

12.2.6 Network Configuration Facts

Linux uses files and commands for network configuration.

This lesson covers the following topics:

- Network configuration files
- Network configuration commands

Network Configuration Files

The following table identifies files that Linux uses for network configuration:

File or Directory	Description
/etc/sysconfig/network-scripts	<p>This directory contains network configuration files. For example, each network interface in the system is configured using a configuration file in this directory named ifcfg-device_name (for example, ifcfg-ens192). Edit the appropriate device file in this directory to modify the following settings:</p> <ul style="list-style-type: none">• Boot protocol (static, DHCP, or BootP)• Autoconfiguration information• IP address, mask, and default router (for static configurations)
/var/lib/dhcpd/dhcpclient/ /var/lib/dhcpd/dhclient.leases /var/lib/dhclient/dhclient.leases	<p>These files contain DHCP lease information. The specific file used will vary between distributions.</p>
/etc/netplan	<p>This directory contains the *.yaml file that defines the network configuration parameters, such as:</p> <ul style="list-style-type: none">• On/off toggle for DHCP4 and DHCP6• Static IP address• Gateway IP address• IP addresses of nameservers <p>You can test the configuration using sudo netplan try. Once you confirm the configuration is accurate, use sudo netplan apply to apply the configuration.</p>
/etc/dhcp/dhclient.conf	<p>This configuration file defines dhclient parameters, such as:</p> <ul style="list-style-type: none">• Protocol timing• Information requested from the server• Information required from the server• Preinitialized addresses for networks without DHCP servers

Network Configuration Commands

The table below shows common commands for configuring network settings:

Command	Function	Example
/etc/init.d/network /etc/rc.d/init.d/network service network	Starts, restarts, or stops networking services on init-based distributions.	service network start starts the network service. service network restart restarts the network service.
systemctl command network	Manages network services on systemd-based distributions.	systemctl stop network stops the networking service. systemctl start network starts the networking service. systemctl restart network restarts the networking service.
ifconfig ifconfig interface	Views network interface information. Use the -a option to display the status of all interfaces.	ifconfig -a displays the status of all interfaces, even those that are down.
ifconfig interface parameters	Creates a static IP configuration for the specified interface. Common ifconfig parameters include the following: <ul style="list-style-type: none"> • address sets the IP address. • netmask sets the subnet mask. • broadcast sets the broadcast address. • up activates the interface. • down deactivates the interface. 	ifconfig ens192 192.168.1.1 netmask addr 255.255.255.0 configures a static IP address and subnet mask for the ens192 interface. ifconfig ens192 up starts the ens192 interface.
ifup interface	Starts a network interface.	ifup ens192 starts the ens192 network device.
ifdown interface	Stops a network interface.	ifdown ens192 stops the ens192 network device.
ip addr show interface	Displays the current networking information for a network interface. Omitting the interface from the command displays networking information for all	ip addr show ens192 displays networking information for the ens192 interface.

	<p>interfaces in the system. Common ip addr show parameters include the following:</p> <ul style="list-style-type: none"> • inet shows the IPv4 address with the subnet mask in CIDR notation. • brd shows the broadcast address. • up or down shows the interface status. • inet6 shows the IPv6 IP address. 	
ip addr add <i>ip_address</i> dev <i>interface</i>	Adds an additional IP address to a network interface.	ip addr add 10.0.0.3 dev ens32 adds an IP address of 10.0.0.3 to the ens32 network interface.
ip addr del <i>ip_address</i> dev <i>interface</i>	Removes an IP address from a network interface.	ip addr del 10.0.0.3 dev ens32 removes an IP address of 10.0.0.3 from the ens32 network interface.
ip link set <i>interface</i> down ip link set <i>interface</i> up	Stops and starts the specified interface.	ip link set ens32 down stops the ens32 interface. ip link set ens32 up starts the ens32 interface.
ethtool	Lists and changes Ethernet card properties such as supported modes, auto-negotiation, speed, wake on, duplex, link detection status, and port. You can also use it to list and change driver settings.	ethtool <i>devname</i> queries Ethernet device properties ethtool -i <i>devname</i> queries Ethernet device driver and firmware ethtool -C <i>drivername</i> adaptive-rx on adjusts the moderation time to the traffic pattern.
iwconfig	Displays and changes the parameters of the wireless network interfaces.	iwconfig <i>wirelessname</i> freq 2.46G sets the frequency to 2.46G iwconfig <i>wirelessname</i> mode Managed activates roaming and allows connection to any one of a number of access points on the network.
brctl	Sets up, maintains, and inspects the Ethernet bridge configuration in the Linux kernel.	brctl show shows all current instances of the ethernet bridge.

		<p>brctl show <i>btidgename</i> shows information about the bridge and its attached ports.</p> <p>brctl showmacs <i>btidgename</i> shows a list of learned MAC addresses for this bridge</p>
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