

Measuring Internet Reliability in 2022: Czech Republic, Slovakia and the rest of the world

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The following steps were taken to rate AS reliability:

- For every AS in the world, we examine all alternate paths to Tier-1 operators with the help of an AS relationship model, the core of Qrator.Radar;
- Using the Maxmind GeoIP database, we matched countries to every IP address of every AS;
- For every AS, we calculated the share of its address space that corresponds to the relevant region. ISP's were filtered out that reside at an Internet Exchange Point in a region where they do not have a significant presence.
- After isolating regional ASs, we analyzed the potential impact of one's outage on other AS's as well as their respective countries;
- In the end, for each country, we identified the AS with the greatest/largest impact on other ASes in their region. Foreign AS's were not considered.
- We took that AS's impact value as a reliability score for the country. And used that score to rate the reliability of countries. The less score is – the better reliability is.

In other words - the more decentralized ISP market is in the country and the less monopolous position holds the largest ISP - the better.

	IPv4	
	2020	
	Czech Republic	Slovakia
Critical ASN	47232	5578
Critical %	6.51%	15.39%
	21th place	77th place
	2021	
Critical ASN	39392	5578
Critical %	7.63%	12.93%
	29th place	58th place
	2022	
Critical ASN	39392	31117
Critical %	8.90%	15.69%
	37th place	75th place

	IPv6	
	2021	
	Czech Republic	Slovakia
Critical ASN	47232	31117
Critical %	5.78%	16.17%
	16th place	57th place
	2022	
Critical ASN	39392	31117
Critical %	8.49%	20.31%
	21th place	72th place

More details on networks

			Position
CZ	Registered ASNs (RIPE data)	751 (100%)	27
SK	Registered ASNs (RIPE data)	212 (100%)	54
Sum of announced IPv4 prefixes			
CZ	Announced Prefixes	2569	52
SK	Announced Prefixes	841	88
At least 1 IPv4 prefix announced			
CZ	Announced ASNs	620 (82.5%)	24
SK	Announced ASNs	181 (85.4%)	51
Sum of announced IPv6 prefixes			
CZ	Announced Prefixes	952	30
SK	Announced Prefixes	698	37
At least 1 IPv6 prefix announced			
CZ	Announced ASNs	295 (39.3%)	19
SK	Announced ASNs	72 (34%)	44

IPv4	Total ASNs	Without neighbors (no routing)	Have neighbors (alive and routing)	No customers (finite AS, no downstreams)	Have only providers (no peerings)	Dirty stub (one provider, peers possible)	Clear stub (only one neighbor - upstream provider)
Czech Republic	751 (100%)	129 (17%)	622 (83%)	528 (70%)	367 (49%)	334 (44%)	255 (34%)
Slovakia	212 (100%)	31 (14%)	181 (85%)	149 (70%)	125 (59%)	100 (47%)	85 (40%)
IPv6	Total ASNs	Without neighbors (no routing)	Have neighbors (alive and routing)	No customers (finite AS, no downstreams)	Have only providers (no peerings)	Dirty stub (one provider, peers possible)	Clear stub (only one neighbor - upstream provider)
Czech Republic	751 (100%)	367 (49%)	384 (51%)	319 (42%)	216 (29%)	225 (30%)	169 (22%)
Slovakia	212 (100%)	139 (65%)	73 (34%)	61 (29%)	44 (21%)	39 (18%)	30 (14%)

Main clear stub providers

IPv4	
Czech Republic	Slovakia
1. 47232 - 35 dependants	1. 5578 - 16 dependants
2. 16019 - 23 dependants	2. 6855 - 15 dependants
3. 29208 - 14 dependants	3. 31117 - 13 dependants
IPv6	
Czech Republic	Slovakia
1. 47232 - 26 dependants	1. 31117 - 12 dependants
2. 16019 - 17 dependants	2. 6855 - 6 dependants
3. 29208 - 11 dependants	3. 5578 - 4 dependants

These clear stub providers play a major role in the national internet segment's reliability.

Czech Republic - PTR critical AS - 5610 “O2” - 27.03% impact score - 11th place within PTR rating

Slovakia - PTR critical AS - 6855 “SK Telekom” - 41.79% impact score - 57th place within PTR rating

Minimal change since 2020 in the impact score.

	Ukraine IPv4	Russia IPv4
Critical ASN	3326	12389
Critical %	3.71% (2021 - 3.30%)	5.31% (2021 - 5.15%)
Place	7th (2021 - 4th)	13th (2021 - 10th)
	Ukraine IPv6	Russia IPv6
Critical ASN	35320 (2021 - 9002)	9049
Critical %	4.39% (2021 - 2.94%)	6.65% (2021 - 6.21%)
Place	5th (2021 - 6th)	15th (2021 - 17th)
	Clear stubs, IPv4	
	Ukraine	Russia
Critical ASNs	1) 3326 2) 3255 3) 43668	1) 9049 2) 3216 3) 20485
Dependants	1) 45 2) 26 3) 18	1) 75 2) 63 3) 62
	Clear stubs, IPv6	
	Ukraine	Russia
Critical ASNs	1) 43668 2) 3326 3) 35320	1) 9049 2) 12389 3) 8359
Dependants	1) 9 2) 9 3) 7	1) 47 2) 30 3) 15
	PTR	
	Ukraine	Russia
Critical ASN	6849	12389
Critical %	21.02%	29.54%
Place	6th	18th

That is it.
Thank you!

All reports are available in
Qrator.Radar's and Qrator Labs'
blogs.

2022 Reliability Research is going
to be published in August.

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