September 16th, 2020, REANNZ Lunchtime session

Connectivity on the go: eduVPN and eduroam

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Outline

eduVPN:

- Brief introduction
- Case study: eduVPN for Malaghan Institute of Medical Research
  - Systems view
  - Network view

eduroam:

- CAT 2.0
- Managed IdP

What is eduVPN and Let'sConnect

- eduVPN - also known as Let'sConnect
  - Open-source VPN solution
    - VPN Server
      - OpenVPN under the hood
    - VPN Clients
      - Windows
      - Mac OSX
      - Android
      - iOS
      - Or any OpenVPN client - but better use Let'sConnect

Name difference: eduVPN vs Let'sConnect

- Let'sConnect is simplified for single organisation use
  - Users just point to one server letsconnect.malaghan.org.nz

- eduVPN target's R&E community
  - provide secure Internet connection on the go
  - VPN server run for the community - with federated login
  - Any interest in having NZ eduVPN via Tuakiri?

Why eduVPN

- Strong need for VPN solution
  - More people working from home
  - Existing VPN solution might not cope
    - Hardware firewalls have longer replacement cycles

"Just run OpenVPN on a Linux server"

... and that's what eduVPN does

but in an easy-to-use way (client and server)

Why eduVPN - performance

Up to 1000 **concurrent** clients on 1 server

- Split over multiple CPU cores (16 assumed) with AES-NI
- Split via multiple openvpn processes running on alternate ports
- Can also scale higher over multiple nodes
  - with a single controller, also serving as a worker node
- Of course, YMMV - firewalls, other bottlenecks

https://www.letsconnect-vpn.org/blog/does-it-scale.html

Why eduVPN - ease of setup

Typical deployment - without eduVPN

- install plain openvpn, explore config, setup CA
- craft per-user connection profile
  - manually deploy on end-user device

Why eduVPN - ease of setup (cont.)

eduVPN:

- creates openVPN config
- runs a CA
- creates user connection profiles on-demand
  - after user authenticates
- client apps fetch and deploy openvpn profiles
  - authentication is done from within app (built-in or external browser)

Why eduVPN - web portals

User Portal:

- Users can manage their configs and devices

Admin Portal: an admin can manage:

- Users (and their configs and connections)
- View overall stats
- Block users

Why eduVPN - ease of setup - server side

- Configure authentication: one of
  - LDAP
  - Radius
  - SAML (Tuakiri login)
  - Local username + password
- Optional 2FA
  - Google Authenticator

Setting up eduVPN - openvpn config

- Configure OpenVPN processes to run
  - one or more ports
  - TCP / UDP (recommended: both)
  - IP addresses to assign to clients (private range)
  - DNS config to push to clients
  - Routes to push
    - split tunnel vs. full VPN

Setting up eduVPN - firewall

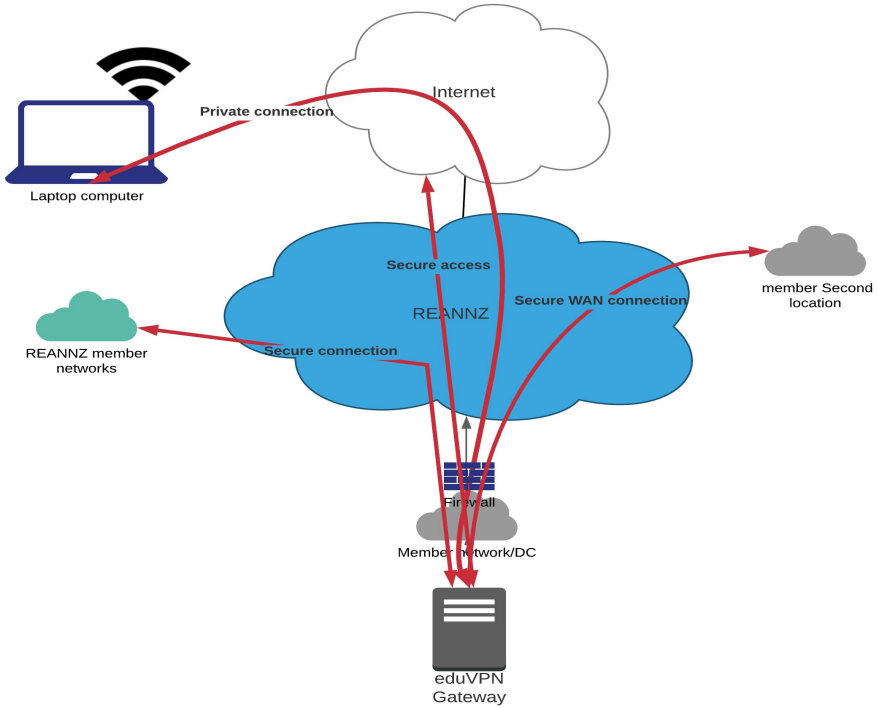
Use iptables on the host

- can do NAT
  - or do NAT and firewalling in a separate firewall
- forward only between VPN tunnel and target interface

Remember to allow IP forwarding

Network aspects of eduVPN

- REANNZ network provides gateway for eduVPN service
- Integrates to existing network services
- Minimal network/config change
- eduVPN gateway handles routing - Full access or split tunneling possible



VPN solution - Malaghan Institute of Medical Research

"Working with the REANNZ team was great - we had a few challenges along the way, but Yesh and Vlad stayed online for hours troubleshooting with me - going way above and beyond!"

Marie Armstrong, Head of IT

https://www.reannz.co.nz/news-and-events/vpn-solution-malaghan-institute-of-medical-research/

"Due to the lockdown all my work-related activities had to be moved off-site at short notice. This meant moving large datasets, that included millions of scientific data points, back and forth from our institute's storage servers to my personal laptop for analysis via the VPN.

Due to the large size of the data only one of these files could be moved and analysed at any given time. As I had several data sets that needed to be analysed and compared to previous results this was extremely tedious and a frustrating experience prior to the improved VPN solution. Transfers sometimes had to be undertaken overnight or even crashed the system. I am very happy with the new VPN solution, as it allows me to transfer my data much quicker, it also communicates much better with the other institute software that we use to process and store these data files."

Dr Johannes Mayer, a Postdoctoral Research Fellow at Malaghan Institute

Questions about eduVPN

Happy to answer eduVPN questions now

Save the date: Wednesday 14 October - eduroam Lunchtime Session

eduroam overview

eduroam: global service for easy and secure network access

- mostly WiFi, but can also be wired network
- 802.1x authentication to home institution
- often deployed as the only SSID
- REANNZ operates eduroam for NZ

eduroam CAT 2.0

Configuration Assistant Tool (CAT) 2.0

- Creates easy to deploy configuration profiles
  - .... so that users don't have to create the profile manually
  - Improve security:
    - set CA cert + hostname to expect in certificate CN
    - and configure anonymous outer identity
  - Multiple reams, multiple SSIDs
  - Error-checking user-entered fields
- Profiles created for range of devices
  - Win, OSX, iOS, Android, ...
- Properly signed, easy to roll out with configuration management tools
- And download links for users to self-provision

eduroam Hosted IdP

- Managed eduroam IdP As A Service
  - Provided to R&E community by GEANT
- For small institutions
  - avoid having to manage own eduroam IdP
  - max 200 users (but multiple devices per user)
- Each device gets separate credentials
  - X509 certs, no username/passwords involved

eduroam Hosted IdP: Getting started

- Talk to a friendly REANNZ staff member
  - Or just email engagement@reannz.co.nz
- Configure your IdP
- Upload CSV with list of users
- Deploy via eduroam CAT

eduroam Applications

eduroam Companion

- Shows Closest eduroam AP
- Available For Android / IOS

eduroam CAT

- Helper Application To Install CAT Configurations Onto Android
- Only Required For Android

Thank you

Are there any questions?

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