

Task8: Working with VPNs

Objective

The objective of this task is to understand how a Virtual Private Network (VPN) enhances online privacy and provides secure communication by encrypting internet traffic and masking the user's IP address.

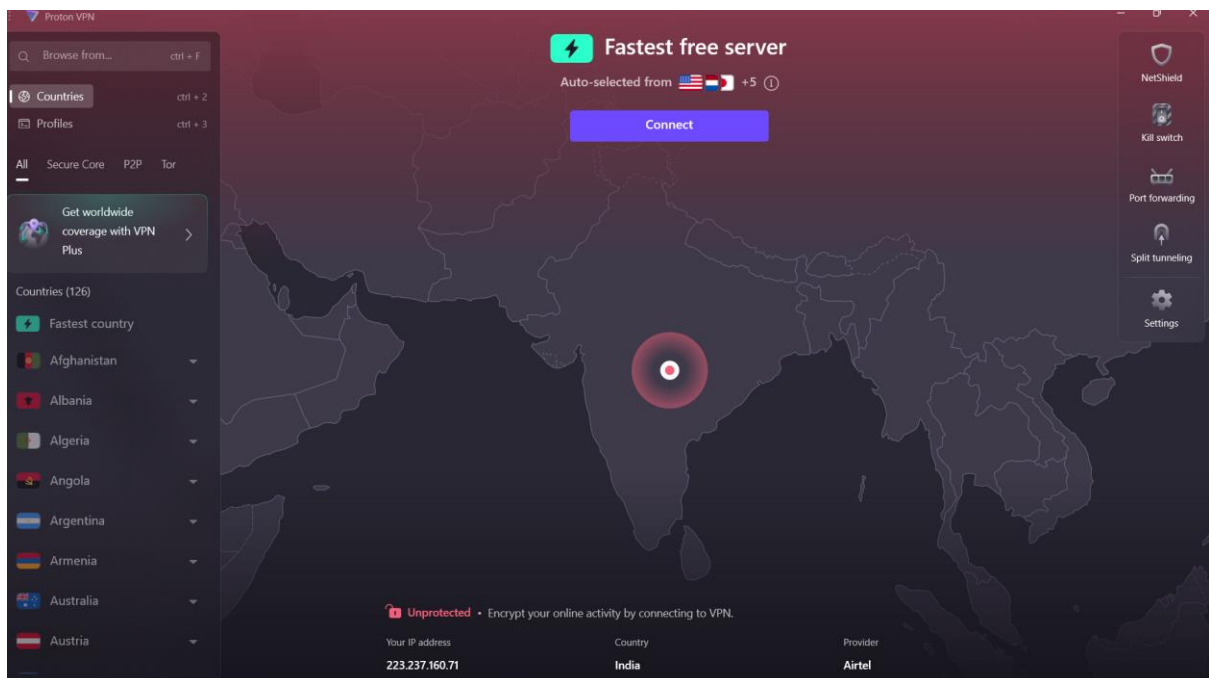
Tools Used

- ProtonVPN (Free Tier)
- Web browser (for IP verification and browsing test)

Steps Performed

1. Choose a VPN Service

I selected a reputable free VPN service (ProtonVPN) by signing up for a free account. These providers are known for strong security features and do not keep logs of user activity.

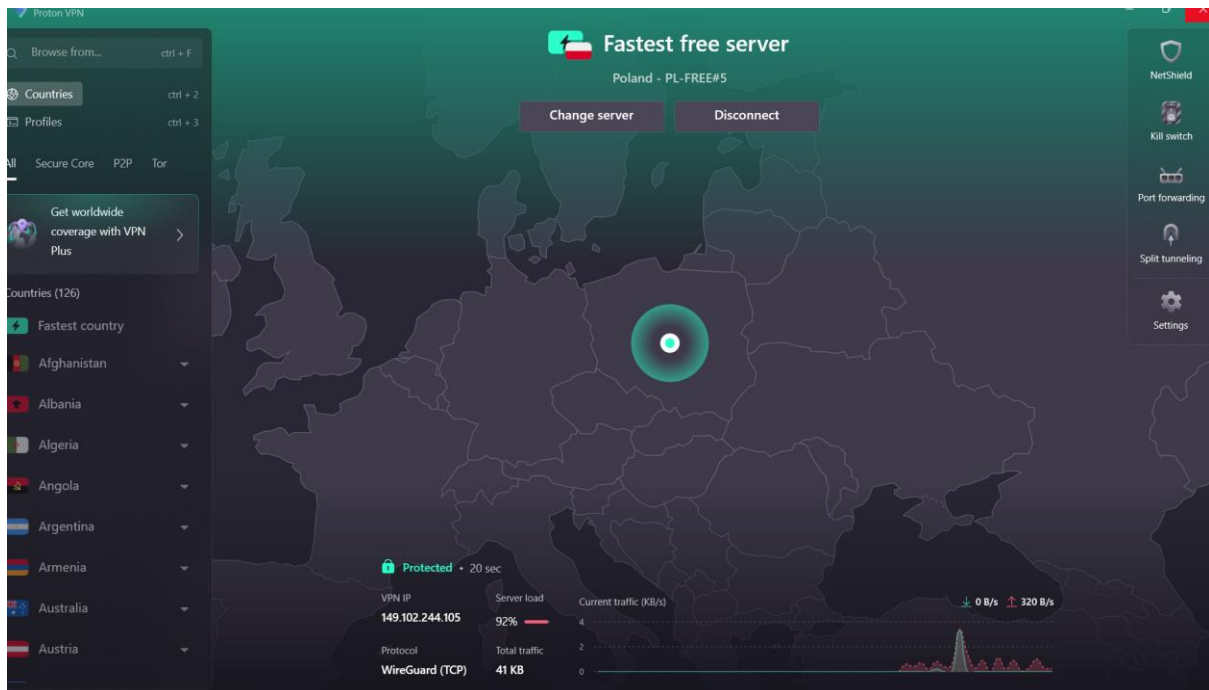


2. Download and Install the VPN Client

I downloaded the VPN application from the official website and installed it on my system

3. Connect to a VPN Server

After logging into the VPN client, I selected the nearest available server (for better speed and lower latency) and clicked Connect.



4. Verify IP Address Change

Before connecting to the VPN, I checked my original IP address on whatismyipaddress.com. After connecting to the VPN, I re-checked the IP and confirmed that the location and IP had changed.

The screenshot shows the WhatIsMyIPAddress.com website. The user's IP address is 2401:4900:91d3:bc84:58b:ec11:27cb:4b44 (IPv6) and 223.237.160.71 (IPv4). The location is identified as Gadag, Karnataka, India, with the ISP being Bharti Airtel Ltd. A red button prompts the user to "HIDE MY IP ADDRESS NOW". A map on the right shows the location in India. Below the main content, a survey question asks "Which is your biggest concern about using the Internet?" and lists various media outlets as sources.

My IP Address is:

IPv6: 2401:4900:91d3:bc84:58b:ec11:27cb:4b44

IPv4: 223.237.160.71

My IP Information:

ISP: Bharti Airtel Ltd.
City: Gadag
Region: Karnataka
Country: India

Your location may be exposed!

HIDE MY IP ADDRESS NOW

[Show Complete IP Details](#)

Location not accurate?
[Update My IP Location](#)

Which is your biggest concern about using the Internet?
As Seen On

The Washington Post CNN USA TODAY FOX BUSINESS The Guardian CBS PCWorld cnet

The screenshot shows the WhatIsMyIPAddress.com website. The user's IP address is 149.102.244.104 (IPv4) and is not detected (IPv6). The location is identified as Warsaw, Mazowieckie, Poland, with the ISP being DataCamp Limited. A red button prompts the user to "RATE YOUR VPN". A map on the right shows the location in Poland. Below the main content, a survey question asks "Which is your biggest concern about using the Internet?" and lists various media outlets as sources.

My IP Address is:

IPv4: 149.102.244.104

IPv6: Not detected

My IP Information:

ISP: DataCamp Limited
Services: VPN Server
City: Warsaw
Region: Mazowieckie
Country: Poland

Looks like you're using a VPN!

RATE YOUR VPN

[Show Complete IP Details](#)

Location not accurate?
[Update My IP Location](#)

Which is your biggest concern about using the Internet?
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5. Browse a Website to Confirm Encryption

I visited a few websites while connected to the VPN. The traffic was routed through the VPN tunnel, ensuring encryption and anonymity.

6. Disconnect VPN and Compare

After disconnecting the VPN, I noticed that my IP returned to the original one, and browsing speed was slightly faster without the VPN (since no encryption overhead was present).

7. Research: VPN Encryption & Privacy Features

- VPNs use encryption protocols like OpenVPN, IKEv2/IPSec, and WireGuard.
- Data passing through the VPN tunnel is encrypted, preventing ISPs, hackers, or third parties from monitoring activity.
- VPNs also hide real IP addresses, making it harder to track users.
- Many VPNs include extra features like kill switch, DNS leak protection, and no-log policies.

Benefits of VPNs

- Protects privacy by hiding real IP address.
- Encrypts data to prevent interception on public Wi-Fi.
- Bypasses geo-restrictions and censorship.
- Provides an additional security layer against hackers.

Limitations of VPNs

- Free VPNs may have limited server choices and speed caps.
- Some providers log data (so choosing a trustworthy one is important).
- Browsing speed may be slower due to encryption overhead.
- VPNs don't protect against phishing attacks or malware.

Conclusion

VPNs play a vital role in enhancing online privacy and secure communication. By encrypting traffic and masking IP addresses, they help protect users from surveillance, tracking, and data theft. However, users should be aware of the limitations of free VPNs and choose providers with strong privacy policies.