



@bmj0114 updated at 2017-10-19



# Configure DNS Wildcard with Dnsmasq Service

Network dnsmasq dns

⚠ More than 1 year has passed since last update.

This post just simply describes how to create a wildcard DNS record e.g.

\*.wildcard.test.com using dnsmasq.

Dnsmasq: <https://en.wikipedia.org/wiki/Dnsmasq>

Dnsmasq has low requirements for system resources,[6][7] can run on Linux, BSDs, Android and OS X, and is included in most Linux distributions. Consequently it "is present in a lot of home routers and certain Internet of Things gadgets"[4] and is included in Android.[5]

## 1. Install dnsmasq

First of all, you need to install dnsmasq service on a server which will be used as your DNS server

```
# yum -y install dnsmasq
```

After dnsmasq is successfully installed, start and enable the service.

```
# systemctl start dnsmasq
# systemctl enable dnsmasq
```

## 2. Add DNS Recode

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By default, dnsmasq service read `/etc/hosts` to resolve a hostname. Therefore, in order to add records to your DNS server running dnsmasq, you just need to add records `/etc/hosts` in the DNS server as below.

```
# cat /etc/hosts
127.0.0.1    localhost
10.10.10.10  dnstest.com
```

After that, restart dnsmasq service.

```
# systemctl restart dnsmasq
```

Then, you can resolve the name `dnstest.com` with the DNS server.

Login to another server and test the following command to check if the name can be resolved as expected.

```
# nslookup dnstest.com [your dns IP address]
Server:          [your dns IP address]
Address:         [your dns IP address]#53

Name:   kimitest.com
Address: dnstest.com
```

### 3. Test Wildcard DNS Recode (Incorrect Configuration)

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No matter what you are doing, the easier the better. So I just add the following line to add wildcard record to `/etc/hosts` . (But it didn't work.)

```
# cat /etc/hosts
127.0.0.1    localhost
10.10.10.10  dnstest.com
111.111.111.111 *.wildcardtest.com
```

However, `nslookup` returned the result below.

```
# nslookup test.wildcardtest.com [your dns IP address]
Server:          [your dns IP address]
Address:         [your dns IP address]#53

** server can't find test.wildcardtest.com: NXDOMAIN
```

On the otherhand, the following command worked. It was not what I expected and completely meaningless.

```
# nslookup *.wildcardtest.com [your dns IP address]
Server:          [your dns IP address]
Address:         [your dns IP address]#53

Name:   *.wildcardtest.com
Address: 111.111.111.111
```

### 4. Add Wildcard DNS Recode Properly

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So, how should wildcard records be added to a dnsmasq server properly?

Let's say you want both `test1.wildcardtest.com` and `test2.wildcardtest.com`, or whatever hostname with the domain `wildcardtest.com`, to be resolved to `100.100.100.100`.

It is very simple. Just add the following line to your `/etc/dnsmasq.conf`.

```
address=/wildcardtest.com/100.100.100.100
```

Or, you can also add the same line to a file under the directory `/etc/dnsmasq.d/` like below. Either way works.

As long as the file is put under the directory, you can set no matter what name to the config file. Automatically dnsmasq reads the files under the directory and set the configurations to its service.

```
# cat /etc/dnsmasq.d/wild-local
address=/wildcardtest.com/100.100.100.100
```

By setting the wildcard record, `*.wildcardtest.com` is going to be resolved to `100.100.100.100`.

Here is the result of testing the wildcard record.

```
# nslookup test1.wildcardtest.com [your dns IP address]
Server:          [your dns IP address]
Address:         [your dns IP address]#53
```

```
Name:   test1.wildcardtest.com
Address: 100.100.100.100
```

```
# nslookup test2.wildcardtest.com [your dns IP address]
Server:          [your dns IP address]
Address:         [your dns IP address]#53
```

```
Name:   test2.wildcardtest.com
Address: 100.100.100.100
```

```
# nslookup test3.wildcardtest.com [your dns IP address]
Server:      [your dns IP address]
Address:     [your dns IP address]#53

Name:   test3.wildcardtest.com
Address: 100.100.100.100
```

As you can see, all hostnames which has `wildcardtest.com` as its domain are resolved to `100.100.100.100`.

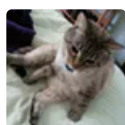
## 5. Forwarding Queries to Upstream DNS

By default, dnsmasq forwards all requests which are not able to be resolved in `/etc/hosts` to the default DNS server on the server dnsmasq is running. Therefore, you can see upstream DNS servers in `/etc/resolv.conf` like below (or maybe you need to add configuration by yourself).

```
# cat /etc/resolv.conf
# Generated by NetworkManager
nameserver [upstream dns IP]
```

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2

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