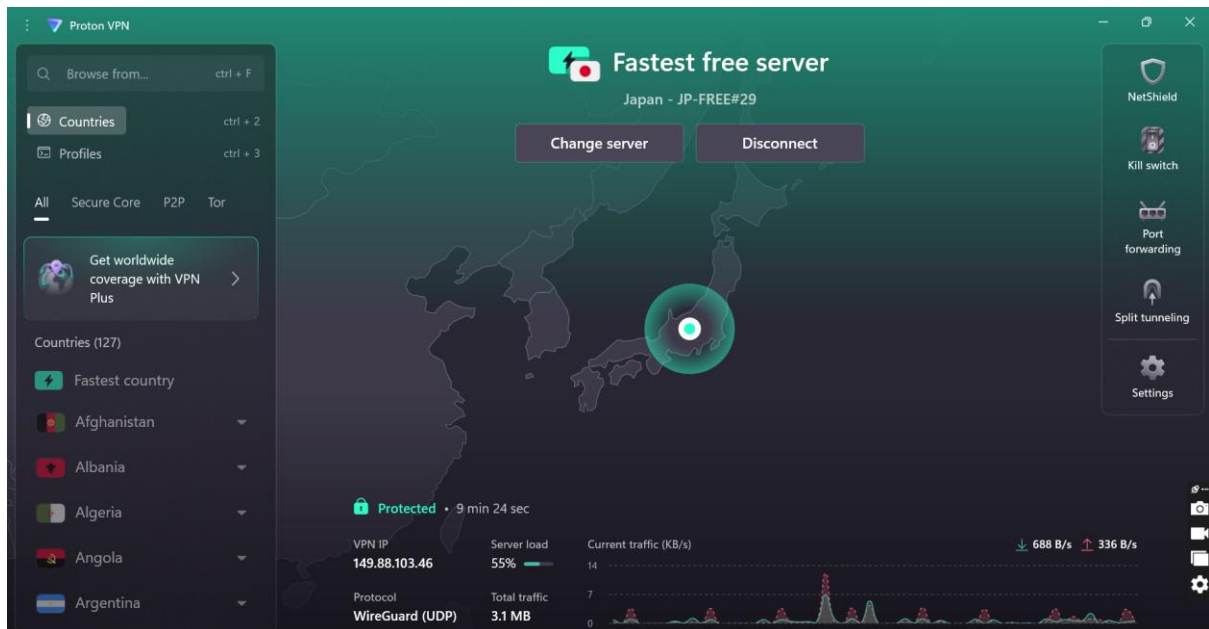# Cyber Security Internship

Task 8 – Understand the role of VPN's in protecting privacy & secure communication

Summary Report:

Title: VPN Practical Exercise

Name: Navya Tiruveedhula

Date: 25-11-2025

Introduction:

This report summarizes the steps performed to test and analyze a Virtual Private Network (VPN). The objective of task was to understand VPN setup, IP masking, encrypted traffic and overall benefits and limitations of VPN usage.

Tools Used:

- VPN provider: **Proton VPN free**
- Website for IP checks: **whatismyipaddress.com, DNSleaktest.com**
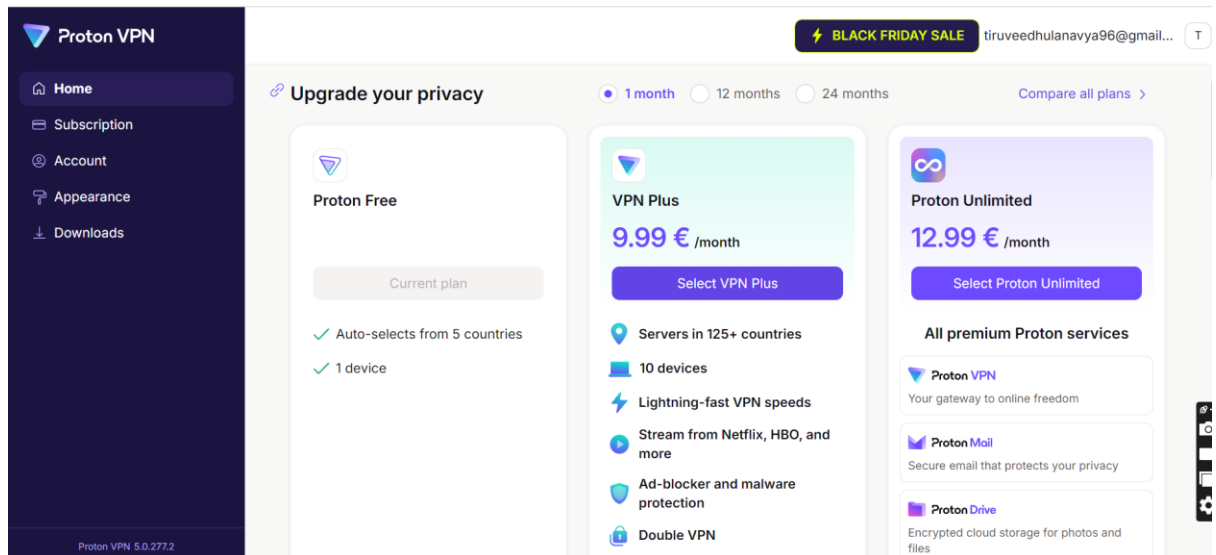- Device: Windows
- Browser: Google Chrome
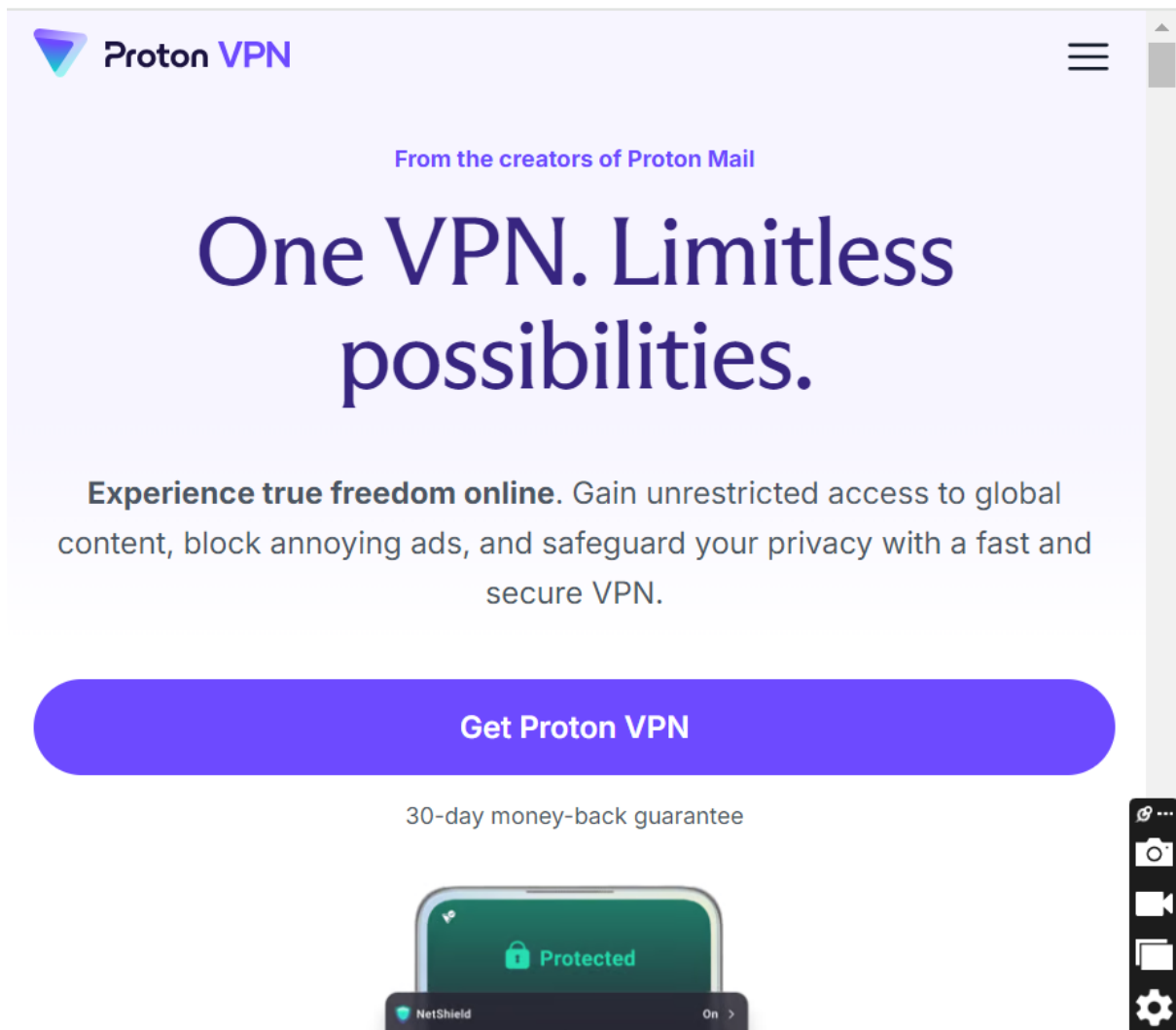
Steps Performed:

a) Choosing and installing VPN

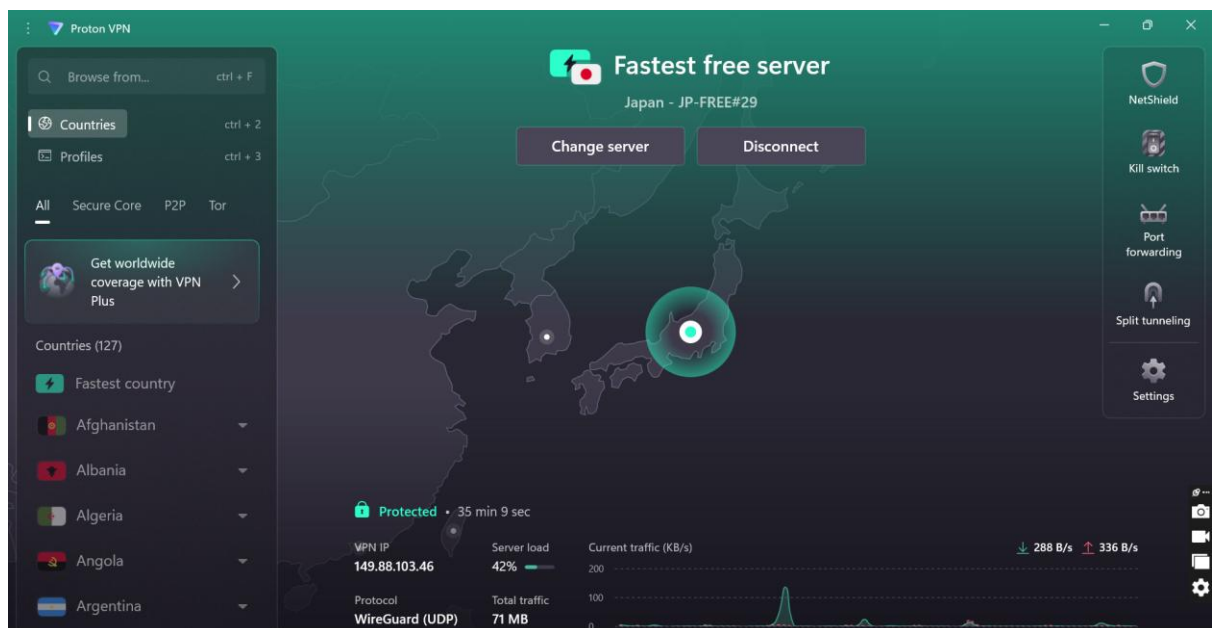We selected **Proton VPN Free** due to its strong security, no-logs policy and unlimited data.

The application was downloaded from the official website and installed successfully.

b) Connecting to a VPN Server

After logging in, I connected to a free server (e.g., Japan)

The app displayed a secured connection status and encrypted tunnel visualization.

c) IP Address Verification

Before connecting, my original IP address showed our real location.

After connecting, the new IP address reflected the VPN server's location, confirming successful masking.

WhatIs MyIPAddress .com

IPv4: (?) **149.88.103.46**

IPv6: (?) **Not detected**

Looks like you're using a VPN!

🛡 **RATE YOUR VPN**

Show Complete IP Details

My IP Information:

ISP:	DataCamp Limited
Services:	VPN Server
City:	Tokyo
Region:	Tokyo
Country:	Japan

My IP Address is:

IPv4: ? ~~(redacted)~~

IPv6: ? **Not detected**

Your location may be exposed!

🛡 **HIDE MY IP ADDRESS NOW**

Show Complete IP Details

My IP Information:

ISP:	Atria Convergence Technologies Ltd.
City:	Guntur
Region:	Andhra Pradesh
Country:	India

d) Testing Encryption and traffic

We browsed multiple websites and observed encrypted traffic in the VPN dashboard. DNS leak test confirmed no DNS leaks.

DNS leak test.com ≡

Your public IP: 149.88.103.47
Test complete

```
Query round Progress... Servers found
1           ......        4
```

IP	Hostname	ISP	Country
149.88.103.44	unn-149-88-103-44.da...	Datacamp	Tokyo, Japan 🔴
149.88.103.45	unn-149-88-103-45.da...	Datacamp	Tokyo, Japan 🔴
149.88.103.46	unn-149-88-103-46.da...	Datacamp	Tokyo, Japan 🔴
149.88.103.47	unn-149-88-103-47.da...	Datacamp	Tokyo, Japan 🔴

DNS leak test.com ≡

Your public IP: ███████
Test complete

```
Query round Progress... Servers found
1           ......        1
```

IP	Hostname	ISP	Country
202.83.30.162	broadband.actcorp.in...	Atria Convergence Technologies	Vijayawada, India 🇮🇳

🔒 **Protected** · 40 sec

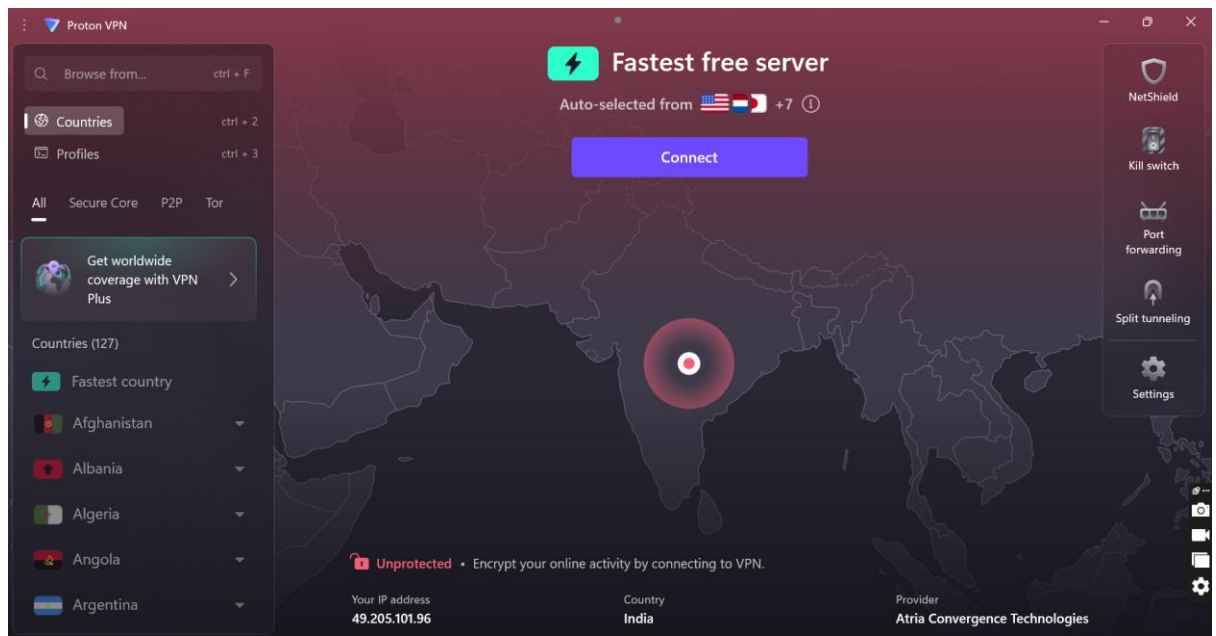| VPN IP	Server load	Current traffic (MB/s)	↓ 512 B/s ↑ 3.5 KB/s
169.150.218.34	**39%**	2	
Protocol	Total traffic	1	
WireGuard (UDP)	**6.5 MB**	0	

e) Disconnecting and Comparing

After disconnecting the VPN

- IP reverted to my original location
- Browsing speed improved slightly
- This confirmed VPN encryption overhead

Research Findings:

- VPN Encryption
  - Uses **AES-256 encryption**
  - Protocols: Open VPN/ WireGuard
  - Provides protection against Wi-Fi attacks, ISP tracking and man-in-the-middle attacks
- Privacy features
  - No-log policy
  - DNS leak protection
  - Kill switch support
  - Strong privacy jurisdiction
- Benefits of VPN
  - Hides IP address and location
  - Encrypts all data
  - Protects on public Wi-Fi
  - Prevents ISP tracking
  - Bypasses geo-restrictions

- Limitations of VPN
  - Slightly reduced internet speed
  - Free VPN's may have limited servers
  - Requires user trust in VPN provider
  - Some websites block VPN traffic

Conclusion:

The VPN experiment successfully demonstrated how VPN's enhance online privacy by encrypting traffic and masking IP addresses. Through hands-on testing, we validated IP changes, encryption behavior and over all impact on speed. VPN's are a valuable cybersecurity tool, but users must carefully choose reputable providers to avoid privacy risks.

References:

- Protonvpn.com
- Whatismyipaddress.com
- Dnsleaktest.com