**CSCI 2930: Practical System Administration**

**Lab 4**

**Spring 2014**

Now that you have configured your CentOS (RHEL6) virtual machine and it is ready to function as a server, let’s set up some services for it to offer. Today, we’ll be configuring DHCP. Since our virtual machines are currently active on the campus network, we’ll have to be extra careful not to enable the service while we’re connected.

Let’s move forward with the configuration. Remember that you should not be doing any of this using a Graphical User Interface (GUI). As a server administrator, you want to be certain that your server’s hardware resources are being used for their intended purposes instead of being wasted on graphics and displays. As such, your server operating systems are going to be Command Line Interfaces (CLIs) a great majority of the time. So open up your terminal and let’s get started.

1. First, you want to make sure that you have root access to the machine:  
   > su
2. Next, let’s install the DHCP service:  
   > yum install dhcp
3. Next, create your DHCP configuration file:  
   > touch /etc/dhcp/dhcpd.conf  
   Some things to keep in mind when working with your configuration file:
   1. Your file may contain extra tabs and blank lines for easier formatting.
   2. Lines beginning with a hash mark (#) are considered comments. Use these as much as you can.
   3. Keywords are case-insensitive.
4. Open your configuration file and begin editing:  
   > vi /etc/dhcp/dhcpd.conf  
   NOTE: Read the manual pages for vi if you have a hard time remembering how to navigate through it.
5. Add the following line to the top of your configuration file. This tells the DHCP service how to update its DNS records for these devices.  
   > ddns-update-style interim;
6. Now let’s add some global configurations:  
   >   
   default-lease-time 3600; # Set the default lease time to 1 hour (in seconds)  
   max-lease-time 7200; # Set the maximum lease time to 2 hours (in seconds)  
   option subnet-mask 255.255.255.0; # Set the subnet mask for all subnets in the network  
   option routers 10.10.10.1; # Set the router address for all subnets in the network  
   option domain-name-servers 8.8.8.8, 8.8.4.4; # Set DNS servers for all subnets in the network  
   option domain-name “examplepanda.com”; # Set domain name for all subnets in the network  
   authoritative; # Declare this as a valid DHCP server
7. Next, we’ll add a subnet declaration to the configuration file:  
   >  
   subnet 10.10.10.0 netmask 255.255.255.0 {  
    option routers 10.10.10.1;  
    option subnet-mask 255.255.255.0;  
     
    option domain-name “examplepanda.com”;  
    option domain-name-servers 8.8.8.8, 8.8.4.4;  
     
    option time-offset -25200; # Mountain Standard Time (in seconds)  
     
    range 10.10.10.10 10.10.10.240;  
   }  
     
   NOTE: Your subnet options can be different than your global options. Subnet options will override the global options, if specifically declared. In this case, since they’re identical, our subnet options can be safely excluded, but we put them in just for practice purposes.
8. Next, we need to create our lease database to keep track of our DHCP leases:  
   > touch /var/lib/dhcpd/dhcpd.leases  
   NOTE: Do NOT edit this file at all! The DHCP service will handle this for you!
9. The next step would normally be to start the DHCP service, but for us, this is going to fail.  
   > /sbin/service dhcpd start  
   The reason this command fails is because the server cannot reach that network at all. The network that we’ve created doesn’t exist (remember what you configured your IP Address to be!).
10. If by some miracle your service DID start, you should immediately stop it before your instructor throws a fit:  
    > /sbin/service dhcpd stop

NOTE: The next portions of this lab are not required for DHCP to run, but they ARE required to complete this lab!

1. Set the DHCP server to only listen for DHCP requests on the primary Ethernet interface:  
   > vi /etc/sysconfig/dhcpd  
   Edit the line (or add it): DHCPDARGS=eth0
2. Add individual host reservations in DHCP:  
   > vi /etc/dhcp/dhcpd.conf  
   host testhost {  
    option host-name “testhost.examplepanda.com”;  
    option hardware ethernet 00:A0:78:8E:9E:AA;  
    fixed-address 10.10.10.15;  
   }

Questions for this lab:

1. Why do we not want to enable DHCP on the existing infrastructure?  
   Because we are not using Cisco’s native proxy mode of operation.
2. What is the purpose of the “touch” command?  
   The touch command lets us create an empty file in the directory we choose.
3. How many possible hosts can the DHCP Range that we created support?  
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4. What are the benefits to locking down the DHCP service to a single interface?  
   So you do not need a physical adapter attached to each IP. You can create multiple virtual interfaces to a single physical card.
5. Why would we want to create a host reservation in DHCP?  
   So we can statically assign IP address to hosts based on MAC addresses.