

# Effective Tor Bridge Distribution

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## 1 Problem

Tor bridges are undocumented relays which are supposed to help censored users access the Tor network when all public relays are blocked. They serve as a *stepping stone* into the public network. Their effectiveness relies on them not leaking to censoring countries. If this happens, they get blocked and become useless in this particular country.

Bridges are distributed over [HTTPS](#), [e-mail](#) and (physical) social networks. It is reported that at least China was able to get an exceeding amount of bridge descriptors distributed over HTTPS and e-mail [2]. Distribution over social networks is more *robust* but less *effective*. Basically, the problem of bridge distribution boils down to a secret which has to reach censored users but must not reach censors. This is impossible by definition since censors can always act like legitimate users and, worse, can launch sybil attacks.

## 2 Current Research

A practical solution to the problem of bridge distribution is to make it easy to get a *few* bridge descriptors but make it hard to get *many* of them. This concept is realized in Tor by implementing different rate-limiting methods.

Recent research [3] focused on developing effective ways of distributing bridges in physical social networks. Unfortunately, this attempt is not very practical yet since it requires some sort of user registration. Also, given the size of countries such as China and Iran, the concept will run into scalability problems.

There are also ideas for advancements in technical (i.e. not over physical social networks) distribution strategies [1]. So far, most of the proposed strategies have neither been tested, nor implemented.

In my own work I will try to enhance the current and propose new bridge distribution methods.

## References

- [1] DINGLEDINE, R. More thoughts on bridge distribution strategies. <http://archives.seul.org/or/dev/Dec-2009/msg00000.html>.
- [2] LEWMAN, A. tor is blocked in china. <https://lists.torproject.org/pipermail/tor-talk/2010-December/004733.html>.
- [3] MCCOY, D., MORALES, J. A., AND LEVCHENKO, K. Proximax: A Measurement Based System for Proxies Dissemination. In *Financial Cryptography and Data Security* (St. Lucia, 2011), Springer.