

Operating Systems

Lab Report #4

Network configuration

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OBJECTIVES

1. Teach the basic network configuration methods under Linux
2. Master the TCP/IP configuration files under Linux
3. Configure IP address, subnet mask, default gateway, and DNS server
4. Master the use of ping, traceroute, netstat, nslookup, and arp.

CODE AND EXECUTION

Assignment 1: Linux internet configure

- (1). If you do not have install net-tools, you should firstly install net-tools by “sudo apt install net-tools” command

```
jerry@jerry-virtual-machine:~$ sudo apt install net-tools
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 154 not upgraded.
Need to get 204 kB of archives.
After this operation, 819 kB of additional disk space will be used.
Get:1 http://cn.archive.ubuntu.com/ubuntu jammy/main amd64 net-tools amd64 1.60+git20181103.0eebece-1ubuntu5 [204 kB]
Fetched 204 kB in 6s (33.7 kB/s)
Selecting previously unselected package net-tools.
(Reading database ... 170321 files and directories currently installed.)
Preparing to unpack .../net-tools_1.60+git20181103.0eebece-1ubuntu5_amd64.deb ...
Unpacking net-tools (1.60+git20181103.0eebece-1ubuntu5) ...
Setting up net-tools (1.60+git20181103.0eebece-1ubuntu5) ...
Processing triggers for man-db (2.10.2-1) ...
```

- (2) . Use “ifconfig” command to check the network card name

```
jerry@jerry-virtual-machine:~$ ifconfig
ens33: flags=4163<UP,BROADCAST,RUNNING,MULTICAST> mtu 1500
    inet 192.168.8.129 netmask 255.255.255.0 broadcast 192.168.8.255
    inet6 fe80::bbf:cfcd:922f:f5c prefixlen 64 scopeid 0x20<link>
    ether 00:0c:29:76:ba:de txqueuelen 1000 (Ethernet)
    RX packets 7713 bytes 9840646 (9.8 MB)
    RX errors 0 dropped 0 overruns 0 frame 0
    TX packets 2919 bytes 229697 (229.6 KB)
    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 1086 bytes 90785 (90.7 KB)
    RX errors 0 dropped 0 overruns 0 frame 0
    TX packets 1086 bytes 90785 (90.7 KB)
    TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0
```

Help

Assignment 2:Configure Network File

The file to configure ubuntu `s network is in /etc/network/interfaces

Enter this command to edit network file:

Different version of ubuntu has different command, my version is 22.04,the command is :

Sudo vi /etc/netplan/00-installer-config.yaml"

Use staticconfigure method to get ip configuration

Auto ens33(network name)

Iface ens33 inet dhcp

Address 192.168.0.2

Netmask 255.255.255.0

Gateway 192.168.0.2

Edit DNS address

Though /etc/netplan/00-installer-config.yaml

Add:" dns_nameservers 223.5.5.5"

```
jerry@jerry-virtual-machine:~/Desktop$ ifconfig
ens33: flags=4163<UP,BROADCAST,RUNNING,MULTICAST> mtu 1500
    inet 192.168.8.129 netmask 255.255.255.0 broadcast 192.168.8.255
    inet6 fe80::20c:29ff:fe76:bade prefixlen 64 scopeid 0x20<link>
    ether 00:0c:29:76:ba:de txqueuelen 1000 (Ethernet)
    RX packets 3424 bytes 4653905 (4.6 MB)
    RX errors 0 dropped 0 overruns 0 frame 0
    TX packets 1771 bytes 130913 (130.9 KB)
    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 13503 bytes 967704 (967.7 KB)
    RX errors 0 dropped 0 overruns 0 frame 0
    TX packets 13503 bytes 967704 (967.7 KB)
    TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0
```

Test Ping

Use the fully command:

Ping www.baidu.com

```
** (process:2605): WARNING **: 12:21:18.777: Permissions for /etc/netplan/01-net
work-manager-all.yaml are too open. Netplan configuration should NOT be accessib
le by others.
jerry@jerry-virtual-machine: ~/Desktop$ ping www.baidu.com
PING www.a.shifen.com (180.101.50.188) 56(84) bytes of data.
64 bytes from 180.101.50.188 (180.101.50.188): icmp_seq=1 ttl=128 time=7.54 ms
64 bytes from 180.101.50.188 (180.101.50.188): icmp_seq=2 ttl=128 time=9.05 ms
64 bytes from 180.101.50.188 (180.101.50.188): icmp_seq=3 ttl=128 time=6.97 ms
64 bytes from 180.101.50.188 (180.101.50.188): icmp_seq=4 ttl=128 time=7.02 ms
64 bytes from 180.101.50.188 (180.101.50.188): icmp_seq=5 ttl=128 time=7.56 ms
64 bytes from 180.101.50.188 (180.101.50.188): icmp_seq=6 ttl=128 time=8.22 ms
64 bytes from 180.101.50.188 (180.101.50.188): icmp_seq=7 ttl=128 time=7.62 ms
64 bytes from 180.101.50.188 (180.101.50.188): icmp_seq=8 ttl=128 time=9.17 ms
64 bytes from 180.101.50.188 (180.101.50.188): icmp_seq=9 ttl=128 time=9.40 ms
64 bytes from 180.101.50.188 (180.101.50.188): icmp_seq=10 ttl=128 time=7.50 ms
64 bytes from 180.101.50.188 (180.101.50.188): icmp_seq=11 ttl=128 time=6.84 ms
64 bytes from 180.101.50.188 (180.101.50.188): icmp_seq=12 ttl=128 time=7.95 ms
^C
--- www.a.shifen.com ping statistics ---
```

if

ANALYSIS

Analyze the behavior of each program. Explain the observed outputs, discuss any challenges encountered, and how they were resolved.

CONCLUSION

Summarize your findings and experiences from this lab assignment.

REFERENCES

List any references or resources you used to complete this lab assignment, if any.