Review of
Augur: Internet-Wide Detection of Connectivity Disruptions
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What is the problem?

Most contemporary censorship studies are anecdotal short-term studies that do not have data that is continuous and hence cannot reliably draw conclusions on how, when and what is censored. The problem is the lack of a global and continuous system that measures the onset of or change in censorship practices in countries across the globe.

Summary

They identify three major problems in contemporary censorship studies. Firstly, the lack of continuity. They are usually one-off measurements that focus on one country or collects measurement for a particular period of time etc. Secondly, the coverage of the measurement with regards to geographical locations and number of vantage points are not a lot are often not reliable for continuous measurement since they are willing participants who run measurements for researchers. Thirdly, for the very same reason, there are ethical considerations. These participants could be put in the way of harm. Augur aims to solve some of these issues by limiting the harm to users by choosing only infrastructural vantage points that are globally incrementing IPID routers which means they are also reliable to a degree. Augur can be run continuously to monitor a wide range of connectivity disruptions.

Key Insights

- Ethically running measurements that does not involve users directly was seen as a challenge before and using infrastructural routers to achieve this was a very good way of protecting users.

Strengths

- Identifying key measurement system design challenges and coming up with a good way to solve them thereby creating a scalable, efficient and ethically sound system.
- Making use of routers and TCP/IP side channels makes the measurement traffic seem like normal Internet background noise, so, the detection and blacklisting of this measurement would be extremely unlikely.

Weaknesses

- Geolocation has been known to be unreliable and hence this may result in some false positives.
- Site and reflector selection needs to be very strict and this may make detecting connectivity disruptions for very specific sites not possible.

Summary of Key Results

- Augur identifies and solves the key challenges of a censorship measurement system. Augur is a global, continuous and ethically sound censorship measurement tool.
- China, Iran, Sudan and Russia can be seen to use the TCP/IP Layer to block certain content to users in their country.

Open Questions

- Augur measures blocking on the TCP/IP layer. What are other ways to use network side channels to ethically and globally detect censorship on the other layers of the network?