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Getting Started with
Network Configuration

Network Configuration

The `ifconfig` command stands for "interface configuration" and is used to display network configuration information.

ifconfig [*OPTIONS*]

Note

The `iwconfig` command is similar to the `ifconfig` command, but it is dedicated to wireless network interfaces.

Not all network settings are important for this module, but it is important to note in the following example that the IPv4 address of the primary network device `eth0` is `192.168.1.2` and that the device is currently active (`UP`):

```
root@localhost:~# ifconfig
eth0      Link encap:Ethernet  HWaddr 02:42:c0:a8:01:02
          inet addr:192.168.1.2  Bcast:192.168.1.255  Mask:255.255.255.0
          UP BROADCAST RUNNING MULTICAST  MTU:1500  Metric:1
          RX packets:59 errors:0 dropped:0 overruns:0 frame:0
          TX packets:86 errors:0 dropped:0 overruns:0 carrier:0
          collisions:0 txqueuelen:1000
          RX bytes:4346 (4.3 KB)  TX bytes:5602 (5.6 KB)

lo        Link encap:Local Loopback
          inet addr:127.0.0.1  Mask:255.0.0.0
          UP LOOPBACK RUNNING  MTU:65536  Metric:1
          RX packets:2 errors:0 dropped:0 overruns:0 frame:0
          TX packets:2 errors:0 dropped:0 overruns:0 carrier:0
          collisions:0 txqueuelen:1000
          RX bytes:100 (100.0 B)  TX bytes:100 (100.0 B)
```

Consider This

The `lo` device is referred to as the *loopback* device. It is a special network device used by the system when sending network-based data to itself.

The `ifconfig` command can also be used to temporarily modify network settings. Typically these changes should be permanent, so using the `ifconfig` command to make such changes is fairly rare.

The `ping` command is used to verify connectivity between two computers. It does this by sending packets to another machine on a network. If the sender receives a response it should be possible to connect to that machine.

Information is sent using "packets"; the encapsulated unit of data sent over a network. In order for the packets to find the other computer, they will need an address. The `ping` command uses IP addresses to identify a computer on the network that it wants to connect to.

By default, the `ping` command will continue sending packets until the break command (**CTL** + **C**) is entered at the console. To limit how many pings are sent, use the `-c` option followed by the number of pings to be sent. The example below shows `ping` being limited to 4 iterations with `-c 4`.

If the `ping` command is successful, you will see output like the following:

```
root@localhost:~# ping -c 4 192.168.1.2
PING 192.168.1.2 (192.168.1.2) 56(84) bytes of data.
64 bytes from 192.168.1.2: icmp_req=1 ttl=64 time=0.051 ms
64 bytes from 192.168.1.2: icmp_req=2 ttl=64 time=0.064 ms
64 bytes from 192.168.1.2: icmp_req=3 ttl=64 time=0.050 ms
64 bytes from 192.168.1.2: icmp_req=4 ttl=64 time=0.043 ms

--- 192.168.1.2 ping statistics ---
4 packets transmitted, 4 received, 0% packet loss, time 2999ms
rtt min/avg/max/mdev = 0.043/0.052/0.064/0.007 ms
root@localhost:~#
```

If the `ping` command fails, you will receive a message stating, `Destination Host Unreachable`:

```
root@localhost:~# ping -c 4 192.168.1.3
PING 192.168.1.3 (192.168.1.3) 56(84) bytes of data.
From 192.168.1.2 icmp_seq=1 Destination Host Unreachable
From 192.168.1.2 icmp_seq=2 Destination Host Unreachable
From 192.168.1.2 icmp_seq=3 Destination Host Unreachable
From 192.168.1.2 icmp_seq=4 Destination Host Unreachable

--- 192.168.1.3 ping statistics ---
4 packets transmitted, 0 received, +4 errors, 100% packet loss, time 3065ms
pipe 4
root@localhost:~#
```

The `ping` command may fail even though the remote machine is connecting. This is because some administrators configure their machines, or even entire networks, not to respond to `ping` requests as a security measure. The `ping` command also works with a hostname, or domain name like yahoo.com. Using this first saves time, if that `ping` command is successful, there is proper name resolution AND the IP address is functioning properly as well.

Follow Along

Exit the root account using the `exit` command:

```
root@localhost:~# exit
logout
```