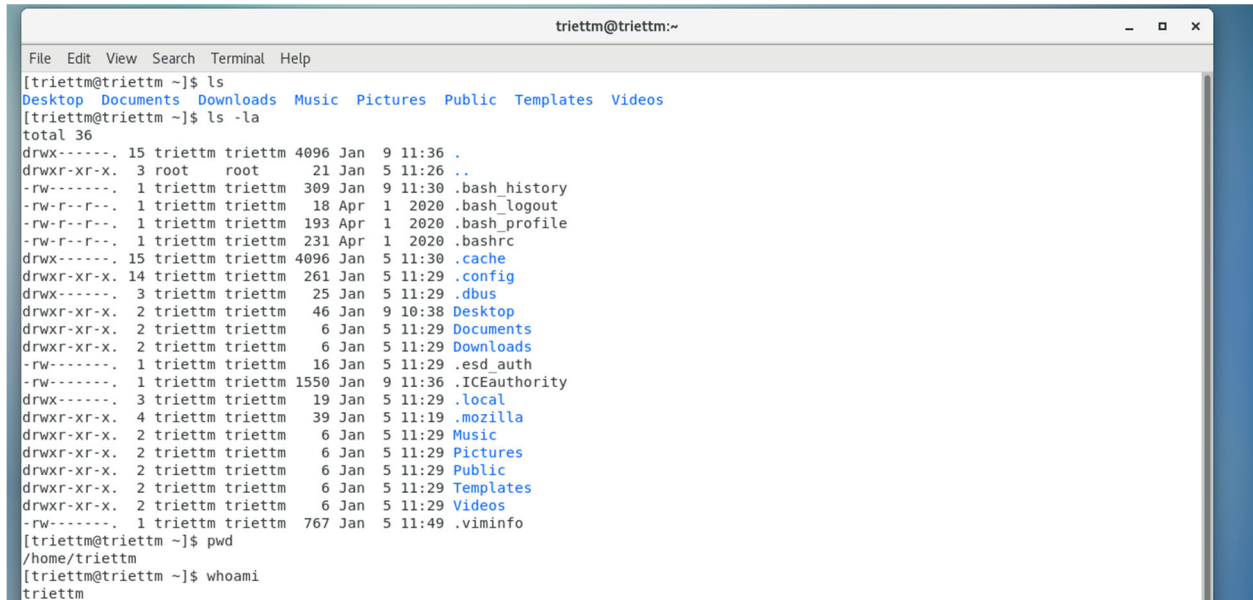


Họ Tên: Trần Minh Triết

MSSV: SE172241

Lab 1



```
triettm@triettm:~  
File Edit View Search Terminal Help  
[triettm@triettm ~]$ ls  
Desktop Documents Downloads Music Pictures Public Templates Videos  
[triettm@triettm ~]$ ls -la  
total 36  
drwx----- 15 triettm triettm 4096 Jan  9 11:36 .  
drwxr-xr-x.  3 root    root    21 Jan  5 11:26 ..  
-rw-----  1 triettm triettm 309 Jan  9 11:30 .bash_history  
-rw-r--r--  1 triettm triettm 18 Apr  1 2020 .bash_logout  
-rw-r--r--  1 triettm triettm 193 Apr  1 2020 .bash_profile  
-rw-r--r--  1 triettm triettm 231 Apr  1 2020 .bashrc  
drwx----- 15 triettm triettm 4096 Jan  5 11:30 .cache  
drwxr-xr-x. 14 triettm triettm 261 Jan  5 11:29 .config  
drwx-----  3 triettm triettm 25 Jan  5 11:29 .dbus  
drwxr-xr-x.  2 triettm triettm 46 Jan  9 10:38 Desktop  
drwxr-xr-x.  2 triettm triettm  6 Jan  5 11:29 Documents  
drwxr-xr-x.  2 triettm triettm  6 Jan  5 11:29 Downloads  
-rw-----  1 triettm triettm 16 Jan  5 11:29 .esd_auth  
-rw-----  1 triettm triettm 1550 Jan  9 11:36 .ICEauthority  
drwx-----  3 triettm triettm 19 Jan  5 11:29 .local  
drwxr-xr-x.  4 triettm triettm 39 Jan  5 11:19 .mozilla  
drwxr-xr-x.  2 triettm triettm  6 Jan  5 11:29 Music  
drwxr-xr-x.  2 triettm triettm  6 Jan  5 11:29 Pictures  
drwxr-xr-x.  2 triettm triettm  6 Jan  5 11:29 Public  
drwxr-xr-x.  2 triettm triettm  6 Jan  5 11:29 Templates  
drwxr-xr-x.  2 triettm triettm  6 Jan  5 11:29 Videos  
-rw-----  1 triettm triettm 767 Jan  5 11:49 .viminfo  
[triettm@triettm ~]$ pwd  
/home/triettm  
[triettm@triettm ~]$ whoami  
triettm
```

Câu lệnh “ls” dùng để liệt kê các file ở nơi mình đang đứng, thêm option -l nó sẽ liệt kê ra chi tiết phân quyền userowner, groupowner, độ lớn file, lần cuối modify, ...; option -a liệt kê ra hết tất cả các file đang ẩn nơi mình đang đứng.

Câu lệnh “pwd” in ra cái path nơi mình đang đứng

Câu lệnh “whoami” cho biết user đang sử dụng



```
triettm@triettm:~  
File Edit View Search Terminal Help  
[triettm@triettm ~]$ uname -a  
Linux triettm.fpt 3.10.0-1160.el7.x86_64 #1 SMP Mon Oct 19 16:18:59 UTC 2020 x86_64 x86_64 x86_64 GNU/Linux  
[triettm@triettm ~]$ id  
uid=1000(triettm) gid=1000(triettm) groups=1000(triettm),10(wheel) context=unconfined_u:unconfined_r:unconfined_t:s0-s0:c0.c1023  
[triettm@triettm ~]$ hostname  
triettm.fpt  
[triettm@triettm ~]$
```

Câu lệnh “uname -a” cho biết version và các thông tin về hệ điều hành mình đang dùng

Câu lệnh “id” cho ta biết user hiện tại có id gì trong group nào, quyền gì

Câu lệnh “hostname” cho ta biết hostname của máy

```

[triectm@triectm ~]$ ps aux
USER      PID %CPU %MEM    VSZ   RSS TTY      STAT START   TIME COMMAND
root         1  0.0  0.1 128428 7024 ?        Ss   12:15   0:01 /usr/lib/systemd/systemd --switched-root --system --deserialize 22
root         2  0.0  0.0      0     0 ?        S    12:15   0:00 [kthreadd]
root         4  0.0  0.0      0     0 ?        S<   12:15   0:00 [kworker/0:0H]
root         6  0.0  0.0      0     0 ?        S    12:15   0:00 [ksoftirqd/0]
root         7  0.0  0.0      0     0 ?        S    12:15   0:00 [migration/0]
root         8  0.0  0.0      0     0 ?        S    12:15   0:00 [rcu_bh]
root         9  0.0  0.0      0     0 ?        R    12:15   0:00 [rcu_sched]
root        10  0.0  0.0      0     0 ?        S<   12:15   0:00 [lru-add-drain]
root        11  0.0  0.0      0     0 ?        S    12:15   0:00 [watchdog/0]
root        13  0.0  0.0      0     0 ?        S    12:15   0:00 [kdevtmpfs]
root        14  0.0  0.0      0     0 ?        S<   12:15   0:00 [netns]
root        15  0.0  0.0      0     0 ?        S    12:15   0:00 [khungtaskd]
root        16  0.0  0.0      0     0 ?        S<   12:15   0:00 [writeback]
root        17  0.0  0.0      0     0 ?        S<   12:15   0:00 [kintegrityd]
root        18  0.0  0.0      0     0 ?        S<   12:15   0:00 [bioset]
root        19  0.0  0.0      0     0 ?        S<   12:15   0:00 [bioset]
root        20  0.0  0.0      0     0 ?        S<   12:15   0:00 [bioset]

```

Câu lệnh “ps aux” cho ta biết các process đang chạy trên máy tương tự như task manager trên windows

triectm@triectm:~										
File Edit View Search Terminal Help										
Tasks: 205 total, 1 running, 204 sleeping, 0 stopped, 0 zombie										
%Cpu(s): 0.0 us, 6.7 sy, 0.0 ni, 93.3 id, 0.0 wa, 0.0 hi, 0.0 si, 0.0 st										
KiB Mem : 3861264 total, 2293180 free, 844028 used, 724056 buff/cache										
KiB Swap: 4063228 total, 4063228 free, 0 used. 2759664 avail Mem										
PID	USER	PR	NI	VIRT	RES	SHR	S	%CPU	%MEM	TIME+ COMMAND
1	root	20	0	128428	7024	4208	S	0.0	0.2	0:01.77 systemd
2	root	20	0	0	0	0	S	0.0	0.0	0:00.00 kthreadd
4	root	0	-20	0	0	0	S	0.0	0.0	0:00.00 kworker/0:0H
6	root	20	0	0	0	0	S	0.0	0.0	0:00.10 ksoftirqd/0
7	root	rt	0	0	0	0	S	0.0	0.0	0:00.01 migration/0
8	root	20	0	0	0	0	S	0.0	0.0	0:00.00 rcu_bh
9	root	20	0	0	0	0	S	0.0	0.0	0:00.46 rcu_sched
10	root	0	-20	0	0	0	S	0.0	0.0	0:00.00 lru-add-drain
11	root	rt	0	0	0	0	S	0.0	0.0	0:00.01 watchdog/0
13	root	20	0	0	0	0	S	0.0	0.0	0:00.00 kdevtmpfs
14	root	0	-20	0	0	0	S	0.0	0.0	0:00.00 netns
15	root	20	0	0	0	0	S	0.0	0.0	0:00.00 khungtaskd
16	root	0	-20	0	0	0	S	0.0	0.0	0:00.00 writeback
17	root	0	-20	0	0	0	S	0.0	0.0	0:00.00 kintegrityd
18	root	0	-20	0	0	0	S	0.0	0.0	0:00.00 bioset
19	root	0	-20	0	0	0	S	0.0	0.0	0:00.00 bioset
20	root	0	-20	0	0	0	S	0.0	0.0	0:00.00 bioset
21	root	0	-20	0	0	0	S	0.0	0.0	0:00.00 kblockd
22	root	0	-20	0	0	0	S	0.0	0.0	0:00.00 md
23	root	0	-20	0	0	0	S	0.0	0.0	0:00.00 edac-poller
24	root	0	-20	0	0	0	S	0.0	0.0	0:00.00 watchdogd
25	root	20	0	0	0	0	S	0.0	0.0	0:00.78 kworker/0:1
30	root	20	0	0	0	0	S	0.0	0.0	0:00.00 kswapd0
31	root	25	5	0	0	0	S	0.0	0.0	0:00.00 ksm
32	root	39	19	0	0	0	S	0.0	0.0	0:00.21 khugepaged
33	root	0	-20	0	0	0	S	0.0	0.0	0:00.00 crypto
41	root	0	-20	0	0	0	S	0.0	0.0	0:00.00 kthrotld

Câu lệnh “top” cũng có tác dụng tương tự như câu lệnh “ps aux”

```
triettm@triettm:~  
File Edit View Search Terminal Help  
[triettm@triettm ~]$ cat /proc/partitions  
major minor #blocks name  
8 0 52428800 sda  
8 1 1048576 sda1  
8 2 51379200 sda2  
11 0 4601856 sr0  
253 0 47308800 dm-0  
253 1 4063232 dm-1  
[triettm@triettm ~]$ cat /proc/meminfo  
MemTotal: 3861264 kB  
MemFree: 2288976 kB  
MemAvailable: 2755492 kB  
Buffers: 1120 kB  
Cached: 683288 kB  
SwapCached: 0 kB  
Active: 765004 kB  
Inactive: 441548 kB  
Active(anon): 523300 kB  
Inactive(anon): 32016 kB  
Active(file): 241704 kB  
Inactive(file): 409532 kB  
Unevictable: 0 kB  
Mlocked: 0 kB  
SwapTotal: 4063228 kB  
SwapFree: 4063228 kB
```

Câu lệnh “cat /proc/partitions” cho ta xem thông tin về phân vùng ổ đĩa

Câu lệnh “cat /proc/meminfo” cho ta xem thông tin về bộ nhớ

```
[triettm@triettm ~]$ cat /proc/cpuinfo  
processor : 0  
vendor_id : AuthenticAMD  
cpu family : 23  
model : 96  
model name : AMD Ryzen 5 4600H with Radeon Graphics  
stepping : 1  
microcode : 0x8600104  
cpu MHz : 2994.373  
cache size : 512 KB  
physical id : 0  
siblings : 1  
core id : 0  
cpu cores : 1  
apicid : 0  
initial apicid : 0  
fpu : yes
```

Câu lệnh “cat /proc/cpuinfo” cho ta xem thông tin về con CPU

```
[triettm@triettm ~]$ cat /etc/*release
CentOS Linux release 7.9.2009 (Core)
NAME="CentOS Linux"
VERSION="7 (Core)"
ID="centos"
ID_LIKE="rhel fedora"
VERSION_ID="7"
PRETTY_NAME="CentOS Linux 7 (Core)"
ANSI_COLOR="0;31"
CPE_NAME="cpe:/o:centos:centos:7"
HOME_URL="https://www.centos.org/"
BUG_REPORT_URL="https://bugs.centos.org/"

CENTOS_MANTISBT_PROJECT="CentOS-7"
CENTOS_MANTISBT_PROJECT_VERSION="7"
REDHAT_SUPPORT_PRODUCT="centos"
REDHAT_SUPPORT_PRODUCT_VERSION="7"

CentOS Linux release 7.9.2009 (Core)
CentOS Linux release 7.9.2009 (Core)
[triettm@triettm ~]$
```

Câu lệnh “cat /etc/*release” cho ta thông tin tổng quan về máy

```
triettm@triettm:/home/triettm
File Edit View Search Terminal Help
Changes will remain in memory only, until you decide to write them.
Be careful before using the write command.

Command (m for help): m
Command action
  a toggle a bootable flag
  b edit bsd disklabel
  c toggle the dos compatibility flag
  d delete a partition
  g create a new empty GPT partition table
  G create an IRIX (SGI) partition table
  l list known partition types
  m print this menu
  n add a new partition
  o create a new empty DOS partition table
  p print the partition table
  q quit without saving changes
  s create a new empty Sun disklabel
  t change a partition's system id
  u change display/entry units
  v verify the partition table
  w write table to disk and exit
  x extra functionality (experts only)

Command (m for help): q

[root@triettm triettm]# fdisk -l /dev/sda

Disk /dev/sda: 53.7 GB, 53687091200 bytes, 104857600 sectors
Units = sectors of 1 * 512 = 512 bytes
Sector size (logical/physical): 512 bytes / 512 bytes
I/O size (minimum/optimal): 512 bytes / 512 bytes
Disk label type: dos
Disk identifier: 0x000a45c0

   Device Boot      Start         End      Blocks   Id  System
/dev/sda1  *        2048     2099199     1048576    83  Linux
/dev/sda2                2099200    104857599    51379200    8e  Linux LVM
[root@triettm triettm]#
```

Câu lệnh “fdisk /dev/sda” cho phép ta config lại cách phân vùng ổ đĩa.

```
triettm@triettm:/home/triettm
File Edit View Search Terminal Help
[root@triettm triettm]# ifconfig
ens33: flags=4163<UP,BROADCAST,RUNNING,MULTICAST> mtu 1500
    inet 192.168.159.120 netmask 255.255.255.0 broadcast 192.168.159.255
    inet6 fe80::e7db:2dde:2b94:9e72 prefixlen 64 scopeid 0x20<link>
    ether 00:0c:29:56:8f:b5 txqueuelen 1000 (Ethernet)
    RX packets 1435 bytes 151742 (148.1 KiB)
    RX errors 0 dropped 0 overruns 0 frame 0
    TX packets 840 bytes 94440 (92.2 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 1000 (Local Loopback)
    RX packets 360 bytes 30600 (29.8 KiB)
    RX errors 0 dropped 0 overruns 0 frame 0
    TX packets 360 bytes 30600 (29.8 KiB)
    TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0

virbr0: flags=4099<UP,BROADCAST,MULTICAST> mtu 1500
    inet 192.168.122.1 netmask 255.255.255.0 broadcast 192.168.122.255
    ether 52:54:00:9d:d9:27 txqueuelen 1000 (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

[root@triettm triettm]#
```

Câu lệnh “ifconfig” cho ta biết cấu hình các card mạng

Nếu muốn xin địa chỉ IP từ DHCP cho card mạng ens33 thì ta có thể dùng câu lệnh dhclient

```
[root@triettm triettm]# dhclient
^C
[root@triettm triettm]# █

[root@triettm triettm]# service network restart
Restarting network (via systemctl): [ OK ]
[root@triettm triettm]#
[root@triettm triettm]# █
```

Dùng câu lệnh “service network restart” để khởi động lại card mạng sau khi đã hoàn thành các bước config.

Tuy nhiên ta có thể config địa chỉ IP của card mạng theo phiên, tuy nhiên khi khởi động lại card mạng thì các config này sẽ bị mất. Câu lệnh phía sau dùng để config default gateway.

```
[root@triettm triettm]# ifconfig ens33 192.168.159.150/24 up
[root@triettm triettm]# route add default gw 192.168.159.2
```

```
[root@triettm triettm]# echo "nameserver 8.8.8.8" >> /etc/resolv.conf
[root@triettm triettm]# cat /etc/resolv.conf
# Generated by NetworkManager
search fpt
nameserver 8.8.8.8
nameserver 8.8.8.8
[root@triettm triettm]#
```

Câu lệnh này để config dns.

Trong trường hợp ta muốn khi ta bật máy lên mà card mạng cũng tự động bật lên để đỡ config bằng tay thì ta làm như sau.

```
triettm@triettm:/home/triettm
File Edit View Search Terminal Help
GNU nano 2.3.1 File: /etc/sysconfig/network-scripts/ifcfg-ens33
TYPE=Ethernet
PROXY_METHOD=none
BROWSER_ONLY=no
BOOTPROTO=dhcp
DEFROUTE=yes
IPV4_FAILURE_FATAL=no
IPV6INIT=yes
IPV6_AUTOCONF=yes
IPV6_DEFROUTE=yes
IPV6_FAILURE_FATAL=no
IPV6_ADDR_GEN_MODE=stable-privacy
NAME=ens33
UUID=d6a0a523-d7b9-4508-9a8c-a56329e019a5
DEVICE=ens33
ONBOOT=no
```

Dùng câu lệnh “nano /etc/sysconfig/network-scripts/ifcfg-ens33” để sửa lại file cấu hình của card mạng ens33. Xem phần ONBOOT sửa từ “no” thành “yes”

```
triettm@triettm:/home/triettm
File Edit View Search Terminal Help
GNU nano 2.3.1 File: /etc/sysconfig/network-scripts/ifcfg-ens33
TYPE=Ethernet
PROXY_METHOD=none
BROWSER_ONLY=no
BOOTPROTO=dhcp
DEFROUTE=yes
IPV4_FAILURE_FATAL=no
IPV6INIT=yes
IPV6_AUTOCONF=yes
IPV6_DEFROUTE=yes
IPV6_FAILURE_FATAL=no
IPV6_ADDR_GEN_MODE=stable-privacy
NAME=ens33
UUID=d6a0a523-d7b9-4508-9a8c-a56329e019a5
DEVICE=ens33
ONBOOT=yes
```

Sau đó khởi động lại card mạng bình thường.

Tuy nhiên công việc của ta là quản trị server mà để IP tự cấp như vậy thì rất nguy hiểm nên ta sẽ config cứng địa chỉ IP sao cho mỗi khi khởi động máy card mạng sẽ tự động bật lên với địa chỉ IP đó.


```
triettm@triettm:/home/triettm
File Edit View Search Terminal Help
GNU nano 2.3.1 File: /etc/sysconfig/network-scripts/ifcfg-ens33
TYPE=Ethernet
PROXY_METHOD=none
BROWSER_ONLY=no
BOOTPROTO=none
DEFROUTE=yes
IPV4_FAILURE_FATAL=no
IPV6INIT=yes
IPV6_AUTOCONF=yes
IPV6_DEFROUTE=yes
IPV6_FAILURE_FATAL=no
IPV6_ADDR_GEN_MODE=stable-privacy
NAME=ens33
UUID=d6a0a523-d7b9-4508-9a8c-a56329e019a5
DEVICE=ens33
ONBOOT=yes
IPADDR=192.168.159.120
NETMASK=255.255.255.0
GATEWAY=192.168.159.2
DNS1=8.8.8.8
```

Sửa phần “BOOTPROTO” thành none và thêm các thông tin khác như IPADDR mà mình muốn config, NETMASK subnetmask phù hợp, GATEWAY là địa chỉ IP default gateway, DNS1 là địa chỉ dns. Save lại rồi khởi động lại card mạng.

```
triettm@triettm:/home/triettm

File Edit View Search Terminal Help

[root@triettm triettm]# nano /etc/sysconfig/network-scripts/ifcfg-ens33
[root@triettm triettm]# service network restart
Restarting network (via systemctl):

[ OK ]

[root@triettm triettm]#
[root@triettm triettm]# ifconfig
ens33: flags=4163<UP,BROADCAST,RUNNING,MULTICAST> mtu 1500
    inet 192.168.159.120 netmask 255.255.255.0 broadcast 192.168.159.255
    inet6 fe80::e7db:2dde:2b94:9e72 prefixlen 64 scopeid 0x20<link>
    ether 00:0c:29:56:8f:b5 txqueuelen 1000 (Ethernet)
    RX packets 1766 bytes 195115 (190.5 KiB)
    RX errors 0 dropped 0 overruns 0 frame 0
    TX packets 1171 bytes 137166 (133.9 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 1000 (Local Loopback)
    RX packets 540 bytes 45900 (44.8 KiB)
    RX errors 0 dropped 0 overruns 0 frame 0
    TX packets 540 bytes 45900 (44.8 KiB)
    TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0

virbr0: flags=4099<UP,BROADCAST,MULTICAST> mtu 1500
    inet 192.168.122.1 netmask 255.255.255.0 broadcast 192.168.122.255
    ether 52:54:00:9d:d9:27 txqueuelen 1000 (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

virbr0-nic: flags=4099<UP,BROADCAST,MULTICAST> mtu 1500
    ether 52:54:00:9d:d9:27 txqueuelen 1000 (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

[root@triettm triettm]#
```

Ngoài ra ta còn có thể gán nhiều địa chỉ ip cho cùng một card mạng.

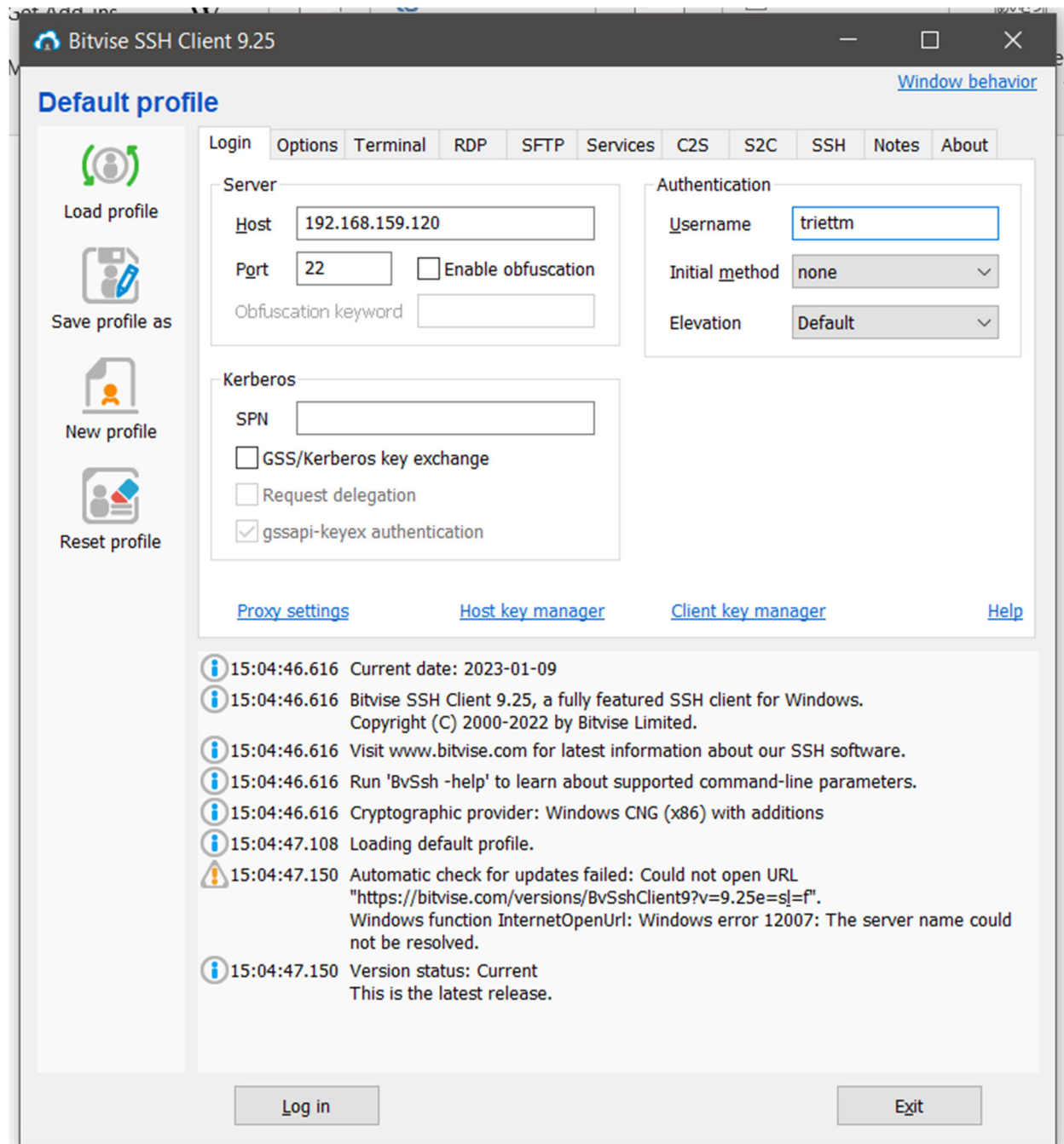
```
[root@triettm triettm]# ifconfig ens33:0: 192.168.146.122/24 up

more: error fetching interface information: device not found
[root@triettm triettm]# ifconfig
ens33: flags=4163<UP,BROADCAST,RUNNING,MULTICAST> mtu 1500
    inet 192.168.159.120 netmask 255.255.255.0 broadcast 192.168.159.255
    inet6 fe80::e7db:2dde:2b94:9e72 prefixlen 64 scopeid 0x20<link>
    ether 00:0c:29:56:8f:b5 txqueuelen 1000 (Ethernet)
    RX packets 1782 bytes 197151 (192.5 KiB)
    RX errors 0 dropped 0 overruns 0 frame 0
    TX packets 1189 bytes 139334 (136.0 KiB)
    TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0

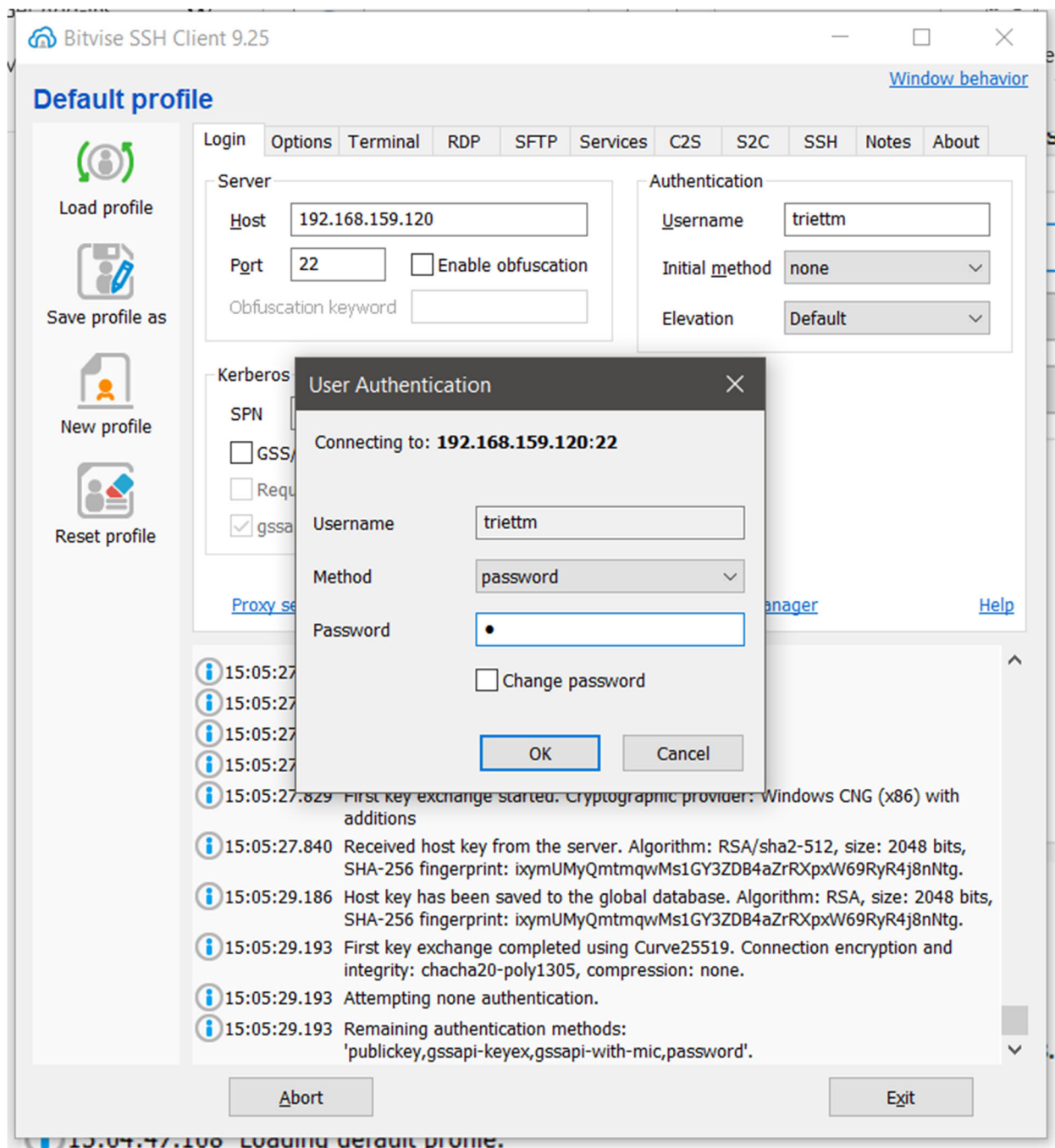
ens33:0:: flags=4163<UP,BROADCAST,RUNNING,MULTICAST> mtu 1500
    inet 192.168.159.122 netmask 255.255.255.0 broadcast 192.168.159.255
    ether 00:0c:29:56:8f:b5 txqueuelen 1000 (Ethernet)

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 1000 (Local Loopback)
    RX packets 540 bytes 45900 (44.8 KiB)
    RX errors 0 dropped 0 overruns 0 frame 0
    TX packets 540 bytes 45900 (44.8 KiB)
    TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0
```


Tiếp theo là việc sử dụng giao thức ssh để config máy ảo remote. Em sử dụng công cụ Bitvise SSH client để remote vào máy ảo mình



Sử dụng credential và IP của máy ảo để remote vào



Bấm nút “New Terminal console” để mở terminal mới.

Bấm nút “New SFTP window” để mở giao thức chuyển file từ máy tính tới máy ảo và ngược lại.

