

Assignment : DHCP
Computer Networking
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1. The leases files to verify that Ubuntu has obtained an IP address.

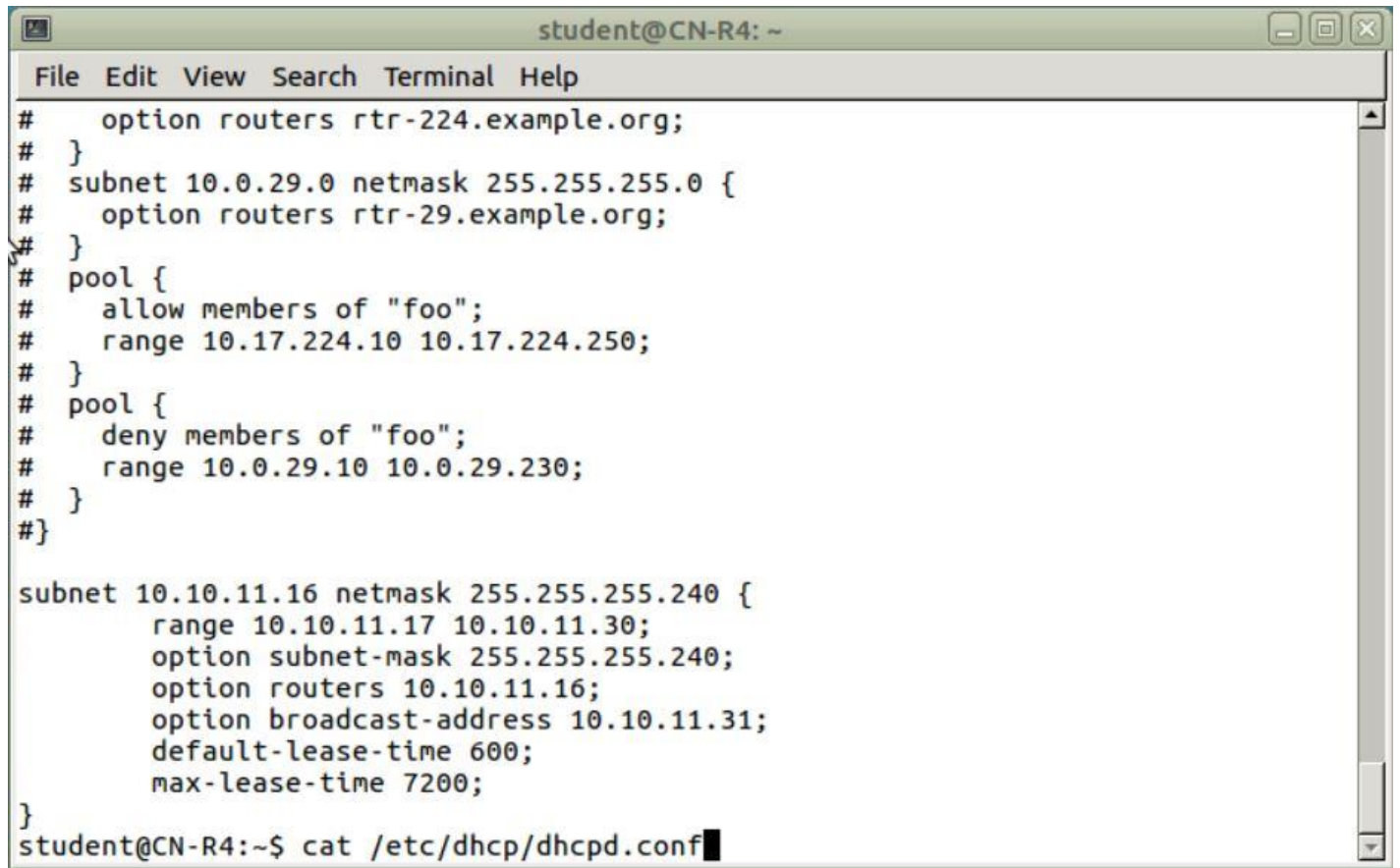
```
student@CN-R4: ~  
File Edit View Search Terminal Help  
student@CN-R4:~$ cat /var/lib/dhcp/dhcpd.conf  
cat: /var/lib/dhcp/dhcpd.conf: No such file or directory  
student@CN-R4:~$ cat /var/lib/dhcp/dhcpd.leases  
# The format of this file is documented in the dhcpd.leases(5) manual page.  
# This lease file was written by isc-dhcp-4.3.3  
  
lease 10.10.11.18 {  
    starts 3 2019/03/06 22:09:56;  
    ends 3 2019/03/06 22:19:56;  
    tstp 3 2019/03/06 22:19:56;  
    cltt 3 2019/03/06 22:09:56;  
    binding state active;  
    next binding state free;  
    rewind binding state free;  
    hardware ethernet 00:00:00:00:00:0b;  
    client-hostname "Ubuntu";  
}  
server-uid "\000\001\000\001$\023\000\341\000\000\000\000\000\012";  
  
lease 10.10.11.18 {  
    starts 3 2019/03/06 22:14:14;  
    ends 3 2019/03/06 22:24:14;  
    cltt 3 2019/03/06 22:14:14;  
    binding state active;  
    next binding state free;  
    rewind binding state free;  
    hardware ethernet 00:00:00:00:00:0b;  
    client-hostname "Ubuntu";  
}  
student@CN-R4:~$
```

Capture 1 Lease Files from R4

```
student@CN-R4: ~  
File Edit View Search Terminal Help  
● isc-dhcp-server.service - ISC DHCP IPv4 server  
   Loaded: loaded (/lib/systemd/system/isc-dhcp-server.service; enabled; vendor preset: enabled)  
   Active: active (running) since Wed 2019-03-06 17:13:43 EST; 1min 3s ago  
     Docs: man:dhcpd(8)  
  Main PID: 1093 (dhcpd)  
    Tasks: 1  
   Memory: 11.8M  
      CPU: 27ms  
   CGroup: /system.slice/isc-dhcp-server.service  
           └─1093 dhcpd -user dhcpd -group dhcpd -f -4 -pf /run/dhcp-server/dhcpd.pid -cf /etc/dhcp/dhcpd.conf  
  
Mar 06 17:13:43 CN-R4 sh[1093]: Wrote 1 leases to leases file.  
Mar 06 17:13:43 CN-R4 dhcpd[1093]: Listening on LPF/eth2/00:00:00:00:00:0a/10.10.11.16/28  
Mar 06 17:13:43 CN-R4 sh[1093]: Listening on LPF/eth2/00:00:00:00:00:0a/10.10.11.16/28  
Mar 06 17:13:43 CN-R4 sh[1093]: Sending on   LPF/eth2/00:00:00:00:00:0a/10.10.11.16/28  
Mar 06 17:13:43 CN-R4 sh[1093]: Sending on   Socket/fallback/fallback-net  
Mar 06 17:13:43 CN-R4 dhcpd[1093]: Sending on   LPF/eth2/00:00:00:00:00:0a/10.10.11.16/28  
Mar 06 17:13:43 CN-R4 dhcpd[1093]: Sending on   Socket/fallback/fallback-net  
Mar 06 17:13:43 CN-R4 dhcpd[1093]: Server starting service.  
Mar 06 17:14:14 CN-R4 dhcpd[1093]: DHCPREQUEST for 10.10.11.18 from 00:00:00:00:00:0b (Ubuntu) via eth2  
Mar 06 17:14:14 CN-R4 dhcpd[1093]: DHCPACK on 10.10.11.18 to 00:00:00:00:00:0b (Ubuntu) via eth2  
~
```

Capture 2 DHCP Address allotment

2. Your configuration for the DHCP server.

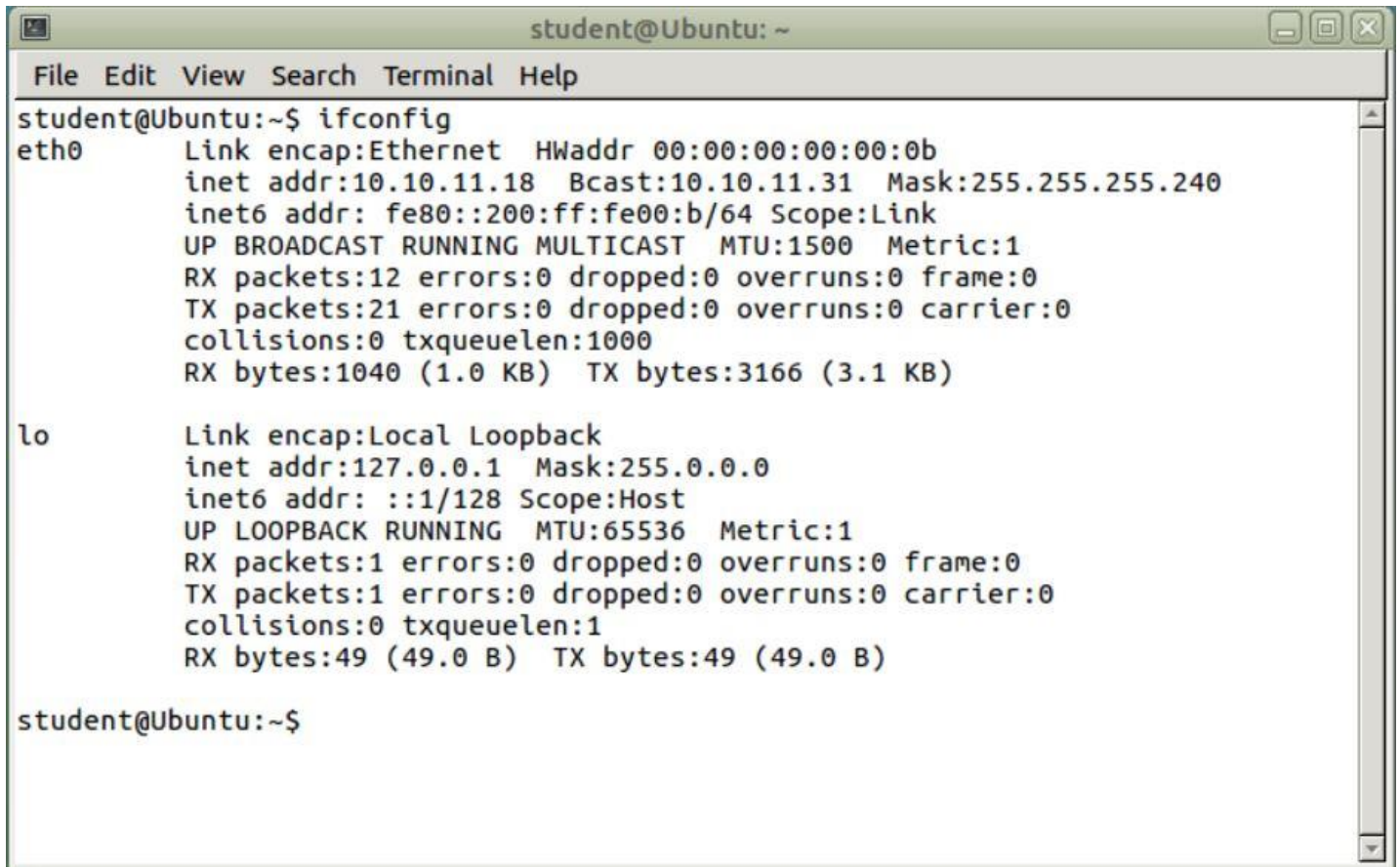
A terminal window titled 'student@CN-R4: ~' with a menu bar (File, Edit, View, Search, Terminal, Help). The terminal displays the configuration of the /etc/dhcp/dhcpd.conf file. The configuration includes options for routers, subnets, and pools. The first subnet is 10.0.29.0 with a netmask of 255.255.255.0, containing a pool that allows members of 'foo' with a range of 10.17.224.10 to 10.17.224.250. The second subnet is 10.10.11.16 with a netmask of 255.255.255.240, containing a pool that denies members of 'foo' with a range of 10.0.29.10 to 10.0.29.230. The third subnet is 10.10.11.16 with a netmask of 255.255.255.240, containing a pool that allows members of 'foo' with a range of 10.10.11.17 to 10.10.11.30. The terminal prompt is student@CN-R4:~\$ cat /etc/dhcp/dhcpd.conf.

```
student@CN-R4: ~
File Edit View Search Terminal Help
# option routers rtr-224.example.org;
# }
# subnet 10.0.29.0 netmask 255.255.255.0 {
#   option routers rtr-29.example.org;
# }
# pool {
#   allow members of "foo";
#   range 10.17.224.10 10.17.224.250;
# }
# pool {
#   deny members of "foo";
#   range 10.0.29.10 10.0.29.230;
# }
#}

subnet 10.10.11.16 netmask 255.255.255.240 {
    range 10.10.11.17 10.10.11.30;
    option subnet-mask 255.255.255.240;
    option routers 10.10.11.16;
    option broadcast-address 10.10.11.31;
    default-lease-time 600;
    max-lease-time 7200;
}
student@CN-R4:~$ cat /etc/dhcp/dhcpd.conf
```

Capture 3 Config File

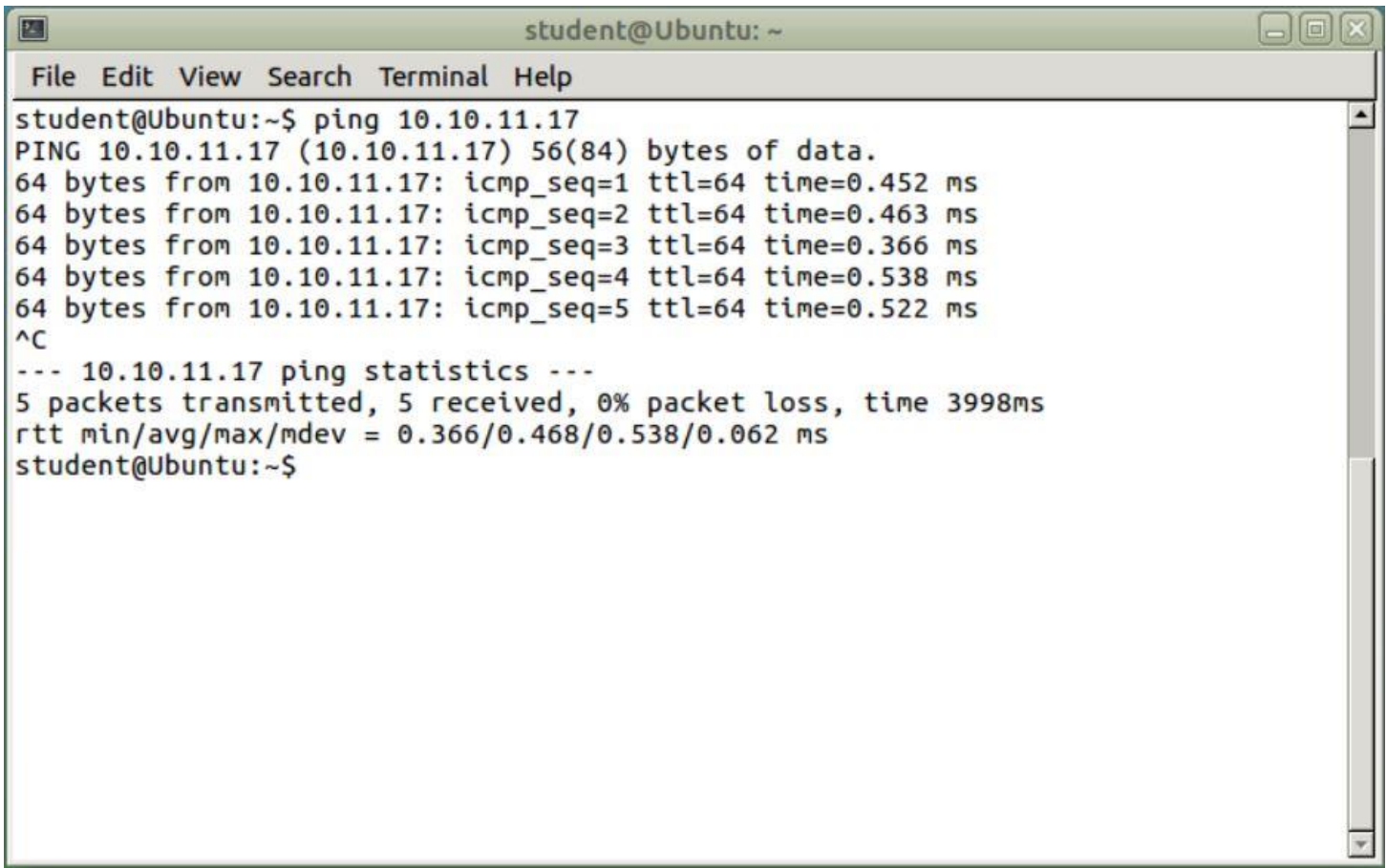
3. Screenshots of ifconfig on Ubuntu



```
student@Ubuntu: ~  
File Edit View Search Terminal Help  
student@Ubuntu:~$ ifconfig  
eth0      Link encap:Ethernet  HWaddr 00:00:00:00:00:0b  
          inet addr:10.10.11.18  Bcast:10.10.11.31  Mask:255.255.255.240  
          inet6 addr: fe80::200:ff:fe00:b/64 Scope:Link  
          UP BROADCAST RUNNING MULTICAST  MTU:1500  Metric:1  
          RX packets:12 errors:0 dropped:0 overruns:0 frame:0  
          TX packets:21 errors:0 dropped:0 overruns:0 carrier:0  
          collisions:0 txqueuelen:1000  
          RX bytes:1040 (1.0 KB)  TX bytes:3166 (3.1 KB)  
  
lo        Link encap:Local Loopback  
          inet addr:127.0.0.1  Mask:255.0.0.0  
          inet6 addr: ::1/128 Scope:Host  
          UP LOOPBACK RUNNING  MTU:65536  Metric:1  
          RX packets:1 errors:0 dropped:0 overruns:0 frame:0  
          TX packets:1 errors:0 dropped:0 overruns:0 carrier:0  
          collisions:0 txqueuelen:1  
          RX bytes:49 (49.0 B)  TX bytes:49 (49.0 B)  
  
student@Ubuntu:~$
```

Capture 4 IfConfig Ubuntu

4. Screenshots showing Ubuntu pinging R4

A screenshot of a terminal window titled "student@Ubuntu: ~". The window has a menu bar with "File", "Edit", "View", "Search", "Terminal", and "Help". The terminal output shows a ping command being executed: "student@Ubuntu:~\$ ping 10.10.11.17". The output displays five successful ping responses with 64 bytes of data, TTL of 64, and varying times (0.452 ms, 0.463 ms, 0.366 ms, 0.538 ms, 0.522 ms). After the responses, there is a "^C" indicating an interrupt. Finally, the ping statistics are shown: "--- 10.10.11.17 ping statistics ---", "5 packets transmitted, 5 received, 0% packet loss, time 3998ms", and "rtt min/avg/max/mdev = 0.366/0.468/0.538/0.062 ms". The prompt "student@Ubuntu:~\$" is visible at the bottom of the terminal.

```
student@Ubuntu:~$ ping 10.10.11.17
PING 10.10.11.17 (10.10.11.17) 56(84) bytes of data:
64 bytes from 10.10.11.17: icmp_seq=1 ttl=64 time=0.452 ms
64 bytes from 10.10.11.17: icmp_seq=2 ttl=64 time=0.463 ms
64 bytes from 10.10.11.17: icmp_seq=3 ttl=64 time=0.366 ms
64 bytes from 10.10.11.17: icmp_seq=4 ttl=64 time=0.538 ms
64 bytes from 10.10.11.17: icmp_seq=5 ttl=64 time=0.522 ms
^C
--- 10.10.11.17 ping statistics ---
5 packets transmitted, 5 received, 0% packet loss, time 3998ms
rtt min/avg/max/mdev = 0.366/0.468/0.538/0.062 ms
student@Ubuntu:~$
```

Capture 5 Ubuntu Pinging R4