

## Network setup

setting up the network on your Linux system is easy

we assume that we are working with the rack here (or devices that require Ethernet cables for the network)  
but if you are doing this wirelessly, it should also be easy

### **you have done this before!**

what we really want to talk about is how to setup a network connection manually

e.g., for cyber storm

we'll do this at the terminal

in fact, you may want to check out the separate terminal notes

to check your network settings

```
ifconfig
eth0  Link encap:Ethernet  HWaddr 00:25:64:aa:17:b2
      inet addr:10.1.102.222  Bcast:10.0.0.255  Mask:255.0.0.0
      inet6 addr: fe80::225:64ff:feaa:17b2/64 Scope:Link
      UP BROADCAST RUNNING MULTICAST  MTU:1500  Metric:1
      RX packets:94918628 errors:185 dropped:12 overruns:0 frame:18535
      TX packets:322275600 errors:0 dropped:0 overruns:0 carrier:0
      collisions:0 txqueuelen:1000
      RX bytes:833841407064 (833.8 GB)  TX bytes:79147388353 (79.1 GB)
      Interrupt:17

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:65536  Metric:1
      RX packets:9163361 errors:0 dropped:0 overruns:0 frame:0
      TX packets:9163361 errors:0 dropped:0 overruns:0 carrier:0
      collisions:0 txqueuelen:0
      RX bytes:1983215453 (1.9 GB)  TX bytes:1983215453 (1.9 GB)
```

eth0 is an Ethernet (cabled) interface

lo is the loopback interface

for routing packets back to your system without any processing  
mainly used for testing, router identification, etc

the relevant entry is the eth0 entry (eth for Ethernet)

```
eth0  Link encap:Ethernet  HWaddr 00:25:64:aa:17:b2
      MAC address (physical address of your device)
inet addr:10.1.102.222  Bcast:10.0.0.255  Mask:255.0.0.0
      IP address
      inet addr:10.1.102.222  Bcast:10.0.0.255  Mask:255.0.0.0
      netmask
      inet addr:10.1.102.222  Bcast:10.0.0.255  Mask:255.0.0.0
      packets sent here go to everyone!
```

to change network settings to

10.4.5.6 in the network 10.0.0.0

```
ifconfig eth0 10.4.5.6 netmask 255.0.0.0 up
```

you could also edit the network configuration

```
sudo vim /etc/network/interfaces
```

```

auto eth0
iface eth0 inet static
address 10.4.5.6
netmask 255.0.0.0
sudo service networking restart
ifconfig eth0
eth0  Link encap:Ethernet  HWaddr 00:25:64:aa:17:b2
      inet addr:10.4.5.6  Bcast:10.0.0.255  Mask:255.0.0.0
      inet6 addr: fe80::225:64ff:feaa:17b2/64 Scope:Link
      UP BROADCAST RUNNING MULTICAST  MTU:1500  Metric:1
      RX packets:94918628 errors:185 dropped:12 overruns:0 frame:18535
      TX packets:322275600 errors:0 dropped:0 overruns:0 carrier:0
      collisions:0 txqueuelen:1000
      RX bytes:833841407064 (833.8 GB)  TX bytes:79147388353 (79.1 GB)
      Interrupt:17

```

to change network settings to obtain an IP address automatically (using a DHCP (Dynamic Host Configuration Protocol) server):

first, make sure that there is no configuration in /etc/network/interfaces

```

sudo ifconfig eth0 0.0.0.0 down
sudo ifconfig eth0 up
sudo dhclient eth0

```

of course, you can do all of this via the GUI  
but why would you?

during labs

if you need Internet, connect your rack to an Internet port  
get an automatic IP address (either via the GUI or manually as above)

during challenges/Cyber Storm

set a static, internal IP address as specified by the prof

usually, each team gets some space

e.g., Team 1 gets 10.1.0.0/255.0.0.0  
Team 2 gets 10.2.0.0/255.0.0.0

...

**never connect both to the internal network and the Internet!**

this is very important

doing so may cause otherwise malicious things to head to the university's production network  
and that is bad

penalties can be severe (both at the university level and for the course)