

eduVPN

BoF

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tnc26

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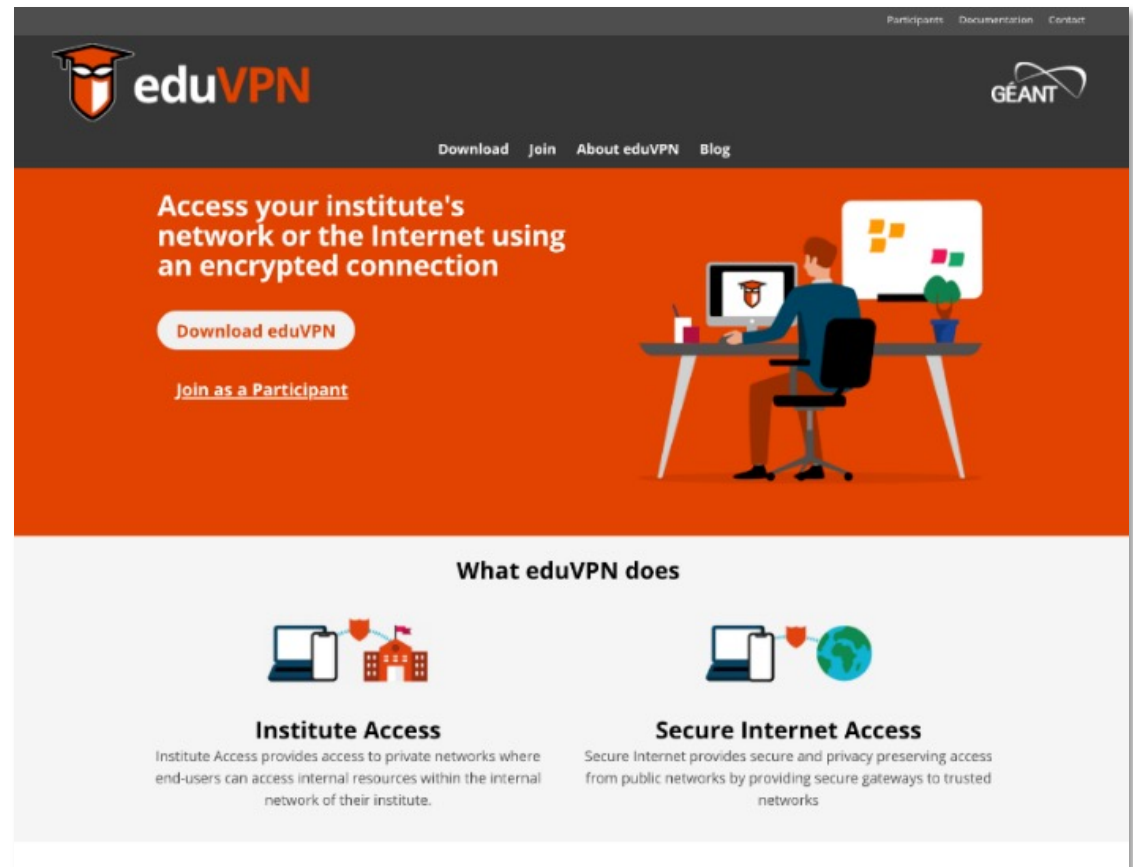
What is eduVPN?

- Project that provides VPN *server* and *client* software
- Server runs on standard Linux distributions (Debian, Ubuntu, Fedora, Enterprise Linux)
- Clients available for all common OSes (Windows, macOS, Linux, Android, iOS)
- Leverages existing VPN technologies (WireGuard + OpenVPN)
 eduVPN “Innovation”: WireGuard over TCP with ProxyGuard
- Uses permissions to allow/restrict access to VPN networks (“Profiles”)



Intro

- Institute access:
 - Access resources
 - ~262 servers
- Clients for:
 - Windows
 - macOS/iOS
 - Linux
 - Android



The screenshot shows the homepage of the eduVPN website. At the top, there is a dark navigation bar with the eduVPN logo on the left and the GÉANT logo on the right. Below the logo, there are links for "Download", "Join", "About eduVPN", and "Blog". The main content area has an orange background. On the left, it says "Access your institute's network or the Internet using an encrypted connection" with a "Download eduVPN" button and a link to "Join as a Participant". On the right, there is an illustration of a person sitting at a desk with a laptop and a whiteboard. Below this, the section "What eduVPN does" is divided into two columns. The first column is titled "Institute Access" and features an icon of a laptop and a building. The second column is titled "Secure Internet Access" and features an icon of a laptop and a globe. Each column has a short paragraph describing the service.

eduVPN

Download Join About eduVPN Blog

Access your institute's network or the Internet using an encrypted connection

Download eduVPN

[Join as a Participant](#)

What eduVPN does

Institute Access

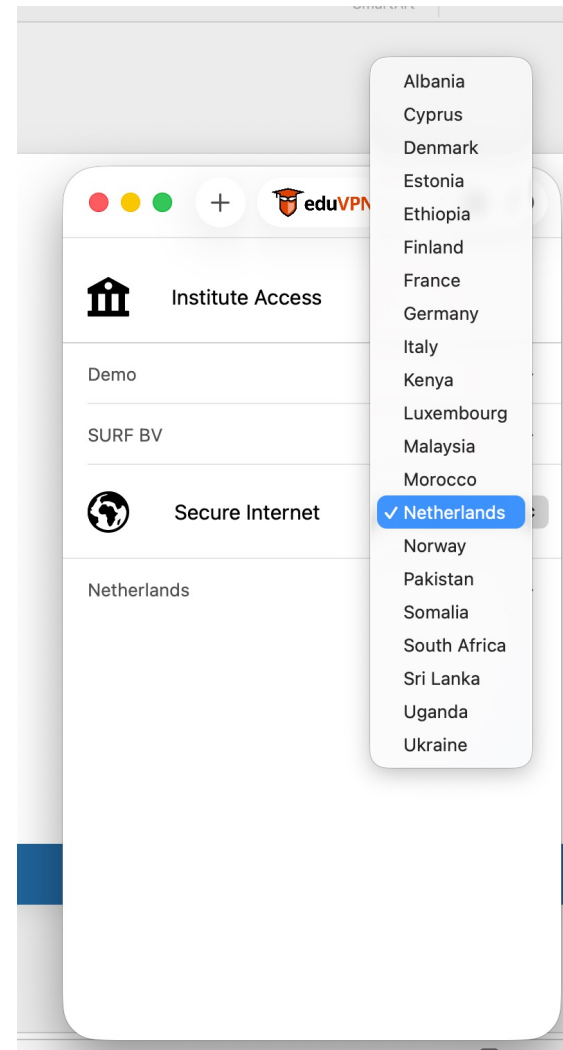
Institute Access provides access to private networks where end-users can access internal resources within the internal network of their institute.

Secure Internet Access

Secure Internet provides secure and privacy preserving access from public networks by providing secure gateways to trusted networks

Intro

- Secure Internet:
 - Connect to a NREN
 - Currently 21 countries
 - Use case: Public hotspots





eduVPN Service

eduVPN is CERN's secure remote access service, providing encrypted connectivity to CERN internal resources from outside the campus. It allows CERN users holding a primary account to safely access internal services and networks using a simple client. You can find more information in the relevant documentation.

Example: University of Turku

- 22000 students & 3400 staff
- Hardware EOL
- Requirements:
 - Use public IP addresses and avoid NAT
 - Multiple nodes for load balancing and fault-tolerance
 - webSSO and MFA
 - provide access management that supports separating group members by their own IP addresses
 - Wide client support
 - high performance and coexistence with Microsoft's Always-On VPN (because we also use Microsoft's IPsec-based Always-On VPN to connect Windows laptops to our essential services when outside our campus network)



Client Audits

- We spend 41k on client audits (funded bij Nordunet)
- We hired the best pentesting firm
- The results.... No issues found

- We spend 4 dollar on A.I. pentesting

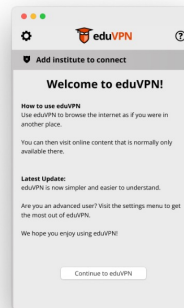
VPN audit by Midnight Blue

- VVTS (VPN Vulnerability Testing Suite)
- Over 10 attacks tested on multiple operating systems and VPN configurations

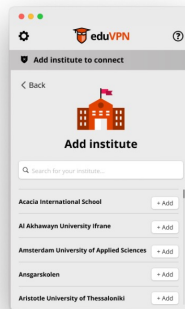
eduVPN Client	LocalNet	LocalNet IPv6	ServerIP	ServerIP IPv6	Expanded Subnet	TunnelVision	TunnelVision on Connection Established	TunnelVision IPv6	TunnelVision IPv6 on Connection Established	TunnelVision IPv6 on IPv4 to IPv6 Localnet	NAT64
Windows, Wireguard, local traffic blocked	⊗	⊗	✓	✓	⊗	⊗	⊗	⊗	⊗	⊗ ¹	✓ ²
Windows, Wireguard, local traffic allowed	✗	✗	✓	✓	✗	✗	✗	✗	✗	✗	✓ ²
Windows, OpenVPN	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗	✓ ²
macOS, Wireguard	✗	✗	✓	✓	✗	✗	✗	✗	✗	✗ ³	✓
macOS, OpenVPN	✗	✗	✓	✓	✗	✗	✗	✗	✗	✗ ³	✓
Linux, Wireguard, local traffic blocked	✓	✓	✓	✓	✓	✓	✓	✓	✓	✗	✓ ²
Linux, Wireguard, local traffic allowed	✓	✓	✓	✓	✓	✓	✓	✓	✓	✗	✓ ²
Linux, OpenVPN	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗	✓ ²
Android, Wireguard	✓	✓	✓	✓	✓	✓ ⁴	✓	✓	✓	✓	✓
Android, OpenVPN	✗	✗	✓	✓	✓ ⁵	✓ ⁴	✓	✓	✓	✓	✓
iOS, Wireguard	✗	✗	✓	✓	✗	✗	✗	✗	✗	✗ ³	✓
iOS, OpenVPN	✗	✗	✓	✓	✗	✗	✗	✗	✗	✗ ³	✓

<https://github.com/MidnightBlueLabs/VVTS/>

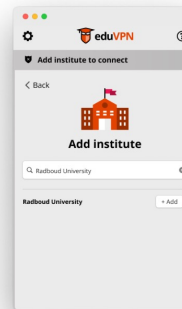
UX Recommendations – funded by Nordunet



Screen 1A – Welcome screen



Screen 2A – Institute search



Screen 2B – Institute search with input

Future

- eduVPN server v4
 - webGUI config editing
 - Focus on large deployments (HA/failover)
 - No more OpenVPN
- New client UX
- Student research



Thank you

Any questions?

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