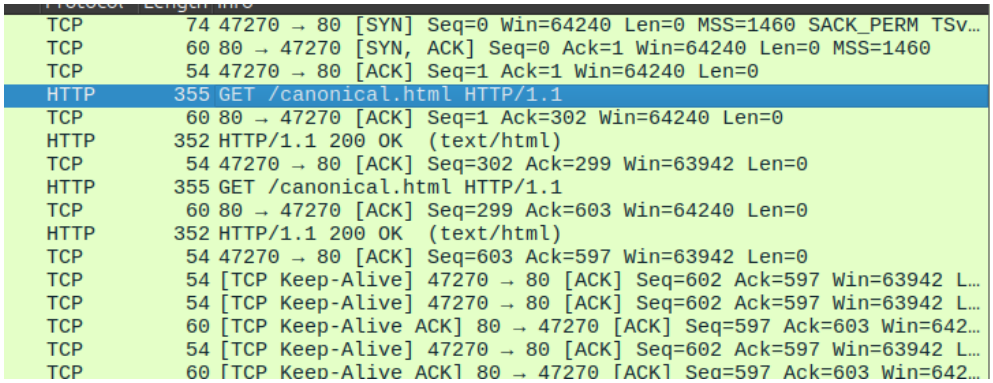
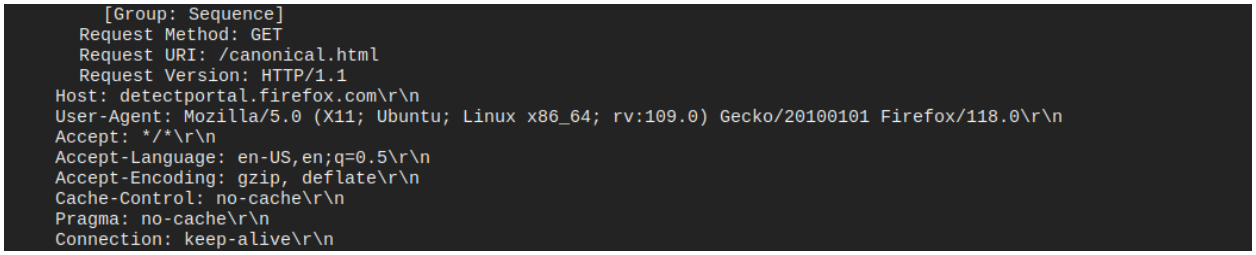
Wireshark Analysis: Port 80 vs Port 443

Utilizing Wireshark, I conducted an in-depth analysis of the traffic on my home network. Curiosity led me to dive into two pivotal ports: 80 and 443. Port 80 is synonymous with HTTP communication, while port 443 is its encrypted counterpart, utilized for HTTPS traffic. Throughout my analysis, I wanted to discern the stark differences between these two protocols. While HTTP operates through plain text, HTTPS elevates security using TLS or SSL encryption.

Here I am running a filter, to solely look at traffic on port 80.

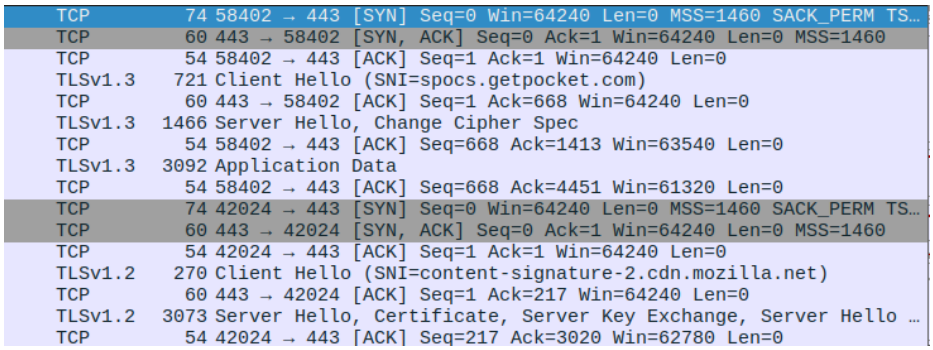


As we can see here, port 80, used for HTTP communication, runs without the shield of encryption such as SSL or TLS. This absence of encryption allows extreme vulnerability for data transmitted through this port. Without HTTPS, data exchanged over port 80 is very susceptible to interception by malicious actors. It is evident that HTTPS is a luxury and a necessity for protecting data online.

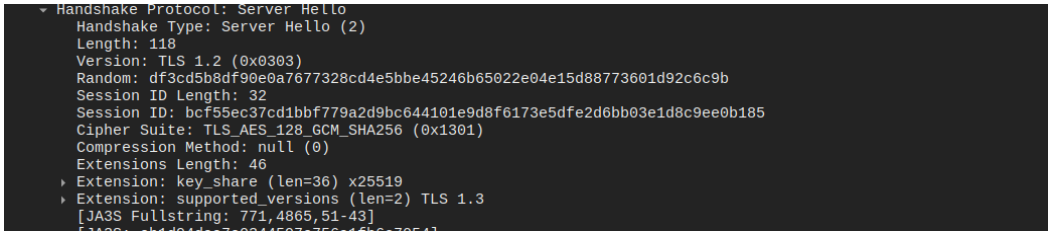


While looking at a *GET* request using HTTP Protocol, you are able to see different information about my PC. I am running Wireshark on an Ubuntu virtual machine, which is very visible among other information.

Here I run the filter, to look at traffic on port 443.



When comparing port 80 traffic to port 443 traffic, the disparity is like night and day. Port 443 is fortified by the TLS 1.2 and TLS 1.3 encryption protocols, allowing for secure network traffic. This encryption safeguards sensitive information such as login credentials, personal details, and financial transactions from malicious actors.



Dissecting the network traffic on port 443 reveals the server's choice of cipher suite. AES-128, a symmetric algorithm, is coupled with the SHA-256 hashing algorithm. Combining these two epitomizes the pinnacle of cryptographic security standards. With this encryption, each packet traversing the network remains secure. The session ID ensures seamless and secure data transmission.

The difference in security between ports 80 and 443 is astounding. It serves as a reminder of the importance of HTTPS in safeguarding our online interactions. In the era of cyber threats and data breaches, we must remember to prioritize keeping our information secure. By adhering to that principle and prioritizing HTTPS-enabled websites, we can prevent our personal information from falling into the wrong hands. If you are ever greeted by the "Not Secure" label while visiting a website, treat that with the utmost importance.