

How to Manage and Configure IP Addresses in Linux

IP addresses are fundamental to networking, serving as unique identifiers for devices on a network. In a Linux environment, managing and configuring IP addresses is crucial for network communication, troubleshooting, and administration. This article will guide you through the processes of viewing, configuring, and managing IP addresses using various Linux commands and tools.

Examples:

1. Viewing IP Addresses

To view the current IP addresses assigned to your network interfaces, you can use the `ip` command:

```
ip addr show
```

This command will display detailed information about all network interfaces and their associated IP addresses.

Alternatively, you can use the `ifconfig` command, which is part of the `net-tools` package:

```
ifconfig
```

2. Assigning a Static IP Address

To assign a static IP address to a network interface, you can use the `ip` command. For example, to assign the IP address `192.168.1.100` with a subnet mask of `255.255.255.0` to the `eth0` interface, you would run:

```
sudo ip addr add 192.168.1.100/24 dev eth0
```

To make this configuration persistent across reboots, you need to edit the network configuration file, typically found at `/etc/network/interfaces` or `/etc/sysconfig/network-scripts/ifcfg-eth0` depending on your Linux distribution.

For Debian-based systems (e.g., Ubuntu):

```
sudo nano /etc/network/interfaces
```

Add the following lines:

```
auto eth0
iface eth0 inet static
    address 192.168.1.100
    netmask 255.255.255.0
    gateway 192.168.1.1
```

For Red Hat-based systems (e.g., CentOS, Fedora):

```
sudo nano /etc/sysconfig/network-scripts/ifcfg-eth0
```

Add or modify the following lines:

```
DEVICE=eth0
BOOTPROTO=static
IPADDR=192.168.1.100
NETMASK=255.255.255.0
GATEWAY=192.168.1.1
ONBOOT=yes
```

3. Releasing and Renewing a DHCP Lease

If your network interface is configured to use DHCP, you might need to release and renew the IP address. This can be done using the `dhclient` command:

To release the current DHCP lease:

```
sudo dhclient -r eth0
```

To renew the DHCP lease:

```
sudo dhclient eth0
```

4. Checking Network Connectivity

To verify that your IP address configuration is correct and that you have network connectivity, you can use the `ping` command:

```
ping -c 4 8.8.8.8
```

This command will send 4 ICMP echo requests to Google's public DNS server and display the

results.