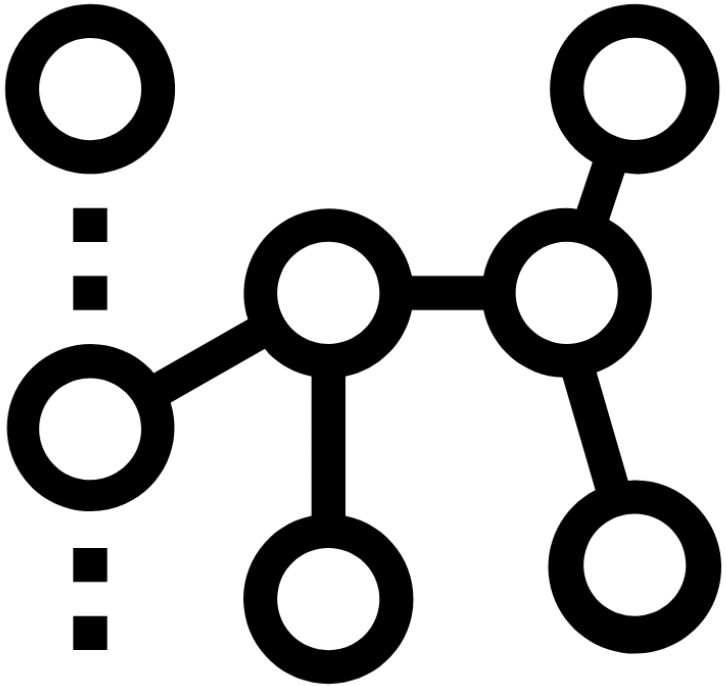
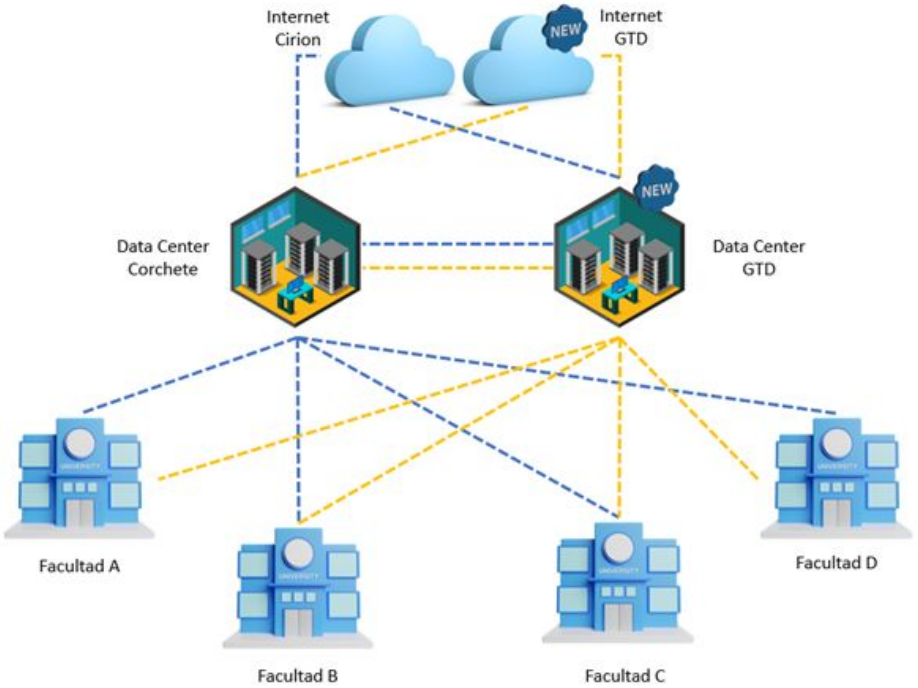
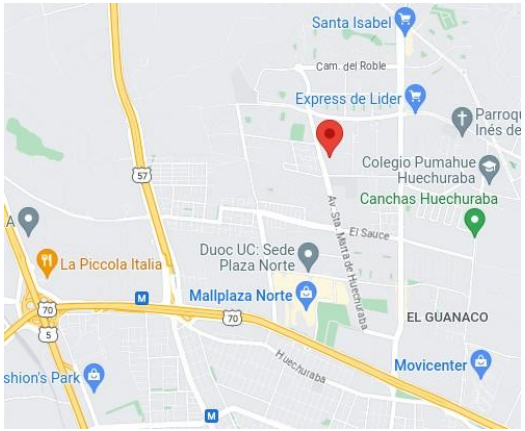
Traceroute



Topología UDP



Cirion	2022	
Lumen	2020	
CenturyLink	2017	
Level3	2011	
Global Crossing	2001	(Impsat 2006)



HURRICANE ELECTRIC
INTERNET SERVICES

Search for ""Universidad Diego Portales""

Quick Links

- BGP Toolkit Home
- BGP Prefix Report
- BGP Peer Report
- Super Traceroute
- Super Looking Glass
- Exchange Report
- Bogon Routes
- World Report
- Multi Origin Routes

Search Results

Result	Type	
64.76.96.0/24	Route	Universidad Diego Portales (C00454781)
200.14.87.0/24	Route	Universidad Diego Portales
200.14.86.0/24	Route	Universidad Diego Portales
200.14.85.0/24	Route	Universidad Diego Portales
200.14.84.0/24	Route	Universidad Diego Portales

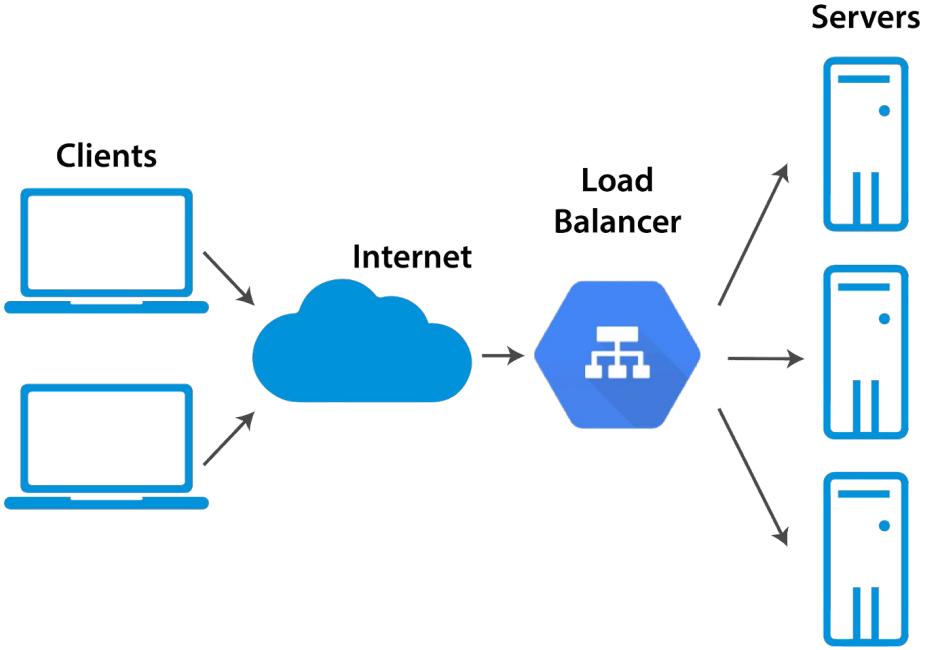
```
7  * * *
8  ae4.edge1.sgo1.ciriontechnologies.net (200.186.40.117)  4.314 ms  31.554 ms
```

(ip.addr == 200.186.40.0/24) && (icmp.type == 0)

No.	Time	Source	Destination	Protocol	Length	Info
9…	0.000000000	200.186.40.101	192.168.1.129	ICMP	98	Echo (ping) reply id=0x0017, seq=1/256, ttl=56
9…	0.010253633	200.186.40.102	192.168.1.129	ICMP	98	Echo (ping) reply id=0x0018, seq=1/256, ttl=58
9…	20.0129980…	200.186.40.105	192.168.1.129	ICMP	98	Echo (ping) reply id=0x001b, seq=1/256, ttl=56
9…	0.010835609	200.186.40.106	192.168.1.129	ICMP	98	Echo (ping) reply id=0x001c, seq=1/256, ttl=58
1…	20.0142118…	200.186.40.109	192.168.1.129	ICMP	98	Echo (ping) reply id=0x001f, seq=1/256, ttl=56
1…	0.013317766	200.186.40.110	192.168.1.129	ICMP	98	Echo (ping) reply id=0x0020, seq=1/256, ttl=57
1…	20.0154838…	200.186.40.113	192.168.1.129	ICMP	98	Echo (ping) reply id=0x0023, seq=1/256, ttl=56
1…	0.011589343	200.186.40.114	192.168.1.129	ICMP	98	Echo (ping) reply id=0x0024, seq=1/256, ttl=57
1…	20.0154747…	200.186.40.117	192.168.1.129	ICMP	98	Echo (ping) reply id=0x0027, seq=1/256, ttl=58
1…	0.012096122	200.186.40.118	192.168.1.129	ICMP	98	Echo (ping) reply id=0x0028, seq=1/256, ttl=57

```
[redacted] for i in {100..120}; do ping -c 1 200.186.40.$i; done
```

Desde Telemática-5G




```
traceroute to 8.8.8.8 (8.8.8.8), 30 hops max, 60 byte packets
 1  _gateway (192.168.1.1)  5.074 ms  2.831 ms  2.903 ms
 2  172.16.40.1 (172.16.40.1)  359.186 ms  359.159 ms  359.132 ms
 3  192.168.0.89 (192.168.0.89)  359.225 ms  359.198 ms  359.212 ms
 4  172.19.0.249 (172.19.0.249)  360.231 ms  361.297 ms  361.780 ms
 5  190.216.145.53 (190.216.145.53)  367.401 ms  390.734 ms  390.708 ms
 6  190.217.42.61 (190.217.42.61)  390.681 ms  31.808 ms  245.027 ms
 7  lag15.ar6.sgo1.ciriontechnologies.net (200.186.40.114)  246.303 ms  246.272 ms lag14.ar6.sgo1.ciriontechnologies.net (200.186.40.110)  246.243 ms
 8  ae4.edge1.sgo1.ciriontechnologies.net (200.186.40.117)  246.214 ms  246.188 ms  246.162 ms
 9  8.243.184.10 (8.243.184.10)  246.135 ms  246.106 ms  246.156 ms
10  * * *
11  dns.google (8.8.8.8)  244.499 ms  245.437 ms  245.368 ms
```

Desafíos de traceroute

- Traceroute no siempre muestra la ruta exacta que siguen los datos.
- Traceroute puede ser afectado por el balanceo de carga, que distribuye el tráfico entre diferentes rutas según la disponibilidad o el rendimiento.
- Traceroute puede ser bloqueado o alterado por firewalls o políticas de filtrado, que impiden el paso o la respuesta de los paquetes ICMP.
- Traceroute puede ser inexacto o inconsistente debido a factores como el congestionamiento de la red, las variaciones del tiempo de propagación, o los errores de transmisión.

Vantage Points

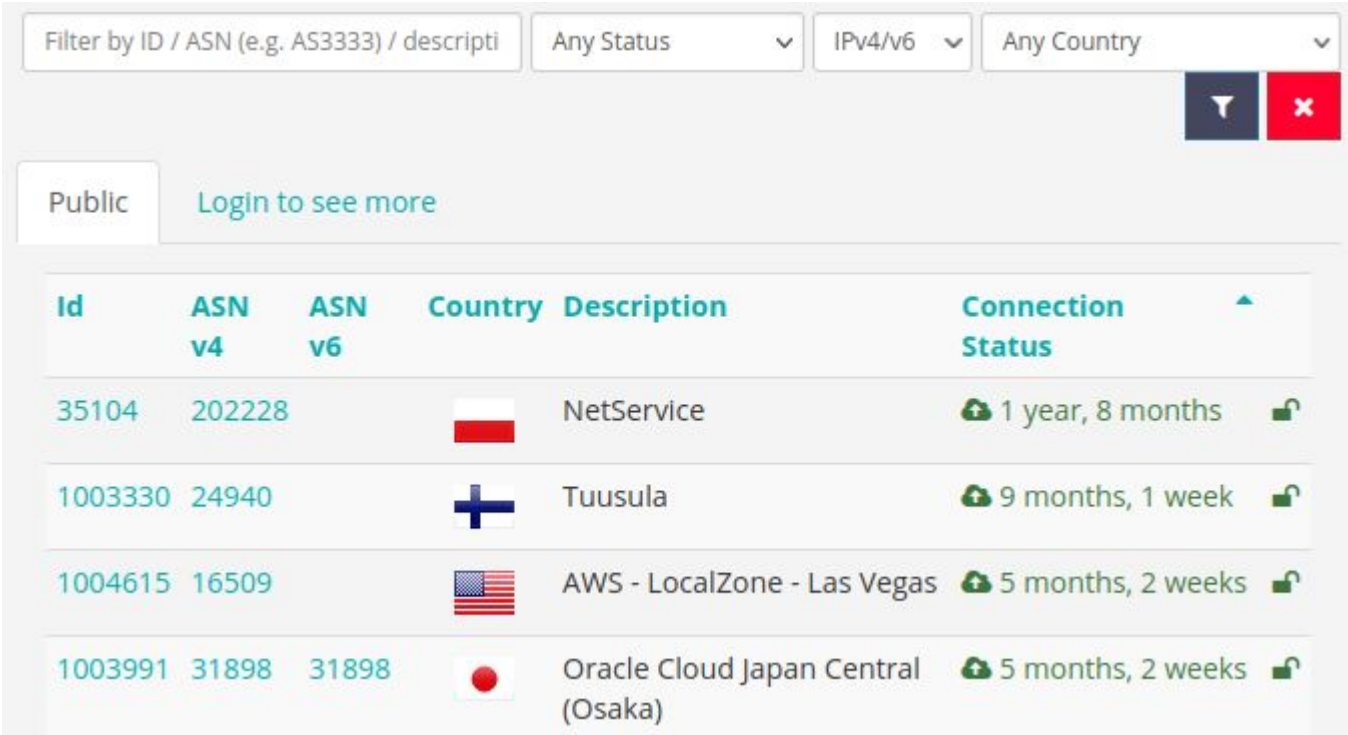
Son puntos de observación que se utilizan para realizar mediciones.
Existen proyectos que los utilizan tales como: CAIDA y RIPE

RIPE NCC
RIPE NETWORK COORDINATION CENTRE

MLAB

https://github.com/Jamesits/docker-ripe-atlas

Ripe Interface



Looking Glass

site:"https://lg.*" "Looking Glass"

Images | Videos | News | Shopping | Portrait | Movie | Mirror | Song | Watchmen

About 7,430 results (0.24 seconds)

PERISCOPE

caida

Path way

```
cat 213.140.53.72.warts| sc_warts2json | jq | grep addr
      "addr": "192.168.1.1",
      "addr": "190.20.192.1",
      "addr": "10.50.3.9",
      "addr": "10.50.3.10",
      "addr": "213.140.39.160",
      "addr": "94.142.98.131",
      "addr": "94.142.98.90",
      "addr": "213.140.49.81",
      "addr": "176.52.248.190",
```

Trace IPv4 - Barcelona, Spain ✖

Target: 190.20.198.238

Hop	Hostname	Packet 1	Packet 2	Packet 3
1	telefonicatelxius-1.gw.ftipnn (213.140.53.72)	1 msec	2 msec	1 msec
2	176.52.248.191	9 msec	9 msec	10 msec
3	ae6-0-grtvirtx3.net.telefonicaglobalsolutions.com (213.140.49.80)	90 msec	90 msec	89 msec
4	94.142.97.225 94.142.117.3	106 msec	* 	 101 msec
5	5.53.7.50 94.142.97.64 176.52.248.54	231 msec	 206 msec 	 217 msec
6		*	*	*
7		*	*	*
8	190-20-192-1.baf.movistar.cl (190.20.192.1)	220 msec	216 msec	215 msec

A nivel ISP

AS7418 TELEFÃNICA CHILE S.A.

ks
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:port
:port
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:outes
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tion

AS Info | Graph v4 | Graph v6 | Prefixes v4 | Peers v4 | Peers v6 | Whois

Company Website: http://www.movistar.cl

Country of Origin: Chile

Internet Exchanges: 1

Prefixes Originated (all): 111
Prefixes Originated (v4): 111
Prefixes Originated (v6): 0

Prefixes Announced (all): 138
Prefixes Announced (v4): 134
Prefixes Announced (v6): 4

movistar

Multihomed equipment

Source	Destination	Indentification	Protocol	Length	Info
190.20.202.148	192.168.1.129	0x6f7b (28539)	ICMP	98	Echo (ping) reply id=0x002e, seq=22/5632,
192.168.1.1	192.168.1.129	0x6f7c (28540)	ICMP	98	Echo (ping) reply id=0x002f, seq=1/256, tt
190.20.202.148	192.168.1.129	0x6f7d (28541)	ICMP	98	Echo (ping) reply id=0x002e, seq=23/5888,
192.168.1.1	192.168.1.129	0x6f7e (28542)	ICMP	98	Echo (ping) reply id=0x002f, seq=2/512, tt
190.20.202.148	192.168.1.129	0x6f7f (28543)	ICMP	98	Echo (ping) reply id=0x002e, seq=24/6144,
192.168.1.1	192.168.1.129	0x6f80 (28544)	ICMP	98	Echo (ping) reply id=0x002f, seq=3/768, tt
190.20.202.148	192.168.1.129	0x6f81 (28545)	ICMP	98	Echo (ping) reply id=0x002e, seq=25/6400,

Paris-traceroute

```
~/Downloads sudo paris-traceroute grupocg.cl
traceroute to grupocg.cl (172.67.181.93), 30 hops max, 30 bytes packets
 1  _gateway (172.16.40.1)  0.592ms    0.593ms    0.595ms
 2  192.168.0.89 (192.168.0.89)  0.779ms    0.782ms    0.782ms
 3  172.19.0.249 (172.19.0.249)  0.426ms    0.426ms    0.428ms
 4  190.216.145.53 (190.216.145.53)  0.526ms    0.525ms    0.526ms
 5  190.217.42.61 (190.217.42.61)  0.955ms    0.955ms    0.956ms
 6  * * *
 7  ae4.edge1.sgo1.ciriontechnologies.net (200.186.40.117)  2.851ms    2.850ms    2.850ms
 8  * * *
 9  4.15.156.82 (4.15.156.82)  107.916ms    114.324ms    114.364ms
10  172.70.52.2 (172.70.52.2)  119.759ms    119.752ms    119.750ms
11  172.67.181.93 (172.67.181.93)  107.131ms    107.147ms    107.159ms

~/Downloads sudo paris-traceroute 45.68.16.100
traceroute to 45.68.16.100 (45.68.16.100), 30 hops max, 30 bytes packets
 1  _gateway (172.16.40.1)  0.580ms    0.580ms    0.581ms
 2  192.168.0.89 (192.168.0.89)  0.656ms    0.659ms    0.662ms
 3  172.19.0.249 (172.19.0.249)  0.518ms    0.522ms    0.518ms
 4  190.216.145.53 (190.216.145.53)  0.586ms    0.591ms    0.589ms
 5  190.217.42.61 (190.217.42.61)  0.849ms    0.858ms    0.856ms
 6  pit-centurylink-21838.scl.pitchile.cl (45.68.16.100)  1.197ms    1.409ms    1.410ms
```

Scamper - trace

```
sudo scamper -I "trace 8.8.8.8"
traceroute from 192.168.31.179 to 8.8.8.8
 1  192.168.31.1  2.659 ms
 2  200.14.84.9  2.652 ms
 3  192.168.0.89  4.485 ms
 4  172.19.0.249  4.013 ms
 5  190.216.145.53  25.177 ms
 6  190.217.42.61  4.075 ms
 7  200.186.40.110  3.131 ms
 8  200.186.40.117  5.031 ms
 9  8.243.184.10  18.014 ms
10  *
11  72.14.237.190  4.492 ms
12  142.251.78.31  4.099 ms
13  8.8.8.8  3.279 ms
```

https://www.caida.org/catalog/software/scamper/code/

Scamper - tracelb

```
sudo scamper -I "tracelb 8.8.8.8"
tracelb from 192.168.31.179 to 8.8.8.8, 9 nodes, 8 links, 71 probes, 95%
192.168.31.1 -> 200.14.84.9
200.14.84.9 -> 192.168.0.89
192.168.0.89 -> 172.19.0.249
172.19.0.249 -> 190.216.145.53
190.216.145.53 -> 190.217.42.61
190.217.42.61 -> (200.186.40.110, 200.186.40.114, *) -> 200.186.40.117
200.186.40.117 -> 8.243.184.10
8.243.184.10 -> * -> 8.8.8.8
```

Mask /30

```
sudo scamper -I "trace 216.184.113.21"
traceroute from 192.168.1.129 to 216.184.113.21
 1  192.168.1.1  32.888 ms
 2  190.20.192.1  25.625 ms
 3  10.50.3.9  21.779 ms
 4  10.50.3.10  38.019 ms
 5  *
 6  *
 7  *
 8  *
 9  *
```

```
for i in {0..255}; do ping -c 1 10.50.3.$i;done | grep "64 bytes"
64 bytes from 10.50.3.9: icmp_seq=1 ttl=253 time=7.28 ms
64 bytes from 10.50.3.10: icmp_seq=1 ttl=252 time=4.87 ms
64 bytes from 10.50.3.13: icmp_seq=1 ttl=253 time=5.14 ms
64 bytes from 10.50.3.14: icmp_seq=1 ttl=252 time=6.26 ms
64 bytes from 10.50.3.21: icmp_seq=1 ttl=253 time=6.52 ms
64 bytes from 10.50.3.22: icmp_seq=1 ttl=61 time=4.87 ms
```

1,5,9,13,17,21,...

Scamper text file

sudo scamper -I "trace 8.8.8.8" -O text -o scamper.text

```
traceroute from 192.168.1.129 to 8.8.8.8
 1  192.168.1.1  2.669 ms
 2  190.20.192.1  5.175 ms
 3  10.50.3.9  6.826 ms
 4  *
 5  72.14.202.154  6.693 ms
 6  *
 7  8.8.8.8  8.969 ms
```

Scamper warts

sudo scamper -I "trace 8.8.8.8" -O warts -o scamper.warts; cat scamper.warts| sc_warts2json


```
{"type":"cycle-start", "list_name":"default", "id":0, "hostname":"NB-Latitude-3420", "start_time":1692591521}
{"type":"trace","version":"0.1", "userid":0, "method":"udp-paris", "src":"192.168.1.129", "dst":"8.8.8.8", "sport":477
1, "usec":515303, "ftime":"2023-08-21 00:18:41"}, "hop_count":8, "attempts":2, "hoplimit":0, "firsthop":1, "wait":5, "
1", "probe_ttl":1, "probe_id":1, "probe_size":44, "tx":{"sec":1692591521, "usec":515620}, "rtt":4.307, "reply_ttl":64,
 "icmp_q_ttl":1, "icmp_q_ipl":44, "icmp_q_tos":0},{"addr":"190.20.192.1", "probe_ttl":2, "probe_id":1, "probe_size":44
92, "reply_ipid":529, "reply_size":56, "icmp_type":11, "icmp_code":0, "icmp_q_ttl":1, "icmp_q_ipl":44, "icmp_q_tos":0}
91521, "usec":615270}, "rtt":5.873, "reply_ttl":253, "reply_tos":192, "reply_ipid":208, "reply_size":56, "icmp_type":1
0", "probe_ttl":4, "probe_id":1, "probe_size":44, "tx":{"sec":1692591521, "usec":665385}, "rtt":5.873, "reply_ttl":252
"icmp_q_ttl":1, "icmp_q_ipl":44, "icmp_q_tos":0},{"addr":"72.14.205.142", "probe_ttl":5, "probe_id":1, "probe_size":44
, "reply_ipid":0, "reply_size":56, "icmp_type":11, "icmp_code":0, "icmp_q_ttl":1, "icmp_q_ipl":44, "icmp_q_tos":0},{"a
91521, "usec":766132}, "rtt":8.081, "reply_ttl":247, "reply_tos":0, "reply_ipid":60218, "reply_size":96, "icmp_type":1
.78.75", "probe_ttl":7, "probe_id":1, "probe_size":44, "tx":{"sec":1692591521, "usec":815518}, "rtt":6.259, "reply_ttl
:0, "icmp_q_ttl":1, "icmp_q_ipl":44, "icmp_q_tos":128},{"addr":"8.8.8.8", "probe_ttl":8, "probe_id":1, "probe_size":44
, "reply_ipid":0, "reply_size":56, "icmp_type":3, "icmp_code":3, "icmp_q_ttl":1, "icmp_q_ipl":44, "icmp_q_tos":128}]}
{"type":"cycle-stop", "list_name":"default", "id":0, "hostname":"NB-Latitude-3420", "stop_time":1692591521}
```

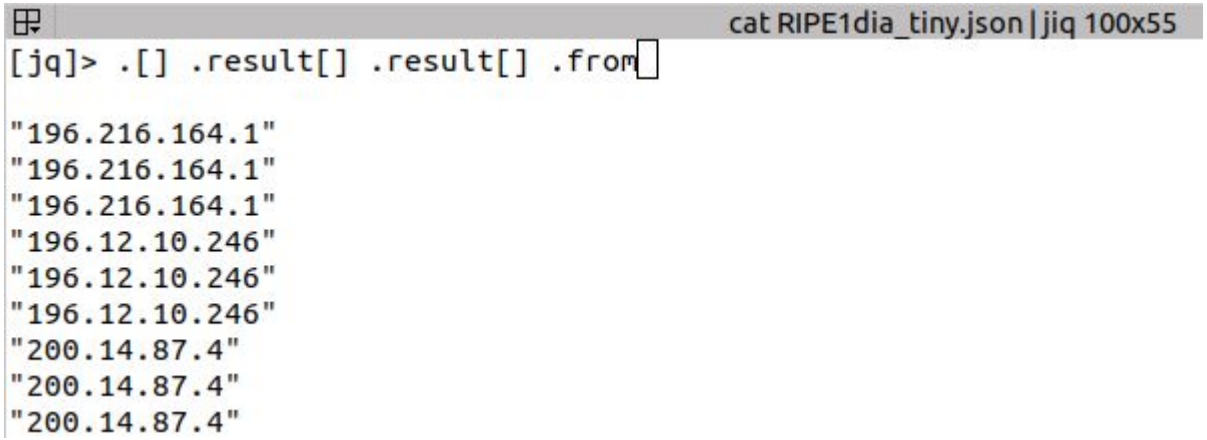

https://www.caida.org/catalog/software/scamper/man/warts.5.pdf

Json Query

analyze a json file

snap install fx

interactive filter



https://jqkungfu.com/

RIPE One Day

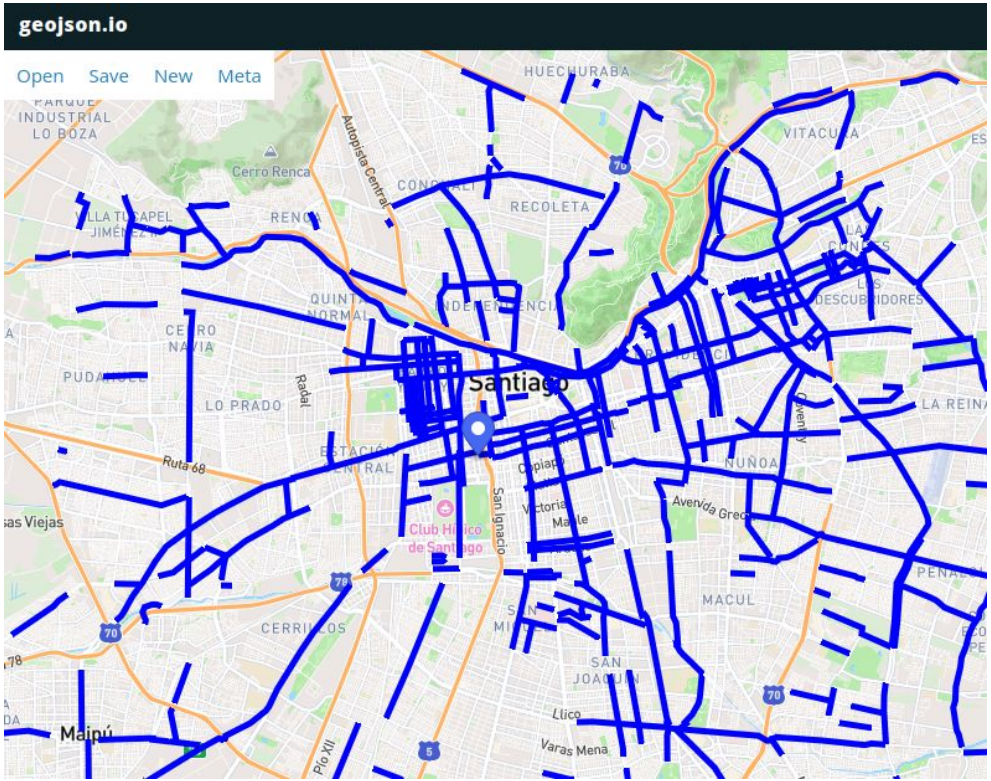
cat RIPE1dia_tiny.json | jq '.[] | .result[] | .result[] | .from' | uniq

"196.216.164.1"
"196.12.10.246"
"200.14.87.4"

CAIDA Ark


```
~/Downloads/scl-cl.team-probing.c009796.20220101.warts(2) cat .scl-cl.team-probing.c009796.20220101.warts | sc_warts2json > scl.json
~/Downloads/scl-cl.team-probing.c009796.20220101.warts(2) head -n1 scl.json | jq
{
  "type": "cycle-start",
  "list_name": "default",
  "id": 9796,
  "hostname": "scl-cl.ark.caida.org",
  "start_time": 1641047986
}
```

GeoJSON




```geojson
{
    "type": "FeatureCollection",
    "features": [
        {
            "type": "Feature",
            "geometry": {
                "type": "Point",
                "coordinates": [
                    -70.66143,
                    -33.45265
                ]
            },
            "properties": {
                "name": "Vergara 432"
            }
        }
    ]
}
```