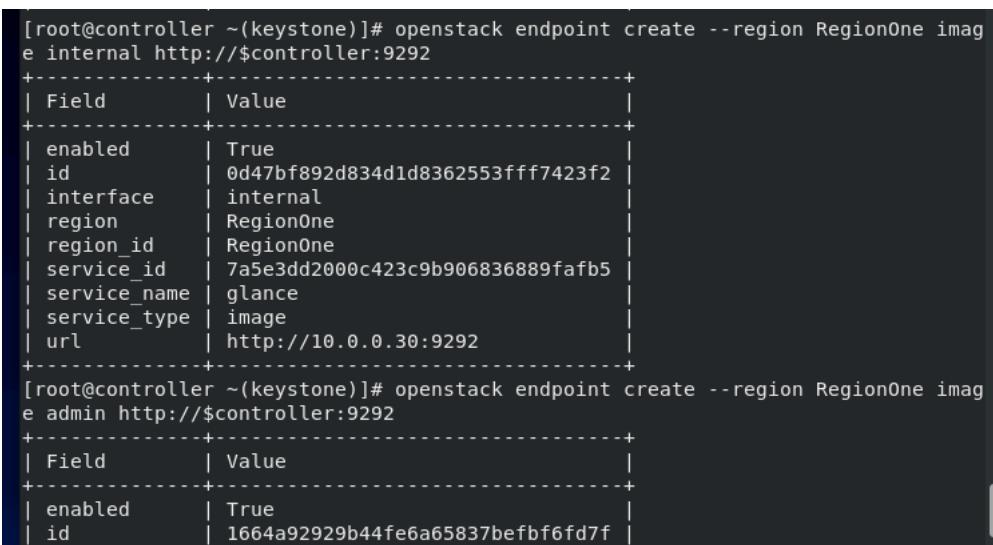
- Ajoutez des utilisateurs et d'autres pour Glance dans Keystone.

```
[root@controller ~]# openstack user create --domain default --project service --password servicepassword glance
+-----+-----+
| Field | Value |
+-----+-----+
| default_project_id | a7a06046fdef4b1cb1e026fecb275d7e |
| domain_id | default |
| enabled | True |
| id | f254aeb7cfea40c6a6589ecce2bbc7c9 |
| name | glance |
| options | {} |
| password_expires_at | None |
+-----+-----+
```



A terminal window titled "root@controller:~". The window shows the following command history:

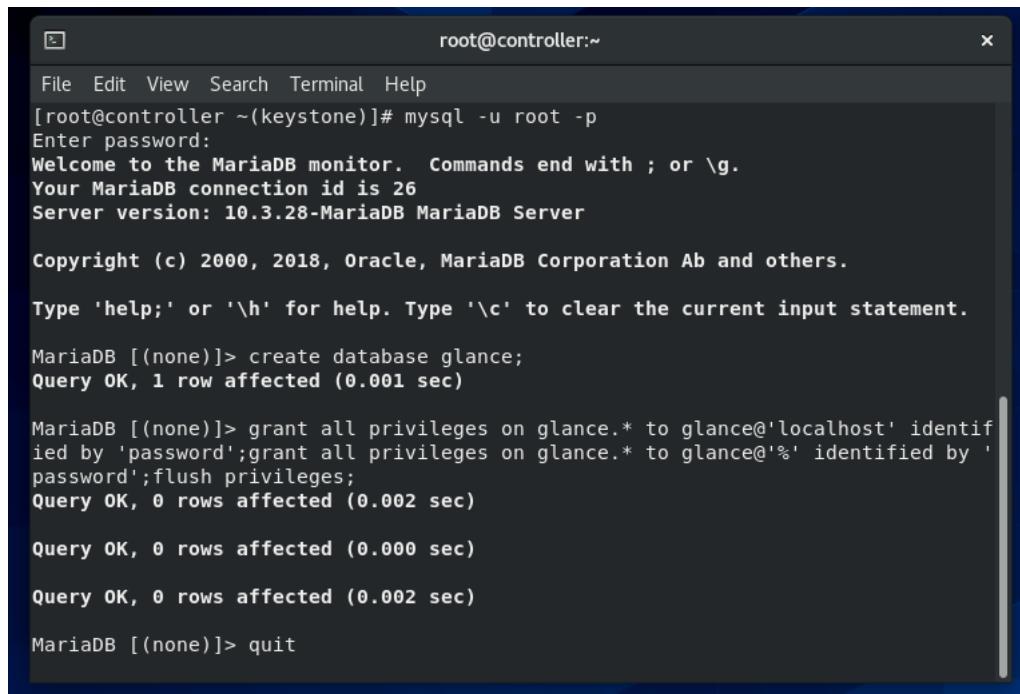
```
File Edit View Search Terminal Help
[...]
[root@controller ~]# openstack role add --project service --user glance admin
[root@controller ~]# openstack service create --name glance --description "OpenStack Image service" image
+-----+-----+
| Field | Value |
+-----+-----+
| description | OpenStack Image service |
| enabled | True |
| id | 7a5e3dd2000c423c9b906836889fafb5 |
| name | glance |
| type | image |
+-----+-----+
[root@controller ~]# export controller=10.0.0.30
```



A terminal window titled "root@controller:~". The window shows the following command history:

```
[root@controller ~]# openstack endpoint create --region RegionOne image internal http://$controller:9292
+-----+-----+
| Field | Value |
+-----+-----+
| enabled | True |
| id | 0d47bf892d834d1d8362553fff7423f2 |
| interface | internal |
| region | RegionOne |
| region_id | RegionOne |
| service_id | 7a5e3dd2000c423c9b906836889fafb5 |
| service_name | glance |
| service_type | image |
| url | http://10.0.0.30:9292 |
+-----+-----+
[root@controller ~]# openstack endpoint create --region RegionOne image admin http://$controller:9292
+-----+-----+
| Field | Value |
+-----+-----+
| enabled | True |
| id | 1664a92929b44fe6a65837befbf6fd7f |
```

- Add a User and Database on MariaDB for Glance.



```
[root@controller ~]# mysql -u root -p
Enter password:
Welcome to the MariaDB monitor.  Commands end with ; or \g.
Your MariaDB connection id is 26
Server version: 10.3.28-MariaDB MariaDB Server

Copyright (c) 2000, 2018, Oracle, MariaDB Corporation Ab and others.

Type 'help;' or '\h' for help. Type '\c' to clear the current input statement.

MariaDB [(none)]> create database glance;
Query OK, 1 row affected (0.001 sec)

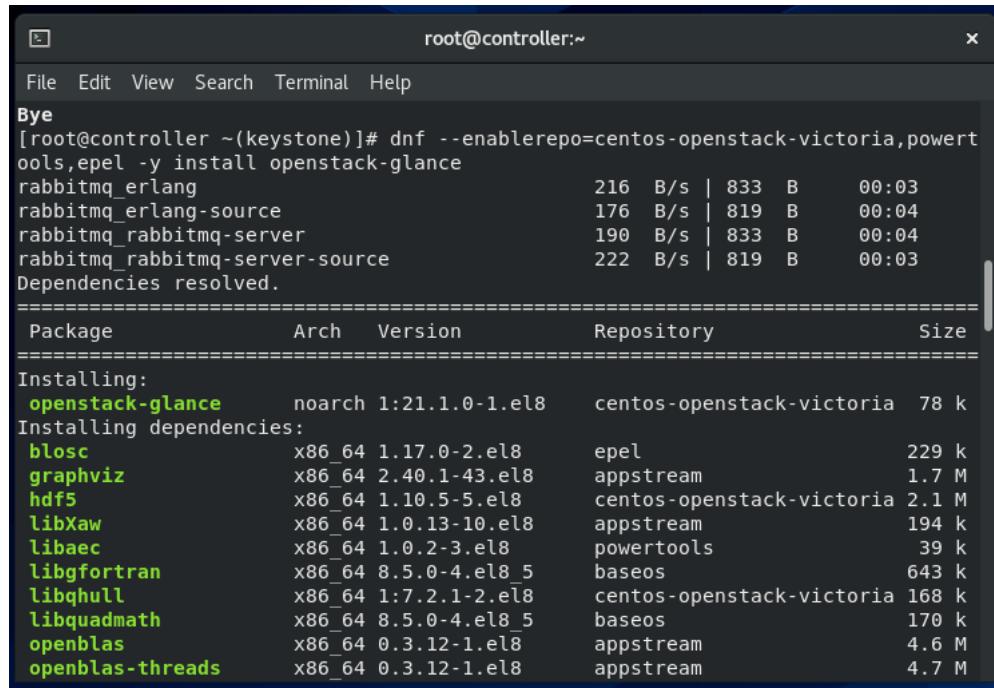
MariaDB [(none)]> grant all privileges on glance.* to glance@'localhost' identified by 'password';
grant all privileges on glance.* to glance@'%' identified by 'password';
flush privileges;
Query OK, 0 rows affected (0.002 sec)

Query OK, 0 rows affected (0.000 sec)

Query OK, 0 rows affected (0.002 sec)

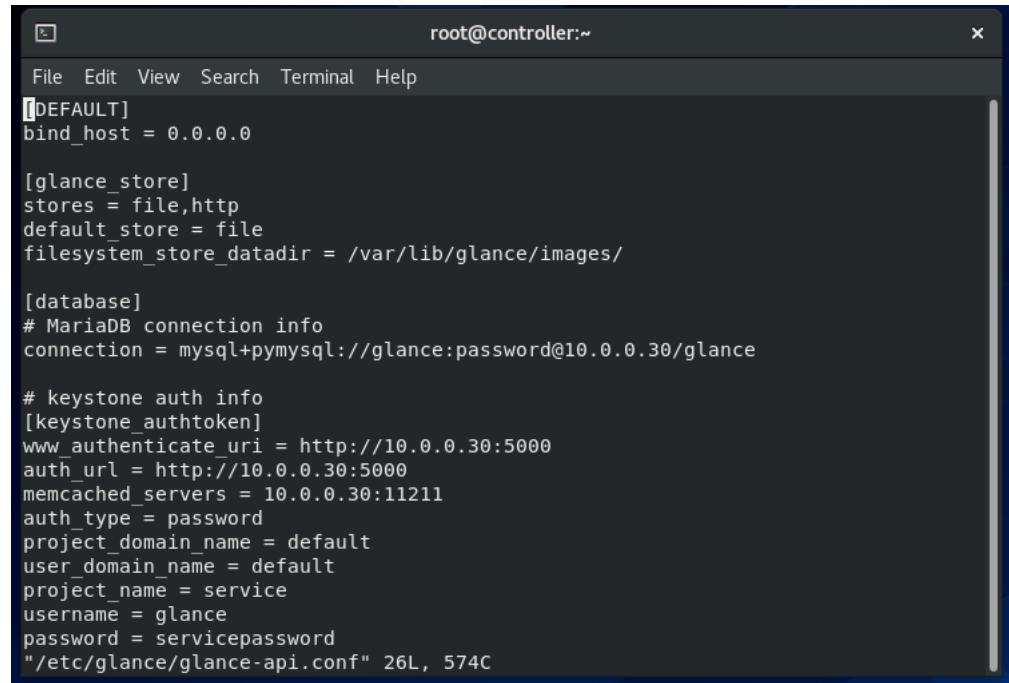
MariaDB [(none)]> quit
```

- Install Glance



```
Bye
[root@controller ~]# dnf --enablerepo=centos-openstack-victoria,powertools,epel -y install openstack-glance
rabbitmq_erlang                               216 B/s | 833 B    00:03
rabbitmq_erlang-source                         176 B/s | 819 B    00:04
rabbitmq_rabbitmq-server                      190 B/s | 833 B    00:04
rabbitmq_rabbitmq-server-source                222 B/s | 819 B    00:03
Dependencies resolved.
=====
 Package           Arch   Version        Repository      Size
 =====
Installing:
 openstack-glance      noarch 1:21.1.0-1.el8    centos-openstack-victoria 78 k
Installing dependencies:
 blosc              x86_64 1.17.0-2.el8    epel            229 k
 graphviz           x86_64 2.40.1-43.el8   appstream       1.7 M
 hdf5               x86_64 1.10.5-5.el8   centos-openstack-victoria 2.1 M
 libXaw              x86_64 1.0.13-10.el8  appstream        194 k
 libaec              x86_64 1.0.2-3.el8    powertools      39 k
 libgfortran         x86_64 8.5.0-4.el8_5 baseos          643 k
 libqhull             x86_64 1:7.2.1-2.el8  centos-openstack-victoria 168 k
 libquadmath          x86_64 8.5.0-4.el8_5 baseos          170 k
 openblas            x86_64 0.3.12-1.el8   appstream       4.6 M
 openblas-threads     x86_64 0.3.12-1.el8  appstream       4.7 M
```

- Configure Glance.



```

root@controller:~ 
File Edit View Search Terminal Help
[DEFAULT]
bind_host = 0.0.0.0

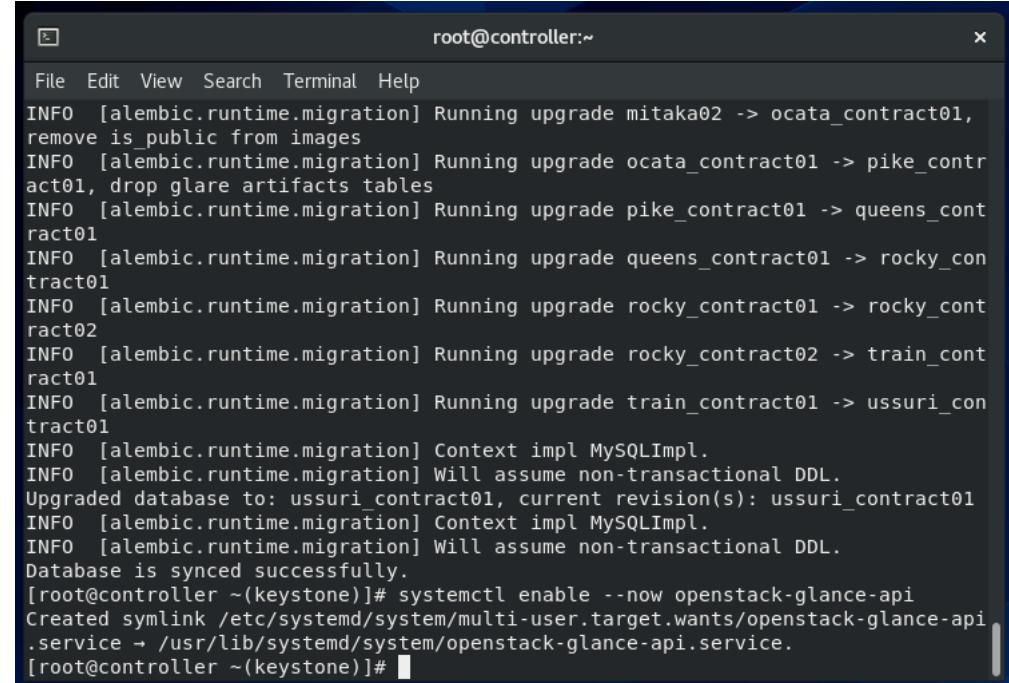
[glance_store]
stores = file,http
default_store = file
filesystem_store_datadir = /var/lib/glance/images/

[database]
# MariaDB connection info
connection = mysql+pymysql://glance:password@10.0.0.30/glance

# keystone auth info
[keystone_authtoken]
www_authenticate_uri = http://10.0.0.30:5000
auth_url = http://10.0.0.30:5000
memcached_servers = 10.0.0.30:11211
auth_type = password
project_domain_name = default
user_domain_name = default
project_name = service
username = glance
password = servicepassword
"/etc/glance/glance-api.conf" 26L, 574C

```

### Creation de /etc/glance/glance-api.conf



```

root@controller:~ 
File Edit View Search Terminal Help
INFO [alembic.runtime.migration] Running upgrade mitaka02 -> ocata_contract01,
remove is_public from images
INFO [alembic.runtime.migration] Running upgrade ocata_contract01 -> pike_contract01,
drop glare artifacts tables
INFO [alembic.runtime.migration] Running upgrade pike_contract01 -> queens_contract01
INFO [alembic.runtime.migration] Running upgrade queens_contract01 -> rocky_contract01
INFO [alembic.runtime.migration] Running upgrade rocky_contract01 -> rocky_contract02
INFO [alembic.runtime.migration] Running upgrade rocky_contract02 -> train_contract01
INFO [alembic.runtime.migration] Running upgrade train_contract01 -> ussuri_contract01
INFO [alembic.runtime.migration] Context impl MySQLImpl.
INFO [alembic.runtime.migration] Will assume non-transactional DDL.
Upgraded database to: ussuri_contract01, current revision(s): ussuri_contract01
INFO [alembic.runtime.migration] Context impl MySQLImpl.
INFO [alembic.runtime.migration] Will assume non-transactional DDL.
Database is synced successfully.
[root@controller ~]# systemctl enable --now openstack-glance-api
Created symlink /etc/systemd/system/multi-user.target.wants/openstack-glance-api.service → /usr/lib/systemd/system/openstack-glance-api.service.
[root@controller ~]#

```

- Si SELinux est activé, modifiez les paramètres booléens.

```
root@controller:~ File Edit View Search Terminal Help # create new module glanceapi 1.0; require { type glance_api_t; type rpm_exec_t; type hostname_exec_t; type sudo_exec_t; type httpd_config_t; type iscsid_exec_t; type gpg_exec_t; class dir search; class file { getattr open read }; } ===== glance_api_t ===== allow glance_api_t httpd_config_t:dir search; allow glance_api_t gpg_exec_t:file getattr; allow glance_api_t hostname_exec_t:file getattr; allow glance_api_t rpm_exec_t:file getattr; allow glance_api_t sudo_exec_t:file getattr; allow glance_api_t iscsid_exec_t:file { getattr open read }; ~ :wq
```

### Creation de `glanceapi.te`

```
root@controller:~ File Edit View Search Terminal Help INFO [alembic.runtime.migration] Running upgrade queens_contract01 -> rocky_contract01 INFO [alembic.runtime.migration] Running upgrade rocky_contract01 -> rocky_contract02 INFO [alembic.runtime.migration] Running upgrade rocky_contract02 -> train_contract01 INFO [alembic.runtime.migration] Running upgrade train_contract01 -> ussuri_contract01 INFO [alembic.runtime.migration] Context impl MySQLImpl. INFO [alembic.runtime.migration] Will assume non-transactional DDL. Upgraded database to: ussuri_contract01, current revision(s): ussuri_contract01 INFO [alembic.runtime.migration] Context impl MySQLImpl. INFO [alembic.runtime.migration] Will assume non-transactional DDL. Database is synced successfully. [root@controller ~]# systemctl enable --now openstack-glance-api Created symlink /etc/systemd/system/multi-user.target.wants/openstack-glance-api.service → /usr/lib/systemd/system/openstack-glance-api.service. [root@controller ~]# setsebool -P glance_api_can_network on [root@controller ~]# vi glanceapi.te [root@controller ~]# checkmodule -m -M -o glanceapi.mod glanceapi.te [root@controller ~]# semodule_package --outfile glanceapi.pp --module glanceapi.mod [root@controller ~]# semodule -i glanceapi.pp
```

## 6. OpenStack Victoria : Add VM Images

Ajoutez des images de machines virtuelles dans Glance.

- Installer l'hyperviseur KVM
  - Install required packages.

```

root@controller:~#
File Edit View Search Terminal Help
Verifying : libvirt-client-7.6.0-6.el8.x86_64 2/7
Verifying : libvirt-daemon-config-nwfilter-7.6.0-6.el8.x86_64 3/7
Verifying : python3-libvirt-7.6.0-1.el8.x86_64 4/7
Verifying : python3-argcomplete-1.9.3-6.el8.noarch 5/7
Verifying : virt-install-2.2.1-4.el8.noarch 6/7
Verifying : virt-manager-common-2.2.1-4.el8.noarch 7/7

Installed:
libvirt-7.6.0-6.el8.x86_64
libvirt-client-7.6.0-6.el8.x86_64
libvirt-daemon-config-nwfilter-7.6.0-6.el8.x86_64
python3-argcomplete-1.9.3-6.el8.noarch
python3-libvirt-7.6.0-1.el8.x86_64
virt-install-2.2.1-4.el8.noarch
virt-manager-common-2.2.1-4.el8.noarch

Complete!
[root@controller ~]# lsmod | grep kvm
[root@controller ~]# systemctl enable --now libvirtd
Created symlink /etc/systemd/system/sockets.target.wants/libvirtd.socket → /usr/
lib/systemd/system/libvirtd.socket.
Created symlink /etc/systemd/system/sockets.target.wants/libvirtd-ro.socket → /u
sr/lib/systemd/system/libvirtd-ro.socket.
[root@controller ~]#

```

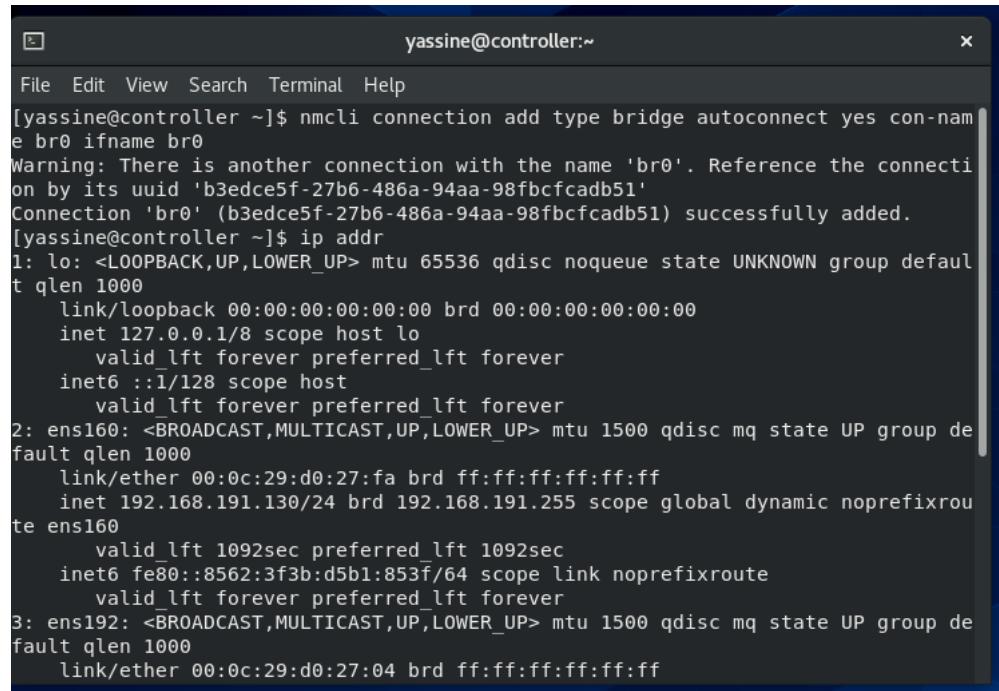
- confirmez que les modules sont chargés et configurez la mise en réseau Bridge pour les machines virtuelles KVM.

```

root@controller:~#
File Edit View Search Terminal Help
virt-install-2.2.1-4.el8.noarch
virt-manager-common-2.2.1-4.el8.noarch

Complete!
[root@controller ~]# lsmod | grep kvm
[root@controller ~]# systemctl enable --now libvirtd
Created symlink /etc/systemd/system/sockets.target.wants/libvirtd.socket → /usr/
lib/systemd/system/libvirtd.socket.
Created symlink /etc/systemd/system/sockets.target.wants/libvirtd-ro.socket → /u
sr/lib/systemd/system/libvirtd-ro.socket.
[root@controller ~]# nmcli connection add type bridge autoconnect yes
con-name br0 ifname br0
Connection 'br0' (6ab88c20-55e3-4ffd-9f6b-f276c115e9dd) successfully added.
[root@controller ~]# nmcli connection modify br0 ipv4.addresses 10.0.0
.30/24 ipv4.method manual
[root@controller ~]# nmcli connection modify br0 ipv4.gateway 10.0.0.1
[root@controller ~]# nmcli connection modify br0 ipv4.dns 10.0.0.1
[root@controller ~]# nmcli connection del ens2
Error: unknown connection 'ens2'.
Error: cannot delete unknown connection(s): 'ens2'.
[root@controller ~]# nmcli connection add type bridge-slave autoconn
ct yes con-name ens2 ifname ens2 master br0
Connection 'ens2' (aacbc08c-2a02-4334-8167-70939d37083b) successfully added.
[root@controller ~]#

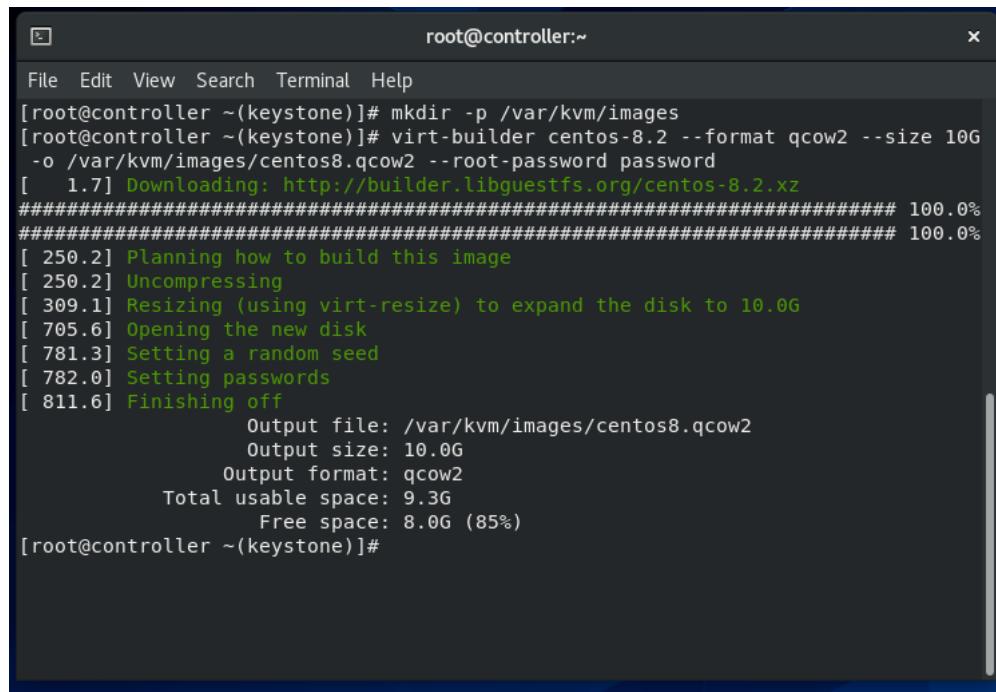
```



```
yassine@controller:~$ nmcli connection add type bridge autoconnect yes con-name br0 ifname br0
Warning: There is another connection with the name 'br0'. Reference the connection by its uid 'b3edce5f-27b6-486a-94aa-98fbfcadb51'
Connection 'br0' (b3edce5f-27b6-486a-94aa-98fbfcadb51) successfully added.
[yassine@controller ~]$ ip addr
1: lo: <LOOPBACK,UP,LOWER_UP> mtu 65536 qdisc noqueue state UNKNOWN group default qlen 1000
    link/loopback 00:00:00:00:00:00 brd 00:00:00:00:00:00
        inet 127.0.0.1/8 scope host lo
            valid_lft forever preferred_lft forever
        inet6 ::1/128 scope host
            valid_lft forever preferred_lft forever
2: ens160: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc mq state UP group default qlen 1000
    link/ether 00:0c:29:d0:27:fa brd ff:ff:ff:ff:ff:ff
        inet 192.168.191.130/24 brd 192.168.191.255 scope global dynamic noprefixroute ens160
            valid_lft 1092sec preferred_lft 1092sec
        inet6 fe80::8c29:13ff:fed0:27ff/64 scope link noprefixroute
            valid_lft forever preferred_lft forever
3: ens192: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc mq state UP group default qlen 1000
    link/ether 00:0c:29:d0:27:04 brd ff:ff:ff:ff:ff:ff
```

Après un reboot on voit l'adres ip

- Créez une image CentOS 8 sur l'hôte du service Glance.



```
root@controller:~# mkdir -p /var/kvm/images
[root@controller ~(keystone)]# virt-builder centos-8.2 --format qcow2 --size 10G -o /var/kvm/images/centos8.qcow2 --root-password password
[ 1.7] Downloading: http://builder.libguestfs.org/centos-8.2.xz
#####
[ 250.2] Planning how to build this image
[ 250.2] Uncompressing
[ 309.1] Resizing (using virt-resize) to expand the disk to 10.0G
[ 705.6] Opening the new disk
[ 781.3] Setting a random seed
[ 782.0] Setting passwords
[ 811.6] Finishing off
          Output file: /var/kvm/images/centos8.qcow2
          Output size: 10.0G
          Output format: qcow2
          Total usable space: 9.3G
          Free space: 8.0G (85%)
[root@controller ~(keystone)]#
```

Créer un répertoire pour l'image disque et télécharger l'image officielle

```
[  OK  ] Reached target sshd-keygen.target.
[  OK  ] Started Login Service.
[  OK  ] Started firewalld - dynamic firewall daemon.
[  OK  ] Reached target Network (Pre).
         Starting Network Manager...
[  OK  ] Started Network Manager.
         Starting Network Manager Wait Online...
[  OK  ] Reached target Network.
         Starting Dynamic System Tuning Daemon...
         Starting OpenSSH server daemon...
         Starting Permit User Sessions...
         Starting Hostname Service...
[  OK  ] Started Permit User Sessions.
[  OK  ] Started Command Scheduler.
         Starting Terminate Plymouth Boot Screen...
         Starting Hold until boot process finishes up...

CentOS Linux 8 (Core)
Kernel 4.18.0-193.6.3.el8_2.x86_64 on an x86_64

localhost login: [  264.019734] IPv6: ADDRCONF(NETDEV_UP): enp1s0: link is not ready
root
[root@localhost ~]#
```

## démarrage de la machine virtuelle

```
Starting Terminate Plymouth Boot Screen...
Starting Hold until boot process finishes up...

CentOS Linux 8 (Core)
Kernel 4.18.0-193.6.3.el8_2.x86_64 on an x86_64

localhost login: [  264.019734] IPv6: ADDRCONF(NETDEV_UP): enp1s0: link is not ready
root
[root@localhost ~]# passwd root;useradd centos;passwd centos
Changing password for user root.
New password:
BAD PASSWORD: The password is shorter than 8 characters
Retype new password:
Sorry, passwords do not match.
New password:
Retype new password:
passwd: all authentication tokens updated successfully.
Changing password for user centos.
New password:
BAD PASSWORD: The password is shorter than 8 characters
Retype new password:
passwd: all authentication tokens updated successfully.
[root@localhost ~]#
```

```
root@controller:~  
File Edit View Search Terminal Help  
NAME="enp1s0"  
DEVICE="enp1s0"  
ONBOOT="yes"  
NETBOOT="yes"  
#UUID="79a007f8-69f6-4baf-9f66-ed59be8a604f"  
IPV6INIT="yes"  
BOOTPROTO="dhcp"  
TYPE="Ethernet"  
PROXY_METHOD="none"  
BROWSER_ONLY="no"  
DEFROUTE="yes"  
IPV4_FAILURE_FATAL="no"  
IPV6_AUTOCONF="yes"  
IPV6_DEFROUTE="yes"  
IPV6_FAILURE_FATAL="no"  
~  
~  
~  
~  
~  
~  
~  
~  
~/etc/sysconfig/network-scripts/ifcfg-enp1s0" 16L, 320C written  
[root@localhost ~]#
```

Modification de **/etc/sysconfig/network-scripts/ifcfg-enp1s0**

```
root@controller:~  
File Edit View Search Terminal Help  
(2/2): cloud-init-21.1-7.el8_5.3.noarch.rpm      311 kB/s | 1.0 MB   00:03  
-----  
Total                                         360 kB/s | 1.2 MB   00:03  
Running transaction check  
Transaction check succeeded.  
Running transaction test  
Transaction test succeeded.  
Running transaction  
  Preparing                                           : 1/1  
  Installing    : python3-pyserial-3.1.1-8.el8.noarch 1/2  
  Installing    : cloud-init-21.1-7.el8_5.3.noarch   2/2  
    Running scriptlet: cloud-init-21.1-7.el8_5.3.noarch 2/2  
[ /usr/lib/tmpfiles.d/rabbitmq-server.conf:1] Line references path below legacy d  
irectory /var/run/, updating /var/run/rabbitmq -> /run/rabbitmq; please update th  
e tmpfiles.d/ drop-in file accordingly.  
  Verifying     : cloud-init-21.1-7.el8_5.3.noarch      1/2  
  Verifying     : python3-pyserial-3.1.1-8.el8.noarch  2/2  
  
Installed:  
  cloud-init-21.1-7.el8_5.3.noarch      python3-pyserial-3.1.1-8.el8.noarch  
  
Complete!  
[root@controller ~](keystone)]#
```

Installation de **cloud-init openssh-server**

```
root@controller:~  
File Edit View Search Terminal Help  
- scripts-per-boot  
- scripts-per-instance  
- scripts-user  
- ssh-authkey-fingerprints  
- keys-to-console  
- phone-home  
- final-message  
- power-state-change  
  
system_info:  
  default_user:  
    name: centos  
    lock_passwd: false  
    gecos: Cloud User  
    groups: [adm, systemd-journal]  
    sudo: ["ALL=(ALL) NOPASSWD:ALL"]  
    shell: /bin/bash  
  distro: rhel  
  paths:  
    cloud_dir: /var/lib/cloud  
    templates_dir: /etc/cloud/templates  
    ssh_svcname: sshd  
  
-- INSERT --
```

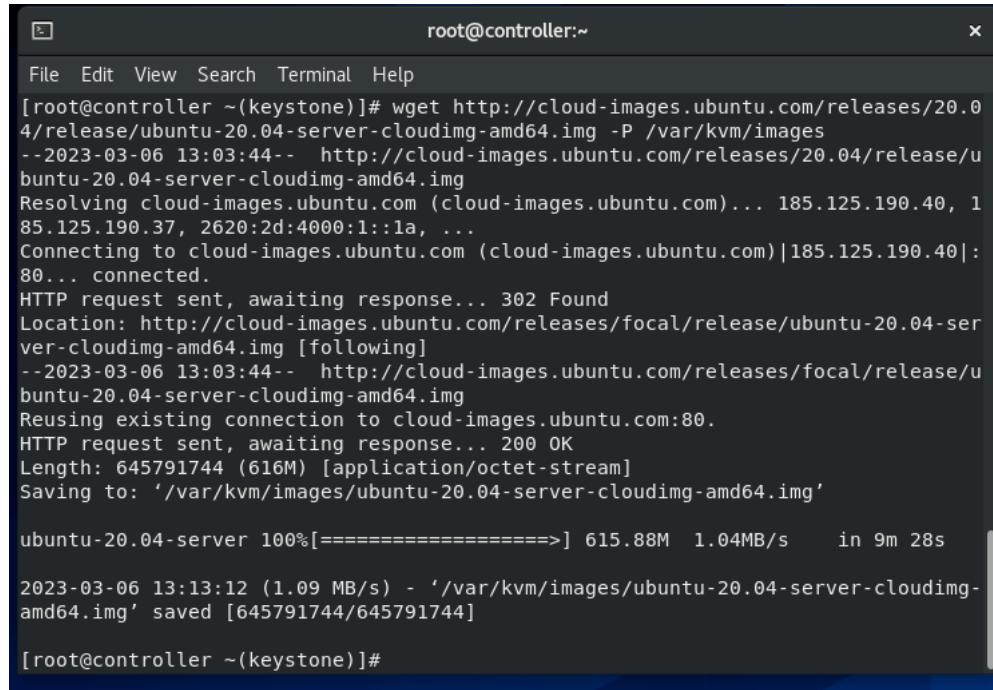
### Modification de `/etc/cloud/cloud.cfg`

- Ajoutez l'image virtuelle à Glance.

```
root@controller:~  
File Edit View Search Terminal Help  
[yassine@controller ~]$ sudo -i  
[sudo] password for yassine:  
[root@controller ~(keystone)]# openstack image create "CentOS8" --file /var/kvm/images/centos8.qcow2 --disk-format qcow2 --container-format bare --public  
+-----+  
| Field | Value  
+-----+  
| container_format | bare  
| created_at | 2023-03-06T12:56:12Z  
| disk_format | qcow2  
| file | /v2/images/6c20c4db-4e2c-4c3f-87c1-a537f509fb01/file
```

```
[root@controller ~(keystone)]# openstack image list  
+-----+-----+-----+  
| ID | Name | Status |  
+-----+-----+-----+  
| 6c20c4db-4e2c-4c3f-87c1-a537f509fb01 | CentOS8 | active |  
+-----+-----+-----+  
[root@controller ~(keystone)]#
```

- Si vous avez une image sur Internet, vous pouvez simplement l'ajouter comme suit.



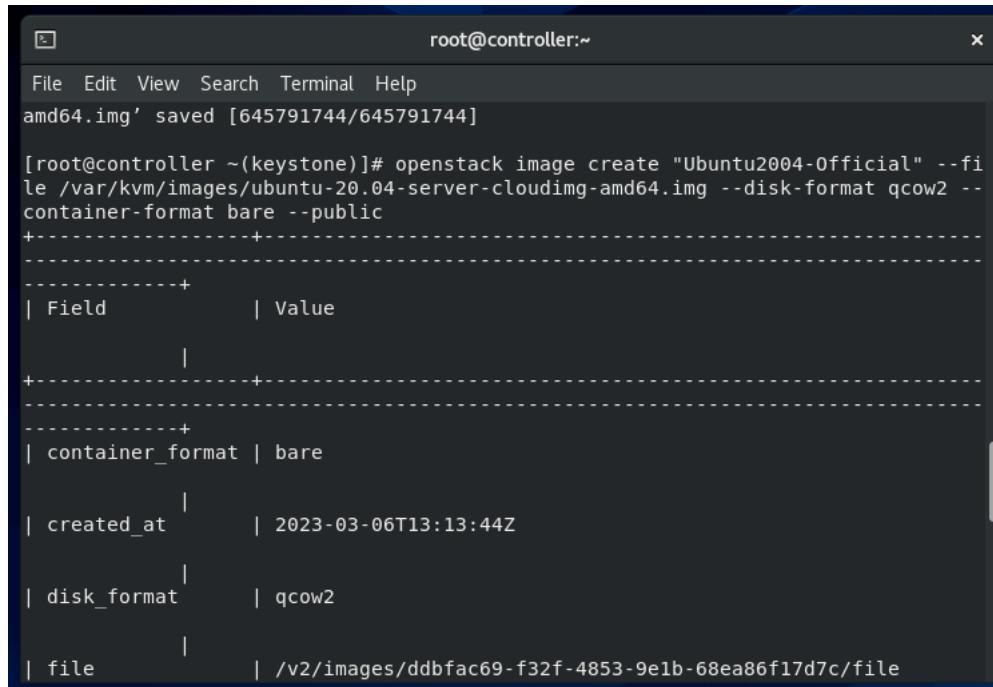
```
[root@controller ~]# wget http://cloud-images.ubuntu.com/releases/20.04/release/ubuntu-20.04-server-cloudimg-amd64.img -P /var/kvm/images
--2023-03-06 13:03:44--  http://cloud-images.ubuntu.com/releases/20.04/release/ubuntu-20.04-server-cloudimg-amd64.img
Resolving cloud-images.ubuntu.com (cloud-images.ubuntu.com)... 185.125.190.40, 185.125.190.37, 2620:2d:4000:1::1a, ...
Connecting to cloud-images.ubuntu.com (cloud-images.ubuntu.com)|185.125.190.40|:80... connected.
HTTP request sent, awaiting response... 302 Found
Location: http://cloud-images.ubuntu.com/releases/focal/release/ubuntu-20.04-server-cloudimg-amd64.img [following]
--2023-03-06 13:03:44--  http://cloud-images.ubuntu.com/releases/focal/release/ubuntu-20.04-server-cloudimg-amd64.img
Reusing existing connection to cloud-images.ubuntu.com:80.
HTTP request sent, awaiting response... 200 OK
Length: 645791744 (616M) [application/octet-stream]
Saving to: '/var/kvm/images/ubuntu-20.04-server-cloudimg-amd64.img'

ubuntu-20.04-server 100%[=====] 615.88M 1.04MB/s   in 9m 28s

2023-03-06 13:13:12 (1.09 MB/s) - '/var/kvm/images/ubuntu-20.04-server-cloudimg-amd64.img' saved [645791744/645791744]

[root@controller ~]#
```

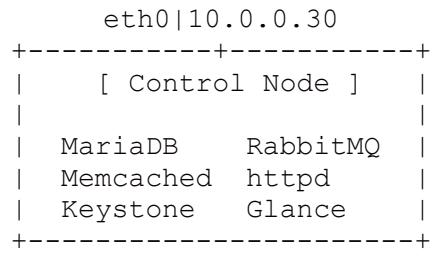
Installation des images



```
[root@controller ~]# openstack image create "Ubuntu2004-Official" --file /var/kvm/images/ubuntu-20.04-server-cloudimg-amd64.img --disk-format qcow2 --container-format bare --public
+-----+
| Field          | Value
+-----+
-----+
| container_format | bare
|
| created_at     | 2023-03-06T13:13:44Z
|
| disk_format     | qcow2
|
| file           | /v2/images/ddbfac69-f32f-4853-9e1b-68ea86f17d7c/file
```

## 7. OpenStack Victoria : Configure Nova #1

Installer et configurer OpenStack Compute Service (Nova).



- Ajoutez des utilisateurs et d'autres pour Nova dans Keystone.

```

root@controller:~# openstack user create --domain default --project service --password serviceword nova
+-----+
| Field      | Value
+-----+
| default_project_id | a7a06046fdef4b1cb1e026fecb275d7e |
| domain_id       | default
| enabled         | True
| id              | 6073b267010c4b078476264be9cef14a
| name            | nova
| options          | {}
| password_expires_at | None
+-----+
[root@controller ~]#

```

```

[root@controller ~]# openstack role add --project service --user nova
admin;openstack user create --domain default --project service --password serviceword placement
+-----+
| Field      | Value
+-----+
| default_project_id | a7a06046fdef4b1cb1e026fecb275d7e |
| domain_id       | default
| enabled         | True
| id              | a66cf2e0bcdcc44eeb28d4e44cc985bd4
| name            | placement
| options          | {}
| password_expires_at | None
+-----+
[root@controller ~]#

```

```

[root@controller ~]# openstack service create --name nova --description "OpenStack Compute service" compute
+-----+
| Field      | Value
+-----+
| description | OpenStack Compute service
| enabled     | True
| id          | e7eee108c8724410b7297df41557523d
| name        | nova
| type        | compute
+-----+
[root@controller ~]#

```

```

[root@controller ~]# openstack service create --name placement --description "OpenStack Compute Placement service" placement
+-----+
| Field      | Value
+-----+
| description | OpenStack Compute Placement service
| enabled     | True
| id          | 5a236d589a8f4630811bfc487c4d765a
| name        | placement
| type        | placement
+-----+
[root@controller ~]#

```

```
[root@controller ~]# export controller=10.0.0.30;openstack endpoint create --region RegionOne compute public http://$controller:8774/v2.1/%(tenant_id)s
+-----+-----+
| Field | Value
+-----+-----+
| enabled | True
| id | ade72b339e49424f9fb25c3ad57fea93
| interface | public
| region | RegionOne
| region_id | RegionOne
| service_id | e7eee108c8724410b7297df41557523d
| service_name | nova
| service_type | compute
| url | http://10.0.0.30:8774/v2.1/%(tenant_id)s
+-----+
[root@controller ~]#
```

```
[root@controller ~]# openstack endpoint create --region RegionOne compute internal http://$controller:8774/v2.1/%(tenant_id)s
+-----+-----+
| Field | Value
+-----+-----+
| enabled | True
| id | 8b65ed1de0e245eb84b93cb1239a78cf
| interface | internal
| region | RegionOne
| region_id | RegionOne
| service_id | e7eee108c8724410b7297df41557523d
| service_name | nova
| service_type | compute
| url | http://10.0.0.30:8774/v2.1/%(tenant_id)s
+-----+
```

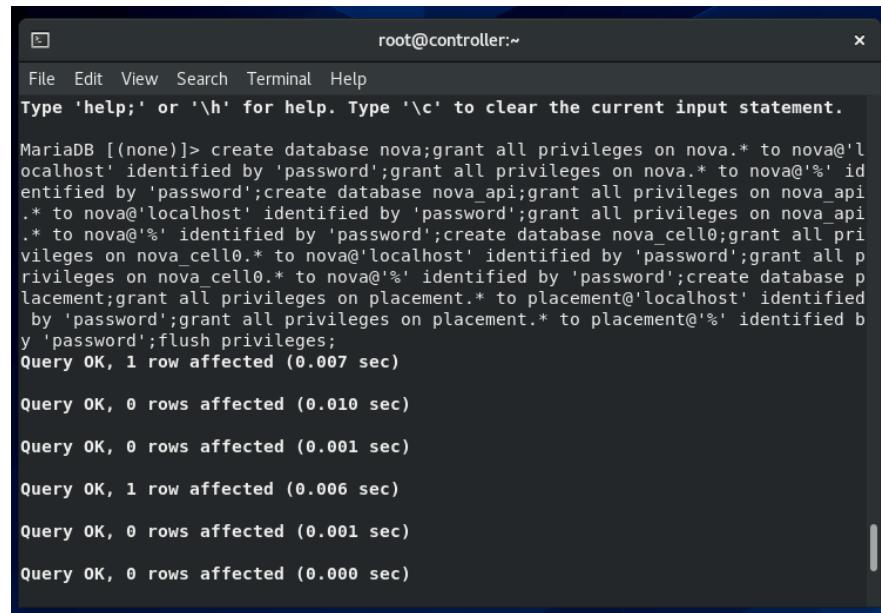
```
File Edit View Search Terminal Help
root@controller:~
[root@controller ~]# openstack endpoint create --region RegionOne compute admin http://$controller:8774/v2.1/%(tenant_id)s
+-----+-----+
| Field | Value
+-----+-----+
| enabled | True
| id | cdf97ec3c020452db8d37c3c94115c4c
| interface | admin
| region | RegionOne
| region_id | RegionOne
| service_id | e7eee108c8724410b7297df41557523d
| service_name | nova
| service_type | compute
| url | http://10.0.0.30:8774/v2.1/%(tenant_id)s
+-----+
[root@controller ~]# openstack endpoint create --region RegionOne placement public http://$controller:8778
+-----+-----+
| Field | Value
+-----+-----+
| enabled | True
| id | 72e82c0c6f1d417bbdc33db5cb8ffaf5
| interface | public
| region | RegionOne
+-----+
```

```
root@controller:~  
File Edit View Search Terminal Help  
| interface | public  
| region | RegionOne  
| region_id | RegionOne  
| service_id | 5a236d589a8f4630811bfc487c4d765a  
| service_name | placement  
| service_type | placement  
| url | http://10.0.0.30:8778  
+-----+  
[root@controller ~(keystone)]# openstack endpoint create --region RegionOne placement internal http://$controller:8778  
+-----+  
| Field | Value |  
+-----+  
| enabled | True |  
| id | 4bcd029299ba404c9d2c0c083654e716 |  
| interface | internal |  
| region | RegionOne |  
| region_id | RegionOne |  
| service_id | 5a236d589a8f4630811bfc487c4d765a |  
| service_name | placement |  
| service_type | placement |  
| url | http://10.0.0.30:8778 |  
+-----+  
[root@controller ~(keystone)]#
```

```
[root@controller ~(keystone)]# openstack endpoint create --region RegionOne placement internal http://$controller:8778  
+-----+  
| Field | Value |  
+-----+  
| enabled | True |  
| id | f9ca84981b8c406ca3b6ba7c382c7a7c |  
| interface | internal |  
| region | RegionOne |  
| region_id | RegionOne |  
| service_id | 5a236d589a8f4630811bfc487c4d765a |  
| service_name | placement |  
| service_type | placement |  
| url | http://10.0.0.30:8778 |  
+-----+
```

```
[root@controller ~(keystone)]# openstack endpoint create --region RegionOne placement admin http://$controller:8778  
+-----+  
| Field | Value |  
+-----+  
| enabled | True |  
| id | 285fa3db0b454406a3a9b912c5a5703c |  
| interface | admin |  
| region | RegionOne |  
| region_id | RegionOne |  
| service_id | 5a236d589a8f4630811bfc487c4d765a |  
| service_name | placement |  
| service_type | placement |  
| url | http://10.0.0.30:8778 |  
+-----+
```

- Ajouter un utilisateur et une base de données sur MariaDB pour Nova.



```

root@controller:~#
File Edit View Search Terminal Help
Type 'help;' or '\h' for help. Type '\c' to clear the current input statement.

MariaDB [(none)]> create database nova;grant all privileges on nova.* to nova@'localhost' identified by 'password';grant all privileges on nova.* to nova@'%' identified by 'password';create database nova_api;grant all privileges on nova_api.* to nova@'localhost' identified by 'password';grant all privileges on nova_api.* to nova@'%' identified by 'password';create database nova_cell0;grant all privileges on nova_cell0.* to nova@'localhost' identified by 'password';grant all privileges on nova_cell0.* to nova@'%' identified by 'password';create database placement;grant all privileges on placement.* to placement@'localhost' identified by 'password';grant all privileges on placement.* to placement@'%' identified by 'password';flush privileges;
Query OK, 1 row affected (0.007 sec)

Query OK, 0 rows affected (0.010 sec)

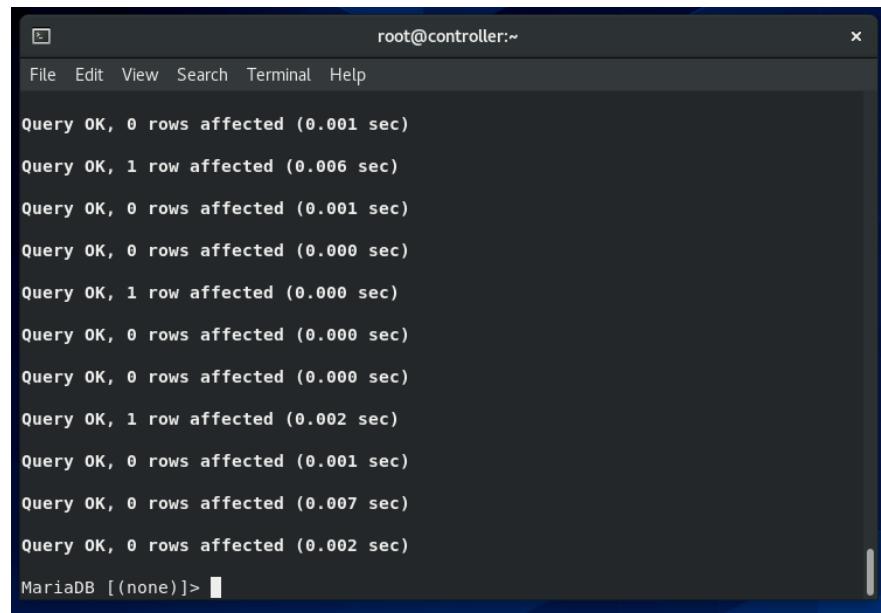
Query OK, 0 rows affected (0.001 sec)

Query OK, 1 row affected (0.006 sec)

Query OK, 0 rows affected (0.001 sec)

Query OK, 0 rows affected (0.000 sec)

```



```

root@controller:~#
File Edit View Search Terminal Help

Query OK, 0 rows affected (0.001 sec)

Query OK, 1 row affected (0.006 sec)

Query OK, 0 rows affected (0.001 sec)

Query OK, 0 rows affected (0.000 sec)

Query OK, 1 row affected (0.000 sec)

Query OK, 0 rows affected (0.000 sec)

Query OK, 0 rows affected (0.000 sec)

Query OK, 1 row affected (0.002 sec)

Query OK, 0 rows affected (0.001 sec)

Query OK, 0 rows affected (0.007 sec)

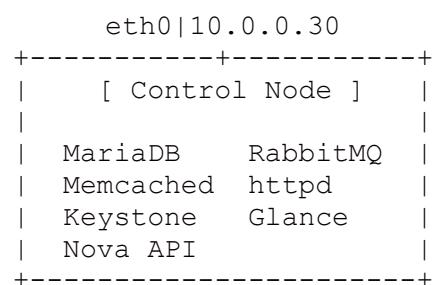
Query OK, 0 rows affected (0.002 sec)

MariaDB [(none)]> 

```

## 8. OpenStack Victoria : Configure Nova #2

Installez le service de calcul OpenStack (Nova).



- Installez les services Nova.

```
root@controller:~ 
File Edit View Search Terminal Help
python3-lexicon-1.0.0-9.el8.noarch
python3-libguestfs-1:1.44.0-3.el8.x86_64
python3-microversion-parse-1.0.1-1.el8.noarch
python3-nova-1:22.2.2-1.el8.noarch
python3-openvswitch2.13-2.13.0-142.el8.x86_64
python3-os-resource-classes-1.0.0-1.el8.noarch
python3-os-traits-2.4.0-2.el8.noarch
python3-os-vif-2.2.1-1.el8.noarch
python3-oslo-versionedobjects-2.3.0-2.el8.noarch
python3-ovsdbapp-1.6.0-1.el8.noarch
python3-paramiko-2.7.2-1.el8.noarch
python3-placement-4.0.0-1.el8.noarch
python3-pynacl-1.4.0-1.el8.x86_64
python3-pyroute2-0.5.13-1.1.el8.noarch
python3-rdo-openvswitch-1:2.13-3.el8.noarch
python3-redis-3.5.3-1.el8.noarch
python3-tooz-2.7.2-1.el8.noarch
python3-voluptuous-0.11.7-2.el8.noarch
python3-websockify-0.11.0-1.el8.noarch
python3-zake-0.2.2-18.el8.noarch
rdo-openvswitch-1:2.13-3.el8.noarch

Complete!
[root@controller ~]#
```

- Configure Nova

```
root@controller:~ 
File Edit View Search Terminal Help
# create new
[DEFAULT]
# define own IP address
my_ip = 10.0.0.30
state_path = /var/lib/nova
enabled_apis = osapi_compute,metadata
log_dir = /var/log/nova
# RabbitMQ connection info
transport_url = rabbit://openstack:password@10.0.0.30

[api]
auth_strategy = keystone

# Glance connection info
[glance]
api_servers = http://10.0.0.30:9292

[oslo_concurrency]
lock_path = $state_path/tmp

# MariaDB connection info
[api_database]
connection = mysql+pymysql://nova:password@10.0.0.30/nova_api
"/etc/nova/nova.conf" 51L, 1134C
```

Creation de /etc/nova/nova.conf

```
[root@controller ~]# chmod 640 /etc/nova/nova.conf; chgrp nova /etc/nova/nova.conf; mv /etc/placement/placement.conf /etc/placement/placement.conf.org; vi /etc/placement/placement.conf
[root@controller ~]#
```

```
[root@controller ~]# chmod 640 /etc/placement/placement.conf; chgrp placement /etc/placement/placement.conf; vi /etc/httpd/conf.d/00-placement-api.conf
[root@controller ~]#
```

Modification de /etc/placement/placement.conf

```
root@controller:~
```

```
<VirtualHost *:8778>
    WSGIProcessGroup placement-api
    WSGIApplicationGroup %{GLOBAL}
    WSGIPassAuthorization On
    WSGIDaemonProcess placement-api processes=3 threads=1 user=placement group=placement
    WSGIScriptAlias / /usr/bin/placement-api
    <IfVersion >= 2.4>
        ErrorLogFormat "%M"
    </IfVersion>
    ErrorLog /var/log/placement/placement-api.log
    #SSLEngine On
    #SSLCertificateFile ...
    #SSLCertificateKeyFile ...
    <Directory /usr/bin>
        Require all granted
    </Directory>
</VirtualHost>

Alias /placement-api /usr/bin/placement-api
<Location /placement-api>
    SetHandler wsgi-script
:wq
```

### Modification de `/etc/httpd/conf.d/00-placement-api.conf`

- Si SELinux est activé, modifiez la politique.

```
root@controller:~
```

```
# create new
module novaapi 1.0;

require {
    type rpm_exec_t;
    type hostname_exec_t;
    type nova_t;
    type gpg_exec_t;
    class file getattr;
}

===== nova_t =====
allow nova_t gpg_exec_t:file getattr;
allow nova_t hostname_exec_t:file getattr;
allow nova_t rpm_exec_t:file getattr;
~
~
~
~
~
~
~
:wq
```

### Création de `novaapi.te`

```
root@controller:~# 
File Edit View Search Terminal Help

Total download size: 224 k
Installed size: 302 k
Downloading Packages:
openstack-selinux-0.8.27-1.el8.noarch.rpm      154 kB/s | 224 kB   00:01
-----
Total                                         154 kB/s | 224 kB   00:01
Running transaction check
Transaction check succeeded.
Running transaction test
Transaction test succeeded.
Running transaction
  Preparing           : 1/1
  Installing         : openstack-selinux-0.8.27-1.el8.noarch 1/1
  Running scriptlet: openstack-selinux-0.8.27-1.el8.noarch 1/1
  Verifying          : openstack-selinux-0.8.27-1.el8.noarch 1/1

Installed:
  openstack-selinux-0.8.27-1.el8.noarch

Complete!
[root@controller ~]# checkmodule -m -M -o novaapi.mod novaapi.te;semodule_package --outfile novaapi.pp --module novaapi.mod;semodule -i novaapi.pp
[root@controller ~]# 
```

### Installation de **openstack-selinux**

- Ajoutez des données dans la base de données et démarrez les services Nova.

```
root@controller:~# 
File Edit View Search Terminal Help

Running transaction test
Transaction test succeeded.
Running transaction
  Preparing           : 1/1
  Installing         : openstack-selinux-0.8.27-1.el8.noarch 1/1
  Running scriptlet: openstack-selinux-0.8.27-1.el8.noarch 1/1
  Verifying          : openstack-selinux-0.8.27-1.el8.noarch 1/1

Installed:
  openstack-selinux-0.8.27-1.el8.noarch

Complete!
[root@controller ~]# checkmodule -m -M -o novaapi.mod novaapi.te;semodule_package --outfile novaapi.pp --module novaapi.mod;semodule -i novaapi.pp
[root@controller ~]# su -s /bin/bash placement -c "placement-manage db sync";su -s /bin/bash nova -c "nova-manage api_db sync";su -s /bin/bash nova -c "nova-manage cell_v2 map_cell0";su -s /bin/bash nova -c "nova-manage db sync";su -s /bin/bash nova -c "nova-manage cell_v2 create_cell --name cell1";systemctl restart httpd
--transport-url not provided in the command line, using the value [DEFAULT]/transport_url from the configuration file
--database_connection not provided in the command line, using the value [database]/connection from the configuration file
[root@controller ~]# 
```

```

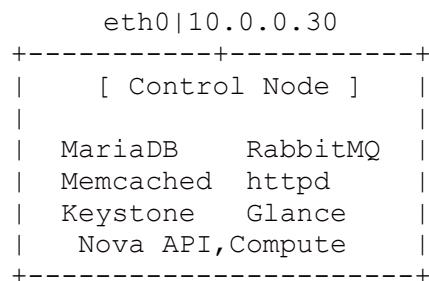
root@controller:~ 
File Edit View Search Terminal Help
> systemctl enable --now openstack-nova-$service
> done
Created symlink /etc/systemd/system/multi-user.target.wants/openstack-nova-api.service → /usr/lib/systemd/system/openstack-nova-api.service.
Created symlink /etc/systemd/system/multi-user.target.wants/openstack-nova-conductor.service → /usr/lib/systemd/system/openstack-nova-conductor.service.
Created symlink /etc/systemd/system/multi-user.target.wants/openstack-nova-scheduler.service → /usr/lib/systemd/system/openstack-nova-scheduler.service.
Created symlink /etc/systemd/system/multi-user.target.wants/openstack-nova-novncproxy.service → /usr/lib/systemd/system/openstack-nova-novncproxy.service.
[root@controller ~]# openstack compute service list
+----+-----+-----+-----+-----+
| ID | Binary      | Host       | Zone     | Status   | State | Updated At
+----+-----+-----+-----+-----+
| 4 | nova-conductor | controller | internal | enabled | up    | 2023-03-06T13:54:47.000000 |
| 5 | nova-scheduler | controller | internal | enabled | up    | 2023-03-06T13:54:47.000000 |
+----+-----+-----+-----+-----+
[root@controller ~]# 

```

Afficher le statut

## 9. OpenStack Victoria : Configure Nova #3

Installez le service de calcul OpenStack (Nova).



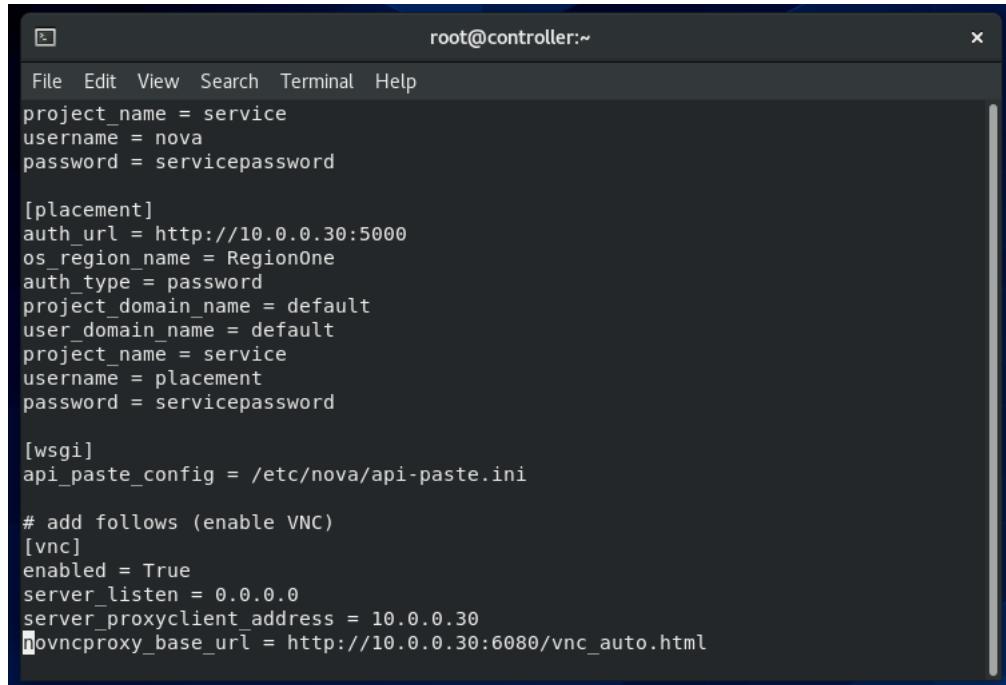
- Install Nova Compute

```

root@controller:~ 
File Edit View Search Terminal Help
[yassine@controller ~]$ dnf --enablerepo=centos-openstack-victoria,epel,powertools -y install openstack-nova-compute
Error: This command has to be run with superuser privileges (under the root user on most systems).
[yassine@controller ~]$ sudo -i
[sudo] password for yassine:
Sorry, try again.
[sudo] password for yassine:
[root@controller ~]# dnf --enablerepo=centos-openstack-victoria,epel,powertools -y install openstack-nova-compute
rabbitmq_erlang                  46  B/s | 833  B    00:17
rabbitmq_erlang-source            58  B/s | 819  B    00:14
rabbitmq_rabbitmq-server          80  B/s | 833  B    00:10
rabbitmq_rabbitmq-server-source   96  B/s | 819  B    00:08
Package openstack-nova-compute-1:22.2.2-1.el8.noarch is already installed.
Dependencies resolved.
Nothing to do.
Complete!
[root@controller ~]# vi /etc/nova/nova.conf

```

- En plus des paramètres de base de Nova, ajoutez les paramètres suivants.



```

root@controller:~#
File Edit View Search Terminal Help
project_name = service
username = nova
password = servicepassword

[placement]
auth_url = http://10.0.0.30:5000
os_region_name = RegionOne
auth_type = password
project_domain_name = default
user_domain_name = default
project_name = service
username = placement
password = servicepassword

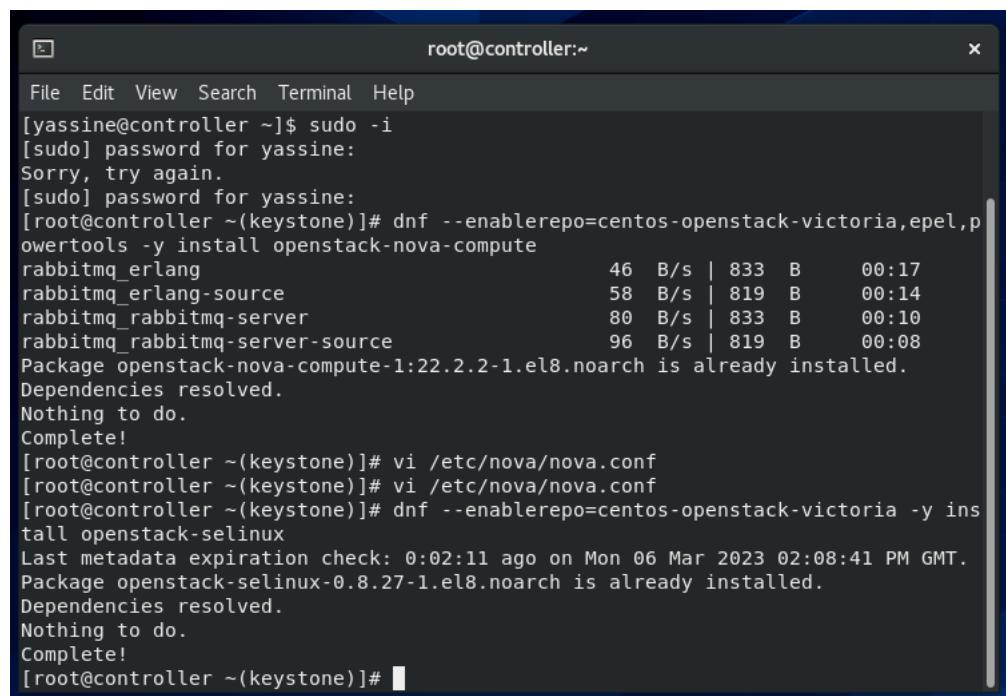
[wsgi]
api_paste_config = /etc/nova/api-paste.ini

# add follows (enable VNC)
[vnc]
enabled = True
server_listen = 0.0.0.0
server_proxyclient_address = 10.0.0.30
novncproxy_base_url = http://10.0.0.30:6080/vnc_auto.html

```

### Modification de `/etc/nova/nova.conf`

- Si SELinux est activé, modifiez la politique.



```

root@controller:~#
File Edit View Search Terminal Help
[yassine@controller ~]$ sudo -i
[sudo] password for yassine:
Sorry, try again.
[sudo] password for yassine:
[root@controller ~(keystone)]# dnf --enablerepo=centos-openstack-victoria,epel,python-tools -y install openstack-nova-compute
rabbitmq_erlang                               46  B/s | 833  B    00:17
rabbitmq_erlang-source                         58  B/s | 819  B    00:14
rabbitmq_rabbitmq-server                      80  B/s | 833  B    00:10
rabbitmq_rabbitmq-server-source                96  B/s | 819  B    00:08
Package openstack-nova-compute-1:22.2.2-1.el8.noarch is already installed.
Dependencies resolved.
Nothing to do.
Complete!
[root@controller ~(keystone)]# vi /etc/nova/nova.conf
[root@controller ~(keystone)]# vi /etc/nova/nova.conf
[root@controller ~(keystone)]# dnf --enablerepo=centos-openstack-victoria -y install openstack-selinux
Last metadata expiration check: 0:02:11 ago on Mon 06 Mar 2023 02:08:41 PM GMT.
Package openstack-selinux-0.8.27-1.el8.noarch is already installed.
Dependencies resolved.
Nothing to do.
Complete!
[root@controller ~(keystone)]# 

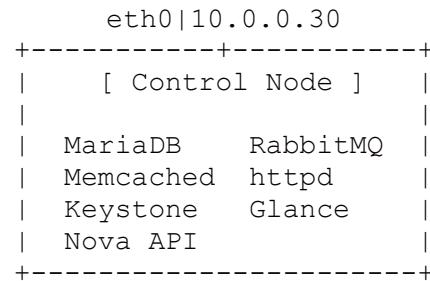
```

- Start Nova Compute.

```
root@controller:~#
File Edit View Search Terminal Help
Package openstack-selinux-0.8.27-1.el8.noarch is already installed.
Dependencies resolved.
Nothing to do.
Complete!
[root@controller ~(keystone)]# systemctl enable --now openstack-nova-compute;su -s /bin/bash nova -c "nova-manage cell_v2 discover_hosts";openstack compute service list
Created symlink /etc/systemd/system/multi-user.target.wants/openstack-nova-compute.service → /usr/lib/systemd/system/openstack-nova-compute.service.
+-----+
| ID | Binary          | Host        | Zone      | Status   | State | Updated At
|-----+-----+-----+-----+-----+-----+-----+
| 4  | nova-conductor | controller | internal | enabled | up    | 2023-03-06T14:12:15.000000 |
| 5  | nova-scheduler | controller | internal | enabled | up    | 2023-03-06T14:12:11.000000 |
| 6  | nova-compute   | controller | nova     | enabled | up    | None
|-----+-----+-----+-----+-----+-----+-----+
[root@controller ~(keystone)]#
```

## 10. OpenStack Victoria : Configure Neutron #1

Configurez le service réseau OpenStack (Neutron).



- Ajoutez un utilisateur ou un service pour Neutron sur Keystone.

```
[root@controller ~(keystone)]# openstack user create --domain default --project service --password servicepassword neutron
+-----+
| Field      | Value
+-----+
| default_project_id | a7a06046fdef4b1cb1e026fecb275d7e |
| domain_id   | default
| enabled     | True
| id          | 49a64607661d4600b97be6da86ae5d06 |
| name        | neutron
| options     | {}
| password_expires_at | None
+-----+
[root@controller ~(keystone)]#
```

```
[root@controller ~]# openstack role add --project service --user neutron
on admin;openstack service create --name neutron --description "OpenStack Networking service" network
+-----+-----+
| Field | Value |
+-----+-----+
| description | OpenStack Networking service |
| enabled | True |
| id | a8feb2b31717474d8ea24f9783a5f5be |
| name | neutron |
| type | network |
+-----+-----+
```

Ajouter l'utilisateur [neutron] dans le rôle [admin] et créer une entrée de service pour [neutron]

```
[root@controller ~]# export controller=10.0.0.30;openstack endpoint create --region RegionOne network public http://$controller:9696
+-----+-----+
| Field | Value |
+-----+-----+
| enabled | True |
| id | f9e60ea9f97549118c26b319cb7310b1 |
| interface | public |
| region | RegionOne |
| region_id | RegionOne |
| service_id | a8feb2b31717474d8ea24f9783a5f5be |
| service_name | neutron |
| service_type | network |
| url | http://10.0.0.30:9696 |
+-----+-----+
```

Créer un point final pour [neutron] (public)

```
[root@controller ~]# export controller=10.0.0.30;openstack endpoint create --region RegionOne network public http://$controller:9696
+-----+-----+
| Field | Value |
+-----+-----+
| enabled | True |
| id | 67461ba58b1743fcbl2aea5f17c405ef |
| interface | public |
| region | RegionOne |
| region_id | RegionOne |
| service_id | a8feb2b31717474d8ea24f9783a5f5be |
| service_name | neutron |
| service_type | network |
| url | http://10.0.0.30:9696 |
+-----+-----+
```

créer un point final pour [neutron] (interne)

```
[root@controller ~]# export controller=10.0.0.30;openstack endpoint create --region RegionOne network public http://$controller:9696
+-----+-----+
| Field | Value |
+-----+-----+
| enabled | True |
| id | a8bf2075f87342ff9a2d2544e4292a34 |
| interface | public |
| region | RegionOne |
| region_id | RegionOne |
| service_id | a8feb2b31717474d8ea24f9783a5f5be |
| service_name | neutron |
| service_type | network |
| url | http://10.0.0.30:9696 |
+-----+-----+
```

créer un point de terminaison pour [neutron] (admin)

- Ajouter un utilisateur et une base de données sur MariaDB pour Neutron.

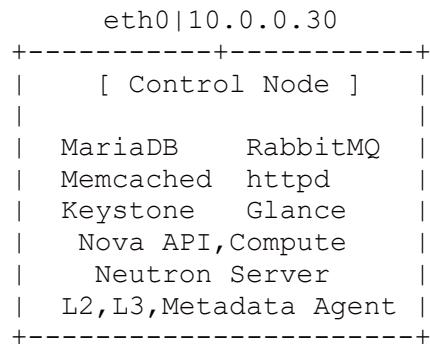
```
root@controller:~  
File Edit View Search Terminal Help  
| url | http://10.0.0.30:9696 |  
+-----+-----+  
[root@controller ~]# mysql -u root -p  
Enter password:  
Welcome to the MariaDB monitor. Commands end with ; or \g.  
Your MariaDB connection id is 42  
Server version: 10.3.28-MariaDB MariaDB Server  
  
Copyright (c) 2000, 2018, Oracle, MariaDB Corporation Ab and others.  
  
Type 'help;' or '\h' for help. Type '\c' to clear the current input statement.  
  
MariaDB [(none)]> create database neutron_ml2;grant all privileges on neutron_ml2.* to neutron@'localhost' identified by 'password';grant all privileges on neutron_ml2.* to neutron@'%' identified by 'password';flush privileges;  
Query OK, 1 row affected (0.002 sec)  
  
Query OK, 0 rows affected (0.009 sec)  
  
Query OK, 0 rows affected (0.003 sec)  
  
Query OK, 0 rows affected (0.008 sec)  
  
MariaDB [(none)]>
```

## 11. OpenStack Victoria : Configure Neutron #2

Configurez le service réseau OpenStack (Neutron).

Neutron a besoin d'un logiciel plugin, il est possible de le choisir parmi certains logiciels.

Il sélectionne le plugin ML2 sur cet exemple. (il utilise Open vSwitch sous le backend)



- Installez les services Neutron.

```
openstack-neutron-ml2-1:17.2.1-1.el8.noarch  
openstack-neutron-openvswitch-1:17.2.1-1.el8.noarch  
python3-designateclient-4.1.0-2.el8.noarch  
python3-gevent-1.2.2-4.el8.x86_64  
python3-logutils-0.3.5-11.el8.noarch  
python3-neutron-1:17.2.1-1.el8.noarch  
python3-neutron-lib-2.6.1-2.el8.noarch  
python3-os-ken-1.2.0-2.el8.noarch  
python3-os-xenapi-0.3.4-1.el8.noarch  
python3-pecan-1.3.2-9.el8.noarch  
python3-setproctitle-1.1.10-17.el8.x86_64  
python3-singledispatch-3.4.0-3-18.el8.noarch  
python3-tinyrpc-1.0.3-1.el8.noarch  
python3-waitress-1.4.2-1.el8.noarch  
python3-webtest-2.0.35-3.el8.noarch  
python3-zmq-19.0.0-3.el8.x86_64  
zeromq-4.3.4-2.el8.x86_64  
  
Complete!  
[root@controller ~]#
```

- Configure Neutron services.

```

root@controller:~#
File Edit View Search Terminal Help
# create new
[DEFAULT]
core_plugin = ml2
service_plugins = router
auth_strategy = keystone
state_path = /var/lib/neutron
dhcp_agent_notification = True
allow_overlapping_ips = True
notify_nova_on_port_status_changes = True
notify_nova_on_port_data_changes = True
# RabbitMQ connection info
transport_url = rabbit://openstack:password@10.0.0.30

# Keystone auth info
[keystone_authtoken]
www_authenticate_uri = http://10.0.0.30:5000
auth_url = http://10.0.0.30:5000
memcached_servers = 10.0.0.30:11211
auth_type = password
project_domain_name = default
user_domain_name = default
project_name = service
username = neutron
"/etc/neutron/neutron.conf" 42L, 1034C

```

Creation de /etc/neutron/neutron.conf

```

root@controller:~#
File Edit View Search Terminal Help
[DEFAULT]
interface_driver = openvswitch
#
# From oslo.log
#

```

Modification de /etc/neutron/l3\_agent.ini

```

root@controller:~#
File Edit View Search Terminal Help
[DEFAULT]
interface_driver = openvswitch
dhcp_driver = neutron.agent.linux.dhcp.Dnsmasq
enable_isolated_metadata = true
#
# From oslo.log
#

```

Modification de /etc/neutron/dhcp\_agent.ini

```

root@controller:~#
File Edit View Search Terminal Help
[DEFAULT]
# specify Nova API server
nova_metadata_host = 10.0.0.30
# specify any secret key you like
metadata_proxy_shared_secret = metadata_secret
#
# From oslo.log
#

```

Modification de /etc/neutron/metadata\_agent.ini

```
root@controller:~  
File Edit View Search Terminal Help  
#instance_uuid_format = "[instance: %(uuid)s] "  
  
# Interval, number of seconds, of log rate limiting. (integer value)  
#rate_limit_interval = 0  
  
# Maximum number of logged messages per rate_limit_interval. (integer value)  
#rate_limit_burst = 0  
  
# Log level name used by rate limiting: CRITICAL, ERROR, INFO, WARNING, DEBUG  
# or empty string. Logs with level greater or equal to rate_limit_except_level  
# are not filtered. An empty string means that all levels are filtered. (string  
# value)  
#rate_limit_except_level = CRITICAL  
  
# Enables or disables fatal status of deprecations. (boolean value)  
#fatal_deprecations = false  
# add to the end  
# OK with no value for [tenant_network_types] now (set later if need)  
[ml2]  
type_drivers = flat,vlan,gre,vxlan  
tenant_network_types =  
mechanism_drivers = openvswitch  
extension_drivers = port_security  
:wq
```

### Modification de /etc/neutron/plugins/ml2/ml2\_conf.ini

```
root@controller:~  
File Edit View Search Terminal Help  
# The format for an instance UUID that is passed with the log message. (string  
# value)  
#instance_uuid_format = "[instance: %(uuid)s] "  
  
# Interval, number of seconds, of log rate limiting. (integer value)  
#rate_limit_interval = 0  
  
# Maximum number of logged messages per rate_limit_interval. (integer value)  
#rate_limit_burst = 0  
  
# Log level name used by rate limiting: CRITICAL, ERROR, INFO, WARNING, DEBUG  
# or empty string. Logs with level greater or equal to rate_limit_except_level  
# are not filtered. An empty string means that all levels are filtered. (string  
# value)  
#rate_limit_except_level = CRITICAL  
  
# Enables or disables fatal status of deprecations. (boolean value)  
#fatal_deprecations = false  
# add to the end  
[securitygroup]  
firewall_driver = openvswitch  
enable_security_group = true  
enable_ipset = true  
-- INSERT --
```

### Modification de /etc/neutron/plugins/ml2/openvswitch\_agent.ini

```
root@controller:~  
File Edit View Search Terminal Help  
# The format for an instance UUID that is passed with the log message. (string  
# value)  
#instance_uuid_format = "[instance: %(uuid)s]"  
  
# Interval, number of seconds, of log rate limiting. (integer value)  
#rate_limit_interval = 0  
  
# Maximum number of logged messages per rate_limit_interval. (integer value)  
#rate_limit_burst = 0  
  
# Log level name used by rate limiting: CRITICAL, ERROR, INFO, WARNING, DEBUG  
# or empty string. Logs with level greater or equal to rate_limit_except_level  
# are not filtered. An empty string means that all levels are filtered. (string  
# value)  
#rate_limit_except_level = CRITICAL  
  
# Enables or disables fatal status of deprecations. (boolean value)  
#fatal_deprecations = false  
# add to the end  
[securitygroup]  
firewall_driver = openvswitch  
enable_security_group = true  
enable_ipset = true  
:wq
```

```
root@controller:~  
File Edit View Search Terminal Help  
username = placement  
password = servicepassword  
  
[wsgi]  
api_paste_config = /etc/nova/api-paste.ini  
  
# add follows (enable VNC)  
[vnc]  
enabled = True  
server_listen = 0.0.0.0  
server_proxyclient_address = 10.0.0.30  
novncproxy_base_url = http://10.0.0.30:6080/vnc_auto.html  
[neutron]  
auth_url = http://10.0.0.30:5000  
auth_type = password  
project_domain_name = default  
user_domain_name = default  
region_name = RegionOne  
project_name = service  
username = neutron  
password = servicepassword  
service_metadata_proxy = True  
metadata_proxy_shared_secret = metadata_secret  
:wq
```

### Modification de **/etc/nova/nova.conf**

- Si SELinux est activé, modifiez la politique

```

.root@controller ~ (keystone)]# vi /etc/neutron/neutron.conf
.root@controller ~ (keystone)]# vi /etc/neutron/neutron.conf
.root@controller ~ (keystone)]# chmod 640 /etc/neutron/neutron.conf;chgrp neutron /etc/neutron/neutron.conf;vi /etc/neutron/l3_agent.ini
.root@controller ~ (keystone)]# vi /etc/neutron/dhcp_agent.ini
.root@controller ~ (keystone)]# vi /etc/neutron/dhcp_agent.ini
.root@controller ~ (keystone)]# vi /etc/neutron/metadata_agent.ini
.root@controller ~ (keystone)]# vi /etc/neutron/metadata_agent.ini
.root@controller ~ (keystone)]# vi /etc/neutron/plugins/ml2/ml2_conf.ini
.root@controller ~ (keystone)]# vi /etc/neutron/plugins/ml2/openvswitch_agent.ini
.root@controller ~ (keystone)]# vi /etc/nova/nova.conf
.root@controller ~ (keystone)]# dnf --enablerepo=centos-openstack-victoria -y install openstack-selinux;setsebool -P neutron_can_network on;setsebool -P haproxy_connect_any on;setsebool -P daemons_enable_cluster_mode on;vi ovsofctl.te
rabbitmq_erlang                                129 B/s | 833 B    00:06
rabbitmq_erlang-source                          139 B/s | 819 B    00:05
rabbitmq_rabbitmq-server                        233 B/s | 833 B    00:03
rabbitmq_rabbitmq-server-source                148 B/s | 819 B    00:05
Package openstack-selinux-0.8.27-1.el8.noarch is already installed.
Dependencies resolved.
Nothing to do.
Complete!
[root@controller ~ (keystone)]#

```

```

File Edit View Search Terminal Help
# create new
module ovsofctl 1.0;

require {
    type neutron_t;
    type neutron_exec_t;
    type neutron_t;
    type dnsmasq_t;
    class file execute_no_trans;
    class capability { dac_override sys_rawio };
}

===== neutron_t =====
allow neutron_t self:capability { dac_override sys_rawio };
allow neutron_t neutron_exec_t:file execute_no_trans;

===== dnsmasq_t =====
allow dnsmasq_t self:capability dac_override;
~
~
```

### Creation de ovsofctl.te

```

INFO [alembic.runtime.migration] Running upgrade 18a/e90ae768 -> e4e236b0e111
INFO [alembic.runtime.migration] Running upgrade e4e236b0e1ff -> e88badaa9591
INFO [alembic.runtime.migration] Running upgrade e88badaa9591 -> d8bdf05313f4
INFO [alembic.runtime.migration] Running upgrade d8bdf05313f4 -> dfe425060830
INFO [alembic.runtime.migration] Running upgrade dfe425060830 -> fd6107509cc0
INFO [alembic.runtime.migration] Running upgrade fd6107509cc0 -> lea5dab0897a
INFO [alembic.runtime.migration] Running upgrade lea5dab0897a -> 49d8622c5221
INFO [alembic.runtime.migration] Running upgrade 49d8622c5221 -> I38991de2b4
INFO [alembic.runtime.migration] Running upgrade 7d9d8eec6ad -> a8b517cff8ab
INFO [alembic.runtime.migration] Running upgrade a8b517cff8ab -> 3b935b28e7a0
INFO [alembic.runtime.migration] Running upgrade 3b935b28e7a0 -> b12a3ef66e62
INFO [alembic.runtime.migration] Running upgrade b12a3ef66e62 -> 97c25b0d2353
INFO [alembic.runtime.migration] Running upgrade 97c25b0d2353 -> 2e0d7a8a1586
INFO [alembic.runtime.migration] Running upgrade 2e0d7a8a1586 -> 5c85685d616d
OK
[root@controller ~ (keystone)]#

```

- Start Neutron services.

```

root@controller:~#
File Edit View Search Terminal Help
Created symlink /etc/systemd/system/multi-user.target.wants/neutron-metadata-agent.service → /usr/lib/systemd/system/neutron-metadata-agent.service.
Created symlink /etc/systemd/system/multi-user.target.wants/neutron-openvswitch-agent.service → /usr/lib/systemd/system/neutron-openvswitch-agent.service.
[root@controller ~]# systemctl restart openstack-nova-api openstack-nova-compute
[root@controller ~]# openstack network agent list
+-----+-----+-----+
| ID           | Agent Type      | Host       | Avail |
| ability Zone | Alive | State | Binary |          |
+-----+-----+-----+
| 30b6fa22-5293-4063-8f4a-cf4f2b34387a | Metadata agent | controller | None  | |
| | :-- | UP | neutron-metadata-agent |          |
| 5aae1686-94b6-456e-bf28-e6612a28644b | DHCP agent     | controller | nova   |
| | :-- | UP | neutron-dhcp-agent |          |
| 8ce74c38-863c-4ceb-ac4d-df782b5360f2 | L3 agent       | controller | nova   |
| | :-- | UP | neutron-l3-agent |          |
| d25c8d93-5e24-42d7-8ced-45ed4d7691b0 | Open vSwitch agent | controller | None  |
| | :-- | UP | neutron-openvswitch-agent |          |
+-----+-----+-----+
[root@controller ~]#

```

Afficher le statut

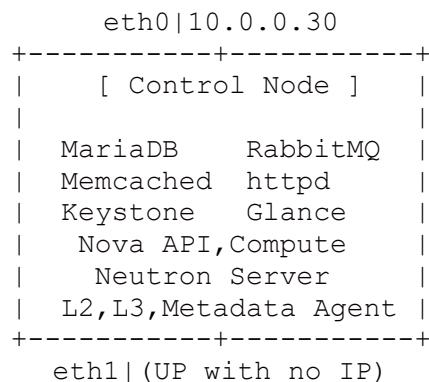
## 12. OpenStack Victoria : Configure Networking

Configurez la mise en réseau pour les instances de machine virtuelle.

Configurez d'abord les paramètres de base pour les services Neutron sur les paramètres tout en un comme ici.

Par exemple, configurez le type de réseau FLAT ici.

Le nœud a 2 interfaces réseau comme suit.



- Configure Neutron services.

```

root@controller:~#
File Edit View Search Terminal Help
[root@controller ~]# ovs-vsctl add-br br-eth1;ovs-vsctl add-port br-eth1 eth1;vi /etc/neutron/plugins/ml2/ml2_conf.ini
ovs-vsctl: Error detected while setting up 'eth1': could not open network device
eth1 (No such device). See ovs-vswitchd log for details.
ovs-vsctl: The default log directory is "/var/log/openvswitch".
[root@controller ~]#

```

```

[securitygroup]
firewall_driver = openvswitch
enable_security_group = true
enable_ipset = true
[ovs]
bridge_mappings = physnet1:br-eth1

```

### Modification de /etc/neutron/plugins/ml2/ml2\_conf.ini

- Créer un réseau virtuel.

```

root@controller:~#
File Edit View Search Terminal Help
eth1 (No such device). See ovs-vswitchd log for details.
ovs-vsctl: The default log directory is "/var/log/openvswitch".
[root@controller ~(keystone)]# vi /etc/neutron/plugins/ml2/openvswitch_agent.ini
[root@controller ~(keystone)]# vi /etc/neutron/plugins/ml2/openvswitch_agent.ini
[root@controller ~(keystone)]# systemctl restart neutron-openvswitch-agent
[root@controller ~(keystone)]# projectID=$(openstack project list | grep service
| awk '{print $2}')
[root@controller ~(keystone)]# openstack network create --project $projectID \
> --share --provider-network-type flat --provider-physical-network physnet1 shar
ednet1
+-----+-----+
| Field | Value |
+-----+-----+
| admin_state_up | UP |
| availability_zone_hints | |
| availability_zones | |
| created_at | 2023-03-06T14:42:17Z |
| description | |
| dns_domain | None |
| id | 0b6795d7-9561-477f-ac5a-d9436803311f |
| ipv4_address_scope | None |
| ipv6_address_scope | None |
| is_default | False |
| is_vlan_transparent | None |

```

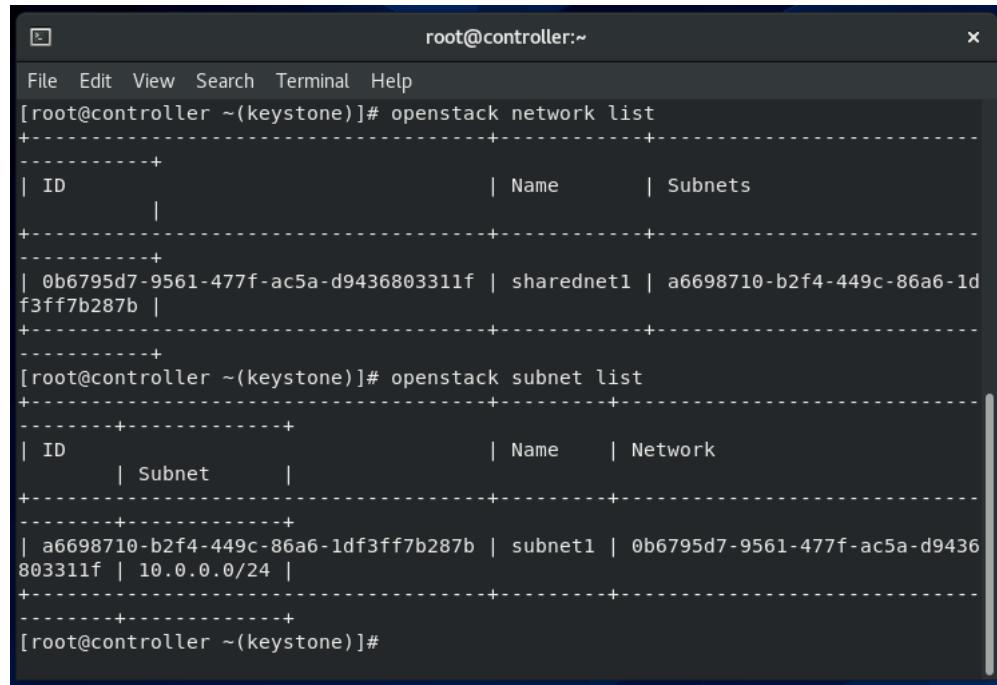
créer un réseau nommé [sharednet1]

```

root@controller:~#
File Edit View Search Terminal Help
| router:external | Internal |
| segments | None |
| shared | True |
| status | ACTIVE |
| subnets | |
| tags | |
| updated_at | 2023-03-06T14:42:17Z |
+-----+-----+
[root@controller ~(keystone)]# openstack subnet create subnet1 --network sharedn
et1 \
> --project $projectID --subnet-range 10.0.0.0/24 \
> --allocation-pool start=10.0.0.200,end=10.0.0.254 \
> --gateway 10.0.0.1 --dns-nameserver 10.0.0.10
+-----+-----+
| Field | Value |
+-----+-----+
| allocation_pools | 10.0.0.200-10.0.0.254 |
| cidr | 10.0.0.0/24 |
| created_at | 2023-03-06T14:42:46Z |
| description | |
| dns_nameservers | 10.0.0.10 |
| dns_publish_fixed_ip | None |
| enable_dhcp | True |
| gateway_ip | 10.0.0.1 |

```

créer un sous-réseau [10.0.0.0/24] dans [sharednet1]



```
root@controller:~# openstack network list
+----+-----+-----+
| ID | Name | Subnets |
+----+-----+-----+
| 0b6795d7-9561-477f-ac5a-d9436803311f | sharednet1 | a6698710-b2f4-449c-86a6-1df3ff7b287b |
+----+-----+-----+
[root@controller ~(keystone)]# openstack subnet list
+----+-----+-----+
| ID | Subnet | Name | Network |
+----+-----+-----+
| a6698710-b2f4-449c-86a6-1df3ff7b287b | subnet1 | 0b6795d7-9561-477f-ac5a-d9436803311f | 10.0.0.0/24 |
+----+-----+-----+
[root@controller ~(keystone)]#
```

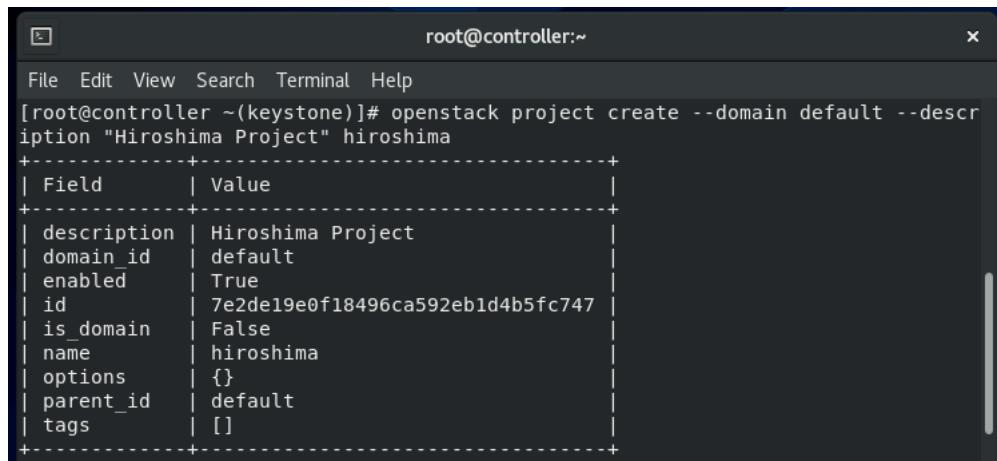
confirmer les paramètres

### 13. OpenStack Victoria : Add Users

Ajoutez des comptes d'utilisateurs dans Keystone qui peuvent utiliser Openstack System.

Tous les noms sont acceptables pour le nom d'utilisateur ou le nom de projet.

- Ajoutez également des saveurs qui définissent également le vCPU ou la mémoire d'une instance.



```
root@controller:~# openstack project create --domain default --description "Hiroshima Project" hiroshima
+----+-----+
| Field | Value |
+----+-----+
| description | Hiroshima Project
| domain_id | default
| enabled | True
| id | 7e2de19e0f18496ca592eb1d4b5fc747
| is_domain | False
| name | hiroshima
| options | {}
| parent_id | default
| tags | []
```

ajouter un projet

```

root@controller:~#
File Edit View Search Terminal Help
[root@controller ~(keystone)]# openstack user create --domain default --project
hiroshima --password userpassword serverworld
+-----+
| Field | Value |
+-----+
| default_project_id | 7e2de19e0f18496ca592eb1d4b5fc747 |
| domain_id | default |
| enabled | True |
| id | d132a0b400614ac6a71c739599c2c619 |
| name | serverworld |
| options | {} |
| password_expires_at | None |
+-----+

```

Ajouter un utilisateur

```

root@controller:~#
File Edit View Search Terminal Help
+-----+
[root@controller ~(keystone)]# openstack role create CloudUser
+-----+
| Field | Value |
+-----+
| description | None |
| domain_id | None |
| id | a63e5b43e71d4fc0b81c562a5f8bed35 |
| name | CloudUser |
| options | {} |
+-----+
[root@controller ~(keystone)]# openstack role add --project hiroshima --user ser
verworld CloudUser
[root@controller ~(keystone)]# openstack flavor create --id 0 --vcpus 1 --ram 20
48 --disk 10 m1.small
+-----+
| Field | Value |
+-----+
| OS-FLV-DISABLED:disabled | False |
| OS-FLV-EXT-DATA:ephemeral | 0 |
| disk | 10 |
| id | 0 |
| name | m1.small |
| os-flavor-access:is_public | True |
+-----+

```

Ajouter un rôle et [flavor]

**NB : il faut changer la taille du disque de 10 vers 12 sinon le reste ne  
marche pas**

#### 14. OpenStack Victoria : Create Instances

Créer et démarrer une instance de machine virtuelle.

Connectez-vous avec un utilisateur et créez une configuration pour l'authentification de Keystone.

```

export OS_PROJECT_DOMAIN_NAME=default
export OS_USER_DOMAIN_NAME=default
export OS_PROJECT_NAME=hiroshima
export OS_USERNAME=serverworld
export OS_PASSWORD=userpassword
export OS_AUTH_URL=http://10.0.0.30:5000/v3
export OS_IDENTITY_API_VERSION=3
export OS_IMAGE_API_VERSION=2
export PS1='[\u@\h \W(keystone)]\$ '
*
```

```
[root@controller ~]# vi ~/keystonerc
[root@controller ~]# vi ~/keystonerc
[root@controller ~]# chmod 600 ~/keystonerc;source ~/keystonerc;echo "
source ~/keystonerc " >> ~/.bash_profile
[root@controller ~]# openstack flavor list
+----+----+----+----+----+
| ID | Name | RAM | Disk | Ephemeral | VCPUs | Is Public |
+----+----+----+----+----+
| 0 | m1.small | 2048 | 10 | 0 | 1 | True |
+----+----+----+----+----+
[root@controller ~]# openstack image list
+----+----+----+
| ID | Name | Status |
+----+----+----+
| 6c20c4db-4e2c-4c3f-87c1-a537f509fb01 | CentOS8 | active |
| ddbfac69-f32f-4853-9e1b-68ea86f17d7c | Ubuntu2004-Official | active |
+----+----+----+
[root@controller ~]# openstack network list
+----+----+
| ID | Name | Subnets |
+----+----+

```

afficher la liste des [flavors] et images disponibles

```
| ddbfac69-f32f-4853-9e1b-68ea86f17d7c | Ubuntu2004-Official | active |
+----+----+----+
[root@controller ~]# openstack network list
+----+----+
| ID | Name | Subnets |
+----+----+
| 0b6795d7-9561-477f-ac5a-d9436803311f | sharednet1 | a6698710-b2f4-449c-86a6-1df3ff7b287b |
+----+----+
+----+
[root@controller ~]# openstack security group create secgroup01
+----+----+
| Field | Value |
+----+----+
| created_at | 2023-03-06T14:53:09Z
```

liste des réseaux openstack et liste des réseaux openstack

```
[root@controller ~]# openstack security group create secgroup01
+-----+
| Field          | Value
+-----+
| created_at     | 2023-03-06T14:53:09Z
| description    | secgroup01
| id             | 8e3d9cfc-2846-4e75-bed4-ebf0361934e8
| name           | secgroup01
| project_id     | 7e2de19e0f18496ca592eb1d4b5fc747
```

créer un groupe de sécurité pour les instances

```
[root@controller ~]# openstack security group list
+-----+-----+-----+-----+
| ID      | Name    | Description | P
| Project | Tags   |             |
+-----+-----+-----+-----+
| 8e3d9cfc-2846-4e75-bed4-ebf0361934e8 | secgroup01 | secgroup01 | 7
| e2de19e0f18496ca592eb1d4b5fc747 | []       |           |
| 96336d1a-5ad9-4b4a-b849-4c0ae6d48f93 | default   | Default security group | 7
| e2de19e0f18496ca592eb1d4b5fc747 | []       |           |
+-----+-----+-----+-----+
```

```
| 96336d1a-5ad9-4b4a-b849-4c0ae6d48f93 | default   | Default security group | 7
| e2de19e0f18496ca592eb1d4b5fc747 | []       |           |
+-----+-----+-----+-----+
[ ] [ ] [ ] [ ]
[root@controller ~]# ssh-keygen -q -N ""
Enter file in which to save the key (/root/.ssh/id_rsa):
[root@controller ~]# openstack keypair create --public-key ~/.ssh/id_rsa.pub mykey
+-----+-----+
| Field      | Value
+-----+-----+
| fingerprint | e7:81:63:b1:c9:7c:3c:41:0c:4b:d3:72:9d:ad:fa:ab |
| name       | mykey
| user_id    | d132a0b400614ac6a71c739599c2c619
+-----+-----+
[root@controller ~]# openstack keypair list
+-----+-----+
| Name | Fingerprint
+-----+-----+
| mykey | e7:81:63:b1:c9:7c:3c:41:0c:4b:d3:72:9d:ad:fa:ab
+-----+-----+
[root@controller ~]# netID=$(openstack network list | grep sharednet1
| awk '{ print $2 }')
[root@controller ~]#
```

Ajouter une clé publique

La création et le démarrage d'une instance ne fonctionne pas à cause du **taille du disque**, alors qu'il faut changer la taille de 10 vers 12 ou plus. Cela est causé par exemple par les mises a jours de Openstack et ces tools, cela nécessite un mise à jour dans le site Openstack victoria dans l'etape du creation d'un Flavor dans la 13eme etape du tutoriel openstack victoria.

**Ce projet est terminé dans la 14eme étape à cause de cette erreur.**

## Conclusion

La création d'une infrastructure Cloud par OpenStack Victoria est une étape importante dans l'évolution de l'informatique moderne. L'essor du Cloud Computing a radicalement transformé la manière dont les entreprises, les gouvernements et les individus gèrent leurs données et leurs applications en ligne. OpenStack Victoria offre une solution complète pour la création et la gestion d'une infrastructure Cloud robuste et évolutive, qui permet de répondre aux besoins les plus complexes en matière de stockage, de traitement et de sécurité.

La mise en place d'une infrastructure Cloud par OpenStack Victoria nécessite une compréhension approfondie des exigences en matière de configuration et d'intégration de systèmes. Cette infrastructure doit être capable de répondre aux demandes de l'ensemble des utilisateurs, avec une disponibilité et une évolutivité élevées. Les technologies et les protocoles utilisés pour la gestion de cette infrastructure doivent être conformes aux standards de l'industrie, afin d'assurer une compatibilité maximale et une interopérabilité entre différents systèmes.

La création d'une infrastructure Cloud par OpenStack Victoria doit être accompagnée d'une planification minutieuse, d'une documentation précise et d'une gestion rigoureuse des risques. Les équipes de développement doivent travailler en étroite collaboration avec les équipes de gestion de projet, les architectes système, les experts en sécurité et les fournisseurs de services Cloud. L'ensemble du processus doit être étroitement surveillé et évalué pour s'assurer que les résultats répondent aux attentes et aux exigences de l'organisation.

En outre, la création d'une infrastructure Cloud par OpenStack Victoria nécessite une forte expertise technique dans un large éventail de technologies. Les professionnels de l'informatique doivent avoir une connaissance approfondie des protocoles de virtualisation, des architectures de stockage distribuées, des outils de surveillance et de gestion de la charge de travail, ainsi que des stratégies de sécurité avancées. Cette expertise doit être complétée par une solide expérience

de travail en équipe, ainsi que par des compétences en communication, en résolution de problèmes et en gestion de projet.

En somme, la création d'une infrastructure Cloud par OpenStack Victoria est un projet ambitieux qui exige une planification, une expertise et une gestion rigoureuses. Elle offre cependant de nombreux avantages, tels que la flexibilité, la disponibilité, l'évolutivité et la sécurité pour répondre aux besoins en constante évolution des utilisateurs. Les organisations qui investissent dans une infrastructure Cloud basée sur OpenStack Victoria peuvent être sûres qu'elles disposent d'une solution à la pointe de la technologie, qui leur permettra de relever les défis de l'avenir de manière efficace et rentable.