EX NO:	KVM INSTALLATION
DATE:	

AIM:

To setup and manage a virtualized environment with KVM (Kernel-based Virtual Machine) in desktop/servers.

PROCEDURE:

To see if your processor is 64-bit, you can run this command:

egrep -c ' lm ' /proc/cpuinfo

```
cloud@openstack:~$ egrep -c 'lm' /proc/cpuinfo
2
cloud@openstack:~$
```

If 0 is printed, it means that your CPU is

not 64-bit.If 1 or higher, it is.

Now see if your running kernel is 64-bit, just issue the following command:

```
root@tce-VirtualBox:~# uname -a
Linux tce-VirtualBox 5.4.0-84-generic #94~18.04.1-Ubuntu SMP Thu Aug 26 23:17:4
6 UTC 2021 x86_64 x86_64 x86_64 GNU/Linux
root@tce-VirtualBox:~#
```

x86_64 indicates a running 64-bit kernel. If you use see i386, i486, i586 or i686, you're running a 32-bit kernel.

Kernel Modules files

```
root@openstack:~# ls /lib/modules/5.3.0-28-generic/kernel/arch/x86/kvm/kvm*
/lib/modules/5.3.0-28-generic/kernel/arch/x86/kvm/kvm-amd.ko
/lib/modules/5.3.0-28-generic/kernel/arch/x86/kvm/kvm-intel.ko
/lib/modules/5.3.0-28-generic/kernel/arch/x86/kvm/kvm.ko
root@openstack:~#
```

KVM INSTALLATION:

Searching Package in Repository

```
root@openstack:~# apt-cache search qemu-kvm
qemu-kvm - QEMU Full virtualization on x86 hardware
root@openstack:~#
```

Installing Package from Repository

```
root@tce-VirtualBox:~# apt-get update
Get:1 http://security.ubuntu.com/ubuntu bionic-security InRelease [88.7 kB]
Hit:2 http://in.archive.ubuntu.com/ubuntu bionic InRelease
Hit:3 http://in.archive.ubuntu.com/ubuntu bionic-updates InRelease
Hit:4 http://in.archive.ubuntu.com/ubuntu bionic-backports InRelease
Hit:5 https://dl.google.com/linux/chrome/deb stable InRelease
Fetched 88.7 kB in 4s (20.9 kB/s)
Reading package lists... Done
```

```
root@tce-VirtualBox:~# ps -ef |grep apt
_apt      4671  4489  1 12:12 ?        00:00:14 /usr/lib/apt/methods/http
root      4734  2274  0 12:29 pts/0    00:00:00 grep --color=auto apt
root@tce-VirtualBox:~# kill -9 4671
root@tce-VirtualBox:~# apt-get install libvirt-bin
Reading package lists... Done
Building dependency tree
Reading state information... Done
The following additional packages will be installed:
  augeas-lenses bridge-utils cpu-checker dmeventd ebtables ibverbs-providers
```

Qemu-kvm

```
root@tce-VirtualBox:~# apt-get install qemu-kvm
Reading package lists... Done
Building dependency tree
Reading state information... Done
qemu-kvm is already the newest version (1:2.11+dfsg-1ubuntu7.39).
qemu-kvm set to manually installed.
0 upgraded, 0 newly installed, 0 to remove and 171 not upgraded.
```

Qwmu-system

```
root@tce-VirtualBox:~# apt-get install qemu-system
Reading package lists... Done
Building dependency tree
Reading state information... Done
The following additional packages will be installed:
  qemu-slof qemu-system-arm qemu-system-mips qemu-system-misc qemu-system-ppc
  qemu-system-s390x qemu-system-sparc
Suggested packages:
  qemu samba vde2 qemu-efi openbios-ppc openhackware openbios-sparc
The following NEW packages will be installed:
  qemu-slof qemu-system qemu-system-arm qemu-system-mips qemu-system-misc
  qemu-system-ppc qemu-system-s390x qemu-system-sparc
0 upgraded, 8 newly installed, 0 to remove and 171 not upgraded.
Need to get 41.1 MB of archives.
After this operation, 219 MB of additional disk space will be used.
Do you want to continue? [Y/n] y
Get:1 http://in.archive.ubuntu.com/ubuntu bionic-updates/main amd64 qemu-system
-arm amd64 1:2.11+dfsg-1ubuntu7.39 [5,649 kB]
6% [1 qemu-system-arm 3,169 kB/5,649 kB 56%]
```

Virt-manager:

```
root@tce-VirtualBox:~# apt-get install virt-manager
Reading package lists... Done
Building dependency tree
Reading state information... Done
The following additional packages will be installed:
  gir1.2-appindicator3-0.1 gir1.2-gtk-vnc-2.0 gir1.2-libosinfo-1.0
  gir1.2-libvirt-glib-1.0 gir1.2-spiceclientglib-2.0
  gir1.2-spiceclientgtk-3.0 libgovirt-common libgovirt2 libgtk-vnc-2.0-0
  libgvnc-1.0-0 libosinfo-1.0-0 libphodav-2.0-0 libphodav-2.0-common
  libpython-stdlib libpython2.7 libpython2.7-minimal libpython2.7-stdlib
  libspice-client-glib-2.0-8 libspice-client-gtk-3.0-5 libusbredirhost1
  libvirt-glib-1.0-0 osinfo-db python python-asn1crypto python-cairo
  python-certifi python-cffi-backend python-chardet python-cryptography
  python-dbus python-enum34 python-gi python-gi-cairo python-idna
  python-ipaddr python-ipaddress python-libvirt python-libxml2 python-minimal
  python-openssl python-pkg-resources python-requests python-six
  python-urllib3 python2.7 python2.7-minimal spice-client-glib-usb-acl-helper
  virt-viewer virtinst
Suggested packages:
  libosinfo-l10n gstreamer1.0-plugins-bad gstreamer1.0-libav python-doc
  python-tk python-cryptography-doc python-cryptography-vectors
  python-dbus-dbg python-dbus-doc python-enum34-doc python-openssl-doc
  python-openssl-dbg python-setuptools python-socks python-ntlm python2.7-doc
  binfmt-support ssh-askpass python-guestfs
The following NEW packages will be installed:
  gir1.2-appindicator3-0.1 gir1.2-gtk-vnc-2.0 gir1.2-libosinfo-1.0
  gir1.2-libvirt-glib-1.0 gir1.2-spiceclientglib-2.0
  gir1.2-spiceclientgtk-3.0 libgovirt-common libgovirt2 libgtk-vnc-2.0-0
  libgvnc-1.0-0 libosinfo-1.0-0 libphodav-2.0-0 libphodav-2.0-common
```

Bridge-utils:

```
root@tce-VirtualBox:~# apt-get install bridge-utils
Reading package lists... Done
Building dependency tree
Reading state information... Done
bridge-utils is already the newest version (1.5-15ubuntu1).
bridge-utils set to manually installed.
0 upgraded, 0 newly installed, 0 to remove and 168 not upgraded.
```

Editing the Config File:

```
root@tce-VirtualBox:~# sudo nano /etc/libvirt/libvirtd.conf
```

```
  GNU nano 2.9.3              /etc/libvirt/libvirtd.conf

# NB, must pass the --listen flag to the libvirtd process for this to
# have any effect.
#
# Using the TCP socket requires SASL authentication by default. Only
# SASL mechanisms which support data encryption are allowed. This is
# DIGEST_MD5 and GSSAPI (Kerberos5)
#
# This is disabled by default, uncomment this to enable it.
#listen_tcp = 1
listen_addr = "0.0.0.0"
unix_sock_group = "libvirt"
unix_sock_ro_perms = "0777"
unix_sock_rw_perms = "0777"
unix_sock_dir = "/var/run/libvirt"
auth_unix_ro = "none"
auth_unix_rw = "none"


# Override the port for accepting secure TLS connections
# This can be a port number, or service name
#
#tls_port = "16514"
```

Virsh list - Displays no of Virtual machine running

```
root@openstack:~# virsh list
 Id    Name                           State
----------------------------------------------------

root@openstack:~#
```

Restarting the particular Service

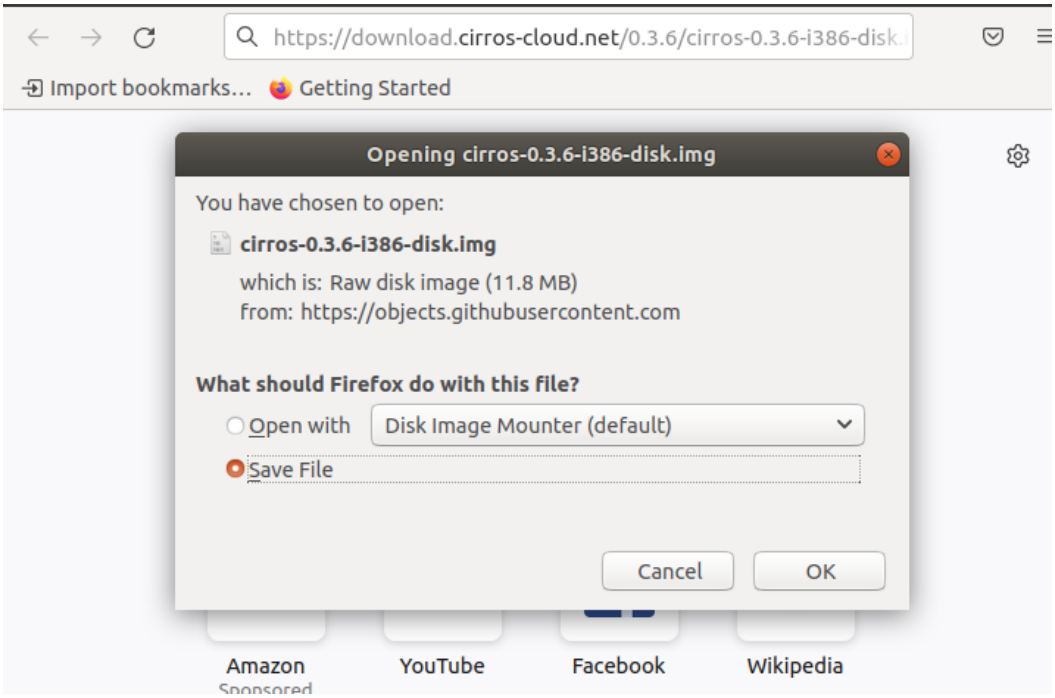
```
root@tce-VirtualBox:~# /etc/init.d/libvirtd restart
[ ok ] Restarting libvirtd (via systemctl): libvirtd.service.
root@tce-VirtualBox:~#
```

Finding the Status of that service:

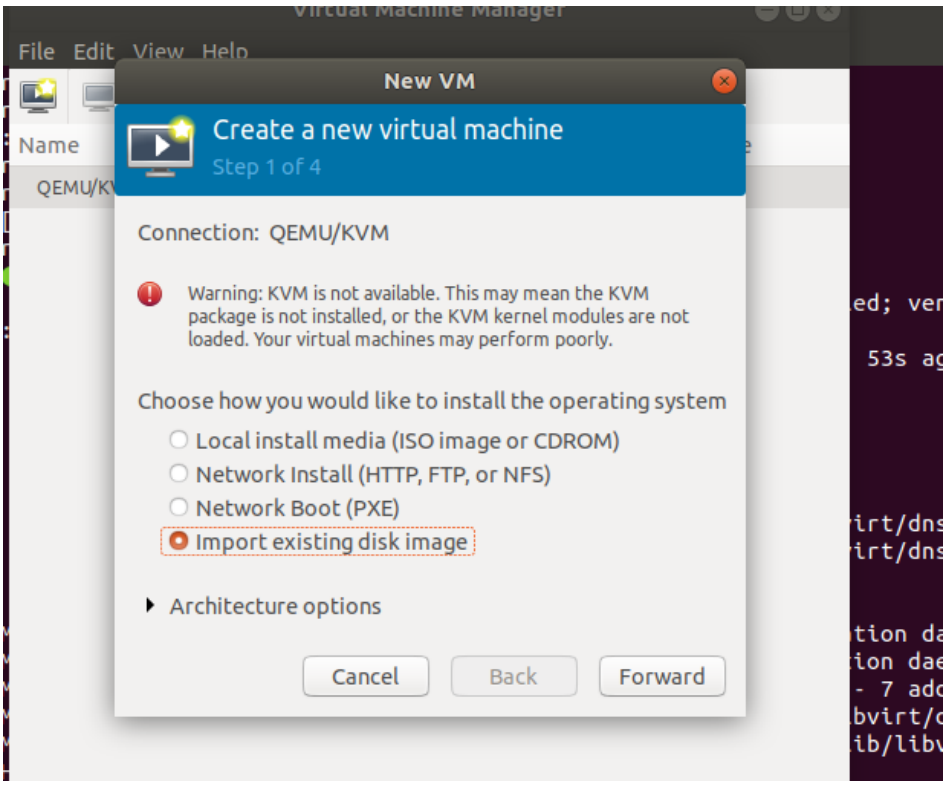
```
root@tce-VirtualBox:~# /etc/init.d/libvirtd status
● libvirtd.service - Virtualization daemon
   Loaded: loaded (/lib/systemd/system/libvirtd.service; enabled; vendor preset
: enabled)
   Active: active (running) since Sat 2022-05-14 12:49:46 IST; 53s ago
     Docs: man:libvirtd(8)
           https://libvirt.org
 Main PID: 16072 (libvirtd)
    Tasks: 19 (limit: 32768)
   CGroup: /system.slice/libvirtd.service
           ├─ 6241 /usr/sbin/dnsmasq --conf-file=/var/lib/libvirt/dnsmasq/de…er
           ├─ 6242 /usr/sbin/dnsmasq --conf-file=/var/lib/libvirt/dnsmasq/de…er
           └─16072 /usr/sbin/libvirtd

May 14 12:49:46 tce-VirtualBox systemd[1]: Starting Virtualization daemon...
May 14 12:49:46 tce-VirtualBox systemd[1]: Started Virtualization daemon.
May 14 12:49:47 tce-VirtualBox dnsmasq[6241]: read /etc/hosts - 7 addresses
May 14 12:49:47 tce-VirtualBox dnsmasq[6241]: read /var/lib/libvirt/dnsmasq…ses
May 14 12:49:47 tce-VirtualBox dnsmasq-dhcp[6241]: read /var/lib/libvirt/dns…le
Hint: Some lines were ellipsized, use -l to show in full.
root@tce-VirtualBox:~#
```

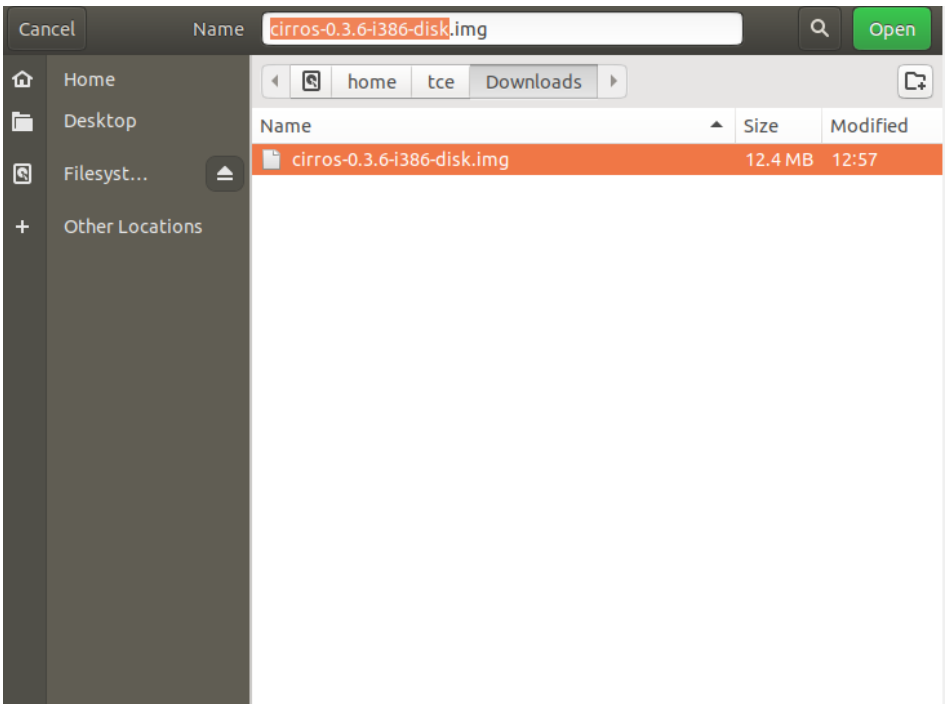
Downloading the virtual image:



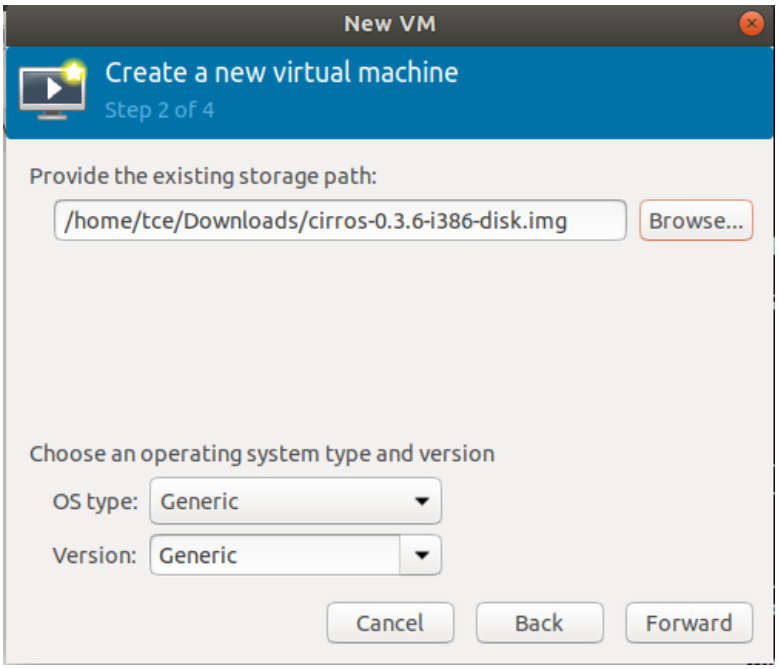
Importing the existing VM that we have downloaded:



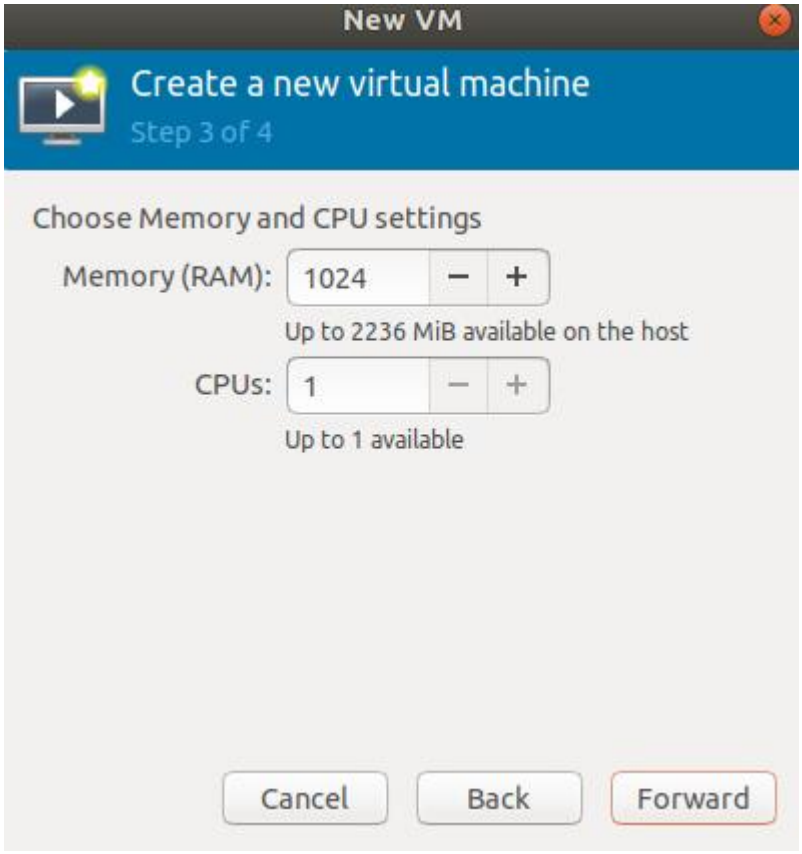
Locating the VM in downloads folder:



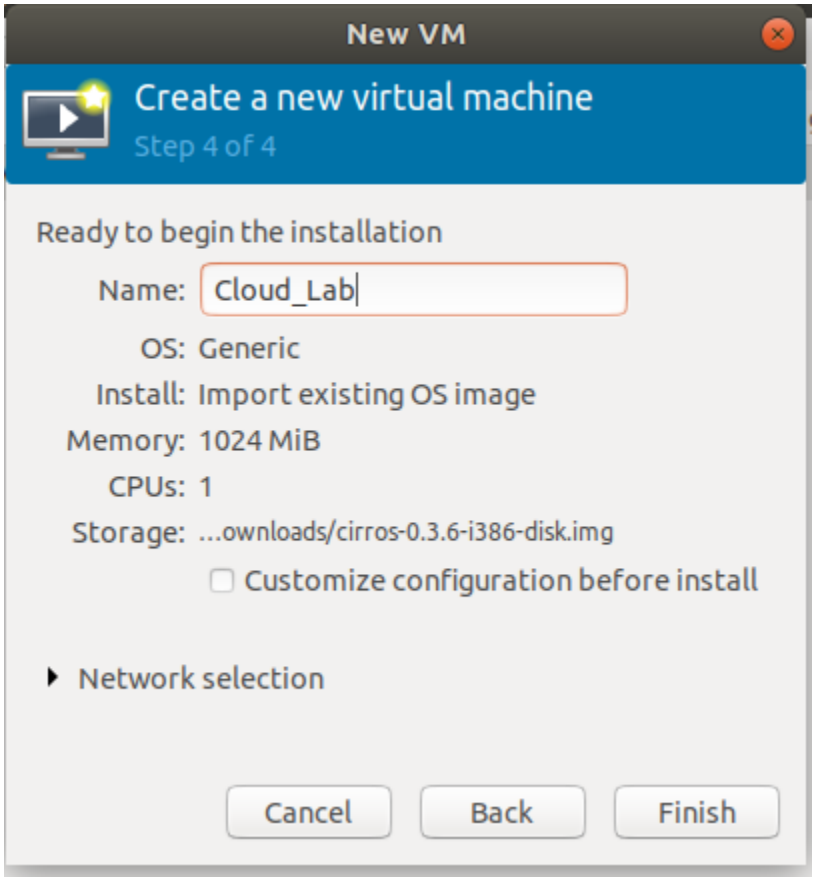
Selecting Image from Local Disk

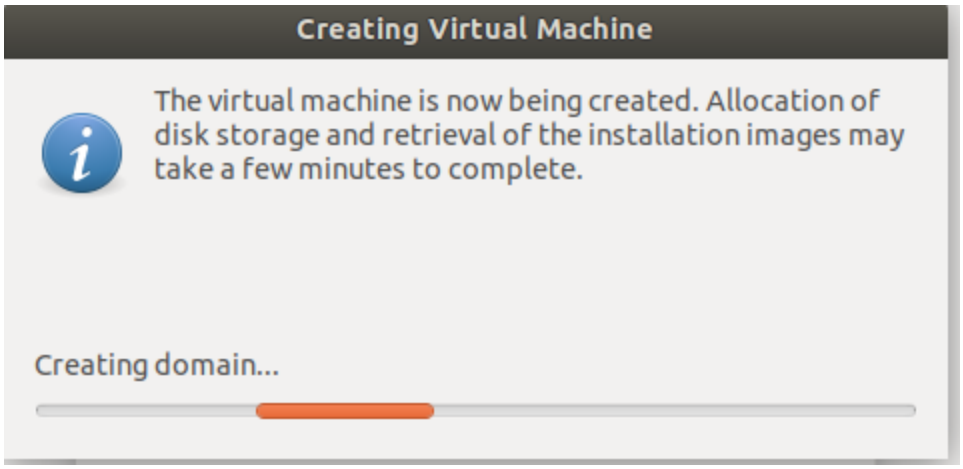


Choosing Memory and CPU

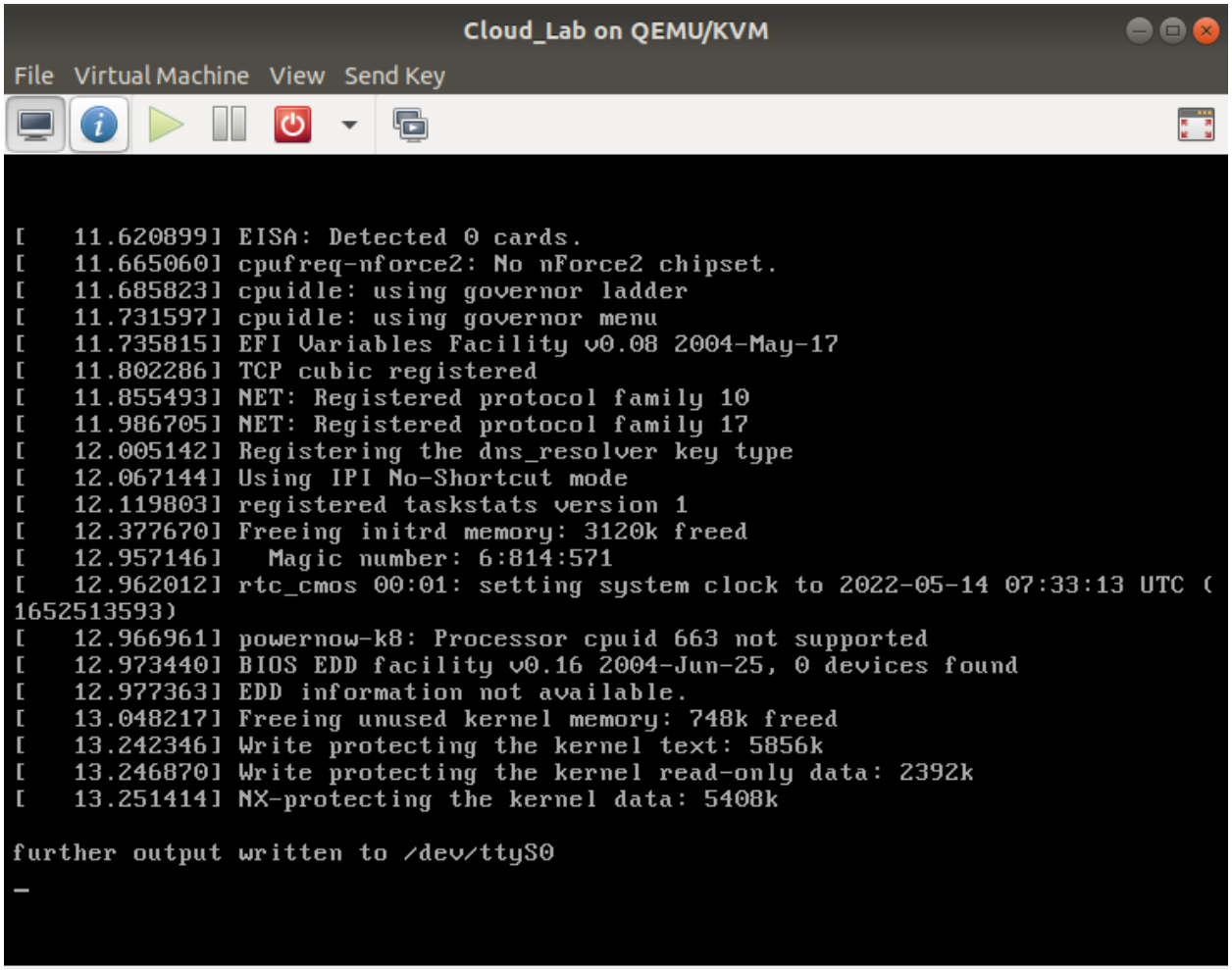


Giving Name for Virtual Machine


New VM
Create a new virtual machine
Step 4 of 4
Ready to begin the installation
Name: Cloud_Lab
OS: Generic
Install: Import existing OS image
Memory: 1024 MiB
CPUs: 1
Storage: ...ownloads/cirros-0.3.6-i386-disk.img
Customize configuration before install
Network selection
Cancel
Back
Finish


Creating Virtual Machine
The virtual machine is now being created. Allocation of disk storage and retrieval of the installation images may take a few minutes to complete.
Creating domain...

Booted VM is now ready:



RESULT:

This KVM has been setup and is managed in the desktops.