



# **VIRTUAL PRIVATE NETWORK**

**Grand Computers Club  
New Technologies SIG  
March 21, 2019**



# Topics

- **Overview**
- **VPN features**
- **Top VPN products**
- **How to install VPN**
- **Other useful sites**
- **Questions**

# Overview

## Definition

- **Virtual Private Network - a private network that is built over a public infrastructure. Security mechanisms, such as encryption, allow VPN users to securely access a network from different locations via a public telecommunications network, most frequently the Internet.**

[technopedia.com](http://technopedia.com)

# Overview

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## Background requirements

- **Connect to other networks**
- **Private secure communications**
- **Quality of service (QoS)**

# Overview

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## Early options

- **Build custom network**
- **Leased line – ISDN 128Kbps**
  - **Secure, reliable**
  - **Expensive, distance consideration**
- **Microwave**
- **Satellite**

# Overview

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## VPN Usage

- **Access a business network while travelling**
- **Access your home network while travelling**
- **Hide your browsing activity from your local network and ISP**
- **Access geo-Blocked websites**
- **Bypass Internet censorship**
- **Transfer sensitive files**

# Overview

## Advantages

- **Cost for infrastructure**
- **Scalability**
- **Off-load support costs**

# Overview

## **Disadvantages**

- **Public network issues**
- **ISP for Quality of Service and control**
- **Compatibility between vendors and equipment**



# Overview

## Considerations

- **Home country**
- **Logging**
- **Protocol choices**
- **Security/privacy**
- **Performance**
- **Cost**
- **Pricing**

# Overview

## How personal VPN works

[Hidemyass.com](http://Hidemyass.com)



**Using a VPN is like having a PO box on the Internet – an address that no one can trace back to you.**

1. Using a VPN is like having a PO box on the internet - an address that no one can trace back to you.

# Overview

## How personal VPN works

[Hidemyass.com](https://hidemyass.com)



**Instead of giving out its real IP address when you click on a website your computer gives one of ours.**

2. Instead of giving out its real IP address when you click on a website, your computer gives one of ours.

# Overview

## How personal VPN works

[Hidemyass.com](https://hidemyass.com)



**The website's data is delivered to our address – and then we forward it to you instantly and securely.**

3. The website's data is delivered to our address - and then we forward it to you, instantly and securely.

# Overview

## How personal VPN works

[Hidemyass.com](https://hidemyass.com)



**The result? You appear to be wherever our server is located allowing you to access the Internet like a local wherever you are in the world.**

4. The result? You appear to be wherever our server is located, allowing you to access the Internet like a local, wherever you are in the world.

# Overview

## How personal VPN works

[Hidemyass.com](https://hidemyass.com)



**And snoopers and hackers online can't trace your activity back to your real address and find out who or where you are.**

5. And snoopers and hackers online can't trace your activity back to your real address and find out who or where you are.

# VPN Protocols/Features

**IP security (*IPSec*) is used to secure communications over the Internet. IPSec traffic can use either transport mode or tunneling to encrypt data traffic. The difference is that transport mode encrypts only the message within the data packet (also known as the payload) while tunneling encrypts the entire data packet. IPSec is often referred to as a "security overlay" because of its use as a security layer for other protocols.**

# VPN Protocols/Features

Secure Sockets Layer (SSL) and Transport Layer Security (TLS) use cryptography to secure communications over the Internet. Both protocols use a "handshake" method of authentication that involves a negotiation of network parameters between the client and server machines. To successfully initiate a connection, an authentication process involving certificates is used. Certificates are cryptographic keys that are stored on both the server and client.



# VPN Protocols/Features

**Point-To-Point Tunneling Protocol (PPTP) is another tunneling protocol used to connect a remote client to a private server over the Internet. PPTP is one of the most widely used VPN protocols because of its straightforward configuration and maintenance and also because it is included with the Windows operating system.**

# VPN Protocols/Features

**Layer 2 Tunneling Protocol (L2TP) is a protocol used to tunnel data communications traffic between two sites over the Internet. L2TP is often used in tandem with IPSec (which acts as a security layer) to secure the transfer of L2TP data packets over the Internet. Unlike PPTP, a VPN implementation using L2TP/IPSec requires a shared key or the use of certificates.**

# Top VPN products

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**The best VPN service**  
**2019**

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**The 5 best VPNs for**  
**Android**

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**Recommended VPNs**  
**2019**

# Top VPN products



ExpressVPN



[Read full review](#)



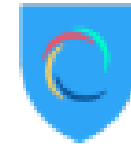
NordVPN



[Read full review](#)



[Read full review](#)



Hotspot Shield



[Read full review](#)

## PRICING

12 months

**\$6.67** /mth

[VIEW](#)

at Express VPN

36 months

**\$2.99** /mth

[VIEW](#)

at NordVPN

12 months

**\$6.49** /mth

[VIEW](#)

at IPVanish VPN

24 months

**\$2.99** /mth

[VIEW](#)

at Hotspot Shield

# Top VPN products



ExpressVPN



NordVPN



Hotspot Shield

## BEST FOR

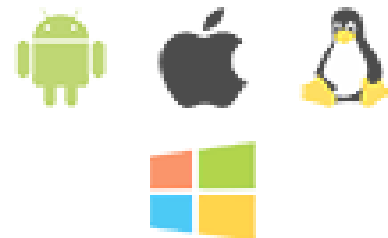
Privacy and unblocking

Balance of options and ease of use

Torrenting and P2P traffic

Browsing Privately

## COMPATIBLE DEVICES



# Top VPN products



ExpressVPN

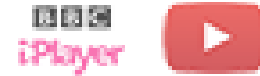


NordVPN



Hotspot Shield

WORKS WITH



NUMBER OF LOCATIONS

94

55

60

79

# Top VPN products



## SIMULTANEOUS CONNECTIONS

7

6

5

5

## P2P TRAFFIC



## UNLIMITED BANDWIDTH



# How to install VPN

[How to set up a VPN in Windows](#)

[How to Set Up a VPN on Mac](#)

[How to configure VPN access on your iPhone or iPad](#)

[Here's how to set up a VPN on your Chromebook](#)

[How to install a VPN on Amazon Fire Stick & Fire TV](#)

[How to set up the ExpressVPN Router](#)



# Other Sites & Videos

[What Is a VPN Connection and How Does It Work?](#)

[What Is A VPN?](#)

[How VPN Works](#)

[What is a VPN? And what can you do with it?](#)

[What is a VPN? How it works and why you should get one](#)

[The 5 best VPNs for Android](#)

[Recommended VPNs 2019](#)

# **Next Meeting**

## **Google Fi**

**Thursday, April 18, 2019**

**3:30-5:00pm**

**Computer Club Classroom**

**Chaparral Center**



# Discussion