

systemd-networkd

Introduction

Systemd-networkd is a system service that manages networks. Debian conventionally has the networking service `networking.service` configured as the default network manager. Which uses `/etc/network/interfaces` file to manage your network interfaces by means of `ifup` and `ifdown` commands.

Systemd-networkd is an alternative option to the Debian networking service — `networking.service`. Since Debian 12 (Bookworm) `systemd-networkd` is used to configure the network within the `lxc` container.

Required services

To use `systemd-networkd`, start/enable `systemd-networkd.service`. It is optional to also configure `systemd-resolved`, which is a network name resolution service to local applications, considering the following points:

- It is important to understand how `resolv.conf` and `systemd-resolved` interact to properly configure the DNS that will be used, some explanations are provided in `systemd-resolved`.
- `systemd-resolved` is required if DNS entries are specified in `.network` files.
- `systemd-resolved` is also required if you want to obtain DNS addresses from DHCP servers or IPv6 router advertisements.
- (by setting `(DHCP=` and/or `IPv6AcceptRA=` in the `[Network]` section, and `UseDNS=yes` (the default) in the corresponding section(s) `[DHCPv4]`, `[DHCPv6]`, `[IPv6AcceptRA]`, see `systemd.network(5)`).
- Note that `systemd-resolved` can also be used without `systemd-networkd`.

Configuration files

Systemd-networkd reads files from the following locations:

- `/usr/lib/systemd/network` ←- Default files shipped with systemd. Lowest priority if filename matches
- `/run/systemd/network` ←- Second Highest Priority. Overrides above files with same name
- `/etc/systemd/network` ←- Highest Priority. Overrides above files with same name

Network Adapter naming

Systemd/udev automatically assigns predictable, stable network interface names for all local Ethernet, WLAN, and WWAN interfaces. e.g. `enp1s0` is the wired adapter and `wlp2s0` is the wireless adapter. Use `networkctl list` to list the devices on the system.

```
# networkctl list
```

```
-----  
IDX LINK TYPE      OPERATIONAL SETUP  
  1 lo   loopback carrier    unmanaged  
  2 eth0 ether    routable   configured  
  
2 links listed.  
-----
```

Configuration

All configurations in this section are stored as *.network in /etc/systemd/network/. For a full listing of options and processing order, see #Configuration files and systemd.network(5). There are three types of configuration files. They all use a format similar to systemd unit files.

- **.network** files. They will apply a network configuration for a matching device
- **.netdev** files. They will create a virtual network device for a matching environment
- **.link** files. When a network device appears, udev will look for the first matching .link file

They all follow the same rules: If all conditions in the [Match] section are matched, the profile will be activated an empty [Match] section means the profile will apply in any case (can be compared to the * wildcard) all configuration files are collectively sorted and processed in lexical order, regardless of the directory in which they live files with identical name replace each other

After making changes to a configuration file, restart systemd-networkd.service.

Links

- <https://manpages.debian.org/bookworm/systemd/systemd.network.5.en.html>
- <https://wiki.archlinux.org/title/systemd-networkd>

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<https://wiki.oscardegroot.nl/> - HomeWiki

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