

CSL7510 VCC

Assignment-1

M23CSA544



Installation of VirtualBox and creation of multiple VMs.



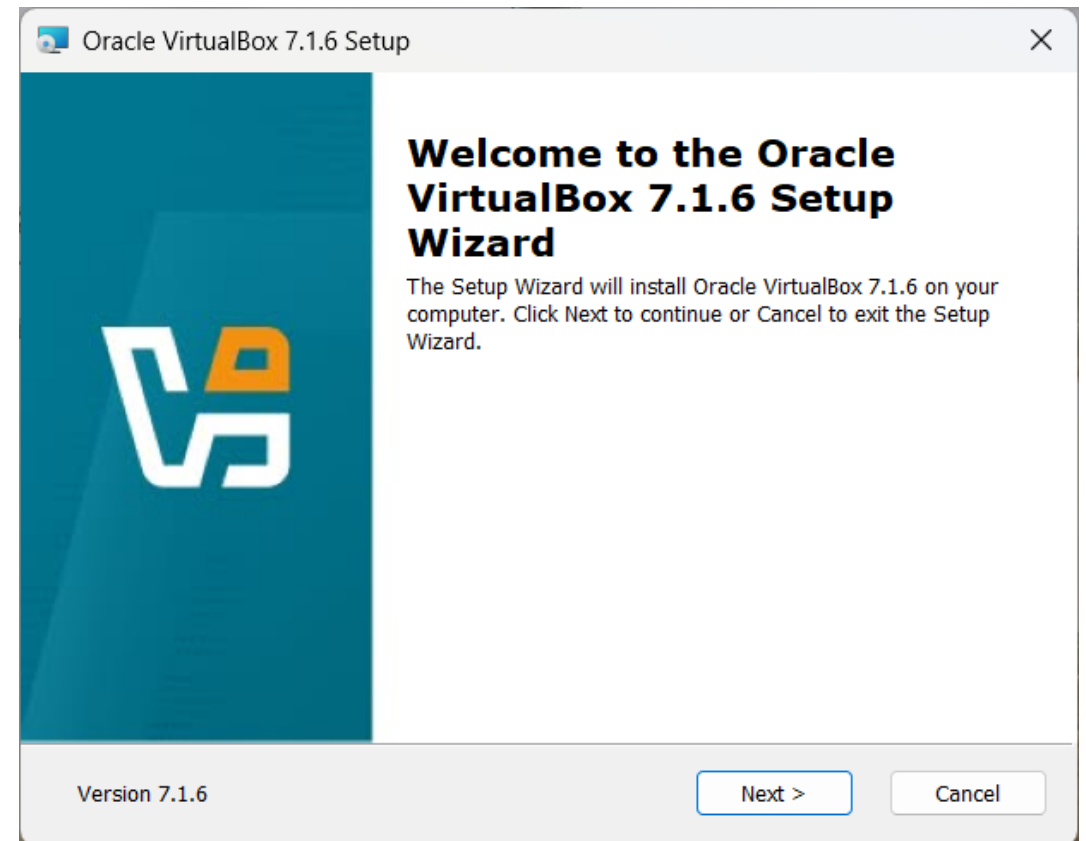
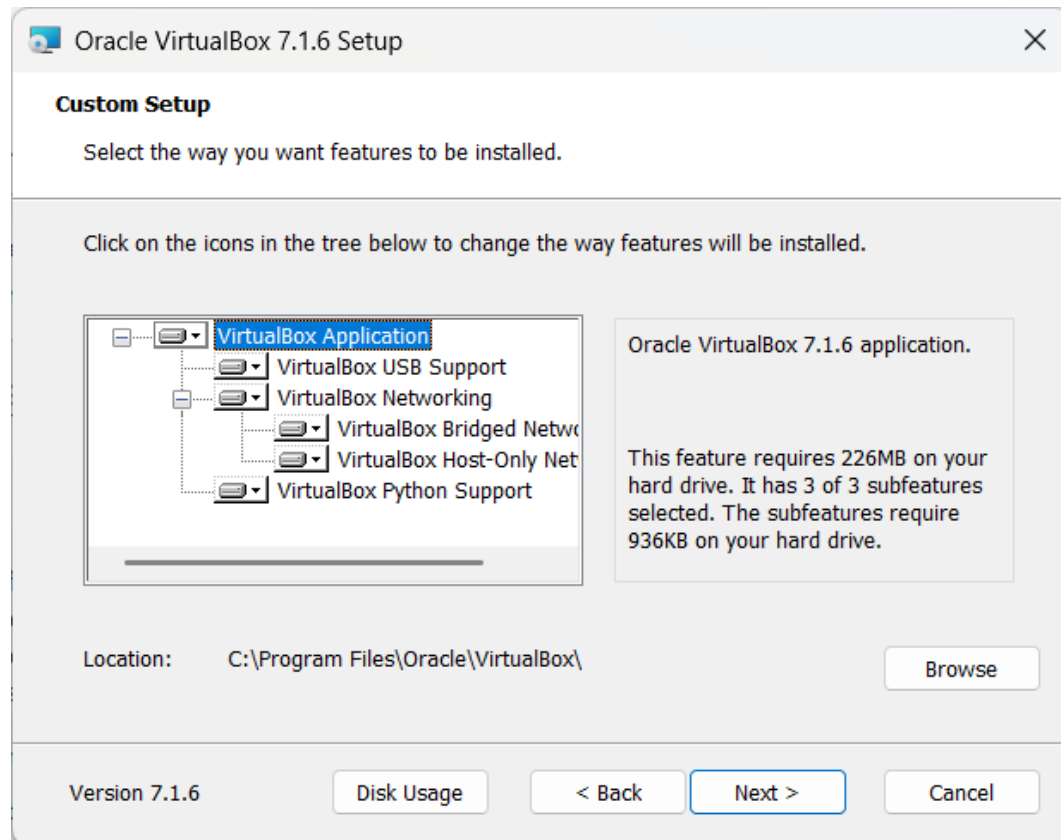
Configuration of network settings to connect the VMs.



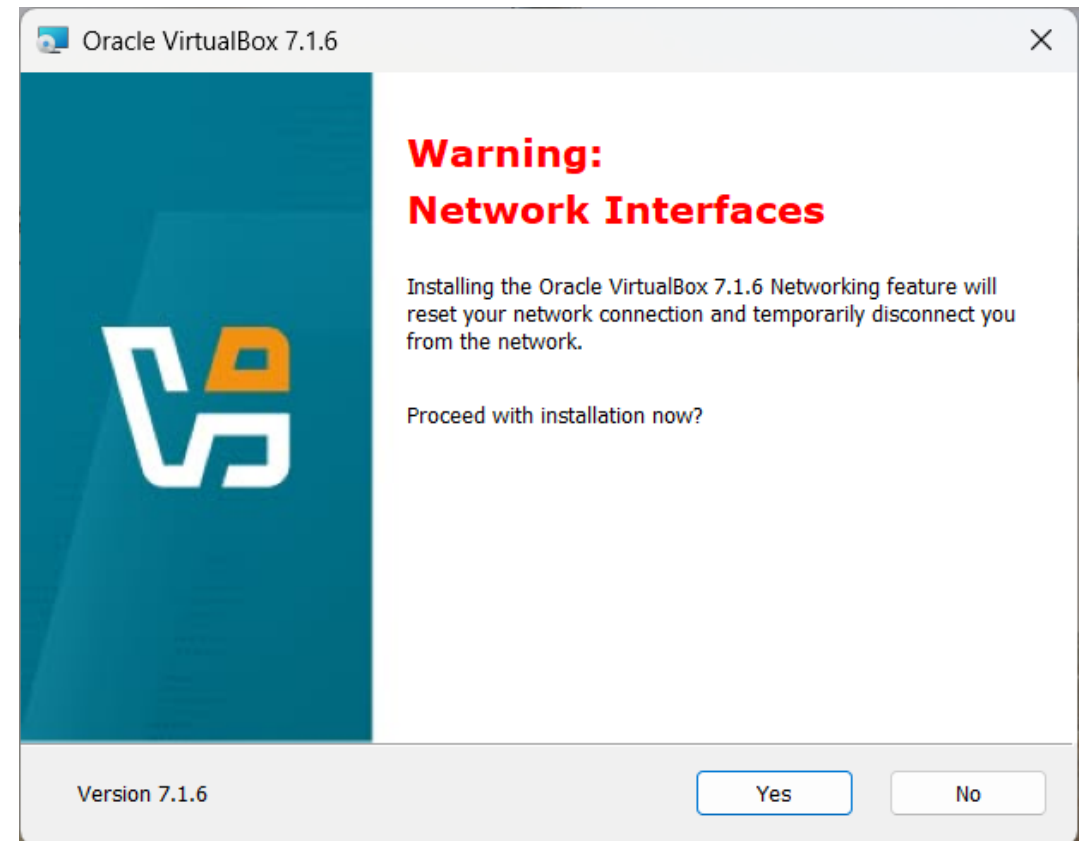
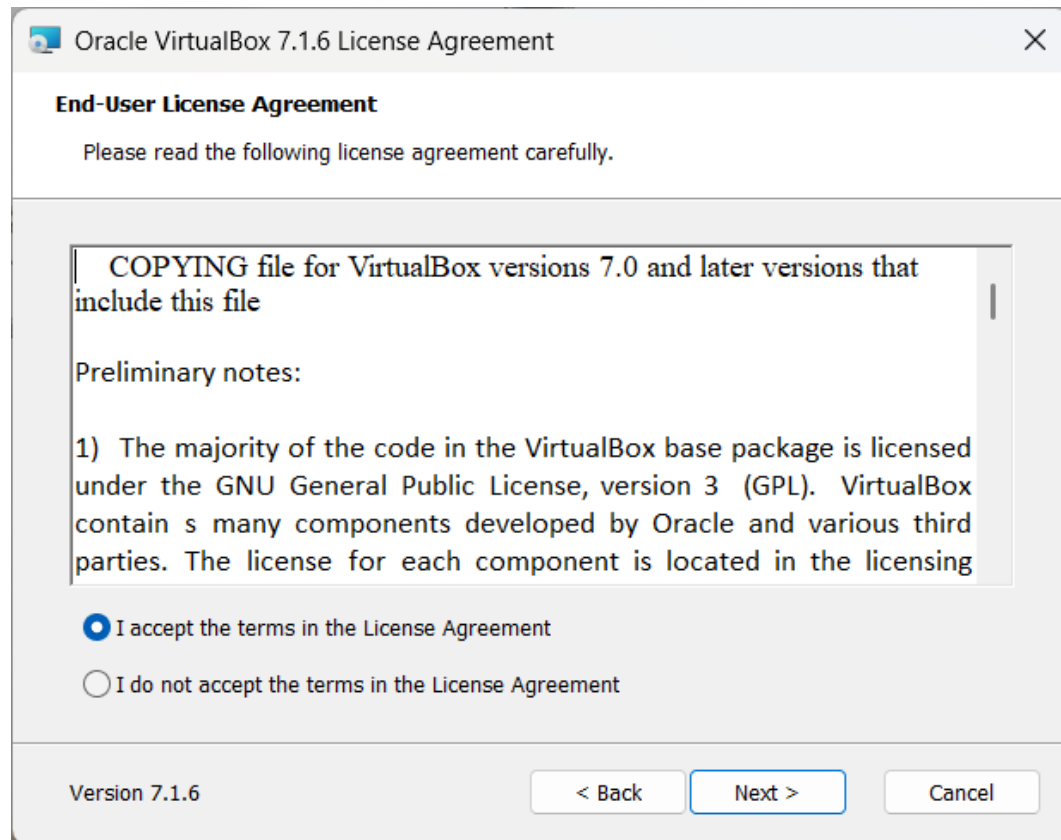
Deployment of a simple microservice application (e.g., a RESTful API or a Node.js-based service) across the VMs.

Installation of VirtualBox and creation of multiple VMs

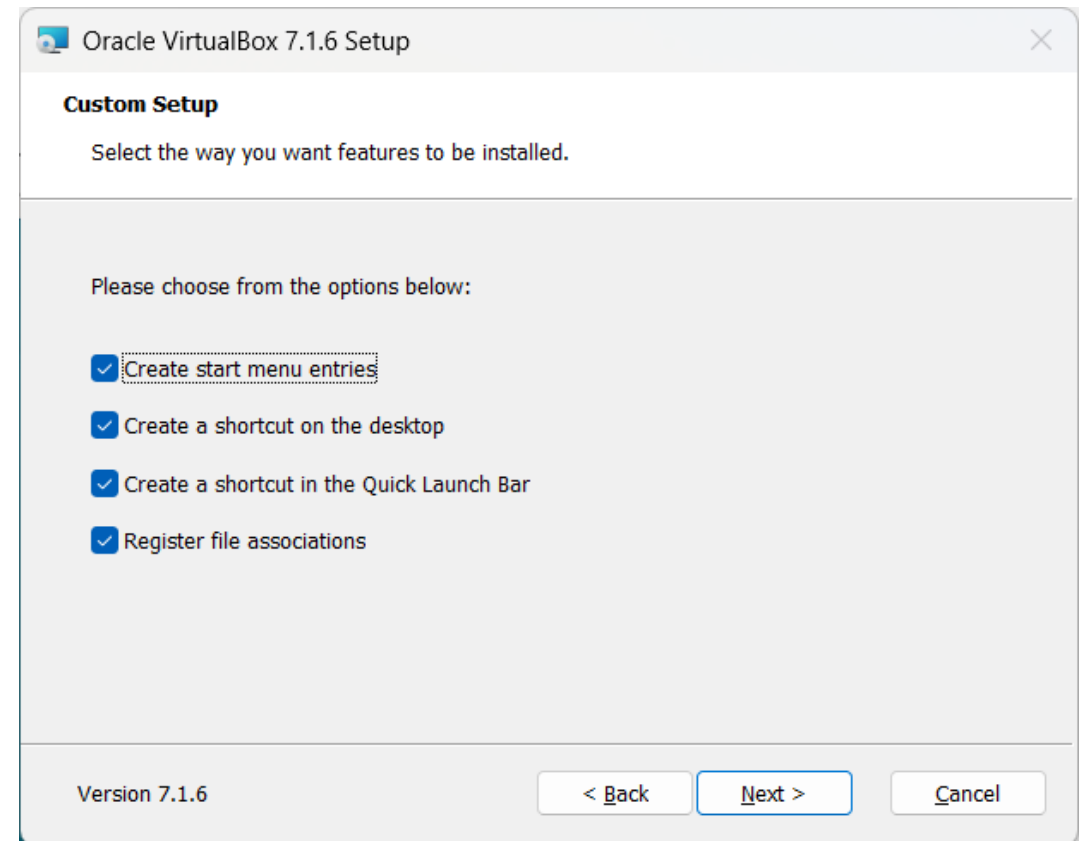
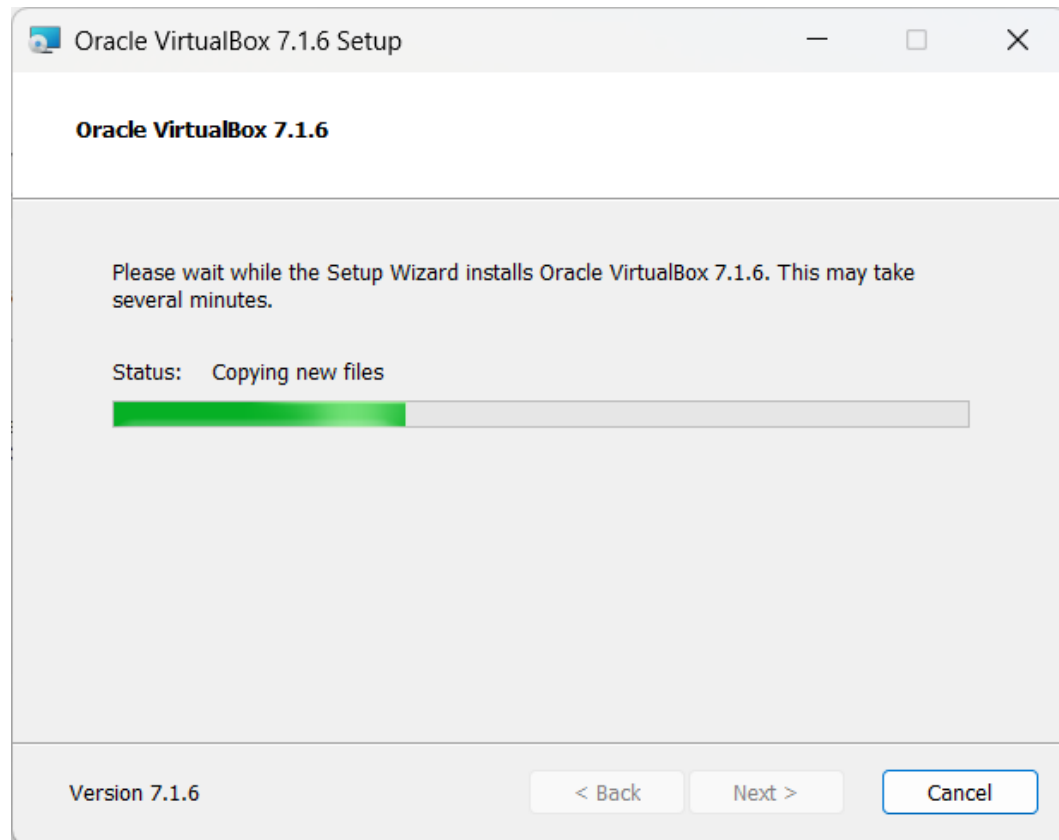
Installation of VirtualBox



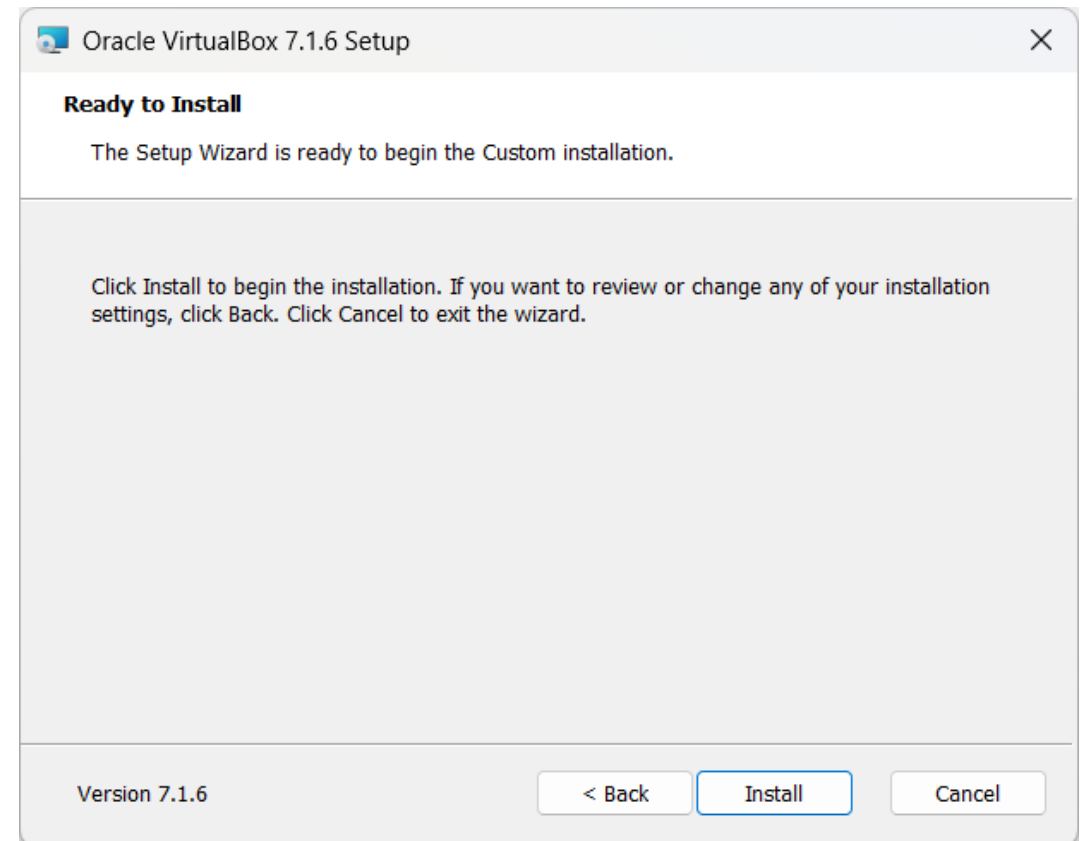
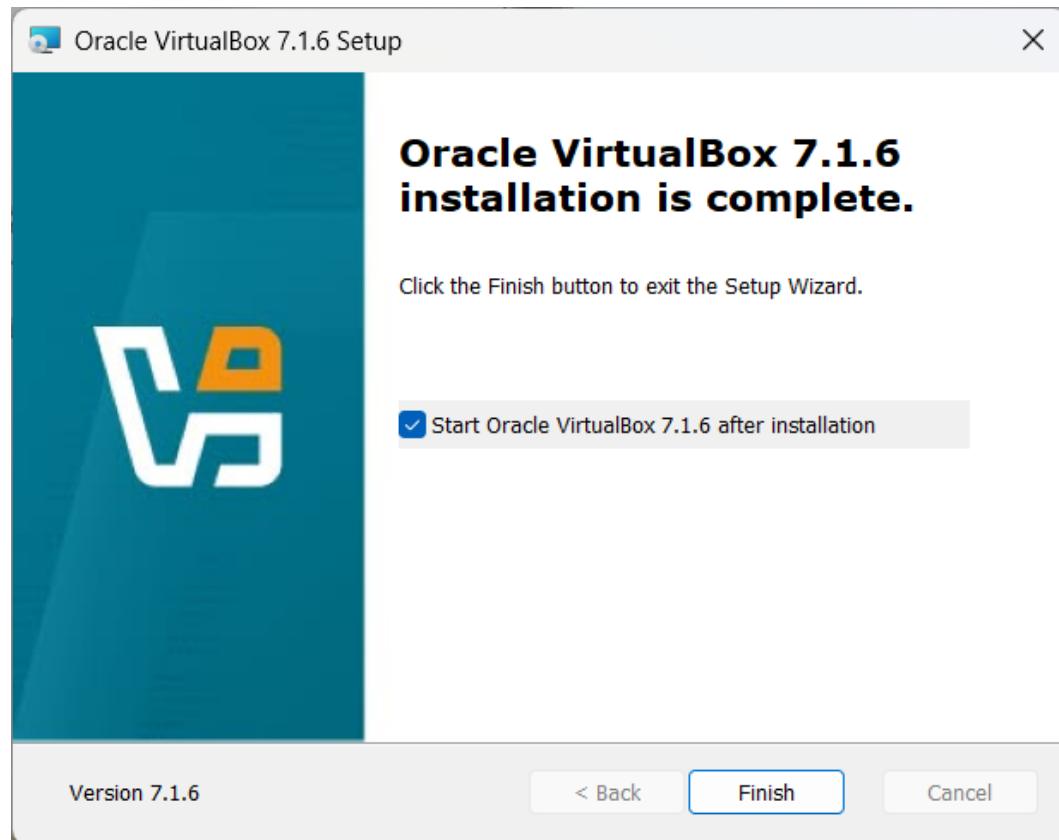
Installation of VirtualBox



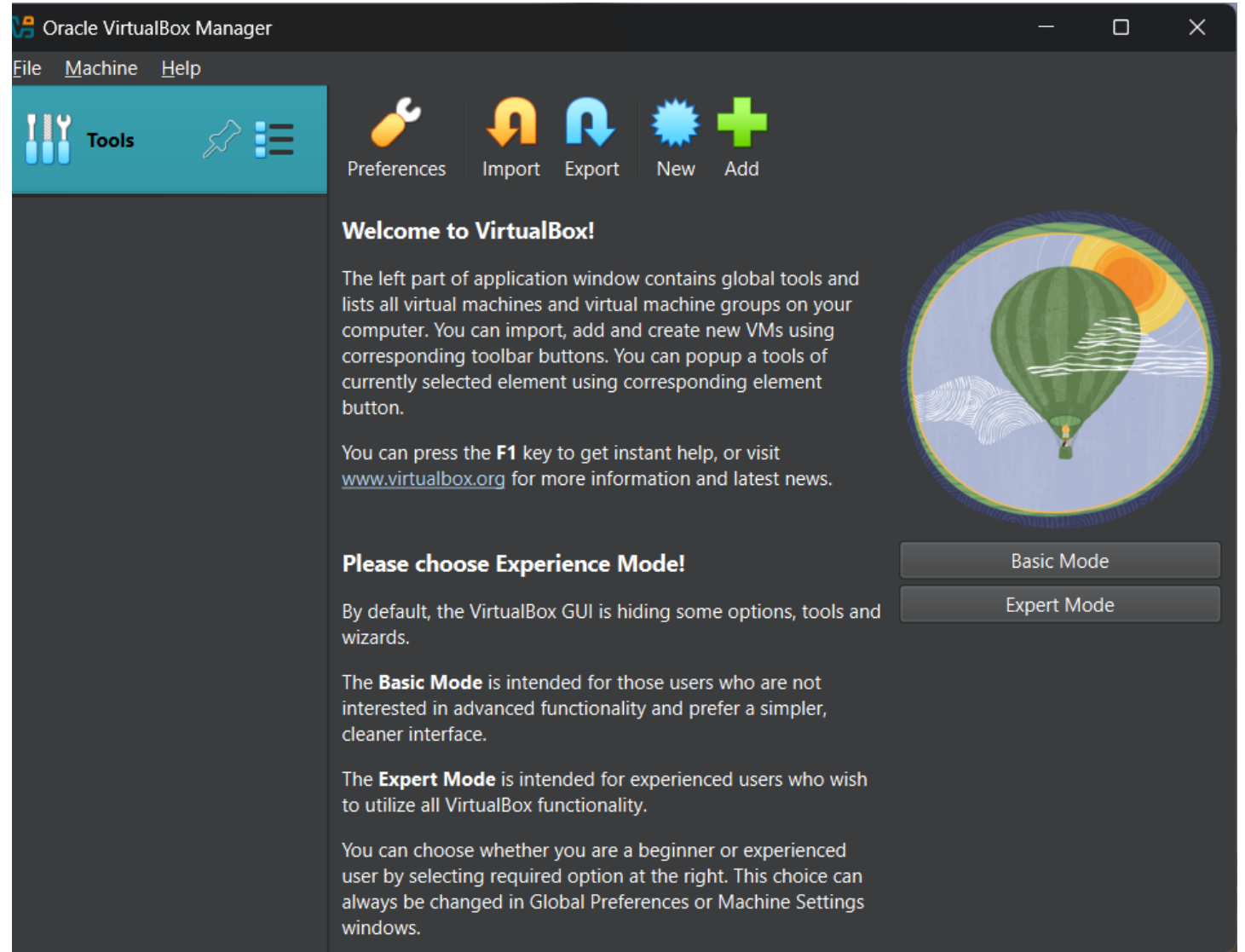
Installation of VirtualBox




Installation of VirtualBox




Creation of multiple VMs



Creation of multiple VMs


 Create Virtual Machine



Virtual machine Name and Operating System

Please choose a descriptive name and destination folder for the new virtual machine to be used throughout VirtualBox to identify this machine. Additionally, you can select the ISO image to be used to install the guest operating system.

Name: VMServer1

Folder:  D:\MTech(AI)-IIT\Semester-3\VirtualBox

ISO Image: C:\Users\Ritesh Lamba\Downloads\ubuntu-24.04.1-desktop-amd64.iso


Edition:

Type: Linux

Subtype: Ubuntu

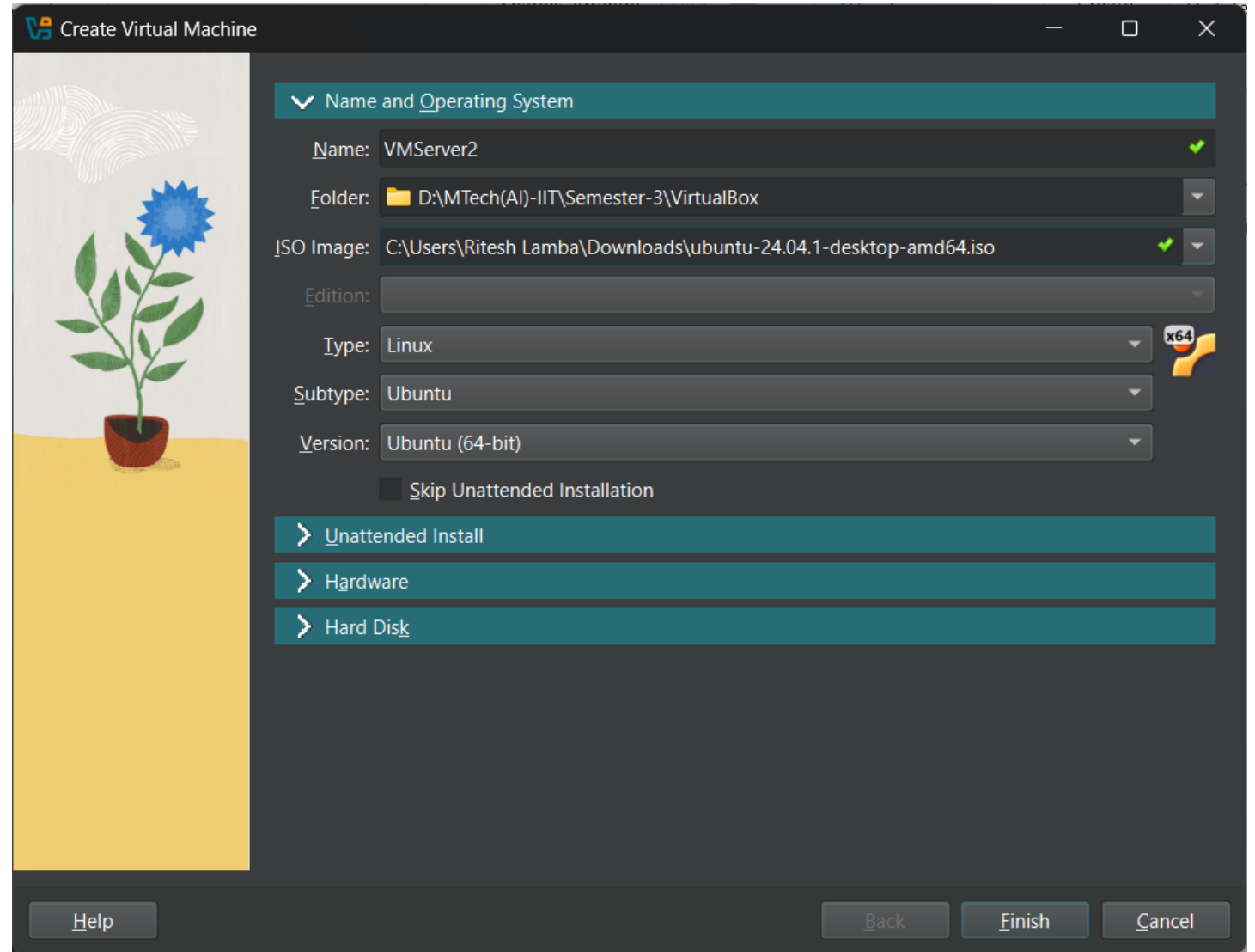
Version: Ubuntu (64-bit)

☒ Skip Unattended Installation

 Detected OS type: Ubuntu (64-bit). This OS type can be installed unattended and start after this wizard is closed.

Help Back

Creation of multiple VMs



Creation of multiple VMs

Create Virtual Machine

Unattended Guest OS Install Setup

You can configure the unattended guest OS install by modifying username, password, and hostname. Additionally you can enable guest additions install. For Microsoft Windows guests it is possible to provide a product key.

Username and Password

Username: RiteshImb ✓

Password: VCC12345#

Repeat Password: VCC12345#

Additional Options

Product Key: #####-#####-#####-#####-#####

Hostname: VMServer1 ✓

Domain Name: myguest.virtualbox.org ✓

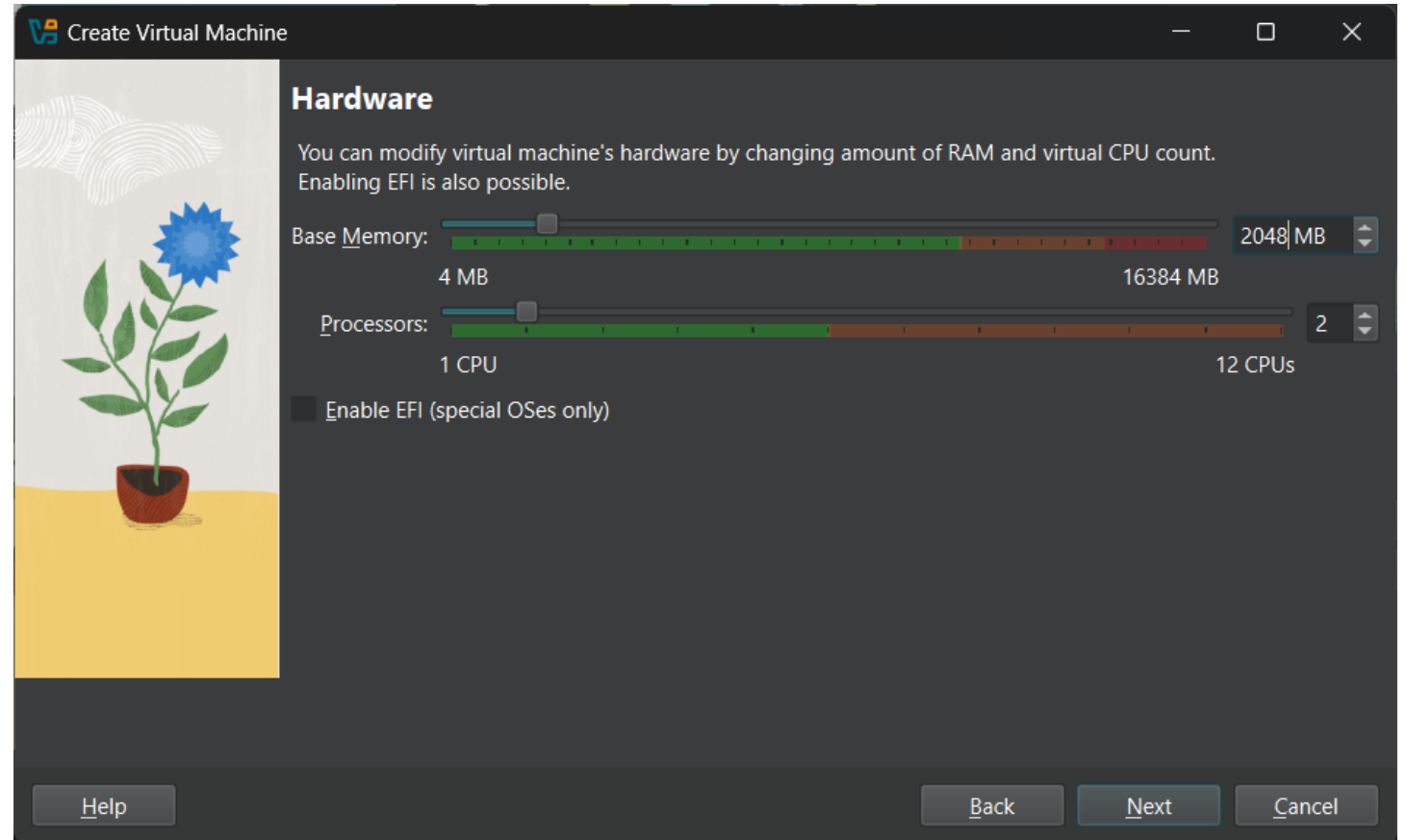
☐ Install in Background

Guest Additions

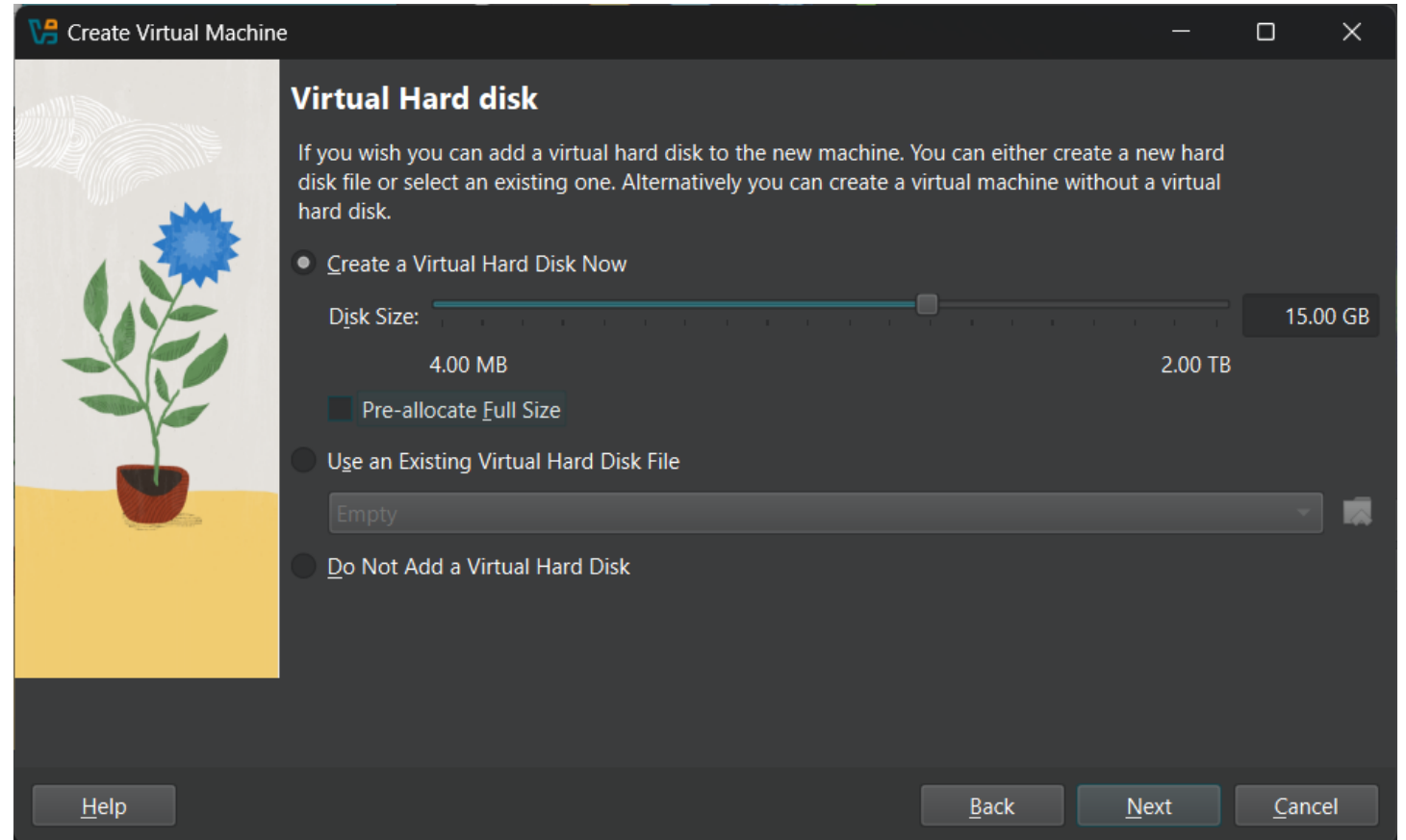
Guest Additions ISO: C:\Program Files\Oracle\VirtualBox\VBBoxGuestAdditions.iso

Help Back Next Cancel

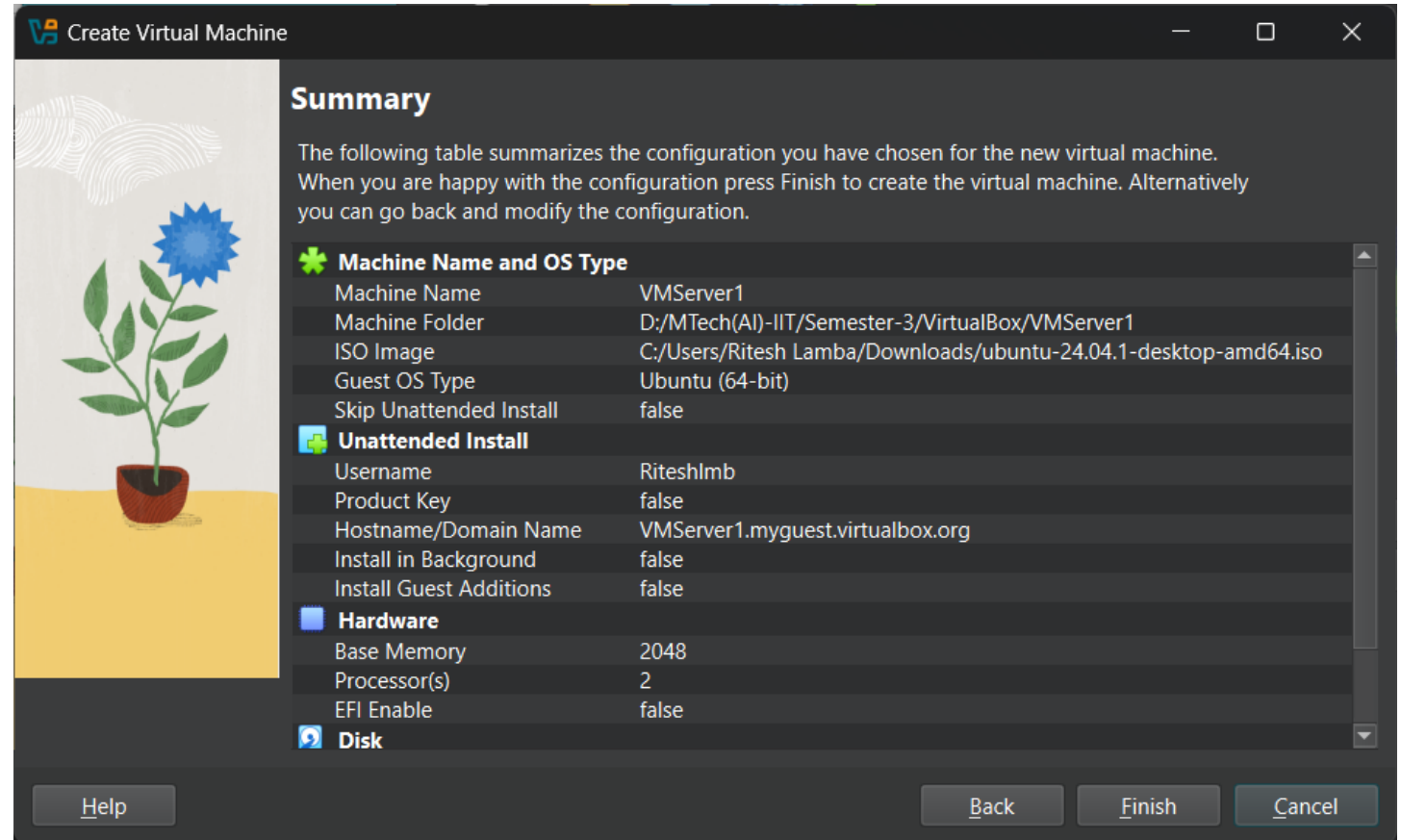
Creation of multiple VMs



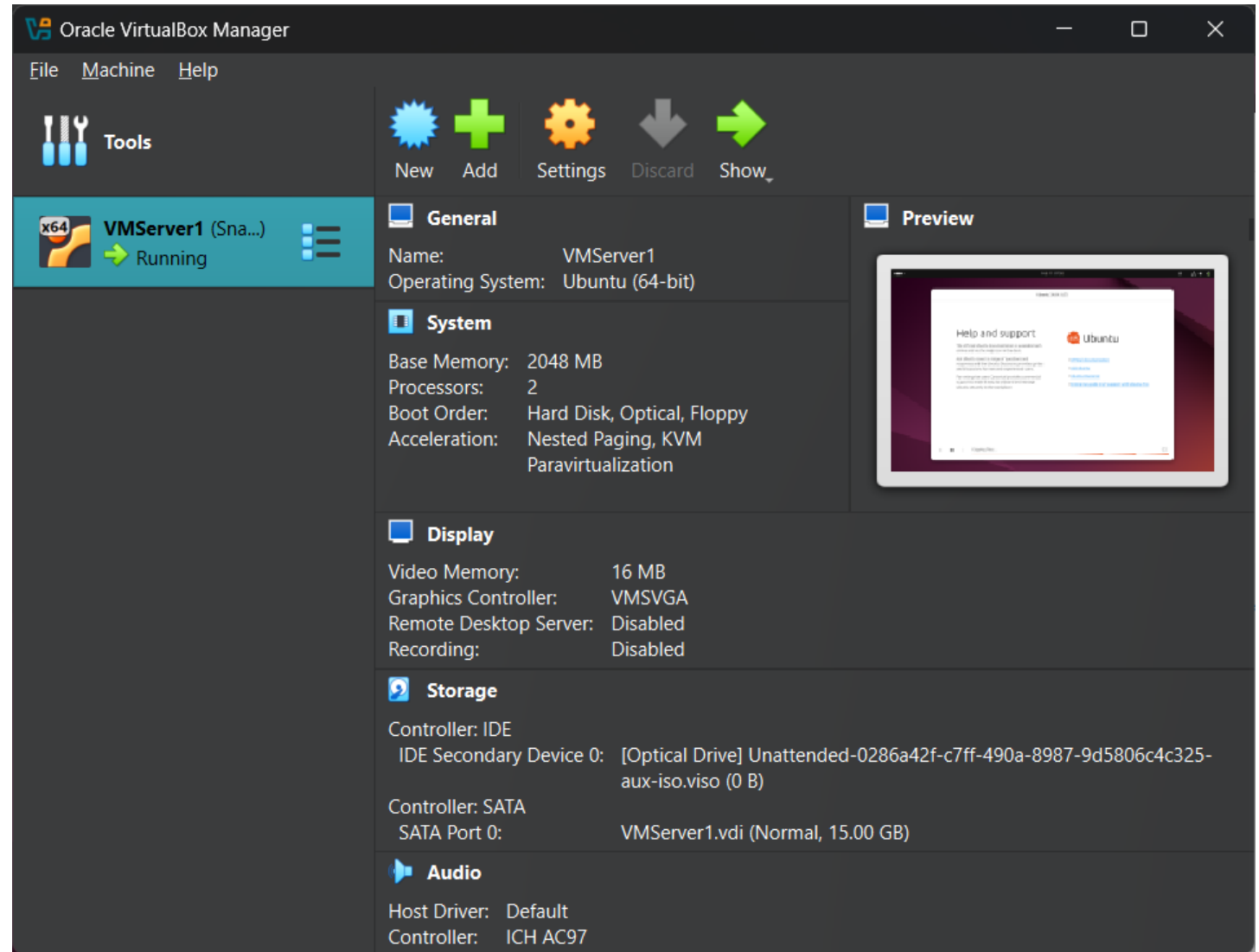
Creation of multiple VMs



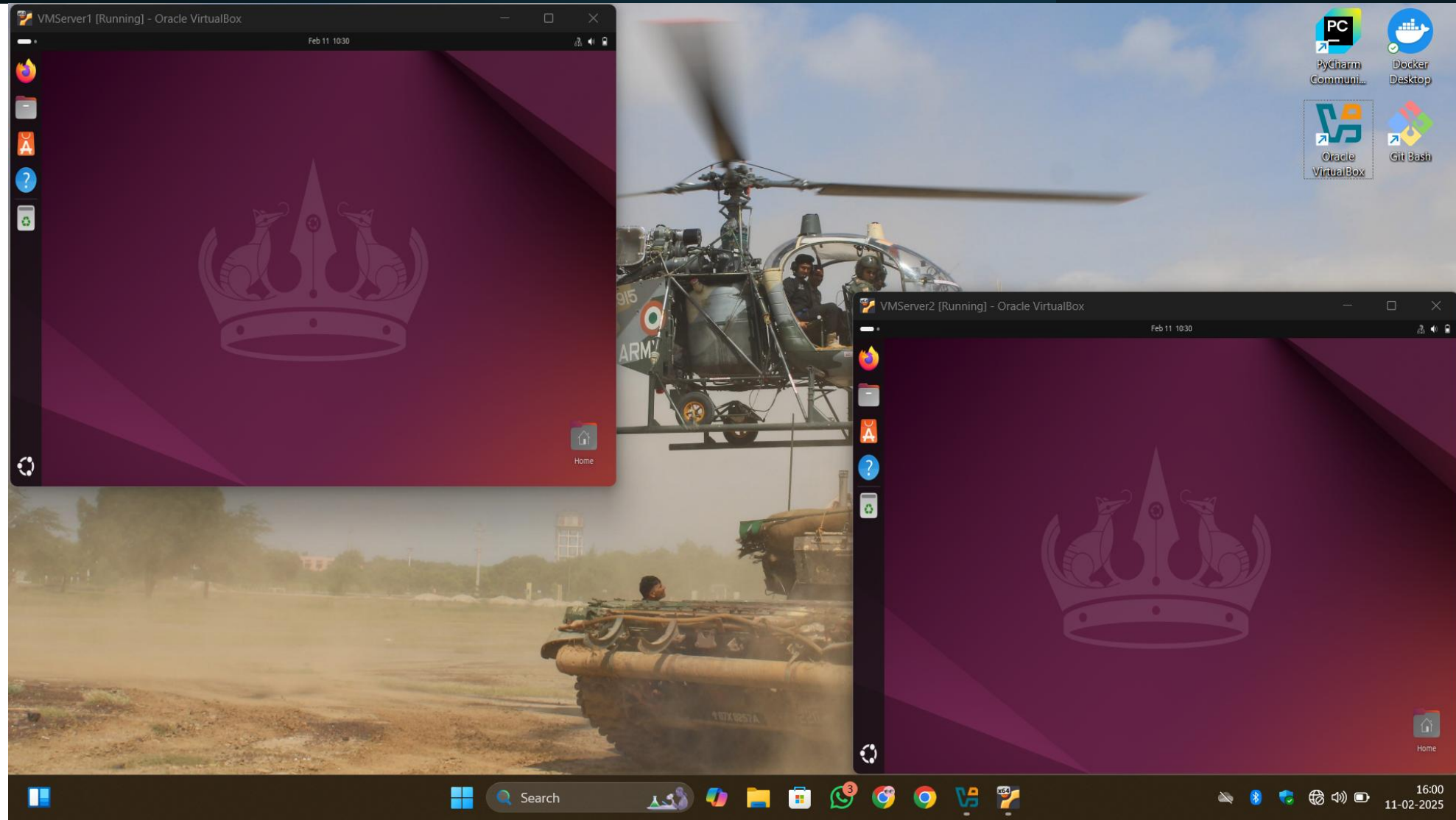
Creation of multiple VMs



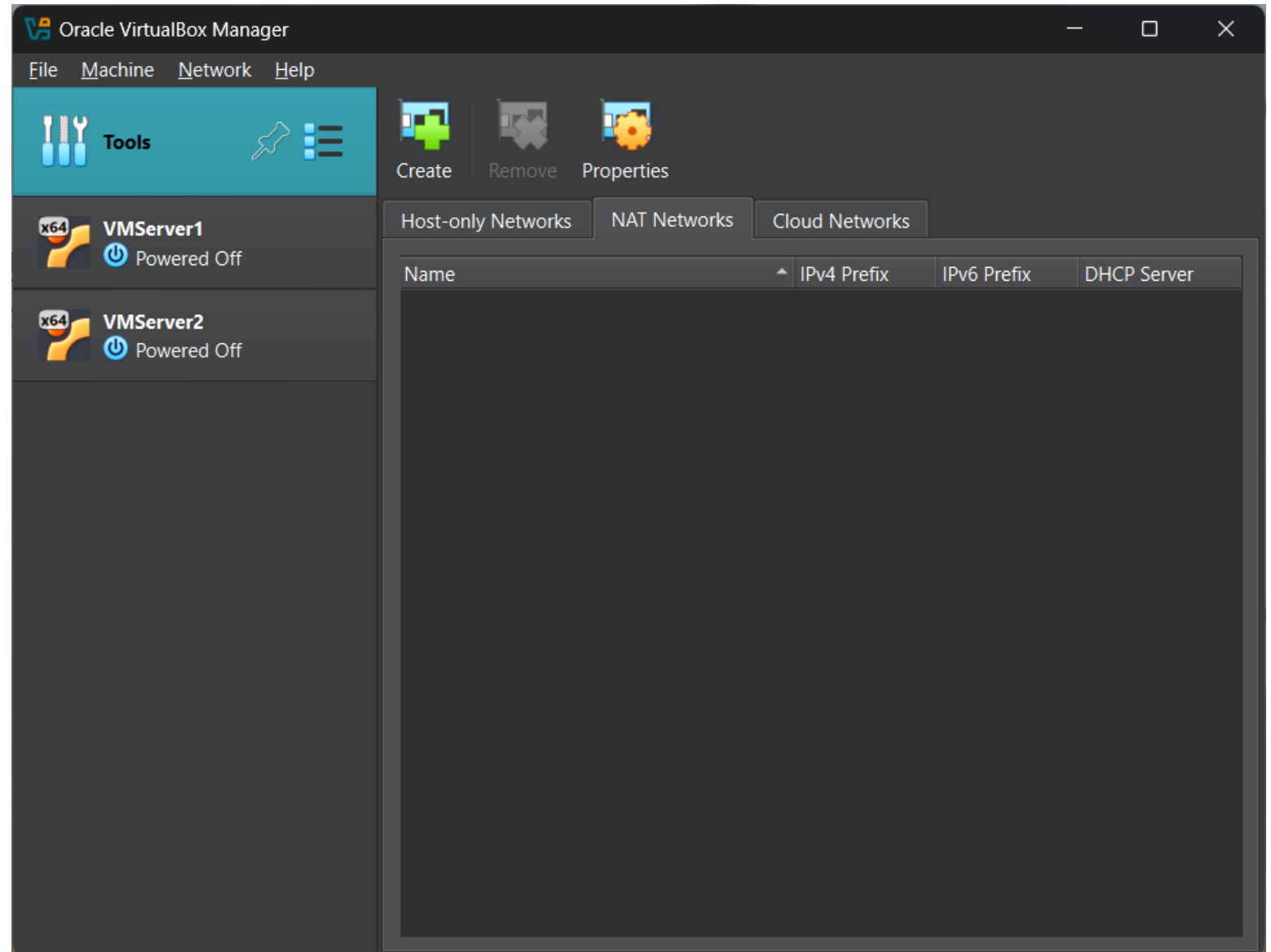
Creation of multiple VMs



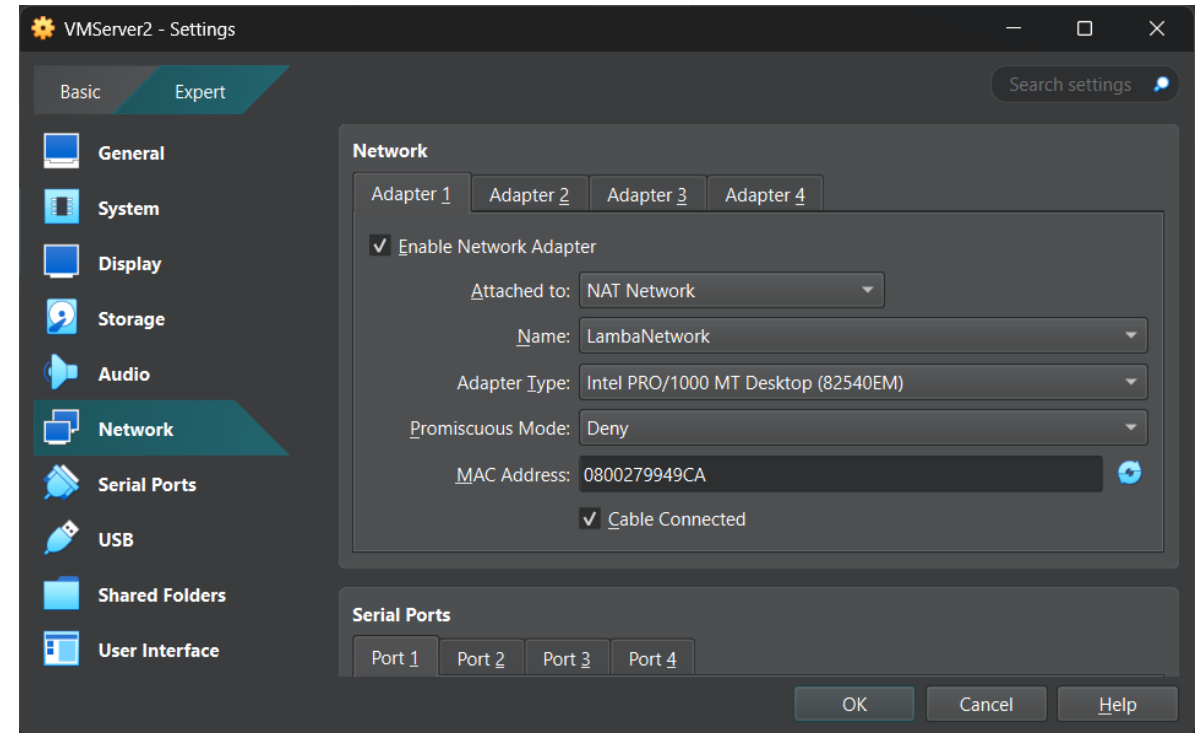
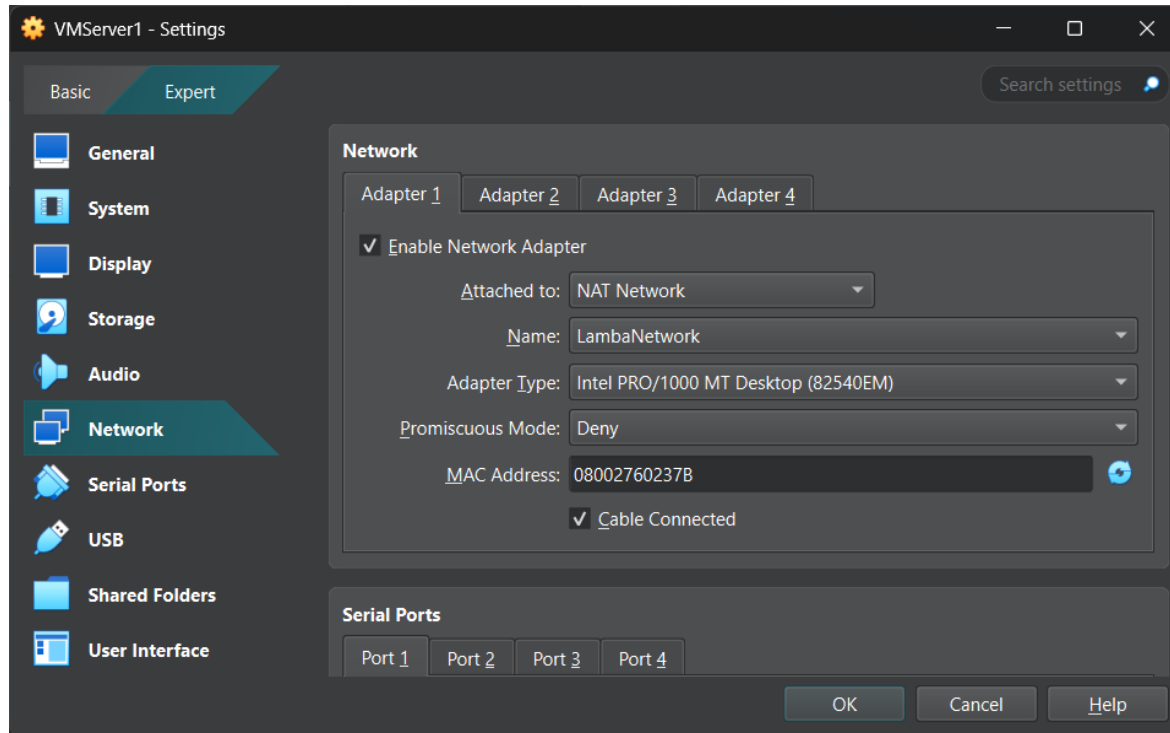
Creation of multiple VMs



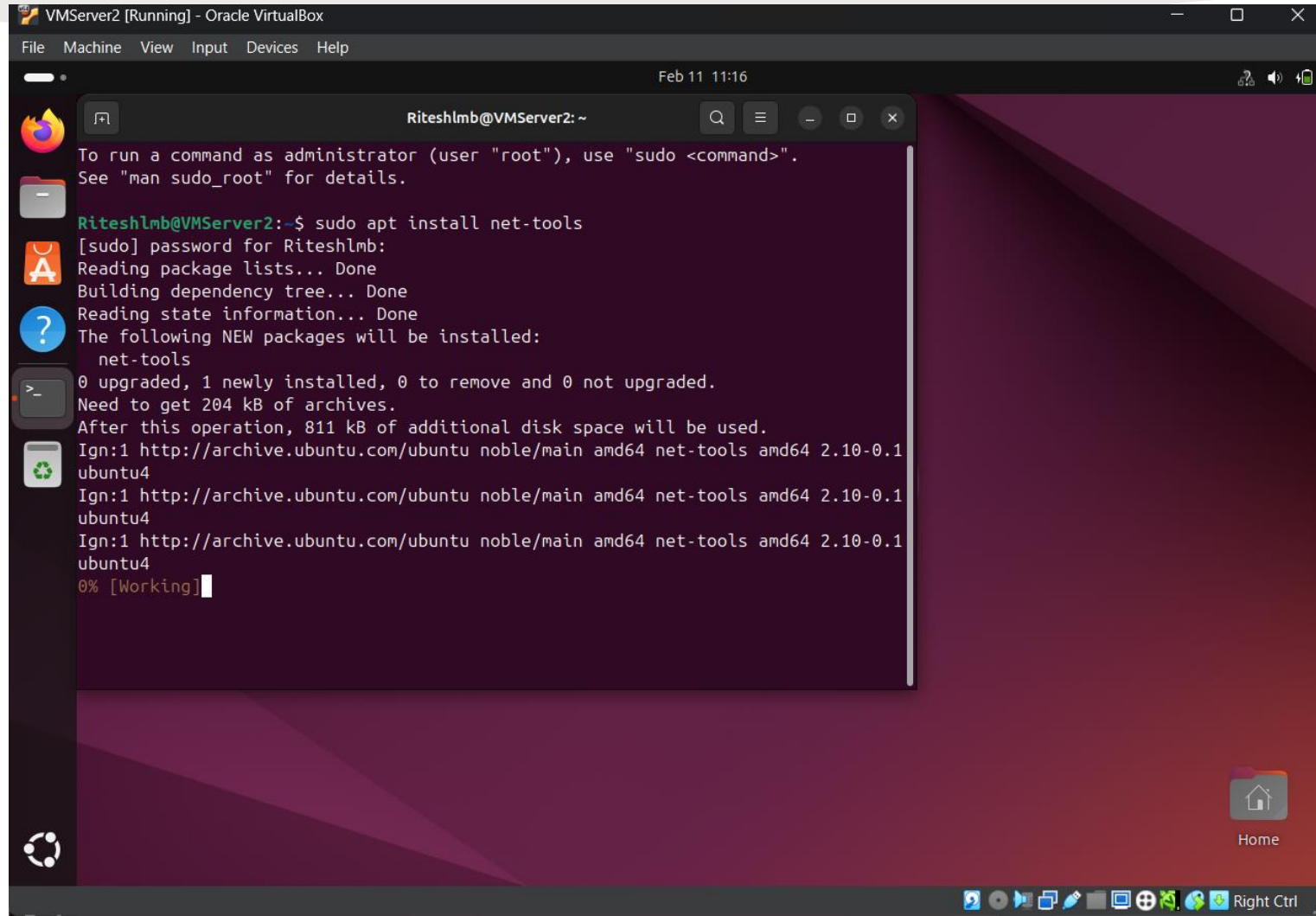
Configuration of Network Settings to Connect the VMs



Configuration of Network Settings to Connect the VMs

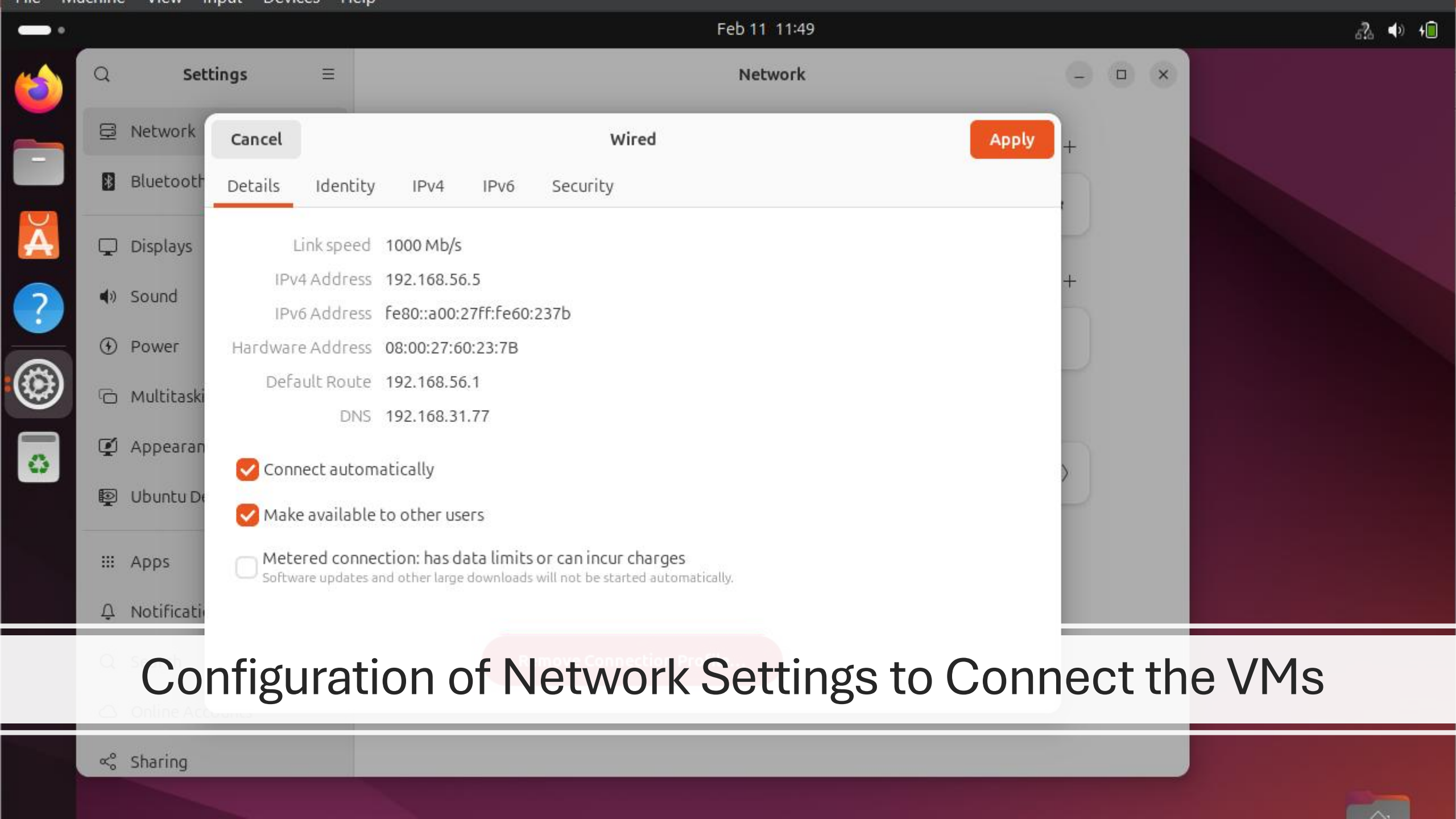


Configuration of Network Settings to Connect the VMs



The screenshot shows a VirtualBox window titled "VMServer2 [Running] - Oracle VirtualBox". Inside the window is a terminal window titled "Riteshlmb@VMServer2: ~". The terminal output shows the installation of net-tools using apt. The user prompts for a password, and the system shows progress for reading package lists, building the dependency tree, and reading state information. It then lists the new packages to be installed (net-tools) and shows the disk space requirements. The installation is currently at 0% and is working.

```
VMServer2 [Running] - Oracle VirtualBox
File Machine View Input Devices Help
Feb 11 11:16
Riteshlmb@VMServer2: ~
To run a command as administrator (user "root"), use "sudo <command>".
See "man sudo_root" for details.
Riteshlmb@VMServer2:~$ sudo apt install net-tools
[sudo] password for Riteshlmb:
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
The following NEW packages will be installed:
  net-tools
0 upgraded, 1 newly installed, 0 to remove and 0 not upgraded.
Need to get 204 kB of archives.
After this operation, 811 kB of additional disk space will be used.
Ign:1 http://archive.ubuntu.com/ubuntu noble/main amd64 net-tools amd64 2.10-0.1
ubuntu4
Ign:1 http://archive.ubuntu.com/ubuntu noble/main amd64 net-tools amd64 2.10-0.1
ubuntu4
Ign:1 http://archive.ubuntu.com/ubuntu noble/main amd64 net-tools amd64 2.10-0.1
ubuntu4
0% [Working]
```



Feb 11 11:49



Settings

Network

Cancel

Wired

Apply

Details

Identity

IPv4

IPv6

Security

Link speed 1000 Mb/s

IPv4 Address 192.168.56.5

IPv6 Address fe80::a00:27ff:fe60:237b

Hardware Address 08:00:27:60:23:7B

Default Route 192.168.56.1

DNS 192.168.31.77

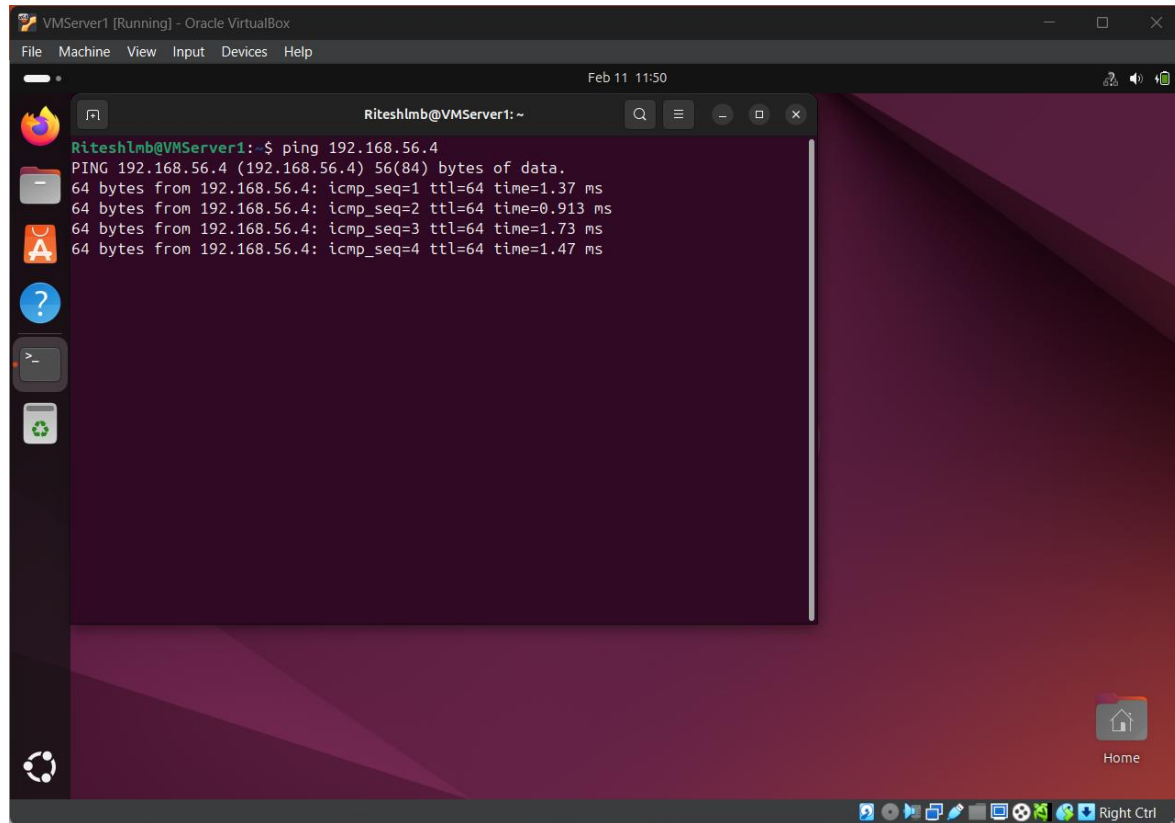
☒ Connect automatically

☒ Make available to other users

☐ Metered connection: has data limits or can incur charges
Software updates and other large downloads will not be started automatically.

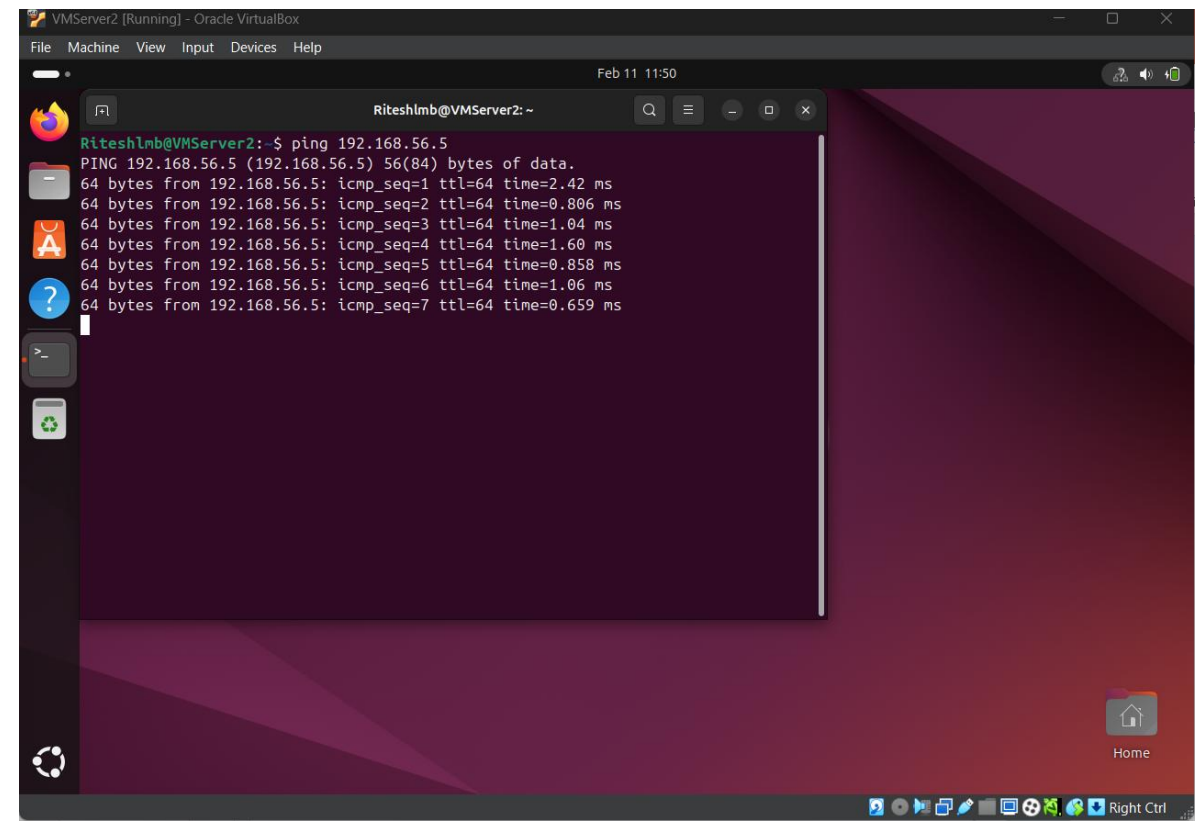
Configuration of Network Settings to Connect the VMs

Configuration of Network Settings to Connect the VMs



VMServer1 [Running] - Oracle VirtualBox

```
Riteshlmb@VMServer1:~$ ping 192.168.56.4
PING 192.168.56.4 (192.168.56.4) 56(84) bytes of data:
64 bytes from 192.168.56.4: icmp_seq=1 ttl=64 time=1.37 ms
64 bytes from 192.168.56.4: icmp_seq=2 ttl=64 time=0.913 ms
64 bytes from 192.168.56.4: icmp_seq=3 ttl=64 time=1.73 ms
64 bytes from 192.168.56.4: icmp_seq=4 ttl=64 time=1.47 ms
```



VMServer2 [Running] - Oracle VirtualBox

```
Riteshlmb@VMServer2:~$ ping 192.168.56.5
PING 192.168.56.5 (192.168.56.5) 56(84) bytes of data:
64 bytes from 192.168.56.5: icmp_seq=1 ttl=64 time=2.42 ms
64 bytes from 192.168.56.5: icmp_seq=2 ttl=64 time=0.806 ms
64 bytes from 192.168.56.5: icmp_seq=3 ttl=64 time=1.04 ms
64 bytes from 192.168.56.5: icmp_seq=4 ttl=64 time=1.60 ms
64 bytes from 192.168.56.5: icmp_seq=5 ttl=64 time=0.858 ms
64 bytes from 192.168.56.5: icmp_seq=6 ttl=64 time=1.06 ms
64 bytes from 192.168.56.5: icmp_seq=7 ttl=64 time=0.659 ms
```

File Machine View Input Devices Help

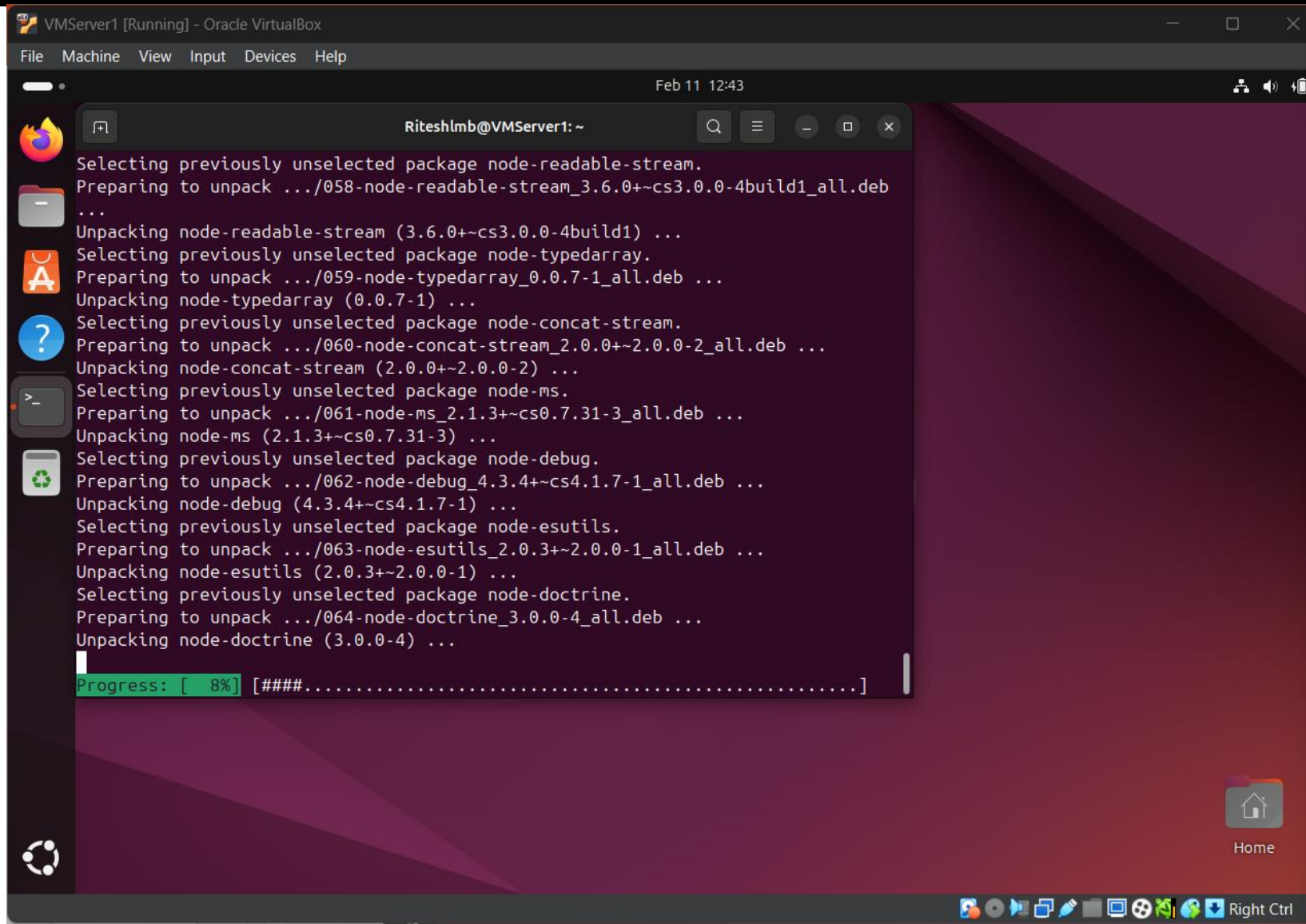
Feb 11 12:40

Riteshlmb@VMServer1: ~

```
Command 'ifconfig' not found, but can be installed with:
sudo apt install net-tools
Riteshlmb@VMServer1:~$ sudo apt install net-tools
[sudo] password for Riteshlmb:
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
The following NEW packages will be installed:
  net-tools
0 upgraded, 1 newly installed, 0 to remove and 0 not upgraded.
Need to get 204 kB of archives.
After this operation, 811 kB of additional disk space will be used.
Get:1 http://archive.ubuntu.com/ubuntu noble/main amd64 net-tools amd64 2.10-0.1ubuntu4 [204 kB]
Fetched 204 kB in 2s (84.0 kB/s)
Selecting previously unselected package net-tools.
(Reading database ... 147991 files and directories currently installed.)
Preparing to unpack .../net-tools_2.10-0.1ubuntu4_amd64.deb ...
Unpacking net-tools (2.10-0.1ubuntu4) ...
Setting up net-tools (2.10-0.1ubuntu4) ...
Processing triggers for man-db (2.12.0-4build2) ...
Riteshlmb@VMServer1:~$
```

Configuration of Network Settings to Connect the VMs

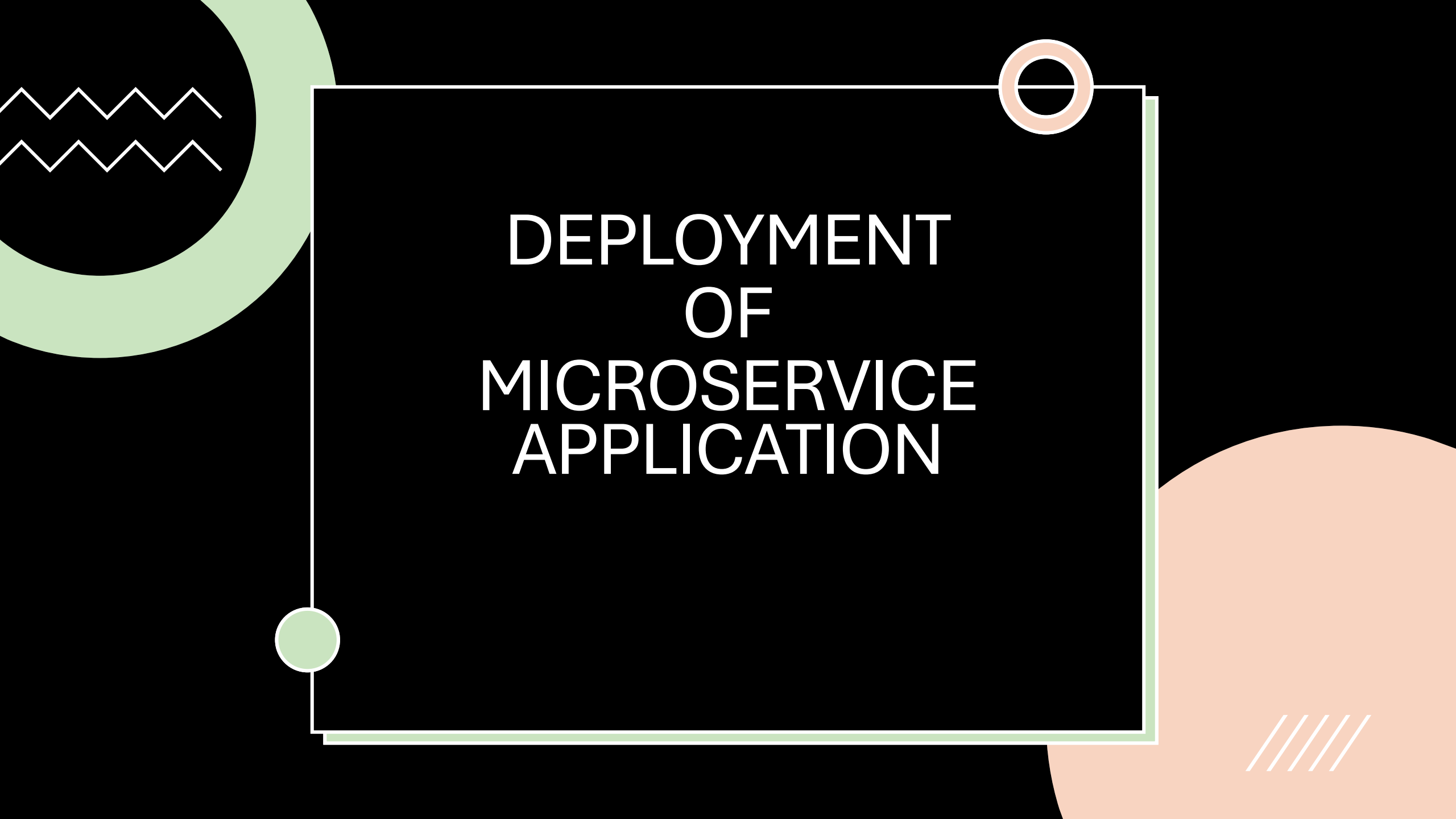
Configuration of Network Settings to Connect the VMs



The screenshot shows a VirtualBox window titled "VMServer1 [Running] - Oracle VirtualBox". Inside the VM, a terminal window is open with the prompt "Riteshlmb@VMServer1: ~". The terminal displays the following output:

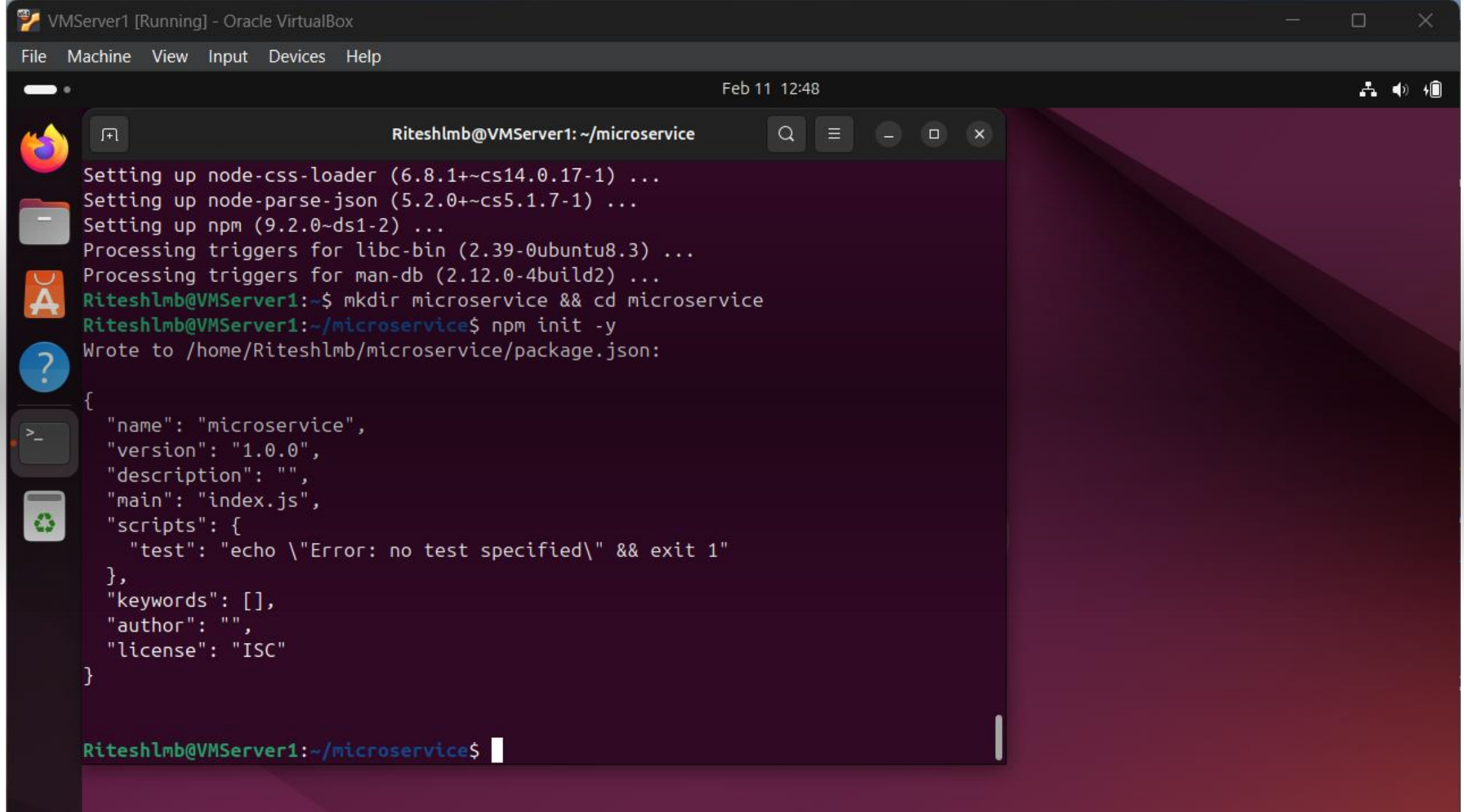
```
Selecting previously unselected package node-readable-stream.  
Preparing to unpack .../058-node-readable-stream_3.6.0+~cs3.0.0-4build1_all.deb ...  
Unpacking node-readable-stream (3.6.0+~cs3.0.0-4build1) ...  
Selecting previously unselected package node-typedarray.  
Preparing to unpack .../059-node-typedarray_0.0.7-1_all.deb ...  
Unpacking node-typedarray (0.0.7-1) ...  
Selecting previously unselected package node-concat-stream.  
Preparing to unpack .../060-node-concat-stream_2.0.0+~2.0.0-2_all.deb ...  
Unpacking node-concat-stream (2.0.0+~2.0.0-2) ...  
Selecting previously unselected package node-ms.  
Preparing to unpack .../061-node-ms_2.1.3+~cs0.7.31-3_all.deb ...  
Unpacking node-ms (2.1.3+~cs0.7.31-3) ...  
Selecting previously unselected package node-debug.  
Preparing to unpack .../062-node-debug_4.3.4+~cs4.1.7-1_all.deb ...  
Unpacking node-debug (4.3.4+~cs4.1.7-1) ...  
Selecting previously unselected package node-esutils.  
Preparing to unpack .../063-node-esutils_2.0.3+~2.0.0-1_all.deb ...  
Unpacking node-esutils (2.0.3+~2.0.0-1) ...  
Selecting previously unselected package node-doctrine.  
Preparing to unpack .../064-node-doctrine_3.0.0-4_all.deb ...  
Unpacking node-doctrine (3.0.0-4) ...  
Progress: [ 8%] [####.....]
```

The terminal window has a sidebar with icons for applications like Firefox, Files, and the Dash icon. The desktop background is a dark purple gradient. At the bottom right, there is a "Home" button and a system tray with various icons and the text "Right Ctrl".



DEPLOYMENT OF MICROSERVICE APPLICATION

Deployment of Microservice Application



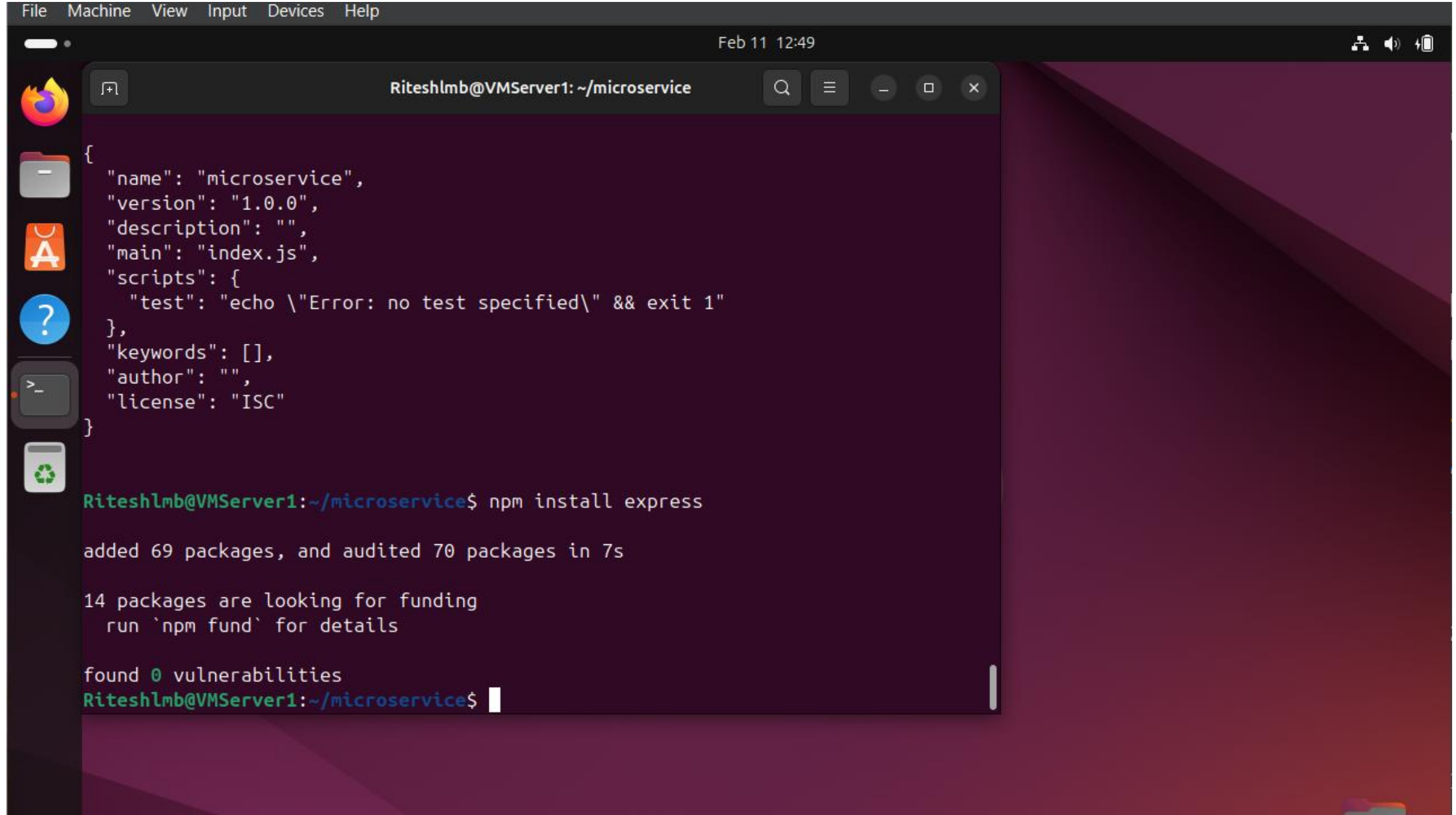
The screenshot shows a VirtualBox window titled "VMServer1 [Running] - Oracle VirtualBox". Inside the window is a terminal window titled "Riteshlmb@VMServer1: ~/microservice". The terminal displays the following commands and output:

```
Setting up node-css-loader (6.8.1+~cs14.0.17-1) ...
Setting up node-parse-json (5.2.0+~cs5.1.7-1) ...
Setting up npm (9.2.0~ds1-2) ...
Processing triggers for libc-bin (2.39-0ubuntu8.3) ...
Processing triggers for man-db (2.12.0-4build2) ...
Riteshlmb@VMServer1:~$ mkdir microservice && cd microservice
Riteshlmb@VMServer1:~/microservice$ npm init -y
Wrote to /home/Riteshlmb/microservice/package.json:

{
  "name": "microservice",
  "version": "1.0.0",
  "description": "",
  "main": "index.js",
  "scripts": {
    "test": "echo \"Error: no test specified\" && exit 1"
  },
  "keywords": [],
  "author": "",
  "license": "ISC"
}
```

The terminal prompt is now `Riteshlmb@VMServer1:~/microservice$`.

Deployment of Microservice Application



The screenshot shows a terminal window titled "Riteshlmb@VMServer1: ~/microservice" with a dark background. The window displays the contents of a package.json file and the output of an npm install command. The package.json file defines a microservice with version 1.0.0, main file index.js, and a test script. The npm install command has successfully installed express and other dependencies.

```
File Machine View Input Devices Help
Feb 11 12:49
Riteshlmb@VMServer1: ~/microservice
{
  "name": "microservice",
  "version": "1.0.0",
  "description": "",
  "main": "index.js",
  "scripts": {
    "test": "echo \"Error: no test specified\" && exit 1"
  },
  "keywords": [],
  "author": "",
  "license": "ISC"
}

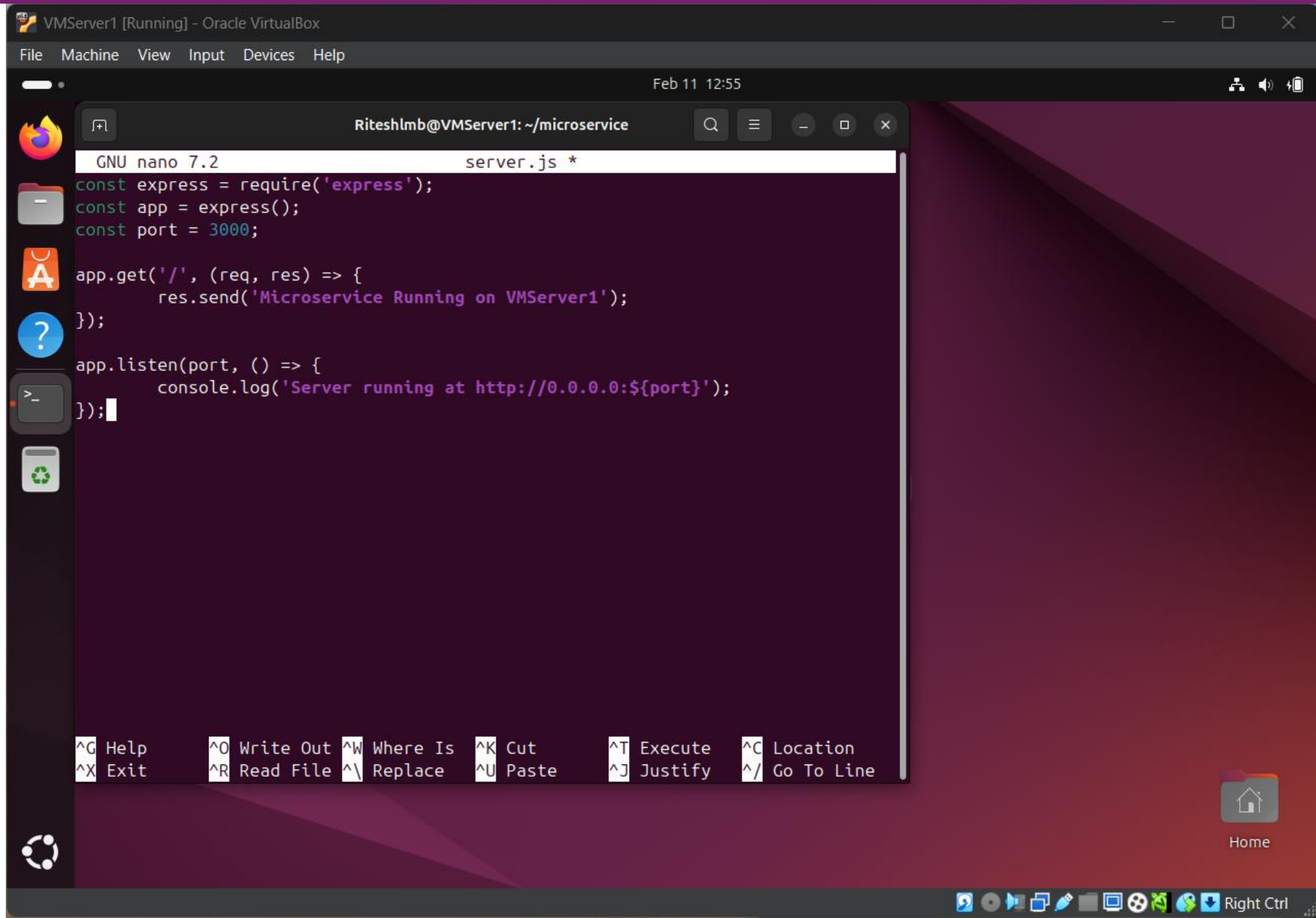
Riteshlmb@VMServer1:~/microservice$ npm install express

added 69 packages, and audited 70 packages in 7s

14 packages are looking for funding
  run `npm fund` for details

found 0 vulnerabilities
Riteshlmb@VMServer1:~/microservice$
```

Deployment of Microservice Application



VMServer1 [Running] - Oracle VirtualBox

File Machine View Input Devices Help

Feb 11 12:55

Riteshlmb@VMServer1: ~/microservice

```
GNU nano 7.2 server.js *
const express = require('express');
const app = express();
const port = 3000;

app.get('/', (req, res) => {
  res.send('Microservice Running on VMServer1');
});

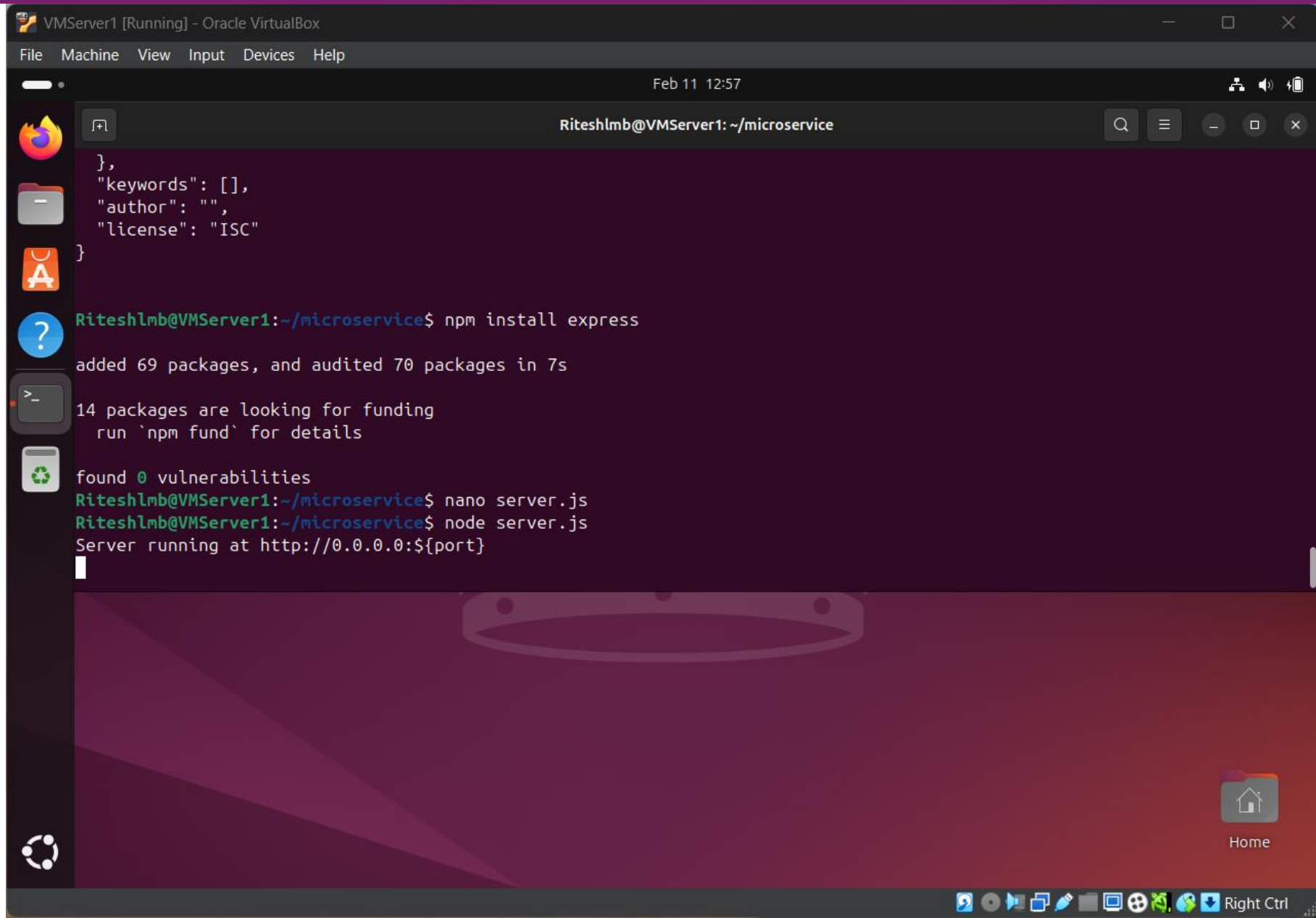
app.listen(port, () => {
  console.log('Server running at http://0.0.0.0:${port}');
});
```

^G Help ^O Write Out ^W Where Is ^K Cut ^T Execute ^C Location
^X Exit ^R Read File ^\ Replace ^U Paste ^J Justify ^_ Go To Line

Home

Right Ctrl

Deployment of Microservice Application



The screenshot shows a VirtualBox window titled "VMServer1 [Running] - Oracle VirtualBox". Inside the VM, a terminal window is open with the prompt "Riteshlmb@VMServer1: ~/microservice". The terminal displays the following commands and output:

```
},
"keywords": [],
"author": "",
"license": "ISC"
}

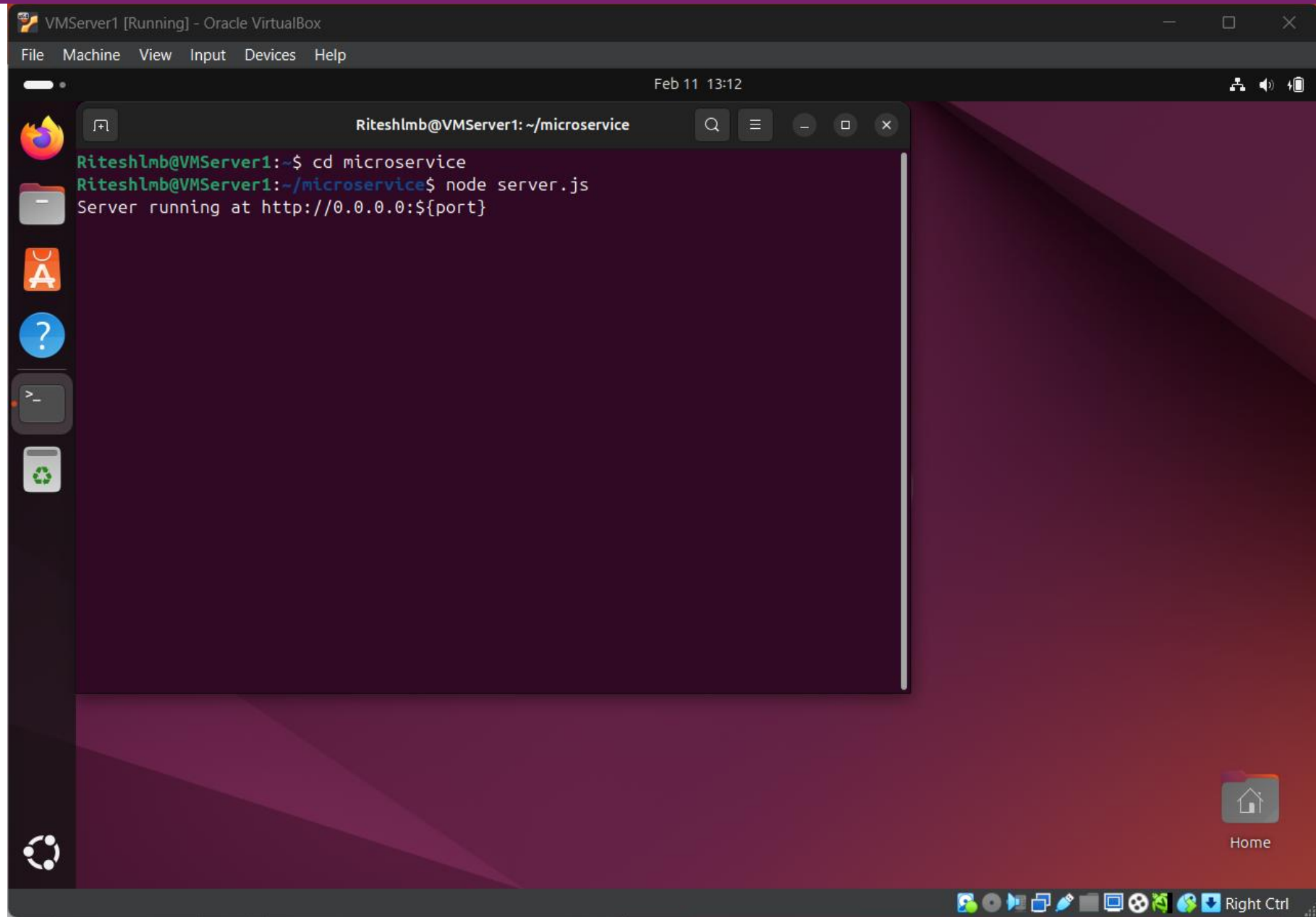
Riteshlmb@VMServer1:~/microservice$ npm install express
added 69 packages, and audited 70 packages in 7s

14 packages are looking for funding
run `npm fund` for details

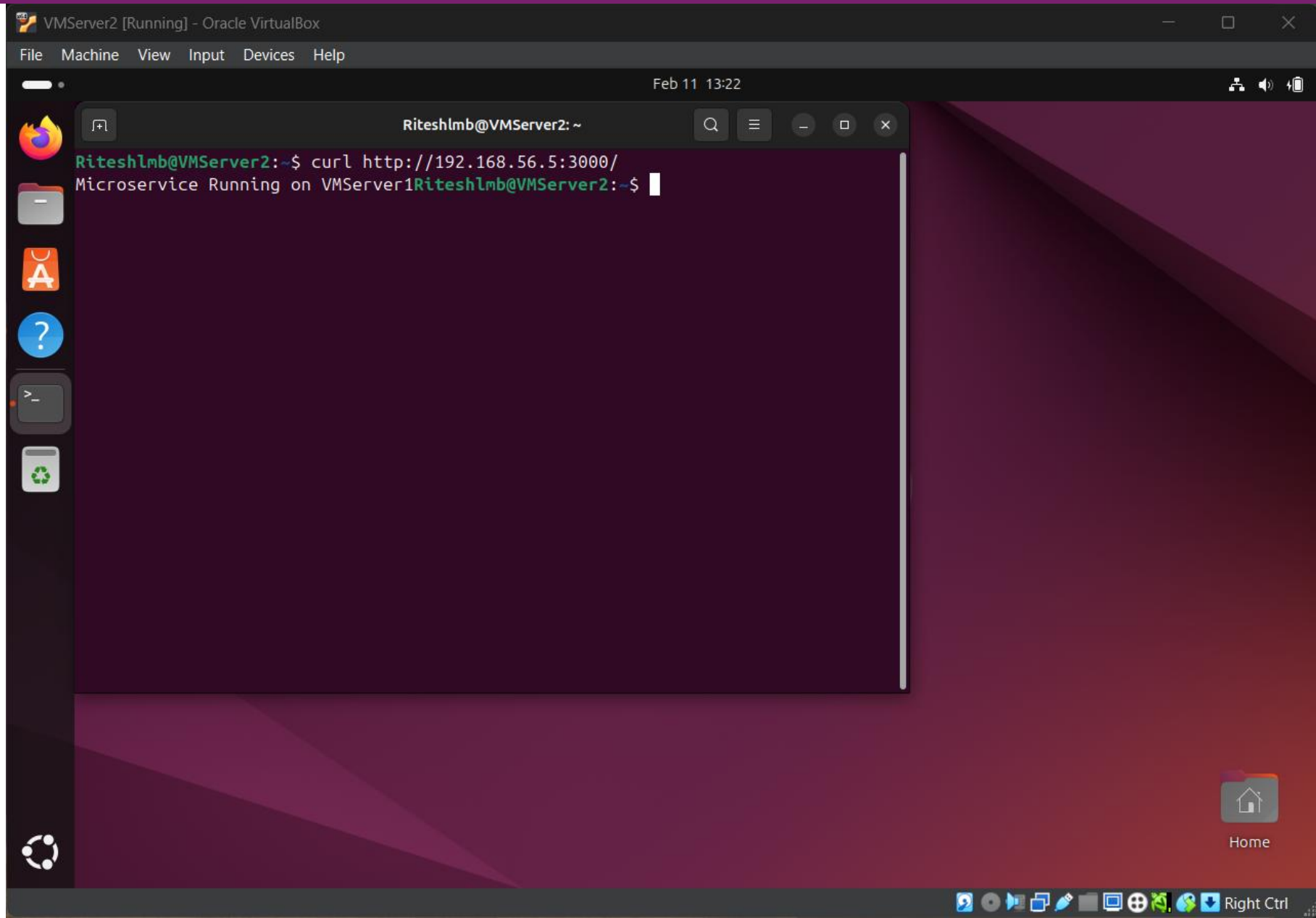
found 0 vulnerabilities
Riteshlmb@VMServer1:~/microservice$ nano server.js
Riteshlmb@VMServer1:~/microservice$ node server.js
Server running at http://0.0.0.0:${port}
```

The terminal window has a sidebar with icons for file manager, application store, help, and other utilities. The desktop background is a dark purple gradient with a faint circular pattern. A "Home" button is visible in the bottom right corner of the desktop.

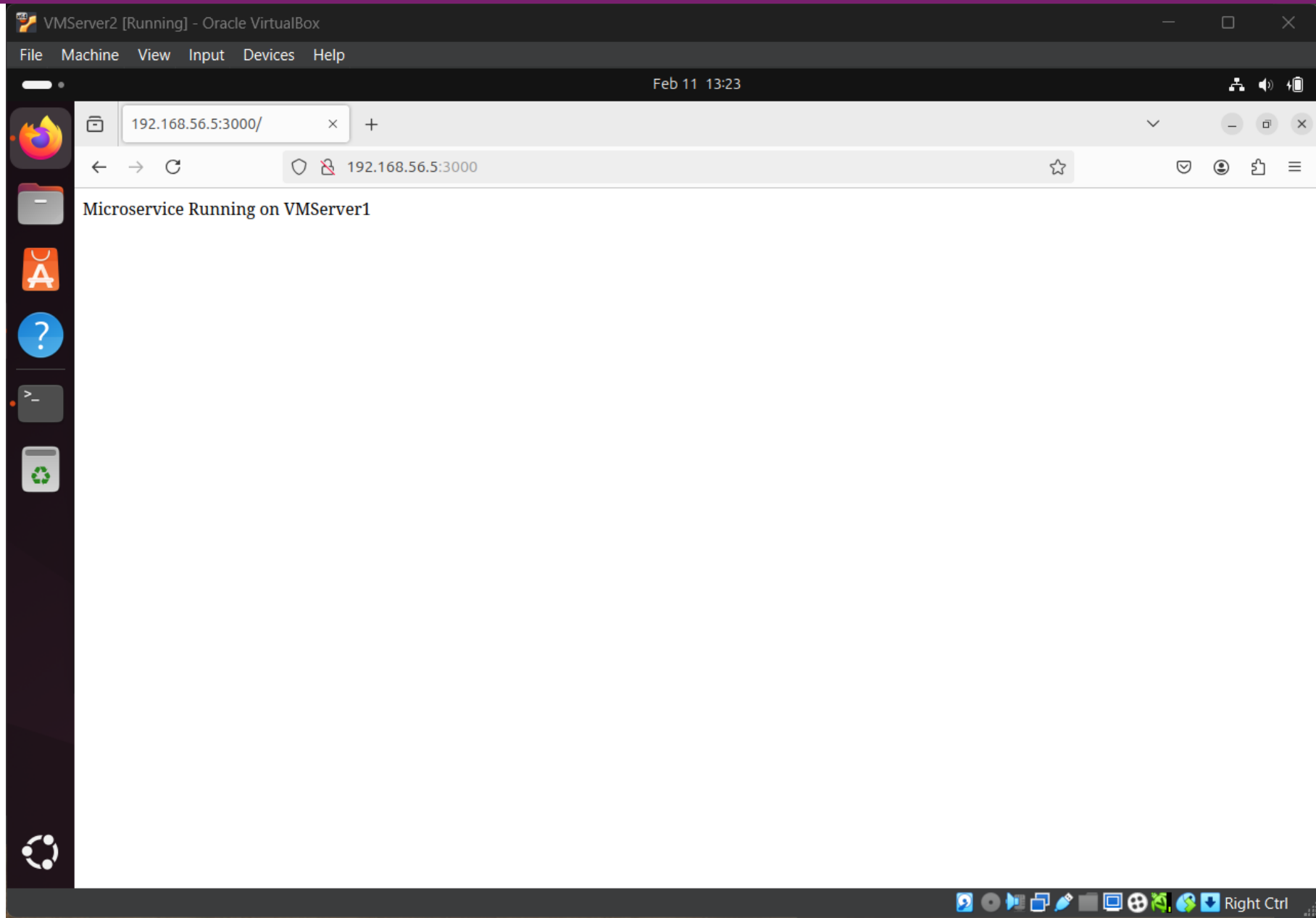
Deployment of Microservice Application



Deployment of Microservice Application



Deployment of Microservice Application





THANKYOU