

VPN Setup and Privacy Report

Platform: macOS Sonoma 15.7

Tool Used: ProtonVPN (Free Tier)

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1. Objective

This report documents the hands-on setup and evaluation of a free VPN client on macOS. The goal is to understand how VPNs protect user privacy, encrypt internet traffic, and mask IP addresses. The exercise includes connection verification, encryption inspection, and a comparison of browsing behavior with and without VPN.

2. Setup Process

2.1 Account Creation

A free account was created on ProtonVPN's official website. Email verification was completed to activate the free tier.

2.2 Installation on macOS

The ProtonVPN macOS client was downloaded using the "macOS Ventura or newer" option, compatible with macOS Sonoma 15.7. Installation was completed via drag-and-drop into the Applications folder. Required permissions were granted under **System Settings > Privacy & Security**.

2.3 VPN Connection

The client was launched and connected to a nearby free server (India or Singapore). Connection status was confirmed via the ProtonVPN dashboard.

3. Verification Steps

3.1 IP Address Change

- **Before VPN:** Original IP address was visible.
- **After VPN:** IP changed to VPN-assigned address.
- Verified using whatismyipaddress.com.

3.2 Traffic Encryption

HTTPS traffic was inspected using Safari's padlock icon and **Web Inspector > Network** tab. Secure encryption was confirmed.

3.3 Disconnect & Comparison

VPN was disconnected to observe changes in browsing speed and IP reversion. A slight improvement in speed was noted post-disconnection.

4. VPN Features Observed

Feature	Description
Encryption Protocols	AES-256 with OpenVPN and WireGuard
No-Log Policy	ProtonVPN enforces strict no-log practices
DNS Leak Protection	Enabled by default
Kill Switch	Available in settings
macOS Integration	Uses native network extension framework

5. Screenshots

- **VPN Connected:** ProtonVPN client showing active connection
- **IP Verification:** Safari window displaying VPN-assigned IP

(Screenshots available in GitHub repository under /screenshots folder)

6. Summary: VPN Benefits and Limitations

Benefits

- Masks IP address for anonymity
- Encrypts traffic to prevent surveillance
- Secures public Wi-Fi usage
- Bypasses geo-restrictions

Limitations

- Free tier may throttle speed or limit servers
 - Some websites block VPN traffic
 - VPN doesn't protect against malware or phishing
 - Slight reduction in browsing speed
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7. Reflection

This exercise provided practical exposure to VPN configuration and privacy tools on macOS. It reinforced the importance of encrypted communication and IP masking in today's digital landscape. The hands-on setup, verification, and analysis contribute to a deeper understanding of cybersecurity fundamentals.

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