

Task 8: VPN Setup and Privacy Protection

Objective

To understand the role of **Virtual Private Networks (VPNs)** in ensuring privacy, secure communication, and anonymity while browsing the internet.

Tools Used

- **VPN Client:** ProtonVPN (Free Tier)
 - **Website for IP Verification:** <https://whatismyipaddress.com>
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Step-by-Step Procedure

Step 1: Choose a VPN Service

Selected **ProtonVPN**, a reputable and privacy-focused VPN service that offers a free plan with unlimited bandwidth and secure servers.

Alternative options considered: Windscribe and TunnelBear.

Step 2: Account Registration

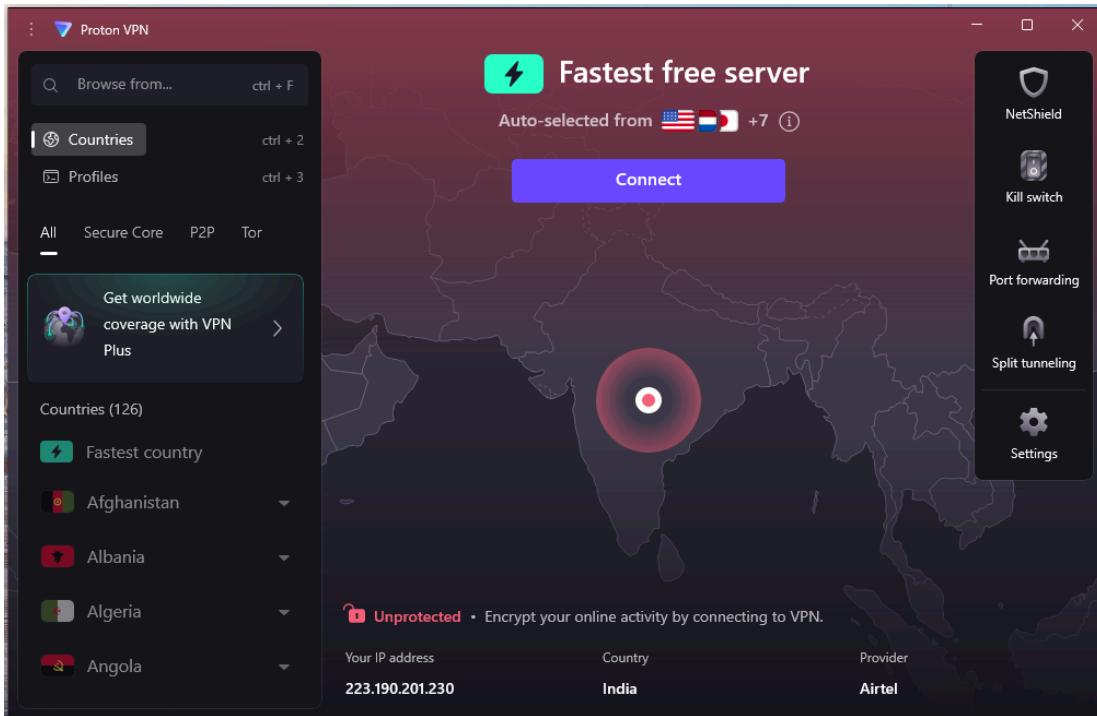
Visited <https://protonvpn.com> and created a free account using an email ID and verification.

Step 3: Download and Install the VPN Client

Downloaded and installed the ProtonVPN client on Windows using the default installation settings.

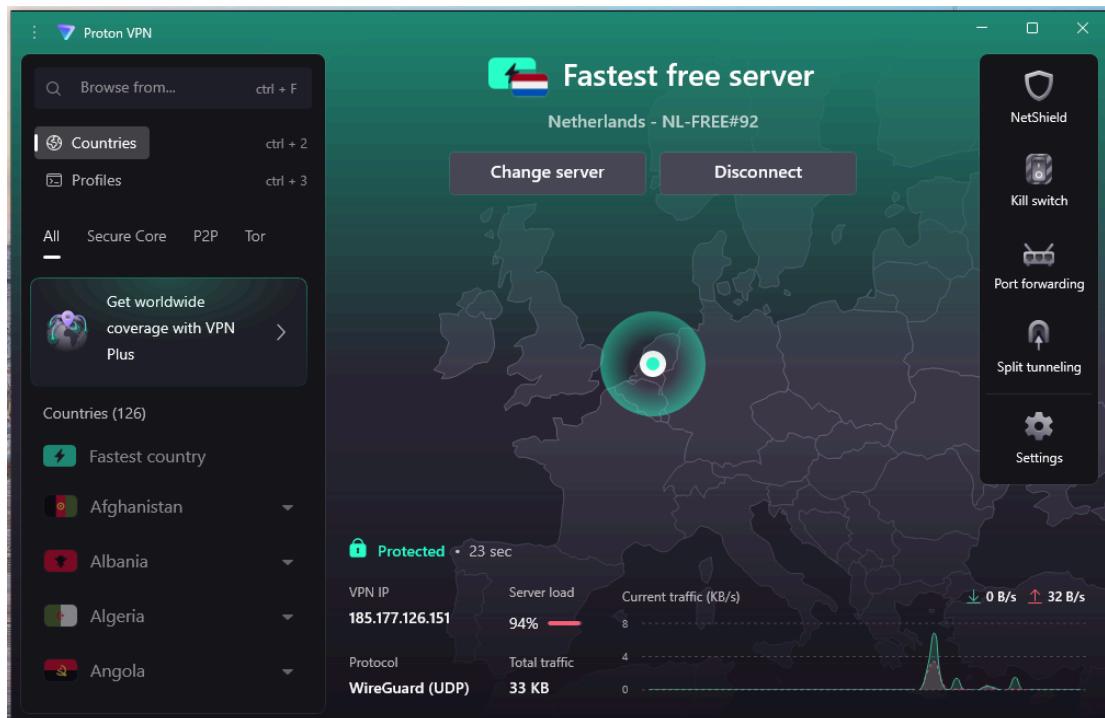
Step 4: Launch VPN and Login

Opened the ProtonVPN app, logged in, and viewed available servers by country.



Step 5: Connect to a VPN Server

Connected to a **free Netherlands server** and confirmed successful connection status.



Step 6: Verify IP Address Change

Visited <https://whatismyipaddress.com> before and after VPN connection to confirm IP masking.

The screenshot shows the homepage of WhatIsMyIPAddress.com. At the top, there is a search bar with the placeholder "Enter Keywords or IP Address..." and a "Search" button. Below the search bar are navigation links: ABOUT, PRESS, PODCAST, and SUPPORT. A horizontal menu bar includes links for MY IP, IP LOOKUP, HIDE MY IP, VPNS (with a dropdown arrow), TOOLS (with a dropdown arrow), and LEARN (with a dropdown arrow). The main content area displays the user's IP information. It shows "My IP Address is:" followed by two boxes: "IPv6: 2401:4900:1c06:40e4:e150:49e5:b1c3:5d2a" and "IPv4: 223.190.201.230". Below these, under "My IP Information:", it lists: ISP: Bharti Airtel Ltd., City: Delhi, Region: Delhi, and Country: India. To the right of this information is a warning: "Your location may be exposed!" and a red button labeled "HIDE MY IP ADDRESS NOW". Below the button is a link "Show Complete IP Details". On the right side of the page is a map of New Delhi, India, with a red pin indicating the location. A tooltip over the map says "Click for more details about 2401:4900:1c06:40e4:e150:49e5:b1c3:5d2a". At the bottom right, there is a link "Location not accurate? Update My IP Location".

Before

The screenshot shows the homepage of WhatIsMyIPAddress.com after connecting to a VPN. The layout is identical to the previous screenshot. The main content area displays the user's IP information. It shows "My IP Address is:" followed by two boxes: "IPv4: 185.177.126.153" and "IPv6: Not detected". Below these, under "My IP Information:", it lists: ISP: WorldStream B.V., Services: VPN Server, City: Naaldwijk, Region: Zuid-Holland, and Country: Netherlands (Kingdom of the). To the right of this information is a warning: "Looks like you're using a VPN!" and a red button labeled "RATE YOUR VPN". Below the button is a link "Show Complete IP Details". On the right side of the page is a map of Antwerp, Belgium, with a red pin indicating the location. A tooltip over the map says "Click for more details about 185.177.126.153". At the bottom right, there is a link "Location not accurate? Update My IP Location".

After

Step 7: Test Secure Browsing

Browsed websites like Wikipedia and YouTube to confirm encrypted traffic and secure DNS queries.

Step 8: Disconnect VPN and Compare

Disconnected VPN and observed IP reversion and minor speed improvement after disconnection.

VPN Encryption and Privacy Features

- AES-256 encryption for secure data transmission.
 - Supports **OpenVPN** and **WireGuard** tunneling protocols.
 - Strict **no-logs policy** ensuring user privacy.
 - **Kill Switch** to prevent data leaks on disconnection.
 - **DNS leak protection** to secure all DNS requests.
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Summary: VPN Benefits and Limitations

Benefits

- Masks the real IP address and location.
 - Encrypts internet traffic to prevent eavesdropping.
 - Protects data on public Wi-Fi networks.
 - Bypasses censorship and geo-restrictions.
 - Enhances online privacy and anonymity.
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Limitations

- Slightly slower browsing due to encryption overhead.
 - Free versions have limited server locations.
 - Cannot protect against phishing or malware directly.
 - Requires trust in the VPN provider's privacy policy.
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Outcome

Successfully configured and tested a VPN connection to understand its role in maintaining privacy, encryption, and secure tunneling.

This task provided hands-on experience in verifying IP masking, encrypted communication, and understanding VPN protocols.

Key Concepts Covered

- VPN (Virtual Private Network)
- Encryption and Decryption
- Tunneling Protocols (OpenVPN, WireGuard)
- IP Masking and Anonymity
- Network Security and Privacy Protection