MULTIPLATFORM INTERNET MEASUREMENTS

ESNOG 10/4/2018 Barcelona
(Janusz Jezowicz, Speedchecker Ltd)
www.speedchecker.xyz

Outline

- Introduction
- Choices of measurement platforms
- Coverage
- How to run measurements
- Sample measurements comparison
- Questions

About Speedchecker

- Founded in UK 10 years ago
- Helping end-users to test internet performance
- Providing tools for ISPs to offer speed tests to their customers
- Operating active measurement network

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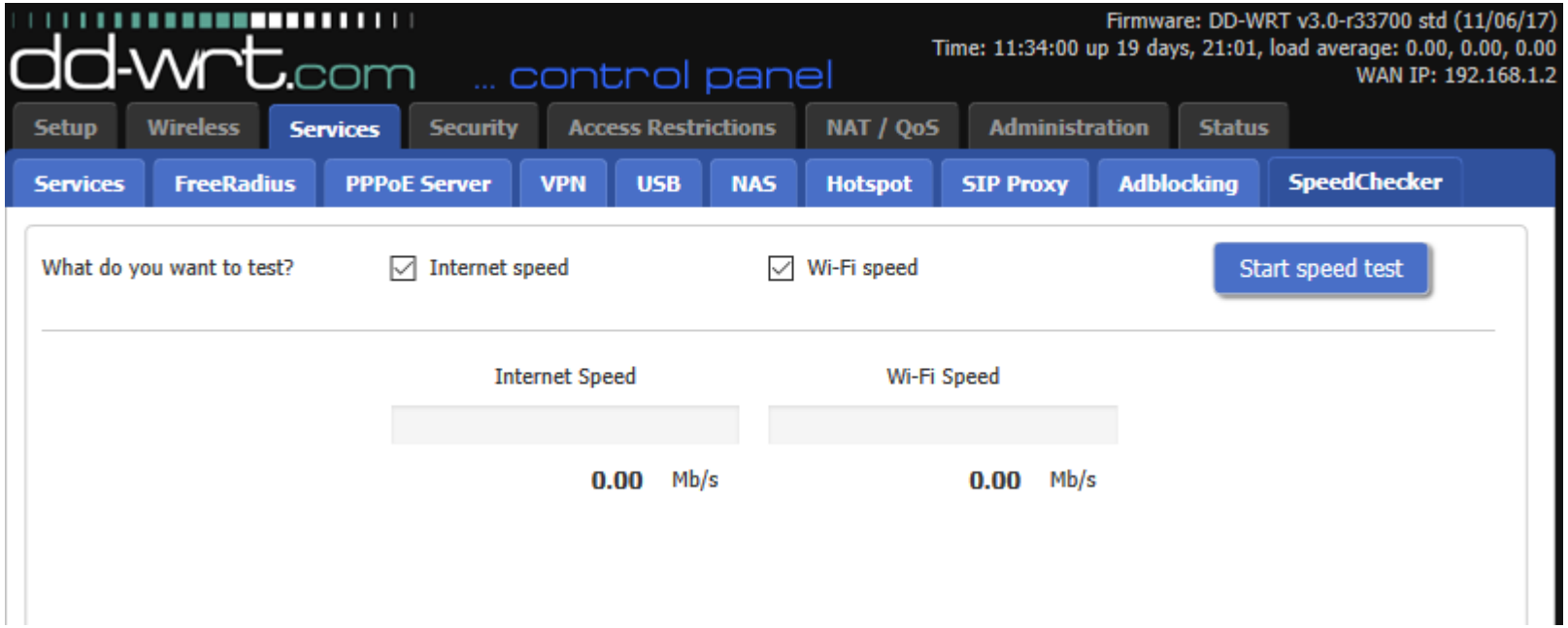
Comparing available platforms

	Router probes	PC probes	Android probes	RIPE Atlas
Coverage	3000-4000	100,000+	100,000+	10000
Availability	99%	10%	50%	99%
Connectivity	LAN	WI-FI,LAN	WI-FI,3G,4G	LAN
Hardware type	High-spec routers	Different PC/OS systems	Different phones/Android OS	Homogeneous
Test coverage	PING,HTTP,Traceroute	PING,DNS,Traceroute,HTTP,Pageload,Video	PING,DNS,Traceroute,HTTP,Pageload,Video	PING,DNS,Traceroute,SSL,NTP
Extensibility	NO	YES	YES	YES

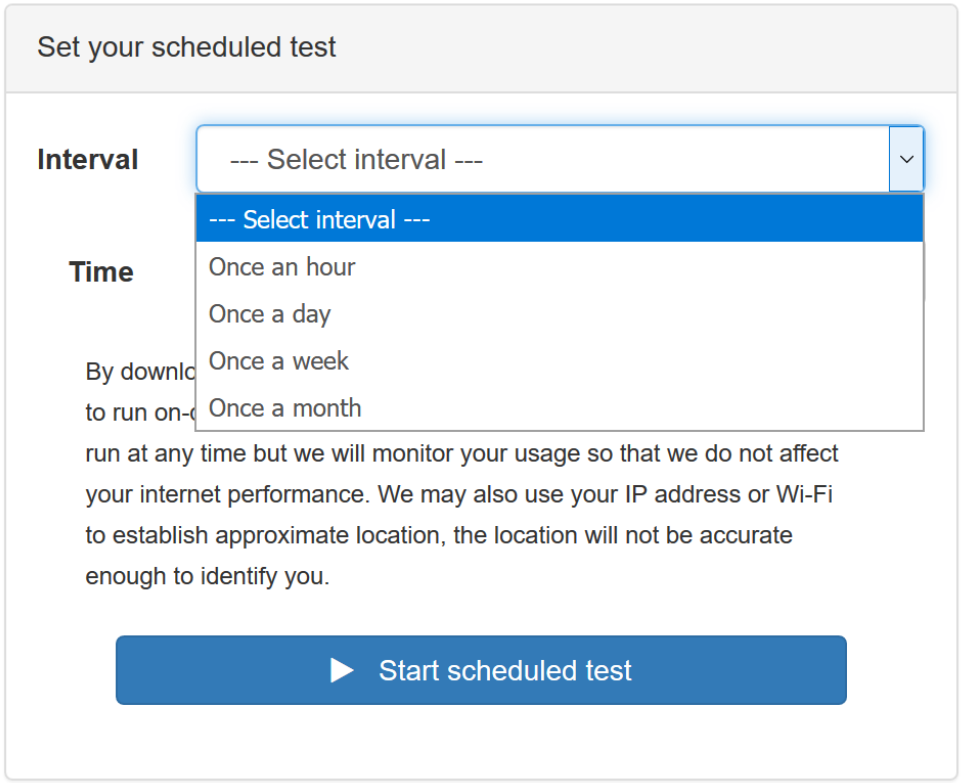
PROBE API – DD-WRT routers

Speedchecker, a private company running large-scale software-based monitoring networks and DD-WRT, the most popular open-source router firmware, announce a partnership which will aim to build the world's largest probe monitoring network.



PROBE API – PC probes

- Windows software to schedule automatic speed tests
- Offering useful functionality in exchange for using user's connection for tests



PROBE API – ANDROID probes

- Android Speed checker app to offer users useful functionality
- Over 5 million downloads in last 4 years
- Users need to agree to background testing on WI-FI
- Mobile data testing coming in 2018 Q2

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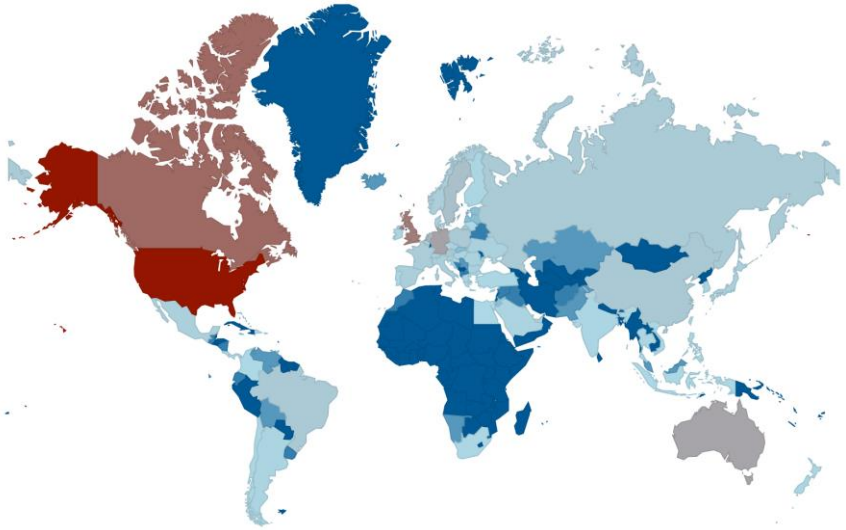
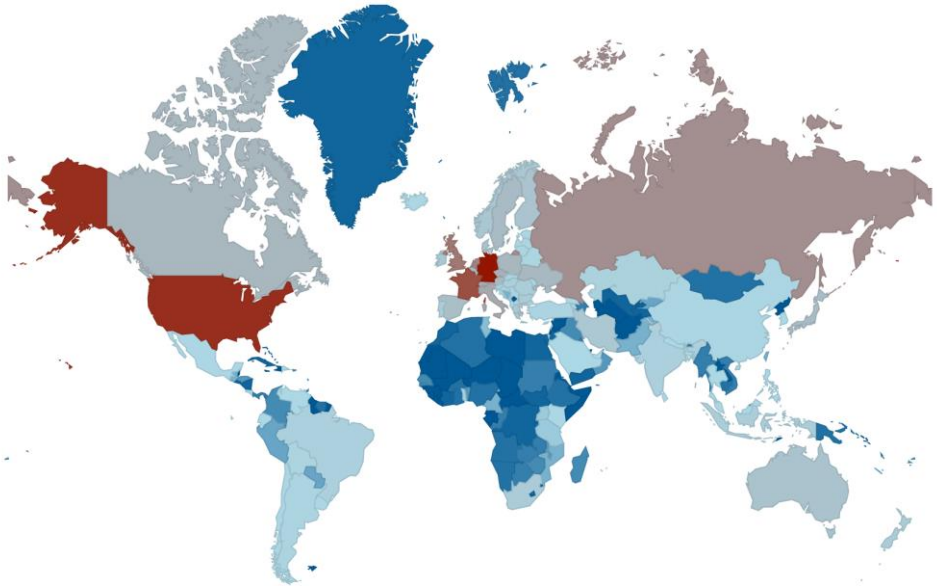
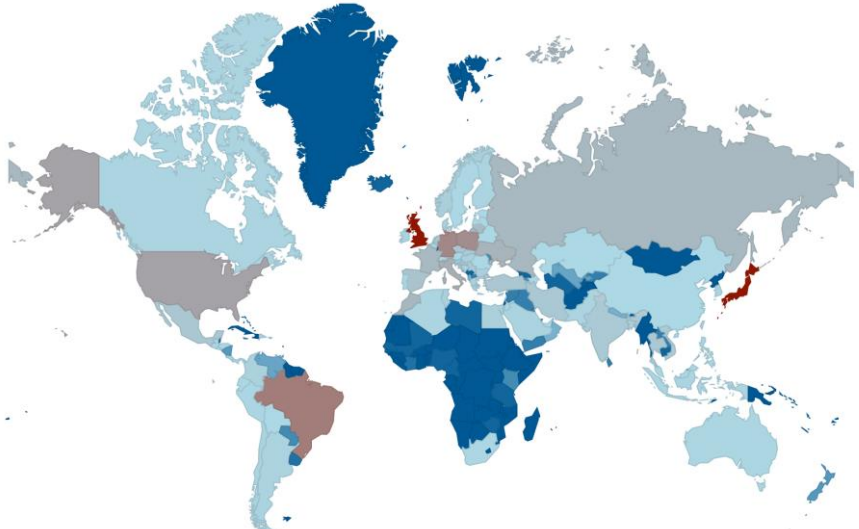
Probe API – Router platform coverage



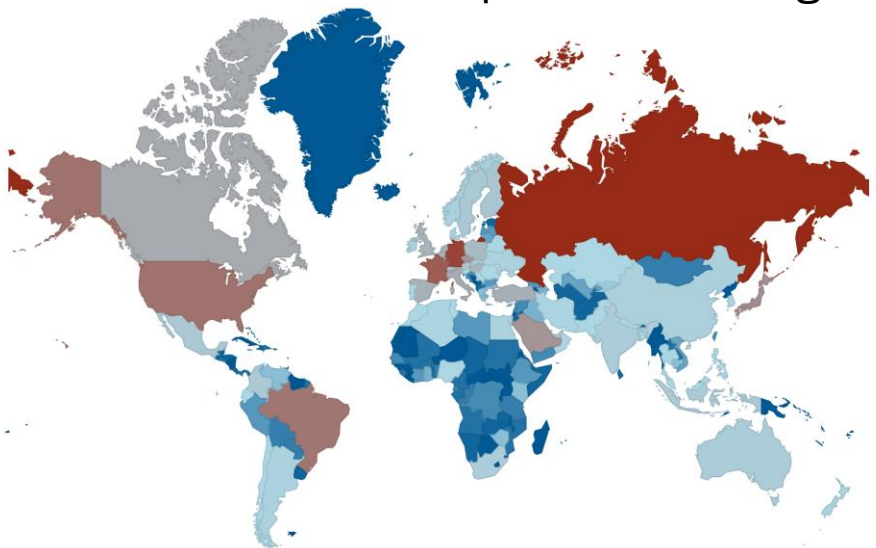
RIPE Atlas platform coverage



Probe API – Android platform coverage

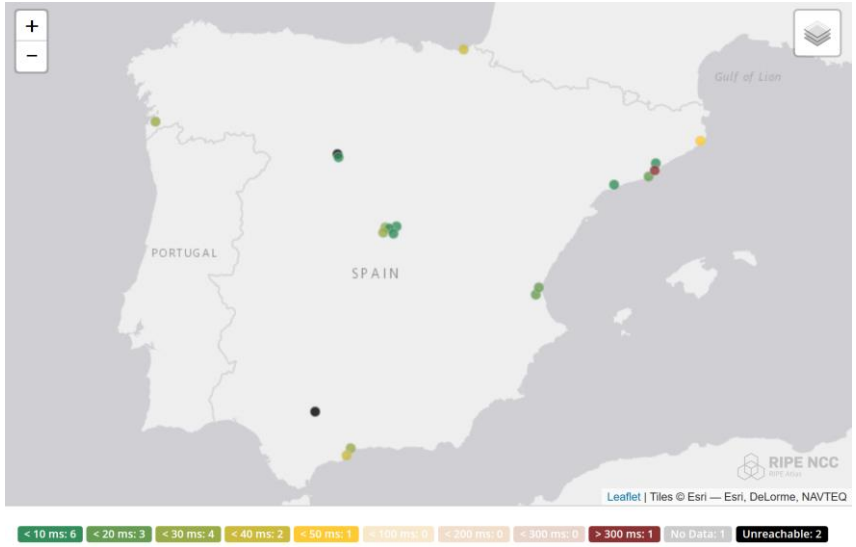


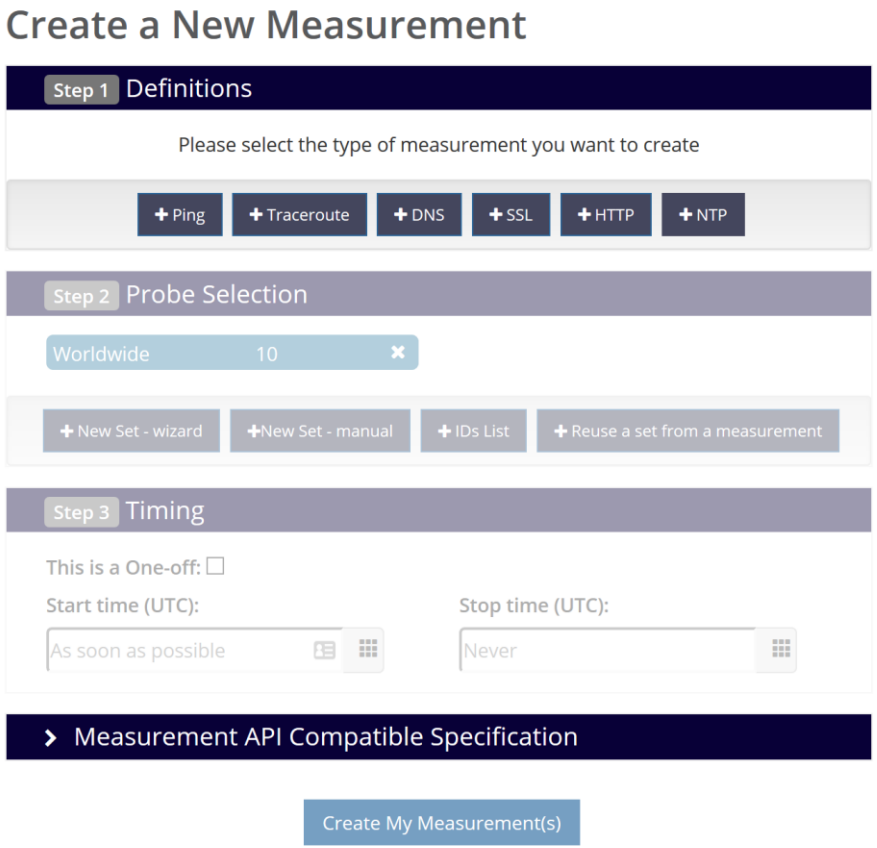
Probe API – PC platform coverage



How to run measurements – RIPE ATLAS

- For testing its required to have “credits”
- Several ways to get credits (e.g. being RIPE NCC or LIR member, hosting probes)
- Easy to use interface to setup one-off or recurring tests
- Analysis options such as LatencyMON, Map visualization or Export





RIPE ATLAS - JSON Export

- Don’t be afraid JSON is easily converted to CSV

https://konklone.io/json/

Convert JSON to CSV

Click your JSON below to edit. Create a permalink any time. Please report bugs and send feedback on GitHub. Made by @konklone.


```
[
  {
    "af": 4,
    "avg": 31.2840416667,
    "dst_addr": "92.122.154.72",
    "dst_name": "www.elpais.com",
    "dup": 0,
    "from": "92.187.204.21",
    "fw": 4910,
    "group_id": 12035767,
    "lts": 19,
    "max": 31.31002,
    "min": 31.24035
```


Extremely large files may cause trouble — the conversion is done inside your browser. Microsoft Edge has a smaller limit than other browsers.

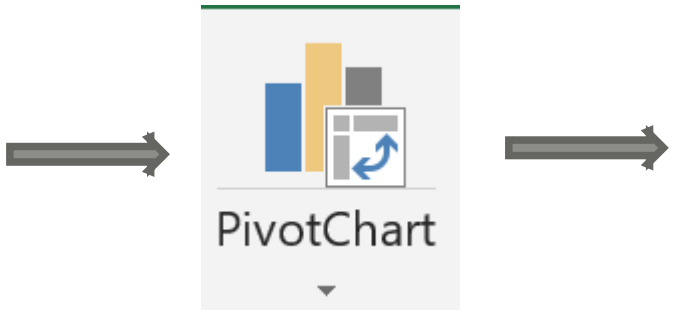
Below are the first few rows (14866 total). Download the entire CSV, show all 14866 rows, or show the raw data.

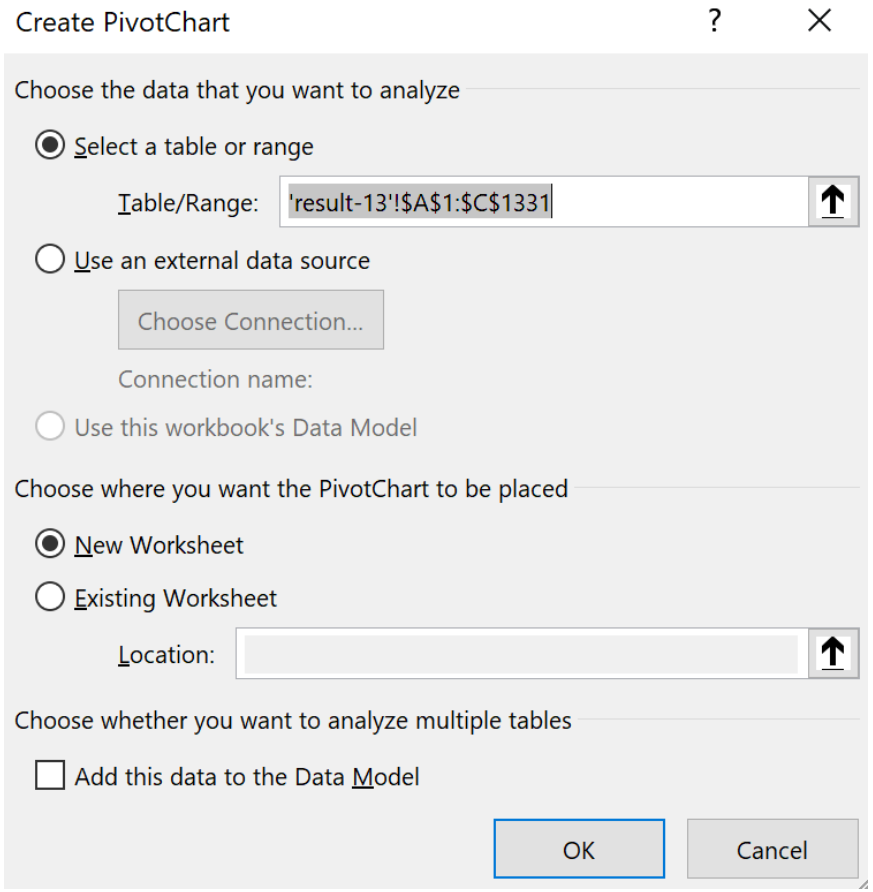
af	avg	dst_addr	dst_name	dup	from	fw	group_id	lts	max	min	msm_id	msm_name	prb_id	proto	rcvd	result/0/rtt	result/1/rtt	result/2/rtt	s
4	31.2840416667	92.122.154.72	www.elpais.com	0	92.187.204.21	4910	12035767	19	31.31002	31.24035	12035767	Ping	11948	ICMP	3	31.24035	31.301755	31.31002	3
4	-1		www.elpais.com	0	90.171.148.222	4910	12035767	13	-1	-1	12035767	Ping	12884	ICMP	0				(
4	11.2812933333	2.16.8.59	www.elpais.com	0	2.139.235.5	4910	12035767	21	11.35338	11.169735	12035767	Ping	16619	ICMP	3	11.35338	11.320765	11.169735	3
4	4.65607	88.221.213.89	www.elpais.com	0	185.32.136.30	4910	12035767	11	4.895535	4.530905	12035767	Ping	18298	ICMP	3	4.895535	4.530905	4.54177	3
4	-1		www.elpais.com	0	88.148.103.98	4910	12035767	21	-1	-1	12035767	Ping	21570	ICMP	0				(
4	3.7539843333	88.221.213.89	www.elpais.com	0	193.22.119.83	4790	12035767	10	3.879937	3.64032	12035767	Ping	2247	ICMP	3	3.879937	3.741696	3.64032	3
4	21.2489816667	2.16.8.82	www.elpais.com	0	176.58.8.10	4900	12035767	7	21.58823	21.03368	12035767	Ping	23267	ICMP	3	21.58823	21.03368	21.125035	3

RIPE ATLAS – Excel visualization

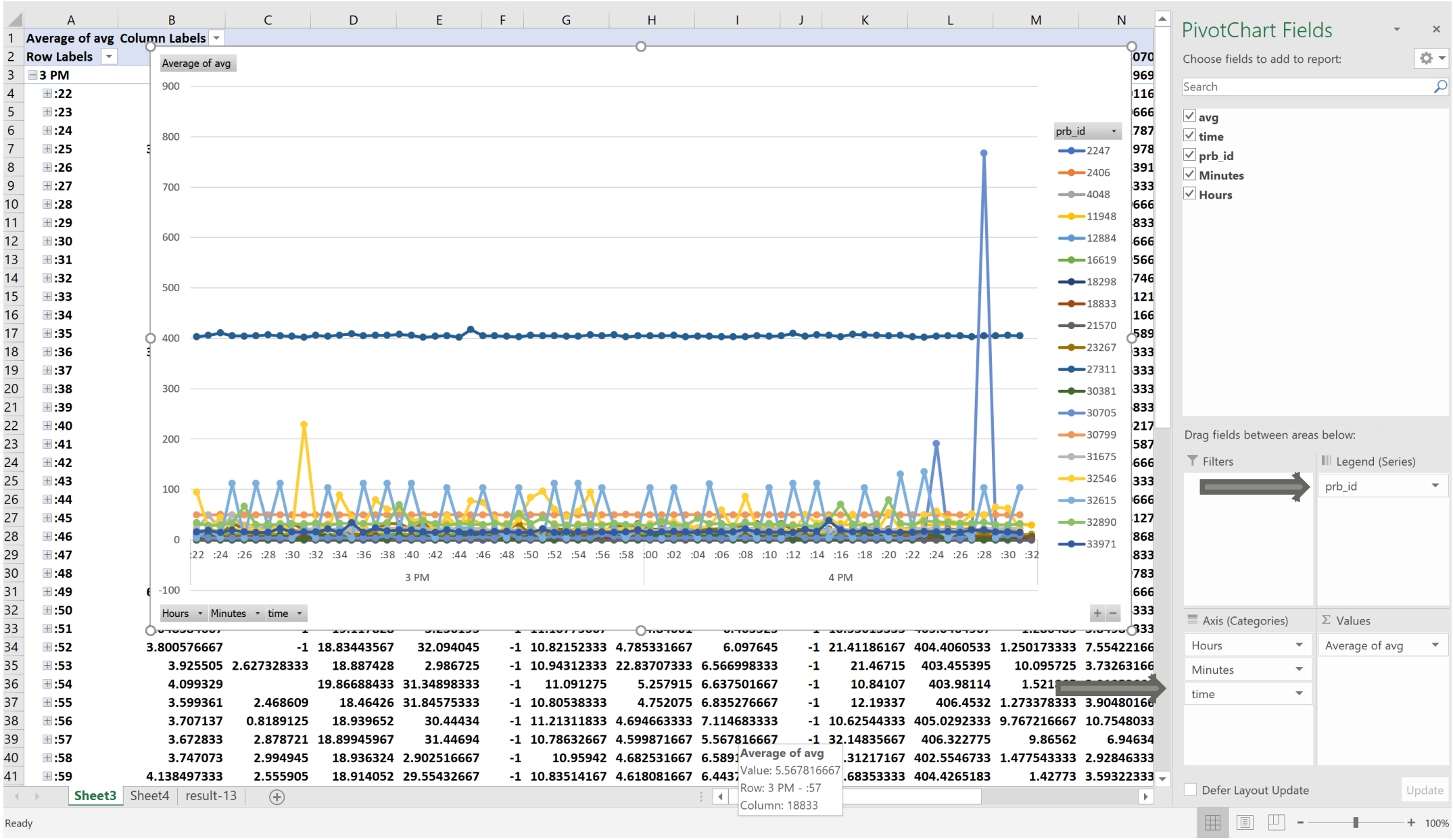
- PivotCharts (like PivotTables) very easy way to visualize, if table prepared correctly
- Let's leave only avg ping result, time and probe ID

avg	time	prb_id
31.34348	3:22:56 PM	11948
-1	3:22:39 PM	12884
10.915	3:22:39 PM	16619
5.704898	3:22:42 PM	18298
6.56754	3:22:14 PM	18833
-1	3:22:35 PM	21570
4.012289	3:22:52 PM	2247
10.84339	3:22:56 PM	23267
2.528769	3:22:58 PM	2406
402.8884	3:22:12 PM	27311
1.295653	3:22:40 PM	30381
10.92601	3:22:55 PM	30705
49.66902	3:22:42 PM	30799
22.03056	3:22:46 PM	31675
94.18323	3:22:53 PM	32546
3.085125	3:22:48 PM	32615
33.76604	3:22:08 PM	32890
15.38764	3:22:08 PM	33971
18.60864	3:22:43 PM	4048
29.4465	3:23:56 PM	11948
-1	3:23:46 PM	12884
10.92946	3:23:42 PM	16619



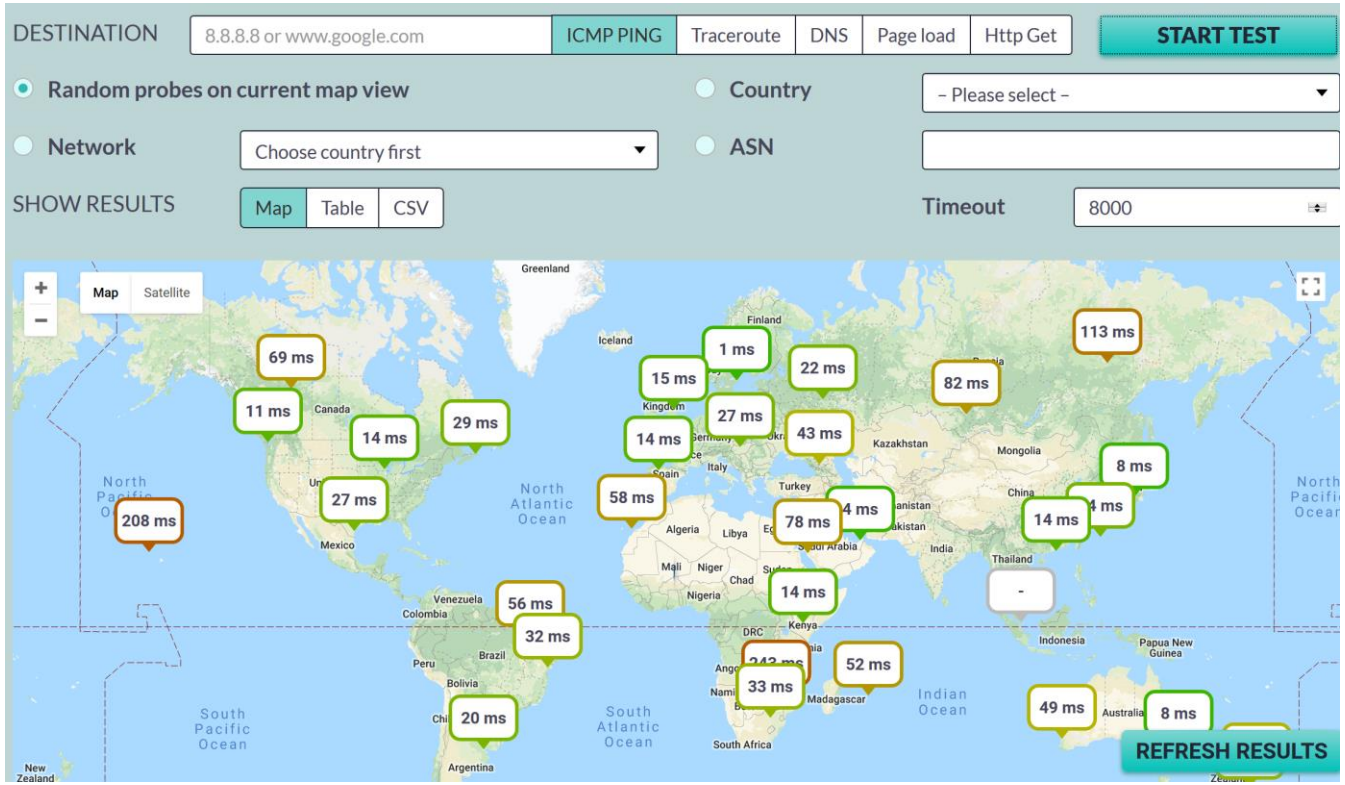


RIPE ATLAS - Results



How to run measurements – PROBE API

- API key required
- Limited free access available for researchers
- Powerful API to control the settings
- GUI for one-off measurements – http://www.maplatency.com (only PC platform!)



How to run measurements – Probe API

Probe API Scheduler

API key: INSERT_HERE

5d3601a7-a055-4c47-9c01-092933a70c81
6bc761fd-7482-4d44-b33e-f153f3246c49
f03d3265-94fe-4a7a-93e9-9171355b7d9c

Probe ID list:
Test Type: ICMP ping
Destination: www.elpais.com
Interval (in seconds): 60

Start test

- Open source set of HTML/JS webpages which control ProbeAPI
- Public tools but API key required
- Export to Excel/JSON

time	Alicante,ES	Palma,ES	Cheste,ES	Bañolas,ES	Alatoz,ES	Bilbao,ES	Málaga,ES	Córdoba,ES	Portals Nous,ES	Madrid,ES	Barcelone,ES	Madrid,ES	Madrid,ES	Almería,ES	Elche,ES	Barcelona,ES	Felanich,ES	Bilbao,ES	Santiago de la Ribera,ES
15:23:25	30	21	19	21	22	45	124	12	13	8	100	0	8	22	52	17	20	16	220
15:23:48	43	22	14	18	23	44	123	11	13	8	100	0	7	25	57	18	19	15	0
15:26:38	49	21	19	0	16	44	124	12	13	7	100	0	7	25	53	19	17	16	266
15:27:25	42	23	20	0	37	45	123	12	13	7	100	0	37	25	51	19	17	15	263
15:27:49	42	22	15	0	22	44	124	11	13	8	100	0	7	26	51	16	17	15	259
15:29:34	49	23	19	0	26	44	124	12	13	8	100	0	8	27	53	16	18	31	0
15:29:56	0	0	15	0	18	44	0	12	13	8	100	0	8	22	50	20	17	31	306
15:30:50	43	21	16	0	30	44	124	12	13	7	100	0	7	24	56	18	17	15	265
15:34:20	43	21	20	0	17	44	124	12	13	7	100	0	7	38	53	18	17	16	0
15:35:08	49	22	19	0	25	44	124	12	13	8	100	0	7	24	52	17	17	17	219
15:37:18	49	21	20	0	16	44	124	13	13	7	100	0	7	27	52	16	18	15	268
15:38:40	42	21	19	0	25	44	124	12	13	8	100	0	7	22	53	17	17	16	0
15:41:23	45	0	20	0	22	44	124	13	13	8	100	0	7	22	57	19	17	16	258
15:41:26	62	21	14	0	34	43	123	11	13	7	100	0	7	30	52	18	20	16	0
15:45:38	46	21	15	0	17	0	123	12	13	7	100	0	8	27	75	17	18	17	256
15:48:02	45	21	22	0	22	43	123	12	13	7	100	0	8	22	53	0	17	15	253
15:48:48	47	21	19	0	20	0	123	12	13	8	100	0	8	32	53	19	18	18	256
15:49:56	44	22	21	0	17	59	123	12	13	0	100	0	8	30	54	16	17	16	282
15:50:56	44	22	19	0	23	48	125	11	13	8	97	0	7	28	54	23	19	17	264

PROBE API - Results

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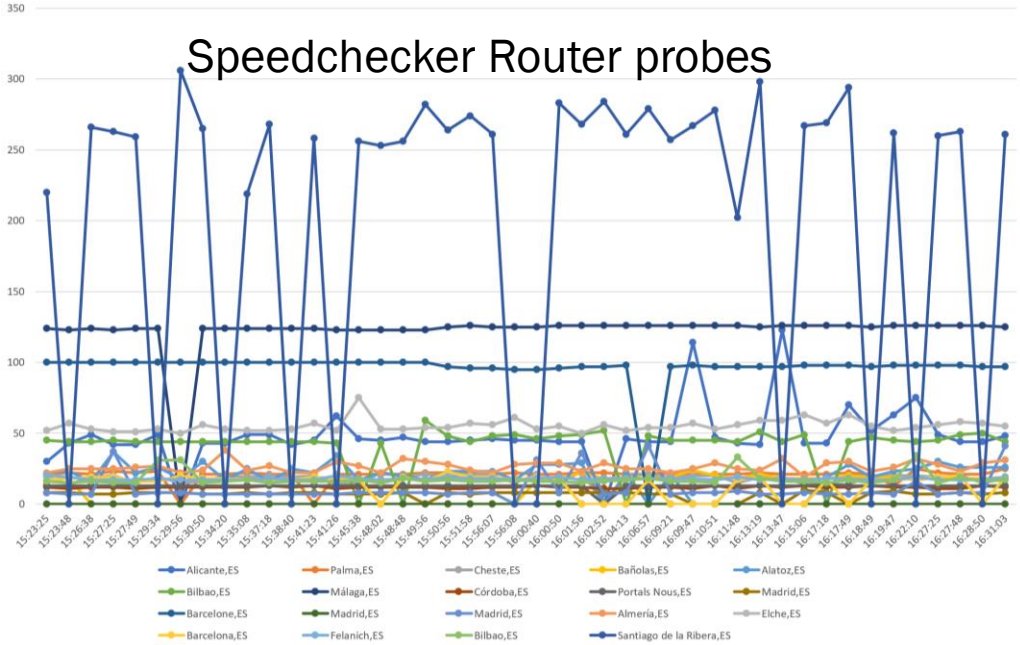
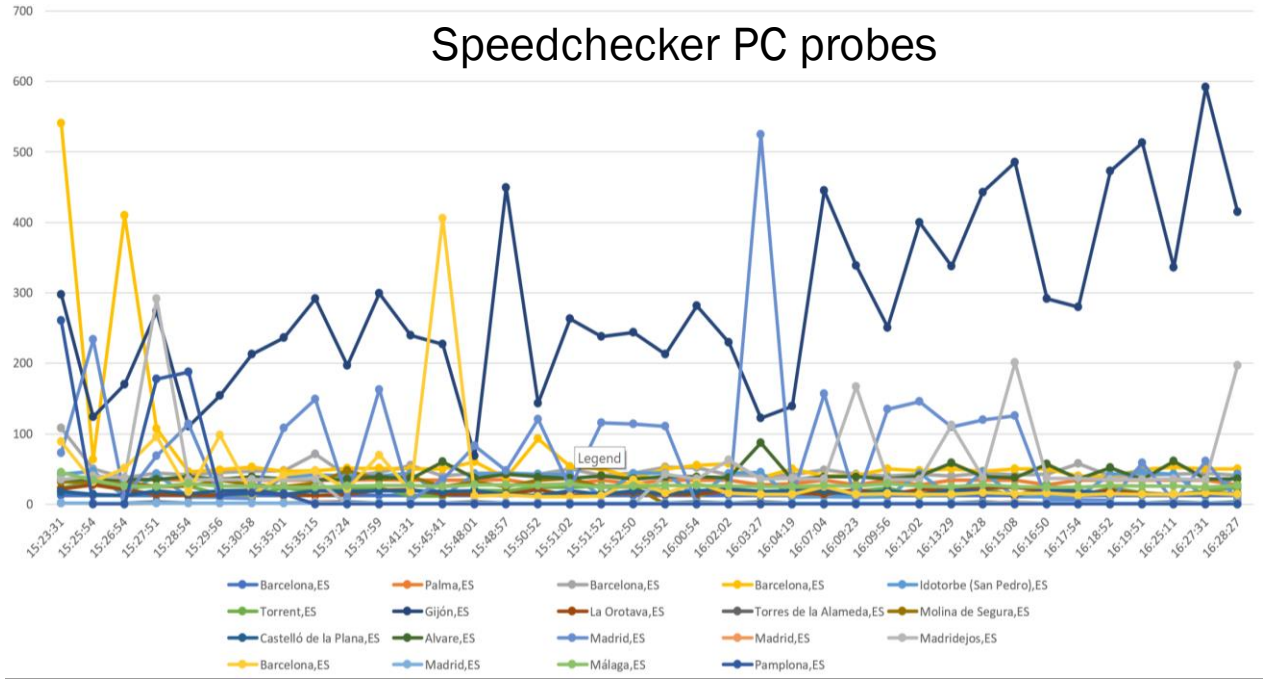
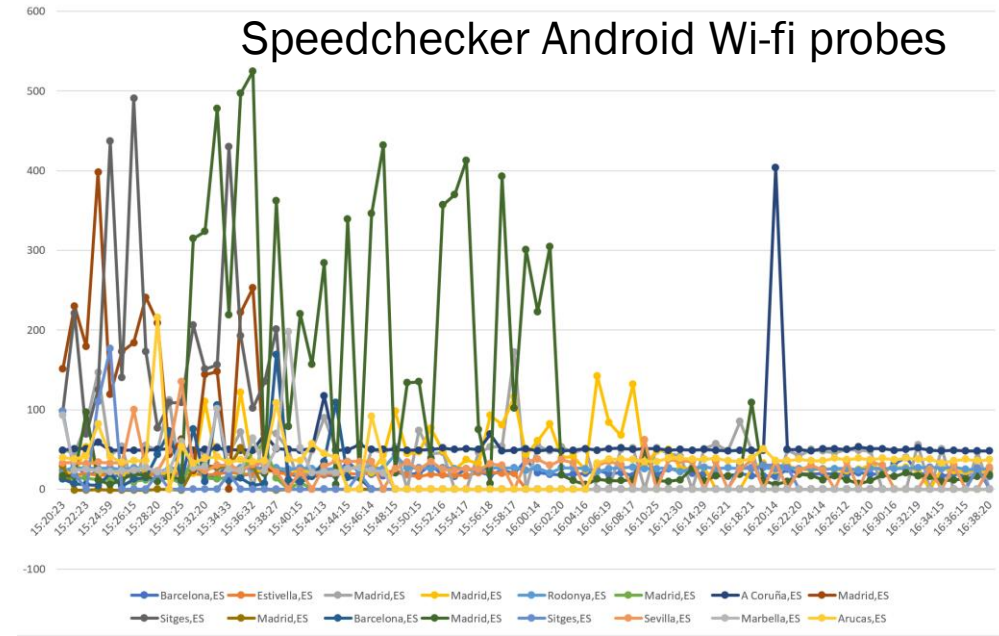
Speedchecker Router probes



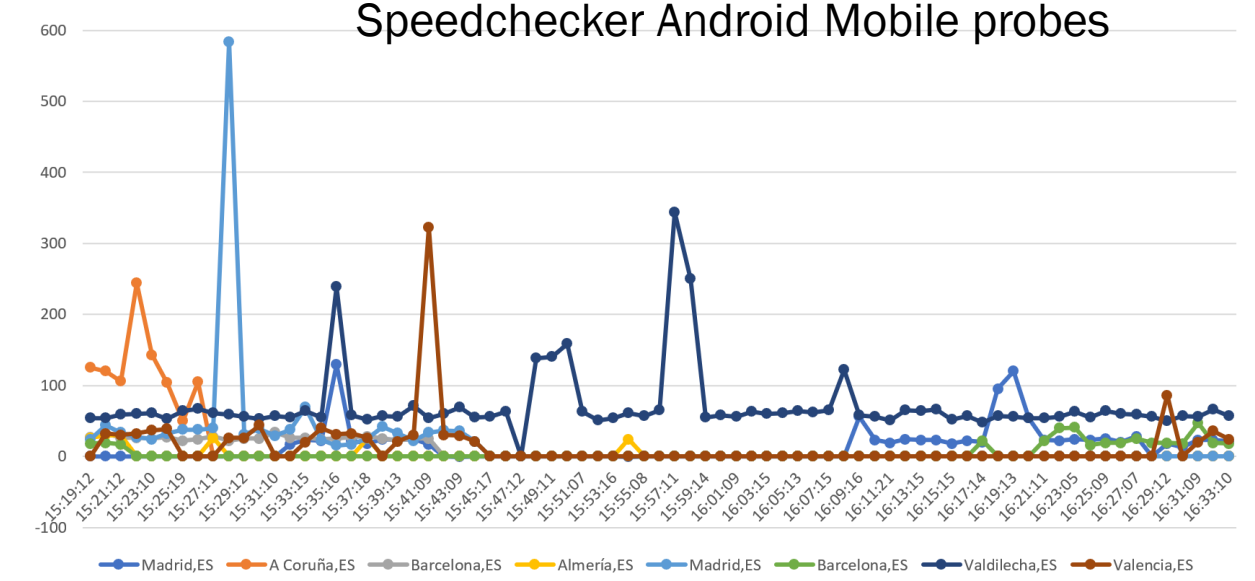
Speedchecker PC probes



Speedchecker Android Wi-fi probes

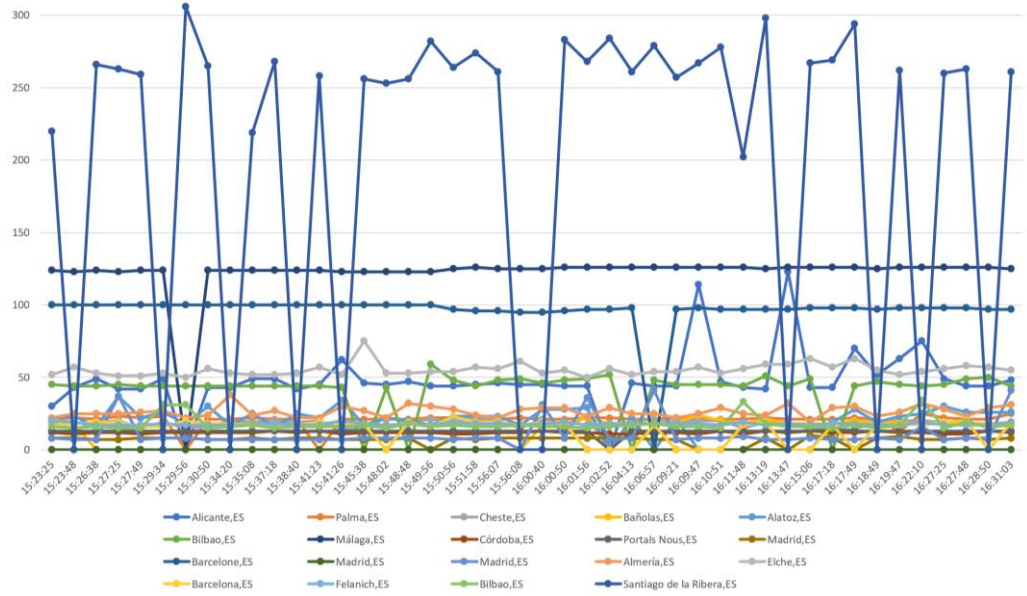


Speedchecker Android Mobile probes

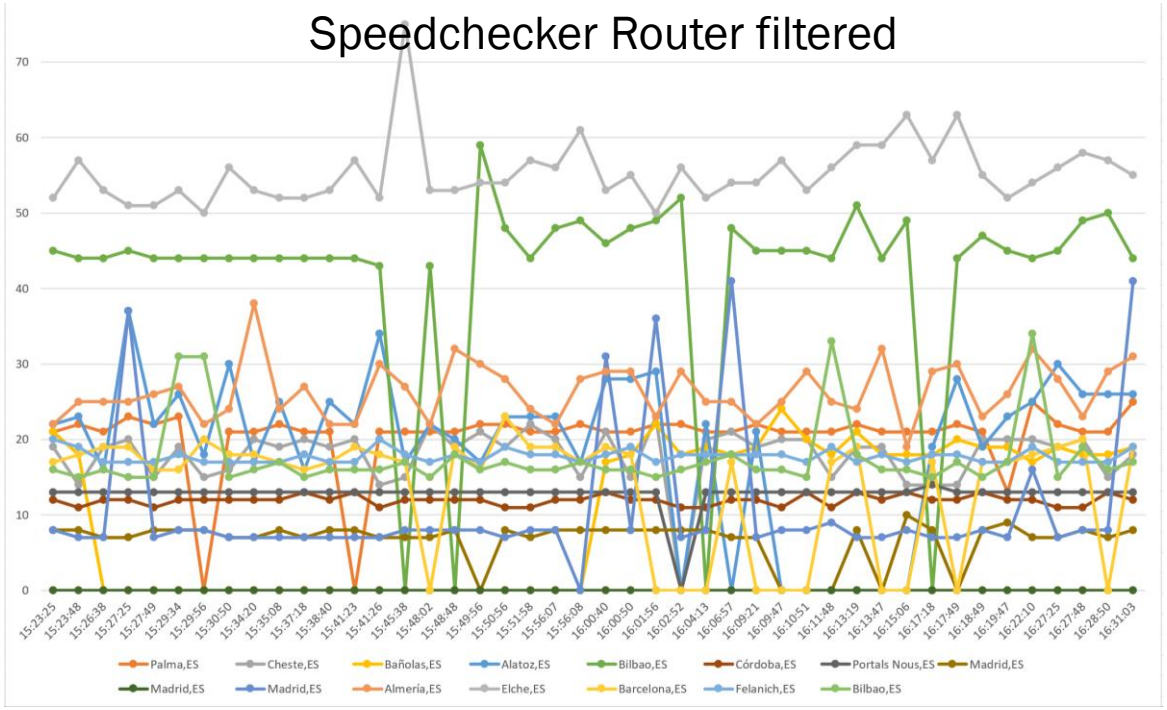


Comparing RIPE Atlas vs Probe API results

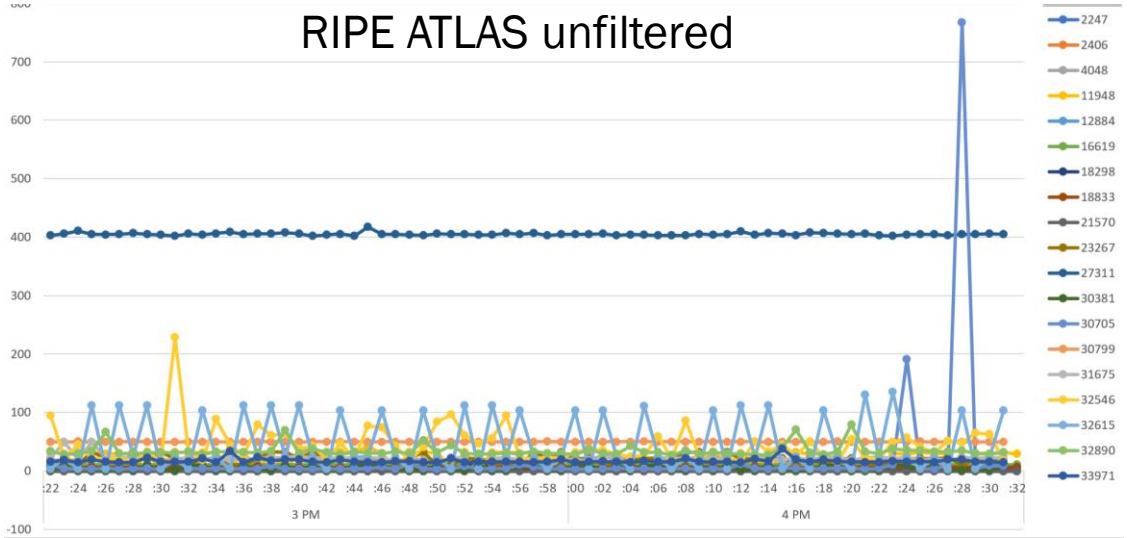
Speedchecker Router unfiltered



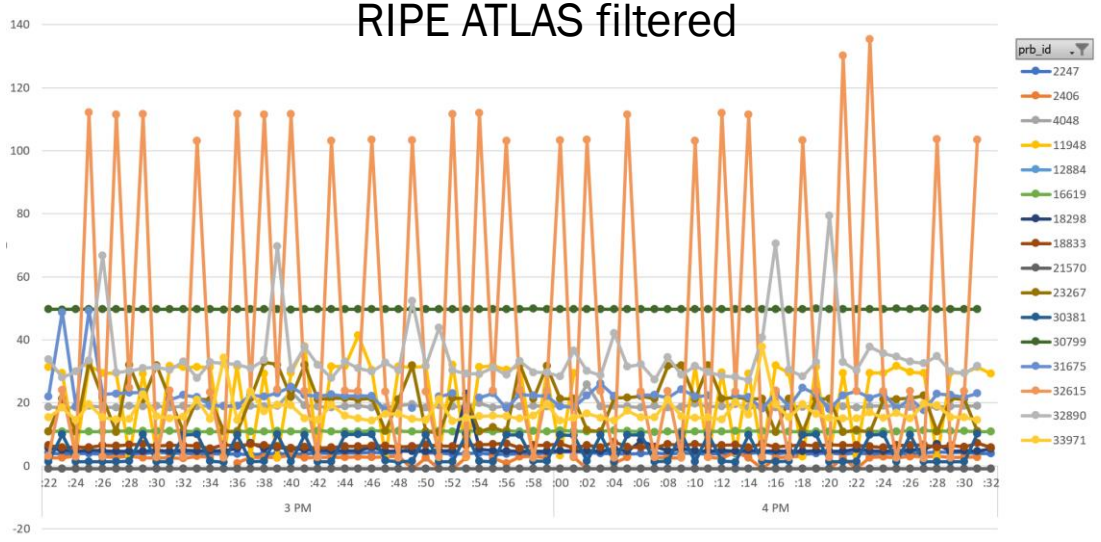
Speedchecker Router filtered



RIPE ATLAS unfiltered



RIPE ATLAS filtered



Thank you!

Janusz Jezowicz
janusz@speedchecker.xyz

Any questions?

For free access to Probe API head to this URL and tick ESNOG checkbox
http://probeapi.speedchecker.xyz/sign-up.html