NETWORKING & SYSTEM ADMINISTRATION LAB

MICRO PROJECT

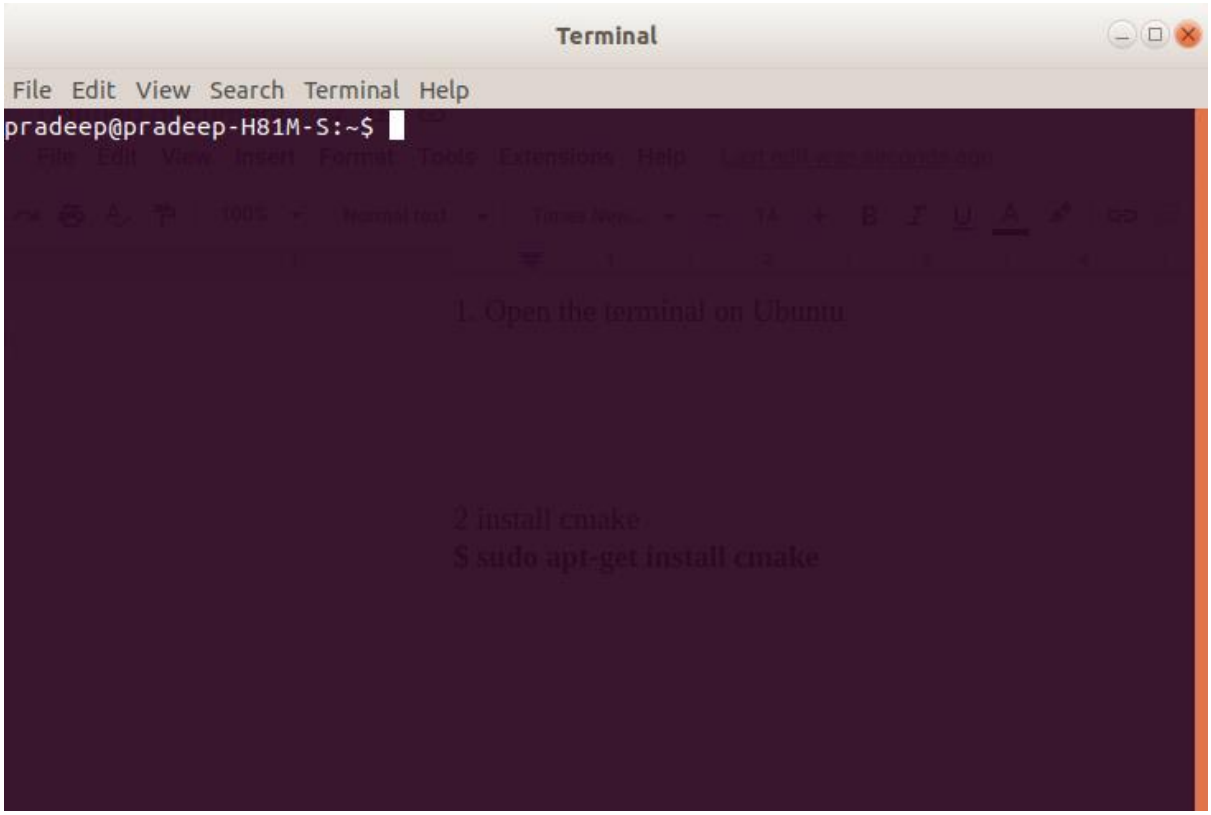
AIM

Introduction to hypervisors and VMs: KVM installation and commands

PROCEDURE

For Ubuntu system, all packages required to run KVM are available on official upstream repositories. Install them using the commands:

1. Open the terminal on Ubuntu



2. Update advanced packaging tool

$ sudo apt-get update

3. Create Virtual Machine

You can create virtual machine using virt-manager utility. Run the following command to start the virt-manager:

$ sudo virt-manager virsh help virsh help virsh help list

$ Sudo virsh nodeinfo

$ Virsh start vm

$ vm virsh start

$ virsh start testvm1

```
mca@U58:~$ sudo apt install qemu-kvm libvirt-daemon-system libvirt-clients bridge-utils
Reading package lists... Done
Building dependency tree
Reading state information... Done
The following additional packages will be installed:
  augeas-lenses cpu-checker dmeventd ebtables ibverbs-providers ipxe-qemu ipxe-qemu-256k-compat-efi-roms libaugeas0 libcacard0
  libdevmapper-event1.02.1 libfdt1 libibverbs1 libiscsi7 liblvm2app2.2 liblvm2cmd2.02 libnetcf1 librados2 librbd1 librdmacm1 libsdl1.2debian
  libspice-server1 libusbredirparser1 libvirt-daemon libvirt-daemon-driver-storage-rbd libvirt0 libxen-4.9 libxenstore3.0 libxml2-utils lvm2
  msr-tools qemu-block-extra qemu-system-common qemu-system-x86 qemu-utils seabios sharutils
Suggested packages:
  augeas-doc augeas-tools libvirt-daemon-driver-storage-gluster libvirt-daemon-driver-storage-sheepdog libvirt-daemon-driver-storage-zfs
  numad radvd auditd systemtap nfs-common zfsutils pm-utils thin-provisioning-tools samba vde2 sgabios ovmf debootstrap sharutils-doc
  bsd-mailx | mailx
The following NEW packages will be installed:
  augeas-lenses bridge-utils cpu-checker dmeventd ebtables ibverbs-providers ipxe-qemu ipxe-qemu-256k-compat-efi-roms libaugeas0 libcacard0
  libdevmapper-event1.02.1 libfdt1 libibverbs1 libiscsi7 liblvm2app2.2 liblvm2cmd2.02 libnetcf1 librados2 librbd1 librdmacm1 libsdl1.2debian
  libspice-server1 libusbredirparser1 libvirt-clients libvirt-daemon libvirt-daemon-driver-storage-rbd libvirt-daemon-system libvirt0
  libxen-4.9 libxenstore3.0 libxml2-utils lvm2 msr-tools qemu-block-extra qemu-kvm qemu-system-common qemu-system-x86 qemu-utils seabios
  sharutils
0 upgraded, 40 newly installed, 0 to remove and 1 not upgraded.
Need to get 20.1 MB of archives.
After this operation, 85.3 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/main amd64 libvirt0 amd64 4.0.0-1ubuntu8 [1,255 kB]
Get:2 http://in.archive.ubuntu.com/ubuntu bionic/main amd64 libvirt-clients amd64 4.0.0-1ubuntu8 [596 kB]
Get:3 http://in.archive.ubuntu.com/ubuntu bionic/main amd64 augeas-lenses all 1.10.1-2 [300 kB]
Get:4 http://in.archive.ubuntu.com/ubuntu bionic/main amd64 libaugeas0 amd64 1.10.1-2 [159 kB]
Get:5 http://in.archive.ubuntu.com/ubuntu bionic/main amd64 libnetcf1 amd64 1:0.2.8-1ubuntu2 [46.4 kB]
Get:6 http://in.archive.ubuntu.com/ubuntu bionic/main amd64 libxenstore3.0 amd64 4.9.2-0ubuntu1 [19.7 kB]
Get:7 http://in.archive.ubuntu.com/ubuntu bionic/main amd64 libxen-4.9 amd64 4.9.2-0ubuntu1 [399 kB]
Get:8 http://in.archive.ubuntu.com/ubuntu bionic/main amd64 libvirt-daemon amd64 4.0.0-1ubuntu8 [2,173 kB]
Get:9 http://in.archive.ubuntu.com/ubuntu bionic/main amd64 libvirt-daemon-system amd64 4.0.0-1ubuntu8 [80.7 kB]
Get:10 http://in.archive.ubuntu.com/ubuntu bionic/main amd64 libiscsi7 amd64 1.17.0-1.1 [55.4 kB]
Get:11 http://in.archive.ubuntu.com/ubuntu bionic/main amd64 libibverbs1 amd64 17.1-1 [44.4 kB]
Get:12 http://in.archive.ubuntu.com/ubuntu bionic/main amd64 librados2 amd64 12.2.4-0ubuntu1 [2,647 kB]
Get:13 http://in.archive.ubuntu.com/ubuntu bionic/main amd64 librbd1 amd64 12.2.4-0ubuntu1 [911 kB]
Get:14 http://in.archive.ubuntu.com/ubuntu bionic/main amd64 qemu-block-extra amd64 1:2.11+dfsg-1ubuntu7 [41.7 kB]
```

4. Add user mca to the KVM

```
mca@U58:~$ sudo adduser mca  kvm
Adding user `mca' to group `kvm' ...
Adding user mca to group kvm
Done.
```

5. Sudo virsh list -all

```
mca@U58:~$ virsh list --all
 Id    Name                           State
----------------------------------------------------
```

Step 6: Check The Status of KVM

```
mca@U58:~$ sudo systemctl status libvirtd
● libvirtd.service - Virtualization daemon
     Loaded: loaded (/lib/systemd/system/libvirtd.service; enabled; vendor preset: enabled)
     Active: active (running) since Thu 2022-06-16 16:08:17 IST; 3min 31s ago
       Docs: man:libvirtd(8)
             https://libvirt.org
   Main PID: 9457 (libvirtd)
      Tasks: 19 (limit: 32768)
     CGroup: /system.slice/libvirtd.service
             ├─9457 /usr/sbin/libvirtd
             ├─9775 /usr/sbin/dnsmasq --conf-file=/var/lib/libvirt/dnsmasq/default.conf --leasefile-ro --dhcp-script=/usr/lib/libvirt/libvirt_le
             └─9776 /usr/sbin/dnsmasq --conf-file=/var/lib/libvirt/dnsmasq/default.conf --leasefile-ro --dhcp-script=/usr/lib/libvirt/libvirt_le

Jun 16 16:08:17 U58 systemd[1]: Started Virtualization daemon.
Jun 16 16:08:20 U58 dnsmasq[9775]: started, version 2.79 cachesize 150
Jun 16 16:08:20 U58 dnsmasq[9775]: compile time options: IPv6 GNU-getopt DBus i18n IDN DHCP DHCPv6 no-Lua TFTP conntrack ipset auth DNSSEC loo
Jun 16 16:08:20 U58 dnsmasq-dhcp[9775]: DHCP, IP range 192.168.122.2 -- 192.168.122.254, lease time 1h
Jun 16 16:08:20 U58 dnsmasq-dhcp[9775]: DHCP, sockets bound exclusively to interface virbr0
Jun 16 16:08:20 U58 dnsmasq[9775]: reading /etc/resolv.conf
Jun 16 16:08:20 U58 dnsmasq[9775]: using nameserver 127.0.0.53#53
Jun 16 16:08:20 U58 dnsmasq[9775]: read /etc/hosts - 7 addresses
Jun 16 16:08:20 U58 dnsmasq[9775]: read /var/lib/libvirt/dnsmasq/default.addnhosts - 0 addresses
Jun 16 16:08:20 U58 dnsmasq-dhcp[9775]: read /var/lib/libvirt/dnsmasq/default.hostsfile
```

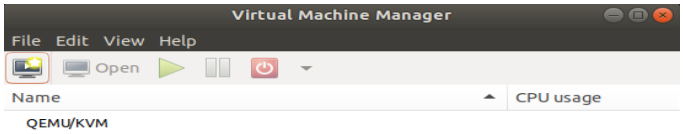
7. $ sudo systemctl enable –now libvirtd

```
mca@U58:~$ sudo systemctl enable --now libvirtd
Synchronizing state of libvirtd.service with SysV service script with /lib/systemd/systemd-sysv-install.
Executing: /lib/systemd/systemd-sysv-install enable libvirtd
mca@U58:~$
```

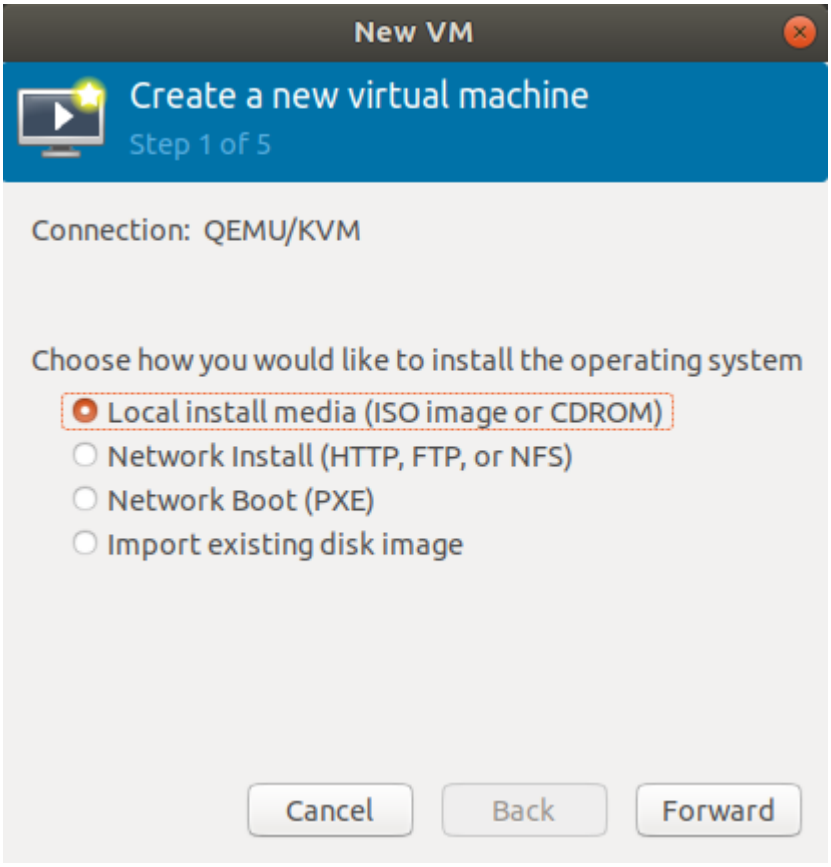
8. Installing virtual machine manager

$ sudo apt install virt-manager

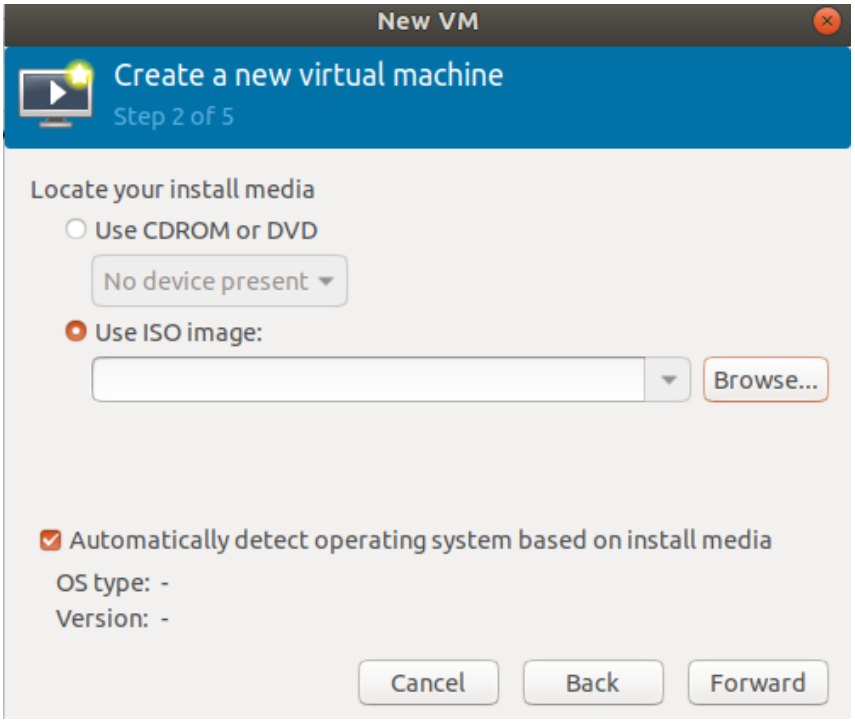
```
mca@U58:~$ sudo apt install virt-manager
Reading package lists... Done
Building dependency tree
Reading state information... Done
The following additional packages will be installed:
  gir1.2-appindicator3-0.1 gir1.2-gtk-vnc-2.0 gir1.2-libosinfo-1.0 gir1.2-libvirt-glib-1.0 gir1.2-spiceclientglib-2.0
  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
  libspice-client-glib-2.0-8 libspice-client-gtk-3.0-5 libusbredirhost1 libvirt-glib-1.0-0 osinfo-db python-asn1crypto 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-openssl python-pkg-resources python-requests python-six python-urllib3
  spice-client-glib-usb-acl-helper virt-viewer virtinst
Suggested packages:
  libosinfo-l10n gstreamer1.0-plugins-bad gstreamer1.0-libav 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 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
  libspice-client-glib-2.0-8 libspice-client-gtk-3.0-5 libusbredirhost1 libvirt-glib-1.0-0 osinfo-db python-asn1crypto 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-openssl python-pkg-resources python-requests python-six python-urllib3
  spice-client-glib-usb-acl-helper virt-manager virt-viewer virtinst
0 upgraded, 41 newly installed, 0 to remove and 1 not upgraded.
Need to get 3,881 kB of archives.
```



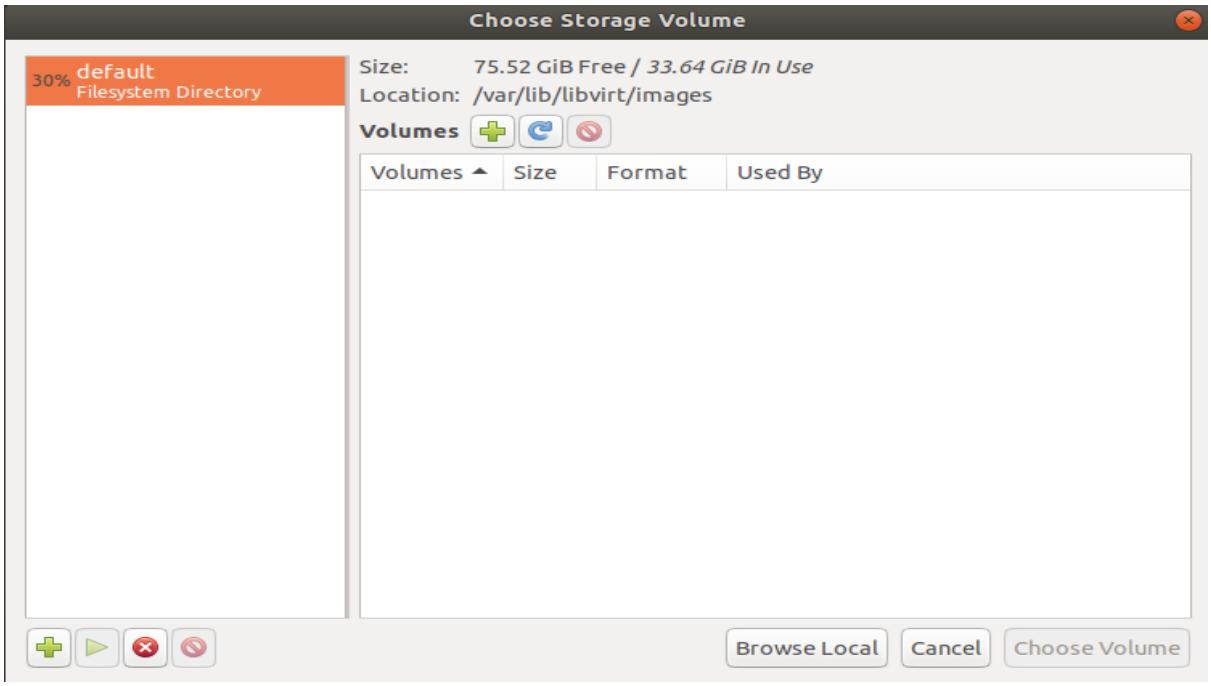
9. select the type of installation media



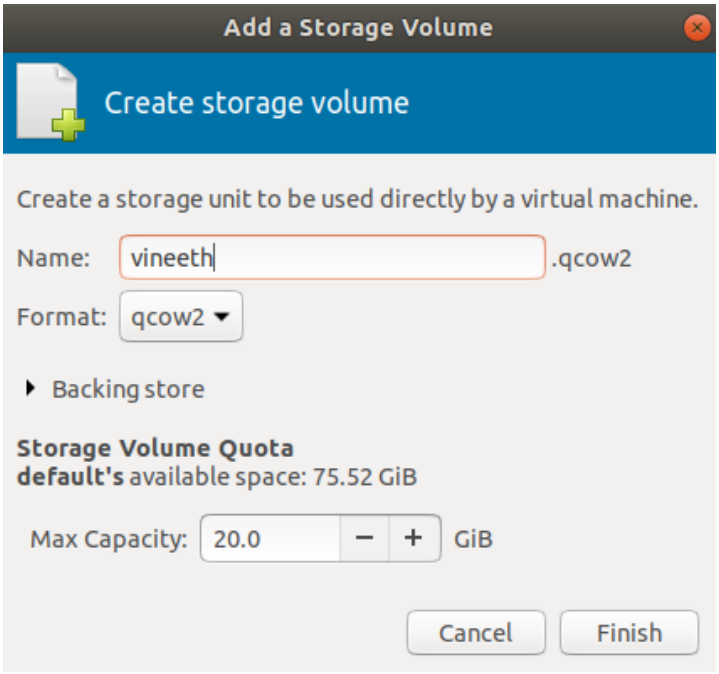
11. Choose ISO image



12. Set Storage amount



13. Give a name to the Kernel Virtual machine and allocate size for storage volume on HDD



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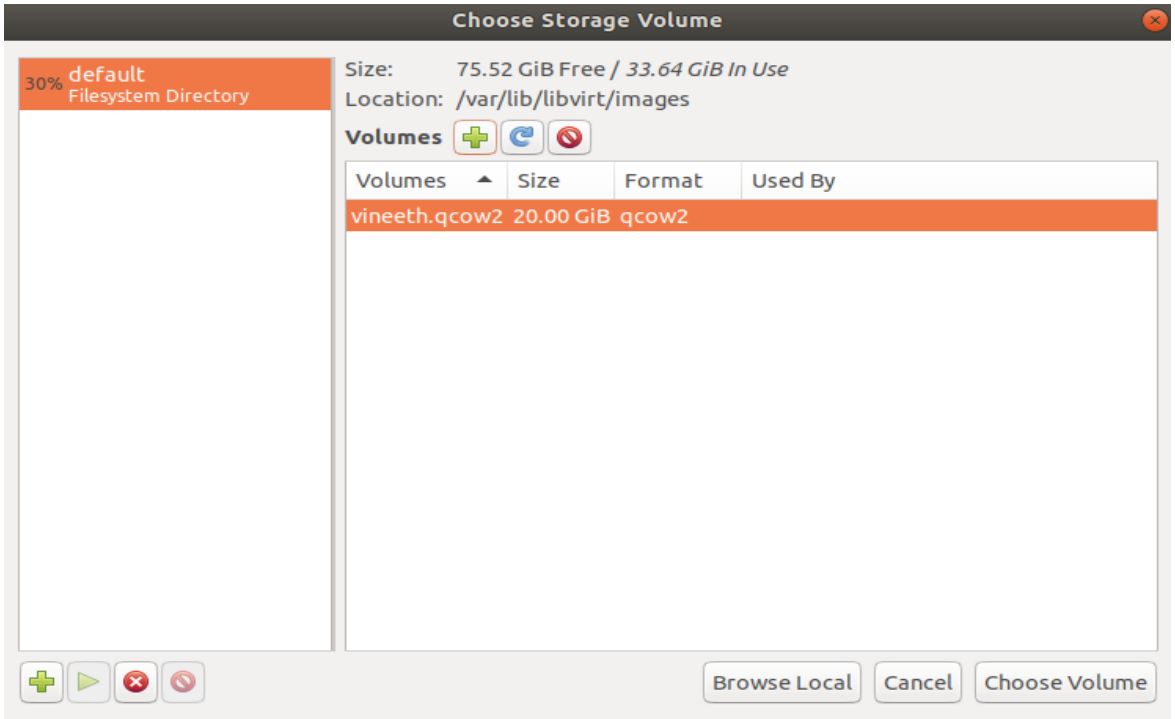
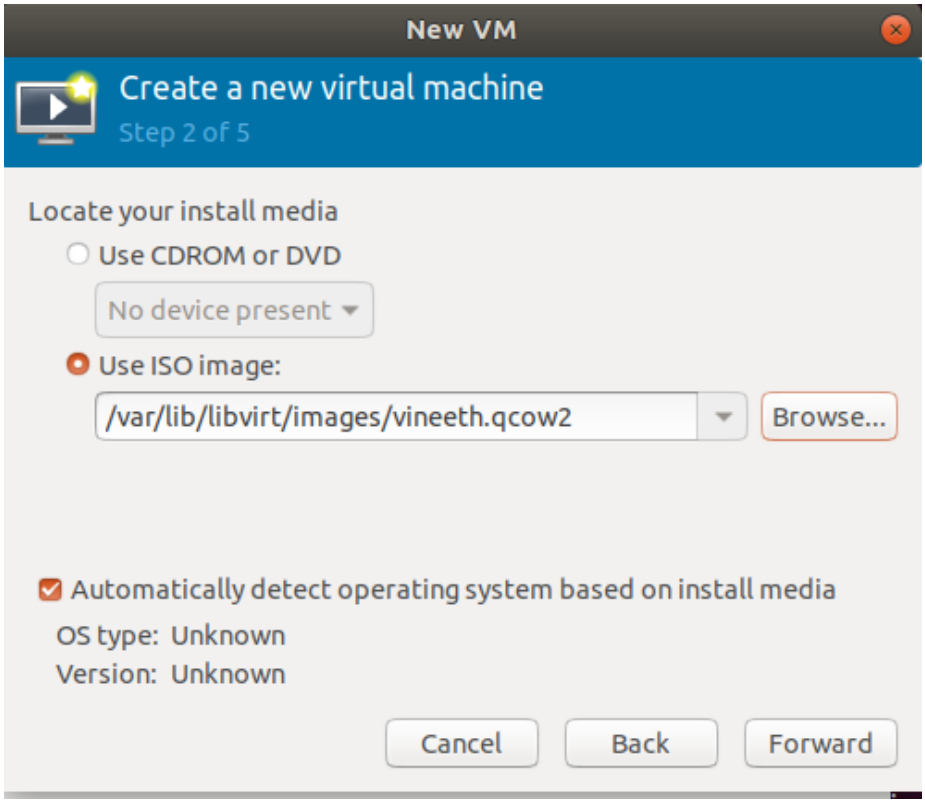
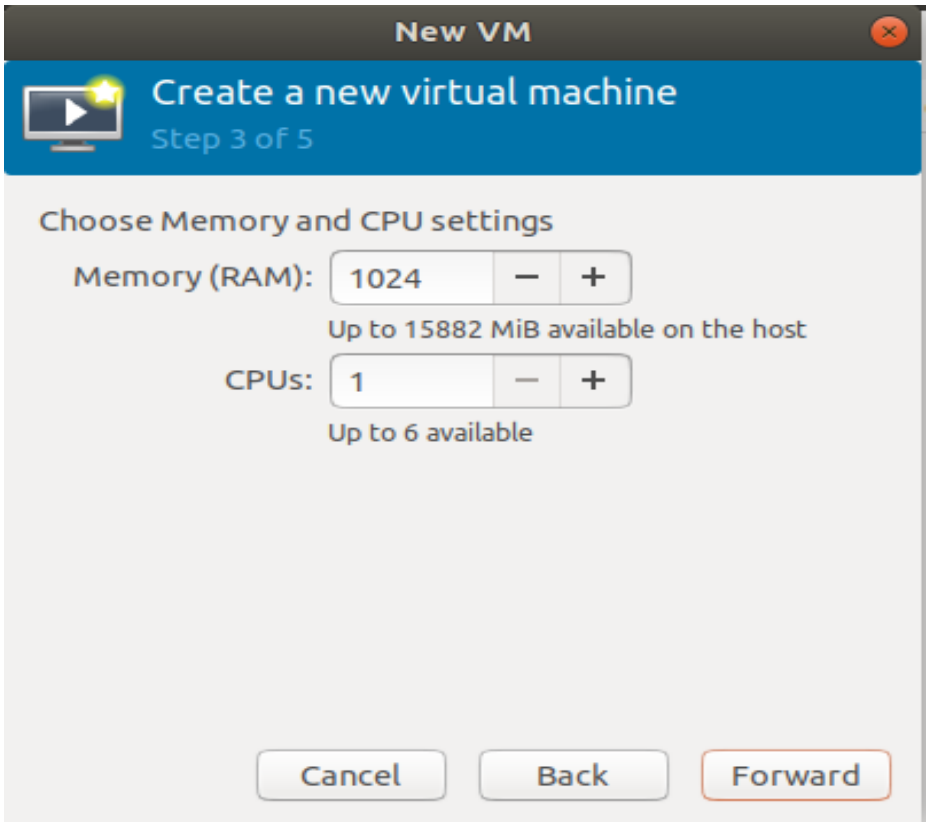



New VM
Create a new virtual machine
Step 2 of 5
Locate your install media
Use CDROM or DVD
No device present
Use ISO image:
/var/lib/libvirt/images/vineeth.qcow2
Browse...
Automatically detect operating system based on install media
OS type: Unknown
Version: Unknown
Cancel
Back
Forward


New VM
Create a new virtual machine
Step 3 of 5
Choose Memory and CPU settings
Memory (RAM):
1024
Up to 15882 MiB available on the host
CPUs:
1
Up to 6 available
Cancel
Back
Forward