

The Installation Guide for the VM Image of EstiNet X Network Simulator and Emulator



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Produced and maintained by EstiNet Technologies Inc.

Revision History

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1.0	November 30, 2018	Initial version



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Install VMware Workstation Player

Because "EstiNet Network Simulator and Emulator" must be installed in Fedora 24(64bit) Operation System, we recommended that user installed Operation System and Simulator in "Virtual Machine" **VMware Workstation Player**. We introduced how to install VMware Player as below.

- a. Please download VMware Player from website of VMware Inc. as below and select the type of Operation System which you have. We selected **VMware Workstation Player for Windows** (as Figure 1).

https://my.vmware.com/en/web/vmware/free#desktop_end_user_computing/vmware_workstation_player/14_0|PLAYER-1410|product_downloads

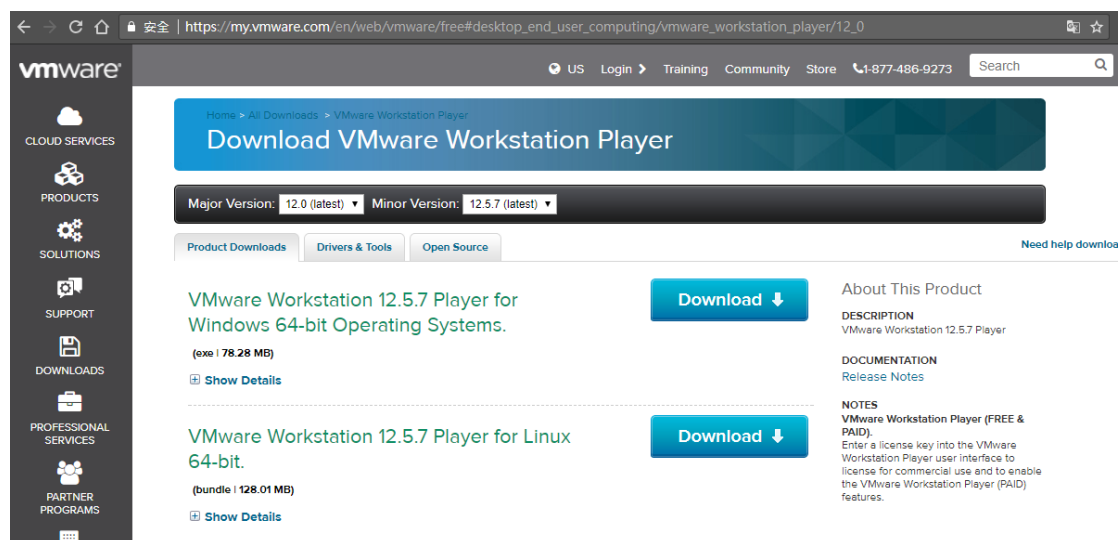


Figure 1 Download VMware Workstation Player

- b. To download the EstiNet X VM Image, please reference the License Key and downloaded information from Delivery Notice.

EstiNet provides three ways to download the EstiNet VMImage.

The first one is MEGA (https://mega.nz/#F!Mv5nEY6D!A5_AdqZpo-8PQi266yBzXg).

The MEGA Monolithic of VM image is

(<https://mega.nz/#F!wmwDXKoS!Pw3oYKmnxYBQgauGHTEU8g>).

The MEGA Sliced of VM image is (https://mega.nz/#F!Mv5nEY6D!A5_AdqZpo-8PQi266yBzXg!ljpFAKpQ).

The second one is Google Drive

(<https://drive.google.com/drive/folders/0Bx3dD-IqTv0IYlhrRFMzR2RZUU0>).

The Google Drive Monolithic of VM image is

(https://drive.google.com/drive/folders/1Ux4En_OWnWZ24LrjoiULmTScIv5cRvTu?usp=sharing).

The Google Drive Sliced of VM image is

(<https://drive.google.com/drive/folders/1ZcD2lQKrPMi8XKKffKBAmNcD39bwjzg?usp=sharing>).

Please reference Page 6 for the description of Sliced VMImage.

The third one is EstiNet FTP server.

FTP Download Link: "<ftp://ftp.estinet.com/>"

FTP Account: [EstiNet10](#)

FTP Password: [estinet](#)

directory /EstiNet10/EstiNet_Trial/VMImage/Monolithic

User could downloads VMImage from MEGA and Google Drive by browser.

User could download VMImage from EstiNet FTP server by FileZilla



(The Free FTP solution <https://filezilla-project.org/>). Please uncompressed VMImage file after VMImage file is completed downloaded.



Figure 2 MEGA

VMImage

名稱 ↑	擁有者	上次修...	檔案大小
Introduction_to_Simulation_Features	estinet.simulator	下午2:12 estinet.simulator	—
Monolithic	estinet.simulator	上午10:53 estinet.simulator	—
Sliced	estinet.simulator	下午1:35 estinet.simulator	—

Figure 3 Google Drive

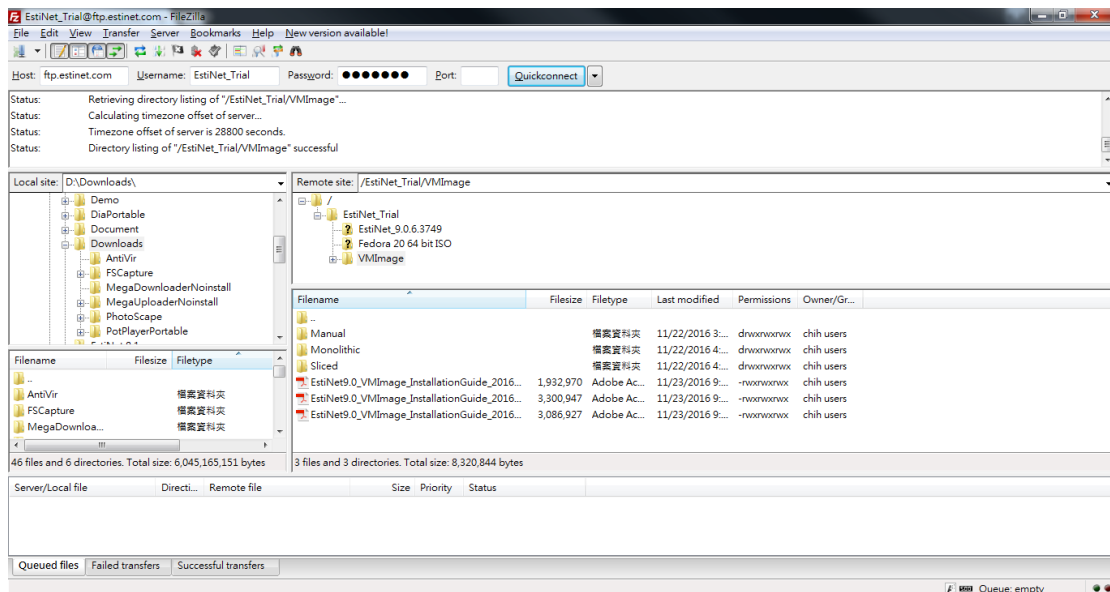


Figure 4 FileZilla

- c. If user download Sliced files of VMImage, please download and install a free application 7-Zip (<http://www.developershome.com/7zip/>) firstly. Open the application of 7-zip. Select the path of sliced files. Click the file such as **EstiNet_X.zip.001** and click the button “Extract” (as below figure). After extract processing is completed, user can get only a compressed file. Please

uncompressed this VMLImage file.

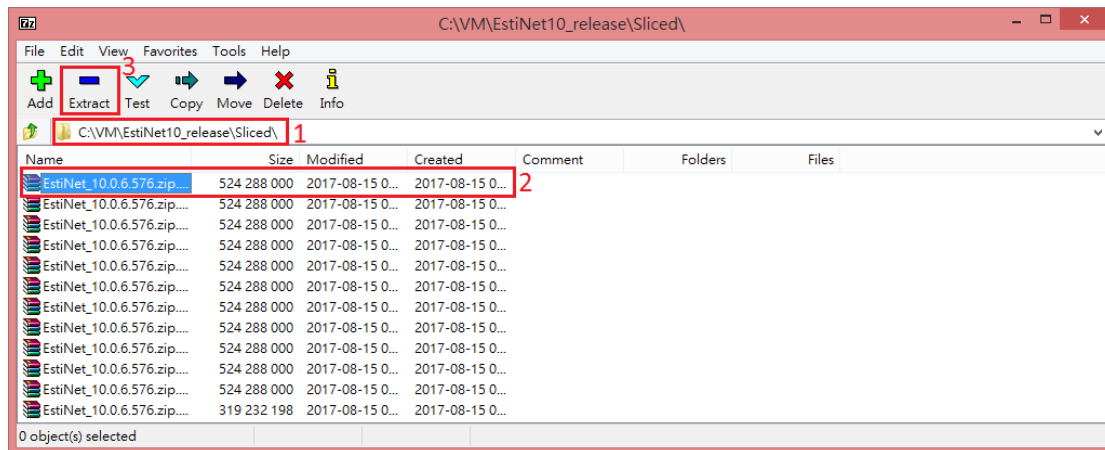


Figure 5 How to Extract the Sliced file use 7-zip

- d. After install **VMware Workstation Player** and unzip EstiNet VM Image, please click the icon "**Open a Virtual Machine**".

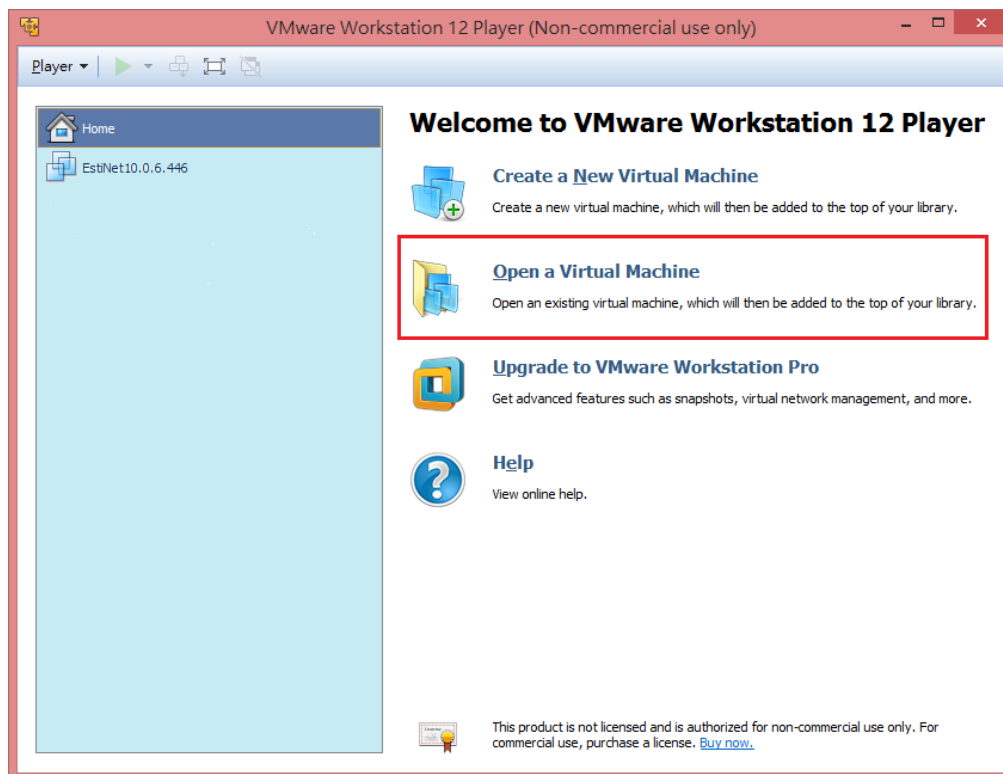


Figure 6 Click Open a Virtual Machine

- e. Please select the path of VM image file then click file .vmx .

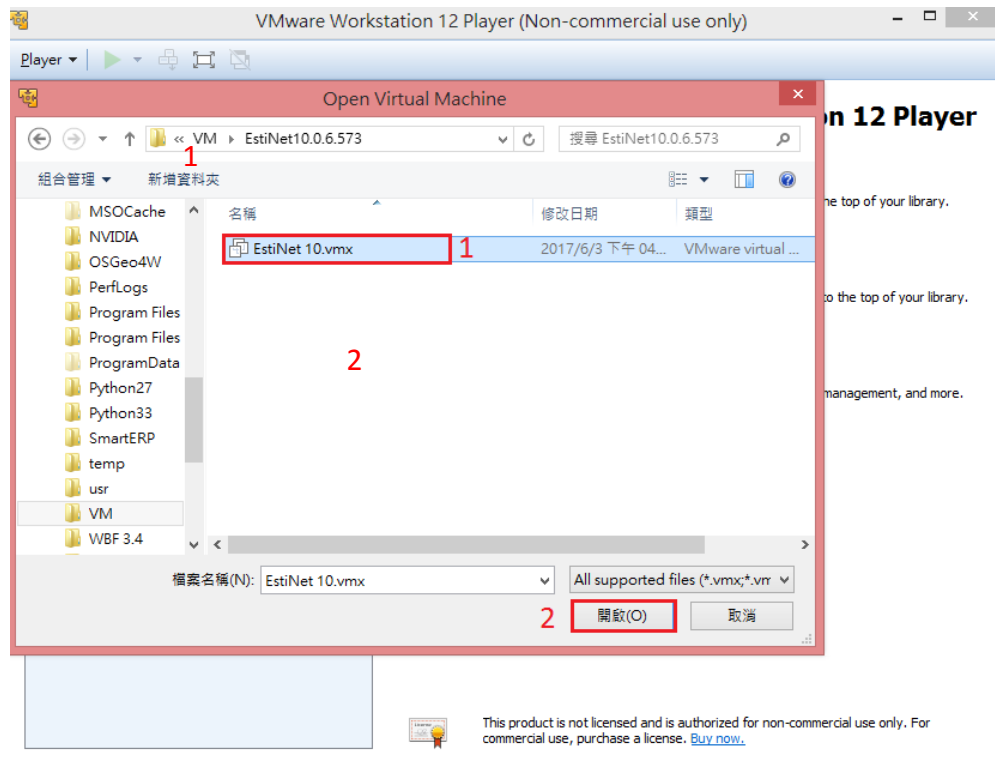


Figure 7 Click file .vmx

- f. When loading EstiNet VM Image, it will pop-up a dialogue box. Please select **I Copied It** (as Figure 8 Dialogue box).

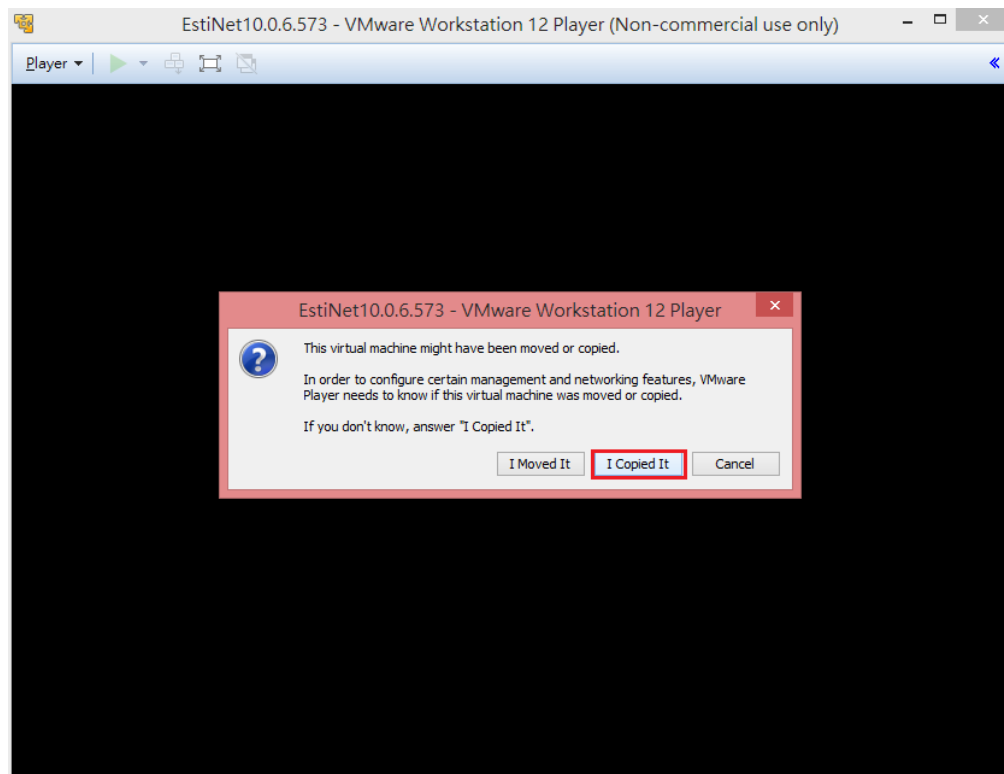


Figure 8 Dialogue box

- g. After complete pre-steps, it will display the EstiNet Image file name that user loaded such as EstiNet_X. Please click "**Power on this virtual**

machine" to power on the Virtual machine.

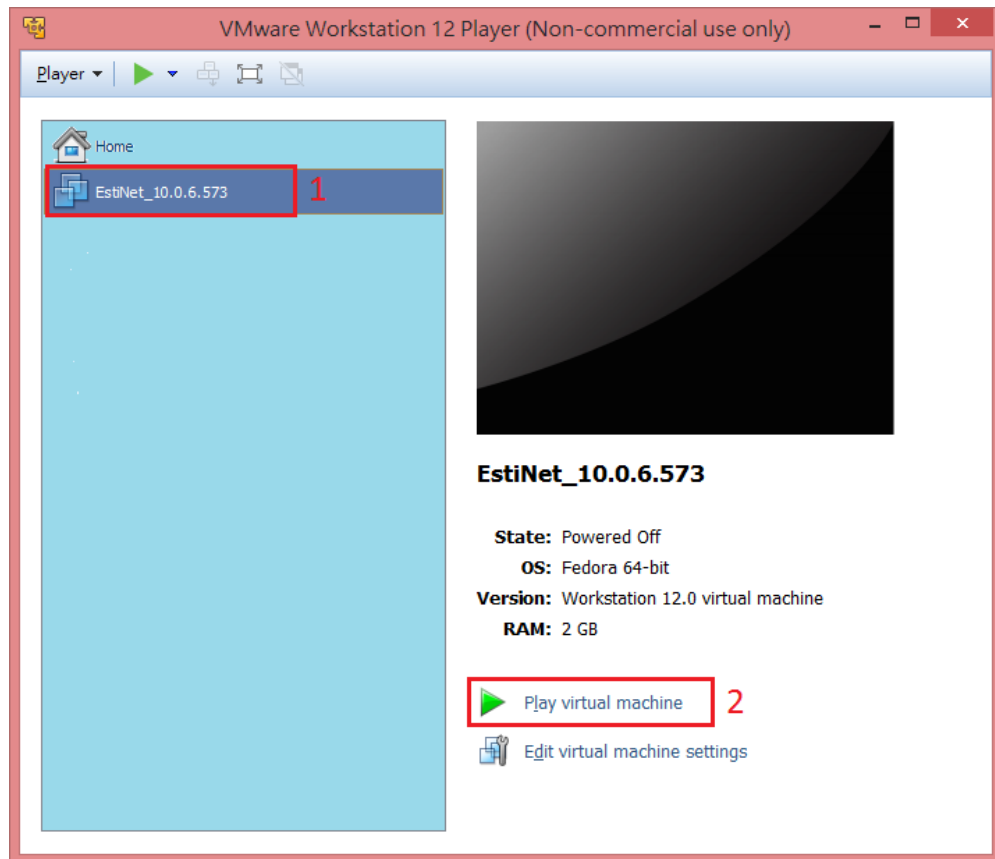



Figure 9 Power on virtual machine

2. To start up the EstiNet Simulator

2.1 The Boot menu

- a. Choose the EstiNet kernel such as “Fedora (4.6.6. estinet20170711.fc24) 24 (Workstation Edition)” on the operation selection screen.



```
Fedora (4.6.6.estinet20170711.fc24) 24 (Workstation Edition)
Fedora (4.10.15-100.fc24.x86_64) 24 (Workstation Edition)
Fedora (4.5.5-300.fc24.x86_64) 24 (Workstation Edition)
Fedora (0-rescue-20d427f98a104557a7855303dfde7a11) 24 (Workstation Editi→

Use the ↑ and ↓ keys to change the selection.
Press 'e' to edit the selected item, or 'c' for a command prompt.
```

Figure 10 Choose the EstiNet kernel on the operation selection screen

b. Login to Fedora24 with user name “estinet” and password “estinet” .

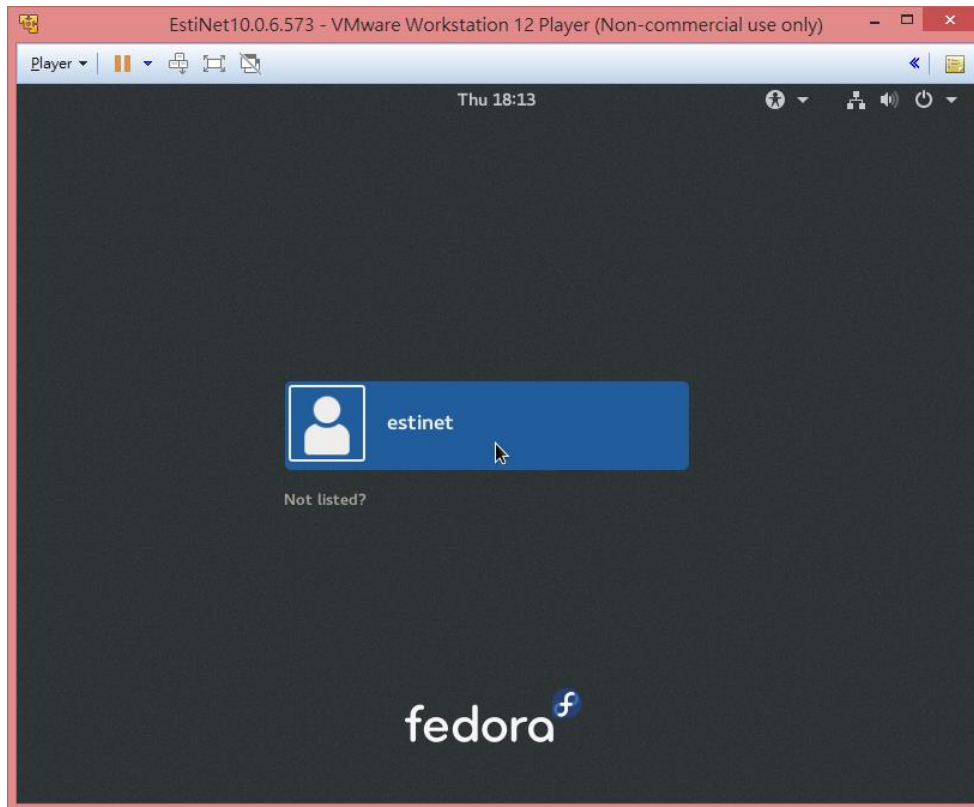


Figure 11 Login with user name “estinet”

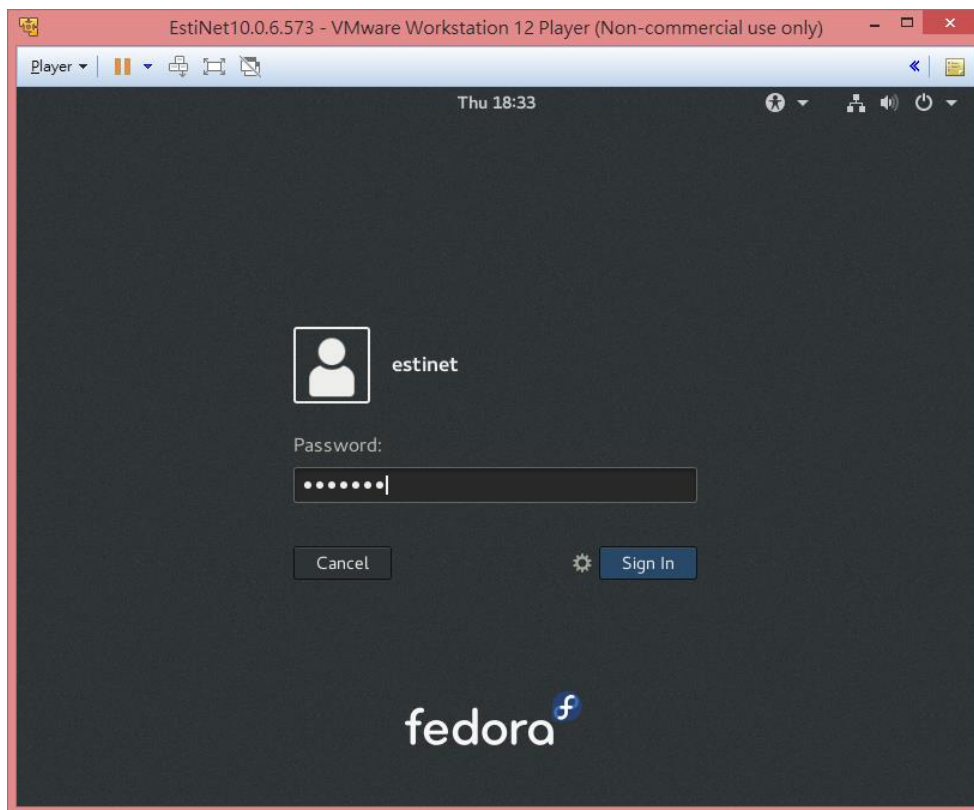


Figure 12 Login with password “estinet”

2.2 Network Setting

- a. After login, please check the Network status is working properly or not. If your Fedora24 environment is the same, please jump to step j.



Figure 13 Network status is working properly

- b. If the network connection status is failed, please reference below steps to make it work properly.



Figure 14 Network connection failed

- c. Please click "Power button" then select "Settings".

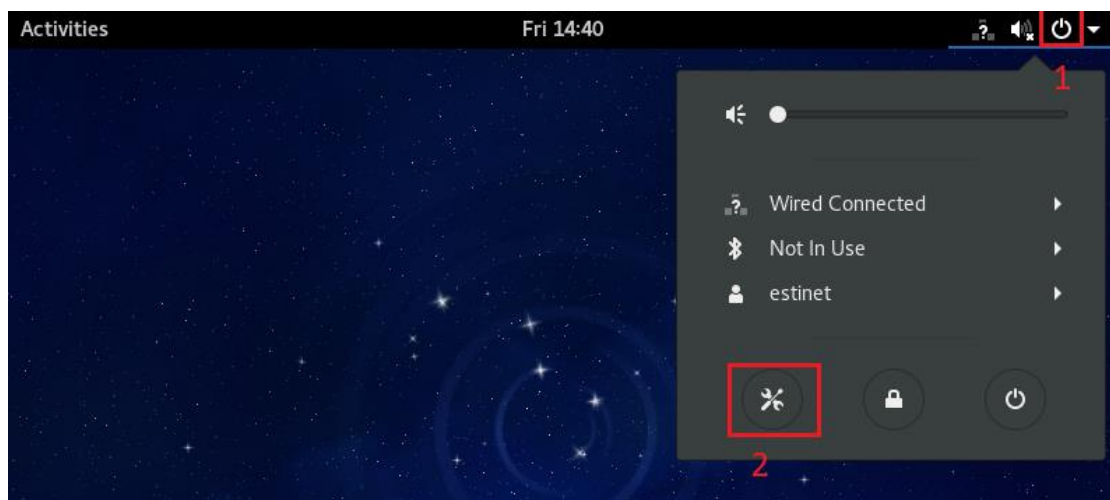


Figure 15 Click "Settings"

d. Click button Network

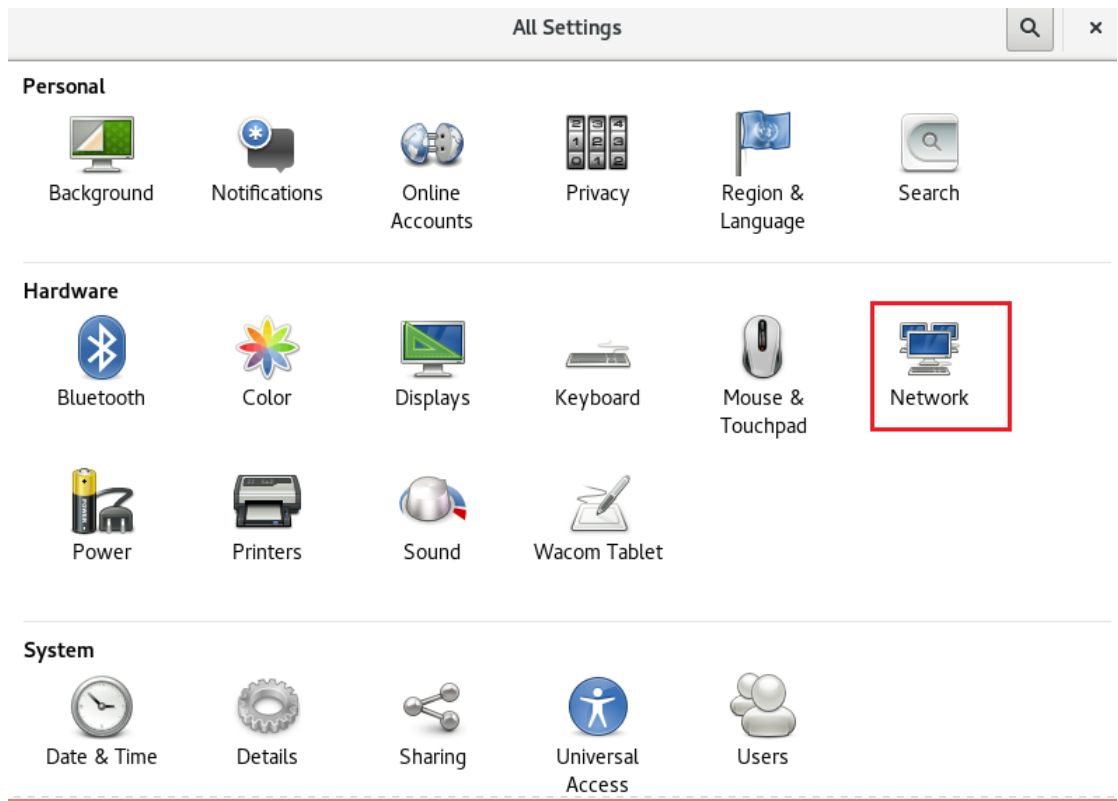


Figure 16 Click button Network

e. After go into the Network settings, please click “Add Profile”.

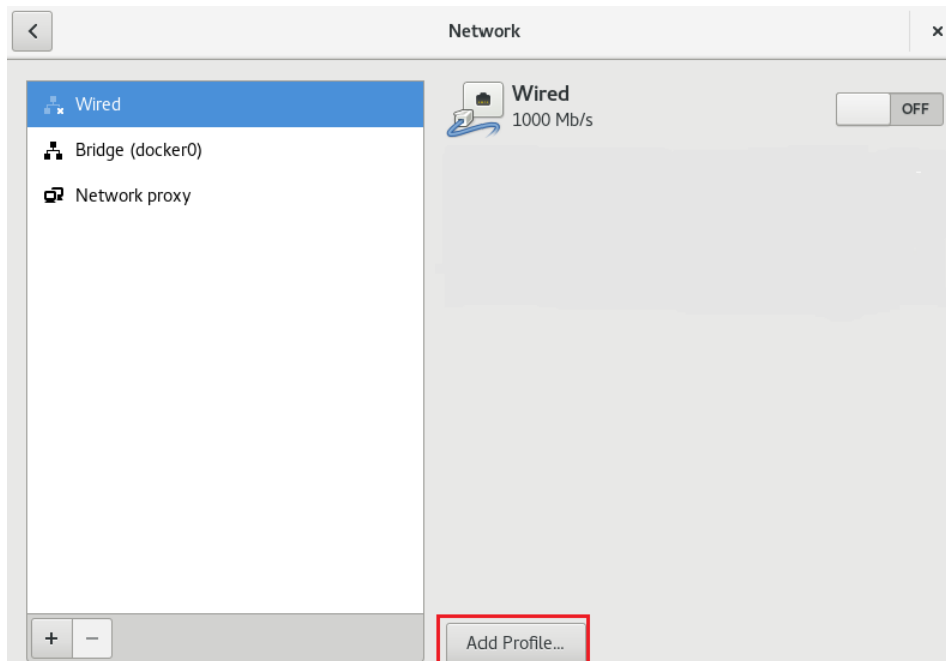


Figure 17 Click “Add Profile”

- f. Go to the window “Profile” and click “Add”, the network should be worked well.

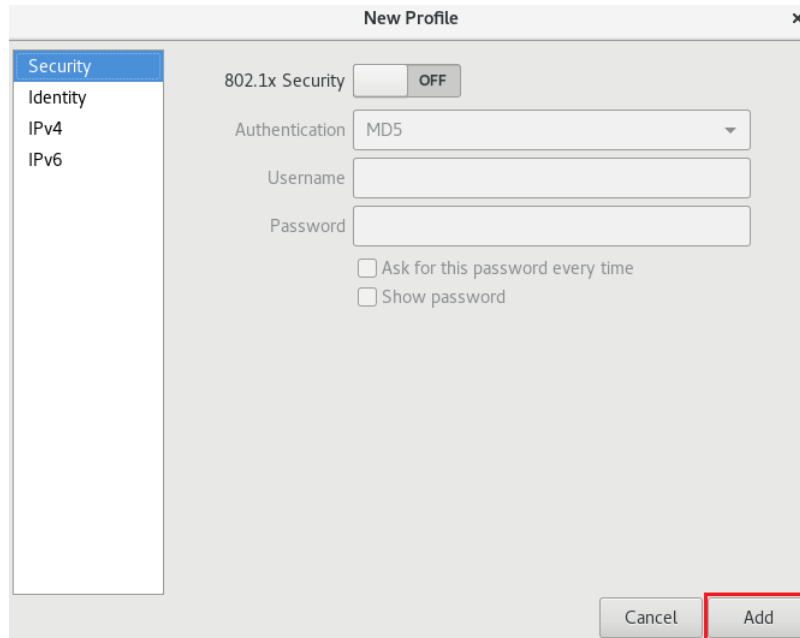


Figure 18 Click “Add”

- g. If the network still can’t work well after pre-steps, please click **Player**→**Manage**→**Virtual Machine Settings** on the upper left corner.

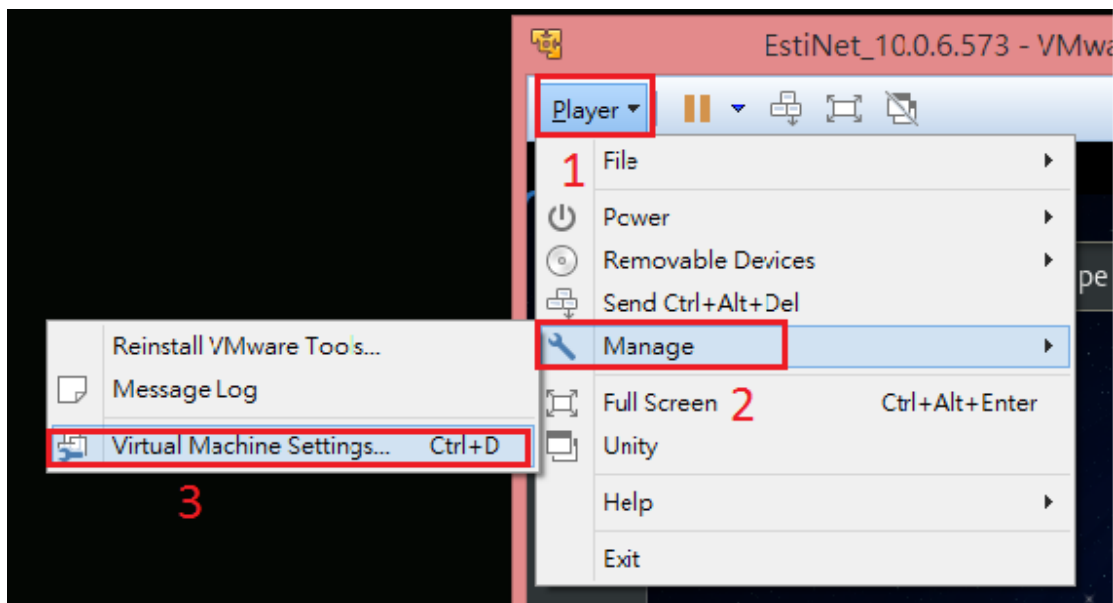


Figure 19 Click Player→Manage→Virtual Machine Settings

- h. Click **“Network Adapter”** on window Virtual Machine Settings.

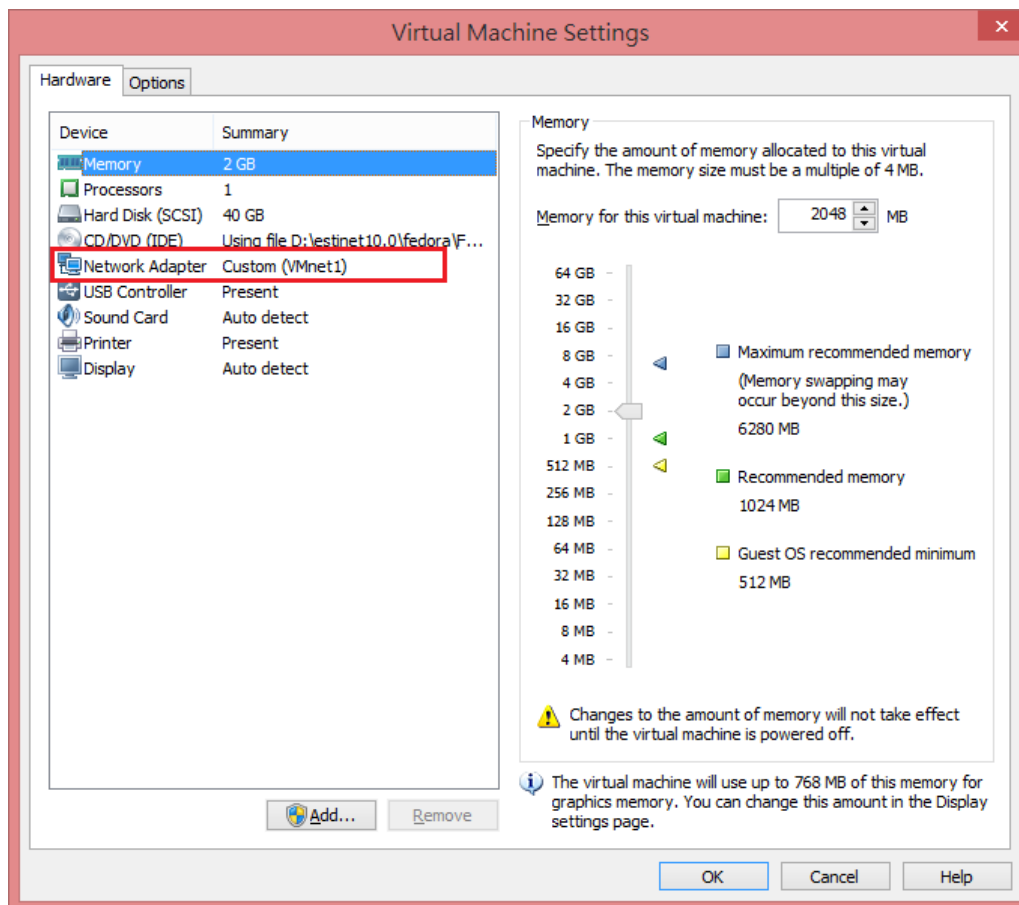


Figure 20 Click Network Adapter

- i. There are two ways for this setting. The one is click **“NAT: Used to share the host’s IP address”**. The other is select **“VMnet (NAT)”** to replace **“VMnet (Host-only)”** on **“Custom: Specific virtual network”**.

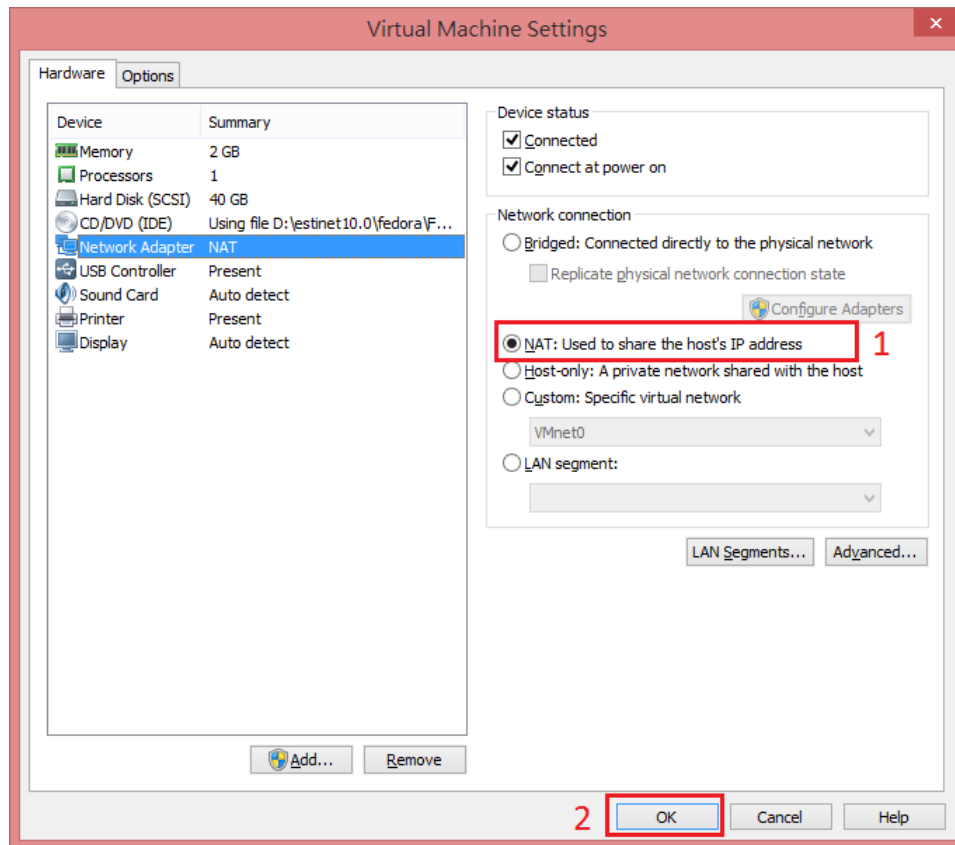


Figure 21 Choose NAT: Used to share the host’s IP address

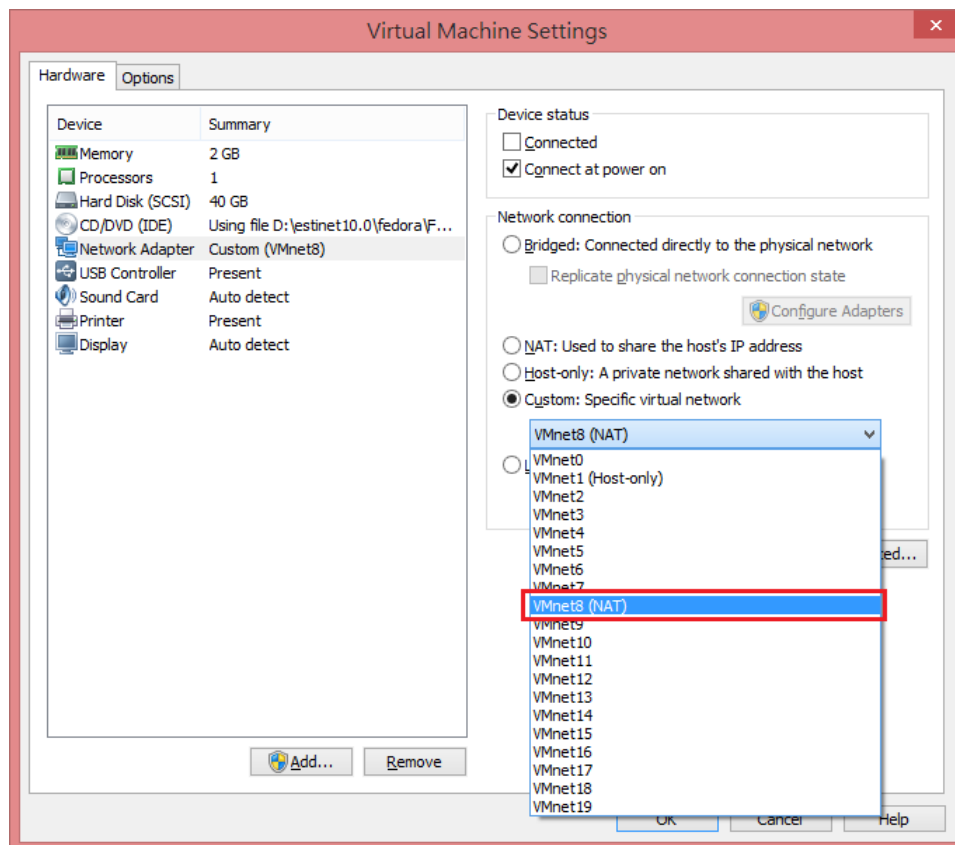


Figure 22 Choose VMnet (NAT) on Custom: Specific virtual network

- j. To open a window “Terminal”, please click “Activities” on the upper left corner then select “Terminal”.

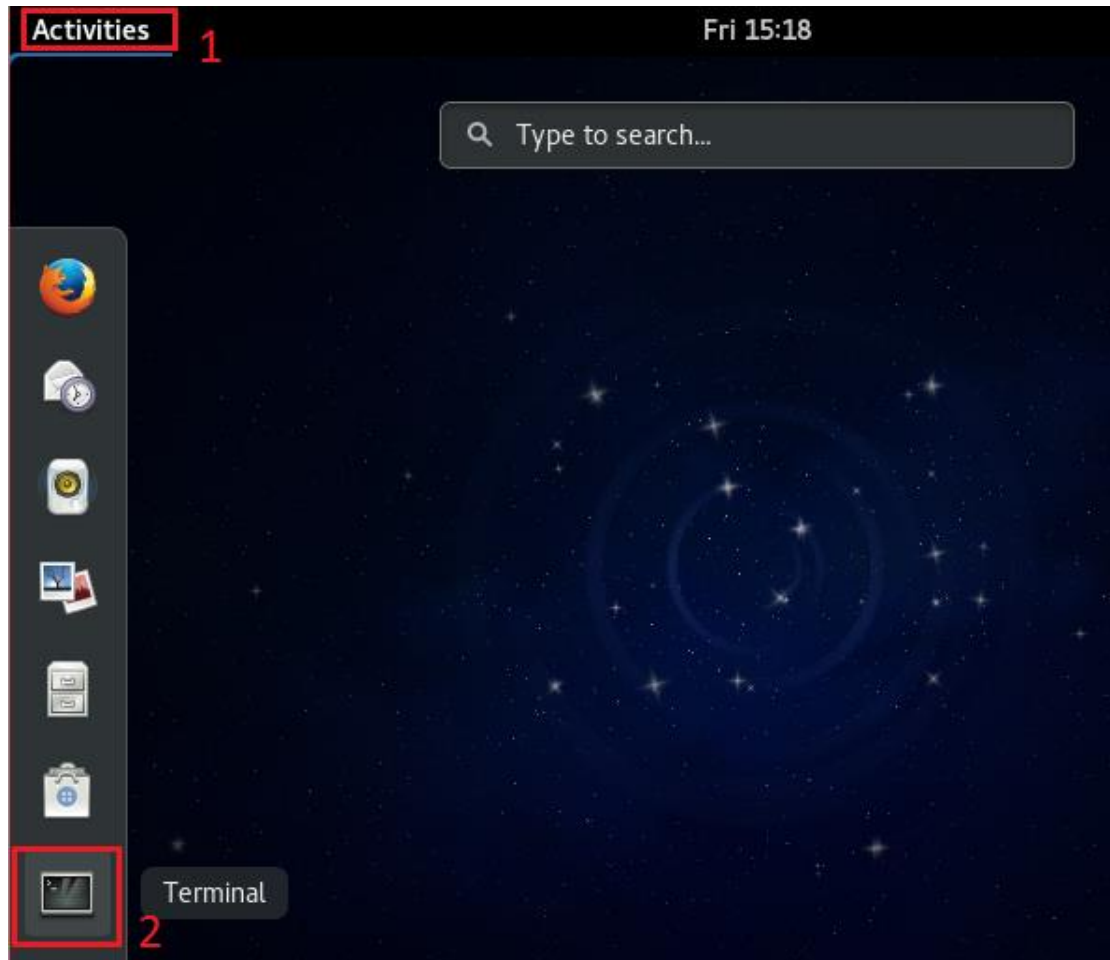


Figure 23 Open window “Terminal”

- k. After open window “terminal”, please input “su –” with Password “estinet” to get root privilege.

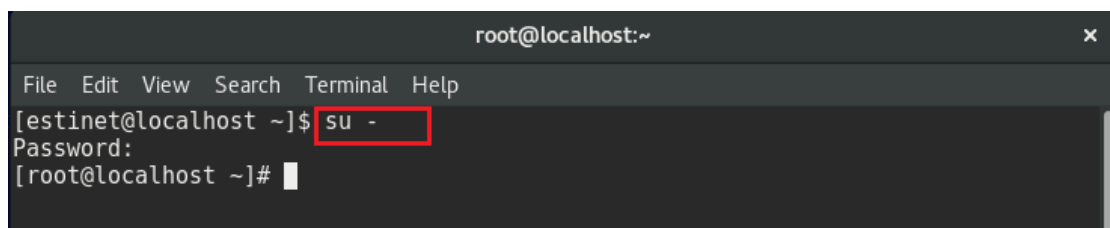


Figure 24 To get root privilege

l. Execute #ifconfig to confirm the network device had got local IP

after all settings.

```

estinet@localhost:/home/estinet
File Edit View Search Terminal Help

[root@localhost estinet]# ifconfig
docker0: flags=4099<UP,BROADCAST,MULTICAST> mtu 1500
    inet 172.17.0.1 netmask 255.255.0.0 broadcast 0.0.0.0
    ether 02:42:37:0f:73:eb txqueuelen 0 (Ethernet)
    RX packets 0 bytes 0 (0.0 B)
    RX errors 0 dropped 0 overruns 0 frame 0
    TX packets 0 bytes 0 (0.0 B)
    TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0

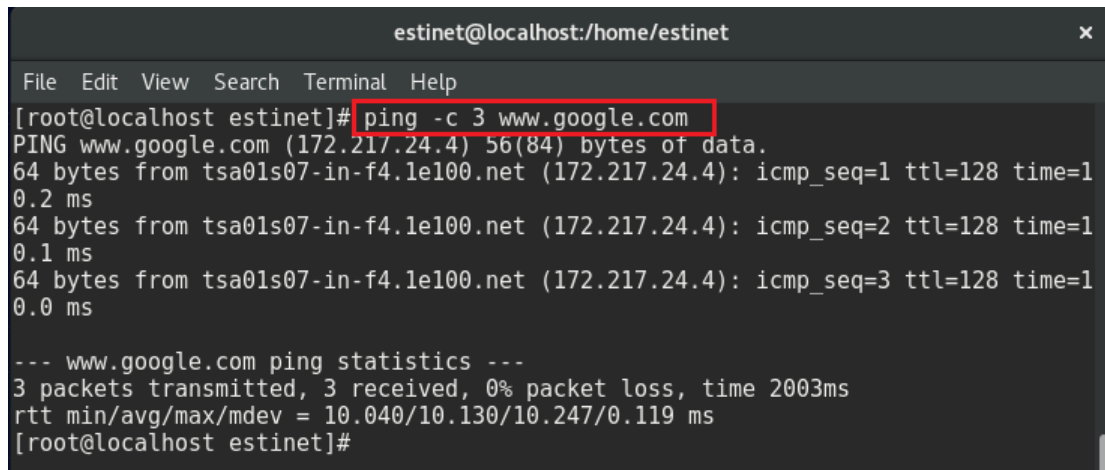
ens33: flags=4163<UP,BROADCAST,RUNNING,MULTICAST> mtu 1500
    inet 192.168.175.133 netmask 255.255.255.0 broadcast 192.168.175.255
    inet6 fe80::f986:92c5:4467:b63 prefixlen 64 scopeid 0x20<link>
    ether 00:0c:29:6a:5e:03 txqueuelen 1000 (Ethernet)
    RX packets 357 bytes 53561 (52.3 KiB)
    RX errors 0 dropped 0 overruns 0 frame 0
    TX packets 179 bytes 18482 (18.0 KiB)
    TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0

lo: flags=73<UP,LOOPBACK,RUNNING> mtu 65536
    inet 127.0.0.1 netmask 255.0.0.0
    inet6 ::1 prefixlen 128 scopeid 0x10<host>
    loop txqueuelen 1 (Local Loopback)
    RX packets 20 bytes 1744 (1.7 KiB)
  
```

Figure 25 Ifconfig_getIP

m.To make sure that the network device can connect to Internet.

For example: #ping www.google.com

A screenshot of a terminal window titled 'estinet@localhost:/home/estinet'. The terminal shows a command prompt '[root@localhost estinet]#' followed by the command 'ping -c 3 www.google.com' which is highlighted with a red box. The output shows three successful ping requests from 'tsa01s07-in-f4.1e100.net (172.217.24.4)' with response times of 0.2 ms, 0.1 ms, and 0.0 ms. Below the pings, it shows '--- www.google.com ping statistics ---' and '3 packets transmitted, 3 received, 0% packet loss, time 2003ms' with rtt values of 10.040/10.130/10.247/0.119 ms. The prompt returns to '[root@localhost estinet]#'.

```
estinet@localhost:/home/estinet
File Edit View Search Terminal Help
[root@localhost estinet]# ping -c 3 www.google.com
PING www.google.com (172.217.24.4) 56(84) bytes of data.
64 bytes from tsa01s07-in-f4.1e100.net (172.217.24.4): icmp_seq=1 ttl=128 time=1
0.2 ms
64 bytes from tsa01s07-in-f4.1e100.net (172.217.24.4): icmp_seq=2 ttl=128 time=1
0.1 ms
64 bytes from tsa01s07-in-f4.1e100.net (172.217.24.4): icmp_seq=3 ttl=128 time=1
0.0 ms

--- www.google.com ping statistics ---
3 packets transmitted, 3 received, 0% packet loss, time 2003ms
rtt min/avg/max/mdev = 10.040/10.130/10.247/0.119 ms
[root@localhost estinet]#
```

Figure 26 Ping www.google.com

n. To make sure the network device can connect to EstiNet License

Server correctly.

EstiNet license server using domain name : lic1.estinet.com 、 IP : 59.124.181.130 and Port : 22220 to provide license service. If your internet has the firewall to block the specific IP and port connection, Please provide this information (domain name, IP and Port number) to the “Computer and Information Networking Center” or MIS (Management Information System) in your site.

Test 1: Get root privilege and execute # **telnet lic1.estinet.com 22220**. If the Network connection is successful, you could see this message.

```
estinet@localhost:/home/estinet
File Edit View Search Terminal Help
[root@localhost estinet]# telnet lic1.estinet.com 22220
Trying 59.124.181.130...
Connected to lic1.estinet.com.
Escape character is '^]'.
Connection closed by foreign host.
[root@localhost estinet]#
```

Figure 27 To execute # telnet lic1.estinet.com 22222

Test2: Get root privilege and execute # **nslookup lic1.estinet.com**. If your DNS server could parsing the EstiNet license server IP address successfully, you should get the result as: **license server IP address is 59.124.181.130** and **domain name is lic1.estinet.com**.

```
estinet@localhost:/home/estinet
File Edit View Search Terminal Help
[root@localhost estinet]# nslookup lic1.estinet.com
Server:      192.168.175.2
Address:     192.168.175.2#53

Non-authoritative answer:
Name:   lic1.estinet.com
Address: 59.124.181.130

[root@localhost estinet]#
```

Figure 28 To execute # nslookup lic1.estinet.com

If you can connect Internet successfully, but you can't find any message that I mentioned above, please **apply to free them with TCP connection** for using EstiNet (domain name: lic1.estinet.com 、 IP: 59.124.181.130, Port: 22220).

2.3 First time to start up the EstiNet Simulator

After login to Fedora24, please open a terminal.

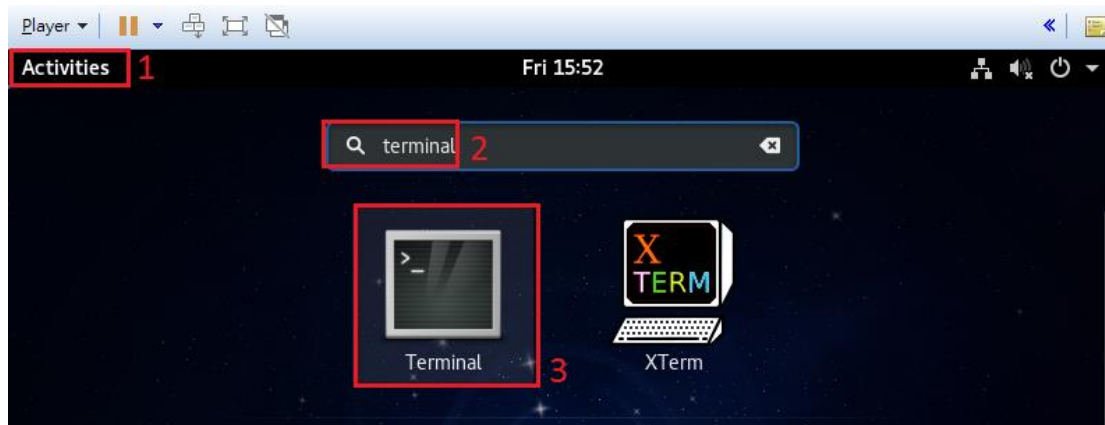


Figure 29 Open terminal

You have to use the command “**su -**” to switch user with password “**estinet**” to get the root privilege.

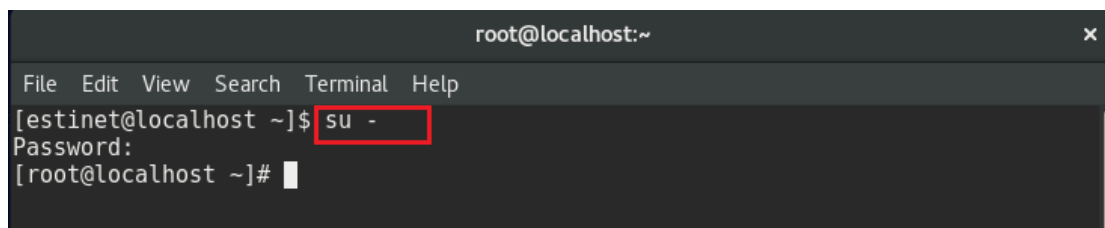


Figure 30 Get root privilege

If this is your first time to run EstiNet, you have to execute the



command named “estinet_inputkey” to enter the license key which

send to your e-mail by EstiNet. Next, you have to execute the

command named “estinet_reserve” to obtain the permission from

the license server to run EstiNet. The commands

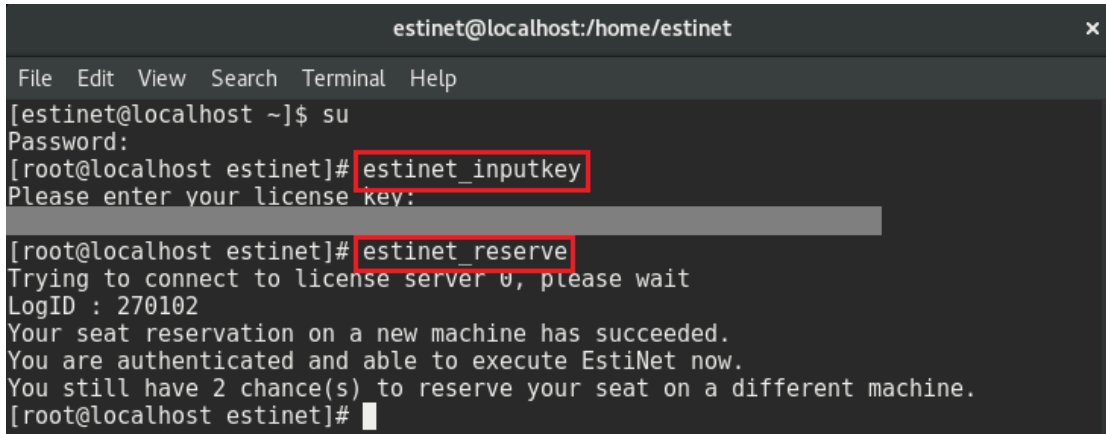
“estinet_inputkey” and “estinet_reserve” only need to be executed

one time. Next time when users run EstiNet simulator, they don’t

need to execute these two commands. Users should start up the

EstiNet simulator as 2.4 General steps to star up the EstiNet

Simulator.



```
estinet@localhost:/home/estinet
File Edit View Search Terminal Help
[estinet@localhost ~]$ su
Password:
[root@localhost estinet]# estinet_inputkey
Please enter your license key:
[redacted]
[root@localhost estinet]# estinet_reserve
Trying to connect to license server 0, please wait
LogID : 270102
Your seat reservation on a new machine has succeeded.
You are authenticated and able to execute EstiNet now.
You still have 2 chance(s) to reserve your seat on a different machine.
[root@localhost estinet]#
```

Figure 31 Obtain the permission from the license server to run EstiNet

2.4 General steps to star up the EstiNet Simulator

After license identification, users could open the EstiNet

simulator to do the simulation. There are two ways to open the

EstiNet simulator. The first way is to click the “Activities” then

search “EstiNet” or click the “Esti” icon directly .Please input

the root Password “estinet” to open the simulator.

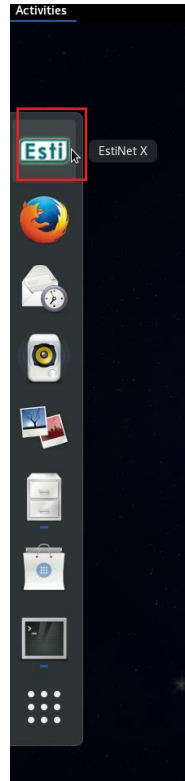


Figure 32 Click “Esti” icon

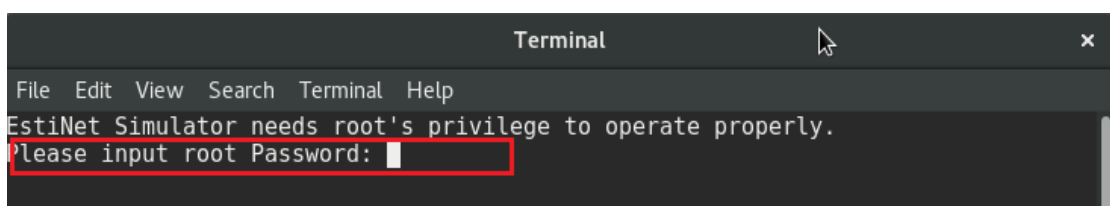


Figure 33 Input root Password

The second way is to open a terminal. To execute the command “su

-” to switch user with password “estinet” to get the root privilege.

Then execute the command “estinetjd”.

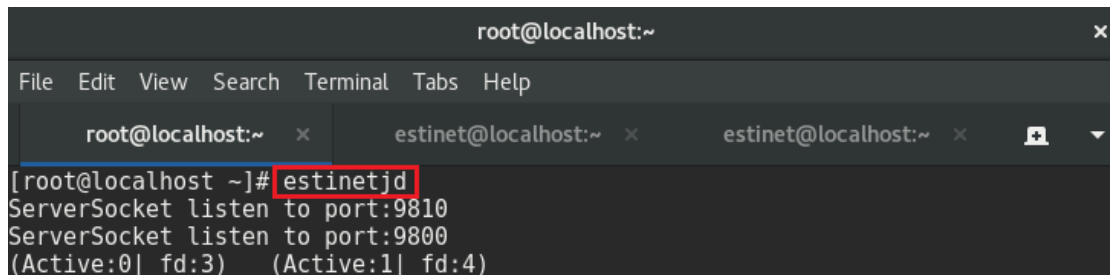
A screenshot of a terminal window titled 'root@localhost:~'. The window has a menu bar with 'File', 'Edit', 'View', 'Search', 'Terminal', 'Tabs', and 'Help'. Below the menu bar, there are three tabs: 'root@localhost:~', 'estinet@localhost:~', and 'estinet@localhost:~'. The first tab is active. The terminal content shows the command '[root@localhost ~]# estinetjd' being entered, with 'estinetjd' highlighted by a red box. The output of the command is: 'ServerSocket listen to port:9810', 'ServerSocket listen to port:9800', and '(Active:0| fd:3) (Active:1| fd:4)'.

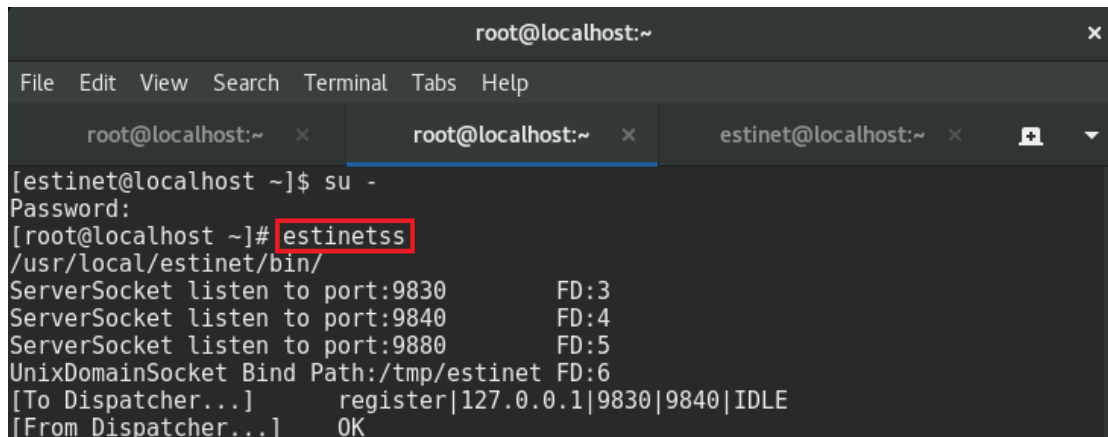
Figure 34 To execute the command estinetjd

Open the second terminal (Users could use “Ctrl” + “Shift” + “T”

to open another terminal). To execute the command “su -” with

password “estinet” to get the root privilege. Then to execute the

command “estinetss”.



```
root@localhost:~  
File Edit View Search Terminal Tabs Help  
root@localhost:~ x root@localhost:~ x estinet@localhost:~ x  
[estinet@localhost ~]$ su -  
Password:  
[root@localhost ~]# estinetss  
/usr/local/estinet/bin/  
ServerSocket listen to port:9830 FD:3  
ServerSocket listen to port:9840 FD:4  
ServerSocket listen to port:9880 FD:5  
UnixDomainSocket Bind Path:/tmp/estinet FD:6  
[To Dispatcher...] register|127.0.0.1|9830|9840|IDLE  
[From Dispatcher...] OK
```

Figure 35 To execute the command estinetss

Open the third terminal, to execute the command “su -” with password “estinet” to get the root privilege. Then execute the command “estinetgui”. The EstiNet simulator will be opened automatically.

```

root@localhost:~
File Edit View Search Terminal Tabs Help
root@localhost:~ x root@localhost:~ x root@localhost:~ x
[estinet@localhost ~]$ su -
Password:
[root@localhost ~]# estinetgui
create udp server
UDP Server - socket() is OK!
mkdir /root/.estinet
mkdir /root/.estinet/etc
mkdir /root/.estinet/tmp
QStandardPaths: XDG_RUNTIME_DIR not set, defaulting to '/tmp/runtime-root'
Trying to connect to license server 0, please wait
LogID : 269720
Get capability command
no:0, name:basic, value:,, isKeyValue:0
no:15, name:source code, value:,, isKeyValue:0
no:1003, name:Enabled to Run Modified Simulation Engine, value:, isKeyValue:0
no:1011, name:LAN & WAN Ethernet, value:, isKeyValue:0
no:1012, name:LAN & WAN Service, value:, isKeyValue:0
no:1021, name:WLAN_80211agn, value:, isKeyValue:0
no:1031, name:SDN_OpenFlow, value:, isKeyValue:0
no:1032, name:SDN_Wi-Fi_Infrastructure, value:, isKeyValue:0
no:1033, name:SDN_Wi-Fi_Ad Hoc, value:, isKeyValue:0
no:1041, name:ITS_Road_Infrasturcture, value:, isKeyValue:0
no:1042, name:ITS_Vehicular_Network, value:, isKeyValue:0
no:1051, name:4G_LTE, value:, isKeyValue:0

```

Figure 36 To execute the command estinetgui

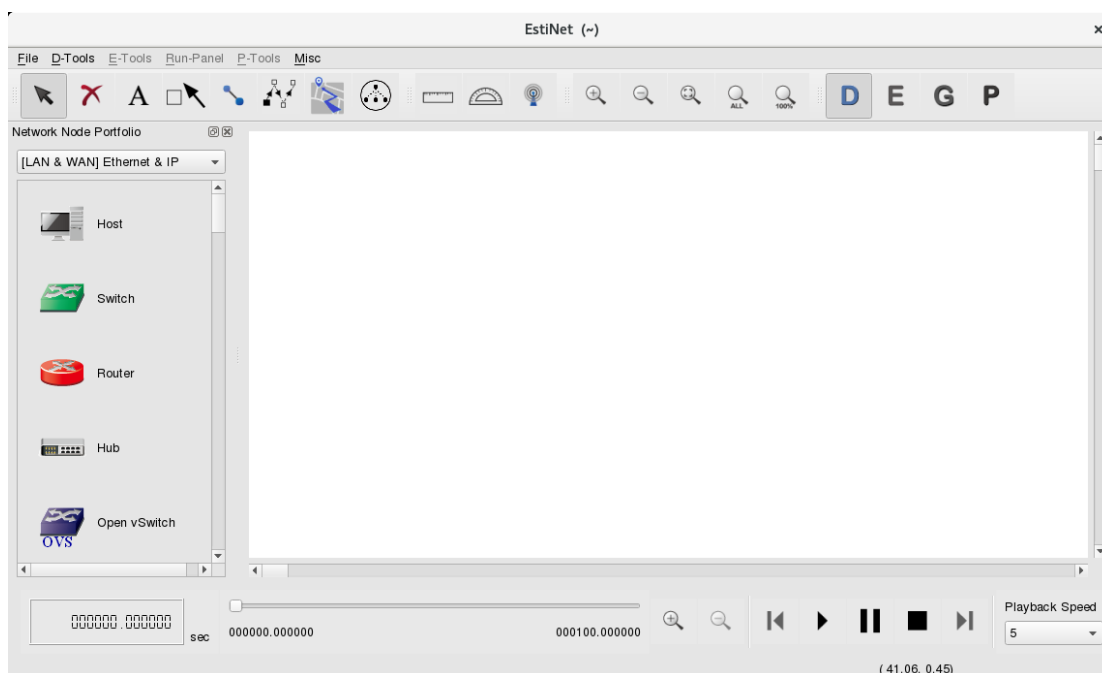


Figure 37 Complete the start of EstiNet Simulator

Appendix

Login information in VM Image

User name: [estinet](#)

Password: [estinet](#)

Root password: [estinet](#)

The EstiNet operation demo video:

(1) Open an EstiNet Simulator

<https://youtu.be/YfwaxbM42zM>

(2) An introduction of Nodes on D state in EstiNet Simulator

<https://youtu.be/6j3AABmzCKo>

(3) How to create a simple SDN (Software Defined Network) topology in EstiNet Simulator

<https://youtu.be/c6QUe2OYW9E>

(4) How to use switch and router in EstiNet Simulator

<https://youtu.be/71fG-DZz9TA>

(5) How to use NAT, DNS and DHCP in EstiNet Simulator

<https://youtu.be/o2Bx9jNP7WI>

(6) How to simulate an ARP spoofing for security issue in EstiNet Simulator

https://youtu.be/qhCA_aizhrA

File directory in VM Image

Installation package path:

[/home/estinet/Downloads/estinet-10.0.6.xxx.xxxxxx- 1.fc24.x86_64.release](#)

Source Code path: [/home/estinet/Downloads/estinetse_all](#)

If user need to update a new version of EstiNet simulator:

(1) Please download the EstiNet X installation package and decompress this package.

```
#tar xvf estinet-10.0.6.xxx.xxxxxx-1.fc24.x86_64.release.tar.bz2
```

(2) Then go into the directory of estinet-10.0.6.xxx.xxxxxx--1.fc24.x86_64.release

```
#cd estinet-10.0.6.xxx.xxxxxx--1.fc24.x86_64.release
```

To execute install.sh

```
#./install.sh
```

(3) After the installation is completed, please reboot the operation system. After restart the operation system and reopen the EstiNet simulator, user could check the installation version from Toolbar, Misc=> Copyright.

