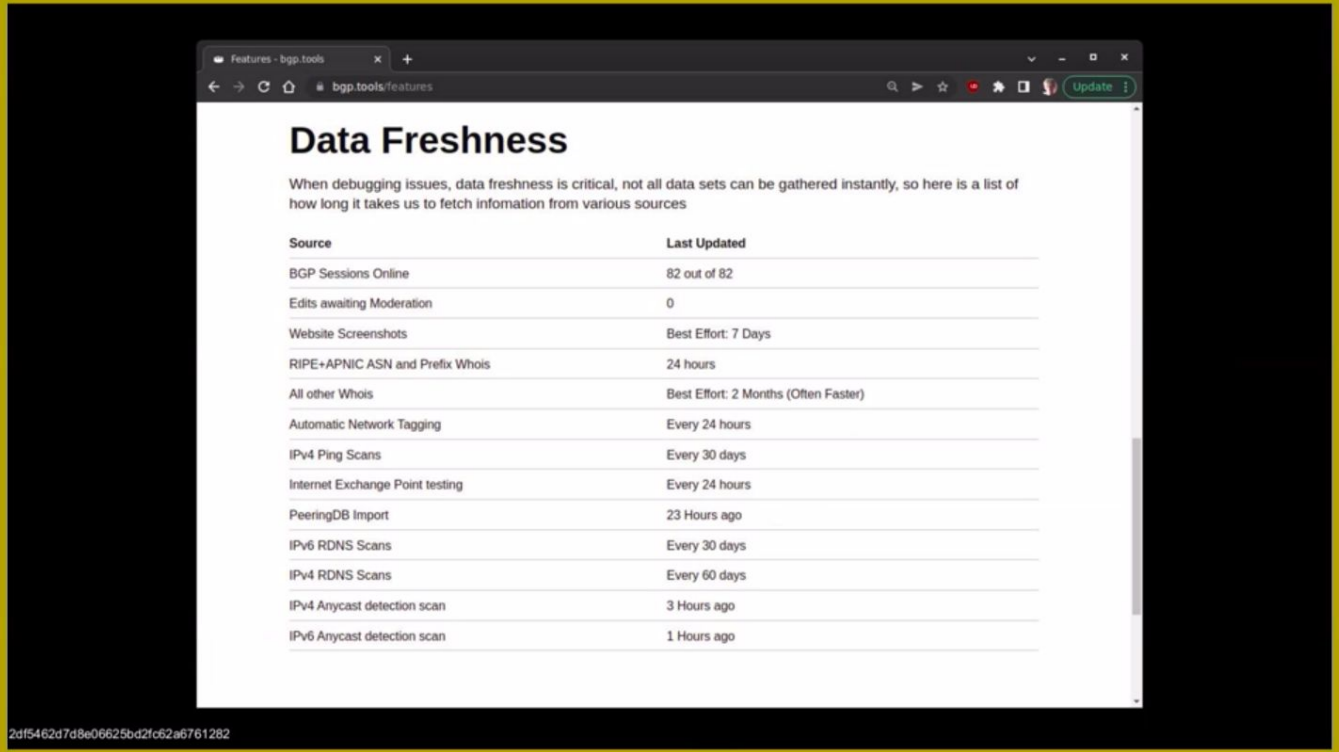
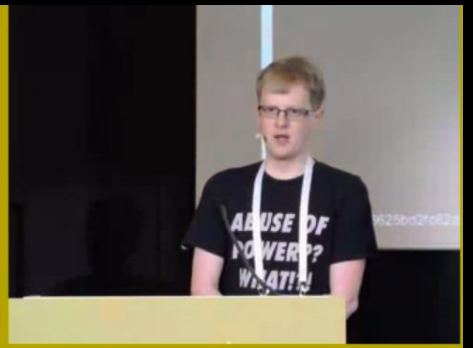
Realtime route collector 1 year on

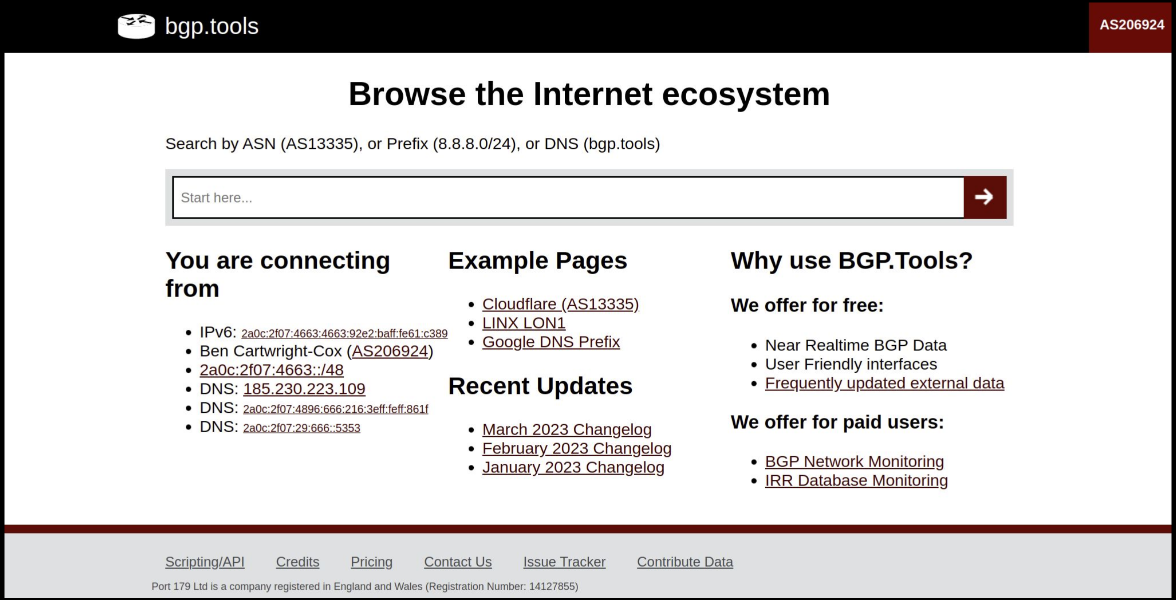
Ben Cartwright-Cox - RIPE86 Rotterdam

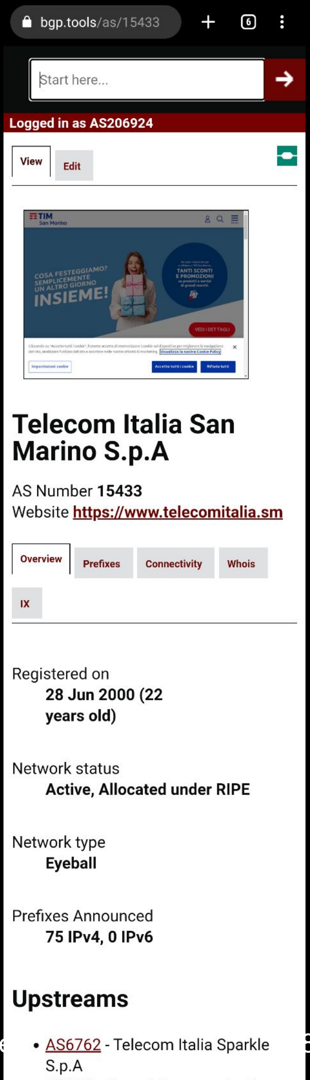
bgp.tools

57f4eb6f1d6cd79bae97580e78978c51


Features - bgp.tools
bgp.tools/features
Update
Data Freshness
When debugging issues, data freshness is critical, not all data sets can be gathered instantly, so here is a list of how long it takes us to fetch infomation from various sources
Source
Last Updated
BGP Sessions Online
82 out of 82
Edits awaiting Moderation
0
Website Screenshots
Best Effort: 7 Days
RIPE+APNIC ASN and Prefix Whois
24 hours
All other Whois
Best Effort: 2 Months (Often Faster)
Automatic Network Tagging
Every 24 hours
IPv4 Ping Scans
Every 30 days
Internet Exchange Point testing
Every 24 hours
PeeringDB Import
23 Hours ago
IPv6 RDNS Scans
Every 30 days
IPv4 RDNS Scans
Every 60 days
IPv4 Anycast detection scan
3 Hours ago
IPv6 Anycast detection scan
1 Hours ago
2df5462d7d8e06625bd2fc62a6761282

ABUSE OF

Quick overview of bgp.tools

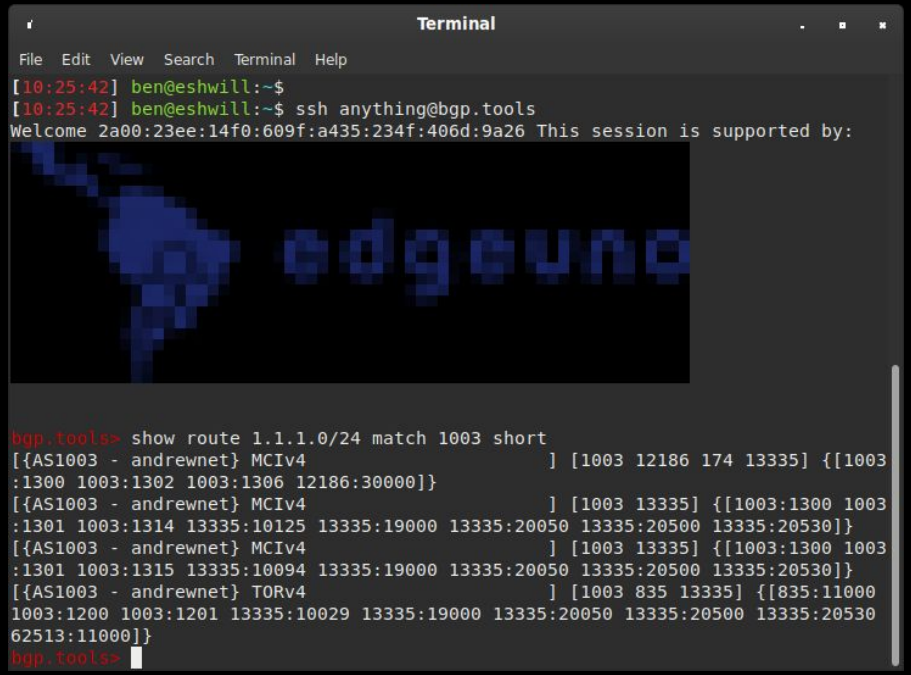


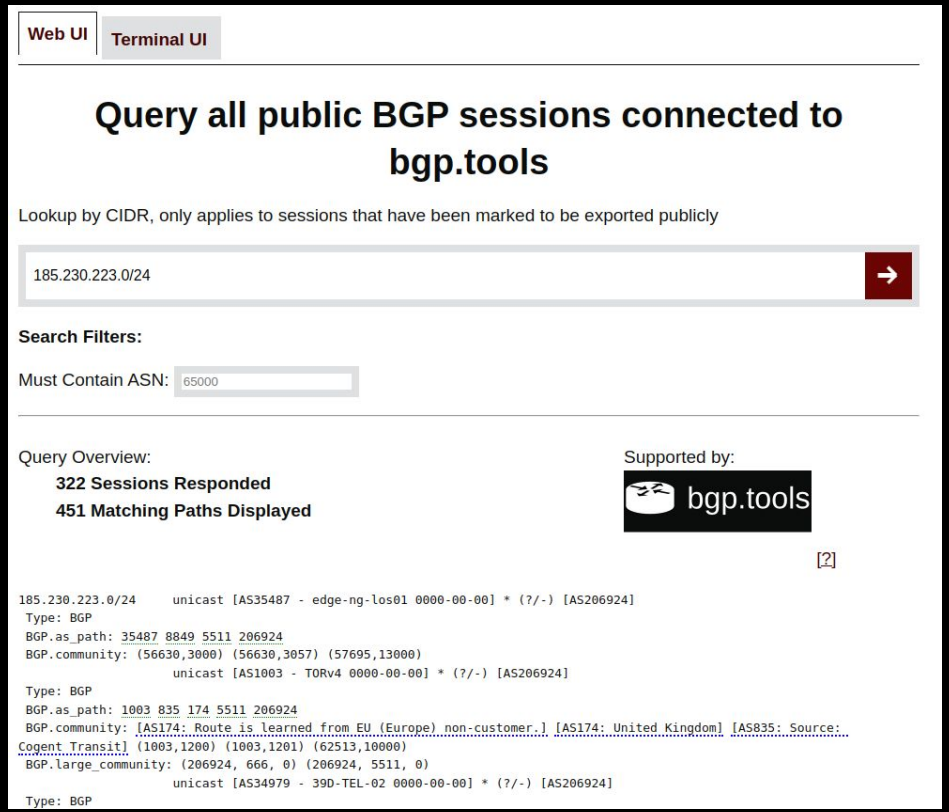


bgp.tools

57f4 … 8978c51

Global Looking Glass (recent)





bgp.tools

IXP Info Pages

MIX-IT

Go to PeeringDB page

Go to IXP-DB page

Data Feeds Available:

RS Feed, Ping, MAC Address

Do you run this IX and want to help with feeds? Contact Us!

List of members (393 routers over 347 ASNs):

	ASN	Description	IPv4	IPv6
	AS16004	MIX S.r.L. - Milan Internet eXchange	217.29.66.1	2001:7f8:b:100:1d1
	AS5392	TELNET S.r.l.	217.29.66.5	2001:7f8:b:100:1d1
	AS12654	RIPE NCC - RIS	217.29.66.6	2001:7f8:b:100:1d1
	AS42692	Overweb Srl	217.29.66.7	2001:7f8:b:100:1d1
	AS25152	RIPE - K-ROOT	217.29.66.8	2001:7f8:b:100:1d1
	AS1267	WIND TRE S.P.A.	217.29.66.9	2001:7f8:b:100:1d1
	AS33891	Core-Backbone GmbH	217.29.66.10	2001:7f8:b:100:1d1

bgp.tools

MINAP Milan

Go to PeeringDB page

Go to IXP-DB page

Route Server ASN: AS43369

Data Feeds Available:

RS Feed, Ping, MAC Address

Top Vendors

Vendor	%
Cisco Systems, Inc	26%
Juniper Networks	24%
Routerboard.com	17%
MIX s.r.l.	6%
Arista Networks	6%

List of members (93 routers over 82 ASNs):

	ASN	Description	IPv4	IPv6	Speed
RS	AS12637	Seeweb s.r.l.	185.1.114.2	2001:7f8:c5::a501:2637:1	10 gbps
RS	AS8816	Metrolink S.R.L.	185.1.114.3	2001:7f8:c5::a500:8816:1	10 gbps
RS	AS5392	TELNET S.r.l.	185.1.114.4	2001:7f8:c5::a500:5392:1	10 gbps
RS	AS20836	CDLAN SpA	185.1.114.5	2001:7f8:c5::a502:0836:1	10 gbps
RS	AS30848	TWT S.p.A.	185.1.114.6	2001:7f8:c5::a503:0848:1	20 gbps

Traceroutes/Looking Glass/Agents

You need a bgp.tools (free) + RIPE Atlas account for this

Orange S.A.

AS Number **5511**

BGP

Select BGP Session to query:

London [IPv4] [IPv6]

Input Prefix:

80.80.80.80

-

Query

```
80.80.80.0/24        unicast [London 0000-00-00] * (?/-) [AS60679]
 Type: BGP
 BGP.as_path: 5511 3356 30247 60679
 BGP.community: [AS5511: United Kingdom] [AS5511: Route received from peering partner]
[AS5511: Route received in Europe from peering] [AS5511: TUNE announce to US peers]
```

RIPE Atlas

There are 392 RIPE Atlas Probes on this ASN.

Select up to 10 probes at random

Traceroute to:

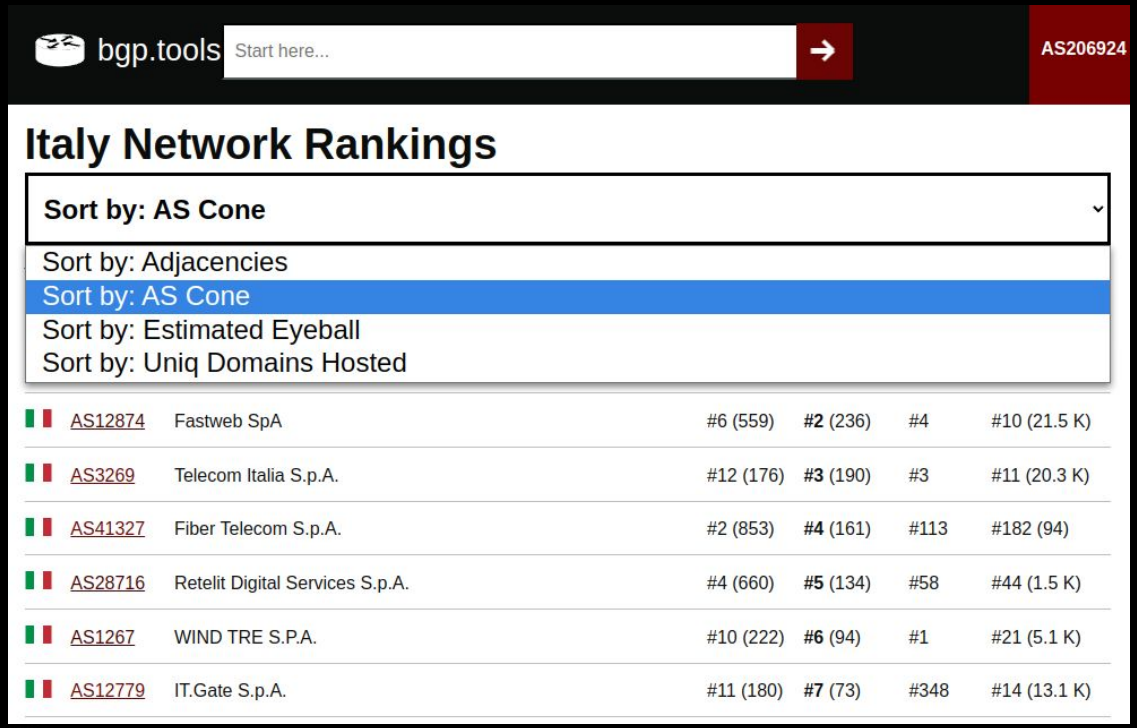
185.230.223.145

-

Request Traceroute

```
Still waiting on results from RIPE Atlas...
Still waiting on results from RIPE Atlas...
Still waiting on results from RIPE Atlas...
Still waiting on results from RIPE Atlas...
RIPE Atlas Link: https://atlas.ripe.net/measurements/54355868/#general
Start: 2023-05-23T17:26:54Z (Probe: 32064)
HOST: 91.53.213.194                          Loss%   Last
  1. AS0      192.168.179.1                   0.0%    1.2
  2. AS3320   p3e9bf082.dip0.t-ipconnect.de.  0.0%    5.4
  3. AS3320   par-sc2-i.PAR.FR.NET.DTAG.DE.   0.0%   24.1
  4. AS5511   193.251.143.83                  0.0%   29.0
  5. AS5511   81.52.166.48                    0.0%   30.8
  6. AS5511   193.251.143.108                 0.0%   31.1
  7. AS0      ???                           100.0    0.0
  8. AS0      ???                           100.0    0.0
  9. AS206924 benjojo.co.uk.                  0.0%   30.9
```

Network Ranking



Can be ranked by Global or ASN Country using:

- Peer Count (*)
- AS Cone
- Eyeball Population
- Domain Records

* is improved by feeding bgp.tools BGP data

bgp.tools

Possibly interesting recent improvements to the site

- The site now has a place to document BGP community values
- AS-SET decoding has been implemented
- Client side Agent software is available for testing (for traceroutes etc)
- RPKI ASPA support has been added
- Historical Graph data is being recorded for monitoring users
- Table dumps (not MRTs) are being produced for CAIDA
- IX-F feeds are used over PeeringDB where available

bgp.tools

Core BGP points

- 940~ BGP sessions established
- Still practically real time BGP data updates on the website

- I feel like I'm reaching some of the limit of networks willing to eBGP peer over the internet
- I also think there is too low visibility of IXP Route Servers
- So bgp.tools is moving into exchanges just like RIPE RIS and RouteViews

bgp.tools

Expanding to IXPs

Getting route server data and beyond

bgp.tools

57f4eb6f1d6cd79bae97580e78978c51

Peering LAN first

- RIS/RV collectors live on IXPs
- Kind of a mess of IXP peers just sending their customer cone, not their full table
- Some have hit capacity limits, etc

Name	Physical Location	Type	Scope	Raw Data
RRC00	Amsterdam, NL	multihop	global	data
RRC01	London, GB	IXP	LINX, LONAP	data
RRC03	Amsterdam, NL	IXP	AMS-IX, NL-IX	data
RRC04	Geneva, CH	IXP	CIXP	data
RRC05	Vienna, AT	IXP	VIXP	data
RRC06	Otemachi, JP	IXP	DIX-IE	data
RRC07	Stockholm, SE	IXP	Netnod	data
RRC10	Milan, IT	IXP	MIX	data
RRC11	New York, NY, US	IXP	NYIIX	data
RRC12	Frankfurt, DE	IXP	DE-CIX	data
RRC13	Moscow, RU	IXP	MSK-IX	data
RRC14	Palo Alto, CA, US	IXP	PAIX	data
RRC15	Sao Paolo, BR	IXP	PTTMetro-SP	data
RRC16	Miami, FL, US	IXP	Equinix Miami	data
RRC18	Barcelona, ES	IXP	CATNIX	data
RRC19	Johannesburg, ZA	IXP	NAP Africa JB	data

bgp.tools

Rough Comparisons

- RIPE has ~1535 BGP sessions online,
  - 372 / 407 Full IPv4/IPv6 tables
  - (by their own calculations)
  - Some of these sessions have issues about to be mentioned, **some are immensely useful views of the internet though!**

bgp.tools

Rough Comparisons

- RIPE has ~1535 BGP sessions online,
  - **372 / 407 Full IPv4/IPv6 tables**
  - (by their own calculations)
  - Some of these sessions have issues about to be mentioned, **some are immensely useful views of the internet though!**

- bgp.tools is 99% eBGP Multihop only
  - 940~ Sessions online
  - 634 / 927 Full IPv4/IPv6 tables (!!)

bgp.tools

Problems with IXP Route Collection

- ***Huge*** bias to AS6939
  - They are on almost all of the large IXPs, and provide you 180k+ of peered v4 routes that will likely be preferred over transit, hiding possibly interesting transit paths from the collector

bgp.tools

Problems with IXP Route Collection

- ***Huge*** bias to AS6939
  - They are on almost all of the large IXPs, and provide you 180k+ of peered v4 routes that will likely be preferred over transit, hiding possibly interesting transit paths from the collector
- Really expensive if you don't have friends
  - IXP Membership fees + XC fees + colo fees
  - IXP membership alone can be more than the last two
  - https://peering.exposed

bgp.tools

Solving for XC Fees / Colo

- What is the cheapest, smallest, most insane thing we could ship to a *willing* IXP?

bgp.tools

Solving for XC Fees / Colo

- What is the cheapest, smallest, most insane thing we could ship to a *willing* IXP?

bgp.tools https://blog.benjojo.co.uk/post/smart-sfp-linux-inside

57f4eb6f1d6cd79bae97580e78978c51

Solving for XC Fees / Colo

- What is the cheapest, smallest, most insane thing we could ship to a *willing* IXP?

- No XC, The switch is the power supply, you can hitch backhaul either via someone friendly on the IXP, or relaying via a VPS from a provider that is on the IXP
- Cheap, Around 150 USD all in
- Single core ARMv7, with 512M of RAM running Debian Jessie
- ***Completely crazy***. People are a little apprehensive about this device!

bgp.tools https://blog.benjojo.co.uk/post/smart-sfp-linux-inside

57f4eb6f1d6cd79bae97580e78978c51

Creative solutions are available

bgp.tools

Creative solutions are available

- Runs a 400Mhz~ 32bit MIPS core, 32MB of RAM
- The constrained RAM and MIPS CPU µArch makes this a challenge to program for
- Thankfully Zig lang has a mostly working MIPS target!
- To use as a generic "Linux box" you must perform *some software changes*
- Vendor has been really keen and helpful with modding these

- Similar tech is available via Huawei/Nokia/FS.COM (they share a chipset and design) for 80 USD~ per optic

bgp.tools

The actual preference tree

1. Some IXPs have VM infrastructure on the exchange that is easy to use, bgp.tools can run a relay in 128MB of RAM and very low CPU requirements
2. Those magic Linux optics are easy and convenient to ship around
    - But are mildly scary for some, also 1G only, and IXPs are sunsetting 1G ports
3. At worst I can ship physical 1U hardware around
    - Ideally want to try and land as many IXPs in a single machine to conserve funds

57f4eb6f1d6cd79bae97580e78978c51

All sessions lead back to London

- You have have noticed it isn't really possible to store a *modern* full internet table on 32MB of RAM.

- Instead of storing sessions locally, the local collector will "rehost" the BGP session back in London where all of the website infrastructure is.

- This is because with how bgp.tools is designed, all BGP data has to be within 3ms~ of the web server to ensure a enjoyable experience

bgp.tools

Current progress

- NL-IX is up, Online in South African INX exchanges (JINX,DINX,CINX), Up on ONIX, More to come!

- Some IXPs are setting up eBGP multihop sessions from their route servers!
  - Route server feeds from MINAP, ERA-IX Amsterdam, GPC Missouri

bgp.tools

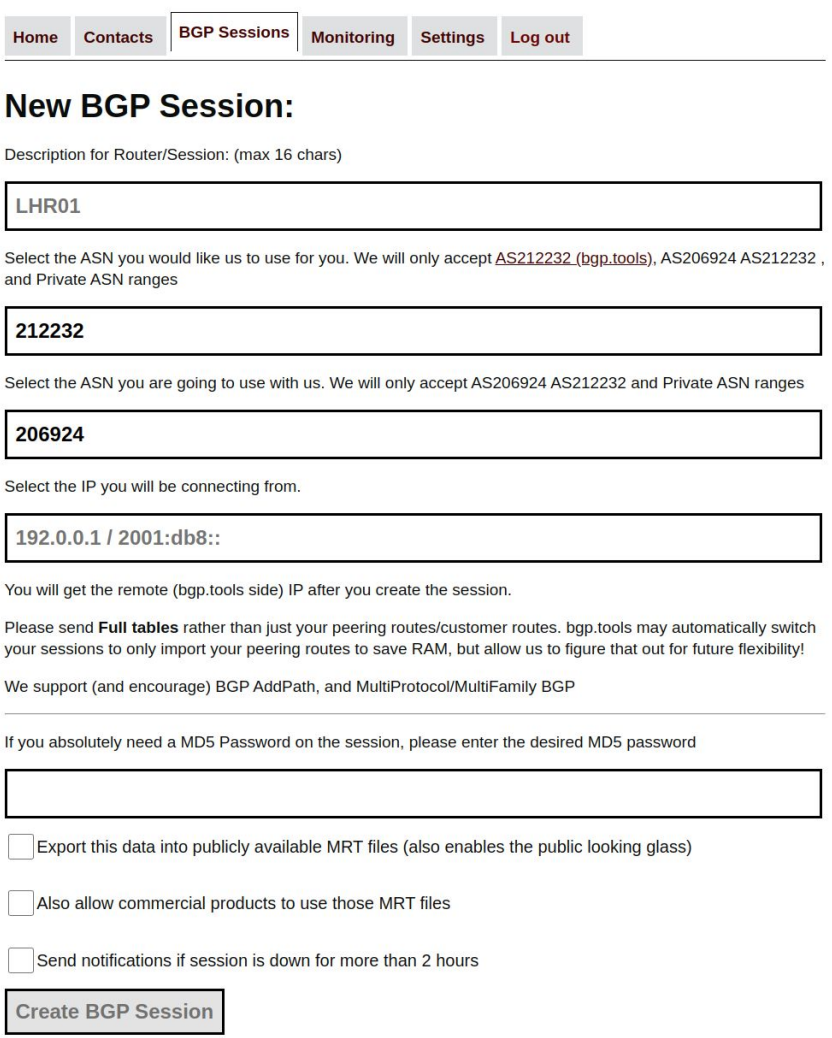
Setting up feeds is easy

Go to (PeeringDB SSO is supported):
https://bgp.tools/kb/setup-sessions

You can **instantly** setup eBGP MultiHop Sessions to bgp.tools. Where you **should** export a full table.

Export to 3rd parties/Looking Glass visibility is entirely optional!

bgp.tools



Questions?

Want to feed bgp.tools?

go to bgp.tools and go to to bottom link "Contribute Data"

More complex queries:
IRC: Benjojo-bgptools (terahertz) / benjojo (everything else)
Or email: **admin@bgp.tools (I'm here until Friday)**

bgp.tools

57f4eb6f1d6cd79bae97580e78978c51