

Dnsmasq


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dnsmasq is a simple DHCP/DNS server which can be used in a local network of up to a 1000 clients. Key features are easy configuration and a small system footprint. It also has support for IPv6.


Contents

- 1 Installation
 - 1.1 USE flags
 - 1.2 Emerge
- 2 Configuration
 - 2.1 Service
 - 2.1.1 OpenRC
 - 2.2 Service configuration
 - 2.3 Main configuration file
 - 2.4 Hosts file
 - 2.5 Additional hosts file
 - 2.6 Upstream nameservers
- 3 Features
 - 3.1 DNS services
 - 3.2 DNSSEC
 - 3.3 DHCP services
- 4 Usage
 - 4.1 Resetting leases
 - 4.2 Reloading non-main configuration settings

Resources

 [Home \(http://www.thekelleys.org.uk/dnsmasq/doc.html\)](http://www.thekelleys.org.uk/dnsmasq/doc.html)

 [Wikipedia \(https://en.wikipedia.org/wiki/Dnsmasq\)](https://en.wikipedia.org/wiki/Dnsmasq)

 [Open Hub \(https://www.openhub.net/p/dnsmasq\)](https://www.openhub.net/p/dnsmasq)

Installation

USE flags

Make a proper USE flag selection:

USE flags for net-dns/dnsmasq (<https://packages.gentoo.org/packages/net-dns/dnsmasq>)

(<https://packages.gentoo.org/useflags/net-dns/dnsmasq>)

| | |
|---|--|
| dbus (https://packages.gentoo.org/useflags/dbus) | Enable dbus support for anything that needs it (gpsd, gnomemeeting, etc) |
|---|--|

| | |
|---|---|
| dhcp (https://packages.gentoo.org/useflags/dhcp) | Enable support for acting as a DHCP server. |
|---|---|

| | |
|---|---|
| dhcp-tools (https://packages.gentoo.org/useflags/dhcp-tools) | Install extra command line tools for manually managing DHCP leases. |
|---|---|

(<https://packages.gentoo.org/packages/emerge> tools)

dnssec
(<https://packages.gentoo.org/useflags/dnssec>)

Enable support DNSSEC validation and caching.

More Data provided by the Gentoo Package Database (<https://packages.gentoo.org>) · Last update: 2019-01-03 19:31
information about USE flags (</wiki/Handbook:AMD64/Working/USE>)

Emerge

Next, install the net-dns/dnsmasq (<https://packages.gentoo.org/packages/net-dns/dnsmasq>) package:

```
root # emerge --ask net-dns/dnsmasq
```

Configuration

There are various resources that can be modified to change dnsmasq behavior. These include

- the command line options as provided through `/etc/conf.d/dnsmasq`
- the main configuration file (`/etc/dnsmasq.conf`)

Service

OpenRC

Add dnsmasq to the default runlevel if it needs to be started automatically:

```
root # rc-update add dnsmasq default
```

To start the service now:

```
root # rc-service dnsmasq start
```

Service configuration

In `/etc/conf.d/dnsmasq`, the command line options passed on to the dnsmasq daemon at start-up can be configured.

FILE `/etc/conf.d/dnsmasq` **Example dnsmasq service configuration**

```
DNSMASQ_OPTS="--user=dnsmasq --group=dnsmasq -H /srv/virt/gentoo/hosts --max-cache-ttl=10"
```

Main configuration file

The main configuration of dnsmasq is done through its configuration file, `/etc/dnsmasq.conf`. The file uses a `key=value` syntax and the one provided by the package is well documented and recommended to read through. Inside the file, or through the command line options, additional resources can be referred to (such as a DHCP hosts file).

Below is a sample configuration file:

FILE `/etc/dnsmasq.conf`

```
# Listen only to this interface
interface=eth1

# Assign names based on mac address
dhcp-host=00:1e:68:c2:ff:ee,endor,192.168.0.54,24h

# Any other DHCP request gets an ip from this range
dhcp-range=eth1,192.168.0.100,192.168.0.120,12h

# Enable the TFTP server and set the root directory for files available via TFTP.
enable-tftp
tftp-root=/var/lib/tftpboot
dhcp-boot=pxelinux.0
```

After editing the configuration file, the service has to be restarted - reloading is supported, but for other resources.

```
root # /etc/init.d/dnsmasq restart
```

Hosts file

The dnsmasq application uses the `/etc/hosts` file as one of its sources for providing DNS services, unless the `-h` (`--no-hosts`) command line argument is passed along.

If the `/etc/hosts` file is updated, the dnsmasq service needs to receive a SIGHUP signal in order to reload the settings. This is also supported through the init scripts' *reload* command:

```
root # /etc/init.d/dnsmasq reload
```

This behavior can also be disabled through the `no-hosts` parameter in the configuration file.

Additional hosts file

It is possible to refer to an (additional) hosts file to use as source for DNS queries. To do so, add the `-H` `/path/to/hostsfile` (`--addn-hosts=/path/to/hostsfile`) command line option. It is also possible to pass a directory; in that case, all files inside that directory will be treated as additional hosts files.

Similar to the standard hosts file, a SIGHUP signal reloads the file.

This behavior can also be set through the `addn-hosts` parameter in the configuration file.

Upstream nameservers

By default, dnsmasq uses the name servers specified in `/etc/resolv.conf` as its upstream nameservers.

A different file can be used through the `-r` (`--resolv-file`) command line option.

This behavior can also be set through the `resolv-file` parameter in the configuration file.

Features

Dnsmasq supports DNS, TFTP, PXE, router advertisements and DHCP services. As such, it is a versatile network management tool for small and medium-sized networks.

DNS services

In order to (only) provide DNS services, first identify the *upstream nameserver* to use. If this is the same nameserver as specified in `/etc/resolv.conf` (`/wiki/Resolv.conf`) then no additional steps need to be taken. Otherwise, point dnsmasq to the proper `resolv.conf` file through the `-r` (`--resolv-file`) command line. Its syntax is the one used by the `/etc/resolv.conf` file, although dnsmasq only looks at the *nameserver* definitions.

For instance:

```
root # echo "nameserver 8.8.8.8" >> /etc/dnsmasq.conf.resolve
```

Next point dnsmasq to this file through the configuration file:

FILE /etc/dnsmasq.conf **Configuring a custom resolv file**

```
resolve-file=/etc/dnsmasq.conf.resolve
```

To verify that the service is running (after restarting as the configuration file has just been changed), use the **dig** command (provided through net-dns/bind-tools (<https://packages.gentoo.org/packages/net-dns/bind-tools>)), asking the DNS server (running on localhost in the following example) to resolve a local or remote address:

```
user $ dig @localhost +short www.gentoo.org
```

```
www-bytemark-v4v6.gentoo.org.  
89.16.167.134
```

DNSSEC

Dnsmasq can validate DNSSEC data while passing through data. This can be accomplished by adding these lines to the config file:

FILE /etc/dnsmasq.conf **Enabling DNSSEC**

```
# DNSSEC setup  
dnssec  
trust-anchor=.,19036,8,2,49AAC11D7B6F6446702E54A1607371607A1A41855200FD2CE1CDDE32F24E8FB5  
trust-anchor=.,20326,8,2,E06D44B80B8F1D39A95C0B0D7C65D08458E880409BBC683457104237C7F8EC8D  
dnssec-check-unsigned
```

The trusted anchor can be found on the [iana.org](https://data.iana.org/root-anchors/root-anchors.xml) site (<https://data.iana.org/root-anchors/root-anchors.xml>). After this change dnsmasq will return SERVFAIL and no DNS data if the validation fails. If the validation succeeds it sets the *ad* flag. In case the domain does not support DNSSEC dnsmasq behaves as before.

DHCP services

In order to enable the DHCP services of dnsmasq, use the `dhcp-range` configuration setting.

For instance, to enable IPv6 address configuration through router advertisement (RA) with infinite lease time, and IPv4 address configuration also with infinite lease time:

FILE /etc/dnsmasq.conf **Enabling IPv6 and IPv4 leases**

```
dhcp-range=2001:db8:81:e2::,ra-only,infinite  
dhcp-range=192.168.100.100,192.168.100.149,infinite
```

It is possible to use static definitions for known hosts, either through the main configuration file (`dhcp-host=` settings) or through a separate file. If a separate file is used, point dnsmasq to it through the `--dhcp-hostsfile` command line option. The advantage of the latter approach is that it is sufficient to send a SIGHUP signal (or reload the service) in order to reread the entries, whereas definitions in the configuration file require a full service restart.

For more information about the syntax of the `dhcp-host` parameter please refer to the manual page or configuration file as its syntax is very extensive.

Usage

This section covers various usage scenarios (maintenance and operational tasks) for the dnsmasq service.

Resetting leases

Clients that had a network interface update which results in a different MAC address might not get the intended IP address immediately. This is because the dnsmasq service has provided this IP address to the old MAC address, and will wait until the lease of this address has expired before re-assigning it.

The dnsmasq service stores its leases in `/var/lib/misc/dnsmasq.leases`. If the lease needs to be removed faster, shut down the dnsmasq service, remove the lease from the `dnsmasq.leases` file and start the service again.

```
root # /etc/init.d/dnsmasq stop
root # nano -w /var/lib/misc/dnsmasq.leases
root # /etc/init.d/dnsmasq start
```

Reloading non-main configuration settings

Next to the `dnsmasq.conf` file, the dnsmasq service can use external definitions for the following services:

- DHCP host configuration entries (through `--dhcp-hostsfile` command line option)
- DHCP options (through `--dhcp-optsfile` command line option)

When these files are modified, a SIGHUP signal has dnsmasq reload these configuration files.

Note

The `resolv.conf` files are by default polled by dnsmasq; changes on these files are automatically picked up unless the `-n` (`--no-poll`) command line option is set or the `no-poll` configuration parameter is used.

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