EX.NO 1: Configure a network adapter connection in Oracle Virtual Box

Date:

READING MATERIALS:

Virtualization is another core technology for cloud computing. It is one of the fundamental components of cloud computing -especially in infrastructure-based services. It allows the creation of a secure, customizable, and isolated execution environment for running applications even if they are untrusted, without affecting other users' applications.

It provides a great opportunity to build elastically scalable systems that can provision additional capability with minimum costs.

It is widely used to deliver customizable computing environments on demand.

It provide a virtual environment for not only executing applications but also for storage, memory, and networking.

There has been a consistent and growing trend to leverage this technology due to the confluence of several phenomena:

Increased performance and computing capacity

the average end-user desktop PC is powerful enough to meet almost all the needs of everyday computing

Underutilized hardware and software resources.

Hardware and software underutilization is occurring due to

(1) increased performance and computing capacity

(2) the effect of limited or sporadic use of resources

Lack of space.

The continuous need for additional capacity, whether storage or compute power, makes data centers grow quickly

Greening initiatives.

Companies are increasingly looking for ways to reduce the amount of energy they consume and to reduce their carbon footprint

Reducing the number of servers through server consolidation will definitely reduce the impact of cooling and power consumption of a data center. Virtualization technologies can provide an efficient way of consolidating servers.

Rise of administrative costs

Power consumption and cooling costs have now become higher than the cost of IT equipment

The increased demand for additional capacity, which translates into more servers in a data center, is also responsible for a significant increment in administrative costs

Characteristics of virtualized environments

In a virtualized environment there are three major components: guest, host, and virtualization layer.

The guest represents the system component that interacts with the virtualization layer

The host represents the original environment where the guest is supposed to be managed.

The virtualization layer is responsible for recreating the same or a different environment where the guest will operate

Hardware virtualization: the guest is represented by a system image comprising an operating system and installed applications.

These are installed on top of virtual hardware that is controlled and managed by the virtualization layer, also called the virtual machine manager.

The virtual environment is created by means of a software program.

Increased security

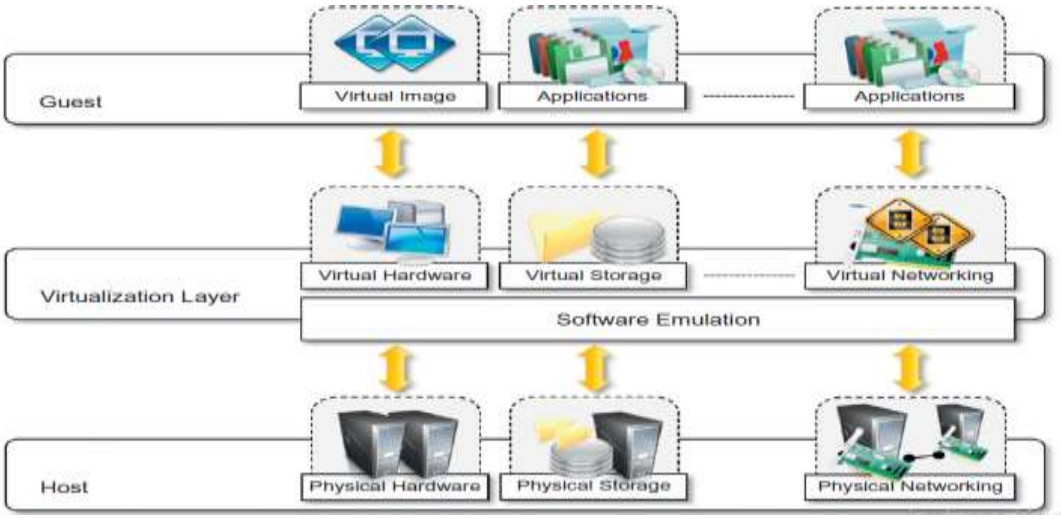
All the operations of the guest are generally performed against the virtual machine

This level of indirection allows the virtual machine manager to control and filter the activity of the guest, thus preventing some harmful operations from being performed.

Resources exposed by the host can then be hidden or simply protected from the guest.

Increased security is a requirement when dealing with untrusted code.

For example, applets downloaded from the Internet run in a sandboxed version of the JVM.



Managed execution

Sharing.

Virtualization allows the creation of a separate computing environments within the same host

Aggregation.

A group of separate hosts can be tied together and represented to guests as a single virtual host.

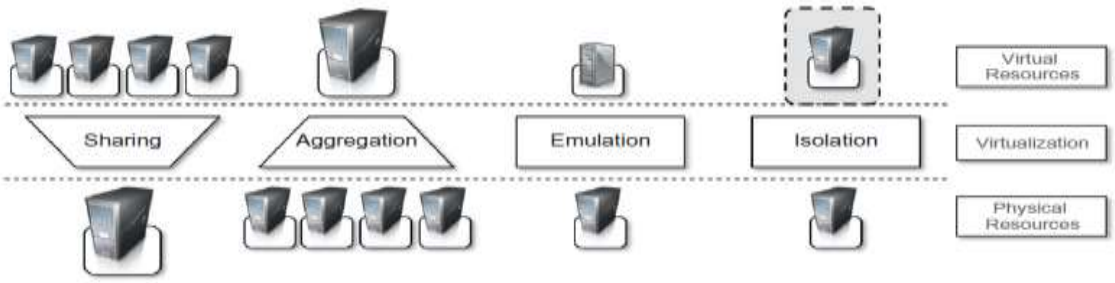
Emulation

controlling and tuning the environment that is exposed to guests.

Isolation

It allows multiple guests to run on the same host without interfering with each other

It provides a separation between the host and the guest



Oracle VM VirtualBox

Oracle VM VirtualBox (formerly Sun VirtualBox, Sun xVM VirtualBox and Innotek VirtualBox) is a type-2 hypervisor for x86 virtualization developed by Oracle Corporation.

VirtualBox was originally created by Innotek GmbH, which was acquired by Sun Microsystems in 2008, which was in turn acquired by Oracle in 2010.

VirtualBox may be installed on Microsoft Windows, macOS, Linux, Solaris and OpenSolaris. There are also ports to FreeBSD and Genode. It supports the creation and management of guest virtual machines running Windows, Linux, BSD, OS/2, Solaris, Haiku, and OSx86,as well as limited virtualization of macOS guests on Apple hardware. For some guest operating systems, a "Guest Additions" package of device drivers and system applications is available, which typically improves performance, especially that of graphics, and allows changing the resolution of the guest OS automatically when the window of the virtual machine on the host OS is resized.

Released under the terms of the GNU General Public License and, optionally, the CDDL for most files of the source distribution, VirtualBox is free and open-source software, though the Extension Pack is proprietary software. The License to VirtualBox was relicensed to GPLv3 with linking exceptions to the CDDL and other gpl incompatible licenses

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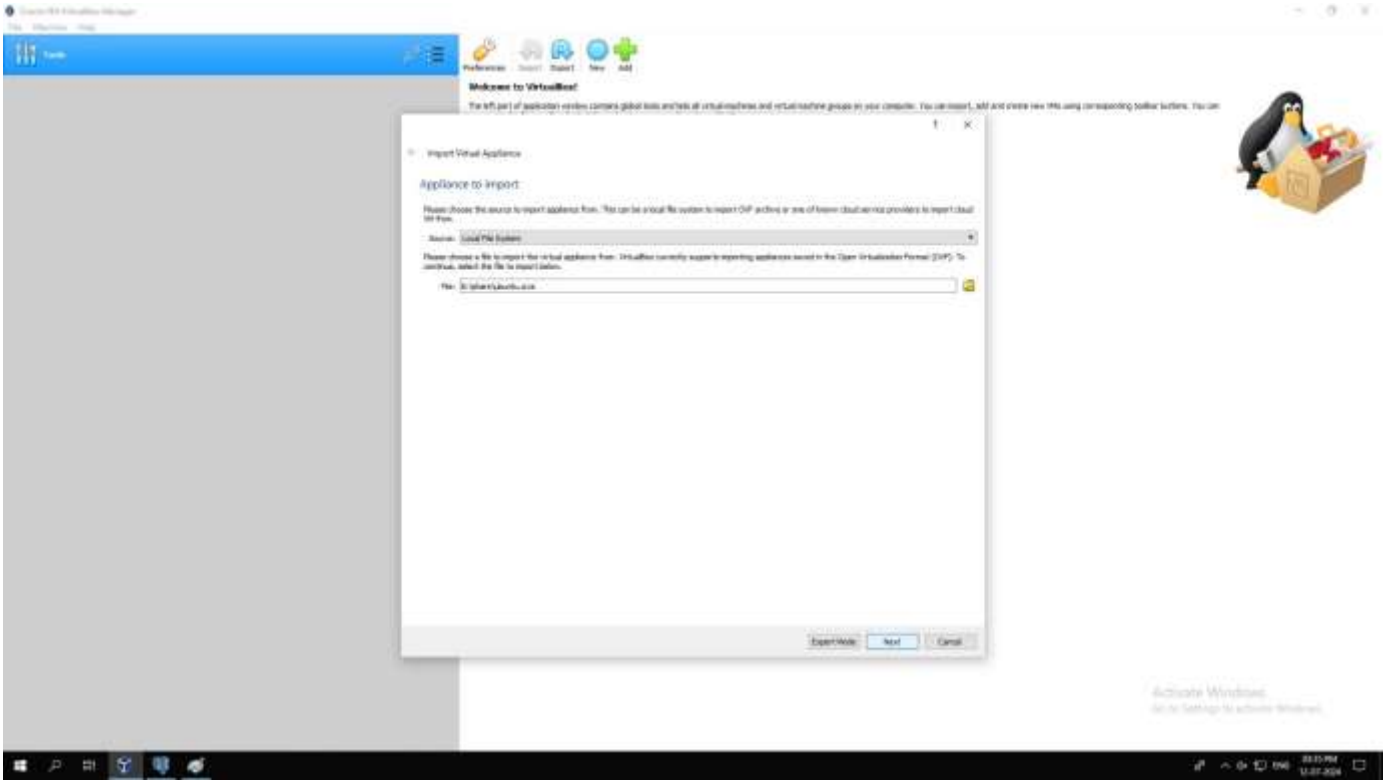
AIM:

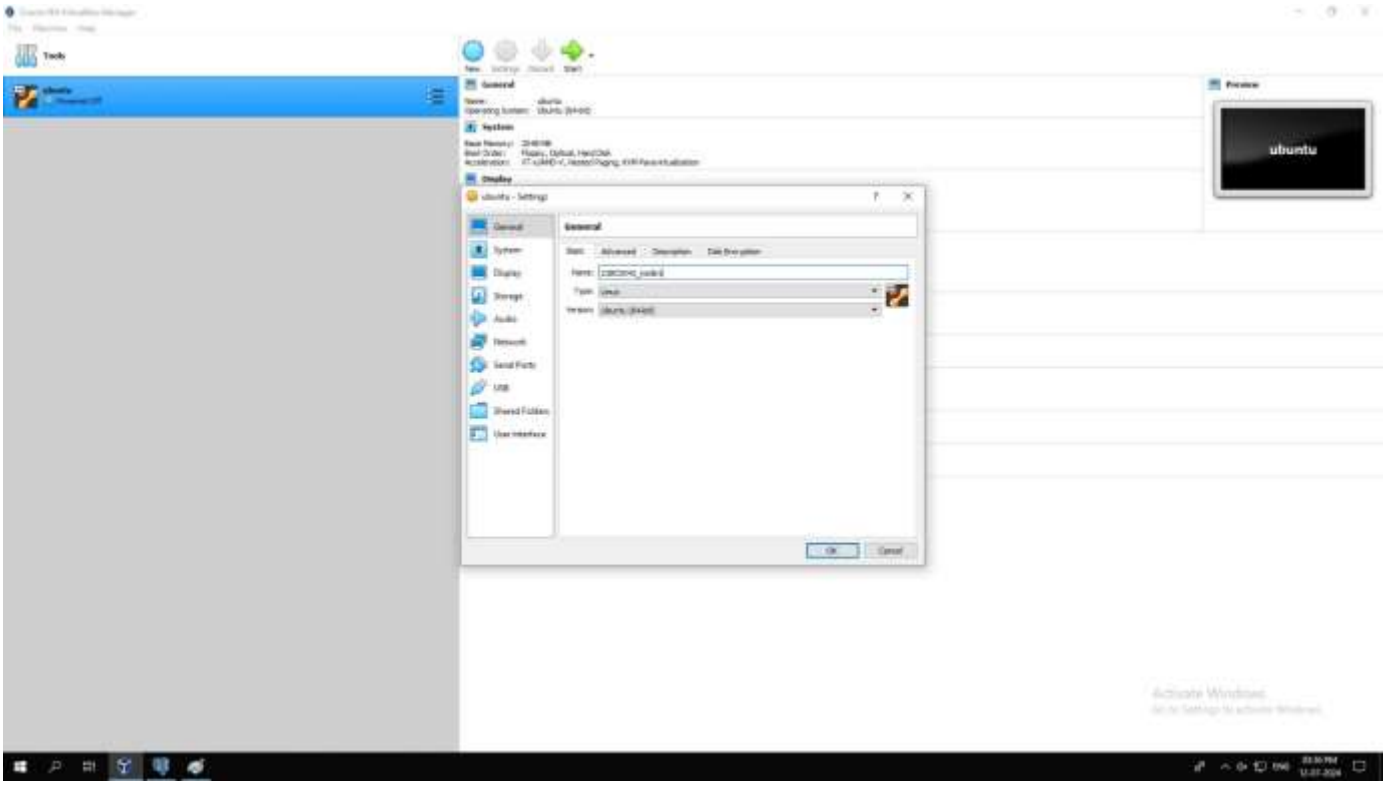
To configure a network adapter connection in Oracle Virtual Box

PROCEDURE with SCREENSHOTS:

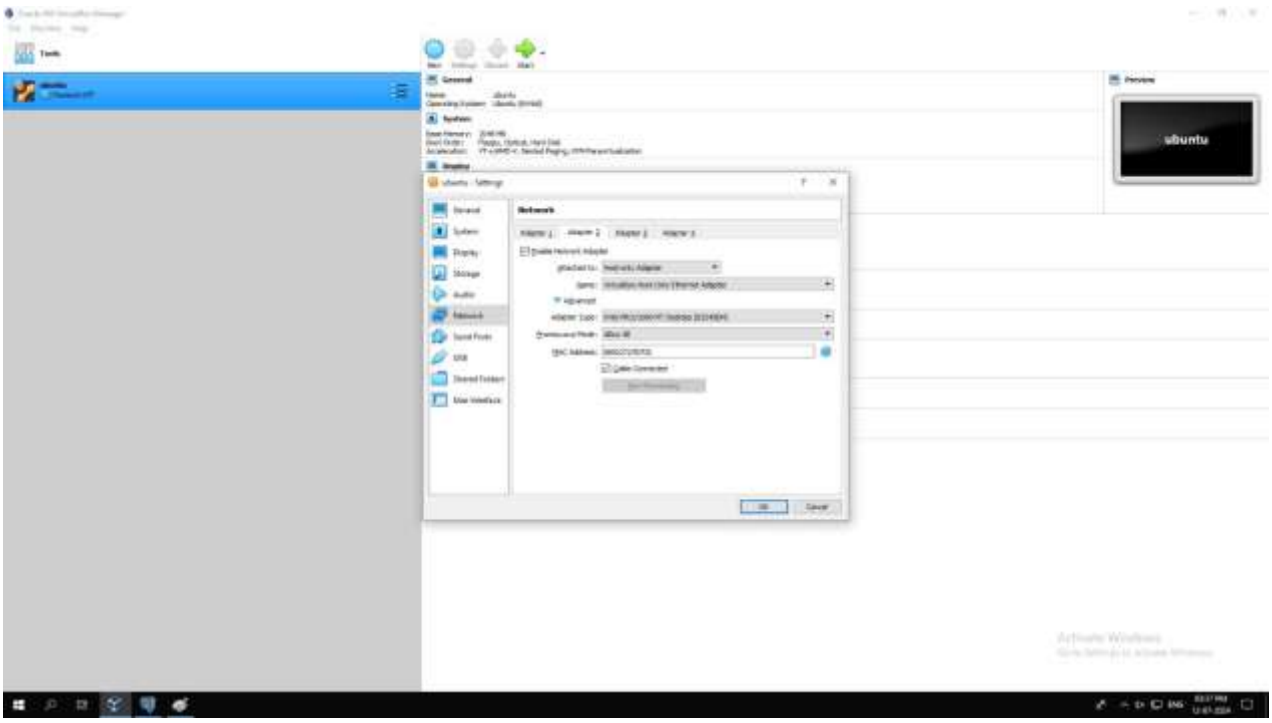
Step 1: Open Oracle VirtualBox.



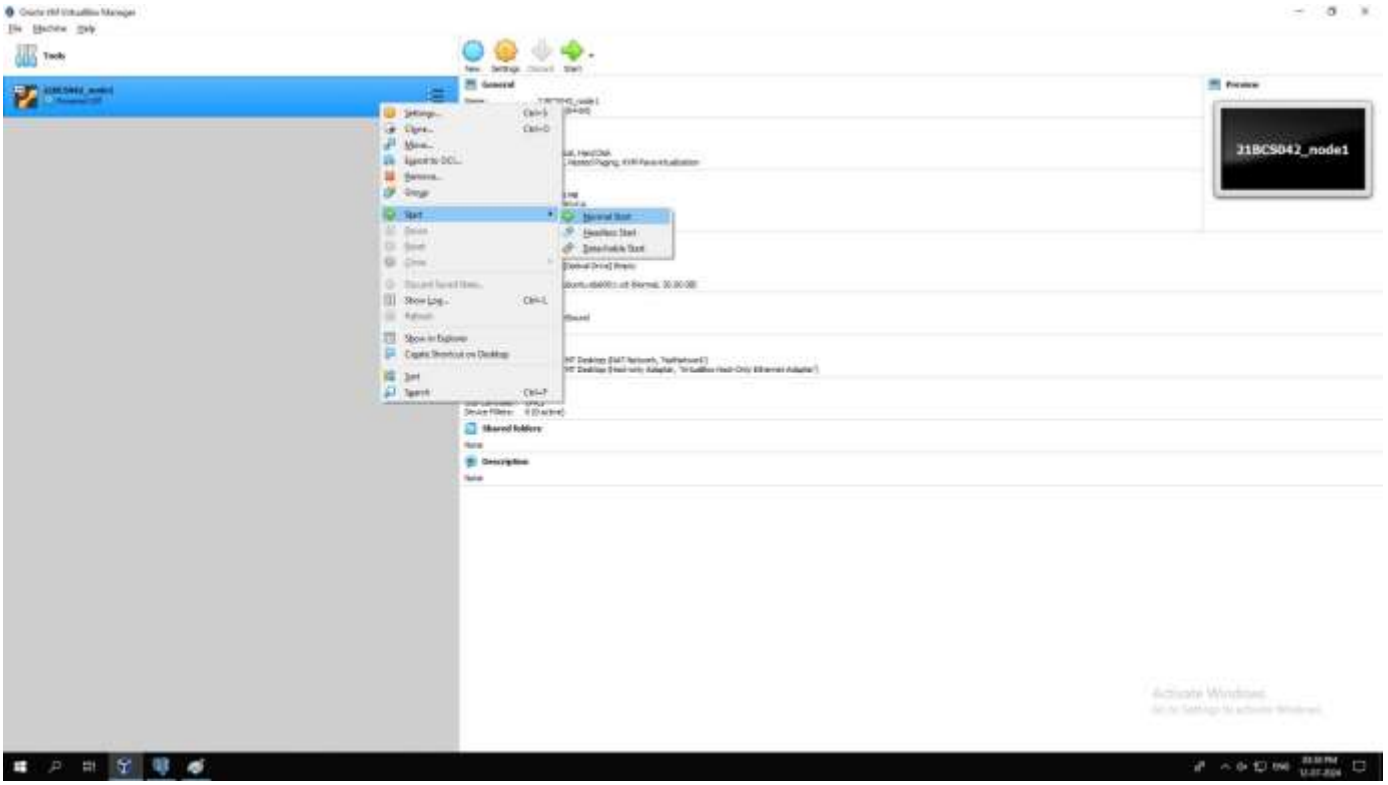
Step 2 : Import Virtual Appliance (for Node1)



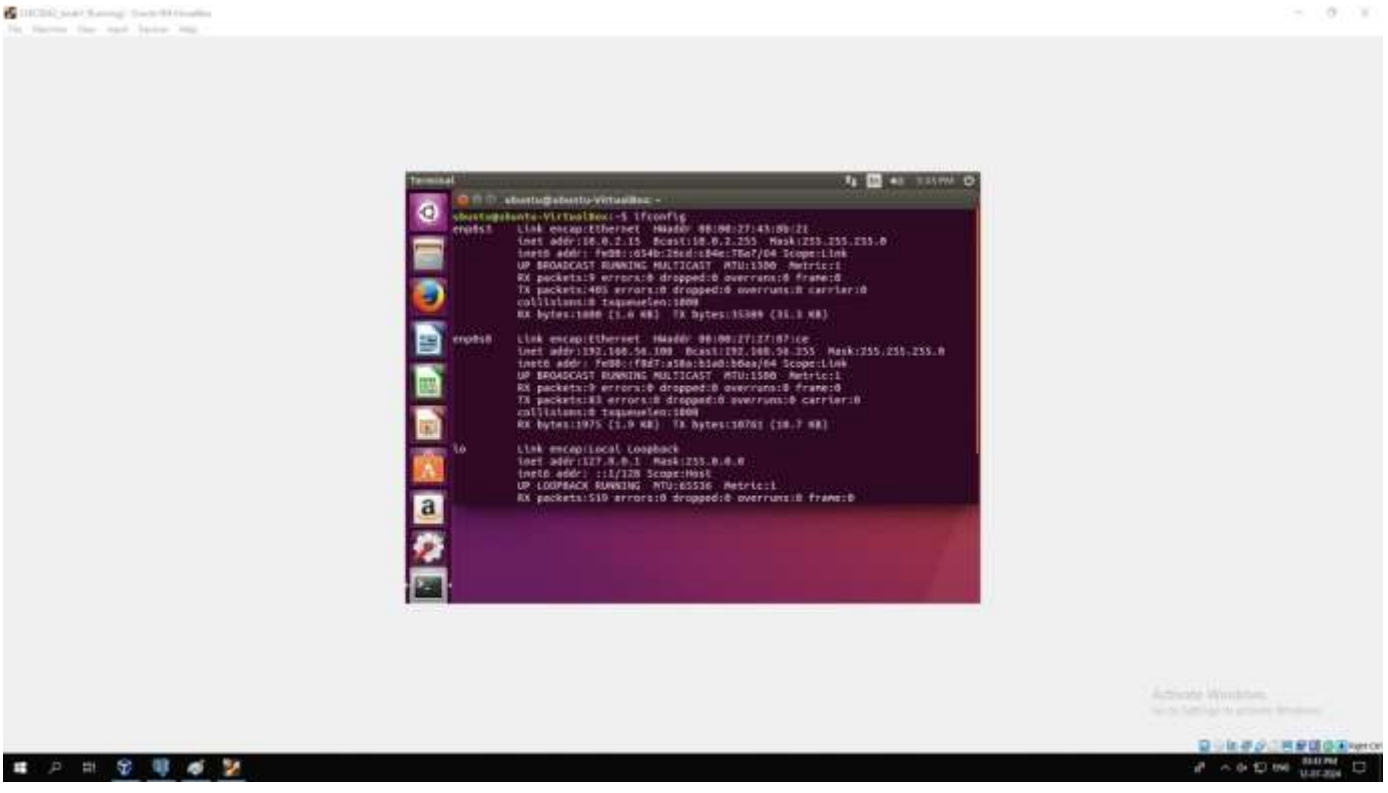
Step 3: Go to the "Network" tab in the Settings window. Under “Adaptor 1” Tab, Configure for NAT. Under “Adaptor 2” Tab, Configure for Host only adaptor.



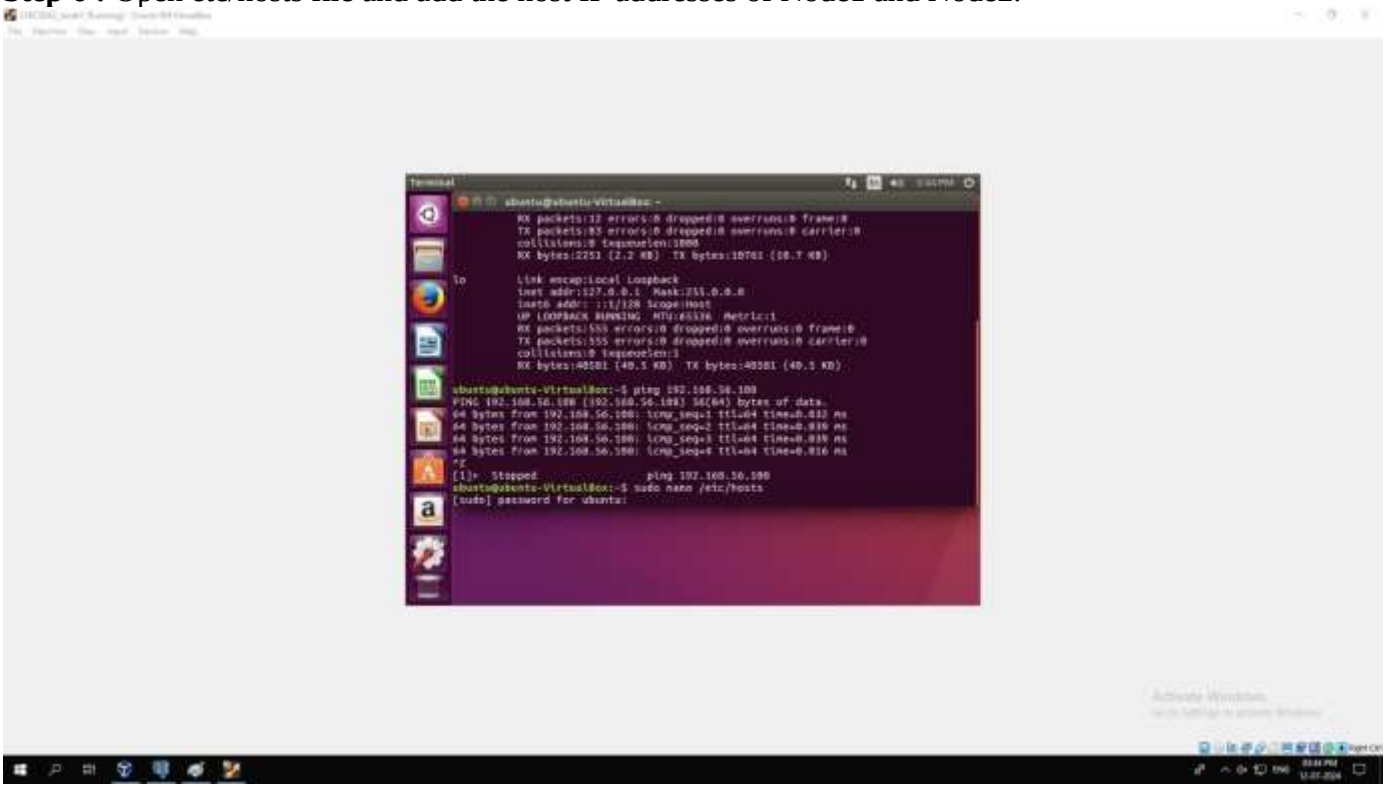
Step 4 : Start Node1 Machine

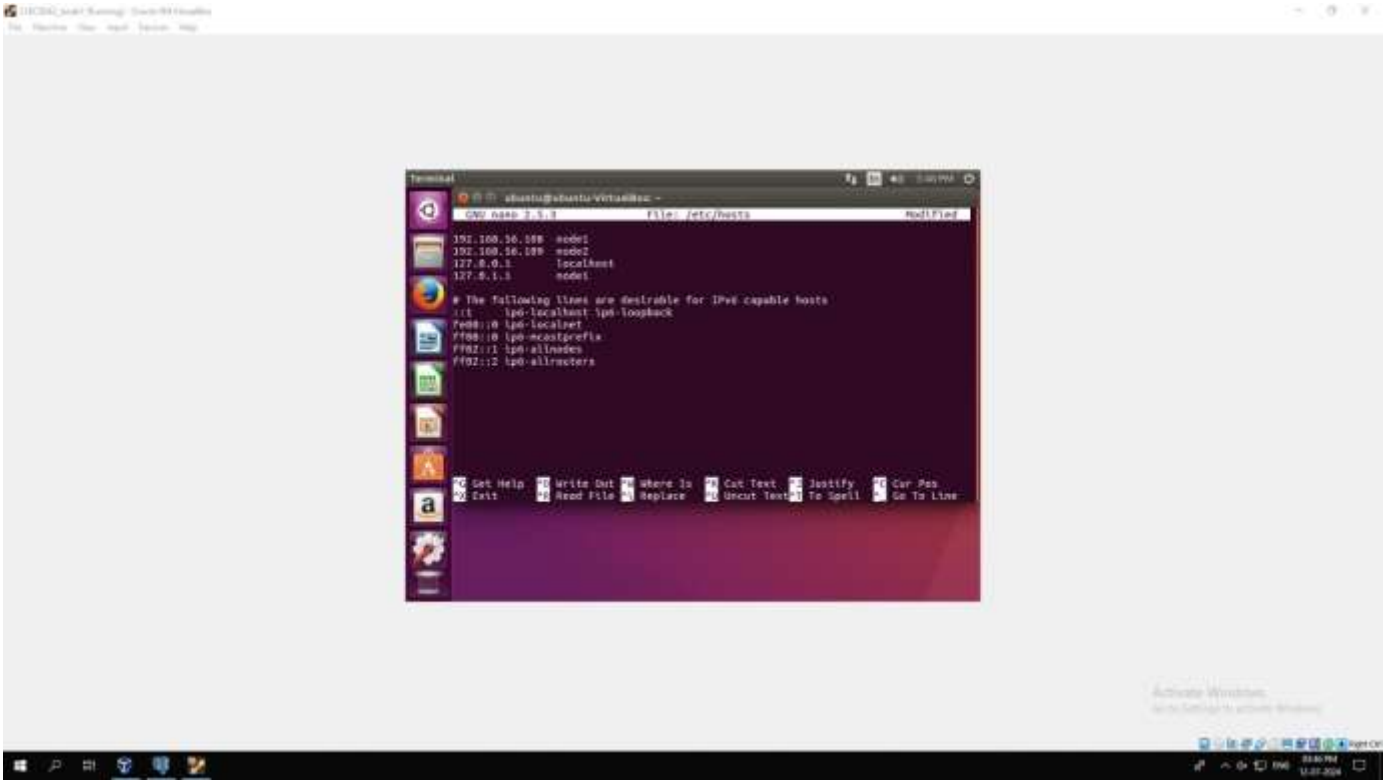


Step 5 : Open “Terminal”, Run ifconfig command to know the IP address of virtual machine Node1.

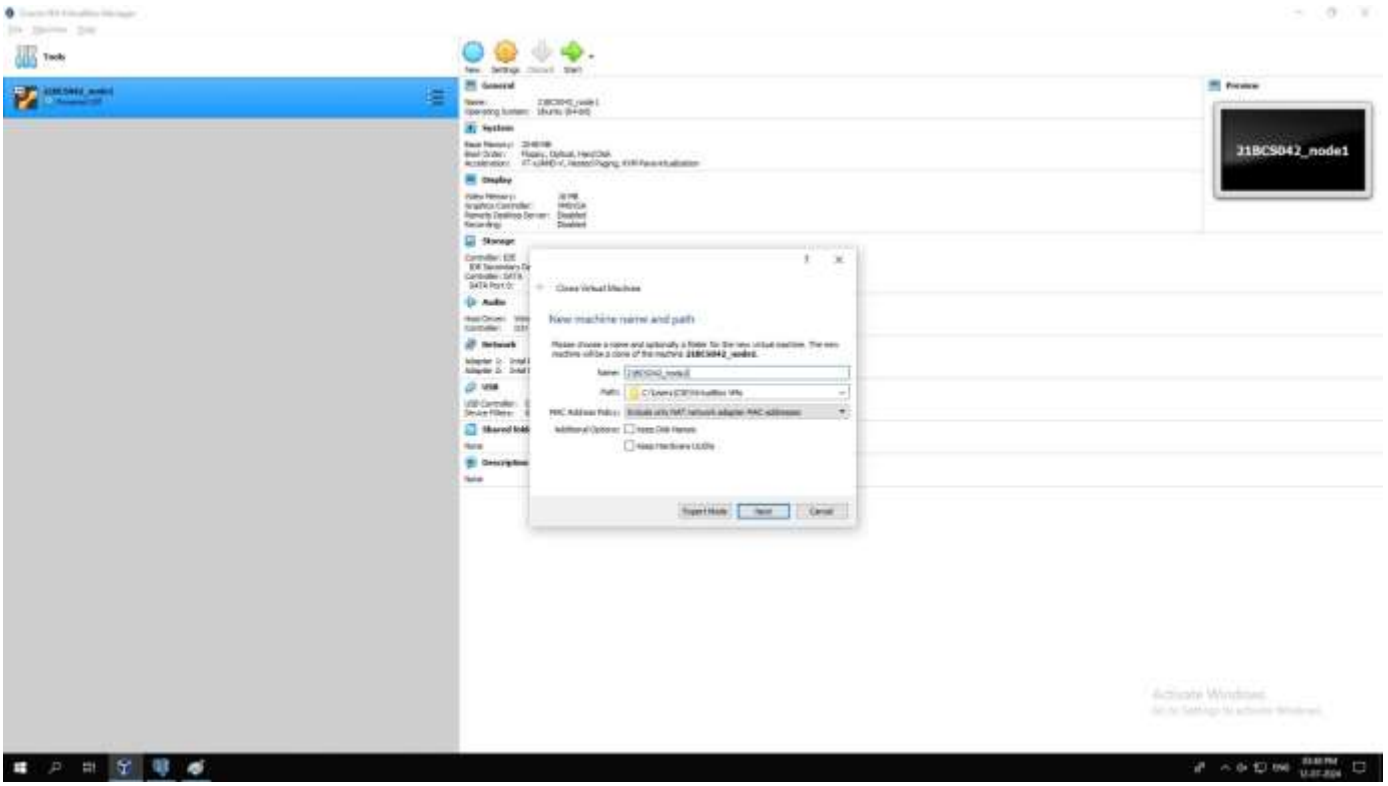


Step 6 : Open etc/hosts file and add the host IP addresses of Node1 and Node2.

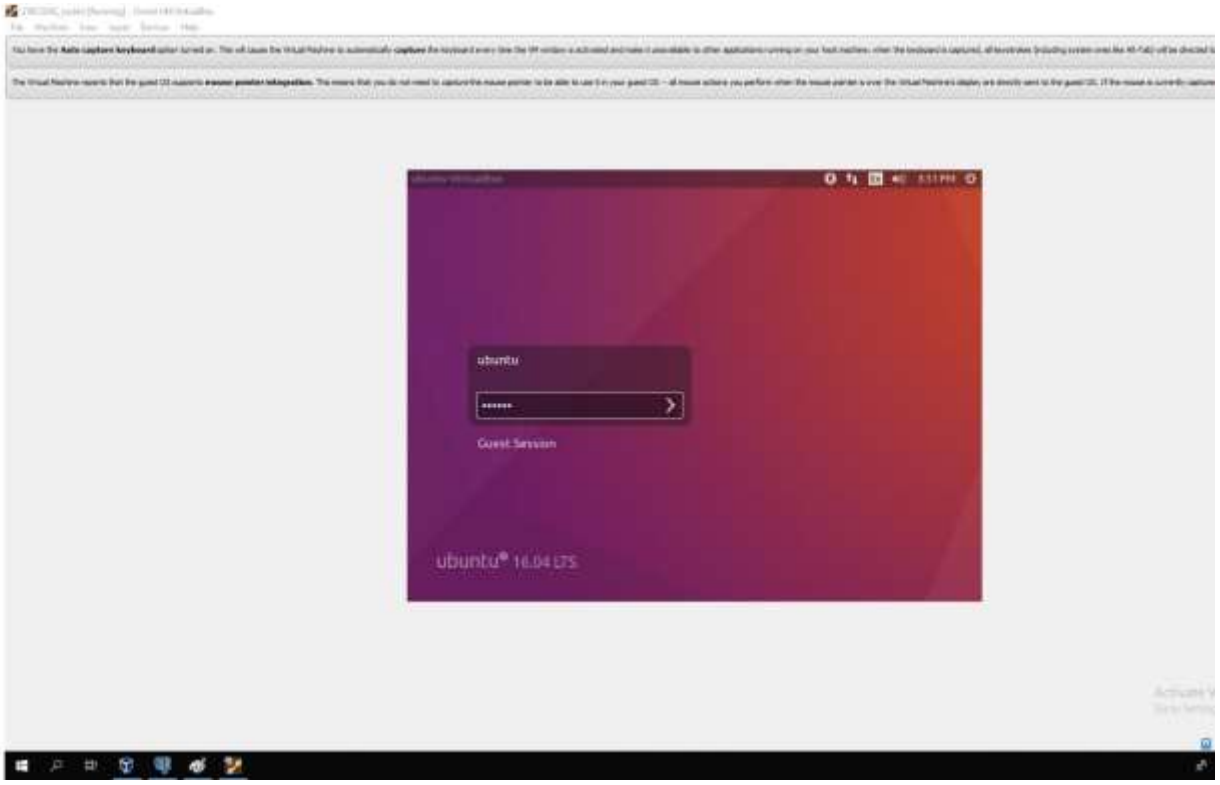




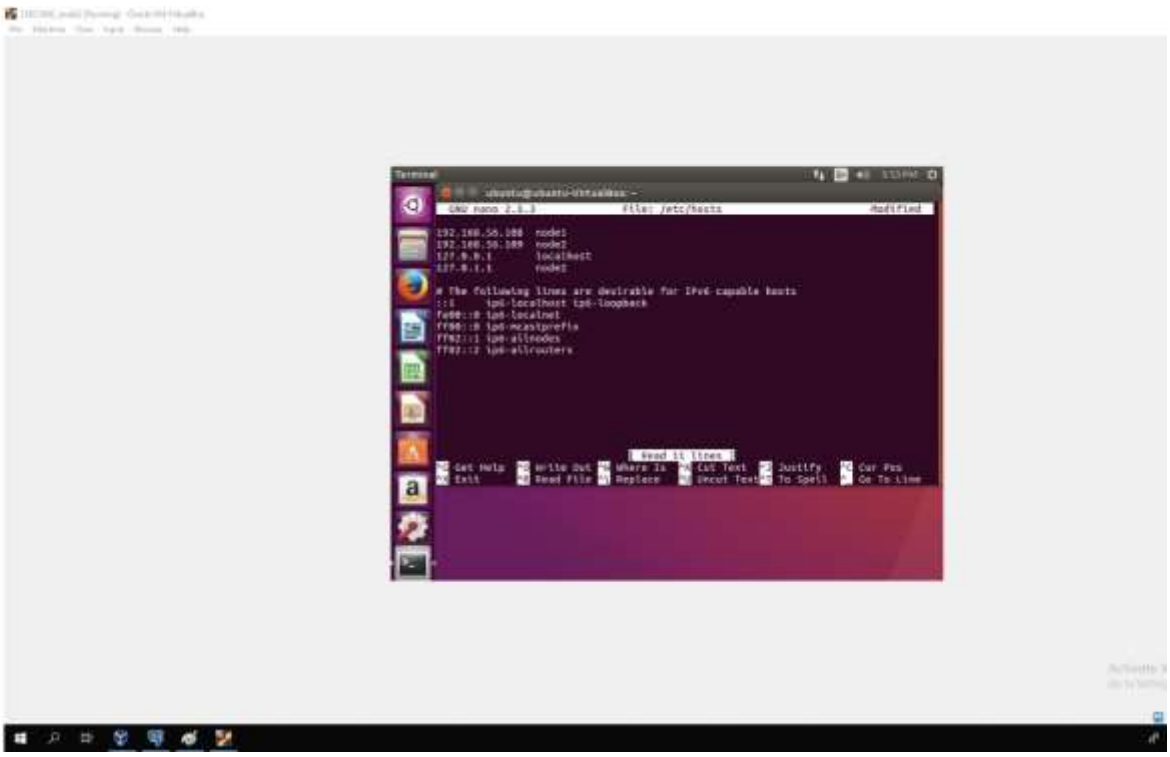
Step 7 : Clone the Node1 and create Node2



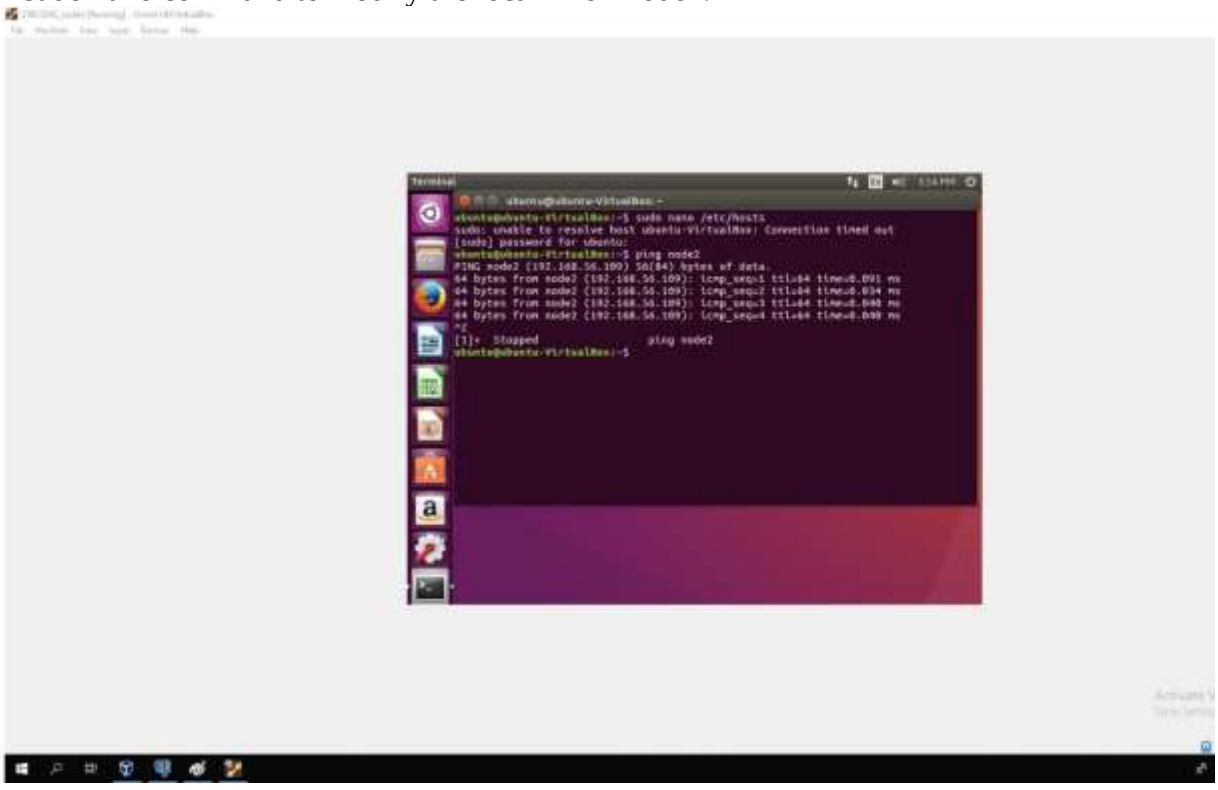
Step 8 : Start the Node 2 machine



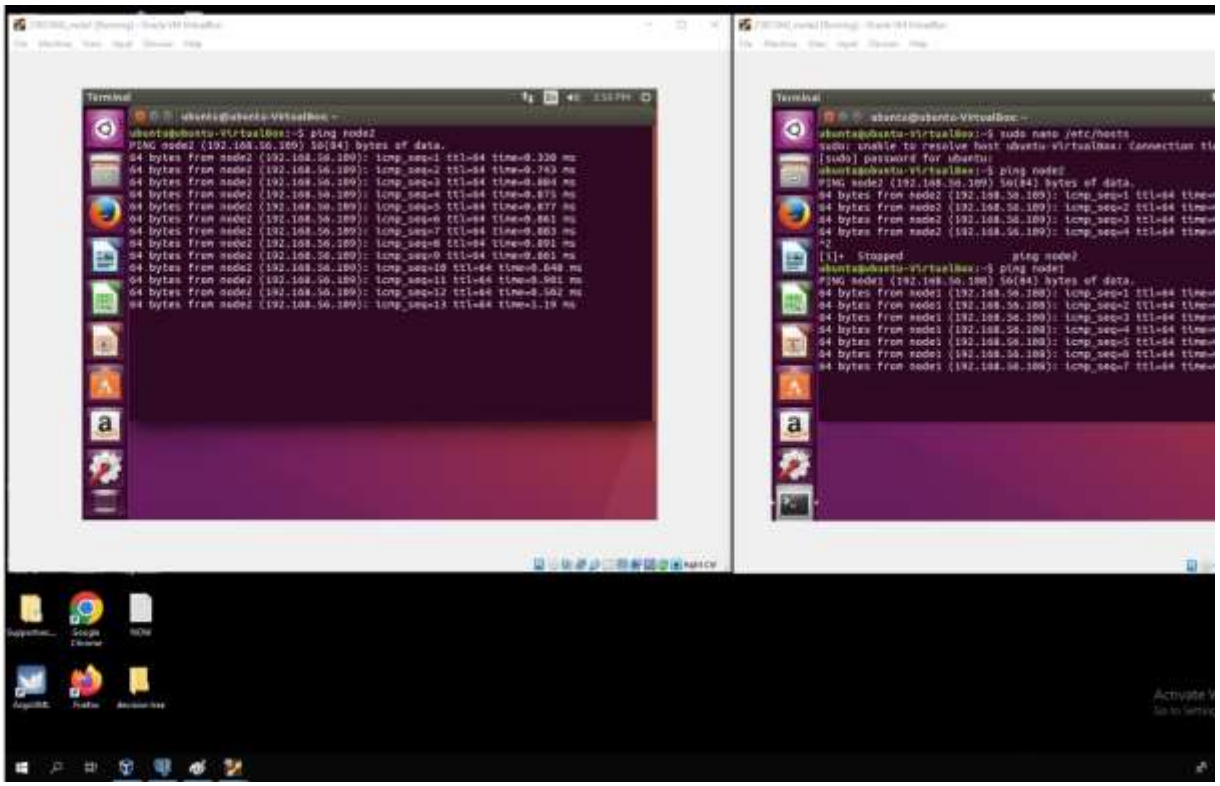
Step 9 : Open terminal, Run ifconfig command to know the IP address of the Node 2.



Step 10 : Run sudo nano command to modify the local IP of Node2.



Step 11 : Run ping command



Evaluation by faculty	
Criteria	**Marks**
Preparation	**/20**
Observation	**/25**
Record	**/20**
Viva	**/10**
Total	**/75**
Faculty Signature with Date	

RESULT: