OpenWrt-based DHCP/DNS server

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This document describes how to build a simple DHCP/DNS server on top of OpenWrt. We assume you already have a working OpenWrt installation and that you have configured basic networking (`/etc/config/network`) and the host's name (`/etc/config/system`).

The following will configure `dnsmasq` to provide DHCP (assigning .1–.100), and DNS (e.g., assigning the hostname *server.example.com* to the computer with MAC address *aa:bb:cc:dd:ee:ff*). The DNS service will also resolve the local host's name, as set in `/etc/config/system`.

```
config dnsmasq
        option domainneeded '1'
        option boguspriv '1'
        option filterwin2k '0'
        option localise_queries '1'
        option rebind_protection '1'
        option rebind_localhost '1'
        option local '/example.com/'
        option domain 'example.com'
        option expandhosts '1'
        option nonegcache '0'
        option authoritative '1'
        option readethers '1'
        option leasefile '/tmp/dhcp.leases'
        option resolvfile '/tmp/resolv.conf.auto'
        option server '192.168.1.1' # Upstream DNS.

config dhcp 'lan'
        option interface 'lan'
        option start '1'
        option limit '100'
        option leasetime '12h'
        option dhcpv6 'server'
        option ra 'server'
        list dhcp_option '3,192.168.1.1' # Default gateway.
        list dhcp_option '121,192.168.0.0/16,192.168.1.1' # A static route.

config dhcp 'wan'
        option interface 'wan'
        option ignore '1'

config odhcpd 'odhcpd'
        option maindhcp '0'
        option leasefile '/tmp/hosts/odhcpd'
        option leasetrigger '/usr/sbin/odhcpd-update'

config host
        option name 'server.example.com'
        option ip '192.168.1.101'
        option mac 'aa:bb:cc:dd:ee:ff'
```

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My research interests include free and open source software, system security, and network security.