GoHop: Personal VPN to Defend from Censorship

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Abstract—Internet censorship threatens people's online privacy, and in recent years, new technologies such as high-speed Deep Packet Inspection (DPI) and statistical traffic analysis methods had been applied in country scale censorship and surveillance projects. Traditional encryption protocols cannot hide statistical flow properties and new censoring systems can easily detect and block them “in the dark”. Recent work showed that traffic morphing and protocol obfuscation are effective ways to defend from statistical traffic analysis. In this paper, we proposed a novel traffic obfuscation protocol, where client and server communicate on random port. We implemented our idea as an open-source VPN tool named GoHop, and developed several obfuscation method including pre-shared key encryption, traffic shaping and random port communication. Experiments has shown that GoHop can successfully bypass internet censoring systems, and can provide high-bandwidth network throughput.

Keyword—VPN, privacy protection, random port, traffic morphing, protocol obfuscation, censorship circumvention

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