# VPN USAGE REPORT

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Date: 7th July 2025

## 1. Introduction

A Virtual Private Network (VPN) is a tool that enhances user privacy and security by encrypting internet traffic and masking the user’s IP address. This report documents the steps taken to evaluate a free VPN service and examines its benefits and limitations.

## 2. VPN Setup and Usage

Step 1: VPN Service Selection

* I chose ProtonVPN, a well-known free VPN service reputed for strong privacy features, no-logs policy, and open-source transparency.

Step 2: Installation

* Downloaded and installed the ProtonVPN client on a Windows 10 system from the official website.

Step 3: Connection

* Connected to the closest available free server (Netherlands) using the application interface. The interface was user-friendly with minimal setup required.

Step 4: IP Address Verification

* Visited whatismyipaddress.com before and after VPN activation:  
  - Before VPN: Displayed actual ISP-provided IP address and location (India).  
  - After VPN: New IP address associated with the Netherlands was displayed, confirming successful tunneling.

Step 5: Encrypted Traffic Check

* Accessed various websites including email and banking portals. Traffic was stable and encrypted as verified using browser extension security indicators (HTTPS and lock symbol).

Step 6: Disconnect and Comparison

* After disconnecting the VPN:  
  - IP address reverted to original.  
  - Browsing speed was slightly faster compared to when VPN was on (notable during streaming).  
    
  Speed Analysis (Approximate):  
  - With VPN: 12 Mbps  
  - Without VPN: 25 Mbps

## 3. VPN Encryption and Privacy Research

Encryption Standard Used:  
ProtonVPN uses AES-256 encryption, 2048-bit RSA key exchange, and HMAC SHA-512 authentication.

Privacy Features:  
- No activity or connection logs  
- Secure Core routing for enhanced anonymity  
- DNS leak protection and kill switch  
- OpenVPN and WireGuard protocol support

## 4. Summary: VPN Benefits & Limitations

* Benefits:
* - Privacy Protection: IP masking and encrypted data transmission  
  - Security on Public Wi-Fi: Protection from packet sniffing and data theft  
  - Bypassing Geo-restrictions: Ability to access region-specific content  
  - Anonymity: Prevents tracking by ISPs and advertisers
* Limitations:
* - Reduced Speed: Due to encryption overhead and server distance  
  - Free Tier Restrictions: Limited server choices and bandwidth throttling  
  - Not Fully Anonymous: VPNs can see traffic and may be compelled by law enforcement to share logs (if not no-log)  
  - Blocked by Some Websites: Streaming platforms and banks may flag VPN usage

## 5. Conclusion

Using a VPN significantly enhances online privacy and data security, especially on unsecured networks. While free VPNs like ProtonVPN offer essential protection, premium versions provide better performance and advanced features. It is essential to select a reputable VPN provider that upholds strict privacy policies.