20th Dec 2019

Exp 2: Installation and Configuration of virtualization using KVM

KVM (Kernel-based Virtual Machine) is free and open source virtualisation software. You can create multiple VM (virtual machines), each VM has its own private virtualised hardware like disk, CPU, RAM etc. It was included in Linux kernel mainline in kernel version 2.6.20. In this experiment we need to install KVM on Ubuntu 16.04 LTS Desktop

Prerequisites:
For installing the KVM you must have following prerequisites.
1. Enable Virtualisation in your system BIOS.
2. Check your system CPU if it supports virtualisation. Run the given below command.

```
egrep -c '(vmx|svm)' /proc/cpuinfo
```

The output from above command either 1 or more it means CPU supports the virtualisation else 0 or less means it does not support.

3. Check Ubuntu 16.04 LTS architecture by running one command i.e

```
girish@UbuntuServer:~$ arch

x86_64
```

x86_64 represents 64 bit kernel.
i386, i486, i586 or i686 represents 32 bit kernel.

The 32-bit OS are limited to 2GB RAM at maximum for a given Virtual Machine.
32-bit kernel will only host 32-bit guest kernel whereas 64-bit kernel can host both 32-bit and 64-bit guest O.S.

Installation of KVM on Ubuntu 16.04

1. Install KVM and other dependencies packages

In Ubuntu 16.04 LTS, you can use the command `apt` or `apt-get` both.

```
sudo apt update
sudo apt install qemu-kvm libvirt-bin bridge-utils
```

2. Know about new users and group for KVM software

Once you installed the packages, some addition will happen in number of users and group.

(a) Two users will be created.

– libvirt-qemu

– libvirt-dnsmasq

Following two lines are added in /etc/passwd file

libvirt-qemu:x:64055:134:Libvirt Qemu,,,:/var/lib/libvirt:/bin/false

libvirt-dnsmasq:x:128:135:Libvirt Dnsmasq,,,:/var/lib/libvirt/dnsmasq:/bin/false

(b) Two groups will be created.

– kvm

– libvirtd

Following two lines are added in /etc/passwd file

kvm:x:134:

libvirtd:x:135:girish

User ‘girish’ is member of group ‘libvirtd’. It means this user can use the KVM.

```
virsh -c qemu:///system list
```

[If you get error, you should logout and login back in your desktop. Means the currently login user should re-login in system.]

Once you are login back, re-run the command. This time you should get the output as given below. It is blank because no VM is created.

```
girish@UbuntuServer:~$ virsh -c qemu:///system list
 Id    Name                           State
----------------------------------------------------
```

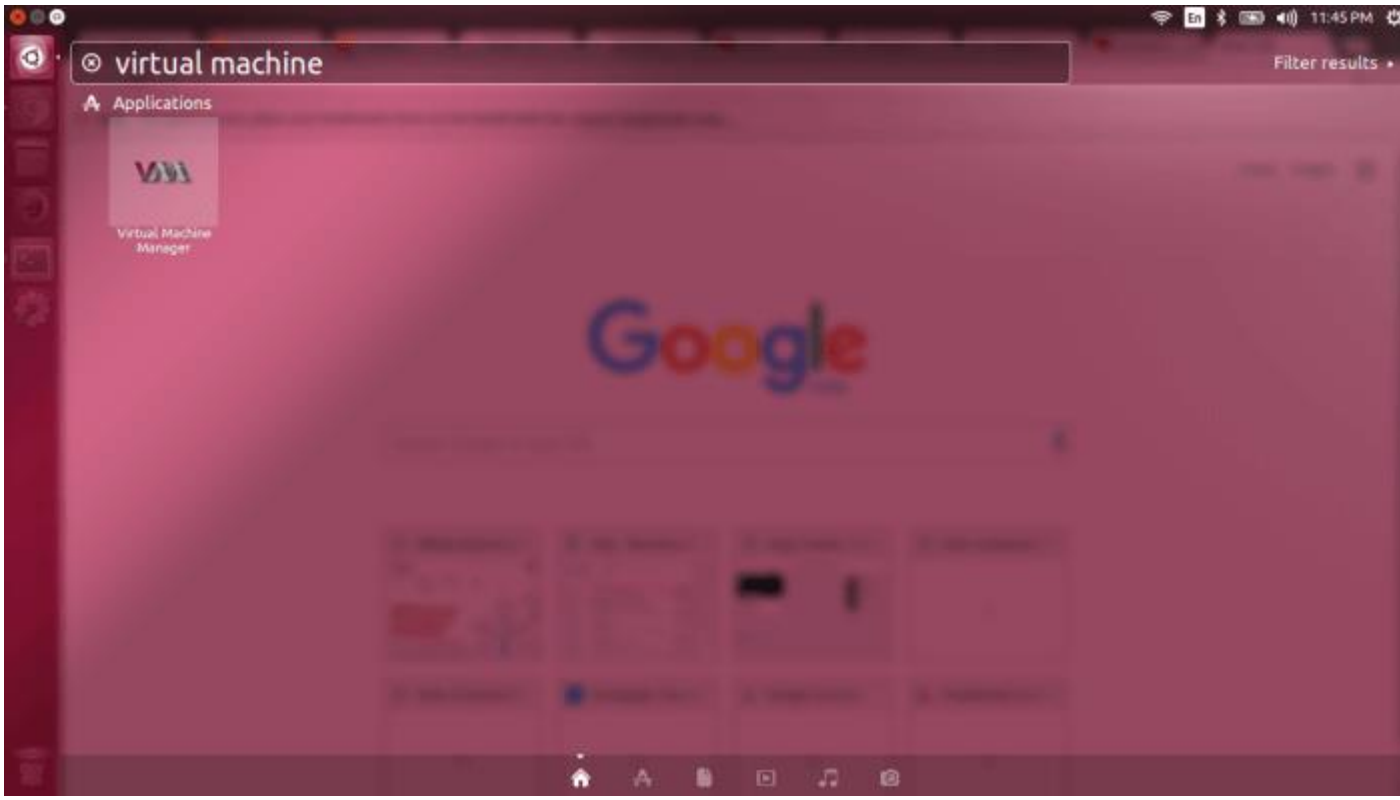
4. Install Virtual Machine Manager

Here we are using Virtual Machine Manager which is a desktop application to manage the KVM virtual machines through libvirt.

Run this command to install Virtual Machine Manager.

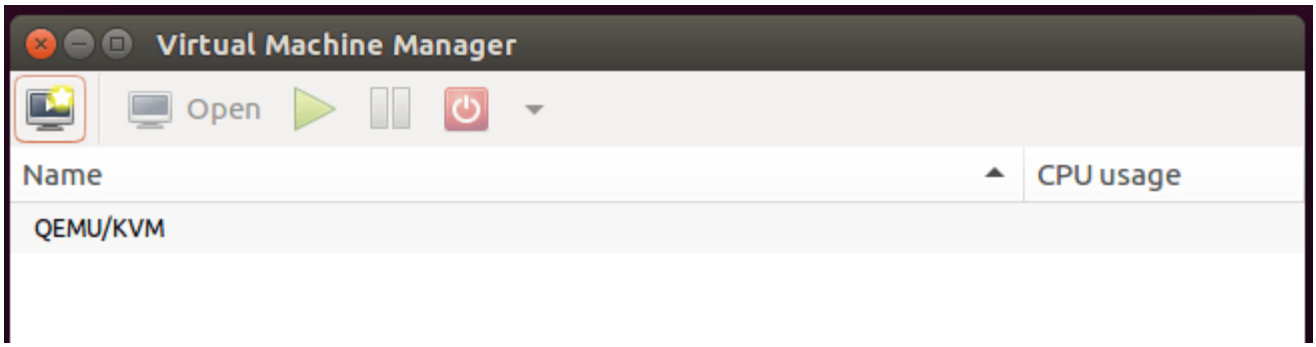
```
sudo apt install virt-manager
```

Open the Virtual Machine Manager by typing the same in Dash Home. Click the icon, it will open the application.

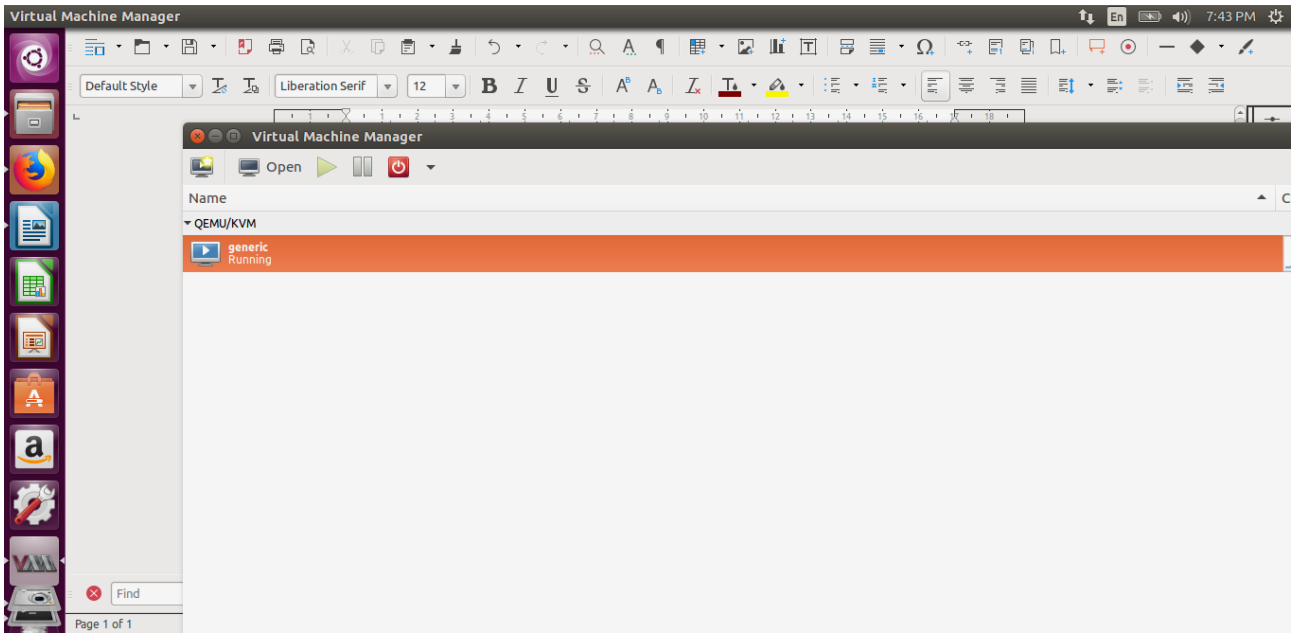


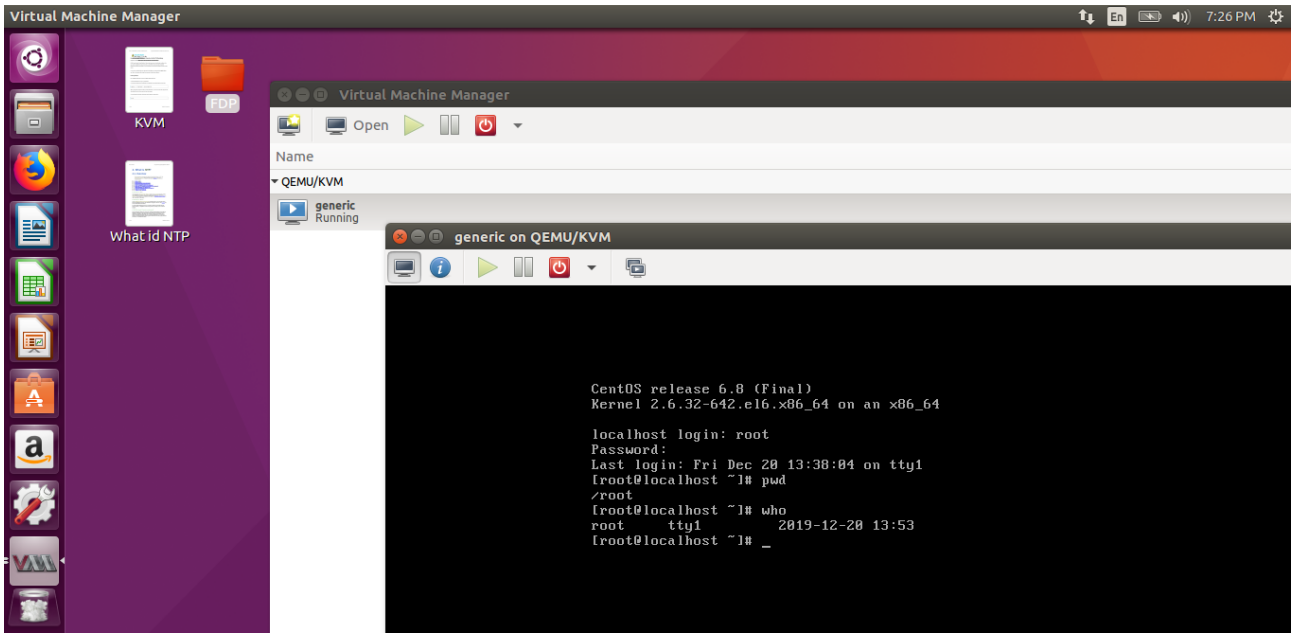
To open the Virtual Machine Manager through command line, type –

```
virt-manager
```



After creating new VM, install CentOS 6.8 or other OS as per requirement.






```
girish@UbuntuServer:~$ virsh -c qemu:///system list
 Id    Name                           State
----------------------------------------------------
 1     generic                        running
```

Conclusion: In this experiment we installed KNM, VMM in Ubuntu 16 machine and created a VM and installed 6.8 CentOS in the VM.

Reference: https://sharadchhetri.com/2017/02/17/how-to-install-kvm-on-ubuntu-16-04-lts-desktop/