

Setting up a reservation only DHCP server on MacOS X

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The Problem:

You don't want 'unknown' or 'undesired' client computers to be able to just connect to your network and receive an IP address via DHCP, but, manual assigning all IP addresses is too tedious and difficult to manage.

Most DHCP servers have the option of handing out specific IP addresses to specific clients (identified by their Ethernet/MAC address) but they of course still give IP addresses to those clients without a 'reservation'.

Solution:

If you are willing to ignore MacOS X Server's built-in DHCP server (or you just have MacOS X, non-server) you can download, compile, and install your own DHCP server. The downside is that it will require you to edit text based configuration files, however I have found that to be exactly what I wanted in my case.

To start you need a copy Apple's Developers Tools installed, which by the way, came with your computer, just not installed on default. If you can't find the CD, it might be in the 'Installers' folder inside of the 'Applications' folder. Or you can download it from:

<http://developer.apple.com/macosx/>

Once the developer tools are installed, open Terminal (or your favorite command line application) and go to the directory you want to put your temporary downloads to

(example: `cd ~/Desktop`)

From the command line type:

```
mkdir dhcpd
cd dhcpd
curl -O ftp://ftp.isc.org/isc/dhcp/dhcp-latest.tar.gz
tar zxvf dhcp-latest.tar.gz
cd dhcp-3.0pl2
```

Note: the last line might be different for you since when you download and extract the latest copy of the dhcp server it might not be the exact same version when I wrote these instructions. Just do a 'cd' to see what version was extracted.

Now type:

```
./configure
make
```

```
sudo make install
```

You will of course be prompted for your password. If you aren't an administrator then you can't do this, but then you probably don't WANT to do any of this!

Now type:

```
sudo touch /var/db/dhcpd.leases
sudo mkdir -p /Library/StartupItems/DHCP/Resources/English.lproj
sudo pico /Library/StartupItems/DHCP/DHCP
```

The last command will open the command line text editor pico, you can use just about any other text editor if you prefer. Once in pico (or other editor) type (or copy and paste from here) the following...

```
-----cut here-----
#!/bin/sh

##
# DHCP
##
. /etc/rc.common
StartService ()
{
    if [ "${DHCP:=-NO-}" = "-YES-" ]; then
        if ! pid=$(GetPID DHCPD); then
            ConsoleMessage "Starting DHCP services"
            /usr/sbin/DHCPD en0
        fi
    fi
}

StopService ()
{
    if pid=$(GetPID DHCPD); then
        ConsoleMessage "Stopping DHCP services"
        kill -TERM "${pid}"
    else

```

```
        echo "DHCPD is not running."
    fi
}
RestartService ()
{
    if pid=$(GetPID dhcpd); then
        ConsoleMessage "Restarting DHCP services"
        kill -HUP "${pid}"
    else
        StartService
    fi
}
RunService "$1"
-----end cut here-----
```

(exit pico, make sure to save)

Now type

```
sudo pico /Library/StartupItems/DHCP/StartupParameters.plist
```

Once in pico type the following...

```
-----cut here-----
{
    Description      = "DHCP server";
    Provides         = ("DHCP");
    Requires         = ("Network");
    Uses             = ("Disks", "Network Time");
    OrderPreference = "None";
}
-----end cut here-----
```

(exit pico, make sure to save)

Now type:

```
sudo pico /Library/StartupItems/DHCP/Resources/English.lproj/Localizable.strings
```

Once in pico type the following...

```
-----cut here-----  
<?xml version="1.0" encoding="UTF-8"?>  
<!DOCTYPE plist SYSTEM "file:///localhost/System/Library/DTDs/PropertyList.dtd">  
<plist version="0.9">  
<dict>  
    <key>Starting DHCP services</key>  
    <string>Starting DHCP services</string>  
    <key>Stopping DHCP services</key>  
    <string>Stopping DHCP services</string>  
    <key>Restarting DHCP services</key>  
    <string>Restarting DHCP services</string>  
</dict>  
</plist>  
-----end cut here-----
```

(exit pico, make sure to save)

Now type:

```
sudo chown -R root.wheel /Library/StartupItems/DHCP  
sudo chmod -R 755 /Library/StartupItems/DHCP  
sudo chmod 644 /Library/StartupItems/DHCP/StartupParameters.plist  
sudo pico /etc/hostconfig
```

In 'hostconfig', add the following line (presumably at the bottom):

```
DHCP=-YES-
```

(exit pico, saving)

Note: To disable DHCP server from automatically starting at boot time, just change that yes to a no.

Now type:

```
sudo pico /etc/dhcpd.conf
```

This is where your dhcp configuration goes. Here is a simple sample. The really trick is NOT including (or enabling) a range. (see the comments in the sample.

```
----- cut here-----
default-lease-time 3600; # = 1 hour (60 seconds x 60 minutes)
max-lease-time 7200; # = 2 hours
ddns-update-style ad-hoc;
option subnet-mask 255.255.0.0;
option broadcast-address 10.0.255.255;
option routers 10.0.0.1;
option domain-name-servers 10.0.0.2, 10.0.0.9;
option domain-name "example.com";
option netbios-name-servers 10.0.1.14;

subnet 10.0.0.0 netmask 255.255.0.0 {
#to allow any unknown MAC addresses to receive IP addresses, simply remove the # from the line
below
# range 10.0.60.2 10.0.60.254;
}

# the following group is for reservations/known clients
group {

default-lease-time 3600; # 432000; # = 1 day (86400 seconds) x 5 (total of 5 days)
max-lease-time 3600; # 864000; # = 10 days
ddns-update-style ad-hoc;
option subnet-mask 255.255.0.0;
option broadcast-address 10.0.255.255;
option routers 10.0.0.1;
option domain-name-servers 10.0.0.2, 10.0.0.9;
option domain-name "example.com";
option netbios-name-servers 10.0.0.14;

host mymachine-desktop { hardware ethernet 00:05:bb:bb:aa:aa; fixed-address 10.0.40.1;}
host myboss-desktop { hardware ethernet 00:30:ee:89:33:8E; fixed-address 10.0.40.2;}
```

```
host someonespc-laptop { hardware ethernet 00:30:66:CF:44:EC; fixed-address 10.0.40.3;}
}
-----end cut here-----
```

Once you have configured the file all that is left to do is test it out.

Type:

```
sudo SystemStarter start DHCP
```

To stop DHCP just type:

```
sudo SystemStarter stop DHCP
```

If you want to make sure it is running type:

```
ps -aux | grep DHCPD | grep -v grep
```

And if it is running you should get something similar to this:

```
root  16943  0.0  0.0  4188  704  ??  Ss   Wed08PM  0:03.55 /usr/sbin/DHCPD en0
```

Tip: We use FileMaker Pro to track all of our inventory (including MAC addresses). To add a machine to DHCP we export the proper data/fields from FileMaker Pro to a text file and then copy the text and past over the reservations in dhcpd.conf.

Document Notes:

Much of this document was based on my experience following William Van Etten's posting at:

<http://www.macosxhints.com/article.php?story=20021017055337617&query=dhcpd>

and various sample dhcp.conf files found using some google.com searches.

This documentation was written based on dhcpd version 3.0pl2 and testing on MacOS X Server version 10.2.x and MacOS X (non-server) version 10.3.

As you probably have noticed I tend to use 'sudo' include 'sudo' quite a bit. Many will point out this could be avoided by either using 'su' or 'sudo -s' but I tend to see using sudo each time as safer (too bad I don't practice what I preach when it comes to sudo vs. su).