

EL5373

INTERNET ARCHITECTURE AND PROTOCOLS

Zheng Pan

0495069

zp322@students.poly.edu

workstation: APAH

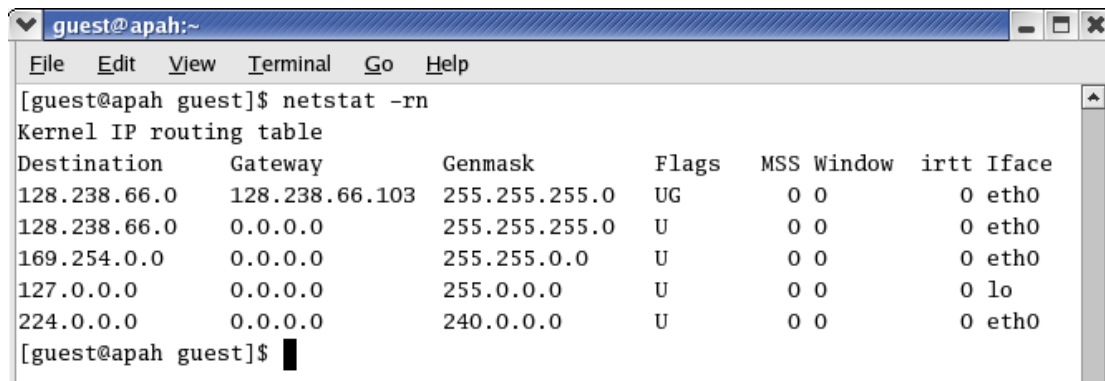
MAC: 00:16:76:a9:82:01

Lab Report 7

Due 24 April 2013

[4 Pages]

Exercise 1



```
guest@apah:~  
File Edit View Terminal Go Help  
[guest@apah guest]$ netstat -rn  
Kernel IP routing table  
Destination Gateway Genmask Flags MSS Window irtt Iface  
128.238.66.0 128.238.66.103 255.255.255.0 UG 0 0 0 eth0  
128.238.66.0 0.0.0.0 255.255.255.0 U 0 0 0 eth0  
169.254.0.0 0.0.0.0 255.255.0.0 U 0 0 0 eth0  
127.0.0.0 0.0.0.0 255.0.0.0 U 0 0 0 lo  
224.0.0.0 0.0.0.0 240.0.0.0 U 0 0 0 eth0  
[guest@apah guest]$
```

Exercise 2



```
[guest@apah guest]$ netstat -g  
IPv6/IPv4 Group Memberships  
Interface RefCnt Group  
-----  
lo 1 224.0.0.1  
eth0 1 224.0.0.1
```

There is one multicast group. The multicast group is 224.0.0.1. The meaning of the group ID is all systems in the subnet.

Exercise 3

```
[guest@apah guest]$ ping 224.0.0.1  
PING 224.0.0.1 (224.0.0.1) 56(84) bytes of data.  
64 bytes from 128.238.66.103: icmp_seq=1 ttl=64 time=0.028 ms  
64 bytes from 128.238.66.104: icmp_seq=1 ttl=64 time=0.393 ms (DUP!)  
64 bytes from 128.238.66.107: icmp_seq=1 ttl=64 time=0.576 ms (DUP!)  
64 bytes from 128.238.66.105: icmp_seq=1 ttl=64 time=0.697 ms (DUP!)  
64 bytes from 128.238.66.100: icmp_seq=1 ttl=64 time=0.789 ms (DUP!)  
64 bytes from 128.238.66.102: icmp_seq=1 ttl=64 time=0.974 ms (DUP!)  
64 bytes from 128.238.66.106: icmp_seq=1 ttl=64 time=1.09 ms (DUP!)  
64 bytes from 128.238.66.101: icmp_seq=1 ttl=64 time=1.29 ms (DUP!)  
all seven hosts (128.238.66.100, 128.238.66.101, 128.238.66.102,  
128.238.66.103, 128.238.66.104, 128.238.66.105, 128.238.66.106, 128.238.66.107)  
reply when the multicast address was pinged.  
[guest@apah guest]$ ping -b 128.238.66.255  
WARNING: pinging broadcast address  
PING 128.238.66.255 (128.238.66.255) 56(84) bytes of data.  
64 bytes from 128.238.66.103: icmp_seq=1 ttl=64 time=0.035 ms  
64 bytes from 128.238.66.104: icmp_seq=1 ttl=64 time=0.326 ms (DUP!)
```

64 bytes from 128.238.66.100: icmp_seq=1 ttl=64 time=0.451 ms (DUP!)

64 bytes from 128.238.66.105: icmp_seq=1 ttl=64 time=0.669 ms (DUP!)

64 bytes from 128.238.66.107: icmp_seq=1 ttl=64 time=0.830 ms (DUP!)

64 bytes from 128.238.66.101: icmp_seq=1 ttl=64 time=0.932 ms (DUP!)

64 bytes from 128.238.66.106: icmp_seq=1 ttl=64 time=1.39 ms (DUP!)

64 bytes from 128.238.66.102: icmp_seq=1 ttl=64 time=1.58 ms (DUP!)

all seven hosts (128.238.66.100, 128.238.66.101, 128.238.66.102, 128.238.66.103, 128.238.66.104, 128.238.66.105, 128.238.66.106, 128.238.66.107) reply when the broadcast address was pinged.

Exercise 4

Unicast:

source MAC: 00:16:76:a9:82:01

destination MAC: 00:04:75:b5:20:b5

source MAC address is host MAC address.

destination MAC address is remote host MAC address.

Multicast:

(1)

source MAC: 00:16:76:a9:82:01

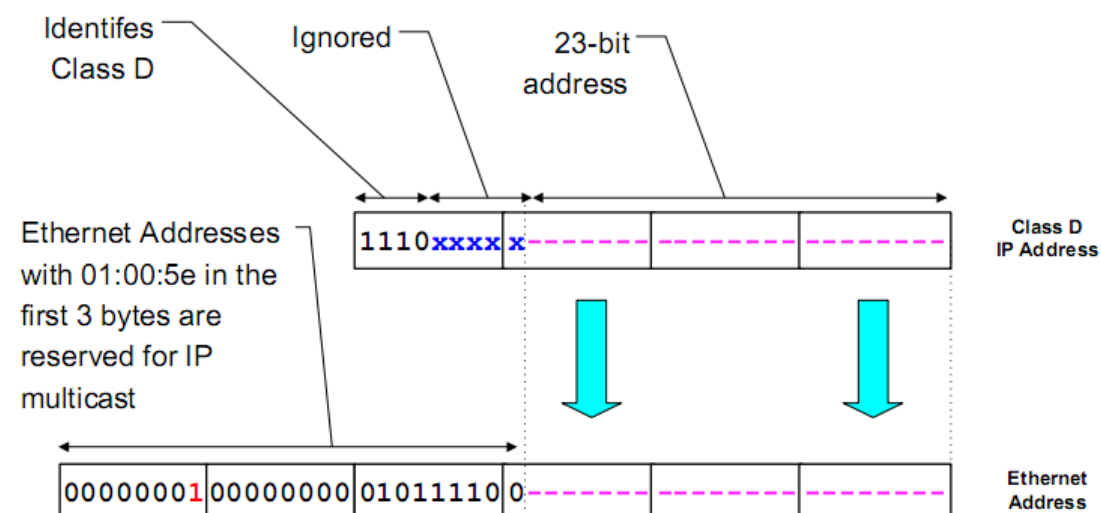
destination MAC: 01:00:5e:0b:6f:0a

(2)

source MAC: 00:16:76:a9:82:01

destination MAC: 01:00:5e:0b:6f:0a

Multicast Address Mapping



Mapping a Class D multicast IP address to an Ethernet multicast address is 01-00-5E(is used for IP Multicast) +0+the last 23-bit of IP address.

230.11.111.10=230.00001011.111.10

232.139.111.10=232.10001011.111.10

For these two IP addresses, the last 23-bit address are the same, so the MAC address are the same 01:00:5e:0b:6f:0a.

Broadcast:

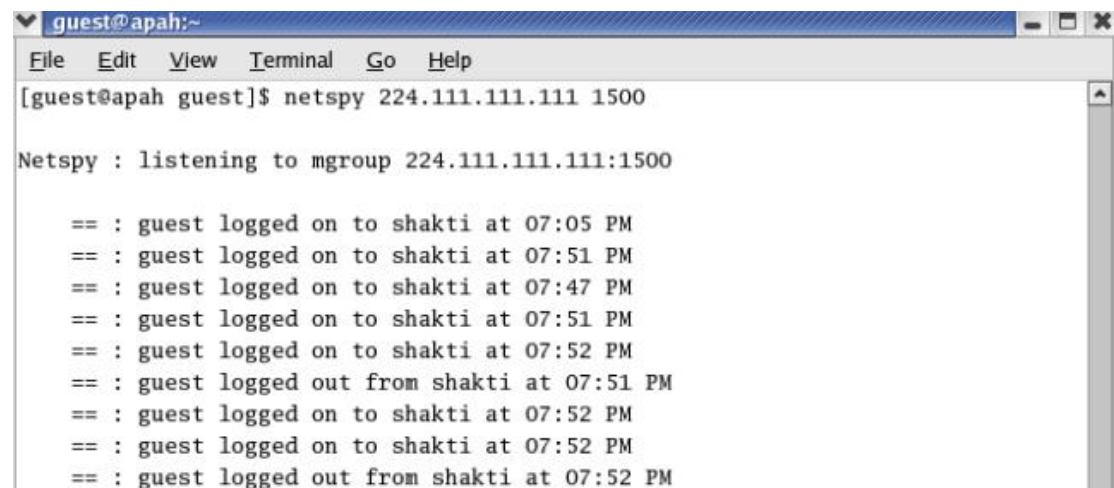
source MAC: 00:16:76:a9:82:01

destination MAC: ff:ff:ff:ff:ff:ff

source MAC address is host MAC address.

destination MAC address is broadcast address.

Exercise 5

A screenshot of a terminal window titled 'guest@apah:~'. The window has a menu bar with 'File', 'Edit', 'View', 'Terminal', 'Go', and 'Help'. The terminal shows the command '[guest@apah guest]\$ netspy 224.111.111.111 1500'. Below the command, it says 'Netspy : listening to mgroup 224.111.111.111:1500'. Then, there is a list of eight log messages, each preceded by '== :'. The messages are: 'guest logged on to shakti at 07:05 PM', 'guest logged on to shakti at 07:51 PM', 'guest logged on to shakti at 07:47 PM', 'guest logged on to shakti at 07:51 PM', 'guest logged on to shakti at 07:52 PM', 'guest logged out from shakti at 07:51 PM', 'guest logged on to shakti at 07:52 PM', and 'guest logged on to shakti at 07:52 PM'. The last line is 'guest logged out from shakti at 07:52 PM'.

```
guest@apah:~  
File Edit View Terminal Go Help  
[guest@apah guest]$ netspy 224.111.111.111 1500  
  
Netspy : listening to mgroup 224.111.111.111:1500  
  
== : guest logged on to shakti at 07:05 PM  
== : guest logged on to shakti at 07:51 PM  
== : guest logged on to shakti at 07:47 PM  
== : guest logged on to shakti at 07:51 PM  
== : guest logged on to shakti at 07:52 PM  
== : guest logged out from shakti at 07:51 PM  
== : guest logged on to shakti at 07:52 PM  
== : guest logged on to shakti at 07:52 PM  
== : guest logged out from shakti at 07:52 PM
```

When a new user logged in to Shakti, one message is sent by netspyd.

From the netspy outputs on all the hosts, eight copies of the message are received in total.

Shakti will receive the multicast datagram because it is the member of multicast group. It will receive this datagram through its loopback interface.