SETTING UP A LAN NETWORK

In this module, we have created a Local Area Network.

Toolkit Used:

Workstation Operating System	Lubuntu 15.04
External Network Interface Cards	Quantity: 1 Manufacturer: TP-LINK Model Number: TF-3200
Switches	Quantity: 1 Manufacturer: D-LINK Model Number: DES-10008A

Below are the steps followed while setting up a LAN.

1. **Install DHCP Server:**

   Installed *isc-dhcp-server* to maintain server setup and configuration.

   $ sudo apt-get install isc-dhcp-server.

2. **Install webmin:**

   Installed webmin to configure and maintain the DHCP server.

   a. Installed required dependencies:
      $ sudo apt-get install perl libnet-ssleay-perl libauthen-pam-perl libpam-runtime opensslibio-pty-perl apt-show-versions python.
   b. Downloaded Webmin:
      $ wget http://prdownloads.sourceforge.net/webadmin/webmin_1.770_all.deb
   c. Installed Webmin:
      $ sudo dpkg --install webmin_1.770_all.deb

3. **Renaming Network Cards**

   In the current workstation, eth1 is connected to the MSIT LAN and eth0 is the external NIC which is going to be used for setting up a LAN for IS specialization purposes. So, for

the better understanding and avoid confusion, we have renamed eth1 to WAN and eth0 to LAN.

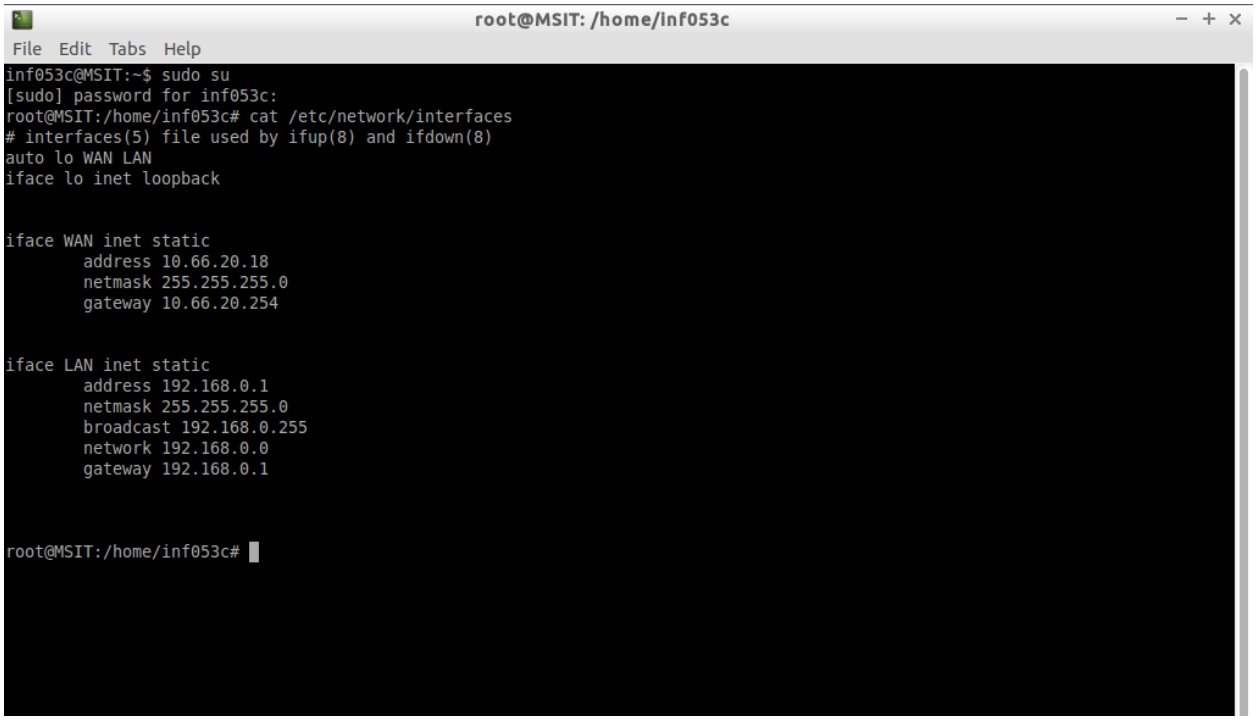
$ sudo leafpad /etc/udev/rules.d/70-persistent-net.rules

4. DHCP & LAN Configuration

I. Editing Network Interfaces:

Edited the network interfaces in order to configure the eth0

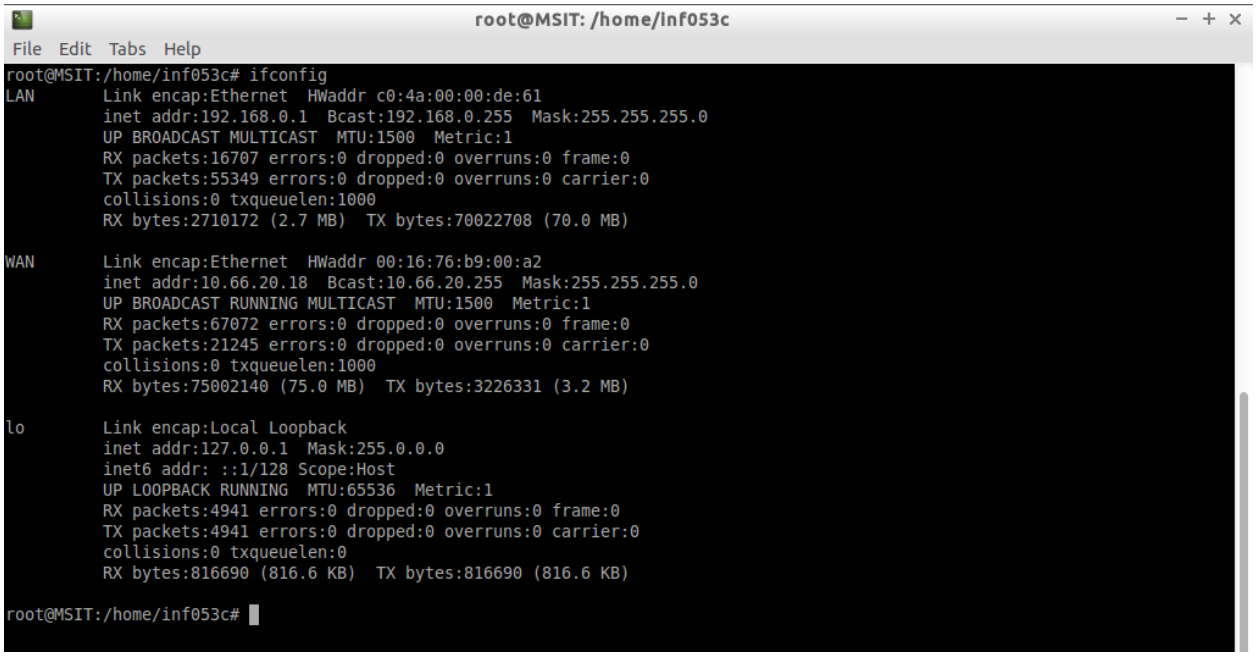
$ sudo leafpad /etc/network/interfaces



II. Check IP Configuration

Check the IP Configuration of both LAN and WAN after editing interfaces.

$ sudo ifconfig



III. Listen for DHCP request

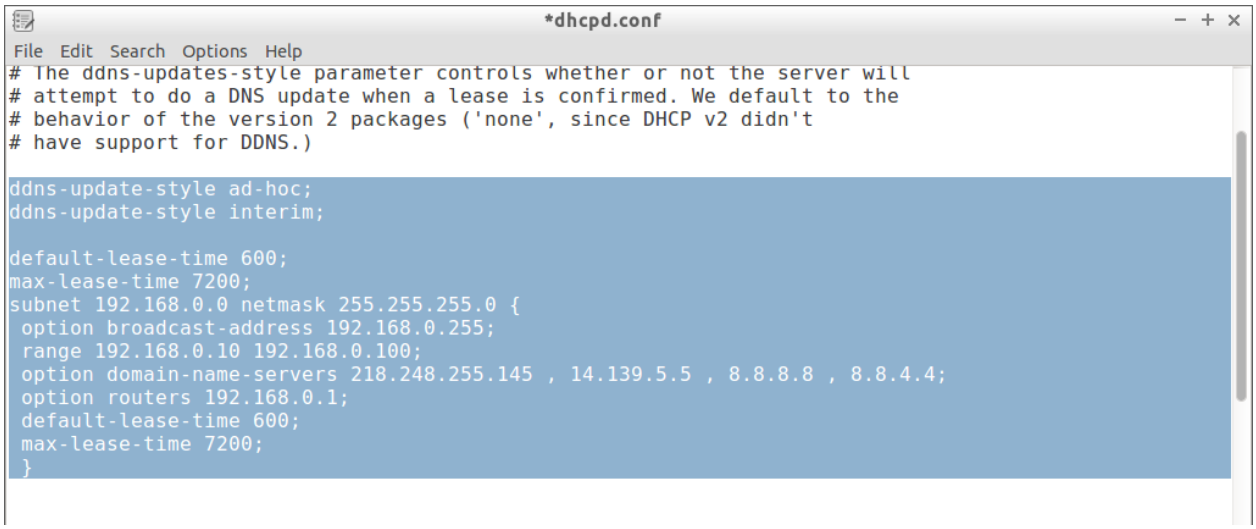
Because there is more than one network card in our workstation, we need to select the network card (WAN) on which our server will be listen for DHCP request.

$ sudo leafpad /etc/default/isc-dhcp-server.

IV. Configure the DHCP server's config file

Edit the dhcp.conf file in order to make changes according to our convenience.

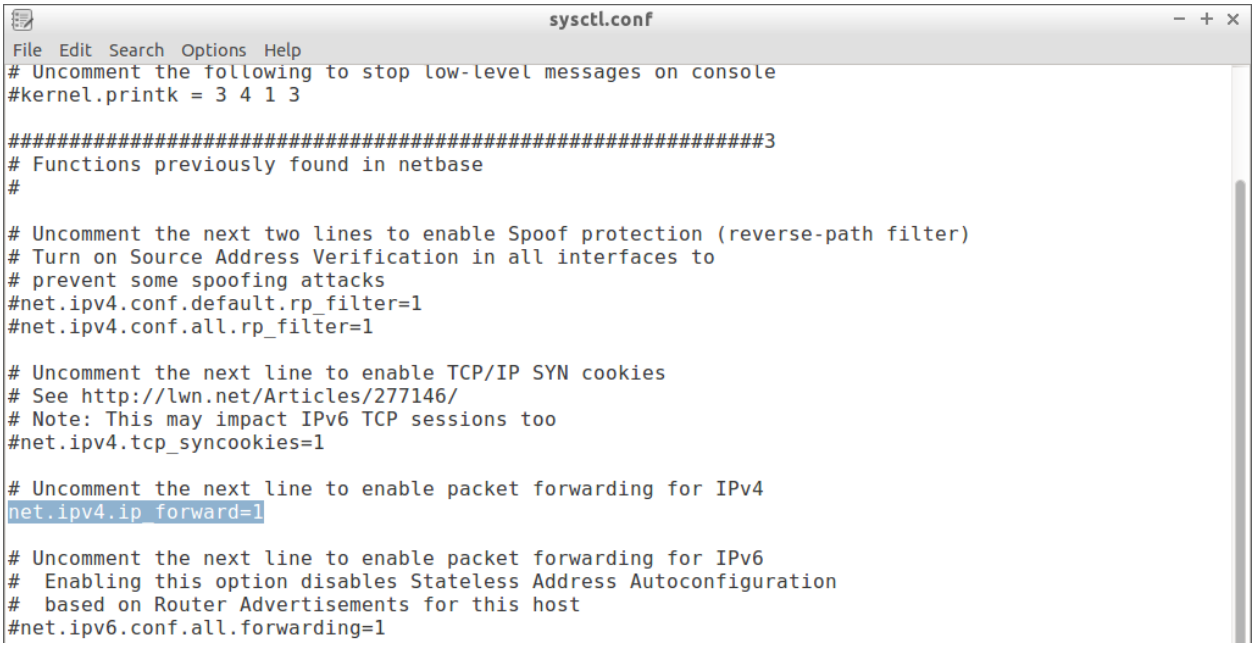
$ sudo nano /etc/dhcp/dhcpd.conf



V. Enable IP Forwarding

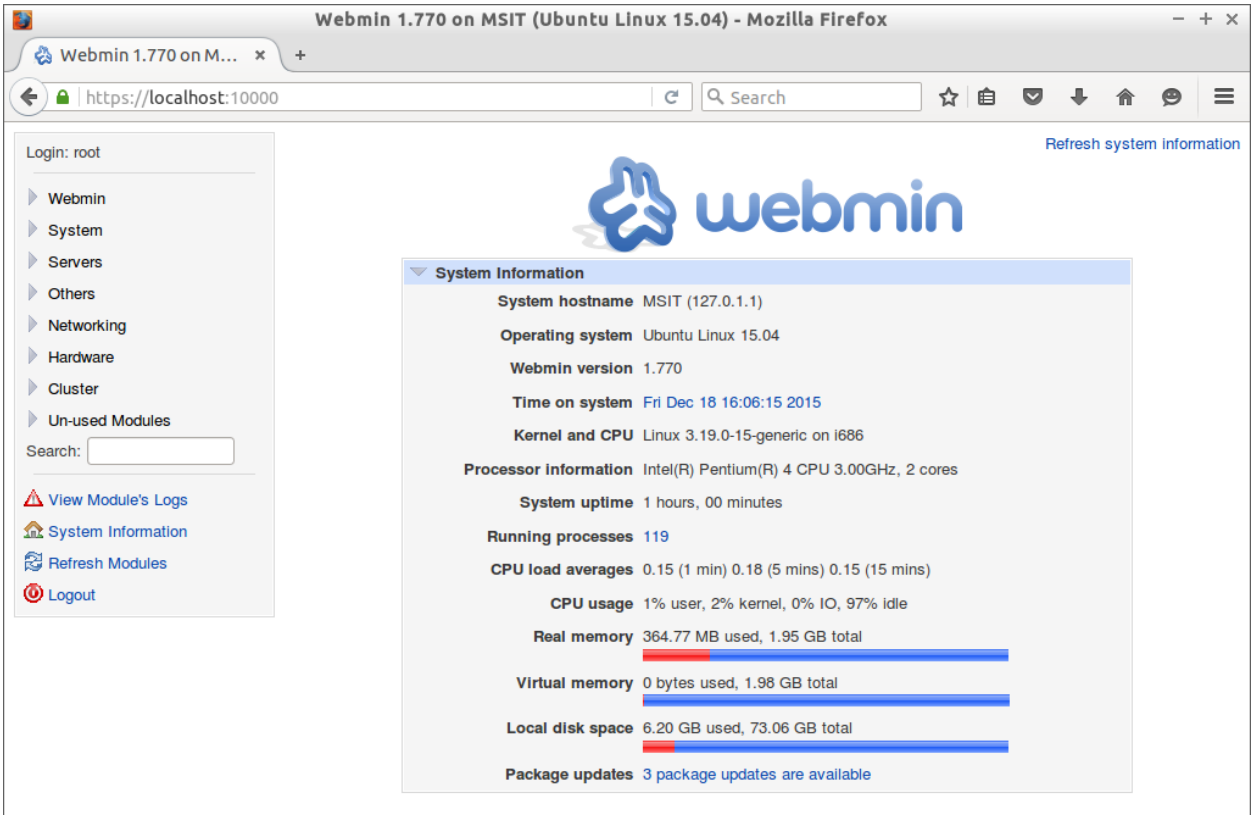
Edit the sysctl.conf file to forward packets from WAN to LAN.
Uncomment IPV4 packet forwarding line.

$ sudo nano /etc/sysctl.conf



VI. Login to Webmin

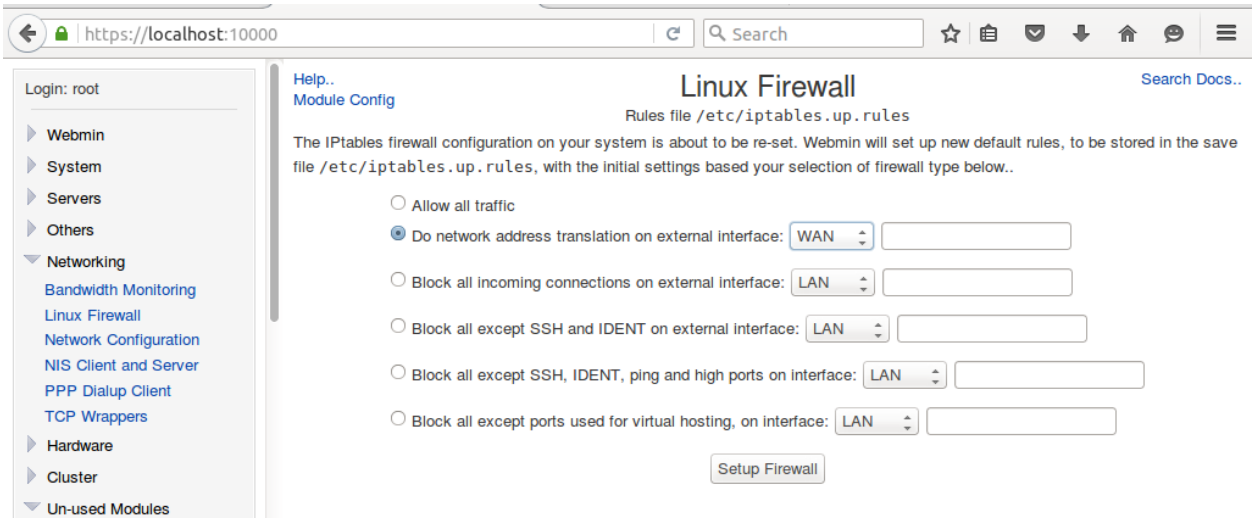
After configuring all our requirements, login to webmin (https://localhost:10000/) using root account.



VII. Add Firewall Rules

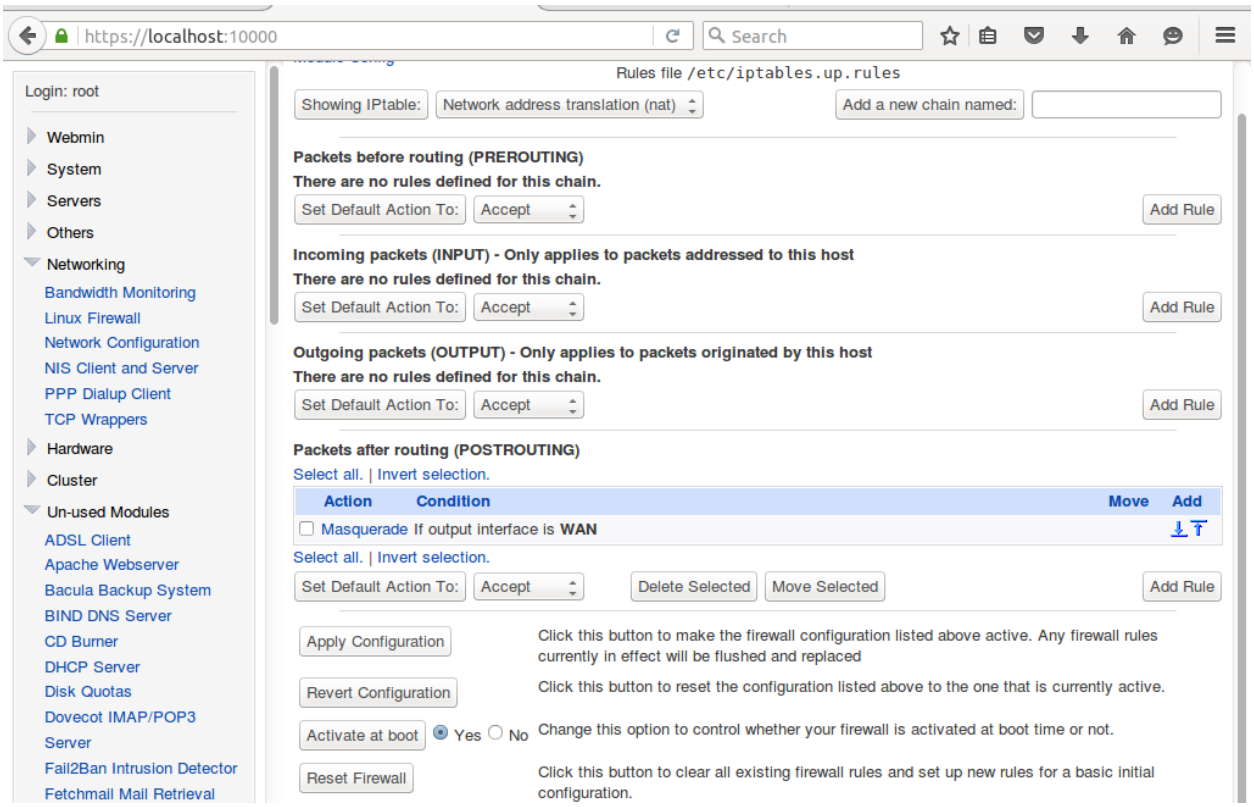
a. Enable MASQUERADE(NAT):

- Select Networking in the left menu bar.
- Select the Linux firewall from the Networking drop down menu.
- Configure the Linux Firewall such that it should do the network address translation for WAN interface.
- So, select "Do network address translation on external interface" for WAN.
- Select the "Setup firewall" finally.



b. Save IP Table rules

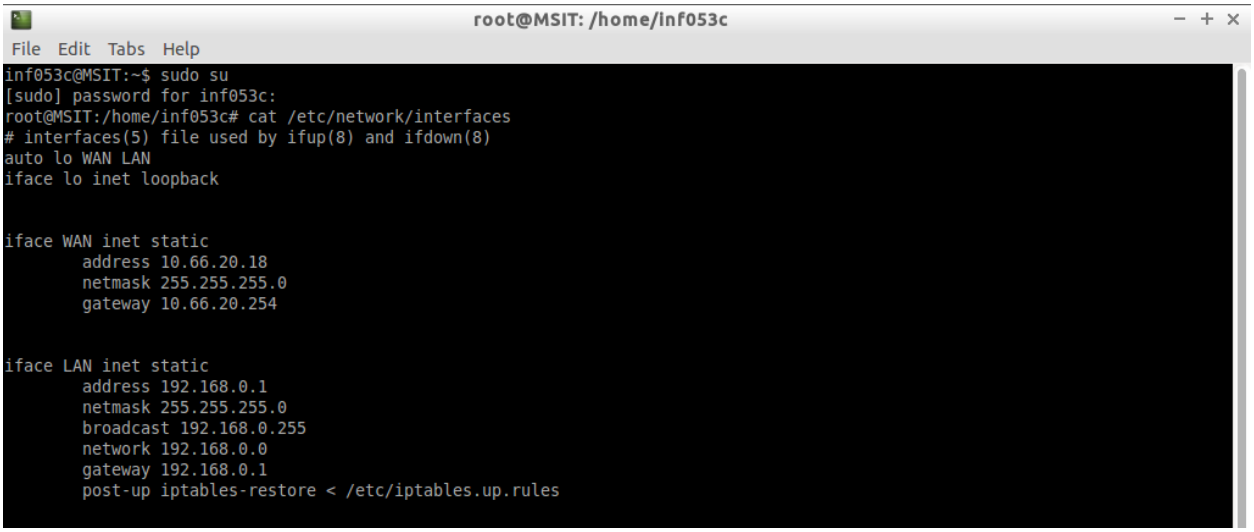
After the above step, save the rules to iptables.up.rules file by clicking on 'Apply changes' in IP Tables.



c. Observe IP Table Changes

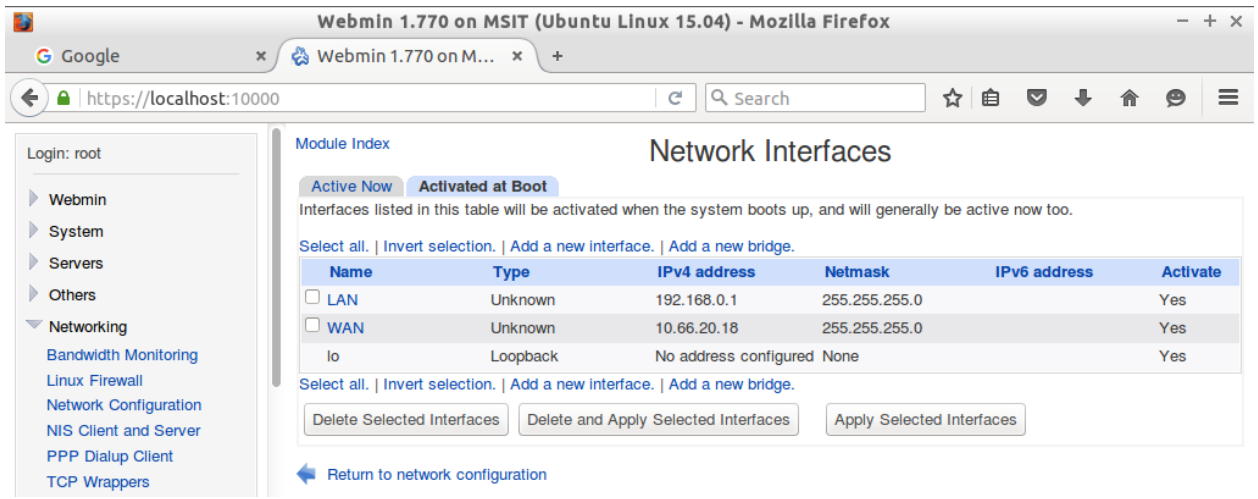
Observe the changes made to the iptables.up.rules result in modification of /etc/network/interfaces file

$ sudo cat /etc/network/interfaces

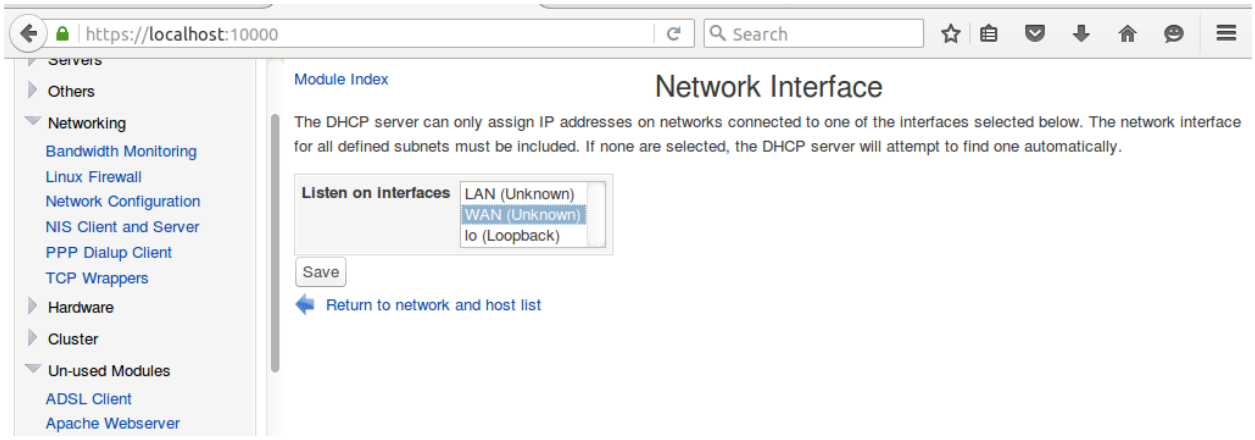


d. Activate Network Interfaces

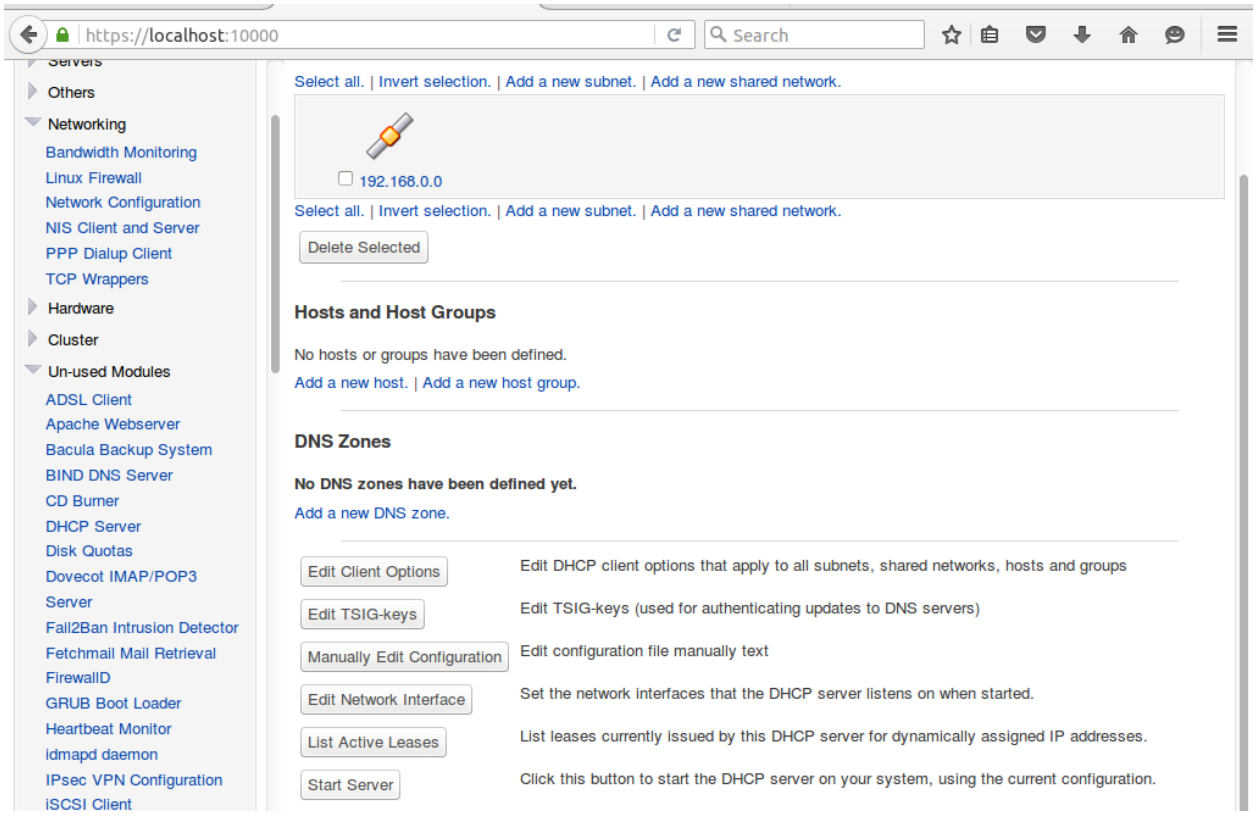
Make sure that both LAN and WAN is up and running. If in case anyone of the interfaces is down, activate it before proceeding.



VIII. Listen to WAN Interface



IX. Start the DHCP Server



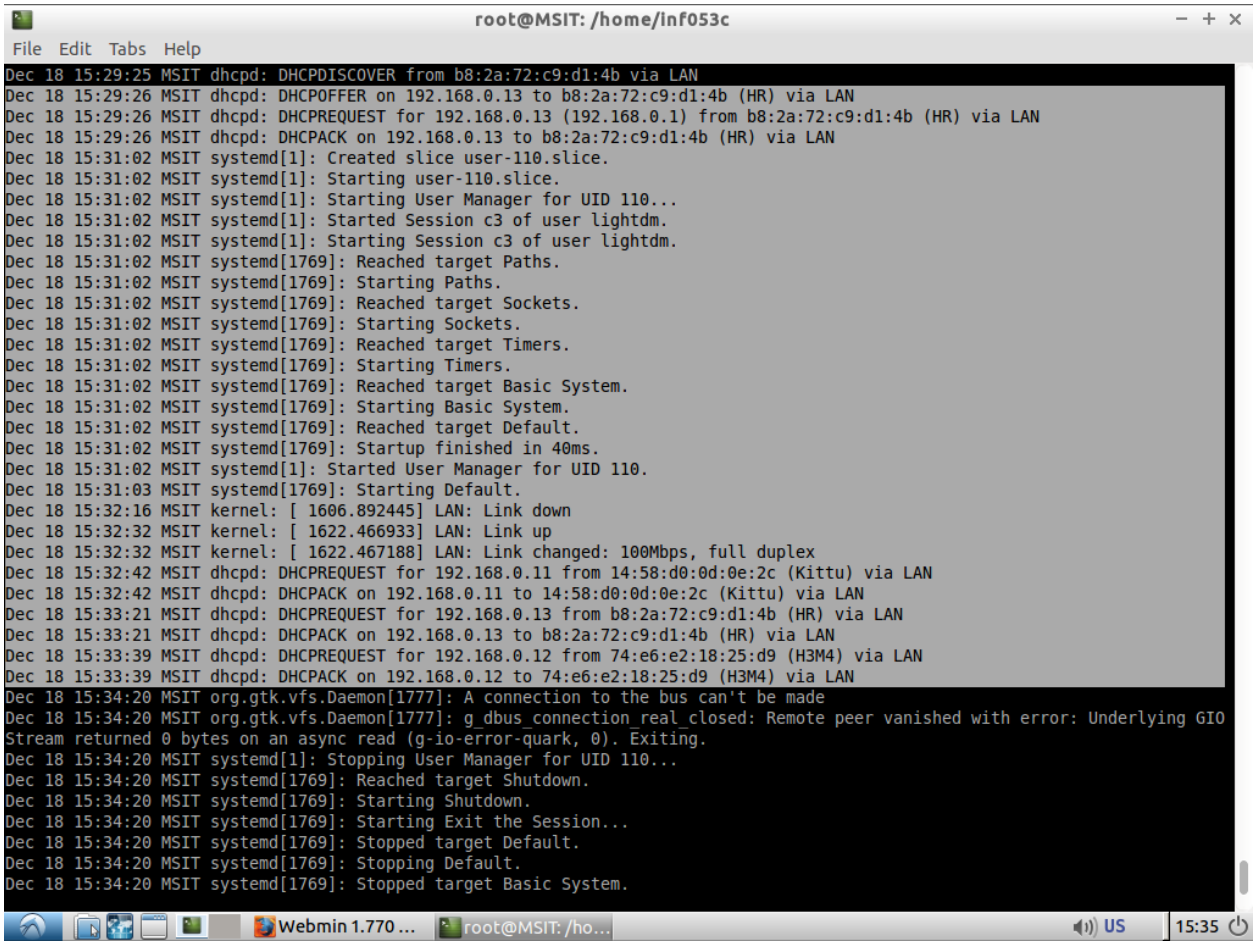
5. Results:

Three personal workstations are connected to the switch which is connected the DHCP Server. The DHCP server automatically allocates IP Addresses to them.

IP address	WorkStation Name
192.168.0.11	Kittu
192.168.0.12	H3M4
192.168.0.13	HR

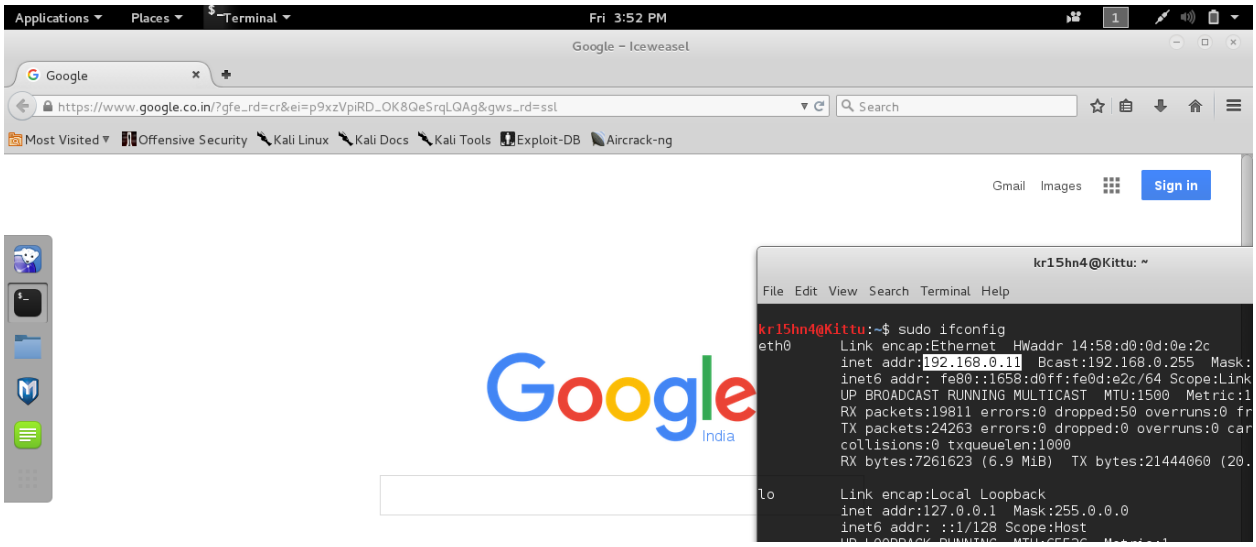
Details can be observed in the screenshot.
It is the result of system log file (/var/log/syslog).

$ sudo tail -50 /var/log/syslog

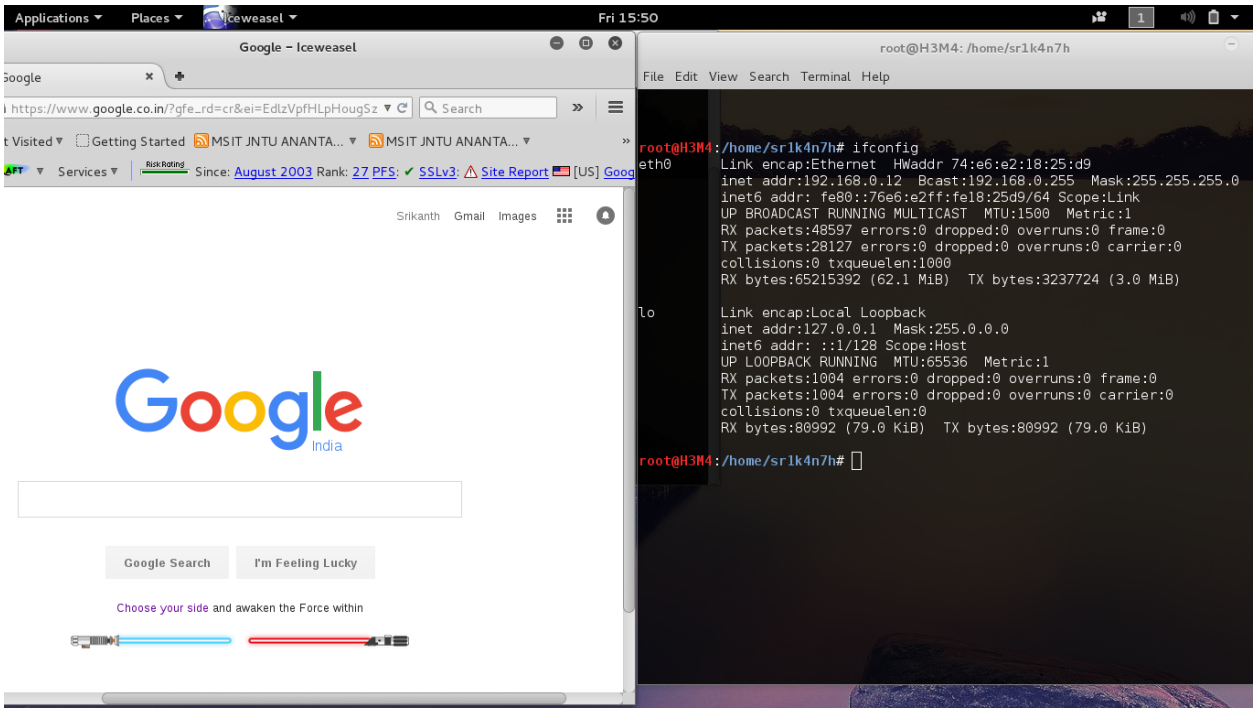


Individual Screenshots:

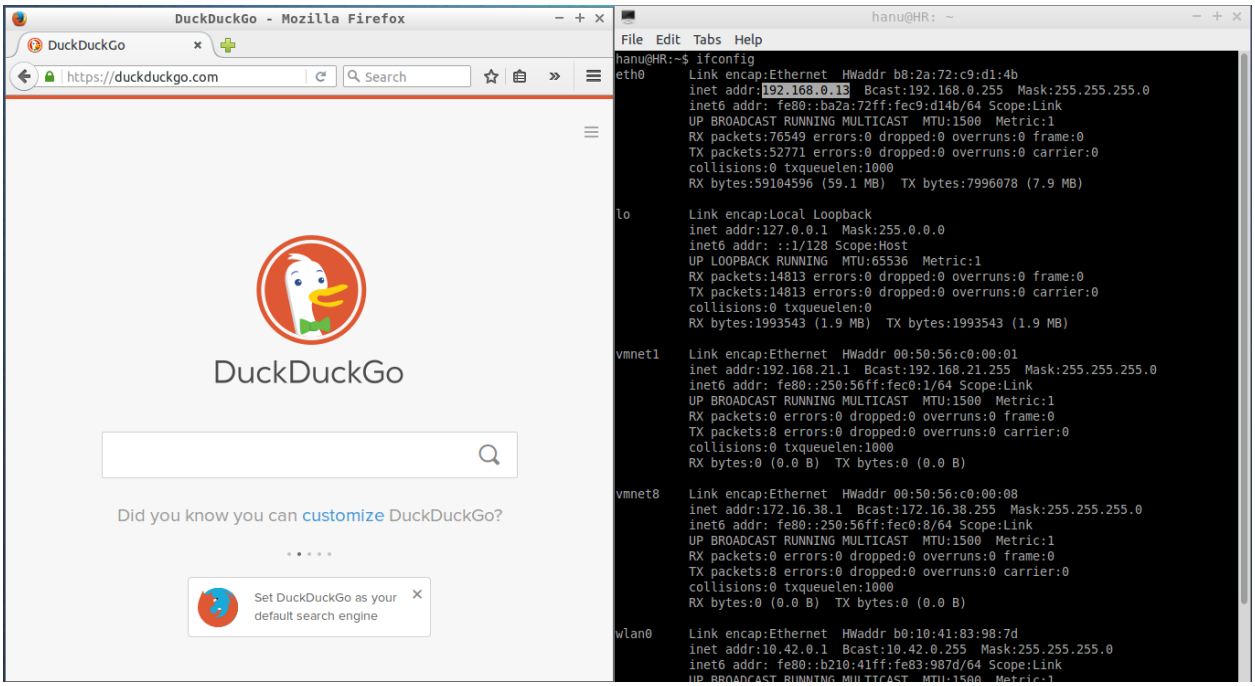
- Kirshnama Naidu – 140A1J0004 , IP : 192.168.0.11 (Kittu)



- Srikanth Narayanaraju – 140A1J0005 , IP : 192.168.0.12 (H3M4)



- Hanumanth Reddy – 140A1J0002 , IP : 192.168.0.13 (HR)



LAB Setup: