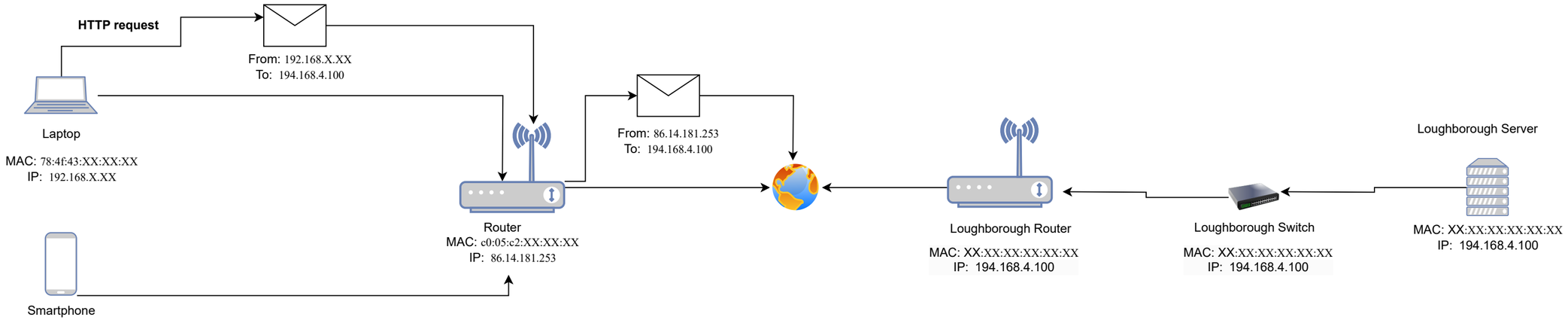
How internet works



Loughborough Web Server

When we type https://www.lborolondon.ac.uk/ , our router connects us to the Loughborough web server, which is a computer that is hosting Loughborough London services.

MAC Address

Every device has a unique identification number called MAC address that is assigned to a device by it's manifacturer to connect to a network.

Virgin Media Hub 3.0

My domestic device that has a switch and router integrated to it. A domestic router can also act as a switch.

Internet

Network of routers all around the world.
The router has a public IP address provided by the ISP that is shared with all the devices within the network and it's accessible over the internet.

HTTP request

Once the IP address is obtained, the browser sends a HTTP request to the web server associated with the Lboro IP address.

Port

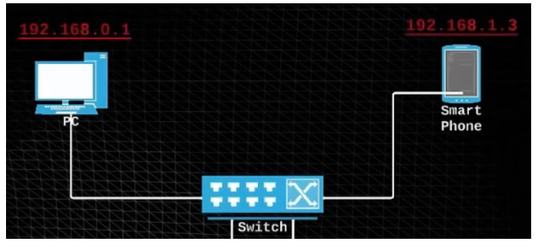
After the NAT process , the router sends the request to Lborocweb server on a specific port, that handles HTTP requests. Each port on a device is assigned with a specific number, that allows multiple services to send and receive data without getting mixed up.

Switch

.A small networking device that allows multiple devices in a small area to connect to each other and share information. This sharing happens though assigning the MAC address between sender and receiver.

Private IP addresses and DHCP

When a router is connected to a switch, it assigns IP addresses to all the devices connected with the switch. This happens through a protocol called DHCP (Dynamic Host Configuration Protocol). This automatically assigns IP addresses to devices in a network for identification. These IP addresses are private as they are only used for identification within the local network, and they are not accessible over the internet.



Domain Name System (DNS)

If we search for Lboro website on the web/mobile browser, the browser first contacts the DNS server. This server has the task to convert the Lboro website name into the IP address associated with the Loughborough web server.

Network Address Translation

This HTTP request was first sent to my network switch that incorporates my MAC address. When the switch could not find the destination within the local network, as the Lboro web server is hosted somewhere on the internet, the request is forwarded to the router. The router checks the destination IP address, and uses a protocol called **NAT to convert the device private IP address to the public IP address of the router.**