Lab 9

First, I installed isc-dhcp-server. Next, I changed machine a's hostname statically using /etc/hostname. Then, I started configuring the dhcp server in /etc/dhcpd.conf. I created the appropriate subnets and masks, specific pools with the last octet 100-199, and default gateways as gathered from there previously static configurations using the routers option as:

```
#File Server subnet subnet 10.21.32.0

netmask 255.255.255.0{


        option routers 10.21.32.1;          pool{

range 10.21.32.100 10.21.32.199;

        }

}


#wlan


subnet 100.64.0.0 netmask 255.255.255.0{

}


#dmz subnet subnet 100.64.22.0 netmask

255.255.255.0 {         option routers

100.64.22.1;          pool{                 range

100.64.22.100 100.64.22.199;

        }

}
```

Since, all machines must have the domain name and search path set to dundermifflin.com, I set that globally along with the ntp and domain name servers. option ntp-servers time-a-wwv.nist.gov, time-a-b.nist.gov; option domain-name-servers 128.138.240.1, 128.138.130.30;

option domain-search "dundermifflin.com"; option

domain-name "dundermifflin.com";

I also added the following to guarantee the lease time to be 600 seconds (10 min), and I made the dhcp configuration authoritative.

default-lease-time 600; max-

lease-time 600; authoritative;

Furthermore, since the DMZ machines and the fileserver have fixed ip addresses that are not within the pools above, I gave them host declarations as below using there mac addresses and ip addresss and giving them a new desired hostname.

host machineb{ hardware ethernet

00:50:56:85:31:43; fixed-address

100.64.22.2; option host-name

"dns0.dundermifflin.com";

}

host machinec{

```
        hardware ethernet 00:50:56:85:96:c6;
fixed-address 100.64.22.3;         option host-
name "web0.dundermifflin.com";

}
host machined{         hardware ethernet
00:50:56:85:43:50;         fixed-address
100.64.22.4;         option host-name
"web1.dundermifflin.com";

}
host machinee{         hardware ethernet
00:50:56:85:2a:a2;         fixed-address
10.21.32.2;         option host-name
"nfs.dundermifflin.com";
 }
host machinef{         hardware ethernet
00:50:56:85:0d:f7;         fixed-address
100.64.22.6;         option host-name
"dns1.dundermifflin.com";
}
```

After trying to run the dhcp server unsuccessfully multiple times, I learned that I had to remove the static configurations on each machine. Hence, I went into each machine and edited there /etc/sysconfig/network-scripts/ifcfg if it was a redhat machine and /etc/network/interfaces if it was a Debian machine after backing up the files. I set BOOTPROTO to dhcp and DHCP_HOSTNAME to the desired hostname and commented out the ip address, netmask, and gateway.

Finally, started the dhcp server using systemctl start dhcpd.service and rebooting all machines A-F in that order. I tested that the network connection was fine using ping. I used systemctl status dhcpd.service and journaltctl -xeu dhcpd to see the logs and determine the DHCPACK, DHCPOFFER, DHCPREQUEST, and pools offered while checking the ip addresses and mac addresses. Furthermore, I created a bash script and ran some commands to test for the hostname, IP, netmask, gateway, search path, nameservers, and NTP servers on every machine.
After noticing that the search path was different for the router, I had to edit it manually in /etc/resolv.conf. I checked the lease time in the Debian machines in their /var/lib/dhcp/dhclient.leases along with other lease paramaters to make sure the lease time was set to 10 minutes (600 seconds). Then, I was able to do the ICMP echo request, which I saw more activity in the logs after implementing. I did that using the simple lines below:

ping-check true; ping-timeout-ms

100; abandon-lease-time 600;

which turns on ping-check, sets the timeout(time to wait for a reply) to 100 ms, and abandons

the lease for 600 seconds(10 minutes).