Measuring Accessibility of Popular Websites when using ProtonVPN

CSE3000 Research Project

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June 29, 2021

1. Research Question

VPNs are being used all over the world to circumvent censorship and maintain privacy. These VPNs are associated with criminality and cybercrime. Thus, websites have resorted to blacklisting malicious VPN IP addresses. This causes genuine users to be blocked from accessing the websites.

To be able to properly assess this problem it is important to know to the frequency that VPNs are blocked and in what manner this occurs. This study measures blocking by websites when using ProtonVPN basic.

2. Types of blocking

- Direct blocking
  - DNS error
  - Connection timeout or reset
  - HTTP status error
- Indirect blocking
  - Block page
  - Empty page
  - Captcha

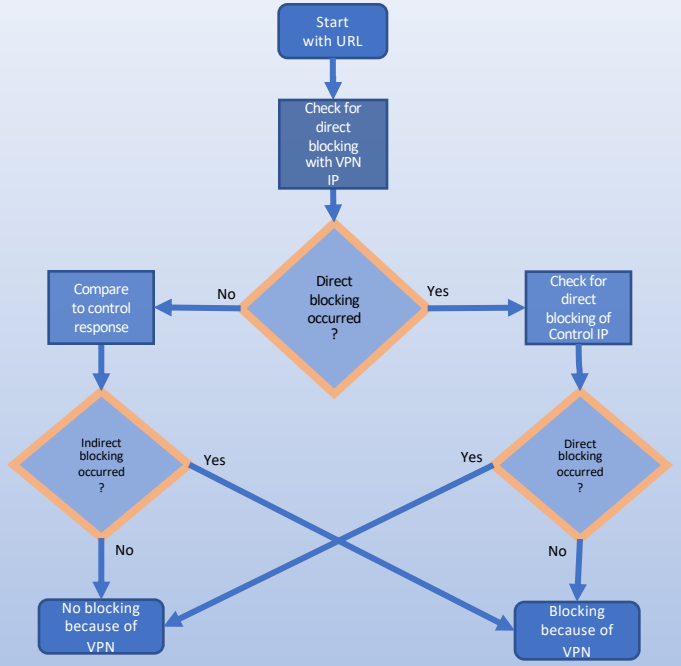

Figure 1. Chart for process of identify blocking

3. Experiment

- The process of determining blocking can be seen in figure 1
- Alexa top 1500 website list
- Selenium Chrome webdriver
- 9 different VPN nodes in the Netherlands

4. Results

- Average of 1.12% blocked domains across VPN nodes
- Amount of blocking differs for VPN nodes
- Amount of blocking similar for different days with same VPN node
- Distribution of blocking and categories seen in figure 2

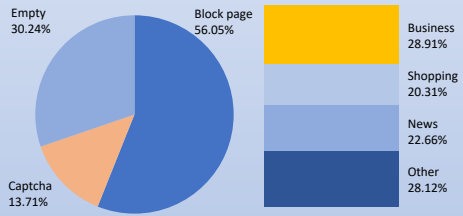

Figure 2. Results

5. Conclusion

The results show that there some is blocking occurring against ProtonVPN users. Future work should still be done to determine whether the results are the same throughout time and for different IP nodes within ProtonVPN and different VPN services.

Contact info

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