Configuring Physical Adapters

LPIC-2: Linux Engineer (201-450)

Objectives:

At the end of this episode, I will be able to:

1. View the currently used network configuration.
2. Modify the configuration of a network adapter under Red Hat and Debian based operating systems.
3. Use the Network Manager to modify a system's network configuration.

> Additional resources used during the episode can be obtained using the download link on the overview episode.

- Viewing Configuration

    - `ifconfig`
    - `ip addr`
    - `ip route`

- DHCP

    - DHCP Release

        - `dhclient -r`

    - DHCP Renew

        - `dhclient`

- Restarting the network service

    - Most changes require restarting the network service
    - `service network restart`
    - `systemctl restart network-manager`

- Configuration using interface scripts

    - RHEL/CentOS

        - Stored in `/etc/sysconfig/network-scripts`
        - `/etc/sysconfig/network-scripts/ifcfg-eno1`
        - Or overridden by NetworkManager

    - Debian/Ubuntu

        - Stored in `/etc/network/interfaces`
        - Or overridden by NetPlan

- Network Interface Naming Convention

    - First part of name

        - `en` = Ethernet
        - `wl` = Wireless
        - `ww` = Cellular (WWAN)

    - Second part of name

        - `o` = On-board
        - `p` = PCI card
        - `s` = Hotplug slot

- Configuration using global settings

  - Name Lookups

    - `/etc/resolv.conf`

      - DNS Servers
      - May be managed by NetworkManager or systemd-resolvd

    - `/etc/hosts`

      - Overrides DNS

  - Network Manager

    - NM copies DNS settings from the interface config or DHCP

  - systemd-resolvd

    - Viewing Settings

      - `resolvectl status`
      - `cat /etc/systemd/resolved.conf`

    - Changing settings

      - `sudoedit /etc/resolvconf/resolv.conf.d/head`
      - `nameserver 4.2.2.1`
      - `sudo systemctl restart systemd-resolved`

- Host Name

  - `/etc/hostname`

    - `hostname <name>` is not normally persistent
    - Defines a machines hostname
    - To modify:

      - `hostnamectl set-hostname <name>`

    - To verify:

      - `hostnamectl status`

- Configuring using NetworkManager

  - Viewing Status

    - `nmcli device status`
    - `nmcli device show <int_name>`
    - `nmcli connection show`
    - `nmcli connection show <int_name>`

  - Reseting an Adapter

    - `nmcli connection reload`
    - `nmcli connection down <int_name>`
    - `nmcli connection up <int_name>`

  - Configuring an Adapter

    - `nmcli connection edit <int_name>`
    - `set connection.autoconnect yes`
    - `set ipv4.method manual`
    - `set ipv4.addr 192.168.0.2/24`
    - `set ipv4.dns 8.8.8.8`

- set ipv4.gateway 192.168.0.1
- save <temporary/persistent>
- quit

RHEL Configuration File

```
DEVICE=eno1
TYPE=Ethernet
BOOTPROTO=none
IPADDR0=192.168.0.2
PREFIX0=24
GATEWAY0=192.168.0.1
ONBOOT=yes
```

Debian Configuration File

```
auto eno1
iface eno1 inet static
  address 192.168.0.2
  netmask 255.255.255.0
  gateway 192.168.0.1
```