Lab 3 - DHCP, OSPF

Kathara DHCP, OSPF.pdf

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DHCP

Introduction

- **DHCP Client**: Replace static configuration in `/etc/network/interfaces` with `dhcp`.
- **DHCP Server**: Configure `/etc/dhcp/dhcpd.conf` to define:
  - Subnets and IP address ranges.
  - Gateways and DNS servers.
  - Reserved IP addresses for specific devices.
  - Example startup script command: `/etc/init.d/isc-dhcp-server start`.

DHCP server and automatic configuration

To configura a DHC server

```
subnet 192.168.1.0 netmask 255.255.255.0 {
    range 192.168.1.100 192.168.1.200;
```

```
    option routers 192.168.1.1;
    option domain-name-servers 8.8.8.8, 8.8.4.4;
}
```

- `subnet 192.168.1.0 netmask 255.255.255.0`: defines the subnet (192.168.1.0) and the subnet mask (255.255.255.0), specifying the network to which the DHCP server will assign IP addresses.
- `range 192.168.1.100 192.168.1.200`: specifies the range of IP addresses that the DHCP server is allowed to assign to clients (from 192.168.1.100 to 192.168.1.200).
- `option routers 192.168.1.1`: sets the default gateway for the subnet, telling clients to use 192.168.1.1 as their router.
- `option domain-name-servers 8.8.8.8, 8.8.4.4`: specifies the DNS servers that the clients will use for resolving domain names (in this case, Google's public DNS servers).

To configure device to get IP from DHCP server

```
auto eth0
iface eth0 inet dhcp
```

Static configuration

```
auto eth0
iface eth0 inet static
    address 192.168.1.100
    netmask 255.255.255.0
    gateway 192.168.1.1
```

or

```
auto eth0
iface eth0 inet static
```

```
    address 192.168.1.100/24
    gateway 192.168.1.1
```

OSPF

daemons

To activate OSPF protocol, we must enable the daemons in **etc/quagga/daemons.conf** stucture in this way

```
zebra=yes
bgpd=no
ospfd=yes
ospf6d=no
ripd=no
ripngd=no
isisd=no
ldpd=no
```

Later we have to do two mode files in the same directory,

zebra.conf

we write all IP for all interfaces

```
hostname r1_dhcp
password zebra
enable password zebra

interface 0
ip address 10.0.0.1/24
link-detect

interface 1
ip address 10.0.1.1/24
link-detect
```

ospfd.conf

```
hostname r1_dhcp
password zebra

interface 0
ospf hello-interval 2

interface 1
ospf hello-interval 2
ospf cost 100

router ospf
network 10.0.1.0/31 area 0.0.0.0
```

- **ospf hello-interval 2:** means to send an ospf message every 2 seconds
- **ospf cost 100:** set value of a link to 100 (default is 10)
- **router ospf section**: all subnetwork that we want to reach with the protocol

Useful comand

- **ip r**: show the routing table
- **ip a**: able to see all interfaces and IP adress of interfaces, we can see if they are of or down
- **ip link set dev eth1 down/up:** to disable enable an interface (i.e. simulate a link failute)
- **telnet localhost ospfd:** to connect in telnet, later insert password (the one in ospfd.conf)
- **show ip ospfd route (once logged in telnet):** show routing table of all the subnet seen by ospfd