12.2.4 Configure DHCP and Static Addressing

Click one of the buttons to take you to that part of the video.

Configure DHCP and Static Addressing 0:00-0:20

In this demonstration I'm going to show you how to configure the network interface on a Linux system to use either dynamic or static IP addressing. We're going to do this using the interface's configuration file.

The location of this interface configuration file does vary a little bit between distributions.

Configure DHCP 0:16-2:09

Let's first look at where it resides on a Fedora system. I do need to switch to my root user account first. We want to switch into the '/etc/sysconfig/network-scripts' directory. I do an 'ls' command here, you'll see a file here ifcfg- followed by the name of the interface. The name of the interface on this particular system is ens192.

Let's switch over to an openSUSE system, and the location of the interface configuration file is a little bit different. Let's change into '/etc/sysconfig'. Do an 'ls' command here. You'll that the name of the directory where these scripts are stored is slightly different. Instead of network-scripts, it's just network. We type 'cd network'. Here the name of the interface on this system is ens32, so the name of the configuration file is ifcfg-ens32.

Even though these files may be stored in a slightly different location between distributions, the syntax used within them is pretty much consistent across all distributions.

Let's switch back to our Fedora system, and let's edit the configuration file for ens192 using the vi editor. When I do, we see all the various parameters that are currently being used in order to configure this network interface.

One of the key ones we need to look at is right here, BOOTPROTO. Notice that BOOTPROTO is currently set to DHCP, which will configure this network interface when it comes online to go out on the network segment and try to locate a DHCP server. If it can find one, it will then request an IP address release from that server.

Configure Static IP Addressing 2:10-4:11

However, if we wanted to, we could reconfigure this network interface with a static IP address. Let's go ahead and do that. I'll press the Insert key to go into insert mode, and then I will remove DHCP and I will change this to a value of 'static'. Now that I've set this to static, I can manually assign an IP address. I'll go ahead and press Enter.

Because we're using static addressing, the first thing we have to assign to this system is an IP address. You do that using the 'IPADDR' directive within this configuration file. We add an '=', and then we specify the IP address we want to assign to this system. Let's enter '10.0.0.160'.

Because we're using IP addressing, we also have to specify the subnet mask that's going to be used so we can identify the network and node portions of the address, and so we can communicate with the other hosts on this network. We enter the 'NETMASK' directive, and we set it '=' to, in this case, a 24-bit subnet mask '255.255.255.0'.

We also need to specify the network address of this network segment. We do that with the 'NETWORK=' directive. The IP address of this network segment is '10.0.0.0'.

Finally, we need to specify the broadcast address of the network segment. We type 'BROADCAST=' and then the broadcast address--'10.0.0.255'. At this point I press Escape, and then we exit the editor and save our changes by entering 'exit'.

If we wanted to, we could actually verify the configuration by entering the 'cat' command to view the file. Here we can see that it is indeed configured to use static IP addressing now instead of DHCP.

Verify and Implement.

The fact that I changed the configuration file for the interface on this system has no effect on the currently running configuration. If I do an 'ifconfig' command, you will see that it's still assigned an IP address, dynamically I might add, of 10.0.0.136.

Verify and Implement 4:12-4:41

To make the change effective, we have to bring the interface down and then bring it back up again. That will cause the kernel to reread the configuration file that we just modified and apply the changes.

Let's do an 'ifdown ens192' command. Let's do 'ifup ens192', bring the interface back online. Now if we do an 'ifconfig', we see that the static IP addressing information that we configured has been applied.

Summary 4:42-4:49

That's it for this demonstration. In this demo we looked at how you configure a network interface on a Linux system to use DHCP or static IP addressing using the network interface's configuration file.
