12.4.2 Configure the Default Route

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

Configure the Default Route 0:00-0:12

In this demonstration, we're going to discuss configuring routes. We'll talk about setting the default route, but we'll also talk about setting routes to other networks.

Set the Default Route 0:13-0:46

Let's begin by looking at setting the default route. Understand that if your system is configured to use a dynamic IP address delivered from a DHCP server, then you probably don't need to set the default route, because the default gateway router address is usually automatically assigned using a DHTP option.

However, if you use static IP addressing, then you need to manually assign the default gateway router address. You can set the default route in two different ways: either persistently or non-persistently. Let's take a look at the persistent option first.

Assign a Persistent Default Route 0:47-2:19

To persistently assign a default route, you have to put it in the appropriate networking configuration file. That way, every time the system boots, the default route will be applied. Which file you put it in depends upon which distribution you're using.

Let's take a look at how to do this on Fedora. I'll switch to my root user account, and let's go into the '/etc/sysconfig/network-scripts' directory. I do an 'ls' command. Notice that there is a configuration file here for my ens192 Ethernet interface. If I do an 'ifconfig' command, we see that this, indeed, is my Ethernet interface that's installed in my system.

If I run the 'route' command first here, before we do anything, notice that I do not have a default gateway set. That's because this interface has been configured with a static IP address, but it has not been configured with the address of the default gateway router, and we need to fix that.

I'm going to edit the 'ifcfg-ens192' configuration file in the vi editor, press Insert. I'm going to go down to the end of the file, and we enter in 'GATEWAY=' followed by the IP address of my default gateway router. In this case, it is '10.0.0.254'. That's for this particular network segment. You will have to use the appropriate gateway router IP address for whatever network segment your system is currently on.

Apply the Default Gateway Address 2:20-3:29

I'll press Escape, write the changes to the file, type 'exit' in the editor. At this point, I've made the change in the configuration file, but that configuration file is read only when the Ethernet interface comes up. In order to apply the change, I have to first take the interface down with the 'ifdown' command, followed the name of the interface I want to take down, 'ens192', and we'll do 'ifup' for the same interface.

By bringing it up, I will cause the kernel to re-read my ens192 configuration file, and the gateway address should be applied. That's done, and we can run the ifconfig command to make sure the interface came up, and it did.

You'll notice, of course, that the IP address of the default gateway is not listed in the output of ifconfig. To view that address, we need to run the 'route' command. Notice that now we do have a default gateway assigned. It is 10.0.0.254. Any outgoing packets from the system that are addressed to hosts that are not on the 10.0.0 network will be automatically sent to this host, which is a router, and it'll take care of getting them to the right location.

Store the Default Gateway Address with openSUSE 3:30-4:18

Be aware that other distributions, such as openSUSE, use a different file to store the default gateway address. Let's take a look at how that works. On an openSUSE distribution, the address of the default gateway is stored in a file called routes, and it's located in the '/etc/sysconfig/network/' directory. Do an 'ls' command. We see the route's file right here.

Let's go ahead and look at it with the cat command, and here you can see that the default gateway is set to 10.0.0.254 for the network interface, which in this system is ens32. If I needed to change the default route, I would edit the routes file in vi and make the necessary

changes.

Set the Default Route Non-Persistently from the Shell Prompt 4:19-5:08

Let's switch back to our Fedora system. That's how you set the default route persistently. You can also set the default route non-persistently from the shell prompt. You do this using the 'route' command.

Be aware that any changes you make to the default gateway address using the route command will not be persistent; they will be in effect only as long as the system stays running. If I reboot, then whatever change I made with route will be gone, and the configuration file that we just edited right here will be applied instead.

To do this, you would enter 'route add default gw', and then the IP address, '10.0.0.254'. I'm not going to hit Enter here because it's the same route that I already have, but this is how I would do it.

Add Other Routes 5:09-7:16

At this point, let's shift gears a little bit and talk about adding other routes. In addition to the default route, you can also set other routes to other networks if the packets for those networks need to go to a different router other than the default gateway.

For example, let's supposed we wanted to add a route to a network that has an address of 15.0.0.0, and we want those packets to be sent to a different router--one that has an IP address of 10.0.0.252. We would again use the 'route' command at the shell prompt, and remember because we're using the route command here, changes we make will not be persistent. If we want them to be persistent, we have to add these commands to the appropriate configuration file. We enter 'route -net', then we specify the IP address of the network segment, which in this case will be '15.0.0.0'. Then we specify the subnet mask used by the network: 'netmask 255'. It's a class A network, so we'll just use '0.0.0 gw'.

Specify the Address of the Router

Then we specify the address of the router--the gateway--that will handle those packets, which has to be connected to my current network segment. I'm on 10.0.0.0, so the IP address of the router on my network segment that's connected to the 15.0.0.0 network is '10.0.0.252'. Hit Enter. Oops, I forgot the add command. Let's do that one more time. 'route add' helps to tell the route command what it is you want to do.

If we type 'route', we should see that that route has been added.

You can also use the route command to delete a route. Let's suppose that we change things and we no longer have to go through this router to get to this network; everything just goes through our default gateway. To do this, we would enter 'route del -net', followed by the network address, '15.0.0.0 netmask 255.0.0.0', then the gateway '10.0.0.252'. We run the 'route' command again, and we see that the route has been removed from the routing table.

Summary 7:17-7:28

That's it for this demonstration. In this demo, we talked about configuring routes from the shell prompt. We first talked about configuring the default route. We did that persistently and non-persistently. Then we talked about adding other routes to the routing table using the route command.
