Serving DHCP from OpenBSD

Networks Three

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Step 1: Plan

We need to answer the following questions:

- What is our overall network topology?
- On what networks will we serve DHCP?
- What are our service level requirements?
- For each network
  - How many clients will we serve?
  - What is their usage profile?
  - Are there any machines that need static addresses?

Planning, cont.

We also need specific information to serve to clients

- The location's domain name
- Client IP address ranges
- DNS server addresses
- Gateway addresses
- Subnet masks, broadcast addresses
- Possibly others

OpenBSD server setup

- The ISC DHCP server, *dhcpd*, is installed by default.
- The configuration file is `/etc/dhcpd.conf`

A simple scenario

Suppose we have an OpenBSD server

- connected to an external interface on 10.25.0.0/16
- connected to an internal interface on 192.168.1.0/24
- we want to serve DHCP on to clients on the internal network

What goes in `dhcpd.conf`?

Global options

The following lines specify global options that apply to every network we serve, unless overridden later.

Domain name

```
option domain-name "op.ac.nz";
```

This tells clients to append our domain name to unqualified hostnames, i.e. `ssh foo` goes to `foo.op.ac.nz`.

DNS servers

```
option domain-name-servers 10.50.1.80, 10.50.1.82;
```

Tell the clients to use these DNS servers.

Lease times

```
default-lease-time 86400
max-lease-time 259200
```

By default, our clients get a one day lease. They can request a longer one, and we will allow up to three days.

Authoritative

```
authoritative;
```

Identifies our server as authoritative.

Subnetworks

Next, we create a configuration block for every subnet. There are subnet-specific options, and we can override global options.

External network

```
subnet 10.25.0.0 netmask 255.255.0.0 {
}
```

Even though we won't serve DHCP on this subnet, it's good practice to create an empty block for it. Since it's directly connected to the server, dhcpd should know about it.

Internal network

```
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 broadcast-address 192.168.1.255;
}
```

Even though we won't serve DHCP on this subnet, it's good practice to create an empty block for it. Since it's directly connected to the server, dhcpd should know about it.

Internal network with a static host

```
shared-network office {
 option routers 192.168.1.1;
 option broadcast-address 192.168.1.255;
 subnet 192.168.1.0 netmask 255.255.255.0 {
     range 192.168.1.100 - 192.168.1.200;
 }

 host bob {
   hardware-ethernet 00:A0:78:6E:8E:A1;
   fixed-address 192.168.1.10;
 }
}
```

The host bob gets a fixed address based on the MAC address. Putting the subnet and the host declaration inside the `shared-network` block means that all clients in the network pick up the common `routers` and `broadcast-address` options.