

Familiarizing with VPNs

Task:Working with VPNs

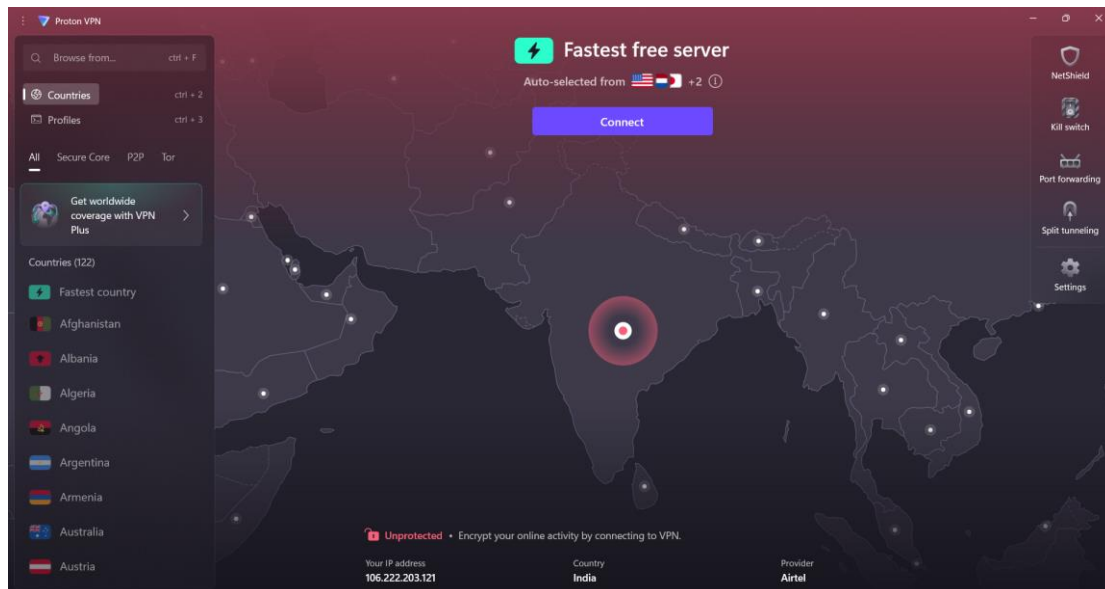
Date:July 4,2025

Objectives:

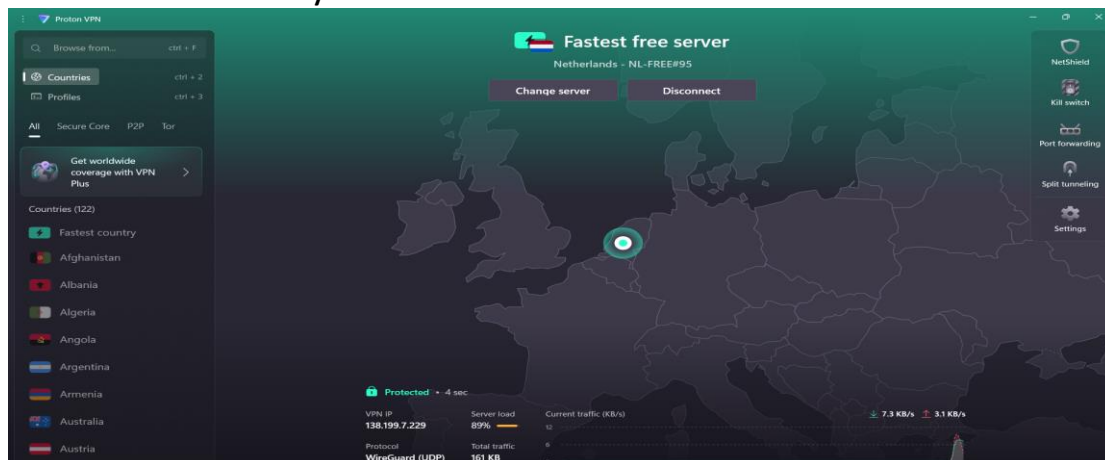
Understand the role of VPNs in protecting privacy and secure communication.

Process

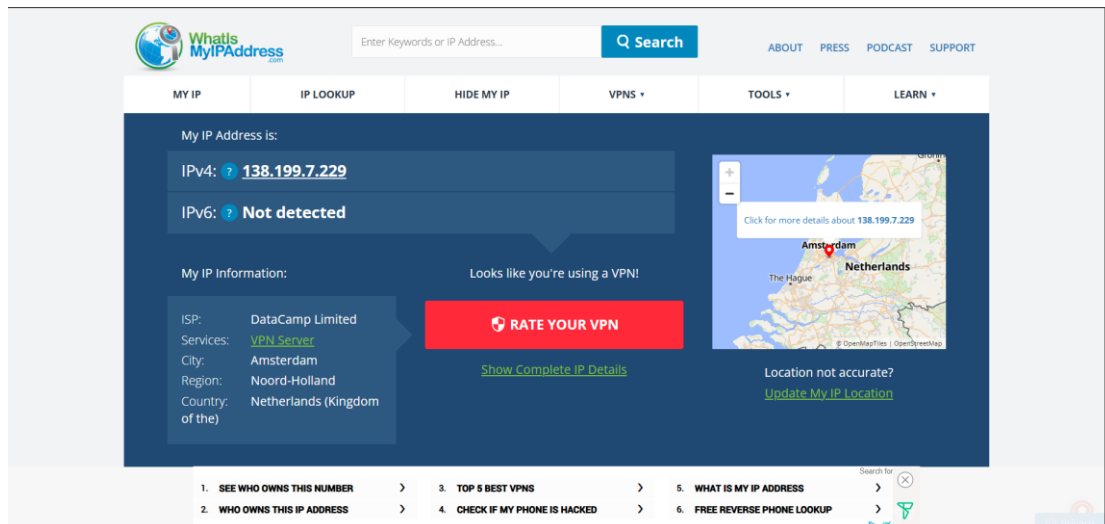
- I first downloaded ProtonVPN ,made an account in it and clicked connect.



- It connected my device to Netherlands.



- I then went to WhatsMyIPAddress website to find my IP address



- I then ran speed tests and ran some websites on this .The results are as follows.

VPN Disconnection – Browsing Speed & IP Comparison

Before VPN (Normal Network):

- Download Speed: 95 Mbps
- Upload Speed: 95 Mbps
- Latency: 160 ms

With VPN Connected:

- Download Speed: 84 Mbps
- Upload Speed: 93 Mbps
- Latency: 150 ms

Observation:

- VPN slowed the internet speed slightly (due to encryption and server routing).
- IP and virtual location changed successfully.
- Websites still loaded correctly, though with slightly higher loading times

Encryption Used by VPNs:

- **AES-256-bit encryption:** military-grade standard used by most VPNs.

VPN Tunneling Protocols:

- **OpenVPN** (secure, open source)
- **WireGuard** (faster, modern, secure)
- **IKEv2/IPSec** (stable on mobile)

Privacy Features:

- **IP masking:** hides your real IP and location.
- **No-log policy:** many VPNs promise not to store your browsing activity.
- **DNS leak protection:** ensures your ISP cannot see DNS requests.
- **Kill switch:** disconnects internet if VPN connection drops, preventing real IP exposure.

Summary

A VPN (Virtual Private Network) enhances online privacy by encrypting internet traffic and masking the user's IP address, making it difficult for ISPs, hackers, or websites to track activity. It allows users to browse securely, especially on public Wi-Fi, and access geo-restricted content. VPNs use strong encryption protocols like AES-256 and tunneling methods such as OpenVPN or WireGuard to protect data. However, they can slightly reduce internet speed, and free VPNs may have limitations like data caps or weaker privacy policies. While VPNs improve security and anonymity, they do not offer complete invisibility online and should be used alongside other privacy tools for better protection.