Configure Networking

This page will assist you in setting up networking on Alpine Linux.

Note: You must be logged in as root in order to perform the actions on this page.

Network setup-scripts

Among the alpine setup scripts that are installed as part of `alpine-conf`, the following network related scripts are available.

- `setup-hostname`
- `setup-interfaces`
- `setup-dns`
- `setup-proxy`
- `setup-ntp`

All the utilities are interactive in nature, when invoked as follows:

```
# setup-interfaces
```

helps to configure wireless and ethernet interfaces in addition to a lot other types.

The above scripts will satisfy most trivial configurations. If you're needs are more advanced, you've to refer to the following detailed guides..

Setting System Hostname

To set the system hostname:

```
# echo "shortname" > /etc/hostname
```

Then, to activate the change:

```
# hostname -F /etc/hostname
```

If you're using IPv6, you should also add the following special IPv6 addresses to your `/etc/hosts` file:

Contents of `/etc/hosts`

```
...
::1             localhost ipv6-localhost ipv6-loopback
fe00::0         ipv6-localnet
```

```
ff00::0         ipv6-mcastprefix
ff02::1         ipv6-allnodes
ff02::2         ipv6-allrouters
ff02::3         ipv6-allhosts
```

Tip: If you're going to use automatic IP configuration, such as IPv4 DHCP or IPv6 Stateless Autoconfiguration, you can skip ahead to Configuring DNS. Otherwise, if you're going to use a static IPv4 or IPv6 address, continue below.

For a static IP configuration, it's common to also add the machine's hostname you just set (above) to the `/etc/hosts` file.

Here's an IPv4 example:

Contents of `/etc/hosts`

```
...
192.168.1.150   shortname.domain.com
...
```

And here's an IPv6 example:

Contents of `/etc/hosts`

```
...
2001:470:ffff:ff::2   shortname.domain.com
...
```

Configuring DNS

Tip: For users of IPv4 DHCP: Please note that `/etc/resolv.conf` will be completely overwritten with any nameservers provided by DHCP. If DHCP does not provide any nameservers, then `/etc/resolv.conf` will still be overwritten, but will not contain any nameservers!

For a static IP address and static nameservers, use one of the following examples.

For IPv4 nameservers, edit your `/etc/resolv.conf` file to look like this:
The following example uses Google's Public DNS servers (https://en.wikipedia.org/wiki/Google_Public_DNS).

Contents of `/etc/resolv.conf`

```
nameserver 8.8.8.8
nameserver 8.8.4.4
```

For IPv6 nameservers, edit your `/etc/resolv.conf` file to look like this:
The following example uses Hurricane Electric's (https://www.he.net/) public DNS server.

Contents of `/etc/resolv.conf`

```
nameserver 2001:470:20::2
```

You can also use Hurricane Electric's public IPv4 DNS server:

Contents of `/etc/resolv.conf`

```
nameserver 74.82.42.42
```

Tip: If you decide to use Hurricane Electric's nameserver, be aware that it is 'Google-whitelisted'. What does this mean? It allows you access to many of Google's services via IPv6. (Just don't add other, non-whitelisted, nameservers to `/etc/resolv.conf` — ironically, such as Google's Public DNS Servers.) Read here (https://www.google.com/intl/en/ipv6/) for more information.

Interface Configuration

Loopback Configuration (Required)

Note: The loopback configuration must appear first in `/etc/network/interfaces` to prevent networking issues.

To configure loopback, add the following to a new file `/etc/network/interfaces`:

Contents of `/etc/network/interfaces`

```
...
auto lo
iface lo inet loopback
```

The above works to set up the IPv4 loopback address (127.0.0.1), and the IPv6 loopback address (::1) — if you enabled IPv6.

Wireless Configuration

See Connecting to a wireless access point.

Ethernet Configuration

For the following Ethernet configuration examples, we will assume that you are using Ethernet device `eth0`.

Initial Configuration

Add the following to the file `/etc/network/interfaces`, above any IP configuration for `eth0`:

Contents of `/etc/network/interfaces`

```
...
auto eth0
...
```

IPv4 DHCP Configuration

Add the following to the file `/etc/network/interfaces`, below the `auto eth0` definition:

Contents of `/etc/network/interfaces`

```
...
iface eth0 inet dhcp
...
```

By default, the busybox DHCP client (udhcpc) requests a static set of options from the DHCP server. If you need to extend this set, you can do so by setting some additional command line options for the DHCP client, via the `udhcpc_opts` in your interface configuration. The following example requests `domain-search` option:

Contents of `/etc/network/interfaces`

```
...
iface eth0 inet dhcp
    udhcpc_opts -O search
...
```

For a complete list of command line options for udhcpc, see this document (https://busybox.net/downloads/BusyBox.html#udhcpc).

IPv4 Static Address Configuration

Add the following to the file `/etc/network/interfaces`, below the `auto eth0` definition:

Contents of `/etc/network/interfaces`

```
...
iface eth0 inet static
        address 192.168.1.150
        netmask 255.255.255.0
        gateway 192.168.1.1
...
```

Since Alpine 3.13 (and only if you have `ifupdown-ng` installed) must be:

Contents of `/etc/network/interfaces`

```
...
iface eth0 inet static
        address 192.168.1.150/24
        gateway 192.168.1.1
...
```

Additional IP addresses

Contents of `/etc/network/interfaces`

```
...
iface eth0 inet static
        address 192.168.1.150
        netmask 255.255.255.0

iface eth0 inet static
        address 192.168.1.151/24
...
```

Since Alpine 3.13 (and only if you have `ifupdown-ng` installed) must be:

Contents of `/etc/network/interfaces`

```
...
iface eth0 inet static
        address 192.168.1.150/24
        gateway 192.168.1.1

iface eth0 inet static
        address 192.168.1.151/24
...
```

IPv6 DHCP Configuration

Alpine's use of ifupdown-ng supports three DHCP clients: udhcpc, dhclient, and dhcpcd. Of these, only dhcpcd can interact with both DHCP and DHCPv6 from the same process, which ifupdown-ng requires. Thus the IPv4 DHCP configuration given above will also result in the use of DHCPv6, but only if you install the dhcpcd package. (The ifupdown-ng scripts prioritize dhclient over udhcpc, and they prioritize dhcpcd over dhclient; see `/usr/libexec/ifupdown-ng/dhcp`.)

IPv6 Stateless Autoconfiguration

Add the following to the file `/etc/network/interfaces`, below the `auto eth0` definition:

Contents of `/etc/network/interfaces`

```
...
iface eth0 inet6 auto
...
```

IPv6 Static Address Configuration

Add the following to the file `/etc/network/interfaces`, below the `auto eth0` definition:

Contents of `/etc/network/interfaces`

```
...
iface eth0 inet6 static
        address 2001:470:ffff:ff::2
        netmask 64
        gateway 2001:470:ffff:ff::1
```

```
        pre-up echo 0 > /proc/sys/net/ipv6/conf/eth0/accept_ra
...
```

Since Alpine Linux 3.13 (and only if you have `ifupdown-ng` installed) must be as:

Contents of `/etc/network/interfaces`

```
...
iface eth0 inet6 static
        address 2001:470:ffff:ff::2/64
        gateway 2001:470:ffff:ff::1
        pre-up echo 0 > /proc/sys/net/ipv6/conf/eth0/accept_ra
...
```

Example: Dual-Stack Configuration

This example shows a dual-stack configuration.

Contents of `/etc/network/interfaces`

```
auto lo
iface lo inet loopback

auto eth0

iface eth0 inet static
        address 192.168.1.150
       netmask 255.255.255.0
        gateway 192.168.1.1

iface eth0 inet6 static
        address 2001:470:ffff:ff::2
        netmask 64
        gateway 2001:470:ffff:ff::1
        pre-up echo 0 > /proc/sys/net/ipv6/conf/eth0/accept_ra
```

Take care since Alpine 3.13 (and only if you have `ifupdown-ng` installed) must be as:

Contents of `/etc/network/interfaces`

```
auto lo
iface lo inet loopback

auto eth0

iface eth0 inet static
        address 192.168.1.150/24
        gateway 192.168.1.1

iface eth0 inet6 static
        address 2001:470:ffff:ff::2/64
        gateway 2001:470:ffff:ff::1
        pre-up echo 0 > /proc/sys/net/ipv6/conf/eth0/accept_ra
```

Firewalling with iptables and ip6tables

See also: Alpine Wall - How-To Alpine Wall - Alpine Wall User's Guide (https://git.alpinelinux.org/awall/about/).

Install iptables/ip6tables

- To install iptables (includes ip6tables in alpine 3.19 and up):

```
# apk add iptables (https://pkgs.alpinelinux.org/packages?name=iptables&branch
```

- To install ip6tables (Alpine older than 3.19 only):

```
# apk add ip6tables (https://pkgs.alpinelinux.org/packages?name=ip6tables&bran
```

- To install the man pages for iptables and ip6tables:

```
# apk add iptables-doc (https://pkgs.alpinelinux.org/packages?name=iptables-do
```

Configure iptables/ip6tables

Save Firewall Rules

For iptables

1. Set iptables to start on reboot
   - `# rc-update add iptables`
2. Write the firewall rules to disk
   - `# rc-service iptables save`
3. If you use Alpine Local Backup:
   1. Save the configuration
      - `# lbu ci`

For ip6tables

1. Set ip6tables to start on reboot

- `# rc-update add ip6tables`

2. Write the firewall rules to disk

- `# rc-service ip6tables save`

3. If you use Alpine Local Backup:

    1. Save the configuration

        - `# lbu ci`

Activating Changes and Testing Connectivity

Changes made to `/etc/network/interfaces` can be activated by running:

```
# rc-service networking restart
```

If you did not get any errors, you can now test that networking is configured properly by attempting to ping out:

```
$ ping www.google.com
PING www.l.google.com (74.125.47.103) 56(84) bytes of data.
64 bytes from yw-in-f103.1e100.net (74.125.47.103): icmp_seq=1 ttl=48 time=58.5 ms
64 bytes from yw-in-f103.1e100.net (74.125.47.103): icmp_seq=2 ttl=48 time=56.4 ms
64 bytes from yw-in-f103.1e100.net (74.125.47.103): icmp_seq=3 ttl=48 time=57.0 ms
64 bytes from yw-in-f103.1e100.net (74.125.47.103): icmp_seq=4 ttl=48 time=60.2 ms
^C
--- www.l.google.com ping statistics ---
4 packets transmitted, 4 received, 0% packet loss, time 3007ms
rtt min/avg/max/mdev = 56.411/58.069/60.256/1.501 ms
```

For an IPv6 traceroute run `traceroute6`:

```
$ traceroute6 ipv6.google.com
traceroute to ipv6.l.google.com (2001:4860:8009::67) from 2001:470:ffff:ff::2, 30 h
 1  2001:470:ffff:ff::1 (2001:470:ffff:ff::1)  3.49 ms  0.62 ms  0.607 ms
 2  *  *  *
 3  *  *  *
 4  pr61.iad07.net.google.com (2001:504:0:2:0:1:5169:1)  134.313 ms  95.342 ms  88.
 5  2001:4860::1:0:9ff (2001:4860::1:0:9ff)  100.759 ms  100.537 ms  89.907 ms
 6  2001:4860::1:0:5db (2001:4860::1:0:5db)  115.563 ms  102.946 ms  106.191 ms
 7  2001:4860::2:0:a7 (2001:4860::2:0:a7)  101.754 ms  100.475 ms  100.512 ms
 8  2001:4860:0:1::c3 (2001:4860:0:1::c3)  99.272 ms  111.989 ms  99.835 ms
 9  yw-in-x67.1e100.net (2001:4860:8009::67)  101.545 ms  109.675 ms  99.431 ms
```

Additional Utilities

iproute2

You may wish to install the 'iproute2' package (note that this will also install iptables if not yet installed)

```
# apk add iproute2
```

This provides the 'ss' command which is IMHO a 'better' version of netstat.

Show listening tcp ports:

```
$ ss -tl
```

Show listening tcp ports and associated processes:

```
$ ss -ptl
```

Show listening and established tcp connections:

```
$ ss -ta
```

Show socket usage summary:

```
$ ss -s
```

Show more options:

```
$ ss -h
```

drill

You may also wish to install 'drill' (it will also install the 'ldns' package) which is a superior (IMHO) replacement for nslookup and dig etc:

```
# apk add drill
```

Then use it as you would for dig:

```
$ drill alpinelinux.org @8.8.8.8
```

To perform a reverse lookup (get a name from an IP) use the following syntax:

```
$ drill -x 8.8.8.8 @208.67.222.222
```

Related articles

You may also wish to review the following network related articles:

- VLAN setup
- Bonding setup
- Network bridge setup
- udhcpc configuration