

# Internet Fragmentation: what a ccTLD manager can do to preclude it from happening?

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# The fragmented internet continues to exist

- ✓ The Internet is a vital resource that allows us to connect, communicate, collaborate and create with people from anywhere in the world.
- ✓ Internet fragmentation looks like a problem because it prevents us from exchanging information, opinions and ideas with everyone around the world.
- ✓ “One world one Internet” or it always was fragmented?

# IP addresses and AS fragmentation

- IP addresses, AS and routes that we use to route traffic in correct.
- Communication channels between AS, equipment that enabling these channels, solid parameters for all this equipment.

It is very similar to the seas, oceans and straits between them.

## Ipv4 and ipv6 breaking up

- IPv4 addresses have run out, but some are reused, so that ipv6 is still not widely deployed.
- Google statistics for May 2024 show that IPv6 availability for the global user base is about 41-46%. There is still a big question – what is cheaper: ipv4 and NAT equipment or ipv6.

# Technical problems fragmentation (DNSSEC errors, routing corruption...)

- There was a problem with DNSSEC in Russia in January 2024 and as a result of this problem, DNS stopped resolving the RU zone sites due to a key collision.
- It turned out as Internet fragmentation event, because for some time RU zone sites were accessible only within Russia.

## TOR "onion space" and the "dark web" fragmentation

- Darknets could receive data from the Internet, but it had addresses that did not appear in the network lists and did not respond to requests from the outside.
- These networks have been clearly fragmenting the Internet since the days of ARPANET.

# Commercial monopoly as a fragmentation

- 1 ISP – 1 residence/apartment/district. But sometimes ISPs have problems with particular internet services. We see Internet fragmentation in such cases.
- Now there are satellite Internet projects (like Starlink), which provide one Internet to all areas. Maybe it will help us to avoid such situations in the future.

## Social platforms and fragmentation

- Platforms or messengers? Toxicity of modern social platforms or usability or flexibility of modern messengers.
- Discussions about news, politics, and public affairs are leaving X and going into much smaller forums — first to X DM groups, then to Telegram, Signal and Discord.
- All these apps and platforms share the same thing – fragmentation.

# Cost-sharing between telecom and Internet Services fragmentation

- The Brazilian regulator, ANATEL, opened a public discussion in 2023 about ‘cost-sharing’.
- In 2022, the European Telecommunications Network Operators’ Association (ETNO) revived an old debate about who should be paying for network traffic.
- ‘Sender pays’ in South Korea – a payment model that regulating fees around network usage and connections between networks.

## Internet fragmentation for security and cybersecurity

- Firewall protections, Virtual Private Network isolation and blocking, Internet for children, Internet shutdowns during school or competitive exam periods.

# Geo-blocking of content

- ✓ Geo-blocking is technology that restricts access to Internet content based on the user's geographical location but may also be used to modify the provided content.
- ✓ The term is most commonly associated with its use to restrict access to premium multimedia content on the Internet, primarily due to copyright and licensing reasons.
- ✓ There are other uses for geo-blocking, such as blocking malicious traffic or to enforce price discrimination, location-aware authentication, fraud prevention, and online gambling (where gambling laws vary by region).

**These examples show us, that Internet Fragmentation, as a whole, is not a new phenomenon.**

**Be it fragmentation by pure technical or by strictly administrative means – we already had plenty experience with it and this is how we live now and lived from the early beginnings.**







# Thank you.

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