**LAB 18**

**Private IPv4 ADDRESSES & NAT**

Note: if you are working on campus, consider the “home network” in the descriptions below as the “campus network”.

# **NAT in your home network**

1. On your laptop, find out which IPv4 address you are using on your active interface (Wi-Fi or Ethernet) to surf the Internet. To this end, use ***ipconfig*** (Windows) or ***ifconfig*** (Mac). Is this a private or a public IP address?

The IP falls in the private range

1. Connect to the same local network with your smartphone or another device (please turn off your 4G mobile data to make sure you connect via Wi-Fi). Inspect the IPv4 address you were given on that device (e.g. via Settings – About the phone). Is this a different IPv4 address than the one on your laptop? And are both devices in the same or in another IP network?

It’s another IP, but still in the same range

1. At your laptop, surf to Google and search for “what is my ip”. What IPv4 address do you get as a result? Note that if you are getting an IPv6 address, you can also use other sites such as <https://whatismyipaddress.com> , <https://www.iplocation.net/> , <https://whatismyip.host/> etc. which are revealing you the IPv4 address you are browsing the Internet with. Is this IPv4 address the same address as one of the addresses you’ve found in the questions above? Is this a public address or a private address?

It is different from the previous, because this is a public IP.

1. Now also surf with your smartphone (or other device) to the same site. What IPv4 address do you see now? Is this the same address as in the previous question (when you were surfing with your laptop)?

It is the same IP

1. Enter this IP address to <https://ipinfo.io/> (no sign up required, use the search bar without account). What ISP does the IPv4 address of the previous question belong to?

Proximus

1. On your laptop do a trace route over IPv4 to Google: ***tracert -4 google.be*** . Pay attention to the change in private/public IP addresses. Do you see where NA(P)T is involved?

You can see where the change happens

# **NAT in the cellular 4G network of your mobile**

1. Now turn off your Wi-Fi on your smartphone, and switch on your 4G mobile data. Inspect the IPv4 address you’ve received now (e.g. via Settings – About the phone). Is this a public address or a private address?

This is a private IP

1. Surf again with your smartphone to one of the previously mentioned sites to get to know the IPv4 address you’re surfing the Internet with. What IPv4 address is shown now? Is this a public address or a private address? Is this the same address you've seen before? Please also check this address on <https://ipinfo.io/> .

You can see that this is a public IP, from the ISP your mobile data plan is

1. On your smartphone do a trace route over IPv4 to Google. On Android you can use the “pingtools” app or the “fing” app. On iOS (iPhone, not Cisco 😉) you can use the “fing” app. Pay attention to the change in private/public IP addresses. Do you see where NA(P)T is involved?
2. You can see where the change happens