

Working and Understanding VPN

Cybersecurity Internship

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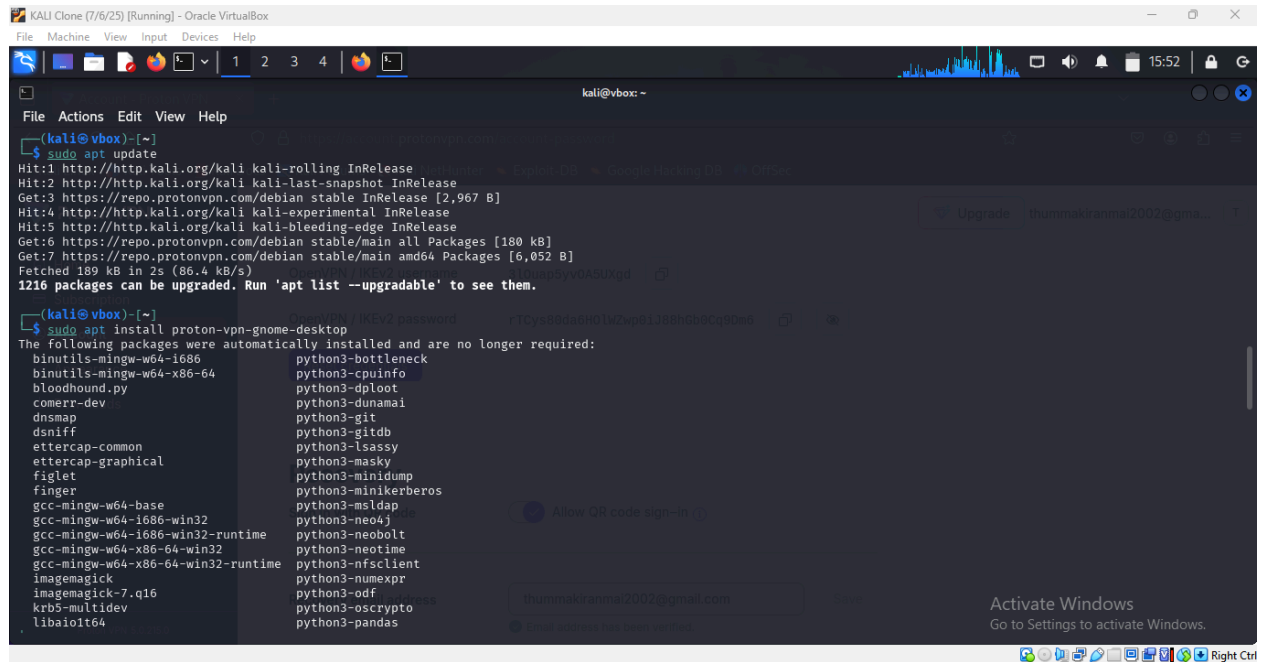
VPN & It's Features

A Virtual Private Network (VPN) allows users to establish a secure and encrypted connection over a less secure network, such as the internet. VPNs enhance privacy and security by masking the user's IP address, encrypting data traffic, and allowing access to geo-restricted content.

Key Features of VPNs:

- Encryption of data
- IP address masking
- Secure tunneling protocols (OpenVPN, IKEv2, WireGuard)
- Protection on public Wi-Fi
- Bypassing geo-restrictions

Installing VPN



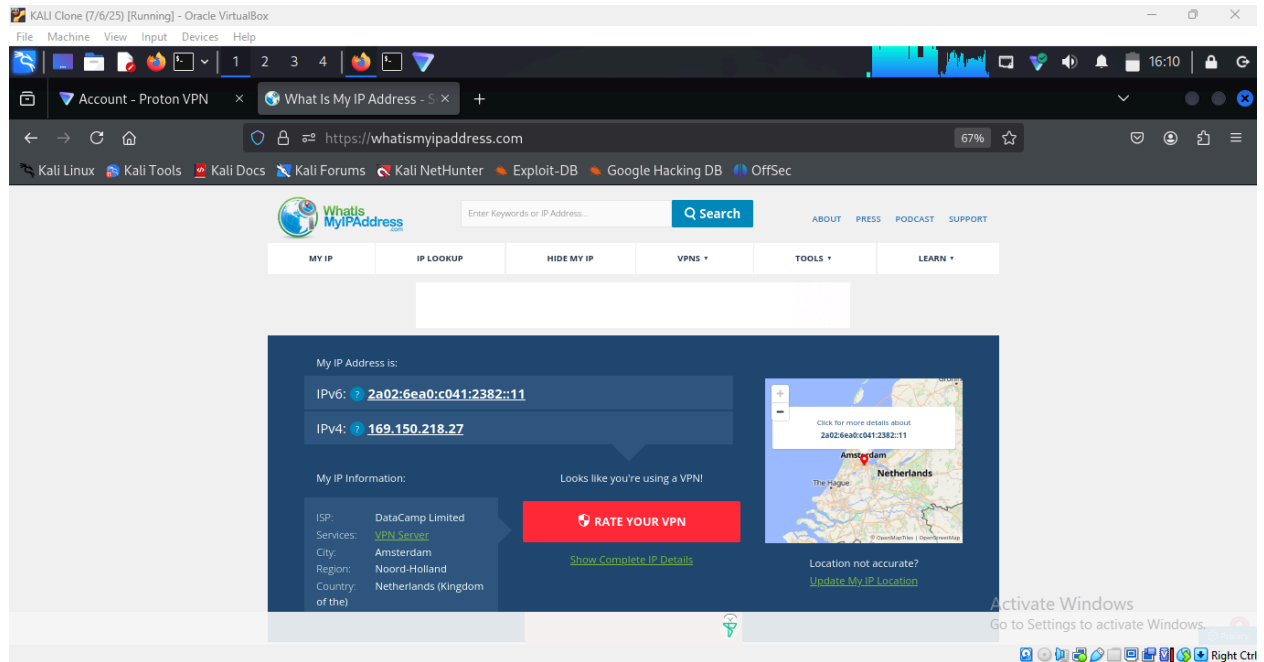
```
KALI Clone (7/6/25) [Running] - Oracle VirtualBox
File Machine View Input Devices Help

kali@vbox: ~
File Actions Edit View Help
(kali@vbox)~$ sudo apt update
Hit:1 http://http.kali.org/kali kali-rolling InRelease
Hit:2 http://http.kali.org/kali kali-last-snapshot InRelease
Get:3 https://repo.protonvpn.com/debian stable InRelease [2,967 B]
Hit:4 http://http.kali.org/kali kali-experimental InRelease
Hit:5 http://http.kali.org/kali kali-bleeding-edge InRelease
Get:6 https://repo.protonvpn.com/debian stable/main all Packages [180 kB]
Get:7 https://repo.protonvpn.com/debian stable/main amd64 Packages [6,052 B]
Fetched 189 kB in 2s (86.4 kB/s)
1216 packages can be upgraded. Run 'apt list --upgradable' to see them.

(kali@vbox)~$ sudo apt install proton-vpn-gnome-desktop
The following packages were automatically installed and are no longer required:
binutils-mingw-w64-i686 python3-bottleneck
binutils-mingw-w64-x86_64 python3-cpuinfo
bloodhound.py python3-dploit
comerr-dev python3-dunamai
dnsmasq python3-git
dsniff python3-gitdb
ettercap-common python3-lsassy
ettercap-graphical python3-masky
figlet python3-minidump
finger python3-minikerberos
gcc-mingw-w64-base python3-msldap
gcc-mingw-w64-1686-win32 python3-neo4j
gcc-mingw-w64-1686-win32-runtime python3-neobolt
gcc-mingw-w64-x86_64-win32 python3-neotime
gcc-mingw-w64-x86_64-win32-runtime python3-nfsclient
imagemagick python3-numexpr
imagemagick-7.q16 python3-odf
krb5-multidev python3-oscrypto
libaio1t64 python3-pandas
```

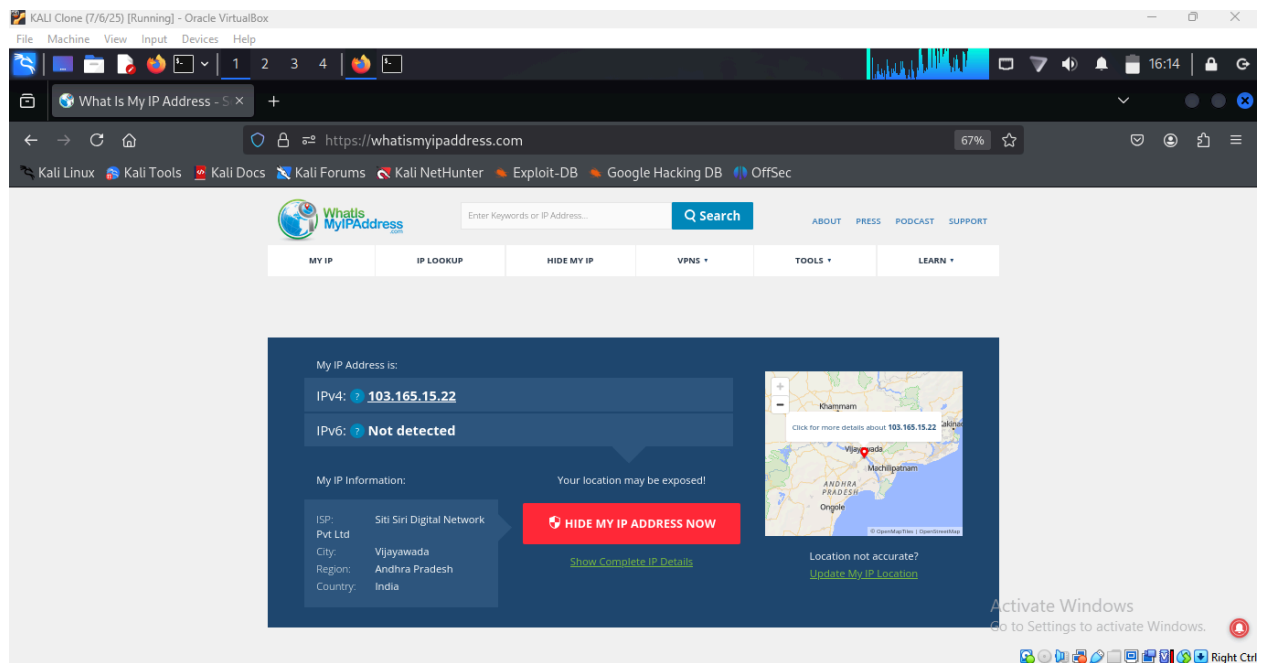
To begin setting up ProtonVPN, the first step was updating the package list using `sudo apt update`. After that, the ProtonVPN GUI desktop application was installed via the command `sudo apt install proton-vpn-gnome-desktop`. This graphical interface makes VPN usage more accessible, especially for new users. The system downloaded and installed required dependencies automatically. This prepares the Kali Linux environment for secure internet browsing through VPN encryption.

Local Machine's IP when VPN connected



After connecting to ProtonVPN, the IP address changed to reflect a different virtual location — in this case, Amsterdam, Netherlands. This confirms that the VPN connection was successful. The system routed internet traffic through ProtonVPN servers, masking the original IP. The ISP shown is “DataCamp Limited,” which differs from the user's actual ISP, further proving anonymity. Using the website *whatismyipaddress.com*, I verified the new IP and location.

Local Machine's IP after Disconnecting VPN



Once the VPN was disconnected, the IP address reverted to the original — located in Vijayawada, India. The ISP also switched back to the original one, “Siti Siri Digital Network Pvt Ltd.” This demonstrates that ProtonVPN effectively hides and reveals the true IP address based on its connection status. The change back to the local IP confirms that no VPN routing is active. Testing the connection again on *whatismyipaddress.com* clearly validated this behavior.