Network setup

setting up the network on your Linux system is easy
we assume that we are working with a wired network adapter (i.e., using an Ethernet cable for the network)
but if you are doing this wirelessly, it should also be easy

you probably 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/challenges, pay attention to the requirements!

we may work in an isolated network (so get a 10. IP address)

we may work on the Internet (so get an IP address automatically)

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)