

The network commands chapter explains various tools which can be useful when networking with other computers both within the network and across the internet, obtaining more information about other computers

netstat

Displays contents of /proc/net files. It works with the Linux Network Subsystem, it will tell you what the status of ports are ie. open, closed, waiting, masquerade connections. It will also display various other things. It has many different options.

tcpdump

This is a sniffer, a program that captures packets off a network interface and interprets them for you. It understands all basic internet protocols, and can be used to save entire packets for later inspection.

ping

The ping command (named after the sound of an active sonar system) sends echo requests to the host you specify on the command line, and lists the responses received their round trip time.

You simply use ping as:

```
ping ip_or_host_name
```

Note to stop ping (otherwise it goes forever) use **CTRL-C** (break).

Please note: Using ping/smbmount/ssh or other UNIX system programs with a computer name rather than IP address will only work if you have the computer listed in your /etc/hosts file. Here is an example:

```
192.168.1.100 new
```

This line says that there is a computer called “new” with IP address 192.168.1.100. Now that it exists in the /etc/hosts file I don't have to type the IP address anymore, just the name “new”.

hostname

Tells the user the host name of the computer they are logged into. Note: may be called *host*.

traceroute

traceroute will show the route of a packet. It attempts to list the series of hosts through which your packets travel on their way to a given destination. Also have a look at *xtraceroute* (one of several graphical equivalents of this program).

Command syntax:

```
traceroute machine_name_or_ip
```

tracpath

tracpath performs a very similar function to *traceroute* the main difference is that *tracpath* doesn't take complicated options.

Command syntax:

```
tracpath machine_name_or_ip
```

nmap

“network exploration tool and security scanner”. *nmap* is a very advanced network tool used to query machines (local or remote) as to whether they are up and what ports are open on these machines.

A simple usage example:

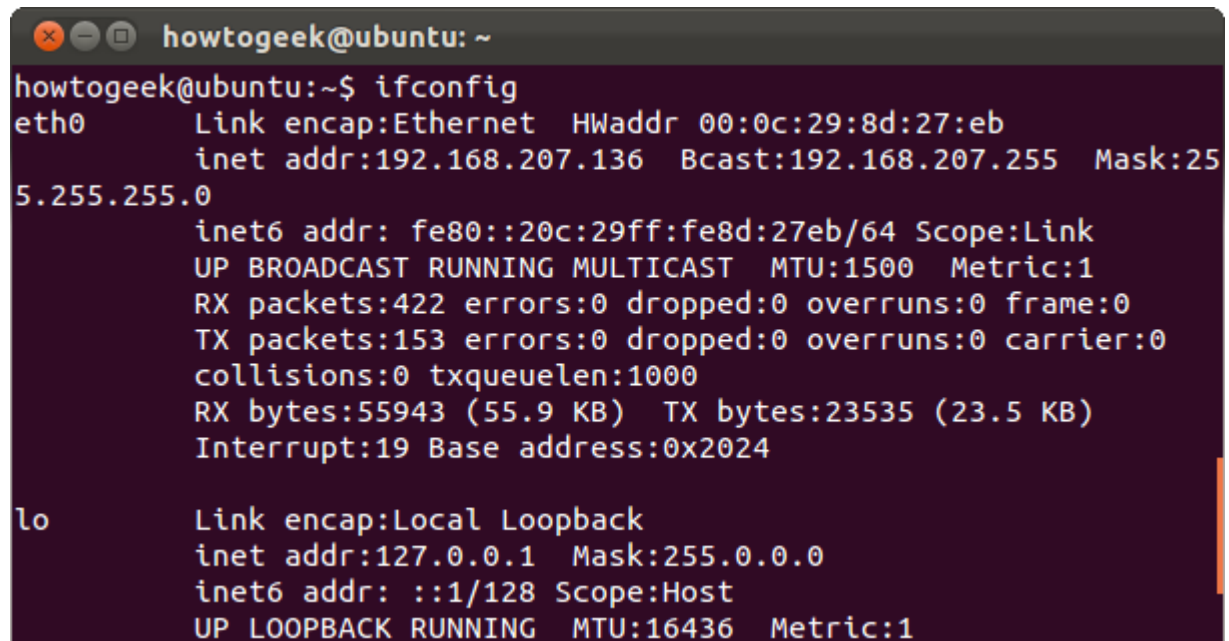
```
nmap machine_name
```

This would query your own machine as to what ports it keeps open. *nmap* is a very powerful tool, documentation is available on the [nmap site](#) as well as the information in the manual page.

ifconfig

The **ifconfig** command has a variety of options to configure, tune, and debug your system's network interfaces. It's also a quick way to view IP addresses and other network interface information. Type **ifconfig** to view the status of all currently active network interfaces, including their names. You can also specify an interface's name to view only information about that interface.

```
ifconfig
ifconfig eth0
```



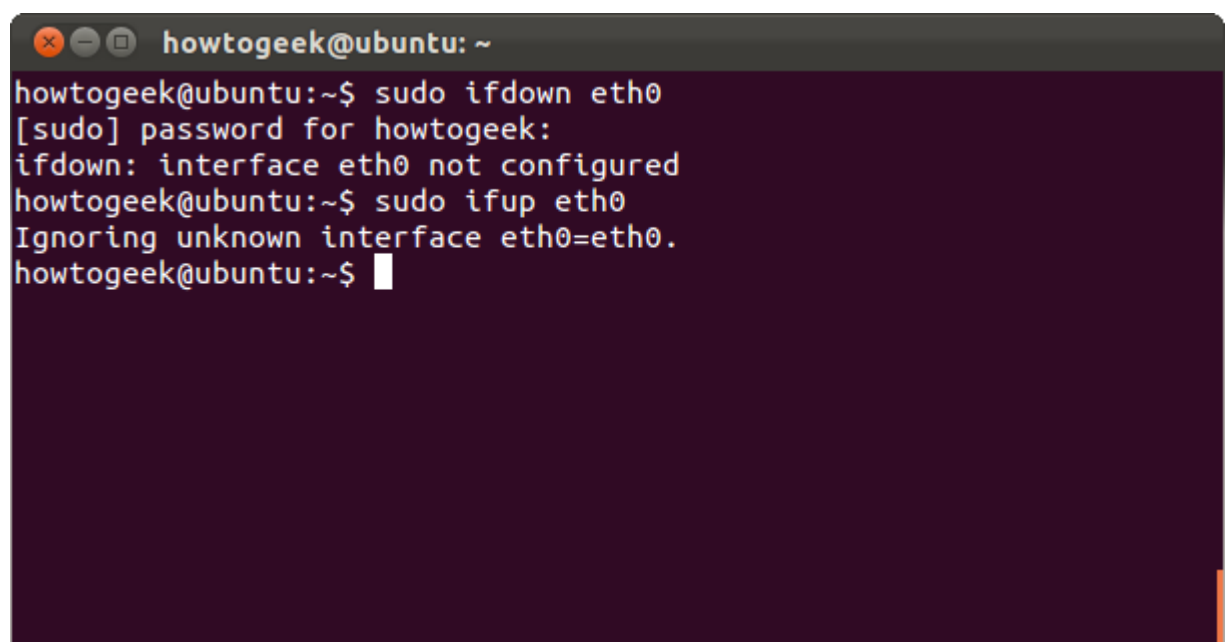
```
howtogeek@ubuntu: ~
howtogeek@ubuntu:~$ ifconfig
eth0      Link encap:Ethernet  HWaddr 00:0c:29:8d:27:eb
          inet addr:192.168.207.136  Bcast:192.168.207.255  Mask:255.255.255.0
          inet6 addr: fe80::20c:29ff:fe8d:27eb/64 Scope:Link
          UP BROADCAST RUNNING MULTICAST  MTU:1500  Metric:1
          RX packets:422 errors:0 dropped:0 overruns:0 frame:0
          TX packets:153 errors:0 dropped:0 overruns:0 carrier:0
          collisions:0 txqueuelen:1000
          RX bytes:55943 (55.9 KB)  TX bytes:23535 (23.5 KB)
          Interrupt:19 Base address:0x2024

lo        Link encap:Local Loopback
          inet addr:127.0.0.1  Mask:255.0.0.0
          inet6 addr: ::1/128 Scope:Host
          UP LOOPBACK RUNNING  MTU:16436  Metric:1
```

ifdown & ifup

The **ifdown** and **ifup** commands are the same thing as running **ifconfig up** or **ifconfig down**. Given an interface's name, they take the interface down or bring it up. This requires root permissions, so you have to use **sudo** on Ubuntu.

```
sudo ifdown eth0
sudo ifup eth0
```



```
howtogeek@ubuntu: ~
howtogeek@ubuntu:~$ sudo ifdown eth0
[sudo] password for howtogeek:
ifdown: interface eth0 not configured
howtogeek@ubuntu:~$ sudo ifup eth0
Ignoring unknown interface eth0=eth0.
howtogeek@ubuntu:~$
```

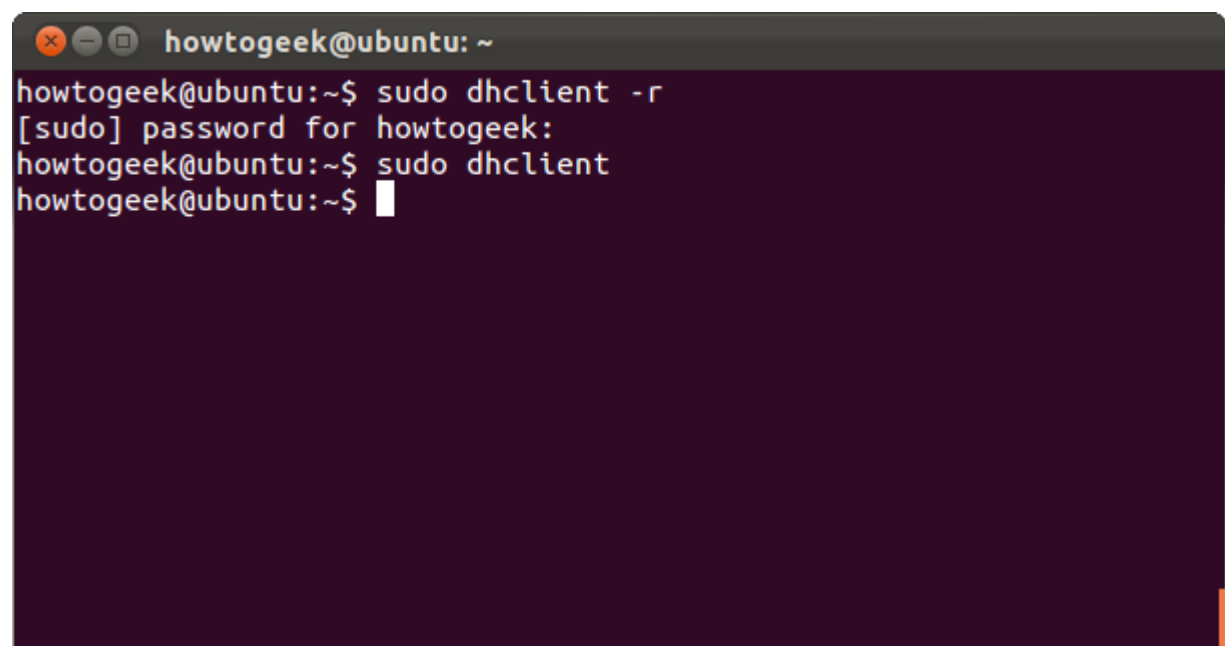
Try this on a Linux desktop system and you'll probably get an error message. Linux desktops usually use NetworkManager, which manages network interfaces for you. These commands will still work on servers without NetworkManager, though.

If you really need to configure NetworkManager from the command line, use the **nmcli** command.

dhclient

The **dhclient** command can release your computer's IP address and get a new one from your DHCP server. This requires root permissions, so use `sudo` on Ubuntu. Run `dhclient` with no options to get a new IP address or use the **-r** switch to release your current IP address.

```
sudo dhclient -r
sudo dhclient
```

A terminal window titled 'howtogeek@ubuntu: ~' with a dark purple background. The terminal shows the following sequence of commands and output: 1. 'howtogeek@ubuntu:~\$ sudo dhclient -r' is entered. 2. '[sudo] password for howtogeek:' is displayed. 3. 'howtogeek@ubuntu:~\$ sudo dhclient' is entered. 4. 'howtogeek@ubuntu:~\$' is shown with a white cursor. The terminal window has standard Ubuntu window controls (close, minimize, maximize) in the top left corner.

```
howtogeek@ubuntu:~$ sudo dhclient -r
[sudo] password for howtogeek:
howtogeek@ubuntu:~$ sudo dhclient
howtogeek@ubuntu:~$
```

netstat

The **netstat** command can show a lot of different interface statistics, including open sockets and routing tables. Run the `netstat` command with no options and you'll see a list of open sockets.

```
howtogeek@ubuntu: ~  
unix 3      [ ]      STREAM    CONNECTED  6955  
unix 2      [ ]      DGRAM      6952  
unix 3      [ ]      STREAM    CONNECTED  6889      /var/run  
/dbus/system_bus_socket  
unix 3      [ ]      STREAM    CONNECTED  6888  
unix 3      [ ]      STREAM    CONNECTED  6887  
unix 3      [ ]      STREAM    CONNECTED  6886  
unix 3      [ ]      DGRAM      6672  
unix 3      [ ]      DGRAM      6671  
unix 3      [ ]      STREAM    CONNECTED  6598      @/com/ub  
untu/upstart  
unix 3      [ ]      STREAM    CONNECTED  6593  
unix 3      [ ]      STREAM    CONNECTED  6538      @/com/ub  
untu/upstart  
unix 3      [ ]      STREAM    CONNECTED  6537  
howtogeek@ubuntu:~$
```

There's a lot more you can do with this command. For example, use the **netstat -p** command to view the programs associated with open sockets.

```
howtogeek@ubuntu: ~  
howtogeek@ubuntu:~$ netstat -p  
(Not all processes could be identified, non-owned process info  
will not be shown, you would have to be root to see it all.)  
Active Internet connections (w/o servers)  
Proto Recv-Q Send-Q Local Address           Foreign Address         State       PID/Program name  
tcp        0      0 ubuntu.local:51820      pz-in-f104.1e100.ne:www ESTABLISHED 3855/firefox  
tcp        0      0 ubuntu.local:43581      204.245.34.202:www     ESTABLISHED 3855/firefox  
howtogeek@ubuntu:~$
```

View detailed statistics for all ports with **netstat -s**.

```
howtogeek@ubuntu: ~  
howtogeek@ubuntu:~$ netstat -s  
Ip:  
  10602 total packets received  
  331 with invalid addresses  
  0 forwarded  
  0 incoming packets discarded  
 10247 incoming packets delivered  
 8969 requests sent out  
  4 outgoing packets dropped  
 28 dropped because of missing route  
  4 fragments failed  
Icmp:  
 2848 ICMP messages received  
 2647 input ICMP message failed.  
ICMP input histogram:  
  destination unreachable: 6
```

ARP Command

ARP (Address Resolution Protocol) is useful to view / add the contents of the kernel's ARP tables. To see default table use the command as.

```
# arp -e  
Address                HWtype  HWaddress          Flags Mask  
Iface  
192.168.50.1           ether    00:50:56:c0:00:08   C  
eth0
```

ETHTOOL Command

ethtool is a replacement of mii-tool. It is to view, setting speed and duplex of your Network Interface Card (NIC). You can set duplex permanently in /etc/sysconfig/network-scripts/ifcfg-eth0 with ETHTOOL_OPTS variable.

```
# ethtool eth0  
Settings for eth0:  
Current message level: 0x00000007 (7)  
Link detected: yes
```

IWCONFIG Command

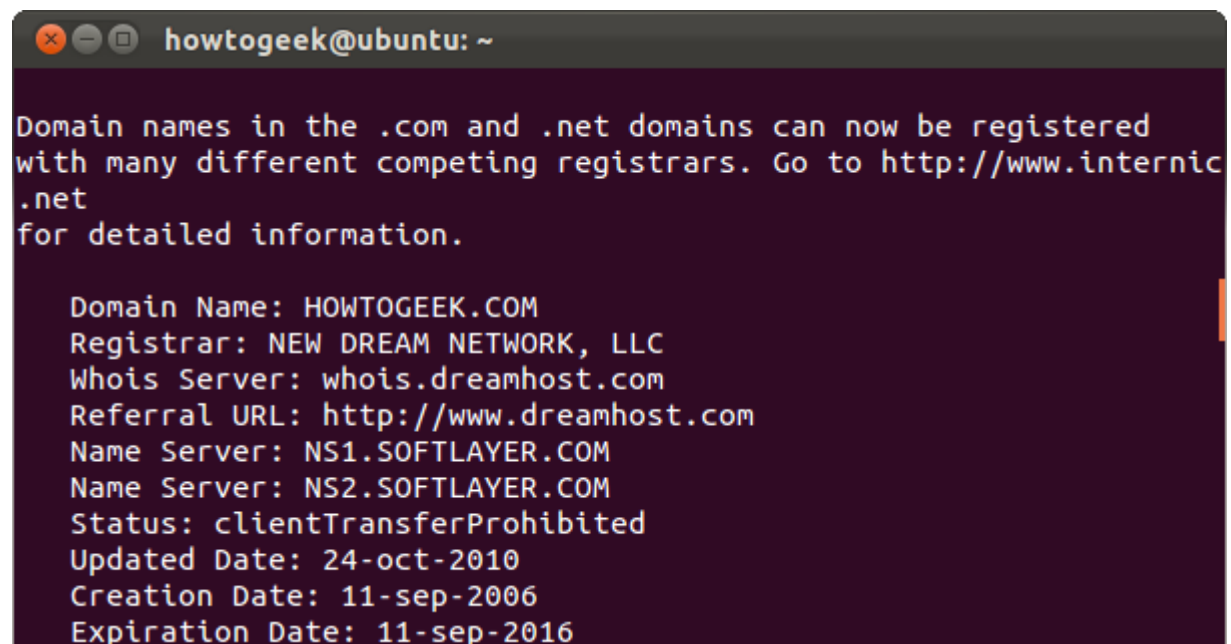
`iwconfig` command in Linux is use to configure a wireless network interface. You can see and set the basic Wi-Fi details like SSID channel and encryption. You can refer man page of `iwconfig` to know more.

```
# iwconfig [interface]
```

whois

The **whois** command will show you a website's whois records, so you can view more information about who registered and owns a specific website.

```
whois example.com
```

A terminal window titled 'howtogeek@ubuntu: ~' displays the output of the 'whois' command for 'example.com'. The output includes a notice about domain registration and specific details for 'HOWTOGEEK.COM'.

```
Domain names in the .com and .net domains can now be registered
with many different competing registrars. Go to http://www.internic
.net
for detailed information.

Domain Name: HOWTOGEEK.COM
Registrar: NEW DREAM NETWORK, LLC
Whois Server: whois.dreamhost.com
Referral URL: http://www.dreamhost.com
Name Server: NS1.SOFTLAYER.COM
Name Server: NS2.SOFTLAYER.COM
Status: clientTransferProhibited
Updated Date: 24-oct-2010
Creation Date: 11-sep-2006
Expiration Date: 11-sep-2016
```

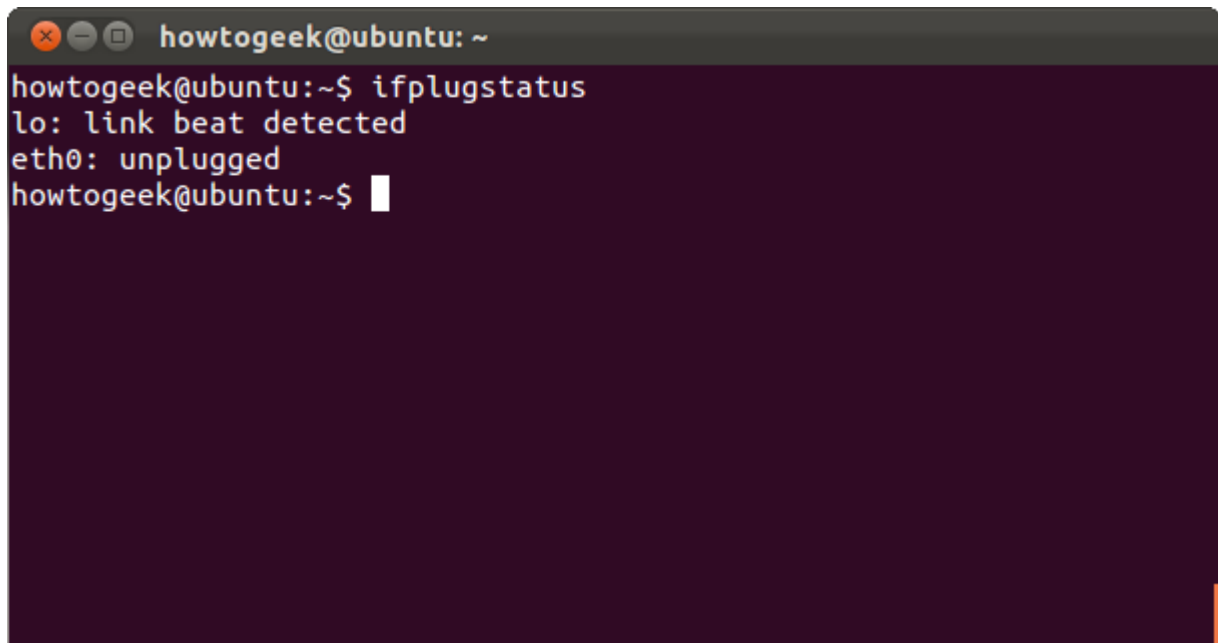
ifplugstatus

The **ifplugstatus** command will tell you whether a cable is plugged into a network interface or not. It isn't installed by default on Ubuntu. Use the following command to install it:

```
sudo apt-get install ifplugd
```

Run the command to see the status of all interfaces or specify a specific interface to view its status.

```
ifplugstatus  
ifplugstatus eth0
```

A terminal window titled 'howtogeek@ubuntu: ~' with standard window controls. The terminal shows the command 'ifplugstatus' being executed, resulting in two lines of output: 'lo: link beat detected' and 'eth0: unplugged'. The prompt 'howtogeek@ubuntu:~\$' is visible at the bottom with a cursor.

```
howtogeek@ubuntu: ~  
howtogeek@ubuntu:~$ ifplugstatus  
lo: link beat detected  
eth0: unplugged  
howtogeek@ubuntu:~$
```

“Link beat detected” means the cable is plugged in. You’ll see “unplugged” if it isn’t.

Iperf -

Iperf is a commonly used network testing tool that can create Transmission Control Protocol (TCP) and User Datagram Protocol (UDP) data streams and measure the throughput of a network that is carrying them. Iperf is a tool for network performance measurement written in C