sales@candelatech.com
support@candelatech.com
+1 (360) 380-1618 [PST, GMT -8]

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T E C H N O L O G I E S

Network Testing and Emulation Solutions

Using Custom DNS on LANforge with DNSmasq

Goal: Create a nameserver for your test network when no Internet access is available.

Isolated testbeds still regularly require their DUTs to resolve hostnames. The `dnsmasq` package on Linux provides this feature. Requires release 5.4.6 or later.

Role of dnsmasq and how to combine it with Virtual Routers

The dnsmasq service provides BOTH DHCP and DNS services.

> **i** If the **dhcp-range** directive is present in the `/etc/dnsmasq.conf` file, then it will respond to DHCP requests.

This setting is NOT governed by the *Netsmith -> Virtual Router -> Modify -> DCHP* setting. You can accidentally leave DNSmasq running in DHCP serving mode and use Chamber View test scenarios that also create a new DHCP service in a virtual router. LANforge does not track the status of DNSmasq like it does the *dhcpd* process it starts in a virtual router. You can end up running two DHCP services if you are not careful

The two modes you would configure are:

- **DNS mode** and use virtual routers for DHCP. Configure the DNS entry of the virtual router to let clients see the nameserver entry.
- **DNS and DHCP mode** and never use the DHCP option of the virtual router.

We suggest configuring DNSmasq in a DNS-only mode most of the time.

Typical Port Setup

If you are crafting a test scenario where you are providing DHCP as an upstream port, create a Virtual Router and drag your upstream port into it. You will probably want a static IP on the port. For this example, we will use `eth1` with address `10.45.0.1`.

- Right-click the port and select **Modify**
- In the *Create/Modify Connection* window:
  - Select DHCP
  - Configure DHCP DNS to be the IP of the port (10.45.0.1)

Enable the DNS service on the port

- Open the Port modify window by either double-clicking on the row in the *Port Mgr* tab or selecting the **Modify Port** option from the Netsmith right-click menu.
- At the lower left of the window, in the *Services* box, select **DNS**.
- Click **OK**.

You have now enabled DHCP in the virtual router.

Configure DNSmasq

The `/etc/dnsmasq.conf` file controls the behavior of the DNSmasq service. The configuration below will serve entries out of `/etc/hosts`. This example is configured to run on interface **eth1**.

`/etc/dnsmasq.conf`

```
domain=lanforge.com
expand-hosts
local=/local/
local=/0.45.10.in-addr.arpa/
log-dhcp
log-queries
interface=eth1
```

Hosts file `/etc/hosts`

```
# Loopback entries; do not change.
::1  localhost.localdomain localhost localhost6.loaldomain6 localhost6
127.0.0.1  localhost.localdomain localhost localhost4.localdomain4 localhost4 vm-6006-local
192.168.1.101 lanforge.localnet lanforge.localdomain
###-LF-HOSTNAME-NEXT-###
192.168.45.94    vm-6006 4585-f38.bitratchet.net
# Custom hostnames:
10.45.0.1 www.lanforge.com lanforge.com
```

Running DNSmasq:

- Check for configuration errors using `dnsmasq --test`.

- Restart DNSmasq to apply changes: `sudo systemctl restart dnsmasq.service`.