Characterizing the Nature and Dynamics of Tor Exit Blocking

Rachee Singh UMass Amherst rachee@cs.umass.edu

Paul Pearce UC Berkeley pearce@cs.berkeley.edu Rishab Nithyanand
Data & Society Research Institute
rishab@datasociety.net

Michael Carl Tschantz International Computer Science Institute mct@icsi.berkeley.edu

Vern Paxson
UC Berkeley and International
Computer Science Institute
vern@cs.berkeley.edu

Sadia Afroz UC Berkeley and International Computer Science Institute sadia@icsi.berkeley.edu

> Phillipa Gill UMass Amherst phillipa@cs.umass.edu

ABSTRACT

Facing undesired traffic from the Tor anonymity network, online service providers discriminate against Tor users. In this study we characterize the extent of discrimination faced by Tor users and the nature of undesired traffic exiting from the Tor network – a task complicated by Tor's need to maintain user anonymity. We leverage multiple independent data sources: email complaints sent to exit operators, commercial threat intelligence, webpage crawls via Tor, and privacysensitive measurements of our own Tor exit nodes to address this challenge. We develop methods for classifying email complaints sent to abuse contacts and an interactive crawler to find subtle forms of discrimination on the Web, and deploy our own exits in various configurations to understand which are prone to discrimination. We find that conservative exit policies are ineffective in preventing the blacklisting of exit relays. However, a majority of the attacks originating from Tor generate high traffic volume, suggesting the possibility of detection and prevention without violating Tor users' privacy. Based on work published at [1].

[1]: Rachee Singh, Rishab Nithyanand, Sadia Afroz, Paul Pearce, Michael Carl Tschantz, Phillipa Gill, and Vern Paxson.

Permission to make digital or hard copies of part or all of this work for personal or classroom use is granted without fee provided that copies are not made or distributed for profit or commercial advantage and that copies bear this notice and the full citation on the first page. Copyrights for third-party components of this work must be honored. For all other uses, contact the owner/author(s).

ANRW '18, July 16, 2018, Montreal, QC, Canada © 2018 Copyright held by the owner/author(s). ACM ISBN 978-1-4503-5585-8/18/07. https://doi.org/10.1145/3232755.3232786

2017. Characterizing the Nature and Dynamics of Tor Exit Blocking. In 26th USENIX Security Symposium (USENIX Security 17). USENIX Association, Vancouver, BC, 325–341.

ACM Reference Format:

Rachee Singh, Rishab Nithyanand, Sadia Afroz, Paul Pearce, Michael Carl Tschantz, Phillipa Gill, and Vern Paxson. 2018. Characterizing the Nature and Dynamics of Tor Exit Blocking. In *ANRW '18: Applied Networking Research Workshop, July 16, 2018, Montreal, QC, Canada.* ACM, New York, NY, USA, 1 page. https://doi.org/10.1145/3232755.3232786