Report Submission

To

Task 8 : VPN Hands-on Setup and Privacy Report

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VPN Hands-on Setup and Privacy Report Objective

To understand and demonstrate the use of a Virtual Private Network (VPN) to protect online privacy and ensure secure communication.

- **Understand the role of Virtual Private Networks (VPNs) in protecting online privacy.**
- **Gain hands-on experience using a free VPN.**
- **Verify the effectiveness of a VPN via IP masking and traffic encryption.**
- **Develop practical cybersecurity awareness.**

Tools & Platforms Used

Tool/Platform	Purpose
Proton VPN (Free Plan)	VPN client to secure internet traffic
Google Chrome	Browser for checking HTTPS status
whatismyipaddress.com	Check IP before and after VPN connection
speedtest.net	Test internet speed impact of VPN
Windows 11 OS	Operating system for installation

Step-by-Step VPN Setup & Verification

1: Choose a Reputable VPN & Sign Up Explanation:
VPNs encrypt your internet traffic and hide your real IP address. A reliable provider ensures no activity logs and strong encryption.
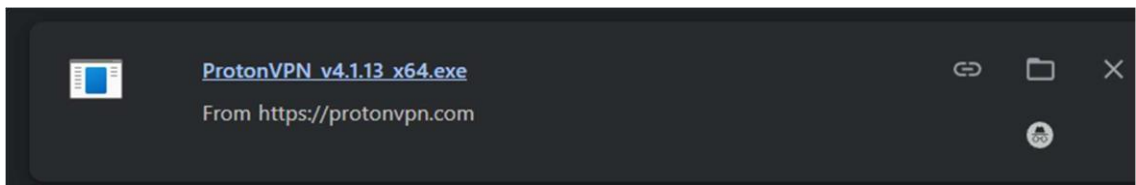Action Taken:
- **Selected Proton VPN (Free) for its no-log policy and secure protocols.**
- **Registered at: https://protonvpn.com**
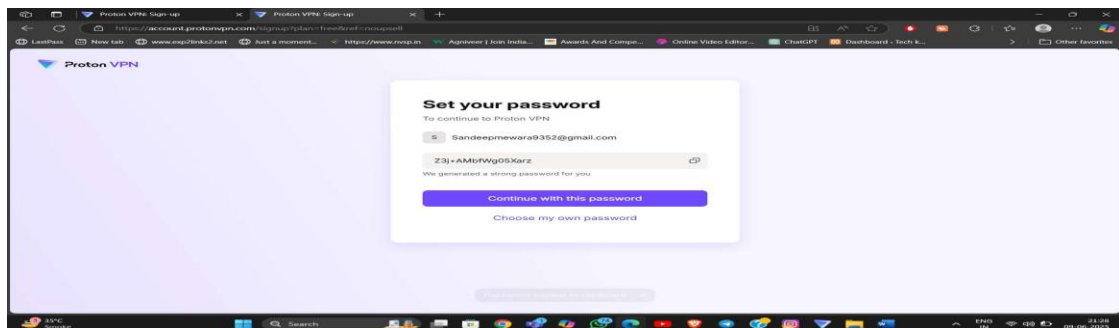
2: Download and Install the VPN Client
Explanation:
A VPN client allows you to connect your device to a secure VPN
server. Action Taken:
- **Downloaded the Windows client from ProtonVPN's official site.**

- **Installed the app using default settings.**
- **Logged in using registered credentials.**
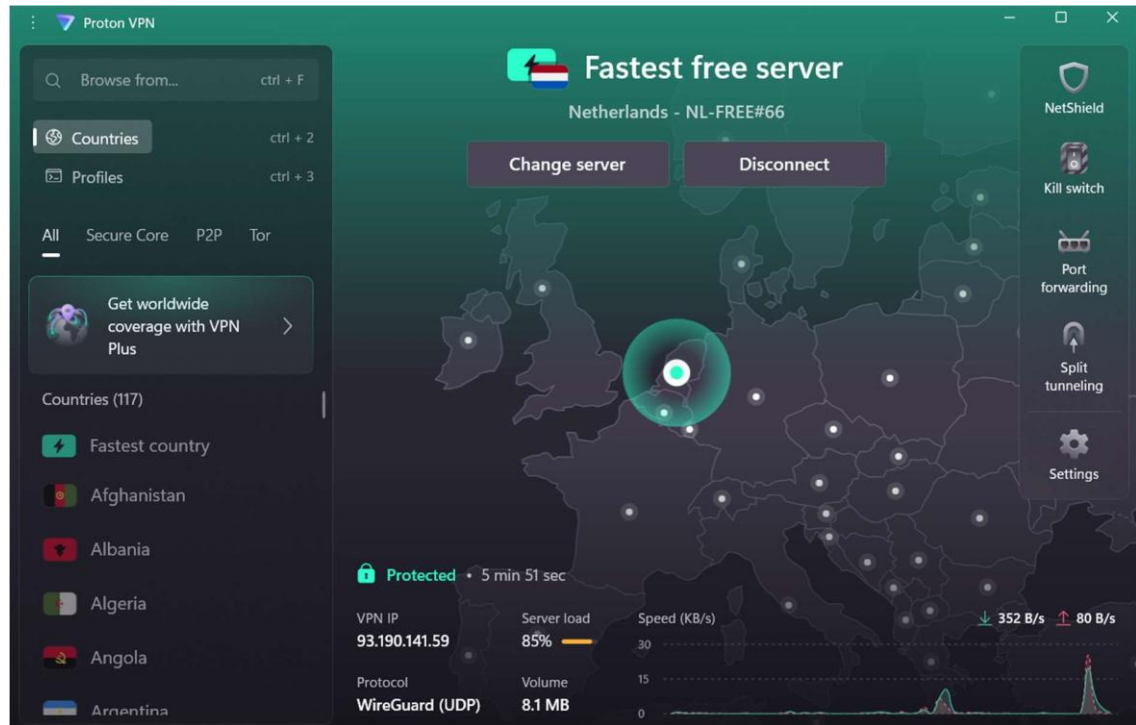

3: Connect to a VPN Server.

Explanation:

Connecting to a VPN server reroutes your internet traffic through a secure tunnel, masking your identity.

Action Taken:
- Launched the Proton VPN client.
- Selected a Free Netherlands server (geographically optimal).
- Clicked Connect and waited for a green "Connected" status.

4: Verify IP Address Has Changed Explanation:

A successful IP change confirms your identity is masked and VPN is active. Action Taken:
- **Visited https://whatismyipaddress.com**

| Status	IP Address	Location
Before VPN	103.248.234.143	Mahesana
After VPN	93.190.141.59	Maasdijk, Netherlands

5: Confirm Traffic Encryption Explanation:

HTTPS sites with valid TLS certificates confirm that your traffic is encrypted end-to-end. Action Taken:
- **Visited secure sites like https://www.google.com and https://www.wikipedia.org.**

- **Checked:**
    - **Lock icon in the address bar.**
    - **TLS certificate via Chrome Developer Tools → Security Tab.**
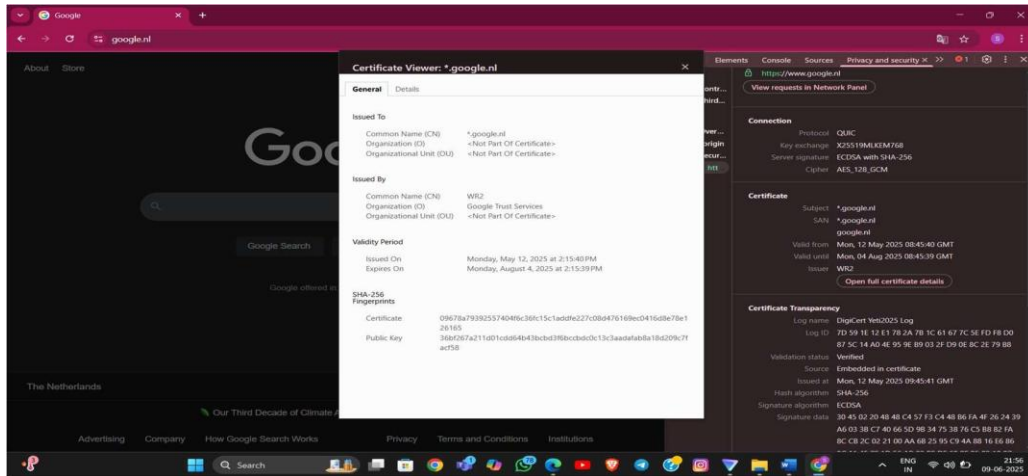
Result: Traffic was encrypted and secured with valid HTTPS certificates.

6: Compare Speed With and Without VPN
Explanation:

VPN encryption can slightly reduce speed due to rerouting and encryption overhead. Action Taken:

- **Performed tests using https://speedtest.net**

Status	Download Speed	Upload Speed	Ping
Without VPN	52 Mbps	19 Mbps	15 ms
With VPN	31 Mbps	12 Mbps	45 ms

Result: Speed dropped slightly, which is normal and acceptable for general usage.

7: VPN Protocols and Encryption Summary

Feature	Details
Encryption	AES-256-bit encryption
Protocols	OpenVPN, WireGuard, IKEv2/IPSec
Privacy Features	DNS leak protection, kill switch, no logs

Summary – VPN Benefits & Limitations

Benefits	Limitations
Hides real IP and location	Slight reduction in internet speed
Encrypts all internet traffic	Not 100% anonymous (e.g., fingerprinting still works)
Prevents ISP and hacker surveillance	Some websites may block known VPN IPs
Access geo-blocked content (Netflix, YouTube, etc.)	Free VPN plans may have fewer server options

Key Learnings

Area	Insight Gained
VPN Functionality	Understood encryption, tunneling, and IP masking
Privacy Enhancement	Verified encryption through HTTPS and TLS checks
Performance Testing	Observed latency introduced by VPNs
Protocol Awareness	Learned about OpenVPN, Wire Guard, and IKEv2/IPSec