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

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Revision History

Rev.	Date	Revision Description
1.0	November 30, 2018	Initial version
1.1	April 11, 2019	1. Using application 7-zip to extract compressed VMImage file 2. Add an introduction for EstiNet X operation
1.2	April 18, 2019	3. Add how to use P4 switch in EstiNet simulator

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1. 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/15_0|PLAYER-1503|product_downloads

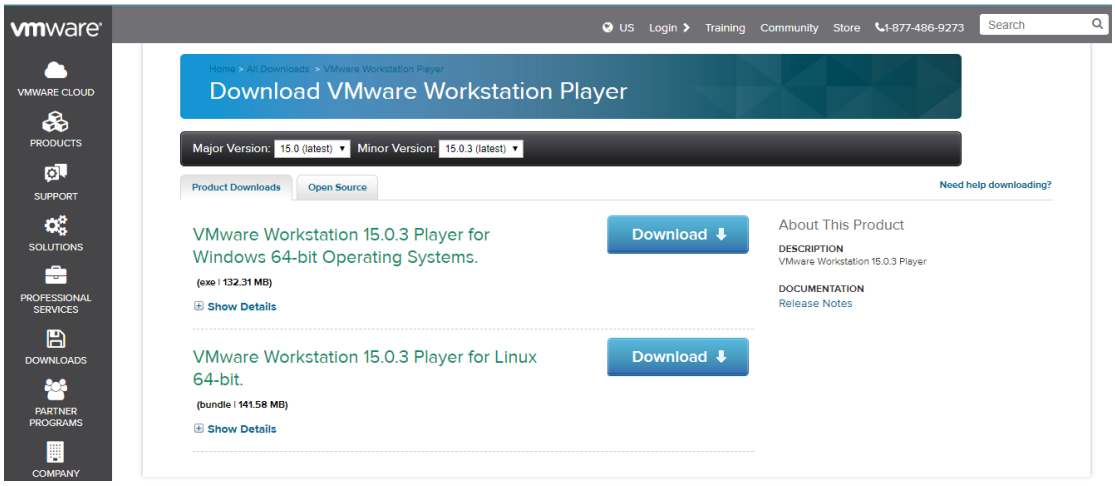

Figure 1 Download VMware Workstation Player

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 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_OWnWZ24LrjoiULmTSclv5cRvTu?usp=sharing).
The Google Drive Sliced of VM image is

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(https://drive.google.com/drive/folders/1ZcD2lQKrPMi8XKKffKBYAmNcD39bwjzg?usp=sharing).

The second 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!IjpFAKpQ).
Please reference Page 6 for the description of Monolithic and 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.

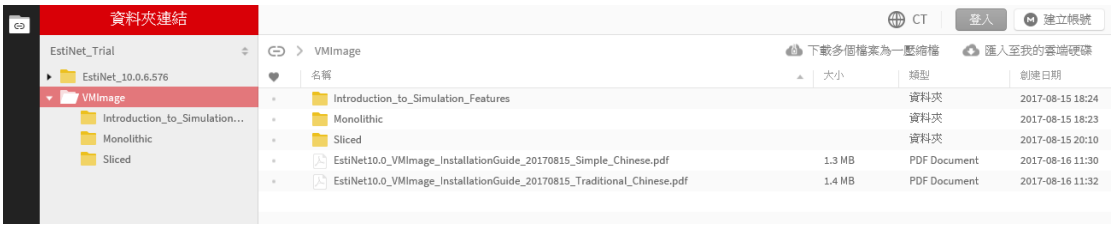

Figure 2 MEGA

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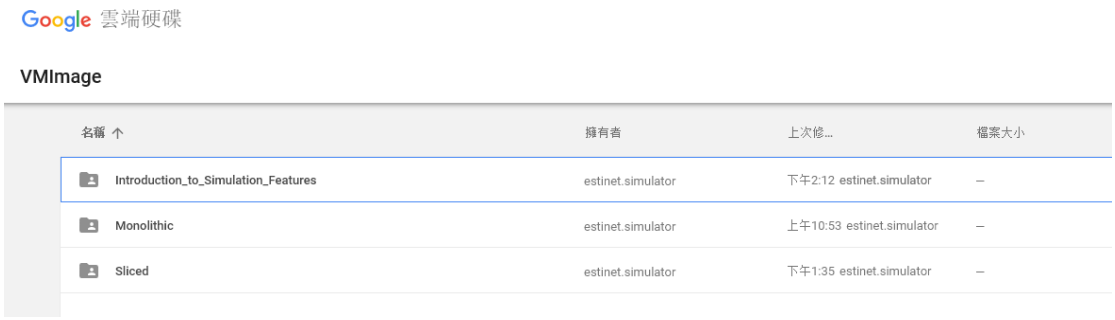

Figure 3 Google Drive

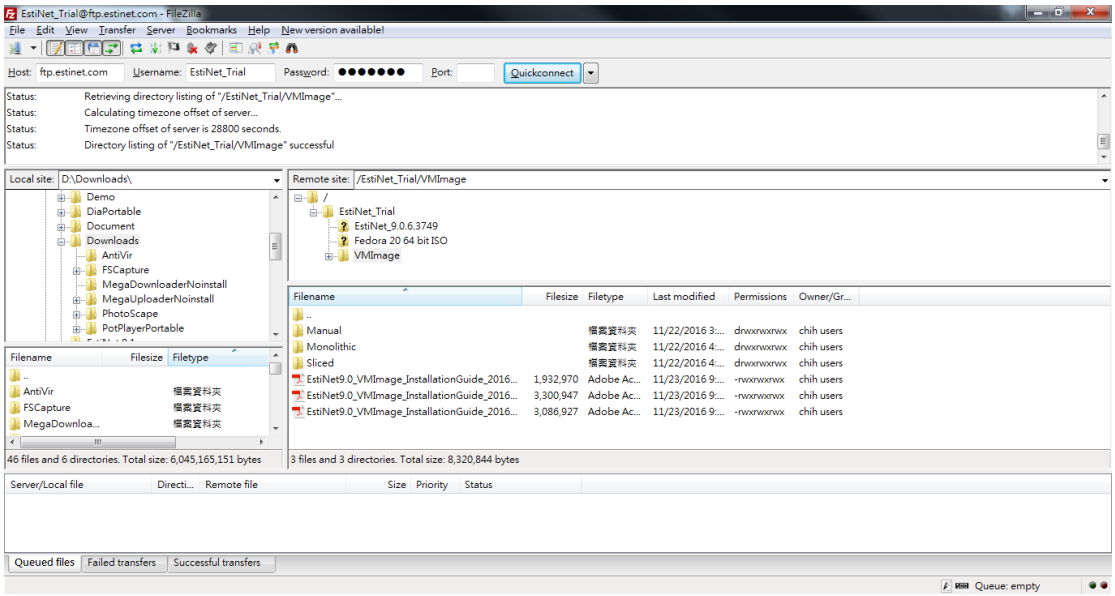

Figure 4 FileZilla

c. Please download and install a free application 7-Zip (https://www.7-zip.org/download.html) to extract compressed file either monolithic or sliced files. For monolithic file **EstiNet_X.7z**, just double click this file to open the 7-Zip software. Then click button **Extract** to extract this decompression file.

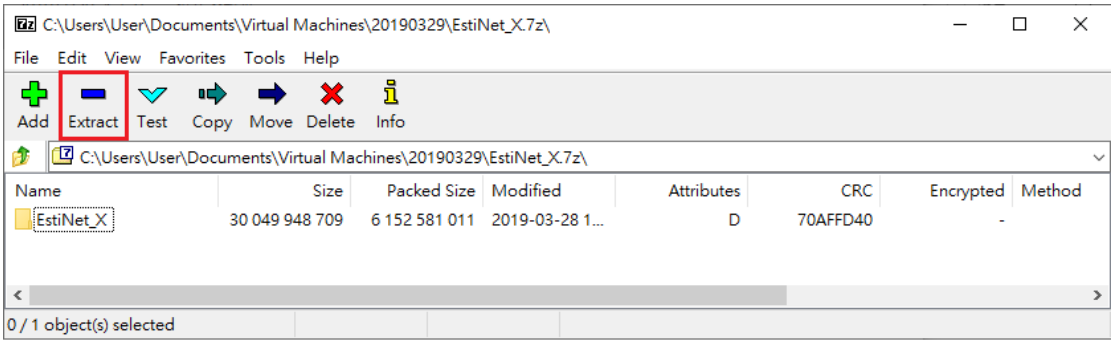

Figure 5 How to Extract the monolithic file by 7-zip

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For sliced files, double click Sliced file folder then click the first sliced file **EstiNet_X.7z.001**, just double click this file to open the 7-Zip software. Then click button **Extract** to extract this decompression file.

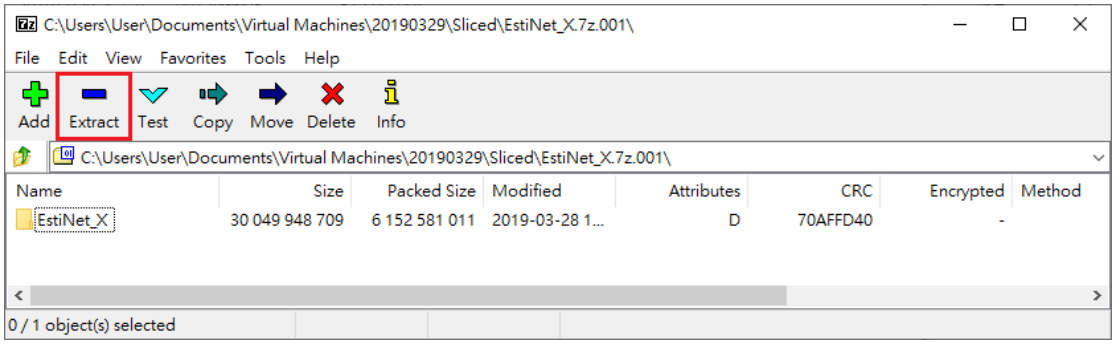

Figure 6 How to Extract the Sliced file by 7-zip

When extract the monolithic/sliced file be completed, users will get a file folder [**EstiNet_X**] in the same directory.

d. After install **VMWare Workstation Player** and decompress EstiNet VM Image, please open the "**VMWare Workstation Player**" such as . Then

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double click "**Open a Virtual Machine**".

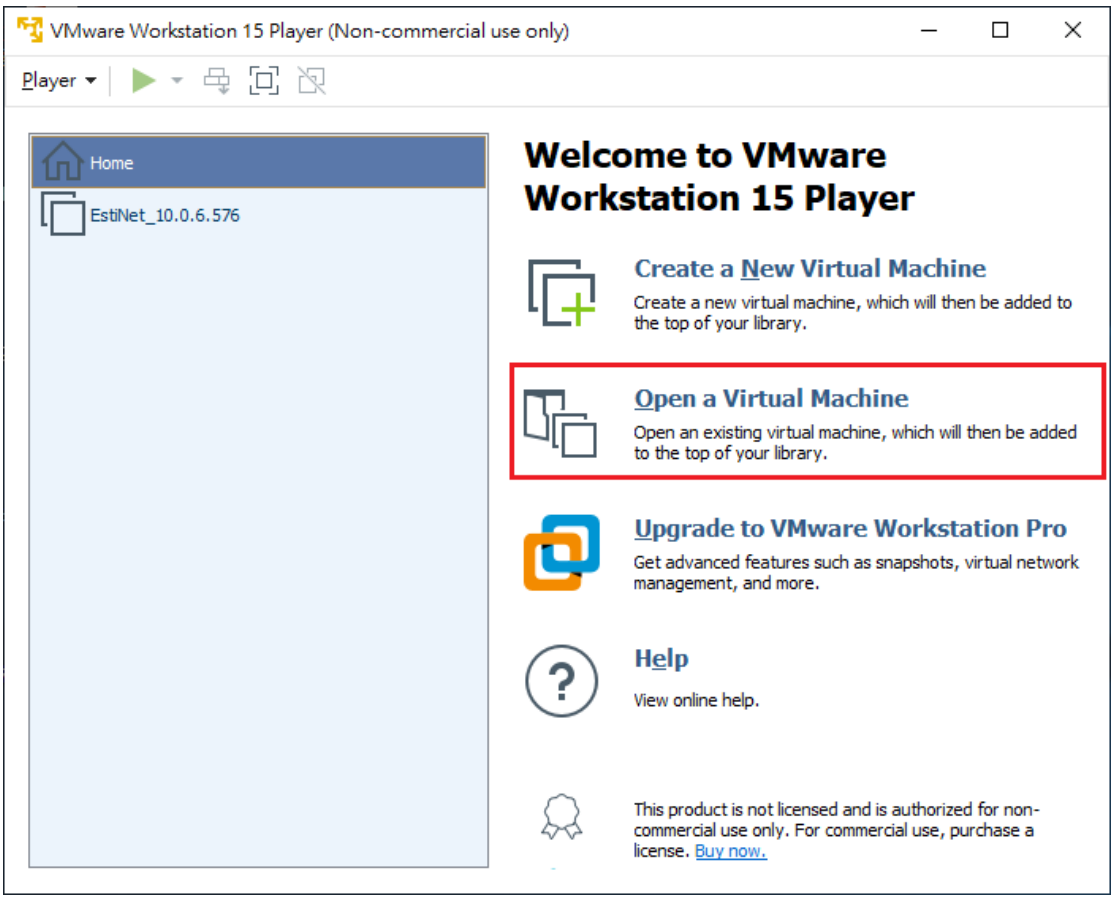

Figure 7 Click Open a Virtual Machine

e. Please select the path of VM image file **EstiNet_X.vmx**, then click button

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"**Open**".

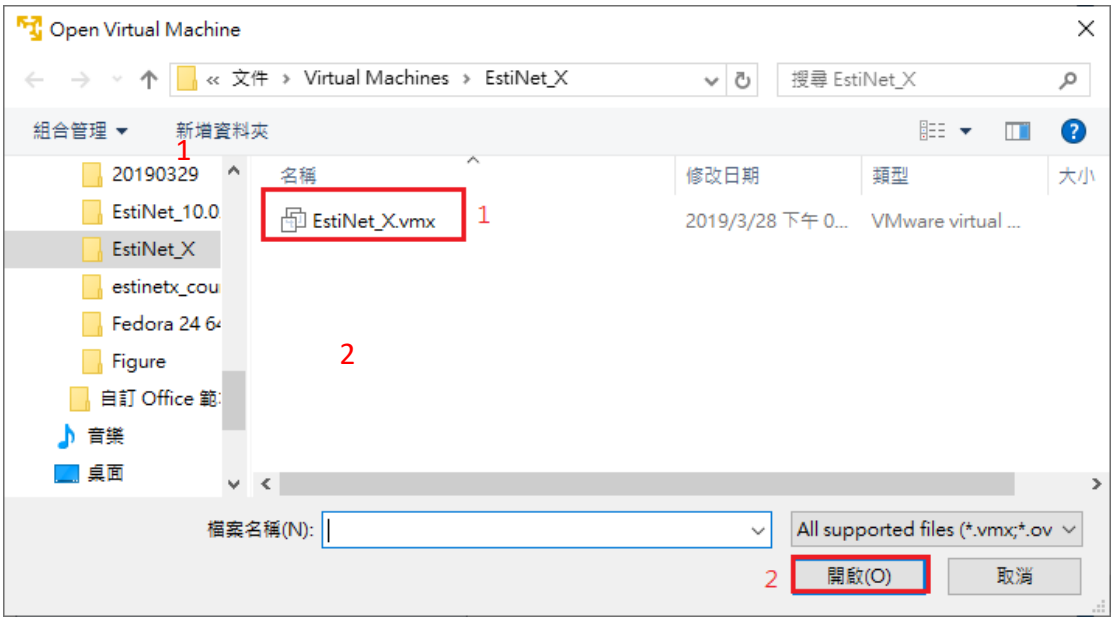

Figure 8 Open VM file EstiNet_X.vmx

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f. Please click "**Play virtual machine**" to power on EstiNet X VMImage.

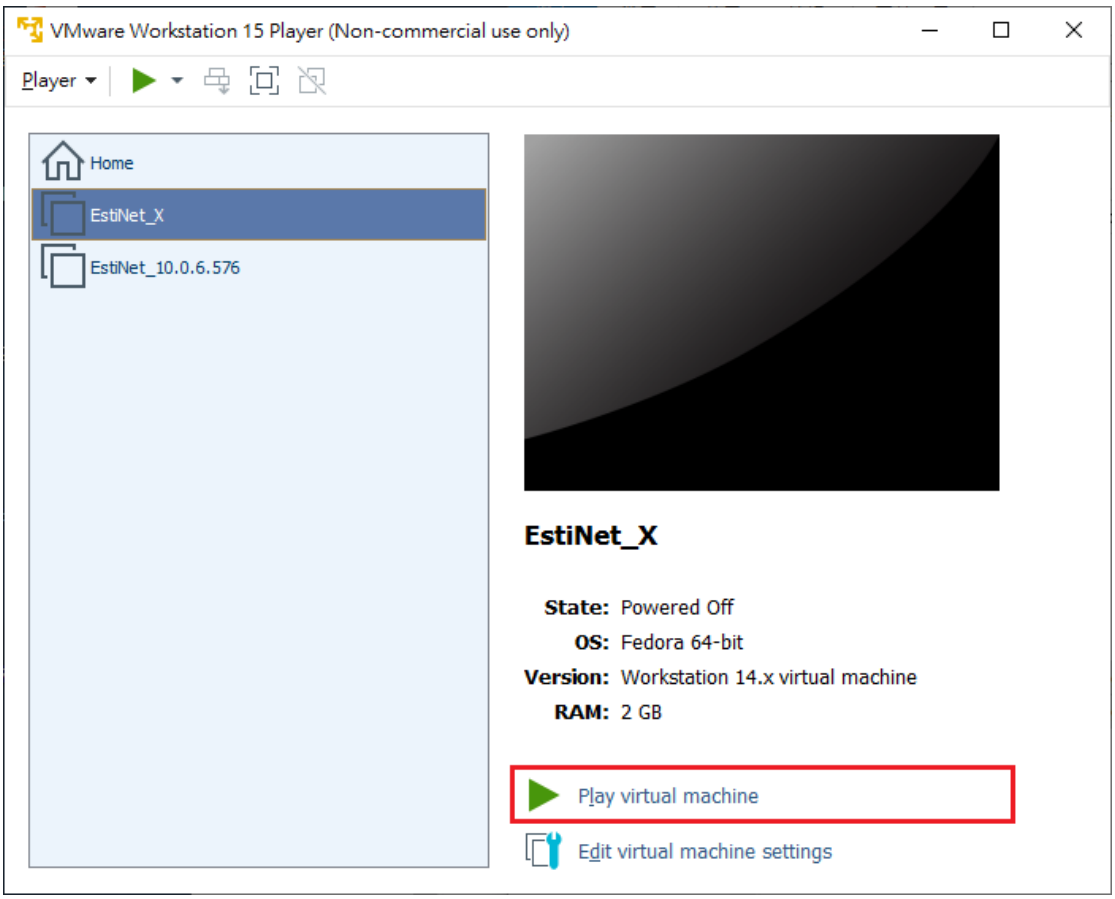

Figure 9 Play EstiNet_X virtual machine

g. When loading EstiNet VM Image, it will pop-up a dialogue box. Please select **I Copied It** (as Figure 10 Dialogue box).

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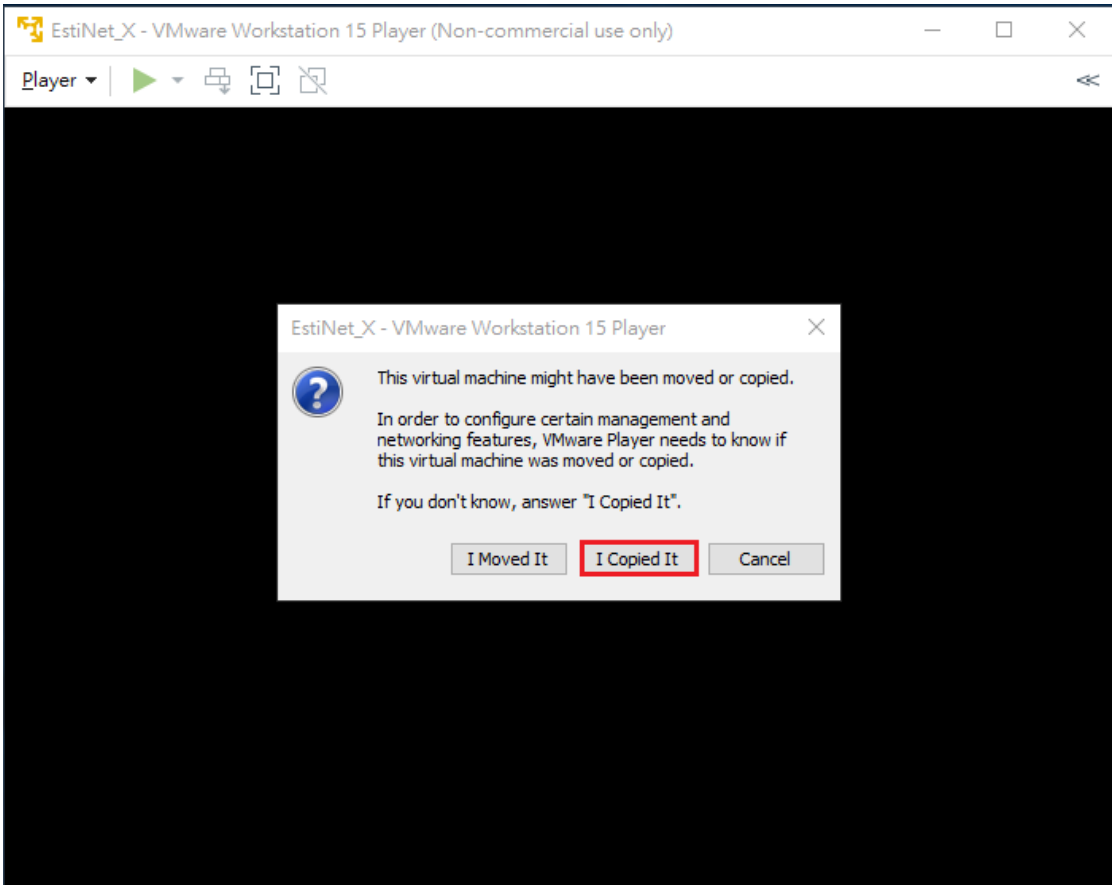

Figure 10 Dialogue box

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2. To start up the EstiNet Simulator

2.1 The Boot menu

a. Choose the EstiNet kernel such as “Fedora (4.6.6. estinet20181030.fc24) 24 (Workstation Edition)” on the selection screen.

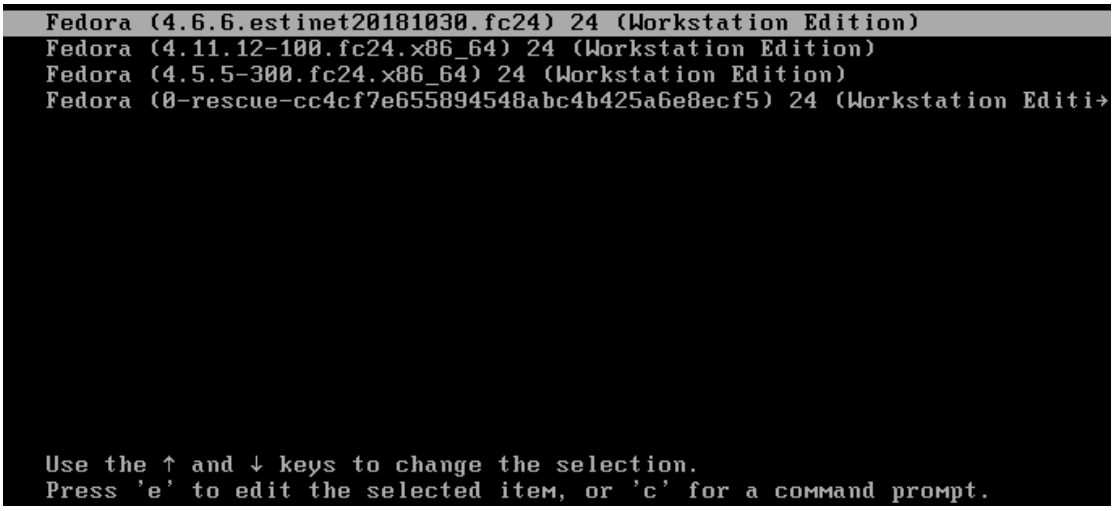

Figure 11 Choose the EstiNet kernel on the operation selection screen

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

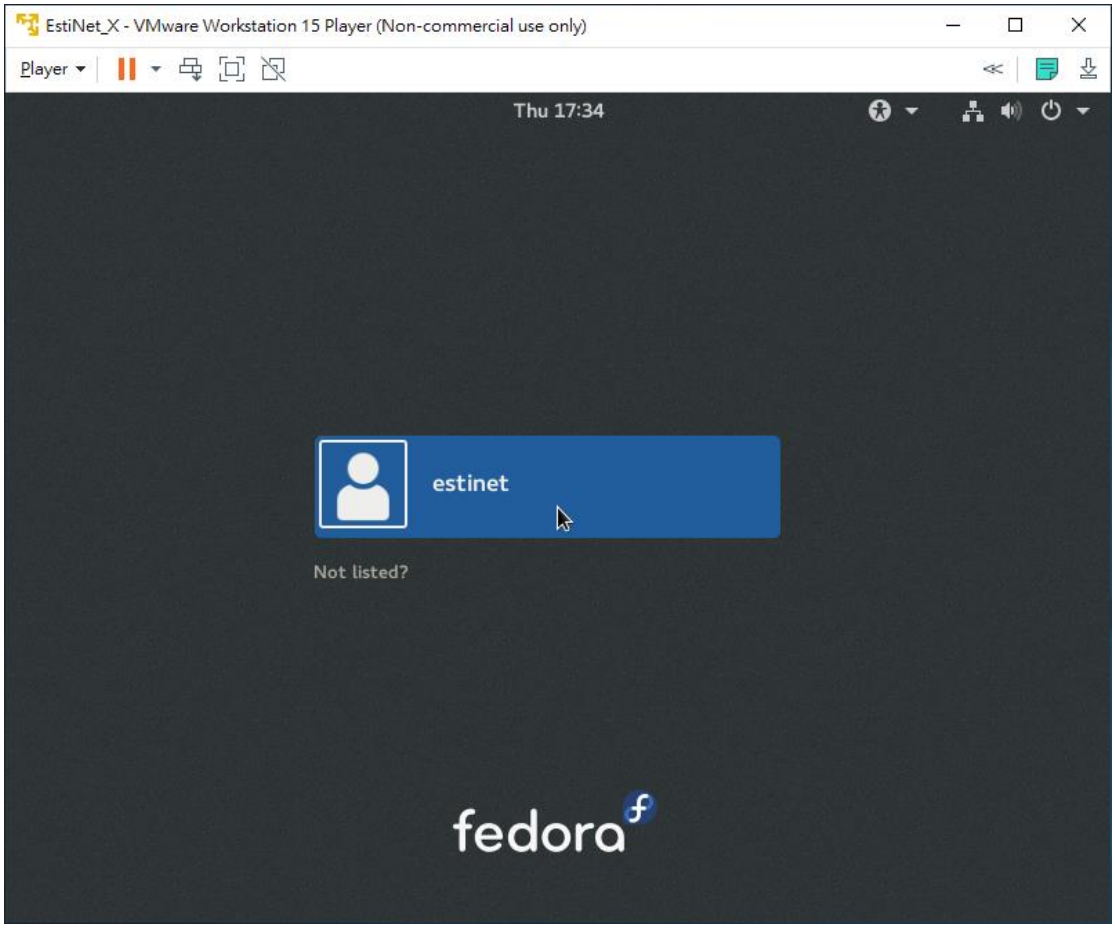

Figure 12 Login with user name “estinet”

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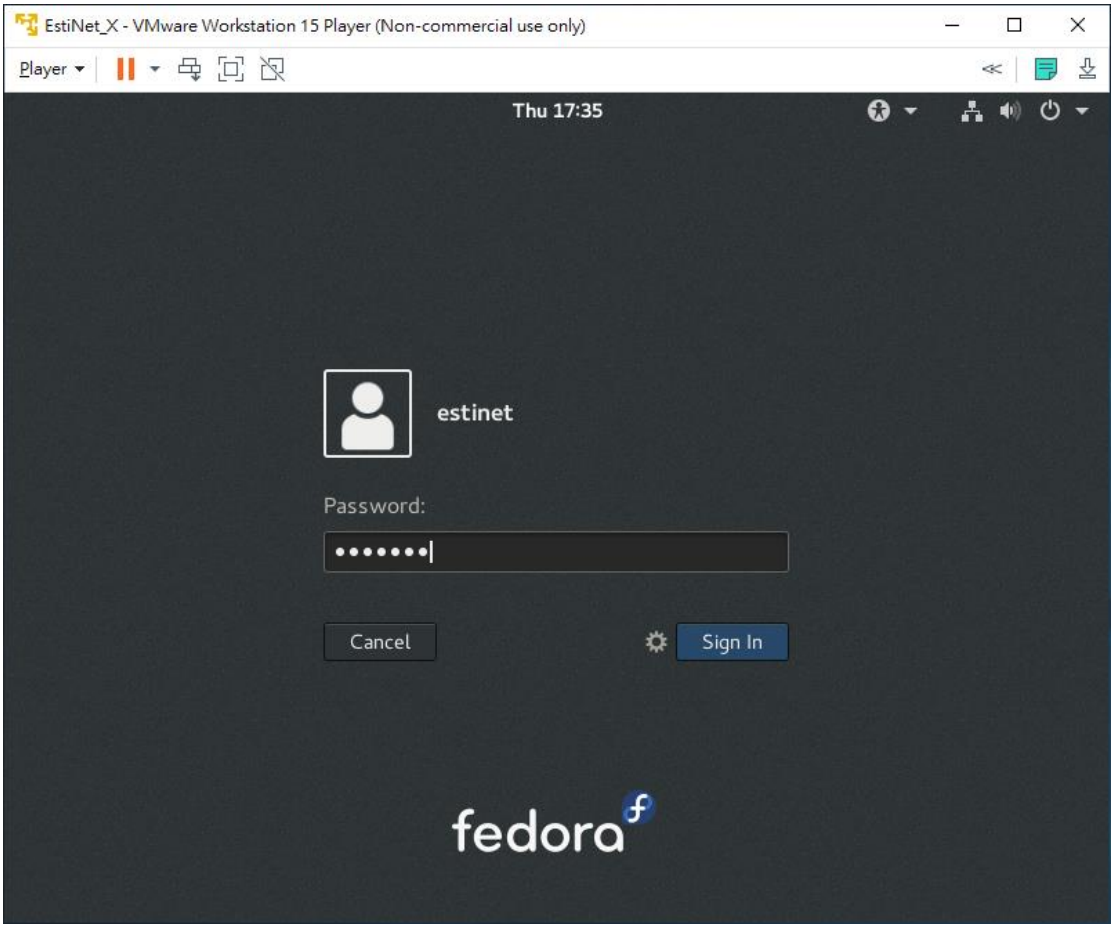

Figure 13 Login with password “estinet”

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 14 Network status is working properly

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

Figure 15 Network connection failed

c. Please click “Power button” then select “Settings”.

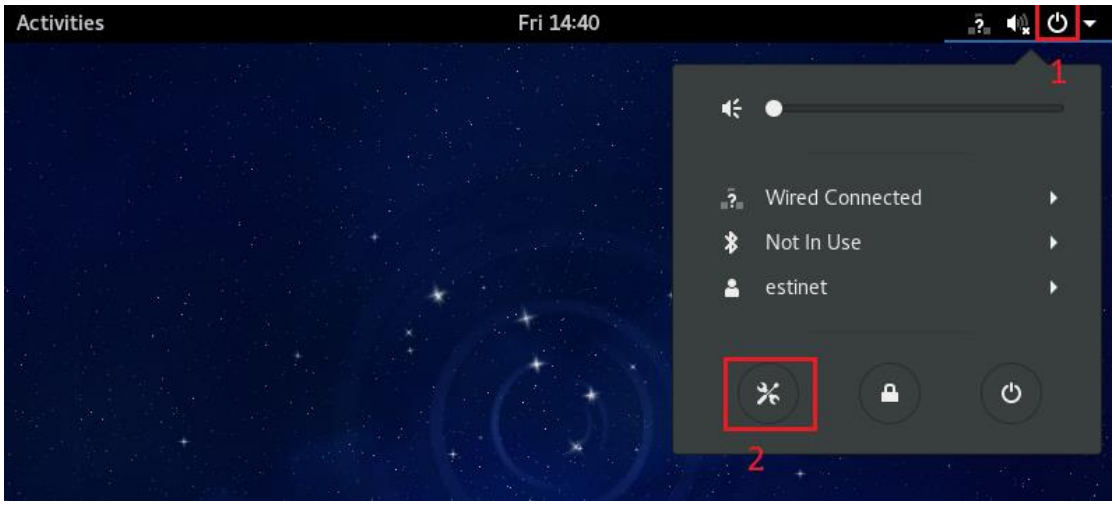

Figure 16 Click “Settings”

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d. Click button Network

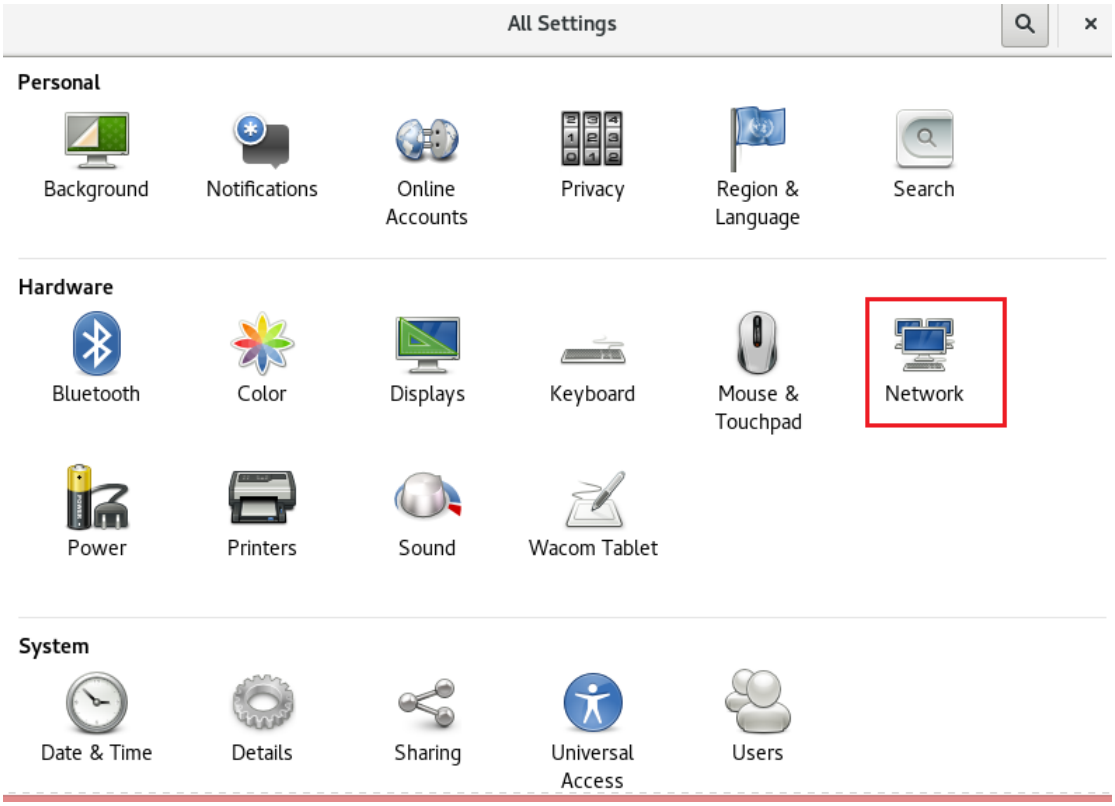

Figure 17 Click button Network

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

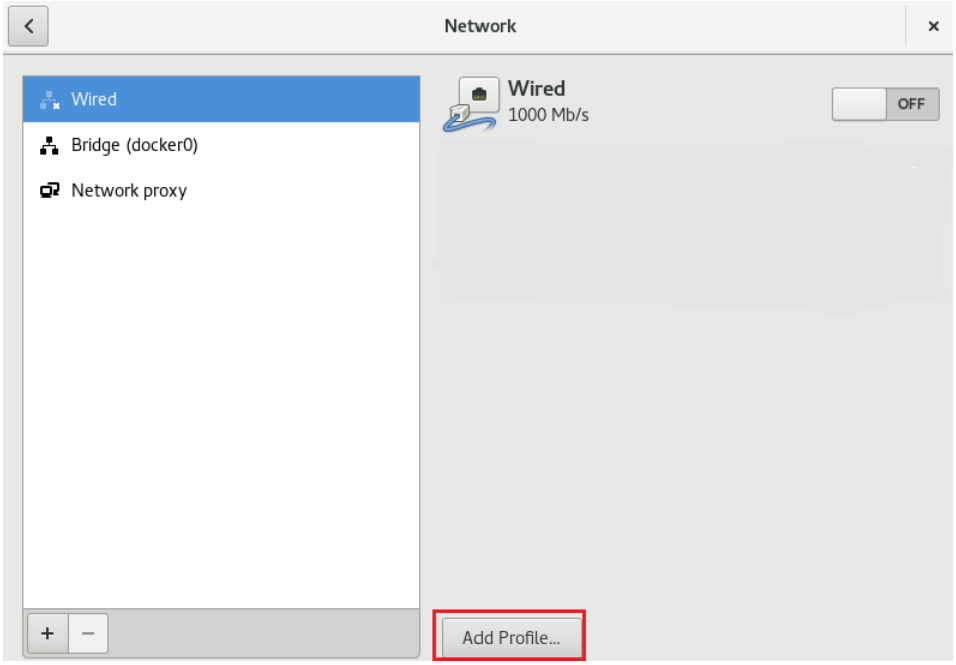

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Figure 18 Click “Add Profile”

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

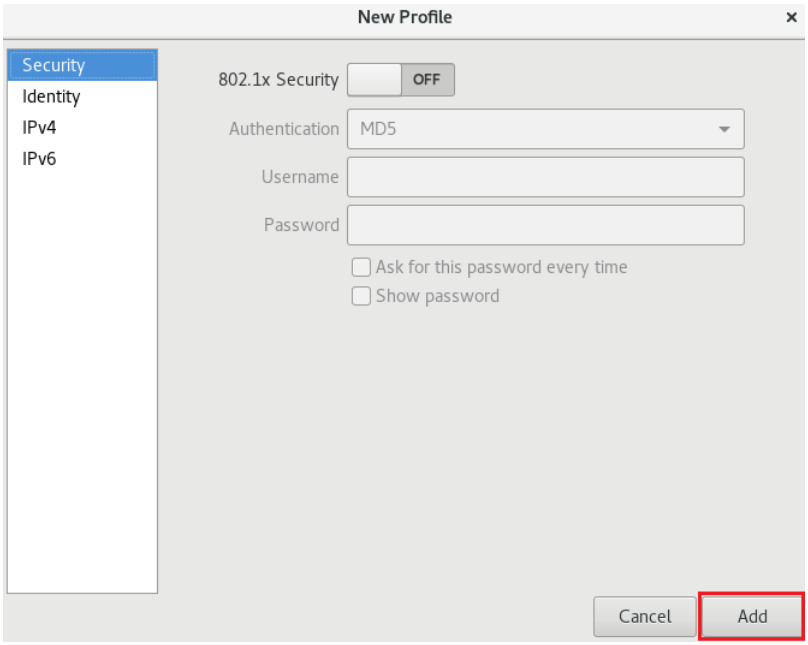

Figure 19 Click “Add”

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

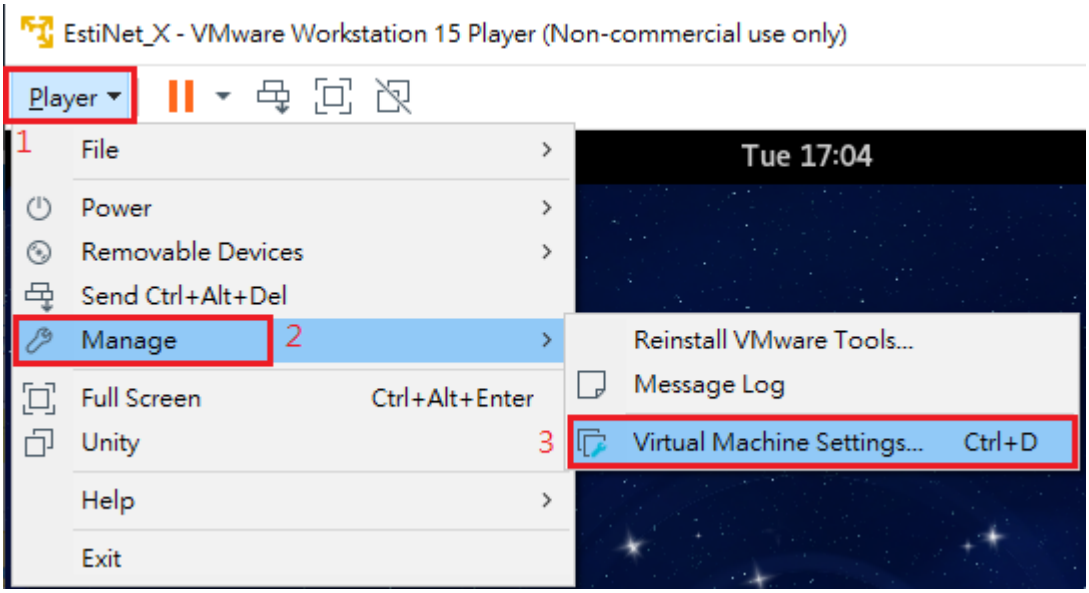

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Figure 20 Click Player→Manage→Virtual Machine Settings

h. Click "**Network Adapter**" on window Virtual Machine Settings. There are two ways for this setting. The one is click "**NAT: Used to share the host's IP address**".

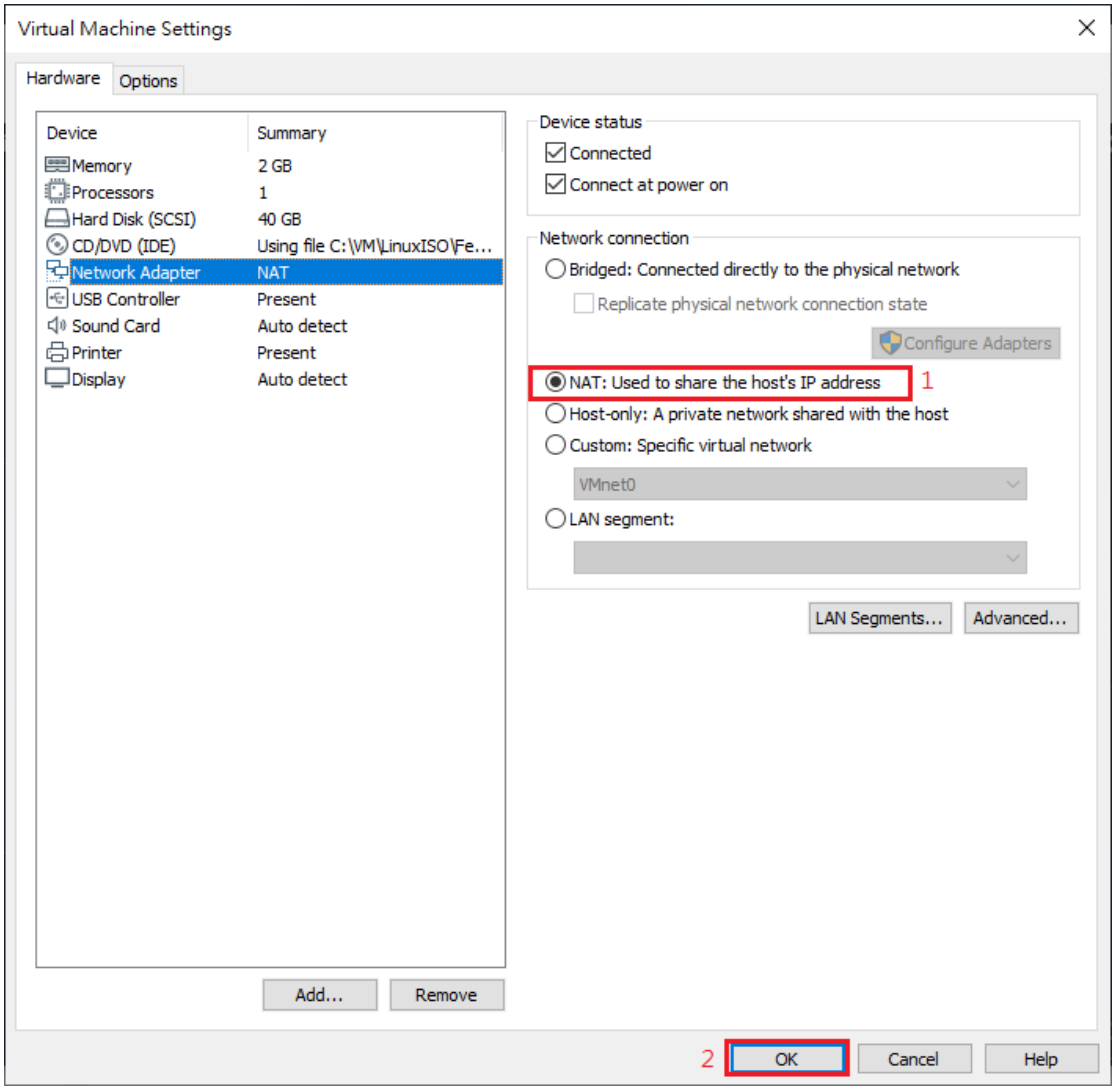

Figure 21 Network Adapter "NAT"

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i. The other one is select "**VMnet (NAT)**" to replace "**WMnet (Host-only)**" on "**Custom: Specific virtual network**".

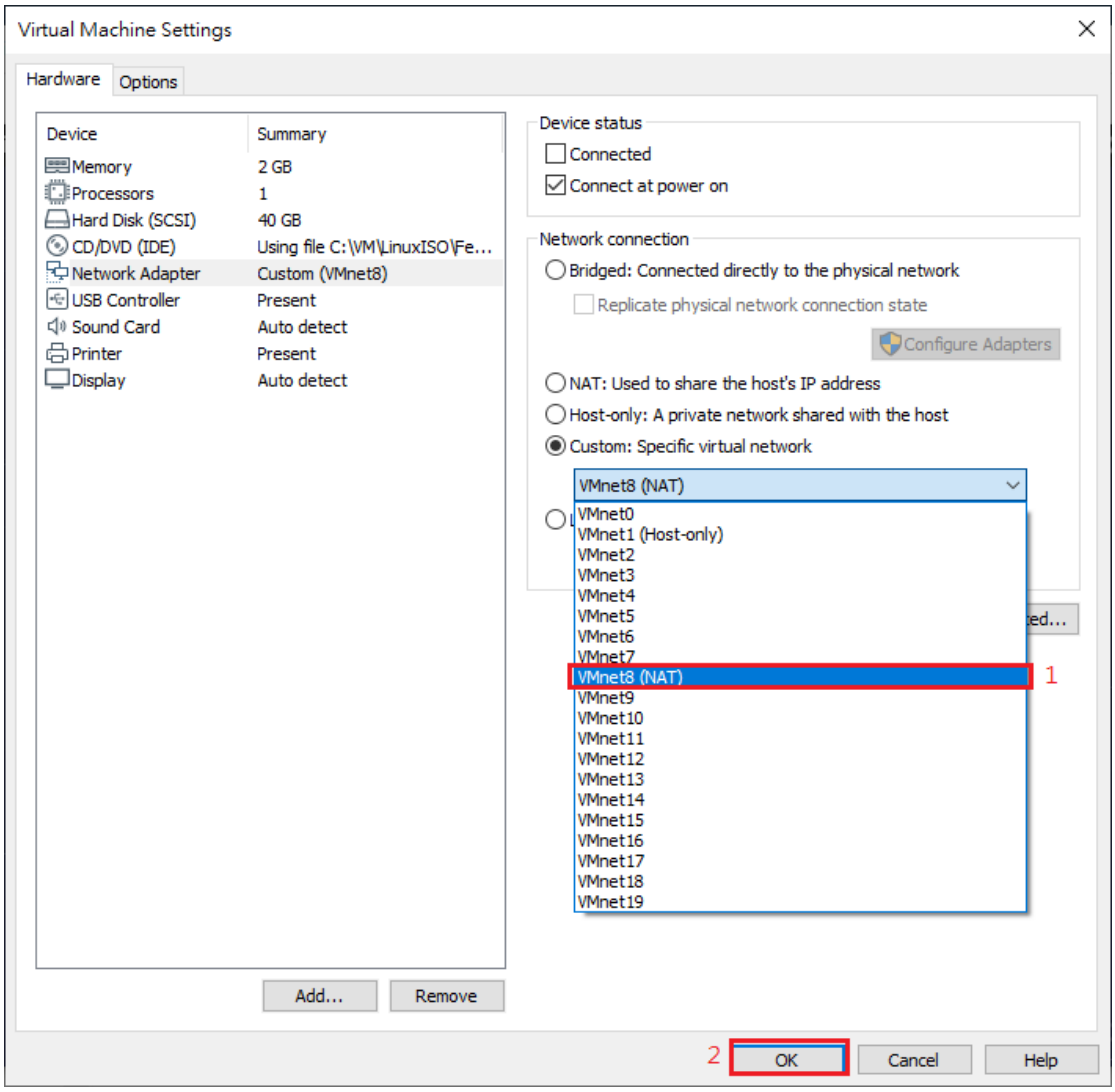

Figure 22 Choose NAT: Used to share the host's IP address

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j. To open a window “Terminal”, please click “**Activities**” on the upper left corner then select “**Terminal**”. After open window “terminal”, please input “**su –**“ with Password “**estinet**” to get root privilege.

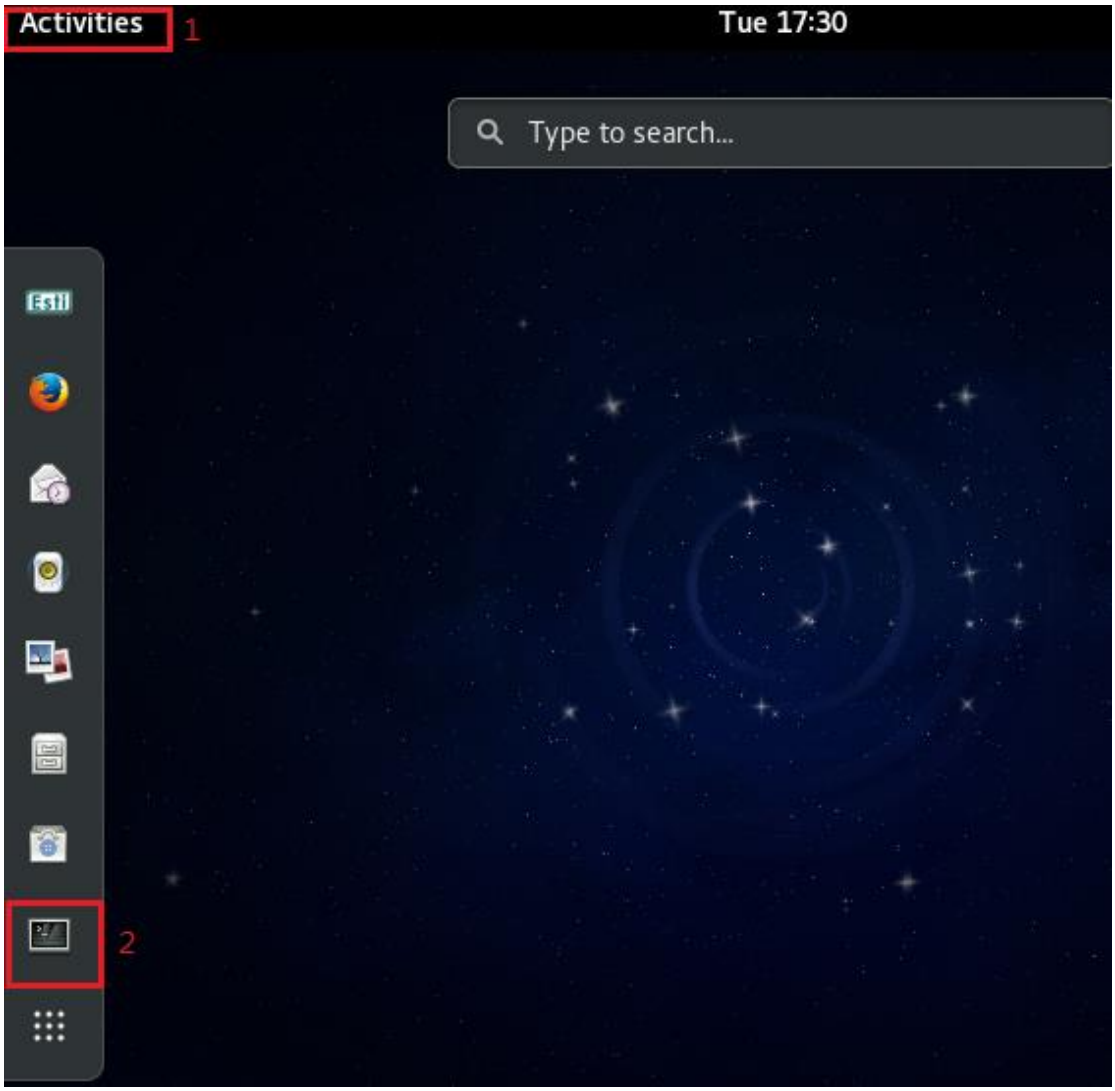

Figure 23 Open window “Terminal”

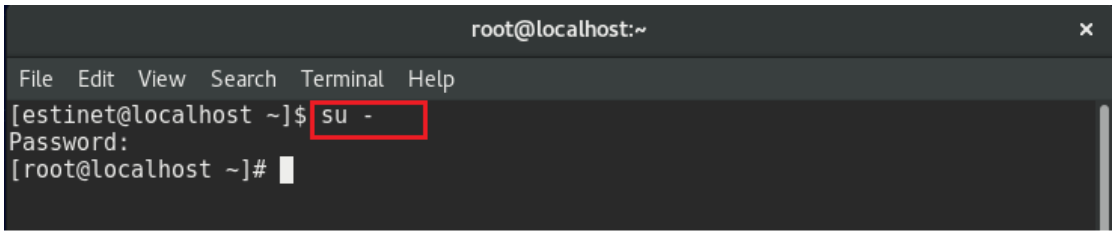

Figure 24 To get root privilege

k. Execute **#ifconfig** to confirm the network device had got local IP after

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all settings.

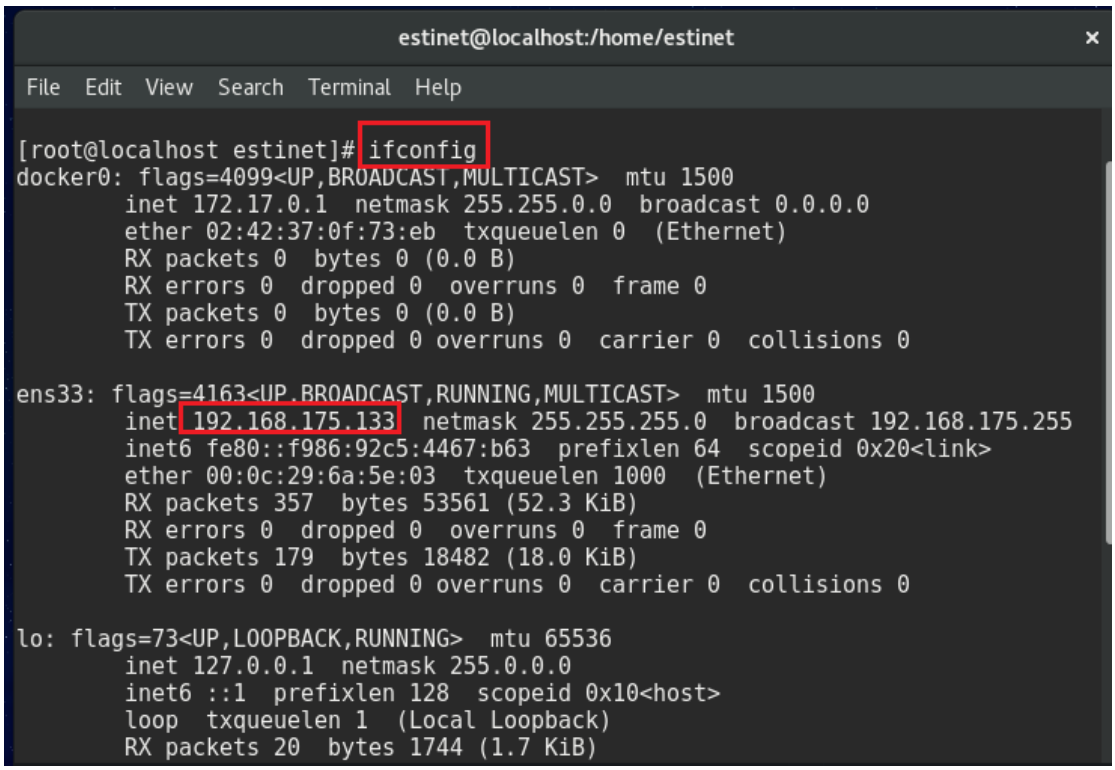

Figure 25 Execute Ifconfig to get network information

l. To make sure that the network device can connect to Internet. For example: #ping www.google.com

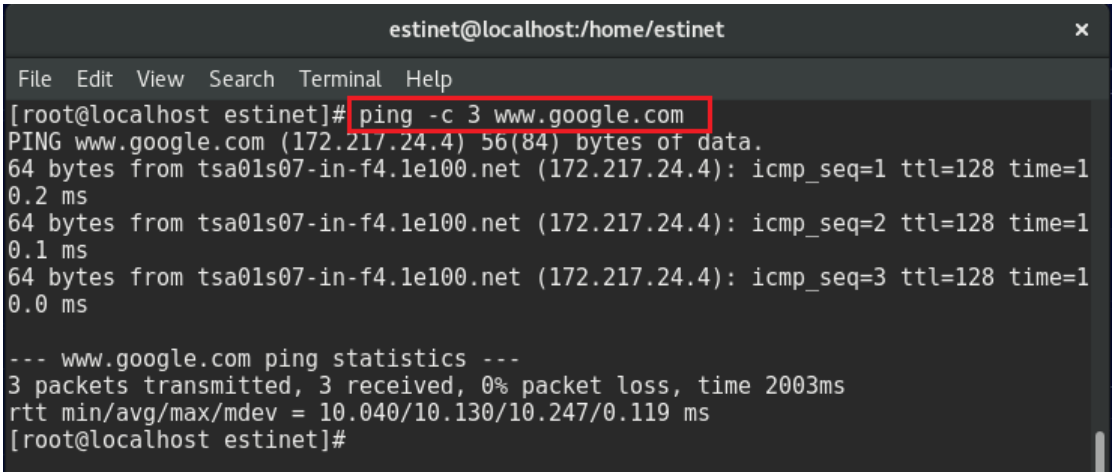

Figure 26 Ping www.google.com

m. To make sure the network device can connect to EstiNet License Server correctly.

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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.

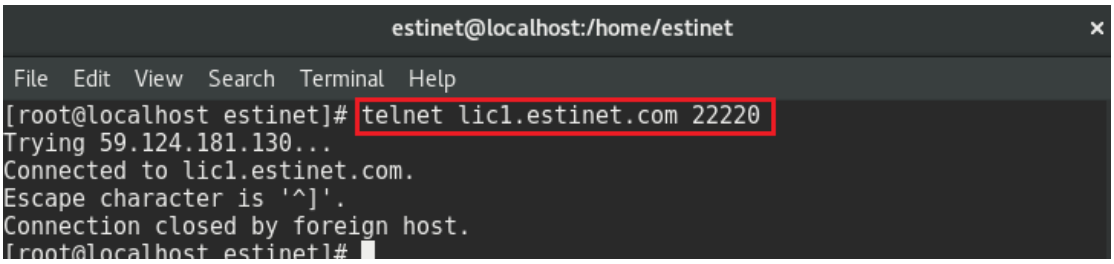

Figure 27 To execute # telnet lic1.estinet.com 22222

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.

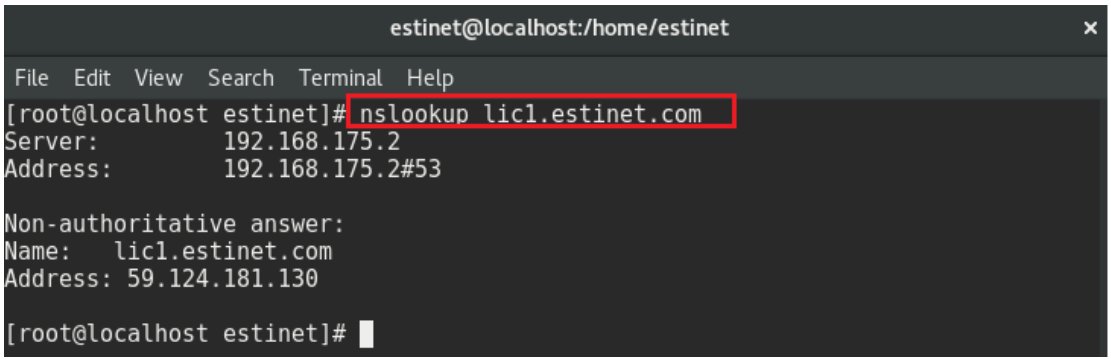

Figure 28 To execute # nslookup lic1.estinet.com

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 simulator (domain name: lic1.estinet.com、IP: 59.124.181.130, Port: 22220) in your organization.

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2.3 First time to start up the EstiNet Simulator with License Key

After login to Fedora24, please open a terminal.

Figure 29 Open terminal

You have to use the command "**`su -`**" with password "**estinet**" to switch user with the root privilege.

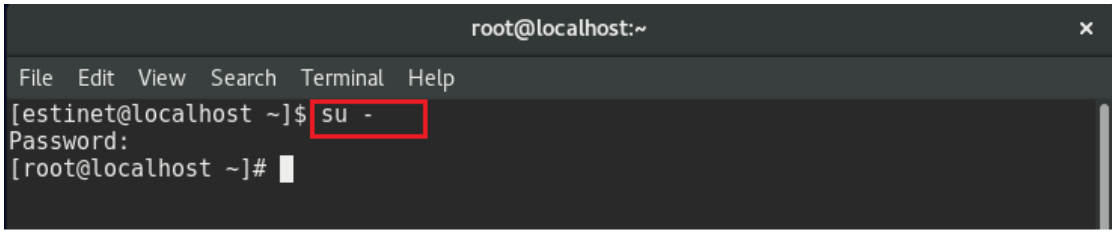

Figure 30 Get root privilege

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.

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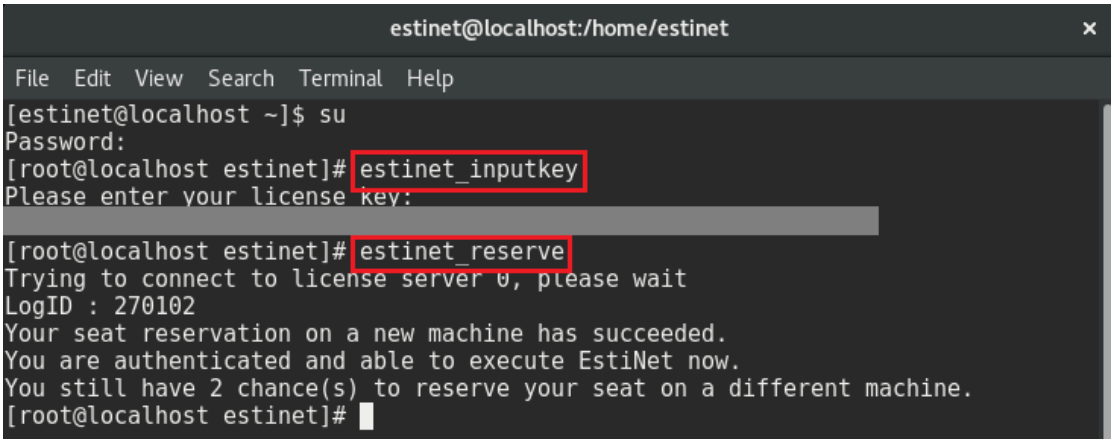

Figure 31 Obtain the permission from the license server to run EstiNet

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.

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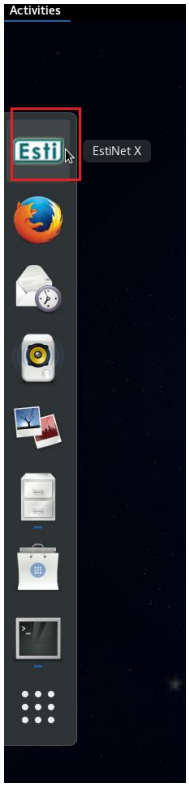

Figure 32 Click “Esti” icon

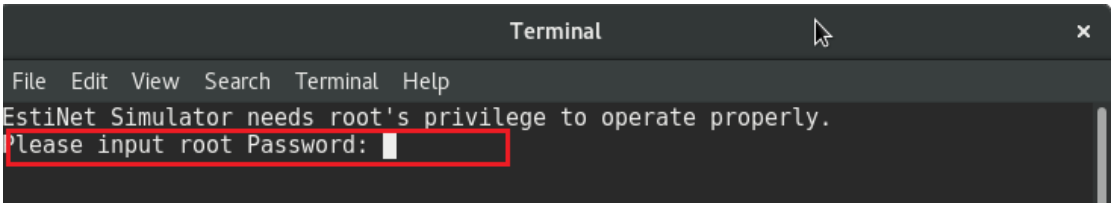

Figure 33 Input root Password

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**”.

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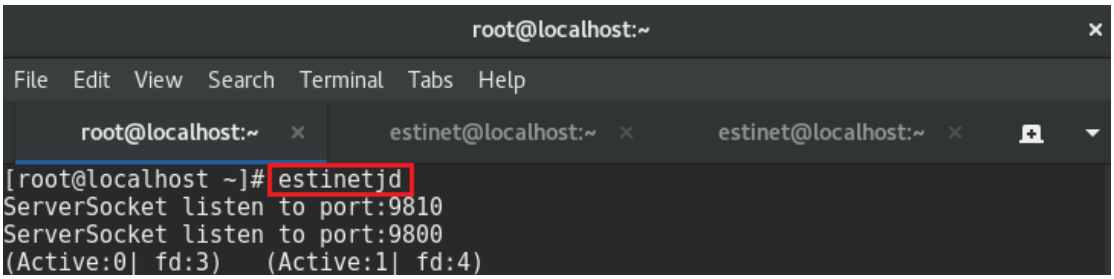

Figure 34 To execute the command estinetjd

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 execute the command "**estinetss**".

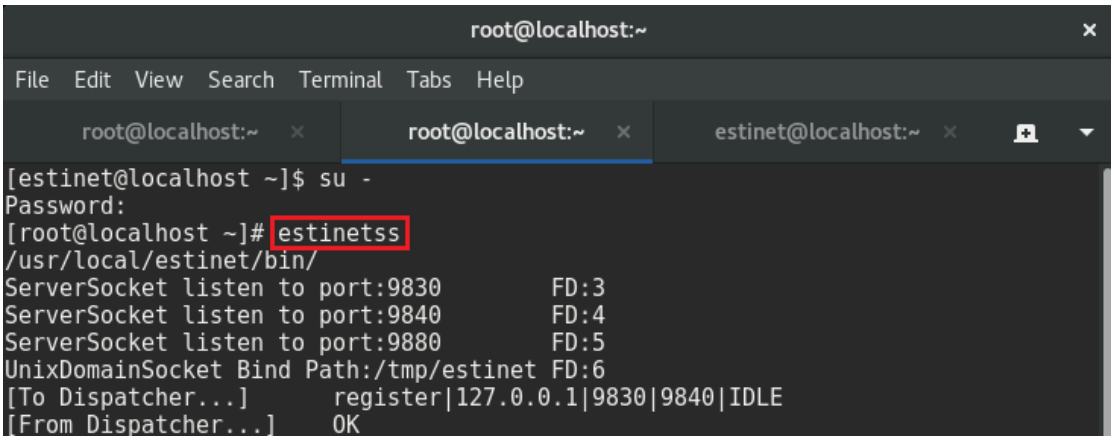

Figure 35 To execute the command estinetss

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.

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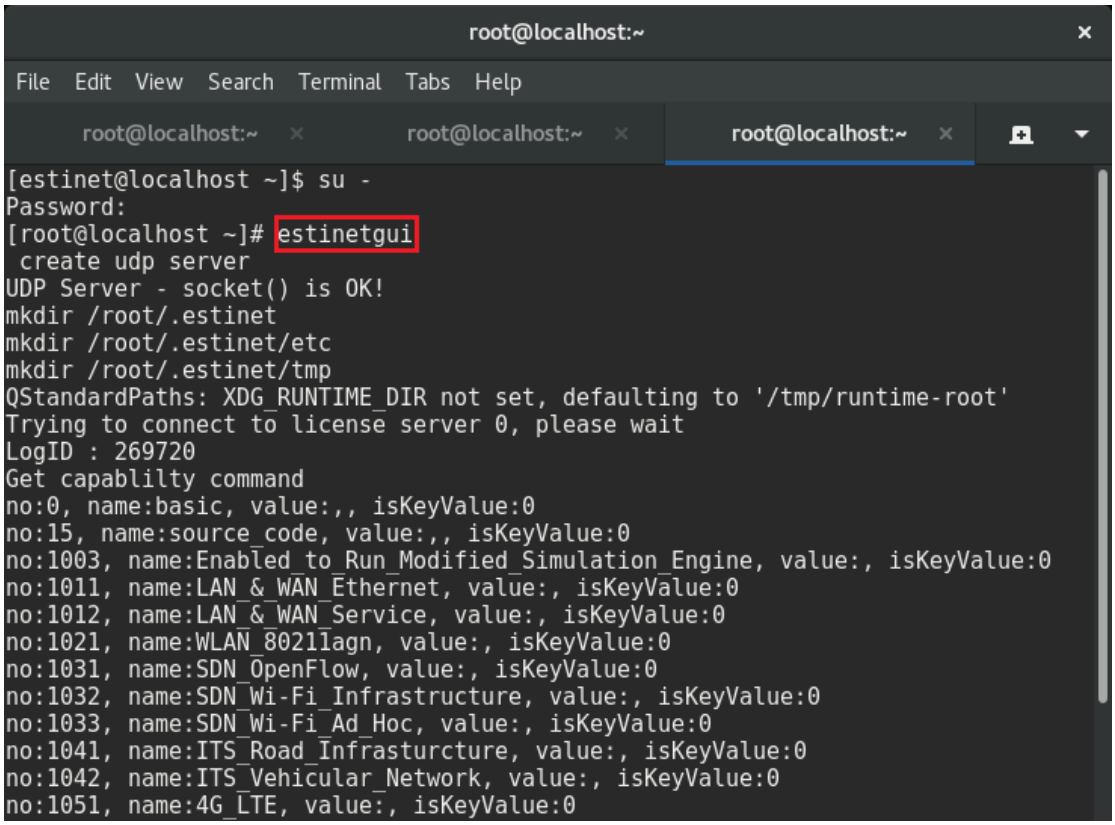

Figure 36 To execute the command estinetgui

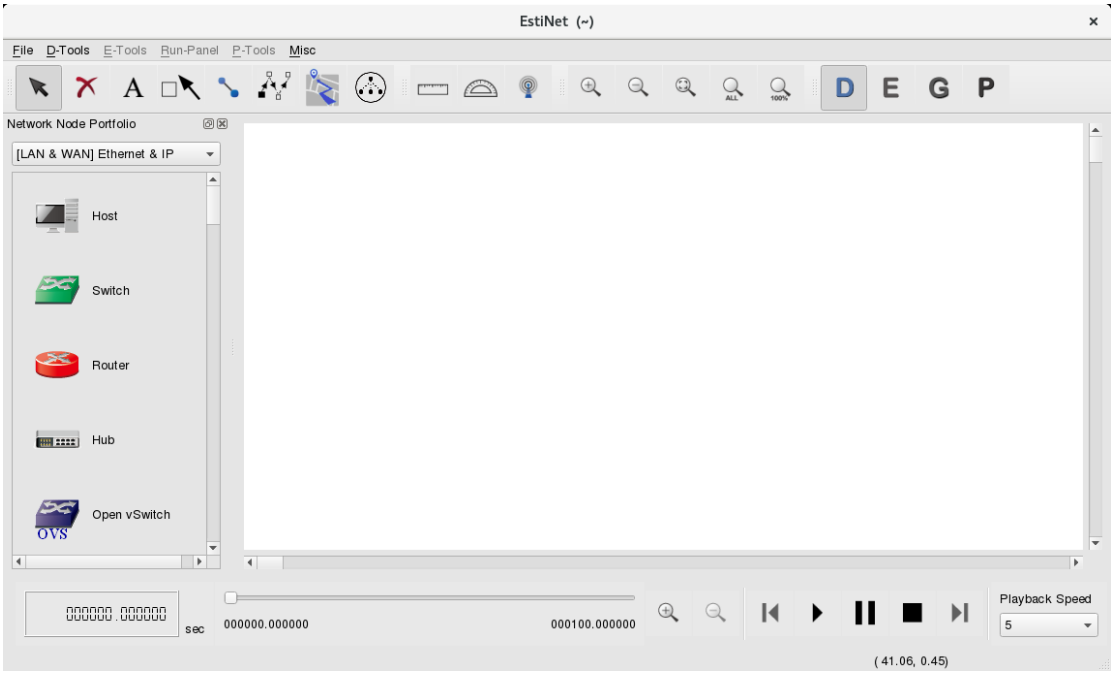

Figure 37 Complete to open the EstiNet Simulator

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3. The introduction for EstiNet X operation

3.1 Environment Introduction

EstiNet provides a highly-integrated and professional GUI environment in which a user can easily conduct network simulations. EstiNet supports common wired and wireless network devices such as hub, switch, router, host, IEEE 802.11(a/g/n) ad hoc mode and infrastructure mode. EstiNet also supports NAT, DNS, VANET (IEEE 802.11(p), ITS) and SDN OpenFlow. All nodes are shown as Figure 38

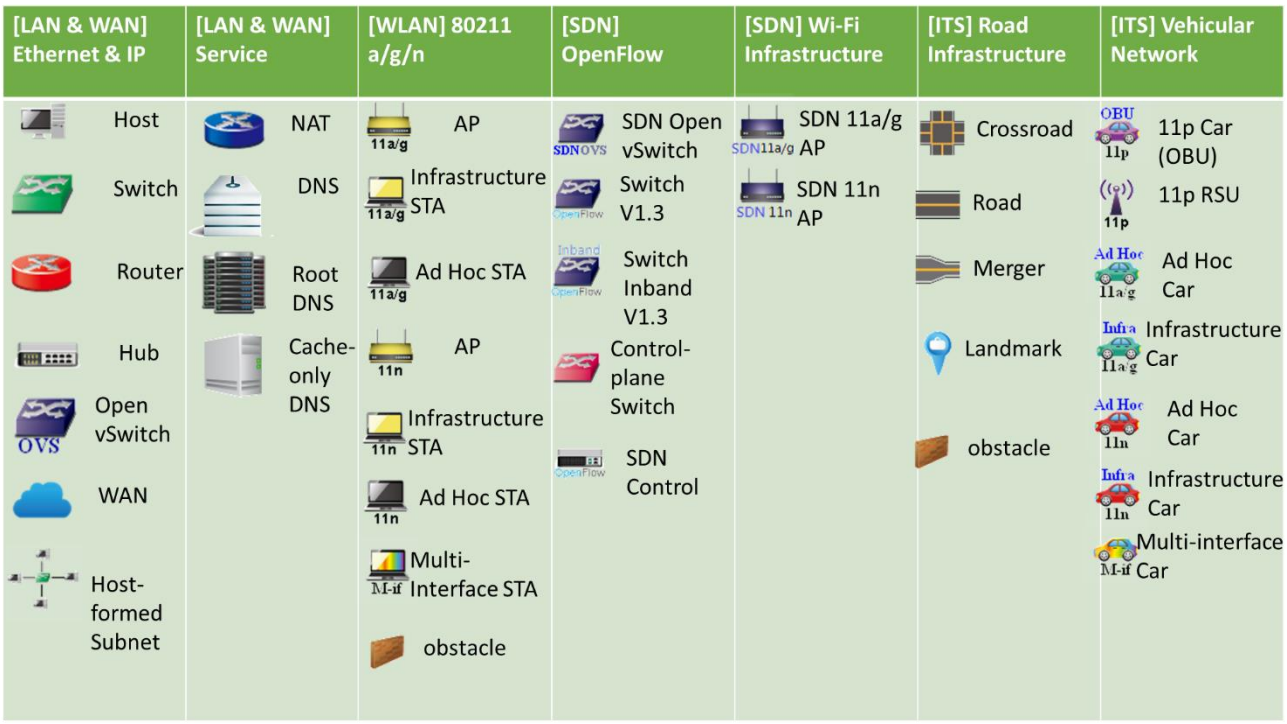

Figure 38 Network Node Portfolio

There are five areas in EstiNet GUI (Figure 39):
Menu Bar: The menus in the Menu bar allow user to access all available operations. There are 6 types of menus: **File**, **D_Tools**, **E_Tools**, **Run-Panel**, **P_Tools** and **Misc**.
User Control: It provides icons of control functions to operate or modify network topology. The icons like zoom in or zoon out, four kinds of simulator operation status

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Network Node: It supports network nodes to draw network topology in working area.

Working Area: The area that user could draw and modify network topology and setup the property of network node.

PlayBack: It provides playback control buttons to display the simulation result in working area.

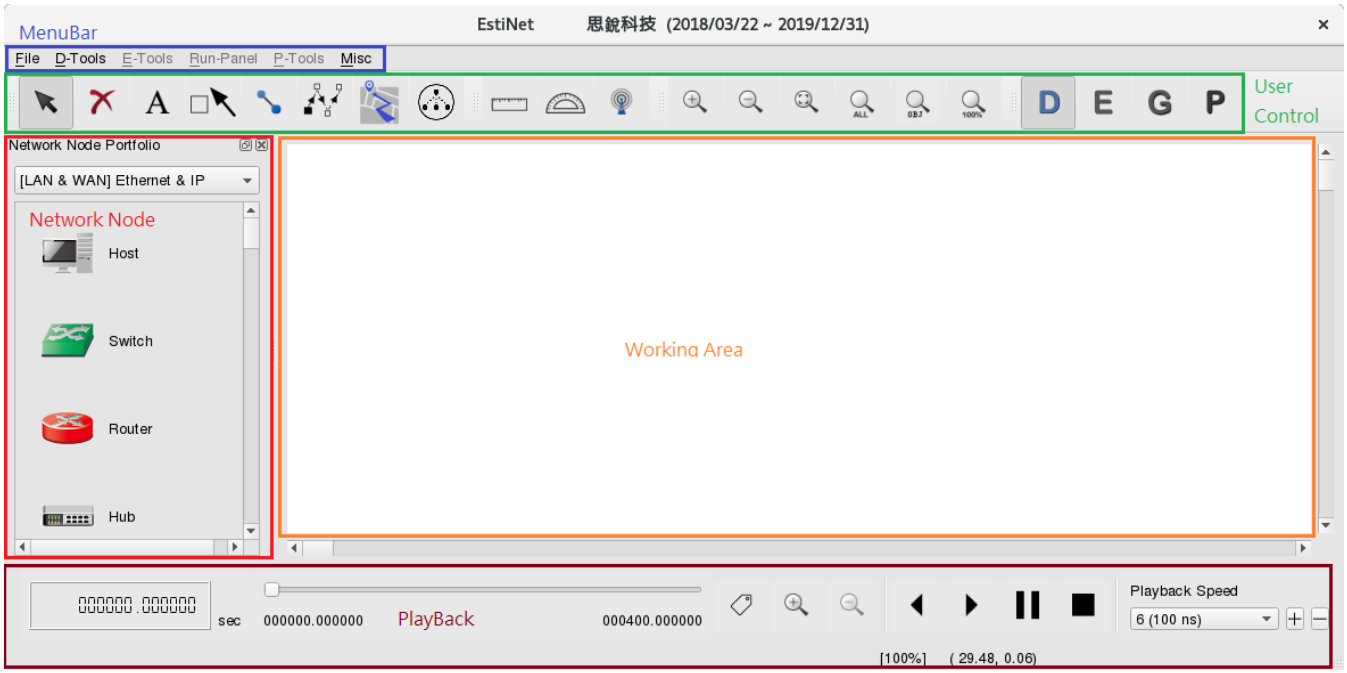

Figure 39 EstiNet Simulator Platform

3.2 Operation Flow

There are four status in simulator operation flow:

D status (Draw a Network Topology),

E status (Edit Parameters),

G status (Generate Configuration Files) and

P status (Play Back Results) as Figure 40. For more

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operation details, please reference the EstiNet operation demo video in P31.

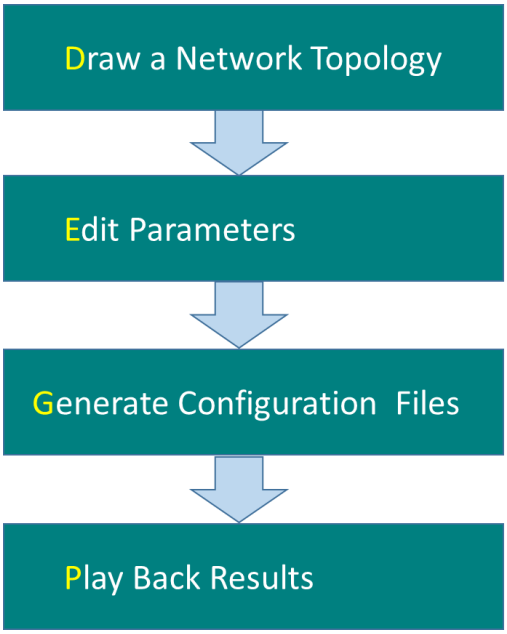

Figure 40 Flow status of EstiNet Simulator

4. How to use P4 Switch in EstiNet Simulator?

EstiNet supports P4 switch in EstiNet simulator. Users could load and use their docker container in EstiNet simulator. EstiNet provides P4 switch examples for users to reference.

Users should update the EstiNet installation package which include the docker container of P4 switch in EstiNet simulator. Please download this installation package from

(1) Google Drive (https://drive.google.com/drive/folders/0Bx3dD-IqTv0IYlhrRFMzR2RZUU0).

(2) MEGA (https://mega.nz/#F!Mv5nEY6D!A5_AdqZpo-8PQi266yBzXg).

(3) EstiNet FTP server.

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

FTP Account: EstiNet10

FTP Password: estinet

Please go into the directory [P4_switch]. The installation package is in

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[EstiNet_10.0.6.xxxx]. Please reference P32 “If user need to update a new version of EstiNet simulator” for more details. Please go into directory [Example] for P4 switch example and document.

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

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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.xxxxxxx-1.fc24.x86_64.release.tar.bz2

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

#cd estinet-10.0.6.xxx.xxxxxxx--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.

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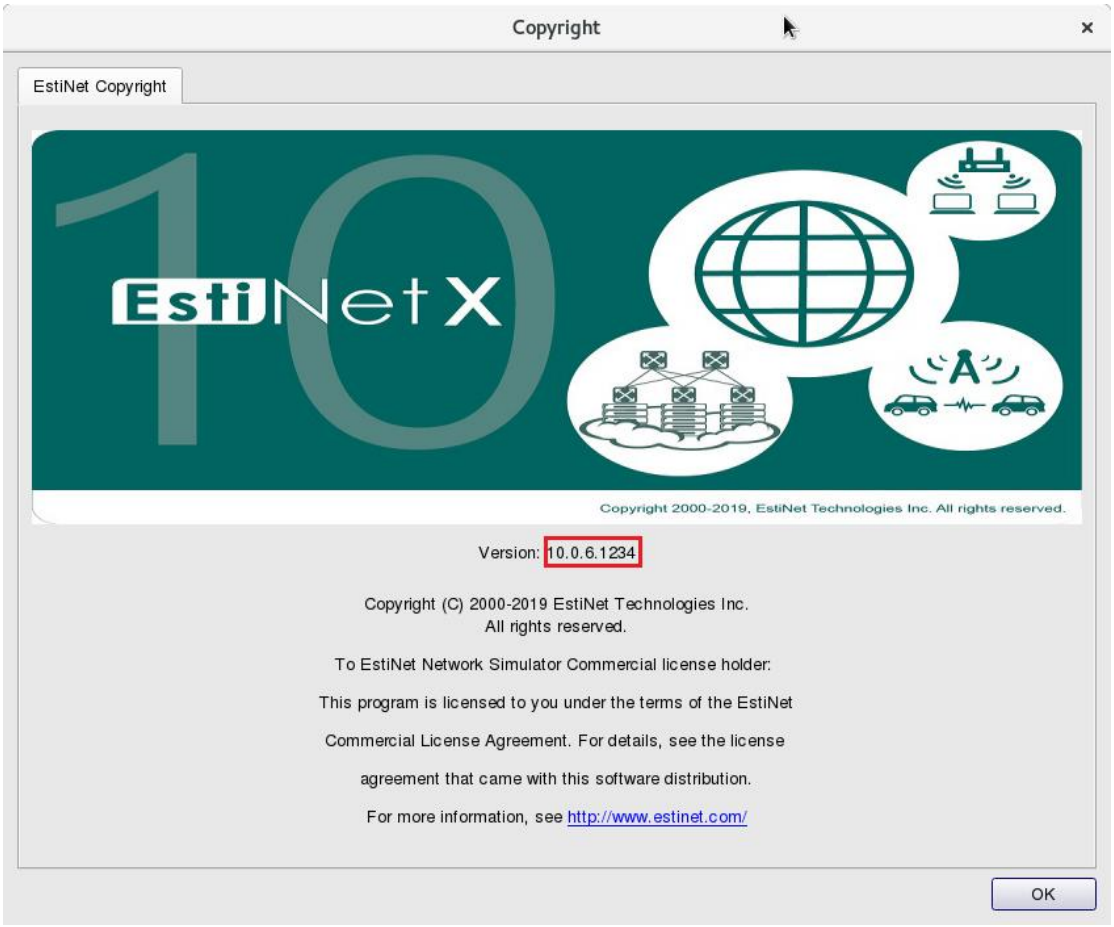

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