



6.2. Interface Configuration Files

Interface configuration files control the software interfaces for individual network devices. As the system boots, it uses these files to determine what interfaces to bring up and how to configure them. These files are usually named `ifcfg-name`, where `name` refers to the name of the device that the configuration file controls.

6.2.1. Ethernet Interfaces

One of the most common interface files is `ifcfg-eth0`, which controls the first Ethernet *network interface card* or *NIC* in the system. In a system with multiple NICs, there are multiple `ifcfg-ethX` files (where `X` is a unique number corresponding to a specific interface). Because each device has its own configuration file, an administrator can control how each interface functions individually.

The following is a sample `ifcfg-eth0` file for a system using a fixed IP address:

```
DEVICE=eth0
BOOTPROTO=none
ONBOOT=yes
NETMASK=255.255.255.0
IPADDR=10.0.1.27
USERCTL=no
```

The values required in an interface configuration file can change based on other values. For example, the `ifcfg-eth0` file for an interface using DHCP looks different because IP information is provided by the DHCP server:

```
DEVICE=eth0
BOOTPROTO=dhcp
ONBOOT=yes
```

The **Network Administration Tool** (`system-config-network`) is an easy way to make changes to the various network interface configuration files.

However, it is also possible to manually edit the configuration files for a given network interface.

Below is a listing of the configurable parameters in an Ethernet interface configuration file:

BONDING_OPTS=parameters

sets the configuration parameters for the bonding device, and is used in `/etc/sysconfig/network-scripts/ifcfg-bondN` (see [Section 6.2.2, “Channel Bonding Interfaces”](#)). These parameters are identical to those used for bonding devices in `/sys/class/net/bonding_device/bonding`, and the module parameters for the bonding driver as described in *bonding Module Directives*.

This configuration method is used so that multiple bonding devices can have different configurations. It is highly recommended to place all of your bonding options after the `BONDING_OPTS` directive in `ifcfg-name`. Do *not* specify options for the bonding device in `/etc/modprobe.d/bonding.conf`, or in the deprecated `/etc/modprobe.conf` file.

BOOTPROTO=protocol

where `protocol` is one of the following:

- » **none** — No boot-time protocol should be used.
- » **bootp** — The BOOTP protocol should be used.
- » **dhcp** — The DHCP protocol should be used.

BROADCAST=address

where `address` is the broadcast address. This directive is deprecated, as the value is calculated automatically with `ipcalc`.

DEVICE=name

where **name** is the name of the physical device (except for dynamically-allocated PPP devices where it is the *logical name*).

DHCP_HOSTNAME=name

where **name** is a short hostname to be sent to the DHCP server. Use this option only if the DHCP server requires the client to specify a hostname before receiving an IP address.

DNS{1, 2}=address

where **address** is a name server address to be placed in `/etc/resolv.conf` if the **PEERDNS** directive is set to **yes**.

ETHTOOL_OPTS=options

where **options** are any device-specific options supported by **ethtool**. For example, if you wanted to force 100Mb, full duplex:

```
ETHTOOL_OPTS="autoneg off speed 100 duplex full"
```

Instead of a custom initscript, use **ETHTOOL_OPTS** to set the interface speed and duplex settings. Custom initscripts run outside of the network init script lead to unpredictable results during a post-boot network service restart.


Set "autoneg off" before changing speed or duplex settings

Changing speed or duplex settings almost always requires disabling autonegotiation with the **autoneg off** option. This needs to be stated first, as the option entries are order-dependent.

GATEWAY=address

where **address** is the IP address of the network router or gateway device (if any).

HOTPLUG=answer

where **answer** is one of the following:

- » **yes** — This device should be activated when it is hot-plugged (this is the default option).
- » **no** — This device should *not* be activated when it is hot-plugged.

The **HOTPLUG=no** option can be used to prevent a channel bonding interface from being activated when a bonding kernel module is loaded.

Refer to [Section 6.2.2, "Channel Bonding Interfaces"](#) for more information about channel bonding interfaces.

HWADDR=MAC-address

where **MAC-address** is the hardware address of the Ethernet device in the form **AA:BB:CC:DD:EE:FF**. This directive must be used in machines containing more than one NIC to ensure that the interfaces are assigned the correct device names regardless of the configured load order for each NIC's module. This directive should **not** be used in conjunction with **MACADDR**.

IPADDR=address

where **address** is the IP address.

LINKDELAY=time

where **time** is the number of seconds to wait for link negotiation before configuring the device.

MACADDR=MAC-address

where **MAC-address** is the hardware address of the Ethernet device in the form **AA:BB:CC:DD:EE:FF**. This directive is used to assign a MAC address to an interface, overriding the one assigned to the physical NIC. This directive should **not** be used in conjunction with **HWADDR**.

MASTER=bond-interface

where **bond-interface** is the channel bonding interface to which the Ethernet interface is linked.

This directive is used in conjunction with the **SLAVE** directive.

Refer to [Section 6.2.2, “Channel Bonding Interfaces”](#) for more information about channel bonding interfaces.

NETMASK=mask

where **mask** is the netmask value.

NETWORK=address

where **address** is the network address. This directive is deprecated, as the value is calculated automatically with **ipcalc**.

ONBOOT=answer

where **answer** is one of the following:

- **yes** — This device should be activated at boot-time.
- **no** — This device should not be activated at boot-time.

PEERDNS=answer

where **answer** is one of the following:

- **yes** — Modify **/etc/resolv.conf** if the DNS directive is set. If using DHCP, then **yes** is the default.
- **no** — Do not modify **/etc/resolv.conf**.

SLAVE=answer

where **answer** is one of the following:

- **yes** — This device is controlled by the channel bonding interface specified in the **MASTER** directive.
- **no** — This device is *not* controlled by the channel bonding interface specified in the **MASTER** directive.

This directive is used in conjunction with the **MASTER** directive.

Refer to [Section 6.2.2, “Channel Bonding Interfaces”](#) for more about channel bonding interfaces.

SRCADDR=address

where **address** is the specified source IP address for outgoing packets.

USERCTL=answer

where **answer** is one of the following:

- **yes** — Non-**root** users are allowed to control this device.
- **no** — Non-**root** users are not allowed to control this device.

