

Where is the Web Closed?

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COMPUTER SCIENCE
INSTITUTE





Bank

Security Step

For your protection, you'll need to complete an additional security step.

Use this text code and enter the same in the text box below.

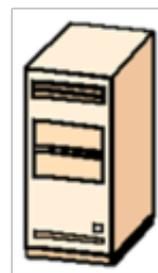
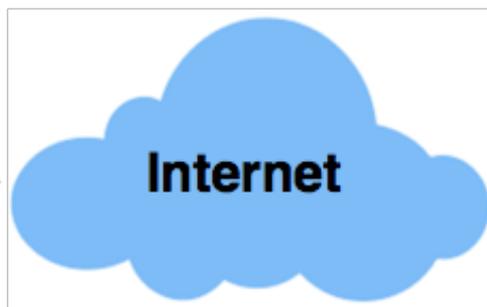


To continue, please enter the text you see above.

[Continue to sign in](#)

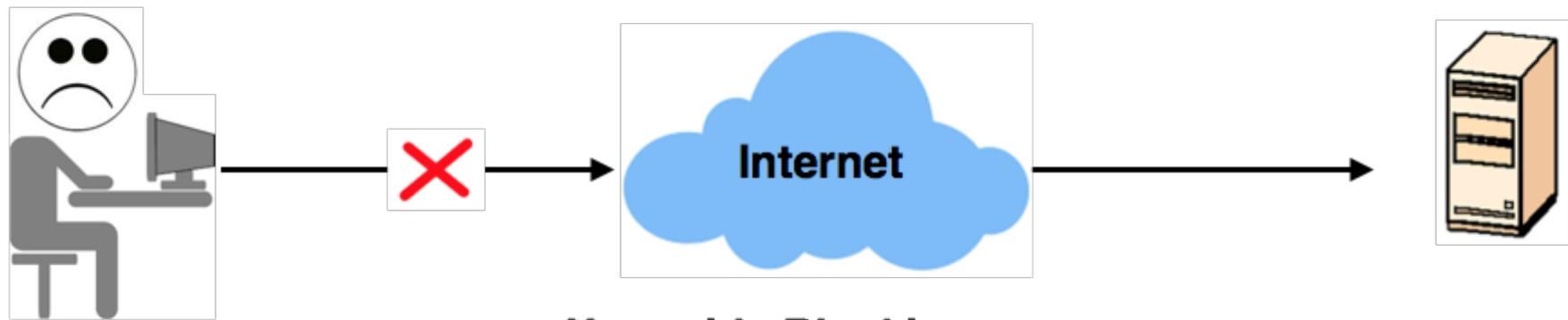
[Return to home page](#)

abc.com



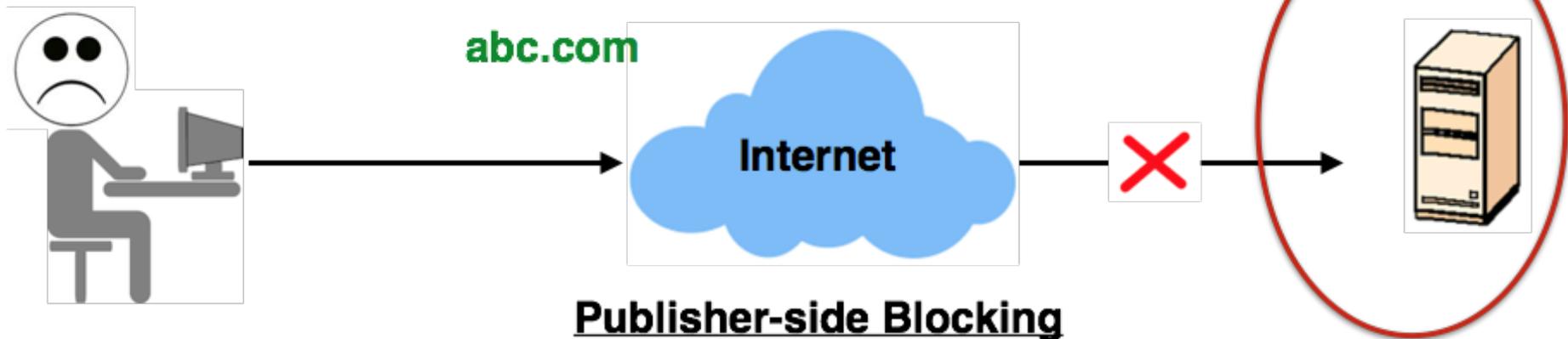
User-side Blocking

abc.com



User-side Blocking

abc.com



Publisher-side Blocking

Error 1020

Ray ID: 48ead65de800c34c • 2018-12-25 11:06:16 UTC

Access denied

What happened?

This website is using a security service to protect itself from online attacks.



vinton g cerf

@vgcerf

Follow



The dunderheads at Verizon block access to myverizon.com account if you are overseas. I plan to cancel my service. idiots.

1:58 PM - 1 Sep 2017

16 Retweets 60 Likes



10



16



60



Internet is going dark

Internet is going dark

... but not because of repressive governments,
because of developers and website owners

*“**Fragmentation** ... encompasses the appearance of diverse pressures in the networked environment that lead to diverse outcomes that are no longer coherent or consistent.”*

Geoff Huston, “Thoughts on the Open Internet”

Measuring Regional Blocking



SonicWALL | Network Security Appliance



Sorry this content is not available in your region due to GDPR.

Block reason: **Gateway GEO-IP Filter Alert**

IP address: **141.101.99.69**

Connection initiated from country: **United Kingdom**

Error 1009

Ray ID: 422f2004f42f93a8 • 2018-05-30 06:25:43 UTC

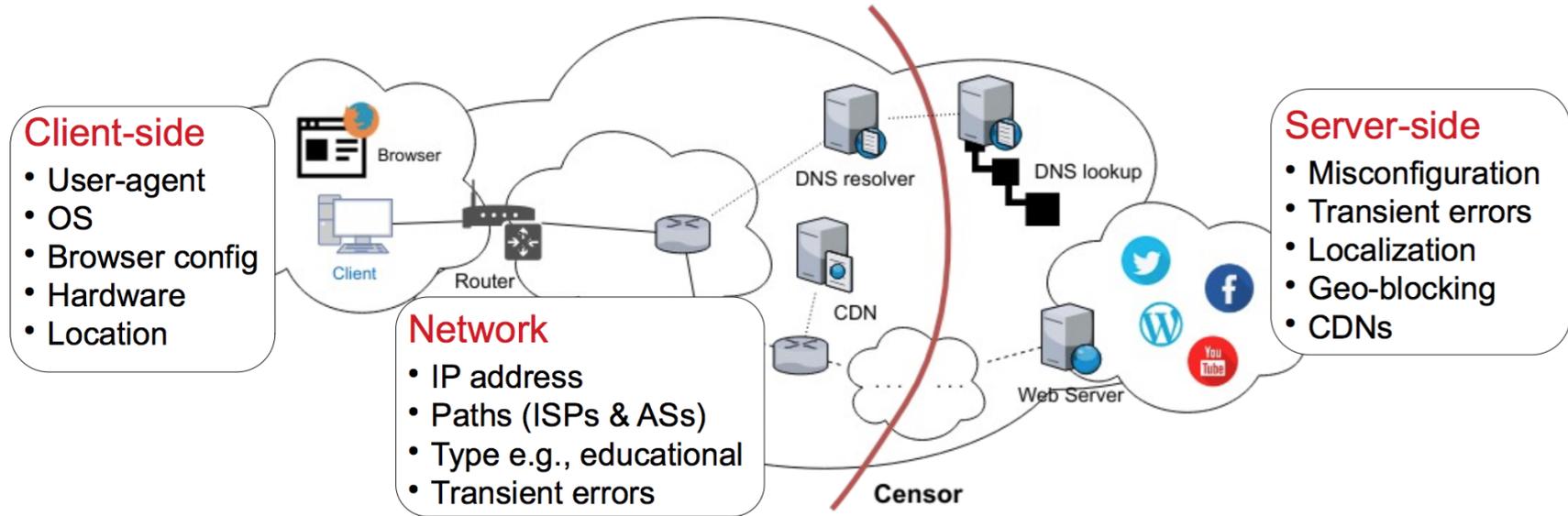
Access denied

What happened?

The owner of this website (stoiximan.com.cy) has banned the country or region your IP address is in (US) from accessing this website.

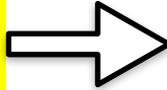
Cloudflare Ray ID: 422f2004f42f93a8 • Your IP: 192.150.187.238 • Performance & security by Cloudflare

Websites can be inaccessible for many reasons

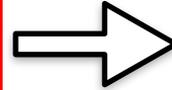


How to measure regional blocking?

List of
unavailable websites

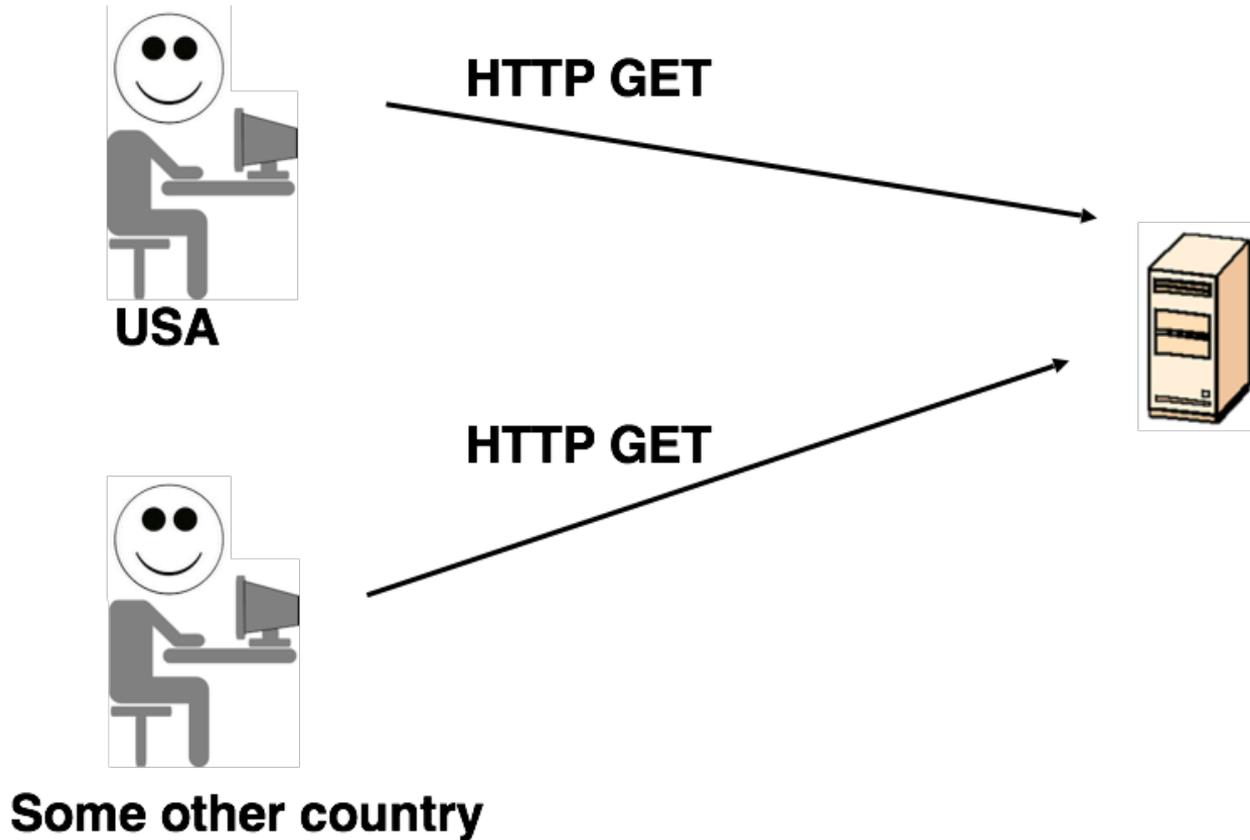


Traceroute

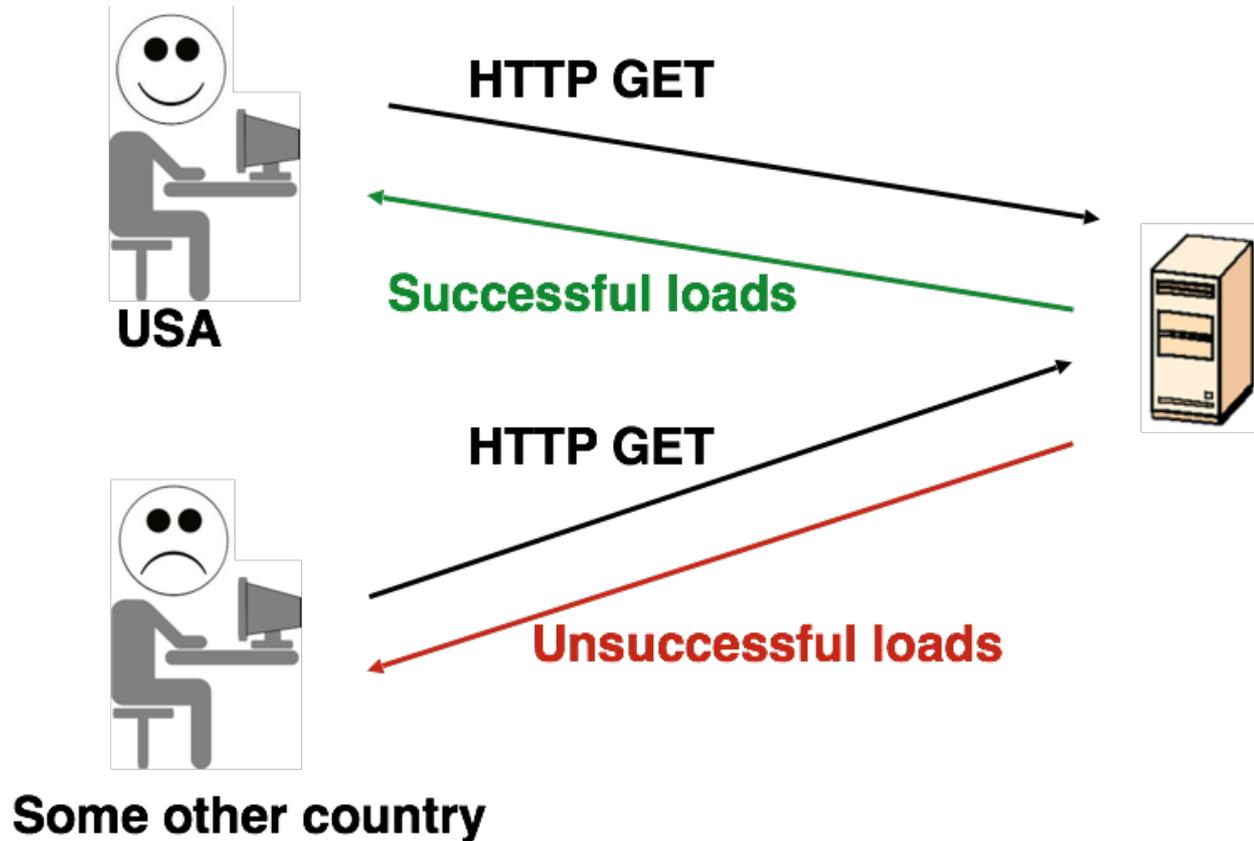


Manual Analysis

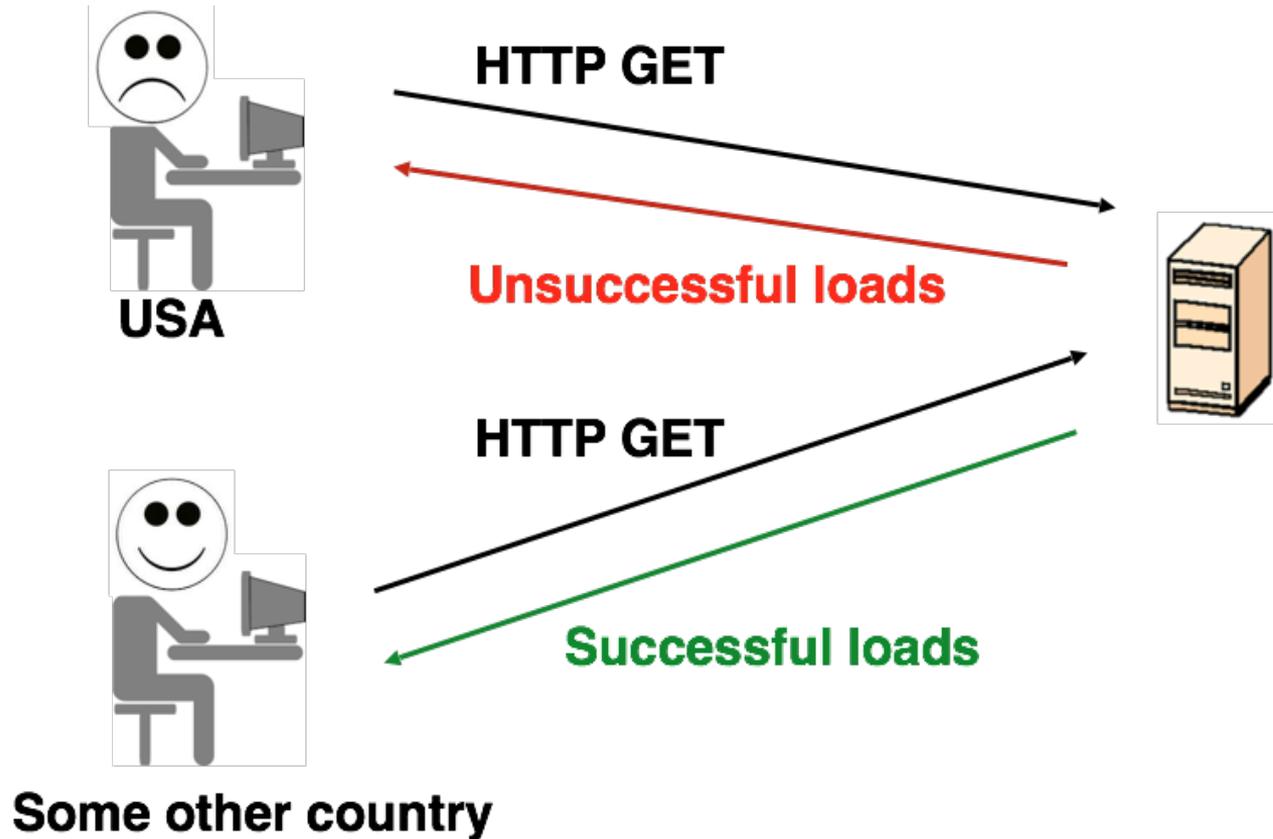
How to measure regional blocking?



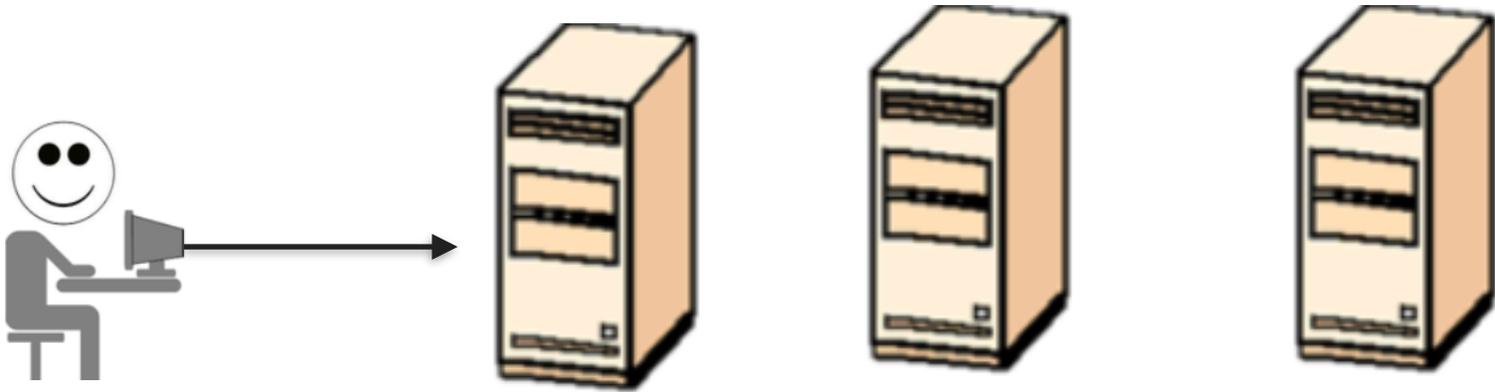
How to measure regional blocking?



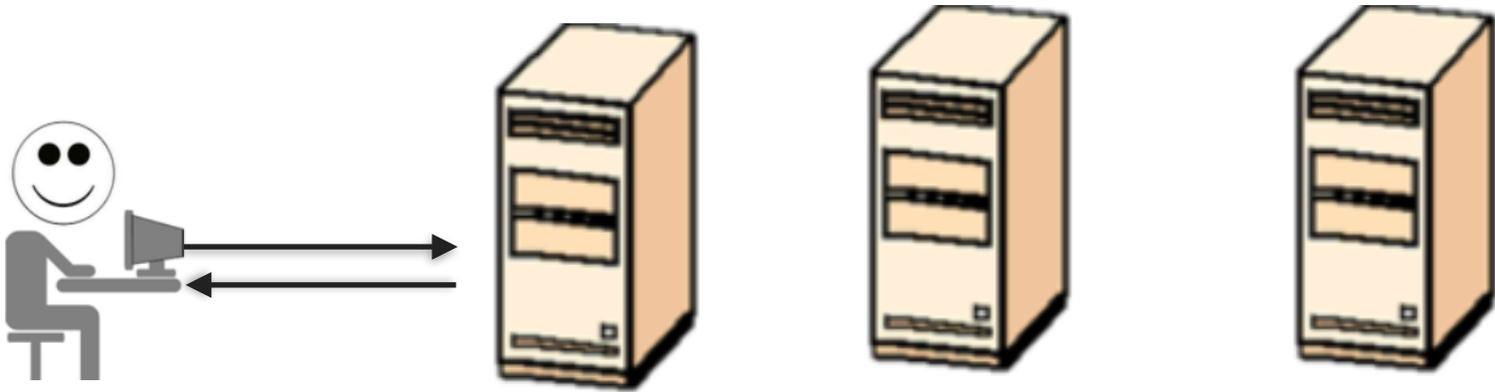
How to measure regional blocking?



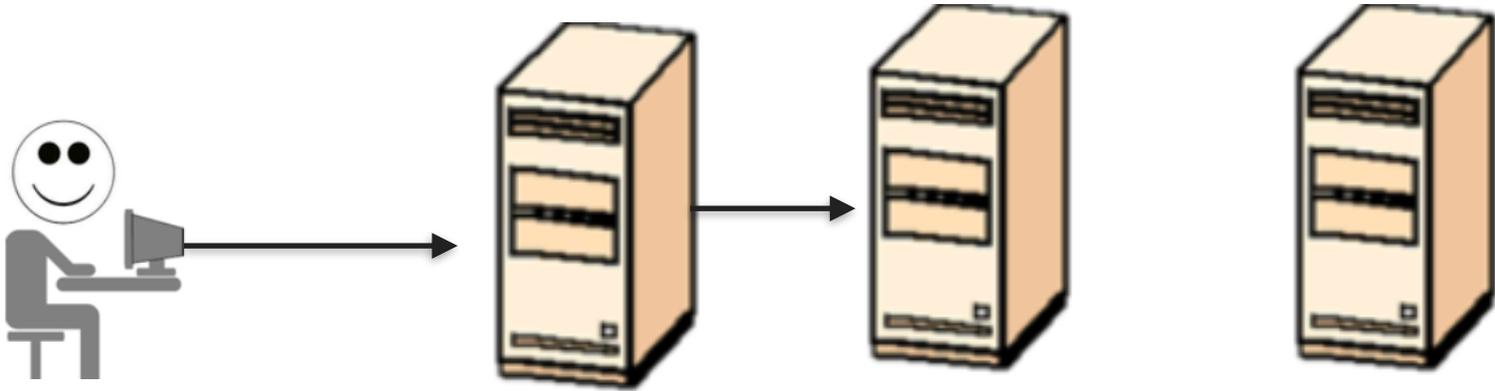
How to verify blocking?



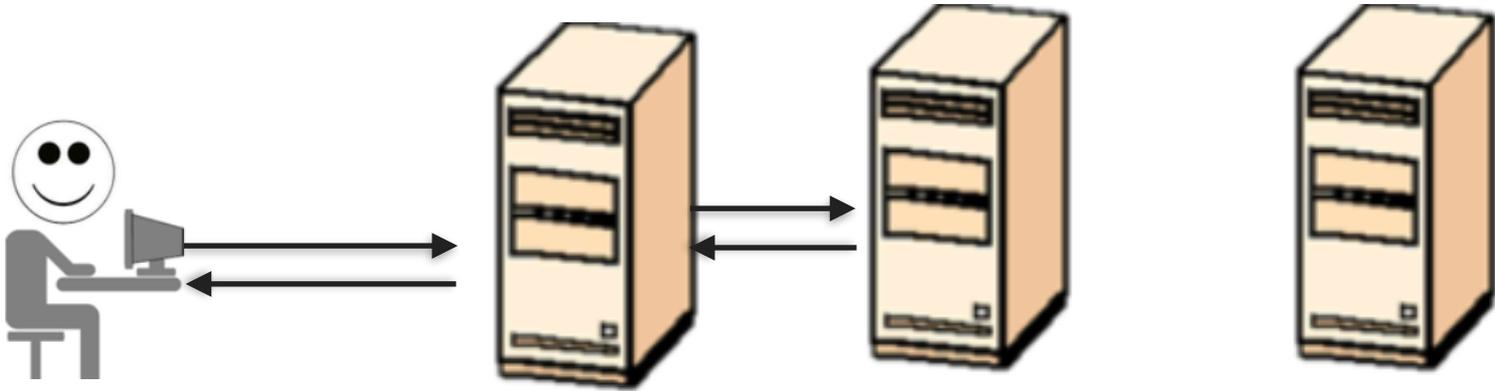
How to verify blocking?



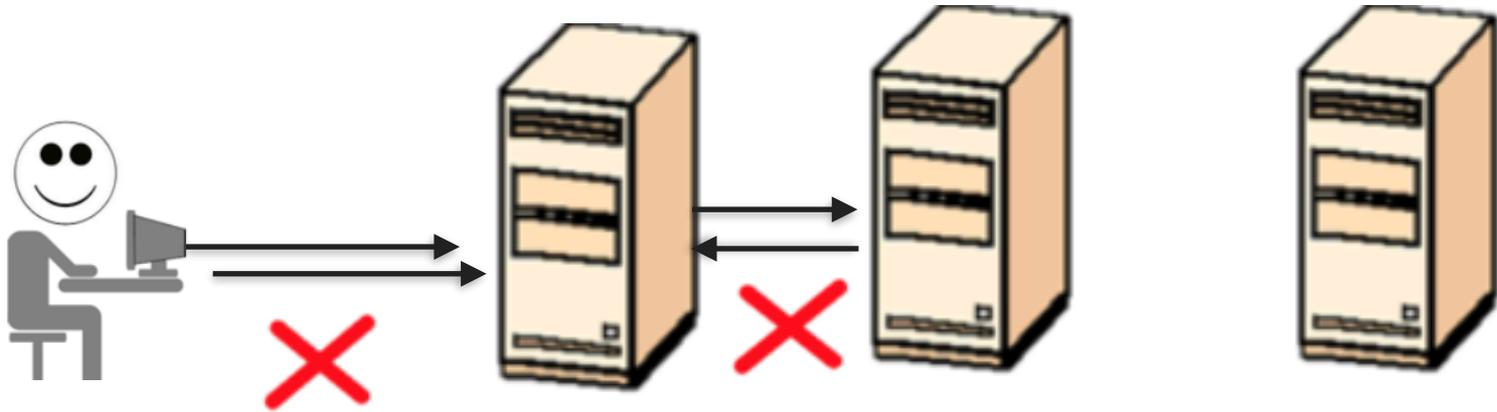
How to verify blocking?



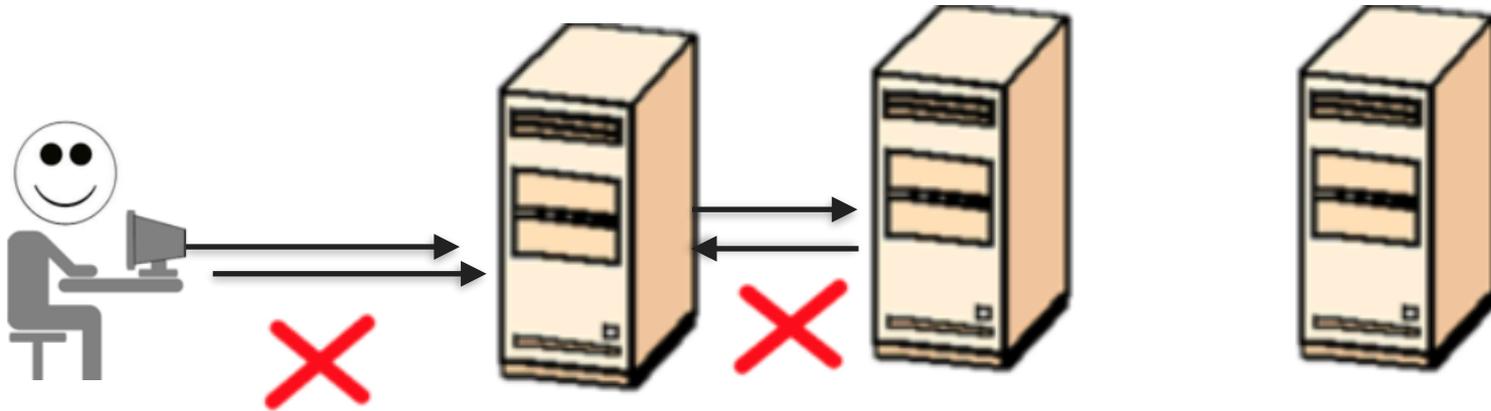
How to verify blocking?



How to verify blocking?



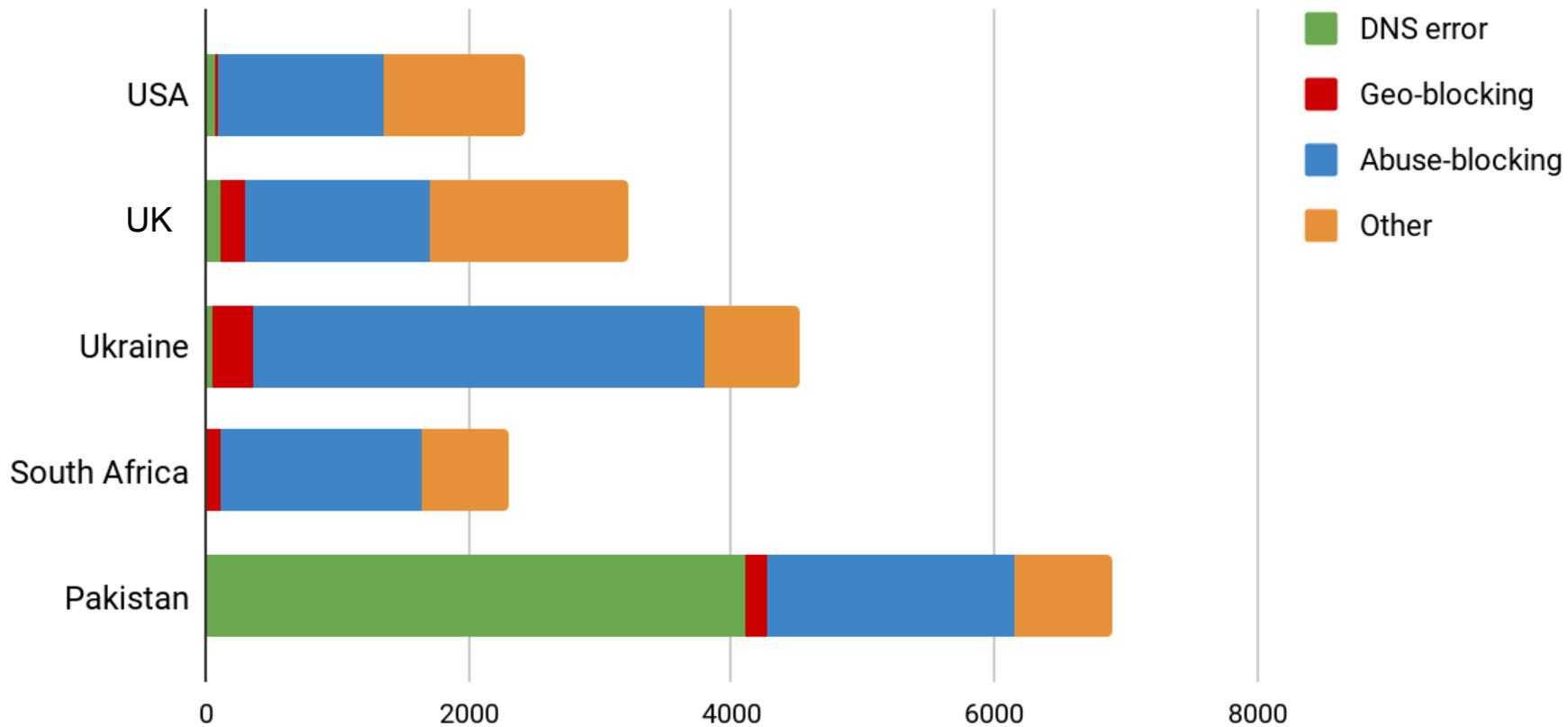
How to verify blocking?



Inside the country?

1. 85,421 Cloudflare-hosted URLs from Alexa top 1M domains
2. 7081 URLs containing top URLs in different topics





Websites blocking
African countries

URL/Country	BWA	KEN	ZAF	PAK	BGR	UKR	IND	GBR	USA
kirklands.com	403	403	403	403†	403	403	403	403	200
panerabread.com	403	403	403	403	403	403	403	403	200
gasbuddy.com	403	403	403	403	403	403	403	403	200
publix.com	TO	TO	TO	TO	TO	TO	TO	TO	200
pizzahut.com	403	403	403	403†	403	403	403	200	200
sunpass.com	TO	TO	TO	TO	TO	TO	TO	200	200
www.allconnect.com	CE	CE	CE	CE	CE	CE	200	CE	200
forumodua.com	503	503	503	503	503	200	503	503	200
funimation.com	403	403	403	403	403	403	403	200	200
tombola.co.uk	403	403	403	403	403	403	403	200	200
safeway.com	403	403	403	403†	403	403	200	403	200
apartments.com	403	403	403	403†	200	403	200†	200	200
duke-energy.com	DE	DE	DE†	DE	DE	DE	200	200	200
cgg.gov.in	403	403	403	DE	403	403	200	200	200
odeon.co.uk	TO	TO	TO	TO	TO	TO	200	200	200
lendingtree.com	403	403	403	403	200	403	200	200	200
restaurant.com	CE	CE	TO†	CE†	CE	200	200	200	200
pbteen.com	403	403	403	CE†	200	200	200	200	200
potterybarn.com	403	403	403	200†	200	200	200	200	200
pikabu.ru	TO	TO	TO	200	200	200	200	200	200
williams-sonoma.com	403	403	403	200	200	200	200	200	200

Websites blocking Pakistan

URL/Country	PAK	UKR	BGR	IND	ZAF	KEN	BWA	GBR	USA
panerabread.com	403	403	403	403	403	403	403	403	200
gasbuddy.com	403	403	403	403	403	403	403	403	200
publix.com	TO	TO	TO	TO	TO	TO	TO	TO	200
forumodua.com	503	200	503	503	503	503	503	503	200
funimation.com	403	403	403	403	403	403	403	200	200
sunpass.com	TO	TO	TO	TO	TO	TO	TO	200	200
www.allconnect.com	CE	CE	CE	200	CE	CE	CE	CE	200
peapod.com	403	403	403	403	403	403	200	403	200
tombola.co.uk	403	403	403	403	403	403	403	200	200
cgg.gov.in	DE	403	403	200	403	403	403	200	200
northerntool.com	403	403	403	403	403	200	200	403†	200
odeon.co.uk	TO	TO	TO	200	TO	TO	TO	200	200
hud.gov	DE	DE	DE	DE	DE†	200	DE	200	200
duke-energy.com	DE	DE	DE	200	DE†	DE	DE	200	200
uhaul.com	TO	TO	200	TO	200†	200	200	TO	200
lendingtree.com	403	403	200	200	403	403	403	200	200
tigerdirect.com	403	403	403	200	200	403	403	200	200
payless.com	DE	DE	DE	200	200†	200	DE	200	200
orvis.com	403	403	403	403	200	403	200	200	200
www.home-barista.com	503	503	503	200	503	200	200	200	200
moneytalksnews.com	403	200	403	403	403	200	200	200	200
ap.gov.in	DE	200	TO	200†	200	200	200	200	200
telegra.ph	TO	200	200	TO	200	200	200	200†	200
poloniex.com	403	403†	200	403	200	200	200	200	200
expekt.com	RD	200	RD	RD†	200	200	200	200	200
www.playstation.com	404	200	200	200	200	404	404	200	200
idbibank.co.in	TO	200	200	200†	200	200	200	200	200
dish.com	TO	TO	200	200	200	200	200	200	200
bankbazaar.com	403	403	200	200	200	200	200	200	200
brickset.com	403	403	200	200	200	200	200	200	200
nazk.gov.ua	DE	200	200	DE	200	200	200	200	200
tax.virginia.gov	DE	DE	200	200	200	200	200	200	200
wipro.com	TO	200	200†	200	200	200	200	200	200
carandclassic.co.uk	*200	200	200	*200	200	200	200	200	200
indianbank.net.in	CE	200	200	200†	200	200	200	200	200

Websites blocking USA

URL/Country	USA	IND	GBR	BGR	BWA	KEN	ZAF	UKR	PAK
joinpaknavy.gov.pl	TO	TO	CE	TO†	TO	TO	TO†	TO	200
joinpakarmy.gov.pl	TO	TO	CE†	TO	TO	TO†	TO	TO	200
parfums.ua	403	403	403	403	200	200	200	200	200
24video.sexy	403	200	403	200	200	200	200	200	200
subscene.com	503	200†	200	200	200	200	200	200	200
jrj.com.cn	TO	200†	200	200	200	200	200	200	200

Blocking mechanisms: GEO blocking

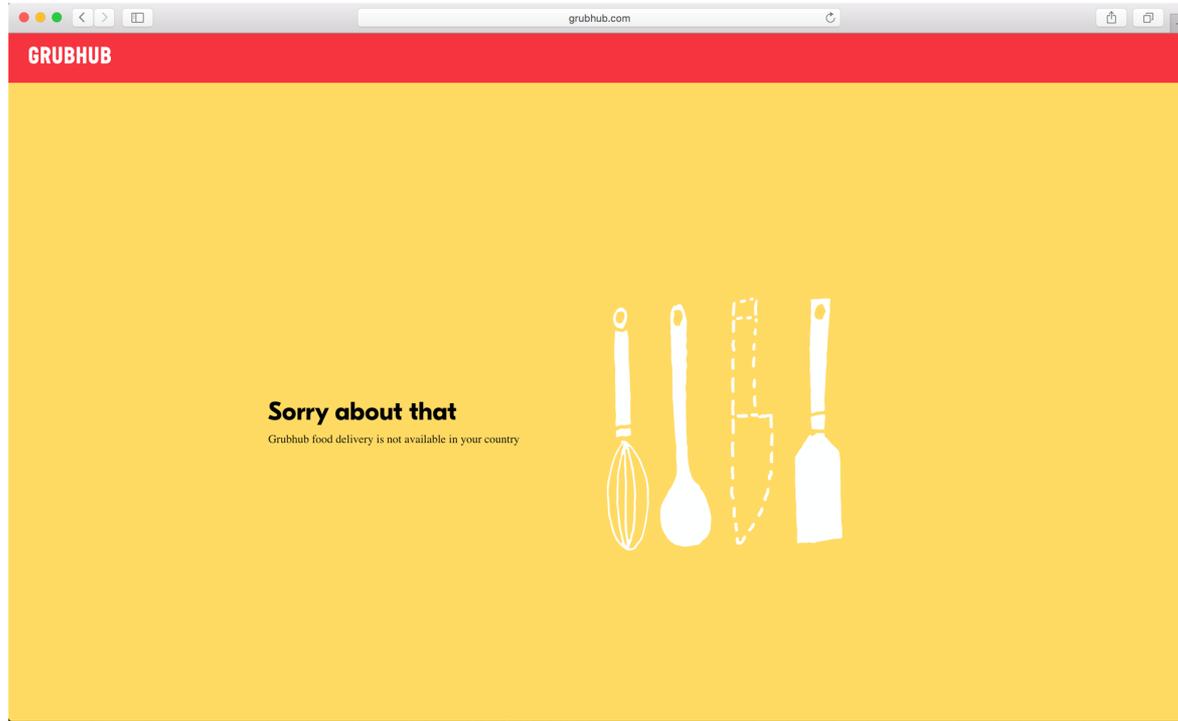
JCPenney



We Are Currently Unable to Provide a Shopping Experience for This Country

Please try again later

Blocking mechanisms: GEO blocking



Blocking mechanisms: GEO blocking



SonicWALL | Network Security Appliance



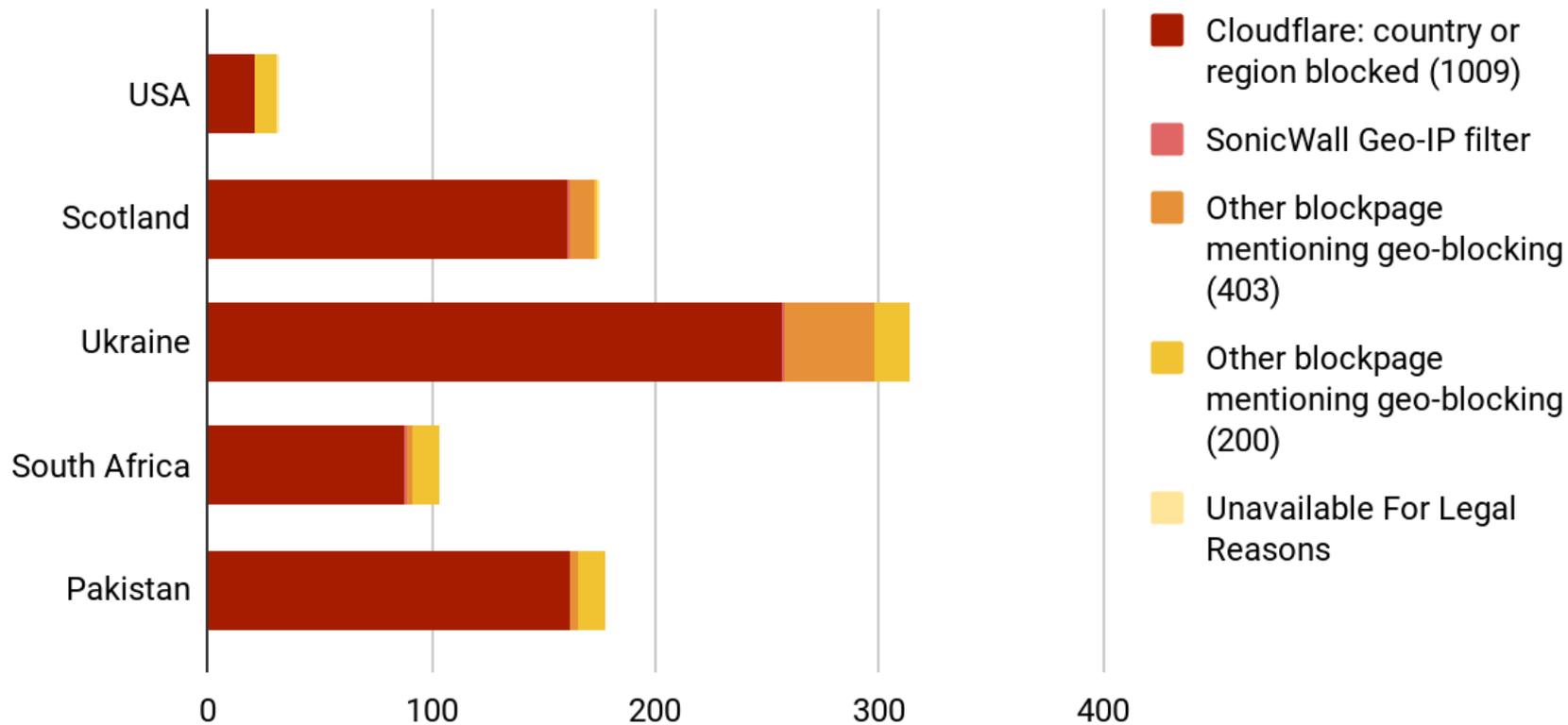
This site has been blocked by the network administrator.

Block reason: **Gateway GEO-IP Filter Alert**

IP address: **39.53.47.73**

Connection initiated from country: **Pakistan**

Types of geo-blocking



Blocking mechanisms: Security

www.lendingtree.com - Access Denied

Error code 16

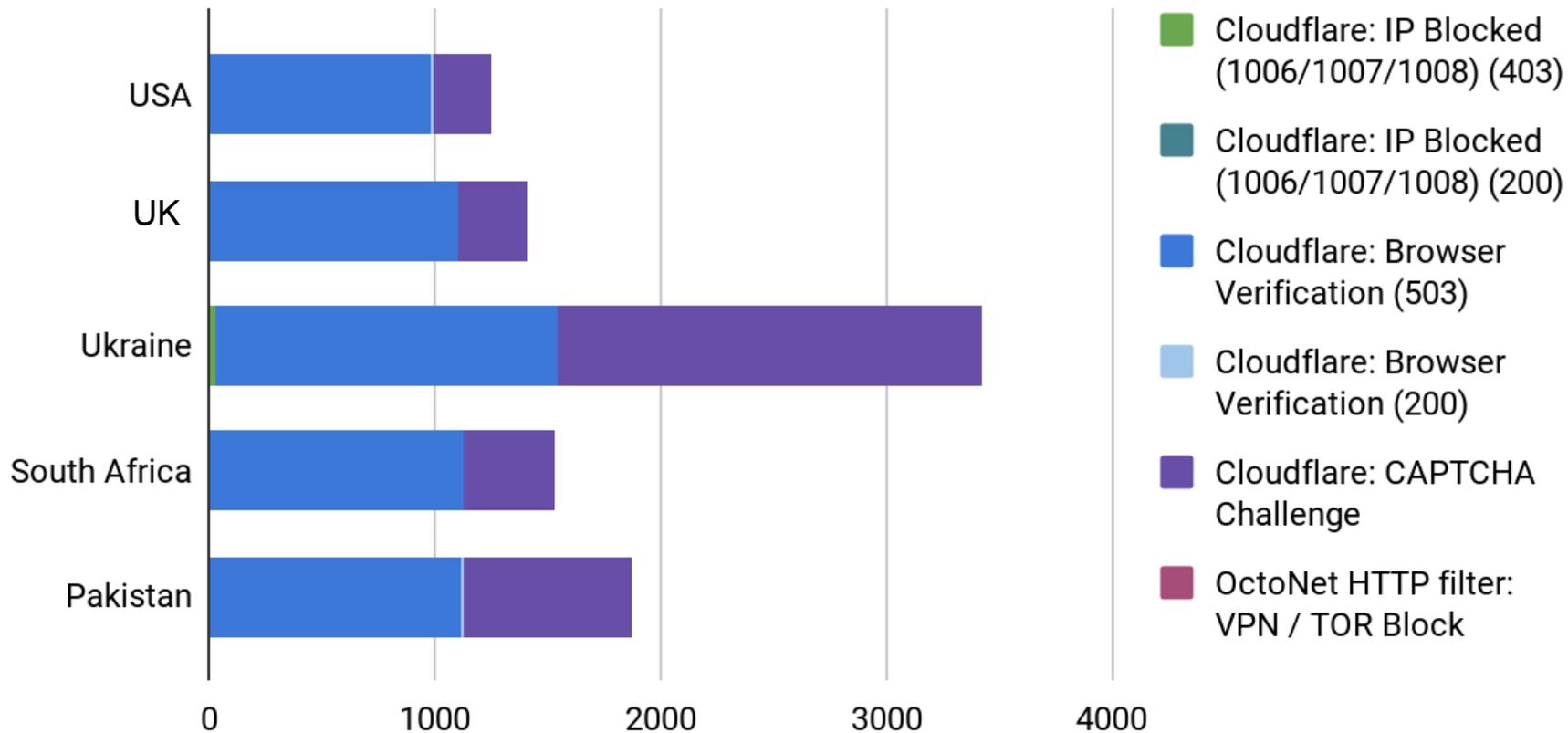
This request was blocked by the security rules

2018-05-23 09:03:55 UTC

Your IP [39.45.233.157](#) | Proxy IP [45.60.28.117](#) (ID 10407)

Incident ID: 407001860088678508-402561825777322917

Types of security-motivated blocking



Different mechanisms for different countries

publix.com: blocks all countries except the USA

williams-sonoma.com: blocks most African countries

safeway.com: blocks all countries except the USA and IND

cgg.gov.in: blocks all countries except the USA, UK and IND

<https://www.newstimes.com>



451 Unavailable For Legal Reasons

Sorry, this content is not available in your region.

Los Angeles Times

Unfortunately, our website is currently unavailable in most European countries. We are engaged on the issue and committed to looking at options that support our full range of digital offerings to the EU market. We continue to identify technical compliance solutions that will provide all readers with our award-winning journalism.

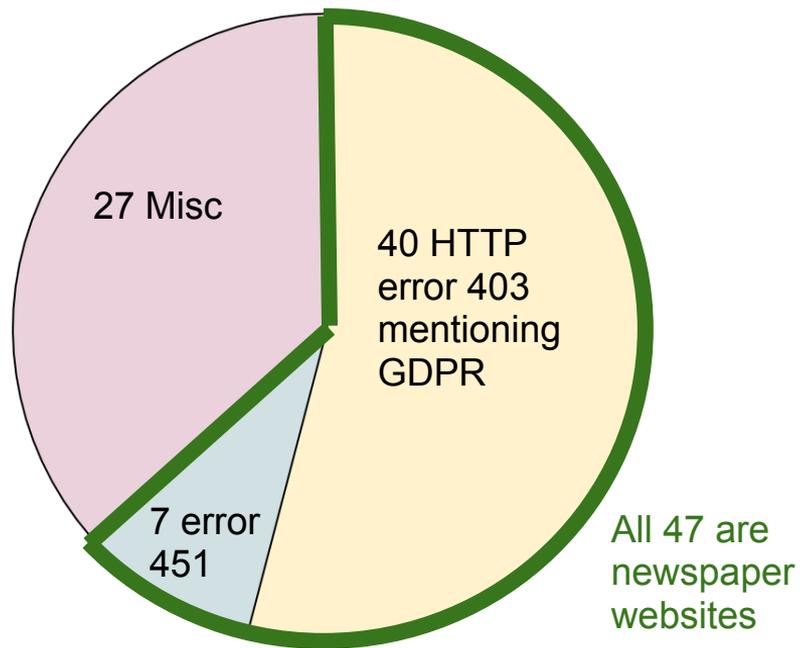
7081 websites from various Alexa lists before and after GDPR went into effect.

Count:

- always worked before,
- still works from the US after, but
- from none of the EU vantages after



GDPR caused ~1% blocking



Websites blocked
due to GDPR

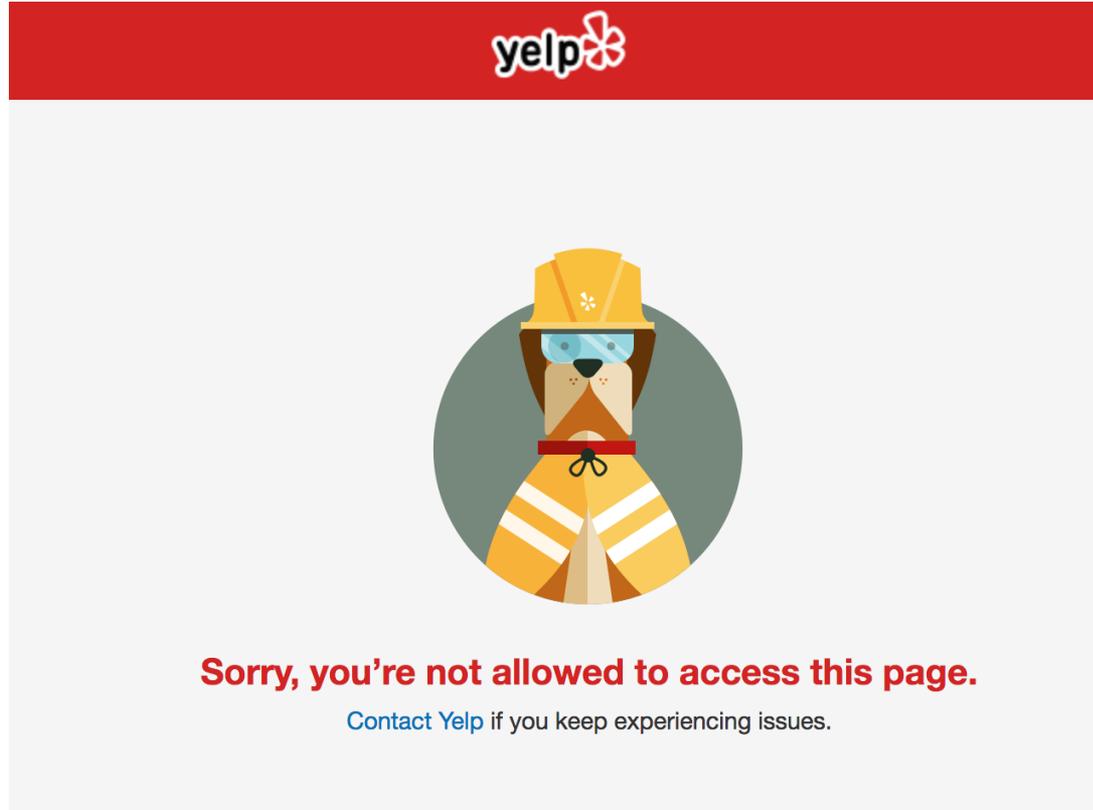
URL/Country	Before	After			
		US	BGR	GBR	DEU
bismarcktribune.com	200	200	DE	403	403
collegian.psu.edu	200	200	403	403	403
dailynebraskan.com	200	200	DE	403	403
dailyprogress.com	200	200	403	403	403
fredericknewspost.com	200	200	403	403	403
fredericksburg.com	200	200	403	DE	403
globegazette.com	200	200	403	403	403
greensboro.com	200	200	403	403	403
gwinnettdaily.com	200	200	403	403	403
havasunews.com	200	200	403	403	403
heraldtimesonline.com	200	200	403	403	403
host.madison.com/wsj	200	200	403	403	403
journalnow.com	200	200	403	403	403
journalstar.com	200	200	403	403	403
journaltimes.com	200	200	DE	403	403
lacrossetribune.com	200	200	403	403	403
lancasteronline.com	200	200	403	403	403
napavalleyregister.com	200	200	DE	403	403
nwitimes.com	200	200	DE	403	403
omaha.com	200	200	403	403	403
pantagraph.com	200	200	403	403	403
pilotonline.com	200	200	403	403	403
postandcourier.com	200	200	403	403	403
postbulletin.com	200	200	403	403	403
pressofatlanticcity.com	200	200	DE	403	403

Blocking mechanisms: ?

The requested URL was rejected. Please consult with your administrator.

Your support ID is: 5527351751160471927

Blocking mechanisms: ?



Why Blocking Happens?

Security-Motivated Blocking

Security-Motivated Blocking

“I can’t imagine any reason someone in Nigeria needs to even see my website, let alone place an order on it.”

Security-Motivated Blocking

“I can’t imagine any reason someone in Nigeria needs to even see my website, let alone place an order on it.”

“We do block by region, I block everything I can, I say block everything that isn't required for business if management will let you. Just remember that doing so makes you safer, not safe.”



PlentyOfFish
Free Online Dating

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[Basic Search](#) | [Advanced Search](#) | [User Search](#) | [My City](#) | [New Users](#) | [No Emails](#) | [Not Yet Viewed](#)

I'm Seeking to All Profiles For Sort

City Zip code

0 to 15 out of 600+ results are shown below

[Create Your FREE Profile Here!](#)

[Sex Personals](#) | [Eharmony Yahoo Personals](#) | [BBW Personals](#)

kbn03 30 Long term Online Now		Care-Q-Linn 50 Dating Online Now		kcg67 42 Friends Online Now	
dbaygirl 56 Dating Online Now		dimplecute14 30 Long term Online Now		adriaticsong 22 Long term Online Now	
lulu1013 22		Vauns 38		Sherri777 42	

Jenna Burrell, Invisible Users: Youth in the Internet Cafés of Urban Ghana



Jenna Burrell, *Invisible Users: Youth in the Internet Cafés of Urban Ghana*

TOOLS FOR BLOCKING

IP Firewall

Web Application Firewall

Access Rules

Firewall rules can be based on IP address, IP address range, Autonomous System Number (ASN) or country.

🔍 Search Access Rules

Algeria



Block



This website



Add a note

Add

TOOLS FOR BLOCKING

IP Firewall

Web Application Firewall

Access Rules

Firewall rules can be based on IP address, IP address range, Autonomous System Number (ASN) or country.

Q Search Access Rules

Algeria



Block



This website



Add a note

Add

TOOLS FOR BLOCKING



I'm not a robot



reCAPTCHA

Bandwidth & requests

Region	Bandwidth (per GB per region)		Requests (per 10,000 requests)
	First 10 TB	Next 10 TB	
North America	\$0.12	\$0.08	\$0.0075
Europe	\$0.12	\$0.08	\$0.0075
Asia	\$0.19	\$0.14	\$0.0090
South America	\$0.19	\$0.14	\$0.0090
Australia & New Zealand	\$0.19	\$0.14	\$0.0090
Brazil	\$0.28	\$0.24	\$0.0160
India	\$0.28	\$0.24	\$0.0160
South Africa	\$0.28	\$0.24	\$0.0160

*“Maybe Macy’s would
like to build a wall too?”*



How to make the web more accessible?

- IP address \neq person
- Test your website from different locations
- Improve transparency:
 - If you are going to block people, tell them why
 - Provide ways to bypass the block

What kind of Internet
do we want to build?