Building a Fast Migration System for WireGuard

Sina Kamali
University of Waterloo
sinakamali@uwaterloo.ca

I. Introduction

WireGuard [1] is a new tunneling protocol that operates at layer 3 by establishing a Linux virtual network interface. WireGuard provides a fully functioning tunneling system, but it makes an important assumption. WireGuard assumes that peers have a way of exchanging keys. In this work we assume that the broker is in charge of exchanging keys between clients and proxies.

There is not a established way to fast migrate a WireGuard proxy server to another already running proxy server. For a migration system to classify as a fast migration, we require two important factors:

1) It should not interfere with other peers that are already connected to the destination proxy.
2) It should have a low down time for the user.
3) It should have a low performance cost for the system.

To this end, we designed a novel approach to migrate WireGuard proxies, which will be detailed in full in the following sections.

II. Design

To support a fast migration scheme, we create a proxy and client. The proxy connects the client to a NAT server which communicates with the internet on behalf of the client. An overview of this design can be seen in 1.

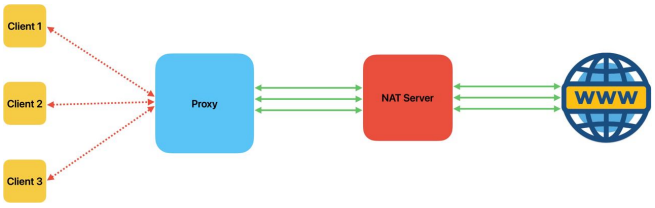

Fig. 1. Hierarchical keys

A. Designing the Client

The fast migration client has a few differences from a

References

[1] Jason A Donenfeld. *WireGuard: Next Generation Kernel Network Tunnel*. 2017. URL: www.wireguard.com.