**Experiment No.: 01**

**Title: Installation and Configuration of Virtualization using KVM**

**Objectives**: From this experiment, the student will be able to,

- Understand the concepts of virtualization.
- Understand KVM architecture and its configuration.

**Hardware / Software Required:** Ubuntu operating system, open-source software KVM, Internet.

**Theory:**

Virtualization is software that separates physical infrastructures to create various dedicated resources. It is the fundamental technology that powers cloud computing.

The technology behind virtualization is known as a virtual machine monitor (VMM) or virtual manager, which separates compute environments from the actual physical infrastructure.

Virtualization makes servers, workstations, storage and other systems independent of the physical hardware layer. This is done by installing a Hypervisor on top of the hardware layer, where the systems are then installed.

There are three areas of IT where virtualization is making headroads, network virtualization, storage virtualization and server virtualization:

• Network virtualization is a method of combining the available resources in a network by splitting up the available bandwidth into channels, each of which is independent from the others, and each of which can be assigned (or reassigned) to a particular server or device in real time. The idea is that virtualization disguises the true complexity of the network by separating it into manageable parts, much like your partitioned hard drive makes it easier to manage your files.

• Storage virtualization is the pooling of physical storage from multiple network storage devices into what appears to be a single storage device that is managed from a central console. Storage virtualization is commonly used in storage area networks (SANs).

• Server virtualization is the masking of server resources (including the number and identity of individual physical servers, processors, and operating systems) from server users. The intention is to spare the user from having to understand and manage complicated details of server resources while increasing resource sharing and utilization and maintaining the capacity to expand later.

Virtualization can be viewed as part of an overall trend in enterprise IT that includes autonomic computing, a scenario in which the IT environment will be able to manage itself based on perceived activity, and utility computing, in which computer processing power is seen as a utility that clients can pay for only as needed. The usual goal of virtualization is to centralize administrative tasks while improving scalability and workloads.

**Procedure:**

Installation Steps :

1. #sudo grep -c "svm\|vmx" /proc/cpuinfo
2. #sudo apt-get install qemu-kvm libvirt-bin bridge-utils virt-manager
3. #sudoadduserrait

#sudoadduserraitlibvirtd

After running this command, log out and log back in as rait

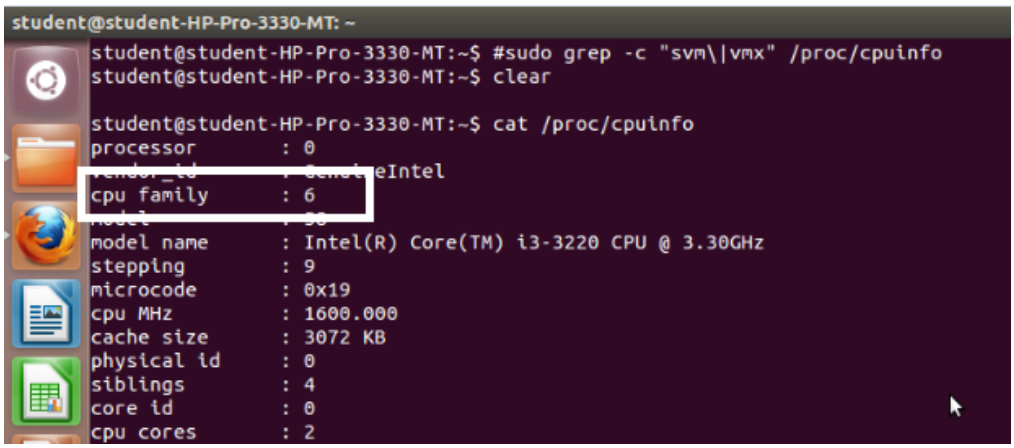
4. Run following command after logging back in as rait and you should see an empty list of virtual machines. This indicates that everything is working correctly.

#virsh -c qemu:///system list

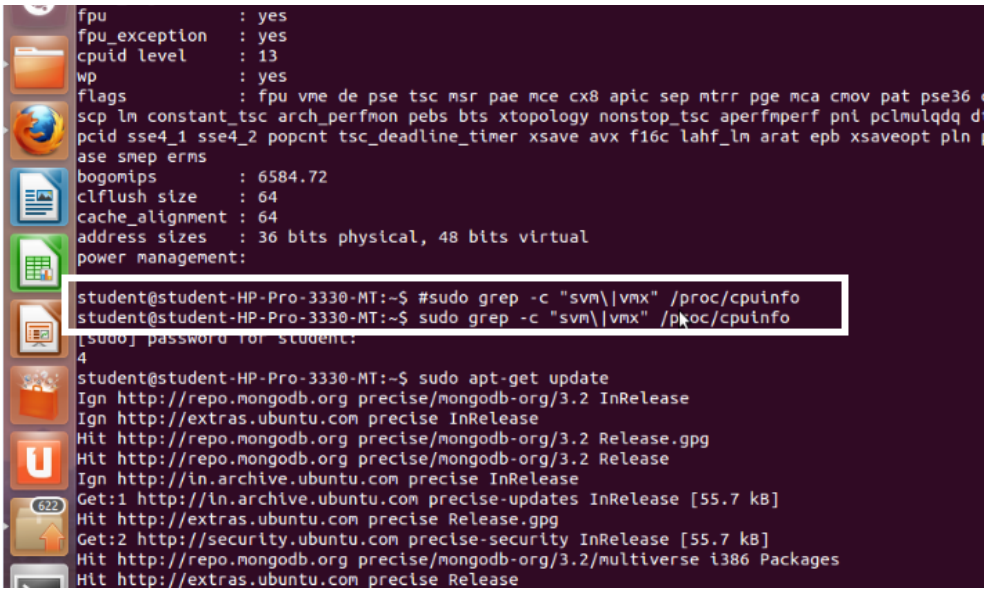
5. Open Virtual Machine Manager application and Create Virtual Machine
   #virt-manager

_____SNAPSHOTS_____

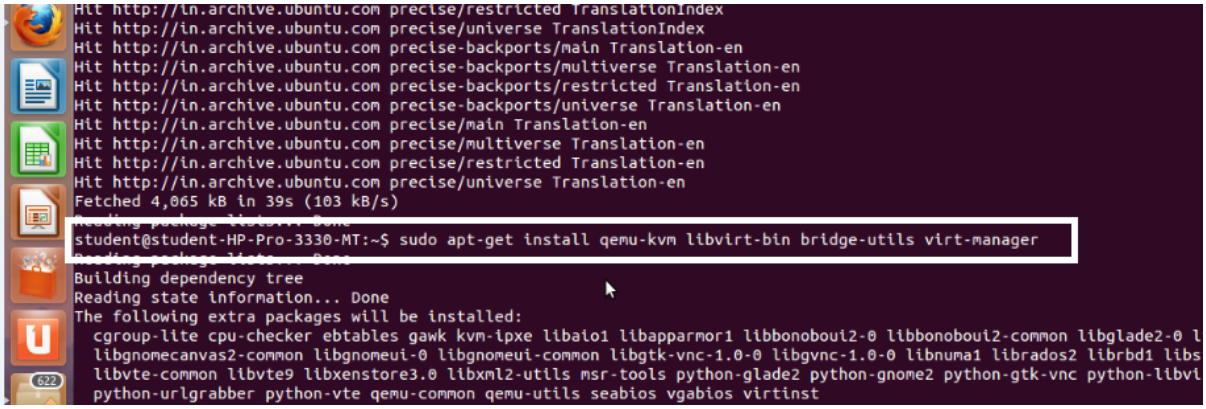
Step 1 : #sudo grep -c "svm\|vmx" /proc/cpuinfo



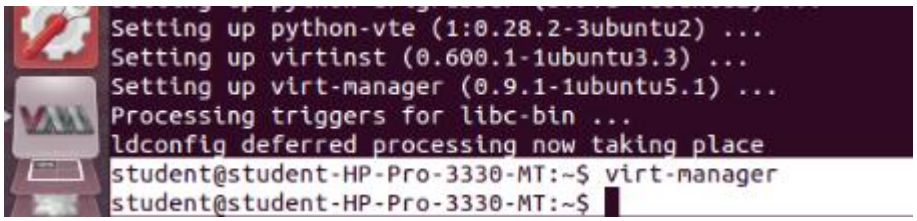
Step 2 : #sudo apt-get install qemu-kvm libvirt-bin bridge-utils virt-manager




Step 3 : #sudoadduserrait
After running this command, log out and log back in as rait

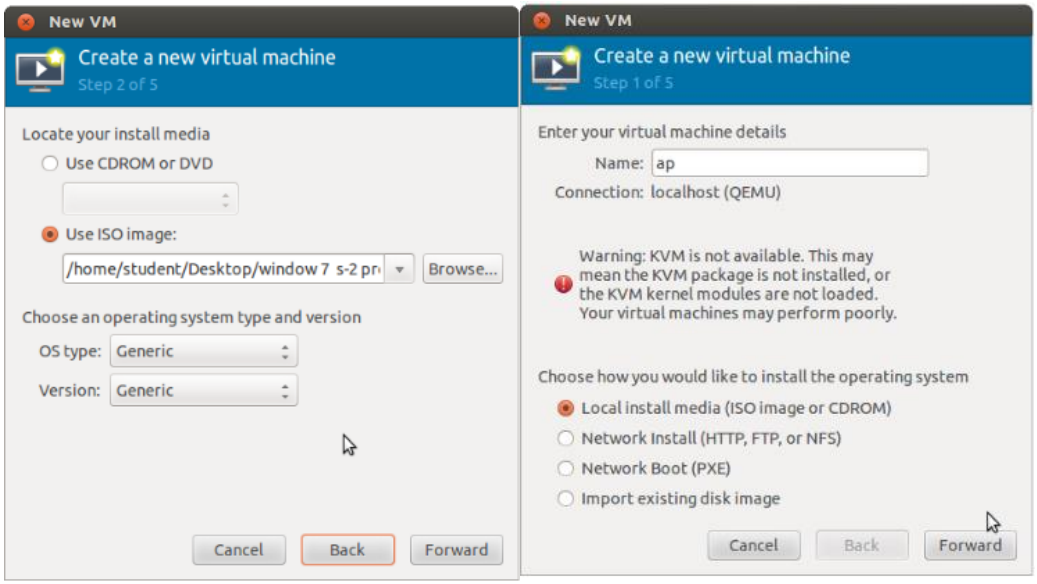


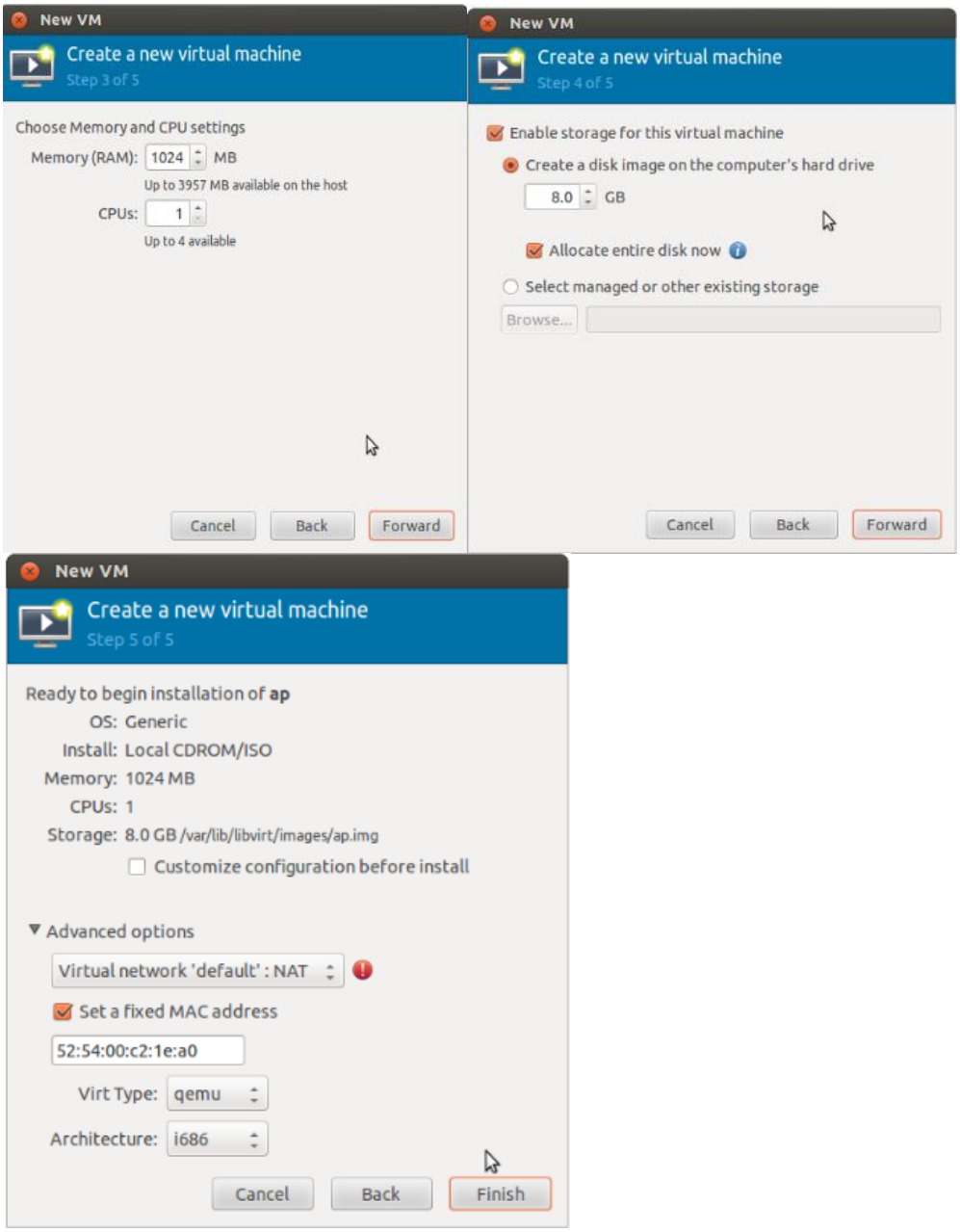

Step 4 : #sudoadduserraitlibvirtd
After running this command, log out and log back in as rait



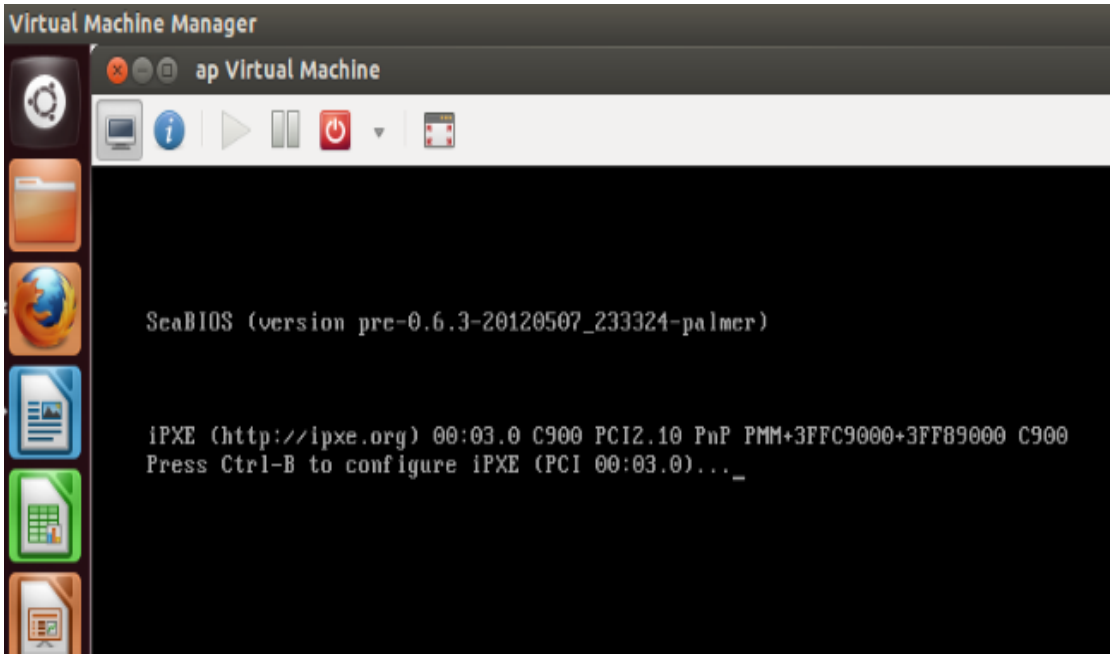
Step 5 : Open Virtual Machine Manager application and Create Virtual Machine #virt-manager as shown below


Step 6 : Create a new virtual machine as shown below

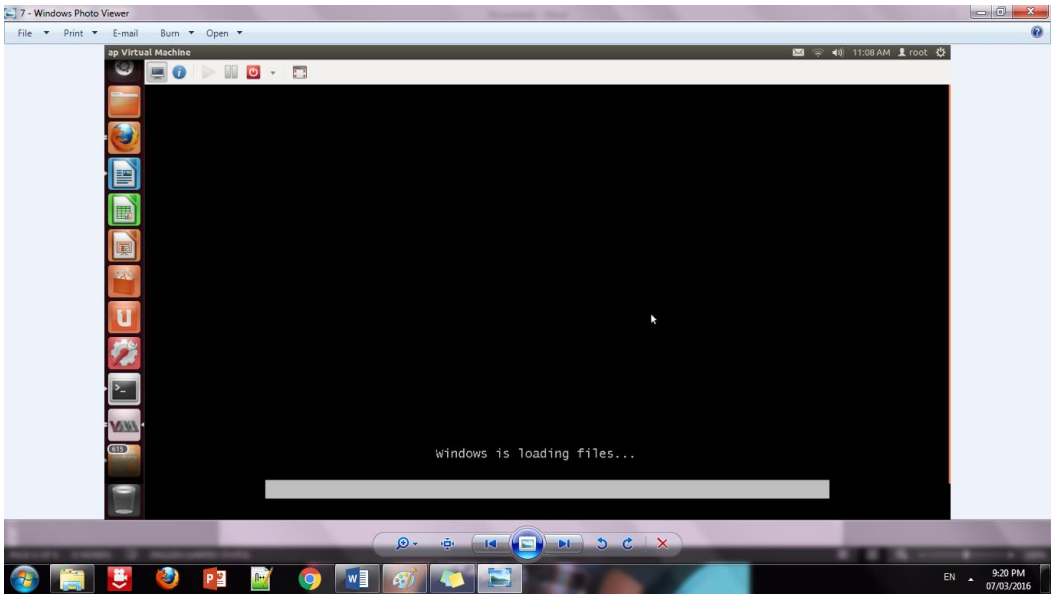




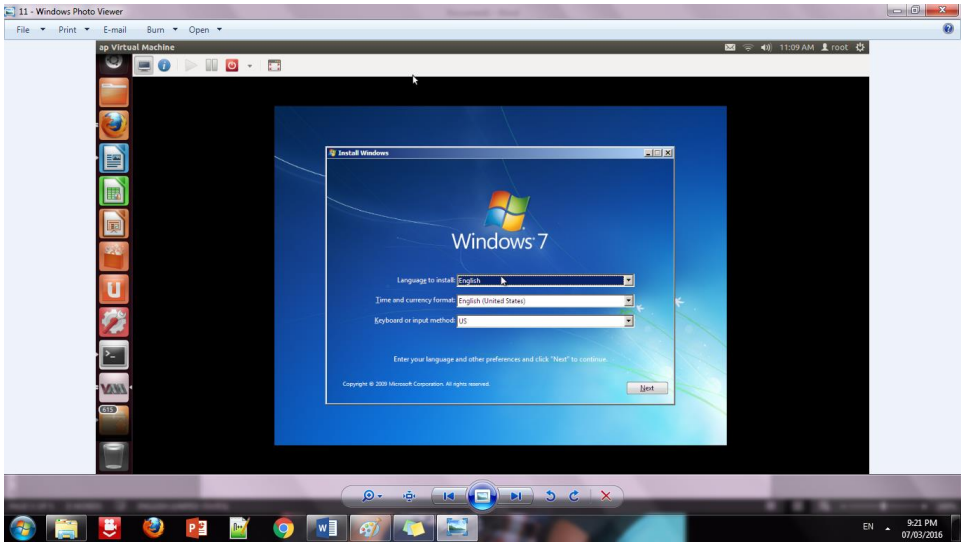

Step 7 : Install windows operating system on virtual machine



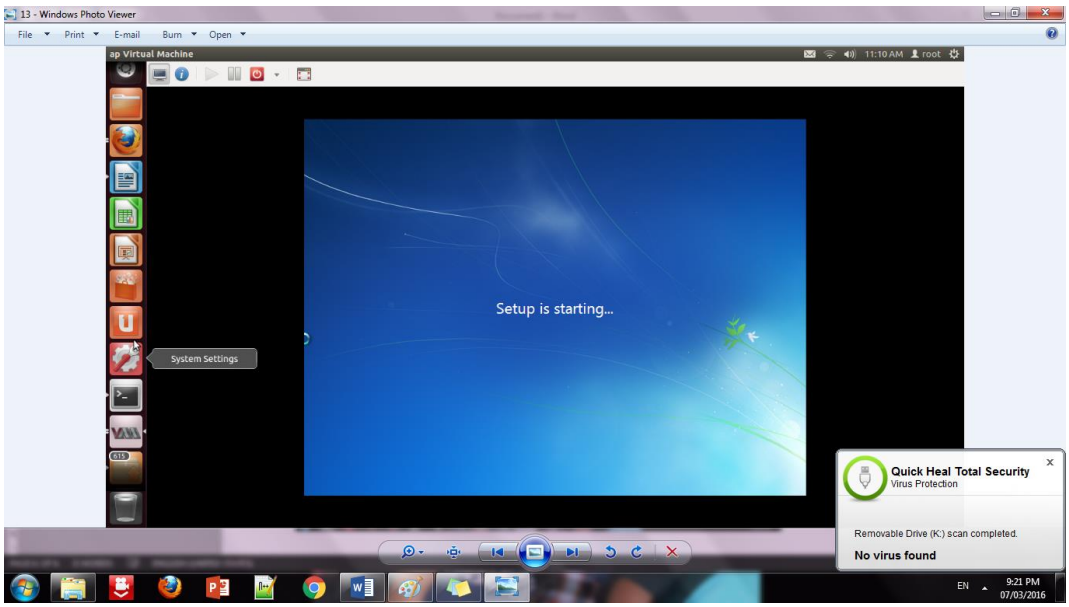

Step 8: Installation of windows on virtual machine



Step 9: Installation of windows 7 on virtual machine




Step 10: Initialization of windows on virtual machine




## Conclusion:

Installation and configuration of KVM have been done successfully onto Ubantu and users added. Like this we can create as many virtual machines as possible on OS and can install any windows onto it.