

 writeup.md

Lab 5 - Network

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Brief description of the network setup provided:

- IP subnet for the desktops and server
 - 10.0.0.0
- Which server is acting as DHCP server
 - Server 1. We can observe from wireshark that DHCP traffic is in server 1 and not server 2.
- What you had to fix in the DHCP setup to reach 8.8.8.8
 - To fix the DHCP setup, change config file's `dhcp-option:3` address from `10.0.0.111` to `10.0.0.1`. This is to correctly route the packets through intGW.

- Initially, DHCP broadcasted to the wrong default gateway IP, which does not exist. Therefore, packet was lost.

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srv1DHCP.conf - Visual Studio Code
File Edit Selection View Go Debug Terminal Help

1 interface=srv1-eth0
2 dhcp-range=srv1-eth0,10.0.0.100,10.0.0.200,255.255.255.0,12h
3 dhcp-option=3,10.0.0.1 #is the intGW addr
4 dhcp-option=option:dns-server,0.0.0.0,8.8.8.8
5 dhcp-authoritative
6

Terminal - cheryl_goh@desktop: ~/Desktop/lab5
File Edit View Terminal Tabs Help

*** Adding controller
*** Adding hosts:
extGW extH1 extH2 h0 h1 h2 h3 h4 intGW srv1 srv2
*** Adding switches:
extS1 s1 s2
*** Adding links:
(extGW, extS1) (extH1, extS1) (extH2, extS1) (intGW, extGW) (intGW, s2) (s1, s2) (s2, h0) (s2, h1) (s2, h2) (s2, h3) (s2, h4) (srv1, s1) (srv2, s1)
*** Configuring hosts
extGW extH1 extH2 h0 h1 h2 h3 h4 intGW srv1 srv2
*** Starting controller
c0
*** Starting 3 switches
extS1 s1 s2 ...
Configured the routers
Done with dnsmask
Done with dnsmasq start
added the route
Received IP for h0
Received IP for h1
Received IP for h2
Received IP for h3
Received IP for h4
Starting web servers
*** Starting CLI:
mininet> h1 ping 8.8.8.8
PING 8.8.8.8 (8.8.8.8) 56(84) bytes of data:
64 bytes from 8.8.8.8: icmp_seq=1 ttl=62 time=12.9 ms
64 bytes from 8.8.8.8: icmp_seq=2 ttl=62 time=0.294 ms
64 bytes from 8.8.8.8: icmp_seq=3 ttl=62 time=0.062 ms
64 bytes from 8.8.8.8: icmp_seq=4 ttl=62 time=0.064 ms
64 bytes from 8.8.8.8: icmp_seq=5 ttl=62 time=0.085 ms
64 bytes from 8.8.8.8: icmp_seq=6 ttl=62 time=0.082 ms
^C
--- 8.8.8.8 ping statistics ---
6 packets transmitted, 6 received, 0% packet loss, time 4999ms
rtt min/avg/max/mdev = 0.062/2.255/12.945/4.781 ms
mininet>

```

Why can you resolve nils.net? Briefly describe where from h1 knows about a DNS server, and what its IP is.

- nils.net has an IP of 8.8.8.2, which is associated to 8.8.8.8 (DNS)
- Initially, h1 uses localhost (127.0.0.1) as the DNS server but does not have an entry for nils.net initially. Hence, change in DNS server to 8.8.8.8 by modifying the resolv.conf file allows h1 to successfully ping nils.net since 8.8.8.8 has an entry for nils.net.

Who is doing the NAT'ing? Which address ranges it is translating between?

- IntGW is doing the NAT'ing.

- The address range it is translating is between private IP addresses 10.0.0.0/24 and (10.0.0.1 - 10.0.0.254) and public IP addresses 2.2.2.2/24

Did you manage to block srv1 from reaching the outside world?

- Yes, blocked srv2 from reaching the outside world by executing the commands " `iptables -I FORWARD -s 10.0.0.11 -j DROP` ", and " `iptables -I INPUT -s 10.0.0.11 -j DROP` ".
- srv2 IP: 10.0.0.11

Did you do any of the optional tasks?

- No