



# SoftEther VPN Project

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SoftEther VPN Project develops and distributes [SoftEther VPN](#),  
*An Open-Source Free Cross-platform Multi-protocol VPN Program*,  
as an academic project from [University of Tsukuba](#), under the Apache License 2.0.

- [SE201901: CVE-2019-11868: SoftEther VPN Server NDIS 5.x Windows Local Bridge Driver Local Privilege Escalation Vulnerability \(July 9, 2019\)](#)
- [Added the SoftEther VPN Server JSON-RPC API Suite implementation. \(July 7, 2019\)](#) [html5.jpg](#)  
The API Suite allows you to easily develop your original SoftEther VPN Server management application to control the VPN Server (e.g. creating users, adding Virtual Hubs, disconnecting a specified VPN sessions) from JavaScript, TypeScript, C# or other languages.
- [Added the Embedded HTML5-based Modern Admin Console. \(July 7, 2019\)](#)
- [Declaration of license switch for SoftEther VPN from GPLv2 to Apache License 2.0](#)

## What is SoftEther VPN

[SoftEther VPN](#) ("*SoftEther*" means "*Software Ethernet*") is one of the world's most powerful and easy-to-use multi-protocol VPN software. It runs on Windows, Linux, Mac, FreeBSD and Solaris.

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SoftEther VPN is [open source](#).  
You can use SoftEther for any personal or commercial use for free charge.

SoftEther VPN is an optimum [alternative to OpenVPN](#) and [Microsoft's VPN servers](#).

SoftEther VPN has a clone-function of OpenVPN Server. You can integrate from OpenVPN to SoftEther VPN smoothly. [SoftEther VPN is faster than OpenVPN](#). SoftEther VPN also supports Microsoft SSTP VPN for Windows Vista / 7 /

8. No more need to pay expensive charges for Windows Server license for Remote-Access VPN function.

SoftEther VPN can be used to realize [BYOD](#) (Bring your own device) on your business. If you have smartphones, tablets or laptop PCs, [SoftEther VPN's L2TP/IPsec server function](#) will help you to establish a remote-access VPN from your local network. SoftEther VPN's L2TP VPN Server has strong compatible with [Windows](#), [Mac](#), [iOS](#) and [Android](#).

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SoftEther VPN is not only an alternative VPN server to existing VPN products (OpenVPN, IPsec and MS-SSTP). SoftEther VPN has also [original strong SSL-VPN protocol](#) to penetrate any kinds of firewalls. Ultra-optimized SSL-VPN Protocol of SoftEther VPN has very fast throughput, low latency and firewall resistance.

SoftEther VPN has [strong resistance against firewalls](#) than ever. [Built-in NAT-traversal](#)

penetrates your network admin's troublesome firewall for overprotection. You can setup your own VPN server behind the firewall or NAT in your company, and you can reach to that VPN server in the corporate private network from your home or mobile place, without any modification of firewall settings. Any deep-packet inspection firewalls cannot detect SoftEther VPN's transport packets as a VPN tunnel, because SoftEther VPN uses Ethernet over HTTPS for camouflage.

Easy to imagine, design and implement your VPN topology with SoftEther VPN. It virtualizes [Ethernet by software-enumeration](#). SoftEther VPN Client implements [Virtual Network Adapter](#), and SoftEther VPN Server implements [Virtual Ethernet Switch](#). You can easily build both [Remote-Access VPN](#) and [Site-to-Site VPN](#), as expansion of Ethernet-based L2 VPN. Of course, [traditional IP-routing L3 based VPN](#) can be built by SoftEther VPN.

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SoftEther VPN has strong compatibility to today's most popular VPN products among the world. It has the interoperability with OpenVPN, L2TP, IPsec, EtherIP, L2TPv3, Cisco VPN Routers and MS-SSTP VPN

Clients. SoftEther VPN is the world's only VPN software which supports SSL-VPN, OpenVPN, L2TP, EtherIP, L2TPv3 and IPsec, as a single VPN software.

SoftEther VPN is free software because it was developed as [Daiyuu Nobori's Master Thesis research](#) in the University. You can [download](#) and [use it](#) from today. [The source-code](#) of SoftEther VPN is available under the Apache License 2.0.

## Features of SoftEther VPN

- Free and [open-source](#) software. 1.2.jpg
- Easy to establish both [remote-access](#) and [site-to-site](#) VPN.
- SSL-VPN Tunneling on HTTPS to [pass through NATs and firewalls](#).
- Revolutionary [VPN over ICMP](#) and [VPN over DNS](#) features.
- Resistance to highly-restricted firewall.
- [Ethernet-bridging \(L2\)](#) and [IP-routing \(L3\)](#) over VPN.
- Embedded [dynamic-DNS](#) and [NAT-traversal](#) so that no static nor fixed IP address is required.
- [AES 256-bit and RSA 4096-bit](#) encryptions.
- Sufficient security features such as [logging](#) and [firewall](#) inner VPN tunnel.
- [1Gbps-class high-speed throughput performance](#) with low memory and CPU usage.
- **Windows, Linux, Mac, Android, iPhone, iPad and Windows Mobile** are supported.
- SSL-VPN (HTTPS) and 6 major VPN protocols ([OpenVPN](#), [IPsec](#), [L2TP](#), [MS-SSTP](#), [L2TPv3](#) and [EtherIP](#)) are all supported as VPN tunneling underlay protocols.
- The [OpenVPN clone function](#) supports legacy OpenVPN clients.
- IPv4 / [IPv6](#) dual-stack.
- The [VPN server](#) runs on [Windows, Linux, FreeBSD, Solaris and Mac OS X](#).
- Configure All settings on [GUI](#).

- [Multi-languages](#) (English, Japanese and Simplified-Chinese).
- No memory leaks. High quality stable codes, intended for long-term runs. We always verify that there are no memory or resource leaks before releasing the build.
- RADIUS / NT Domain user authentication function
- RSA certificate authentication function
- Deep-inspect packet logging function
- Source IP address control list function
- syslog transfer function
- [More details at Specification](#).

## Architecture of SoftEther VPN

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Virtualization of Ethernet devices is the key of the SoftEther VPN architecture. SoftEther VPN virtualizes Ethernet devices in order to realize a flexible virtual private network for both [remote-access VPN](#) and [site-to-site VPN](#). SoftEther VPN implements the Virtual Network Adapter program as a software-emulated traditional Ethernet network adapter.

SoftEther VPN implements the Virtual Ethernet Switch program (called [Virtual Hub](#)) as a software-emulated traditional Ethernet switch. SoftEther VPN implements VPN Session as a software-emulated Ethernet cable between the network adapter and the switch.

You can create one or many [Virtual Hub](#) with SoftEther VPN on your server computer. This server computer will become a [VPN server](#), which accepts VPN connection requests from [VPN client](#) computers.

You can create one or many [Virtual Network Adapter](#) with SoftEther VPN on your client computer. This client computer will become a VPN client, which establishes a VPN connections to the Virtual Hub on the VPN server.

You can establish VPN sessions, as called 'VPN tunnels', between VPN clients and VPN servers. A VPN session is the virtualized network cable. A VPN session is realized over a TCP/IP connection. The signals through the VPN session is encrypted by SSL. Therefore, you can safely establish a VPN session beyond the Internet. A VPN session is established by SoftEther VPN's ["VPN over HTTPS" technology](#). It means that SoftEther VPN can create a VPN connection beyond [any kinds of firewalls and NATs](#).

The Virtual Hub exchanges all Ethernet packets from each connected VPN session to other connected sessions. The behavior is same to traditional Ethernet switches. The Virtual Hub has a FDB (forwarding database) to optimize the transmission of Ethernet frames.

You can define a [local bridge](#) between the Virtual Hub and the existing physical Ethernet segment by using the Local Bridge function. The Local Bridge exchanges packets between the physical Ethernet adapter and the Virtual Hub. You can realize a [remote-access VPN](#) from home or mobile to the company network by using the Local Bridge function.

You can define a [cascading connection](#) between two or more remote Virtual Hubs. With cascading, you can integrate two or more remote Ethernet segments to a single Ethernet segment. For example, after you establish cascading connections between the site A, B and C, then any computers in the site A will be able to communicate with the computers in the site B and the site C. This is a [site-to-site VPN](#).

SoftEther VPN can also establish a VPN session over UDP. The UDP-mode of SoftEther VPN supports [NAT traversal](#). The NAT traversal function allows the VPN server behind existing NATs or firewalls to accept incoming VPN sessions. You need no network administrator's special permission before setting up a VPN server on the company network behind firewalls or NATs. Additionally, SoftEther VPN Server may be placed on the dynamic IP address environment since SoftEther VPN has built-in [Dynamic DNS \(DDNS\)](#) function.

SoftEther VPN Server supports additional VPN protocols, including [L2TP/IPsec](#), [OpenVPN](#), [Microsoft SSTP](#), [L2TPv3](#) and [EtherIP](#). These realizes the interoperability with [built-in L2TP/IPsec VPN clients on iPhone, iPad, Android, Windows and Mac OS X](#), and also with [Cisco's VPN routers](#) and other vendors VPN products.

## How to Use SoftEther VPN ?

SoftEther VPN is an essential infrastructure to build-up IT systems on enterprises and small-businesses.

## [Ad-hoc VPN](#)

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Make an ad-hoc VPN consists of the small-number computers with SoftEther VPN. Despite long-distance, it is easy to communicate mutually with any kinds of LAN-oriented protocols.

## [Remote Access to LAN](#)

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Does employees need to connect to the company LAN from outside or home? Remote Access VPN will realizes virtual network cable from a Client PC to the LAN from anywhere and anytime.

## [LAN to LAN Bridge](#)

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Geologically distributed branches are isolated as networks by default. SoftEther VPN lays virtual Ethernet cables between your all branches. Then all computers of all branches are connected to the single LAN.

[banner2.jpg](#)

SoftEther VPN can build-up flexible and dependable virtual network around Clouds. Amazon EC2, Windows Azure and most of other Clouds are supporting SoftEther VPN.

## [Join a Local PC into Cloud](#) [Join a Cloud VM into LAN](#)

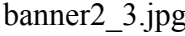
Your desktop or laptop PC can join into the Cloud VM network. You can make use of Cloud VM as if it is on your own local network easily.

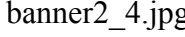
[banner2\\_1.jpg](#)

Your Cloud VM can join to your company LAN with SoftEther VPN. Anyone on your company can access to the Cloud VM without any settings.

[banner2\\_2.jpg](#)

## Cloud to LAN Bridge VPN Cloud to Cloud Bridge VPN

SoftEther VPN keeps a  virtual dedicate Ethernet line from the Cloud to the LAN 24h/365d. You can consider remote Cloud private network as a part of your corporate network.

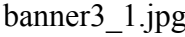
Are you using Amazon EC2  and Windows Azure, or using two or more remote datacenters of a Cloud service? SoftEther VPN can make a single united network between all Cloud VMs despite differences of physical locations.

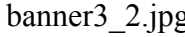


SoftEther VPN supports several mobile devices including iPhone and Android. Your smartphone is now a part of your on-premise or Cloud network by using SoftEther VPN.

### iPhone and Android

### Windows and Mac Laptops

iPhone and Android has a  built-in VPN client but originally they need Cisco, Juniper or other expensive hardware-based VPNs for remote-access. SoftEther VPN has a same function to Cisco, and supports your iPhone and Android easily.

Your mobile PCs with  Windows or Mac can be easily connected to SoftEther VPN anywhere and anytime, despite firewalls or packet filters on Wi-Fi or overseas ISP. Windows RT is also supported.



SoftEther VPN is also an ultra-convenient tool for effective system management by IT professionals on enterprises and system integrators.

## [Remote Management](#)

Are you having problem with banner4\_1.jpg many servers, clients and printers of your client companies are distributed around the state? SoftEther VPN will help you a network administrator as a handy tool just from your desk. You can reach to any networks by only installing SoftEther VPN.

## [Building Your Own Cloud](#)

Do you want to build and banner4\_3.jpg provide your own Cloud service which can beat Amazon EC2 or Windows Azure? SoftEther VPN can help you to build an inter-VMs network and remote-bridging network between your Cloud and your customer's on-premise.

[banner5.jpg](#)

SoftEther VPN is also convenient for home users. You can be proud of using enterprise-class VPN for your home-use.

## [Remote Access](#)

Do you want to access to banner5\_1.jpg your home server or digital appliance from outside? Set up SoftEther VPN Server on your home PC and gain access to your server or HDTV recorder from anywhere even the opposite side of the earth, through the Internet.

## [VPN for Network Testing, Simulation and Debugging](#)

SoftEther VPN is not a banner4\_2.jpg program only for building remote network. It can be used for network design, test, and simulation by IT professionals. For example, delay, jitter and packet loss generator is implemented on SoftEther VPN. So network designer can test VoIP phones under the bad-condition IP network.

## [Comfortable Network Anywhere](#)

Are you a business man and banner5\_2.jpg running around the world? Most of Wi-Fi and local ISPs of several countries are discomfort to use because of packet filtering or censorship. So set up your private relay



server on your own home PC and use it from fields to gain ease.

[banner6.jpg](#)

Does your network administrator hesitates to assign you a global IP address? Or Does your company has a firewall on the border between the private network and the Internet? No problem! SoftEther VPN has a strong function to penetrate troublesome corporate firewalls.

## [Dynamic DNS and NAT Traversal](#)

Unlike legacy IPsec-based [banner6\\_1.jpg](#) VPN, even if your corporate network doesn't have any static global IP address you can set up your stable SoftEther VPN Server on your corporate network.

## [VPN Azure](#)

If the corporate firewall is [banner6\\_2.jpg](#) more restricted and the NAT Traversal of SoftEther VPN doesn't work correctly, use VPN Azure to penetrate such a firewall.

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IPsec-based VPN protocols which are developed on 1990's are now obsoleted. IPsec-based VPN are not familiar with most of firewalls, NATs or proxies. Unlike IPsec-based VPN, SoftEther VPN is familiar with any kind of firewalls. Additionally SoftEther VPN requires no expensive Cisco or other hardware devices. You can replace your Cisco or OpenVPN to SoftEther VPN today.

## [Penetrates Firewall by SSL-VPN](#)

Are you having trouble with [banner7\\_1.jpg](#) IPsec-based legacy VPN products? Replace

## [Replacements of OpenVPN](#)

Are you still using [banner7\\_2.jpg](#) OpenVPN? SoftEther VPN has more ability, better performance and easy-configurable GUI-based management tools.

it to SoftEther VPN. SoftEther VPN Protocol is based on HTTPS so almost all kinds of firewalls will permits SoftEther VPN's packets.

SoftEther VPN has also the OpenVPN Server Clone Function so that any OpenVPN clients, including iPhone and Android, can connect to SoftEther VPN easily.

## [Replacements of Cisco or other hardware-based VPNs](#)

Cisco, Juniper or other hardware-based IPsec VPNs are expensive for set-up and management. They are also lack of usability and compatibility with Firewalls. Replace them to SoftEther VPN. You can very easily replace because SoftEther VPN also has the L2TP/IPsec VPN function which is same to Cisco's.

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## **Screenshots**

SoftEther VPN consists of three software: VPN Client, VPN Server and VPN Bridge.

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*SoftEther VPN Client*

[More Screenshots...](#)

[1.0\\_vpnservice.jpg](#)

*SoftEther VPN Server Admin Tool*

*More Screenshots...*