

ELEVATE LABS

Cyber Security Internship

INTERN NAME – IMAM ASHRAF

Task 8: VPN Hands-On and Security Understanding

Assignment Report

🔍 Objective

The objective of this task is to gain hands-on experience in setting up and using a VPN to understand how VPNs protect user privacy, secure online communication, and encrypt traffic.

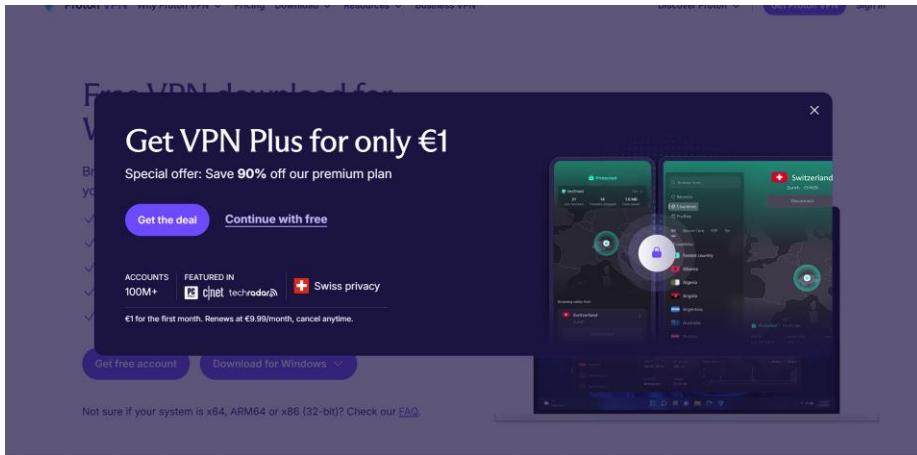
🛠 Tools Used

- **VPN Client:** ProtonVPN (Free Tier)
- **IP Verification Tool:** WhatIsMyIPAddress.com
- **Web Browser:** Google Chrome

Steps Performed

Step 1: Selection and Download of VPN

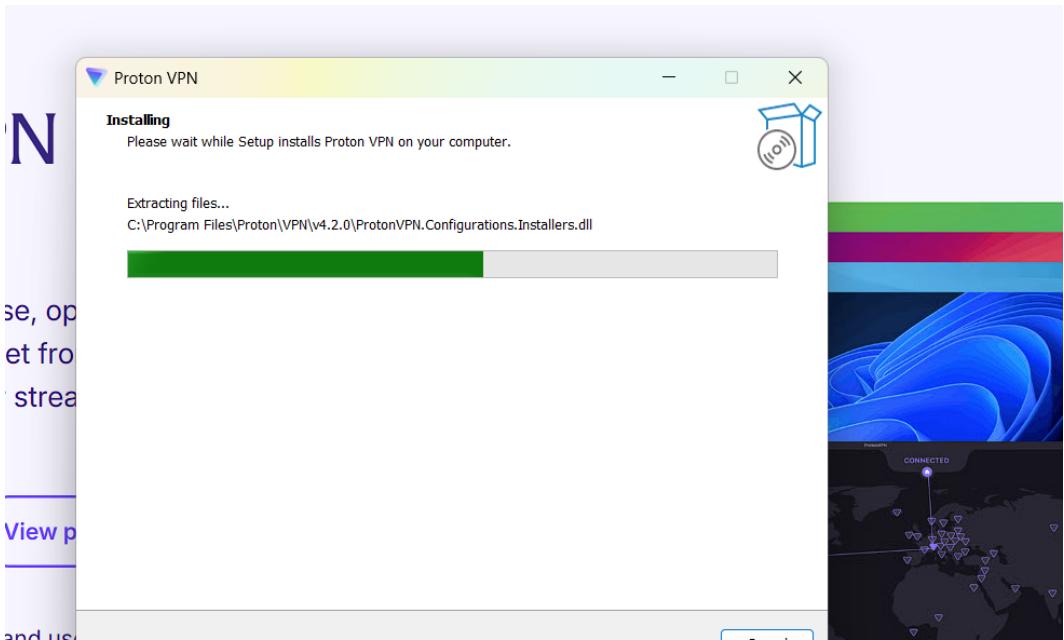
I selected **ProtonVPN (Free Tier)** for this task due to its reputable privacy policy, open-source applications, and strong security protocols. The VPN client was downloaded from the official ProtonVPN website.



A screenshot of the ProtonVPN website. The main heading is "Download VPN apps for any device". Below it, a paragraph states: "Proton VPN apps are easy to use, open source, and audited for security. Protect your internet from hackers and surveillance while accessing or streaming content anywhere in the world." Two buttons are present: "Download for Windows" and "View plans". A note below the paragraph reads: "Founded by MIT and CERN scientists and used by journalists and activists all over the world, Proton VPN is working to make online privacy and security available to all." To the right of the text is a large image showing multiple screenshots of the ProtonVPN app interface, including a world map and various connection details.

Step 2: Installation

The ProtonVPN setup file was installed successfully on the system. The installation process was straightforward, with no additional software or permissions requested outside the VPN functionality.

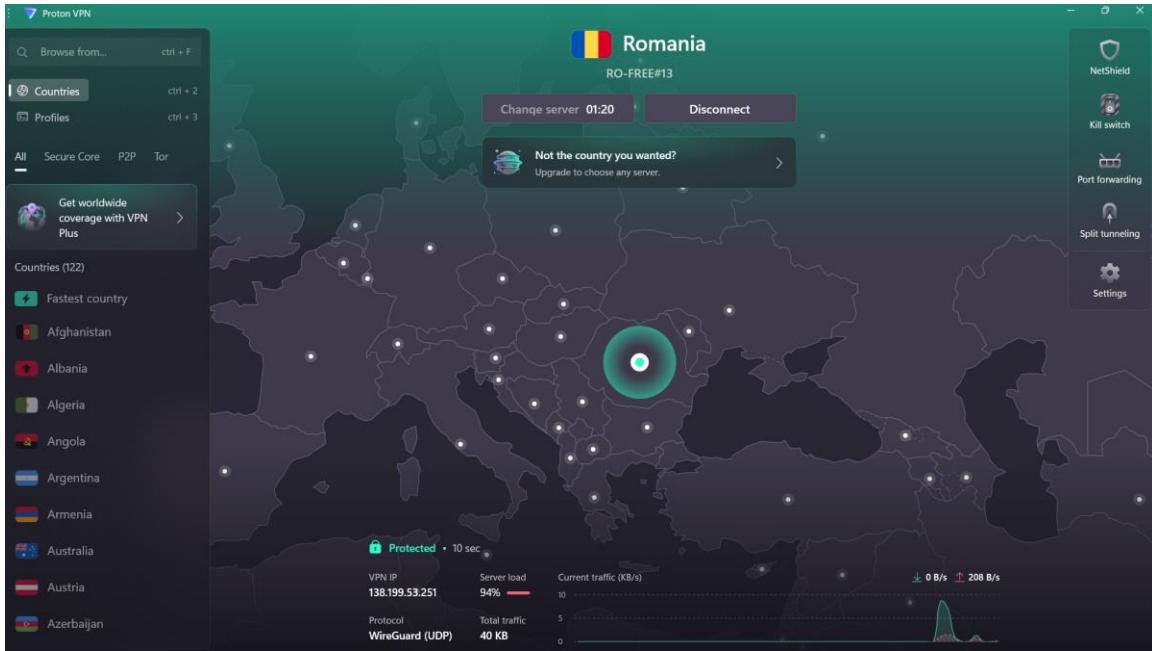


Step 3: VPN Account Setup

I created a **ProtonVPN free account** using a secure email address. The registration process did not require any sensitive personal information.

Step 4: VPN Connection

I logged in to the ProtonVPN client and connected to the **recommended server** with optimal speed and minimal latency.



Step 5: IP Address Verification

To verify whether the VPN was working correctly:

- I checked my IP address using whatismyipaddress.com before connecting to the VPN and noted my original IP.
- After connecting to ProtonVPN, I checked the IP address again. The IP address was successfully changed, confirming that my traffic was now being routed through the VPN server.

Step 6: Secure Browsing Confirmation

I visited multiple websites and noticed the browsing experience was seamless. The VPN connection successfully encrypted my traffic and prevented direct exposure of my original IP address.

Step 7: VPN Disconnection and Speed Comparison

After disconnecting from the VPN:

- My IP address reverted to the original, confirming the VPN session was properly terminated.
- Browsing speed improved slightly after disconnection, which is typical as VPN encryption adds a small overhead.

Step 8: Research on VPN Encryption and Privacy Features

ProtonVPN uses strong encryption protocols such as:

- **AES-256 encryption** to protect data traffic.
- **OpenVPN and IKEv2/IPSec protocols** for secure tunneling.
- **No-logs policy**, ensuring that user activity is not stored.
- DNS leak protection and kill switch features for enhanced security.

VPN Benefits and Limitations

✓ Benefits:

- **Privacy Protection:** Hides real IP address and encrypts browsing activity.
- **Secure Data Transmission:** Strong encryption protocols protect sensitive information.
- **Access to Geo-Restricted Content:** Allows access to content unavailable in the user's region.
- **Public Wi-Fi Protection:** Shields traffic on insecure networks.

✗ Limitations:

- **Potential Speed Reduction:** VPN encryption can reduce browsing speed.
- **Limited Servers in Free Plans:** Free VPNs often have limited server access and bandwidth.
- **Not Fully Anonymous:** VPNs mask IPs but do not guarantee complete anonymity.
- **Dependence on VPN Provider Trust:** User security is only as strong as the provider's privacy practices.