

SECTION 3 Network Configuration

In this section of the workbook, you learn how to do the following:

- “Manage the Network Configuration Information from YaST” on 3-2

In this exercise you change all the network configuration information into static values.

- “Configure the Network Connection Manually” on 3-6

In this exercise, you learn how to configure the network manually.

Exercise 3-1 Manage the Network Configuration Information from YaST

Up to now, your system got all network configuration information via DHCP. In this exercise you change all the important information into static values.

Use the **ip** command to find out which ip address you are currently using. Also note your current hostname. Then change the network configuration to static IP addresses, using the values you found. Use 10.0.0.254 as default gateway and also as address of the name server.

To manage the network configuration information from YaST, do the following:

- Part I: Get your IP Number and Hostname
- Part II: Start the YaST Network Configuration Module
- Part III: Enter a Static IP Address and Subnet Mask
- Part IV: Change your Hostname
- Part V: Enter a DNS Server
- Part VI: Enter a Default Gateway
- Part VII: Activate new Settings and Finish

Part I: Get your IP Number and Hostname

To get your IP number and hostname, do the following:

1. From the GNOME desktop, open the main menu.
2. Select **More Applications**.
3. Enter **term** into the Filter text box.
4. Select the **Gnome Terminal** icon to start a terminal emulation.
5. Enter **/sbin/ip address show** to record the following information for your SUSE Linux Enterprise Server 10 server:
 - IP address:
 - Hostname:

6. Close the terminal window.

Part II: Start the YaST Network Configuration Module

To start the network configuration module of YaST, do the following:

1. From the GNOME desktop, open the main menu.
2. Select **More Applications**.
3. Enter **ya** into the Filter text box.
4. Select the **YaST** icon to start YaST.
5. Enter the root password **novell** in the appearing dialog; then select **Continue** or press Enter.

The YaST Control Center appears.

6. Start the network card module by selecting **Network Devices > Network Card**.

Part III: Enter a Static IP Address and Subnet Mask

To enter a static IP address and subnet mask, do the following:

1. Make sure that **Traditional Method with ifup** is selected and select **Next**.

Your network card is listed in the upper table.

2. Make sure *your network card* is selected; then select **Edit**.
3. Make sure that the **Address** tab is activated.
4. Switch the setup by selecting **Static address setup**.
5. In the IP Address field, enter the *IP address* from Part I.
6. In the Subnet mask field, enter **255.255.255.0**.

Part IV: Change your Hostname

To change your hostname, do the following:

1. Select **Host name and name server**.
2. (Conditional) If a dialog appears indicating that the **resolv.conf** files has been temporarily modified, continue by selecting **Modify**.
3. In the Hostname field, enter the *hostname* from Part I.
4. In the Domain Name field, enter **digitalairlines.com**.

Part V: Enter a DNS Server

To enter a DNS server, do the following:

1. In the Name Server 1 field, enter the IP address of your DNS server (**10.0.0.254**).
2. If there are values in the other Name Server text fields, remove them.
3. In the Domain Search field, enter **digitalairlines.com**.
4. If there are values in the other Domain Search text fields, remove them.
5. Select **OK**.

Part VI: Enter a Default Gateway

To enter a default gateway, do the following:

1. Select **Routing**.
2. In the Default Gateway field, enter the IP address of your Internet gateway (**10.0.0.254**).
3. Select **OK**.

Part VII: Activate new Settings and Finish

To activate new settings and finish, do the following:

1. Select **Next**.
2. Select **Next**.
3. Close the YaST Control Center.
4. To test your network connection, start the web browser Firefox and try to call <http://www.novell.com>.

(End of Exercise)

Exercise 3-2 *Configure the Network Connection Manually*

The purpose of this exercise is to familiarize you with manually configuring the network.

In the first part, using the command `ip`, find out the current settings for IP address, routes, mac address, and the file used to store the hardware configuration of the network card in `/etc/sysconfig/hardware/` and the configuration options in that file.

In the second part, using YaST, delete the current network configuration.

In the third part, using the `ip` command, set up the network manually. As only the command `ip` is used, this configuration is not permanent.

In the fourth part, recreate the file in `/etc/sysconfig/hardware/` noted in part I using an editor, as well as the files `/etc/sysconfig/network/ifcfg-eth-id-MAC-address` and `/etc/sysconfig/network/routes`. Reboot the computer and test the network to see if the network is set up correctly after a reboot.

Detailed Steps to Complete this Exercise:

- Part I: Note the Current Network Configuration
- Part II: Delete the Current Network Setup with YaST
- Part III: Configure the Network Manually
- Part IV: Save the Network Connection to Interface and Hardware Configuration Files

Part I: Note the Current Network Configuration

To note the current network configuration, do the following:

1. On the graphical desktop, open a terminal window and **su -** to root (password **novell**).
2. Enter **ip address show eth0** (depending on the setup you might have to use **eth1** instead of **eth0**).
3. Find the line starting with **inet**, and record the **IP address** with the **subnet mask** displayed in that line:
 - **IP address:**
 - **Subnet mask:**
4. Enter **ip route show**.
5. Find the line starting with **default** and record the **gateway IP address** of the gateway:
 - **Gateway IP address:**
6. Enter **ip link show eth0**.
7. Find the line starting with **link/ether** and record the **MAC address** of the network card:
 - **MAC address:**
8. Change to the **/etc/sysconfig/hardware** directory by entering the following:
cd /etc/sysconfig/hardware
9. Enter **ls -al**; then look for one of the following files (depending on your hardware configuration):
 - **hwcfg-id-PCI_address**
 - or*
 - **hwcfg-bus-pci-PCI_address**
10. Record the name of the file:

Note: If there are several files with the above pattern, enter **lspci** in a terminal window. The output shows the PCI addresses of PCI hardware components in your computer.

11. Display the contents of the file by entering one of the following:

- ❑ **cat hwcfg-id-PCI_address**
- or*
- ❑ **cat hwcfg-bus-pci-PCI_address**

12. Record the following parameters:

- ❑ **MODULE=**
- ❑ **MODULE_OPTIONS=**
- ❑ **STARTMODE=**

You use these parameters and the hwcfg filename in Part IV to manually create the file.

Part II: Delete the Current Network Setup with YaST

To delete the current network setup with YaST, do the following:

1. Start **YaST** and select **Network Devices > Network Card**.
2. Select **Traditional Method with ifup**.
3. Select the *network card*; then select **Delete**.
4. Select **Next**.
5. From the terminal window (as root), enter **rm /etc/sysconfig/network/routes**.
6. Verify that the network connection is not working any more by entering **ping 10.0.0.254**.
7. Enter **ip address show**.

Note that the device eth0 is not up anymore or no longer listed.

Part III: Configure the Network Manually

To configure the network manually, do the following:

1. To initialize the device eth0 again, enter in the terminal window:

```
hwup bus-pci-PCI_address
```

You noted the PCI address in Part I, Step 10. The command should look similar to the following:

```
hwup bus-pci-000\02\00.0
```

2. Enter the following command:

```
ip address add your_IP_address/24 brd + dev eth0
```

3. To activate the network device, enter **ip link set eth0 up**.

4. To set the default route enter the following:

```
ip route add default via gateway_IP_address
```

5. Verify that the network connection is working again by entering **ping www.novell.com**.

Part IV: Save the Network Connection to Interface and Hardware Configuration Files

To save the network connection to interface and hardware configuration files, do the following:

1. From the terminal window, change to the directory **/etc/sysconfig/network**.
2. Make a copy of the network configuration template by entering the following:

```
cp ifcfg.template ifcfg-eth-id-MAC_address
```

3. Open the copied file (**ifcfg-eth-id-*MAC_address***) with the **vi** editor.

4. Find the following options and enter the indicated values:

- STARTMODE='auto'
- BOOTPROTO='static'

- ❑ IPADDR='your_IP_address/24'
 - ❑ NETMASK='255.255.255.0'
 - ❑ BROADCAST='10.0.0.255'
5. Save the file and exit vi (:wq).
 6. Change to the directory **/etc/sysconfig/hardware**.
 7. Create one of the following files with **vi**:
 - ❑ **hwcfg-id-PCI_address**
 - or*
 - ❑ **hwcfg-bus-pci-PCI_address**
 8. Enter the parameters you recorded in the last step of Part I of this exercise.
 9. When you finish, save the file and exit the editor.
 10. Change to the directory **/etc/sysconfig/network**.
 11. Create a new file with vi called **routes**.
 12. Add the following line to the file:
default default_gateway_IP_address - -
 13. Save the file and exit vi.
 14. Reboot your system (**init 6**) and log in as **geeko** with a password of **novell**.
 15. From a terminal window (as root), verify that the network configuration is loaded correctly by entering the following commands:
ip address show eth0
ip route show
 16. Verify that the network connection is working properly by entering the following commands:
ping 10.0.0.254



If the network configuration fails to work properly, and your configuration files are created correctly, use the YaST Network Card module to delete the currently configured network card. Then restart the Network Card module and reconfigure the network card with the proper settings.

(End of Exercise)

