

# Creative Route Collection for bgp.tools

Ben Cartwright-Cox - NOG.FI 2023



# Quick overview of bgp.tools

 bgp.tools

AS206924

## Browse the Internet ecosystem

Search by ASN (AS13335), or Prefix (8.8.8.0/24), or DNS (bgp.tools)

Start here... 

### You are connecting from

- IPv6: 2a0c:2f07:4663:4663:92e2:baff:fe61:c389
- Ben Cartwright-Cox (AS206924)
- 2a0c:2f07:4663::/48
- DNS: 185.230.223.109
- DNS: 2a0c:2f07:4896:666:216:3eff:feff:861f
- DNS: 2a0c:2f07:29:666::5353

### Example Pages

- [Cloudflare \(AS13335\)](#)
- [LINX LON1](#)
- [Google DNS Prefix](#)

### Recent Updates

- [March 2023 Changelog](#)
- [February 2023 Changelog](#)
- [January 2023 Changelog](#)

### Why use BGP.Tools?

#### We offer for free:

- Near Realtime BGP Data
- User Friendly interfaces
- [Frequently updated external data](#)

#### We offer for paid users:

- [BGP Network Monitoring](#)
- [IRR Database Monitoring](#)

[Scripting/API](#) [Credits](#) [Pricing](#) [Contact Us](#) [Issue Tracker](#) [Contribute Data](#)

Port 179 Ltd is a company registered in England and Wales (Registration Number: 14127855)

Start here... 

Logged in as AS206924

View

Looking Glass 



## Elisa Oyj

AS Number **6667**

Website

<https://elisa.com/carrierservices/>

Overview

Prefixes

Connectivity

Whois

IX

Registered on

**5 Sep 2006 (16 years old)**

Network status

**Active, Allocated under RIPE**

Network type

**Carrier**

Prefixes Originated

**4 IPv4, 0 IPv6**

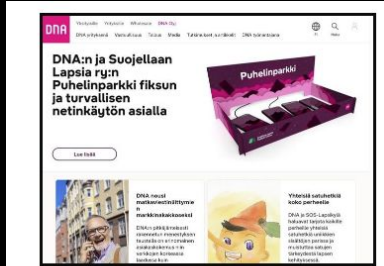


# bgp.tools

20

22e153

# ASN Info



## DNA Oyj

AS Number **16086**

Website <https://corporate.dna.fi/>

Overview Prefixes **Connectivity** Whois IX

### Peers

137

### Upstreams

4

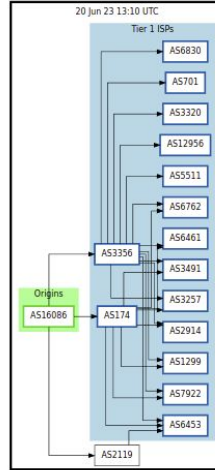
### Downstreams

57 (Cone: 67)

## Network Policy **i**

[Click here to learn more about what this graph means and what makes up a network policy](#)

### Policy kind\_snyder



### Prefixes in selected policy

| - | Prefix           | Description                                |
|---|------------------|--|
| ? | 192.107.208.0/20 |  |
| + | 143.51.128.0/17  | Lahden kaupunki, City of Lahti             |
| + | 195.95.208.0/23  | Pajjat-Hämeen Koulutuskesksemi kuntayhtymä |
| ? | 192.107.200.0/21 |  |

Load all 72 prefixes in policy

[How are upstreams and downstreams calculated?](#)

### Upstreams **⚡**

| ASN                    | Description                       | IPv4 | IPv6 |
|------------------------|-----------------------------------|------|------|
| <a href="#">AS174</a>  | Cogent Communications             | ✓    | ✓    |
| <a href="#">AS3356</a> | Lumen (Level 3)                   | ✓    | ✓    |
| <a href="#">AS6453</a> | TATA COMMUNICATIONS (AMERICA) INC | ✓    | ✗    |
| <a href="#">AS2119</a> | Telenor Norge AS                  | ✓    | ✗    |

### Peers **⚡**

| ASN                   | Description           | IPv4 | IPv6 |
|-----------------------|-----------------------|------|------|
| <a href="#">AS174</a> | Cogent Communications | ✓    | ✓    |

|                         |                |   |   |
|-------------------------|----------------|---|---|
| <a href="#">AS49531</a> | "NetCom-R" LLC | ✓ | ✗ |
| <a href="#">AS49063</a> | Dataline Ltd   | ✓ | ✗ |

### Downstreams **⚡**

| ASN                      | Description            | IPv4 | IPv6 |
|--------------------------|------------------------|------|------|
| <a href="#">AS198024</a> | Istekki Oy             | ✓    | ✓    |
| <a href="#">AS29240</a>  | Loihde Trust Oy        | ✓    | ✓    |
| <a href="#">AS8236</a>   | DNA Oyj                | ✓    | ✓    |
| <a href="#">AS206175</a> | Meidan IT ja talous Oy | ✓    | ✗    |
| <a href="#">AS198514</a> | ALSO Cloud Oy          | ✓    | ✗    |



9ebdc6dd22e153

# Prefix Data

Overview Connectivity Whois **DNS** Validation

Show Forward DNS

| A              | DNS  |
|----------------|--|
| 62.165.128.195 | fortivpn.inchcape.fi   |
| 62.165.128.202 | backend.remote-dev.yobitti.fi, port.staging.rekkaparkki.com ( <a href="#">14 more...</a> ) |
| 62.165.128.205 | pma.docker-prod.yobitti.fi, maps.yobitti.fi, sp.yobitti.fi ( <a href="#">27 more...</a> )  |

↑  
See what A records to into a prefix!

→  
See IPv6 PTR records inside a prefix!



Overview Connectivity Whois **DNS**

Validation

Show Reverse DNS

Remove auto generated reverse DNS entries

| Address                               | PTR                    |
|---------------------------------------|------------------------|
| 2a0c:2f07:4896:2c2:2c1::a             | 2com2-2com1.p2p.b6     |
| 2a0c:2f07:4896:2c2:2c1::b             | 2com1-2com2.p2p.b6     |
| 2a0c:2f07:4896:666::5511              | monsoon-to-orange.b    |
| 2a0c:2f07:4896:666::b179              | send-hold-timer-tester |
| 2a0c:2f07:4896:666:216:3eff:fe06:b6ff | www-monsoon-3.b621     |
| 2a0c:2f07:4896:666:216:3eff:fe15:70a  | dht-5.b621.net.        |
| 2a0c:2f07:4896:666:216:3eff:fe1a:65a6 | gophervista.b621.net.  |
| 2a0c:2f07:4896:666:216:3eff:fe22:f48d | deepspeech-w-1.b621    |
| 2a0c:2f07:4896:666:216:3eff:fe2e:fa45 | ubnt.b621.net.         |
| 2a0c:2f07:4896:666:216:3eff:fe6d:9416 | ttf-services.b621.net. |
| 2a0c:2f07:4896:666:216:3eff:fe8f:813c | nat64-monsoon.b621     |

bgp.tools Start here... →

Logged in as AS206924

View Edit Super LG

## 62.165.128.0/18

Originated by **AS16086**  
AS Name: **DNA Oyj**


Overview Connectivity Whois **DNS**

Validation

Registered on  
**17 Dec 2001 (21 years old)**

Registered to  
**fi.dna (RIPE)**

# Global Looking Glass

```
Terminal
File Edit View Search Terminal Help
recording to ~/.ssh/recordings/rec_1683493861827672619
[22:11:01] ben@metropolis:~$ ssh ifnbg@bgp.tools
Welcome 2a0c:2f07:4663:4663:92e2:baff:fe61:c389 This session is supported by:

bgp.tools> show route 185.230.223.0/24 match 1003 short
[AS1003 - andrewnet] TORv4 [1003 835 174 5511 206924] {[
174:21100 174:22012 835:10000 1003:1200 1003:1201 62513:10000 206924:666:0 20692
4:5511:0]}
[AS1003 - andrewnet] MCiv4 [1003 12186 32097 1299 3170 2
06924] {[1003:1300 1003:1302 1003:1306 12186:30000]}
bgp.tools>
```



Web UI | Terminal UI

## Query all public BGP sessions connected to bgp.tools

Lookup by CIDR, only applies to sessions that have been marked to be exported publicly


Search Filters:

Must Contain ASN:

---

Query Overview:

**322 Sessions Responded**  
**451 Matching Paths Displayed**

Supported by: 

185.230.223.0/24 unicast [AS35487 - edge-ng-los01 0000-00-00] \* (?/-) [AS206924]

Type: BGP  
BGP.as\_path: 35487 8849 5511 206924  
BGP.community: (56630,3000) (56630,3057) (57695,13000)  
unicast [AS1003 - TORv4 0000-00-00] \* (?/-) [AS206924]

Type: BGP  
BGP.as\_path: 1003 835 174 5511 206924  
BGP.community: [AS174: Route is learned from EU (Europe) non-customer.] [AS174: United Kingdom] [AS835: Source: Cogent Transit] (1003,1200) (1003,1201) (62513,10000)  
BGP.large\_community: (206924, 666, 0) (206924, 5511, 0)  
unicast [AS34979 - 39D-TEL-02 0000-00-00] \* (?/-) [AS206924]

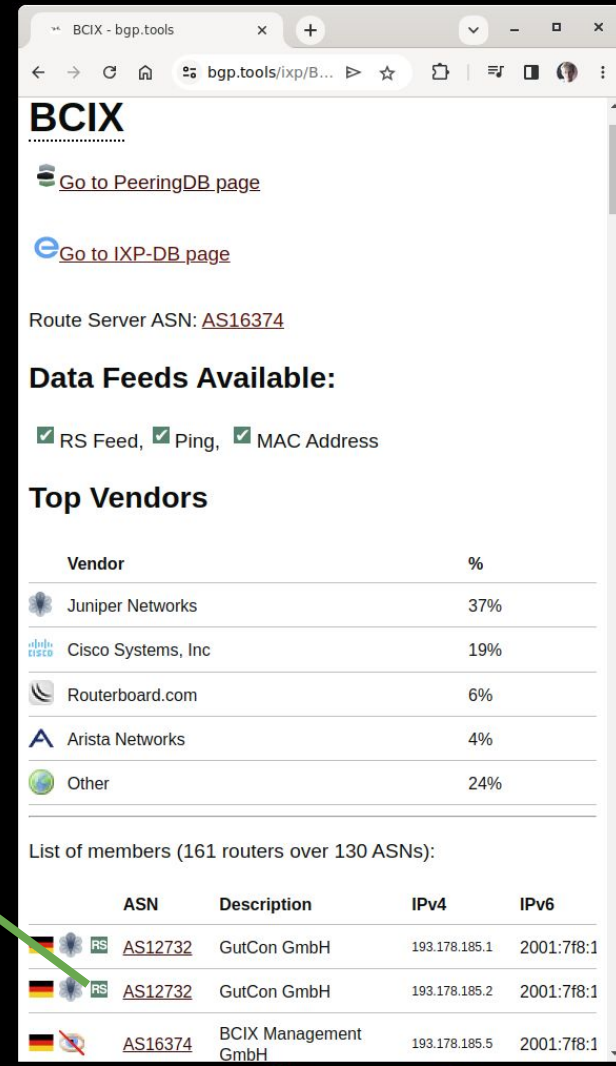
Type: BGP

# IXP Info Pages

View

Showing routes on "BCIX" route servers that point to the next hop of 193.178.185.12, 2001:7f8:19:1::3b1d:1.

| Session    | Prefix                           | BGP Path  |
|------------|----------------------------------|---|
| BCIX-RS1-4 | <a href="#">152.195.102.0/24</a> |  <a href="#">AS16374</a>  <a href="#">AS15133</a> |
| BCIX-RS1-4 | <a href="#">152.195.103.0/24</a> |  <a href="#">AS16374</a>  <a href="#">AS15133</a> |
| BCIX-RS1-4 | <a href="#">46.22.76.0/24</a>    |  <a href="#">AS16374</a>  <a href="#">AS15133</a> |
| BCIX-RS1-4 | <a href="#">46.22.77.0/24</a>    |  <a href="#">AS16374</a>  <a href="#">AS15133</a> |



BCIX

[Go to PeeringDB page](#)






[Go to IXP-DB page](#)

Route Server ASN: [AS16374](#)







**Data Feeds Available:**

RS Feed,  Ping,  MAC Address

**Top Vendors**

| Vendor   | %   |
|--|-----|
|  Juniper Networks   | 37% |
|  Cisco Systems, Inc | 19% |
|  Routerboard.com    | 6%  |
|  Arista Networks    | 4%  |
|  Other              | 24% |

List of members (161 routers over 130 ASNs):

| ASN   | Description          | IPv4          | IPv6       |
|---|----------------------|---------------|------------|
|   <a href="#">AS12732</a>     | GutCon GmbH          | 193.178.185.1 | 2001:7f8:1 |
|   <a href="#">AS12732</a> | GutCon GmbH          | 193.178.185.2 | 2001:7f8:1 |
|   <a href="#">AS16374</a> | BCIX Management GmbH | 193.178.185.5 | 2001:7f8:1 |





# Traceroutes/Looking Glass/Agents

## 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]
```

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



AS34695 The Crazy Red Cat Company LTD

AS Number **34695**  
Website <https://www.e4a.it>

Registered 18 M (old)

Network status: Active, Allocated under RIPE

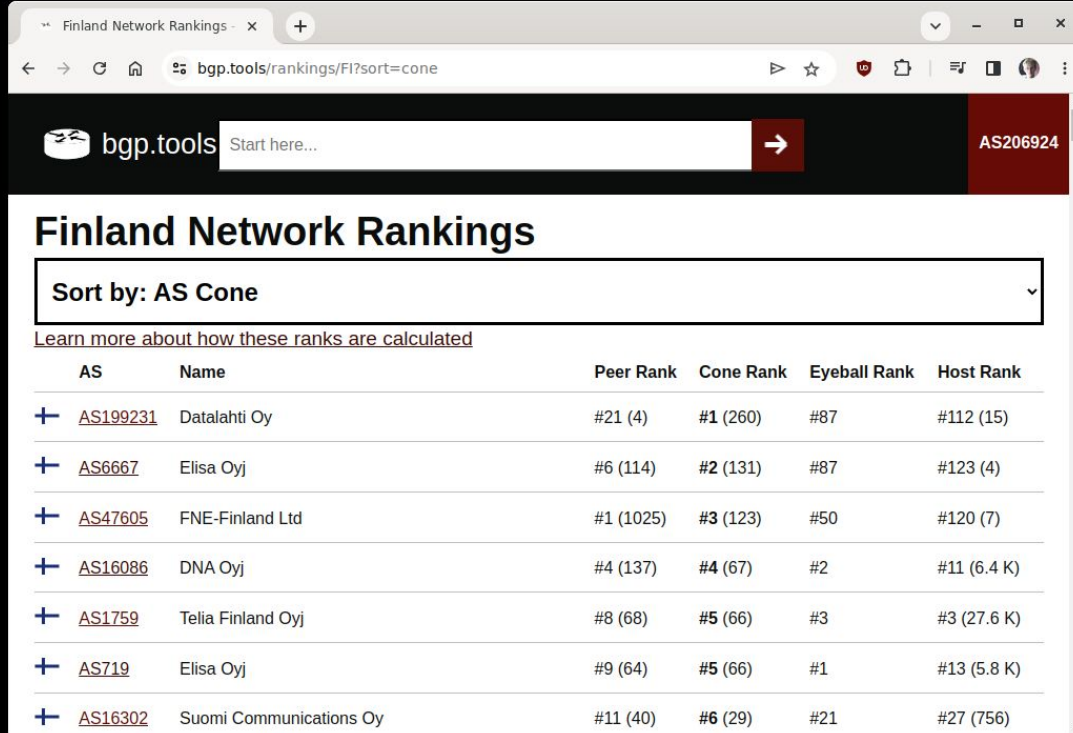
Prefixes Announced: 2 IPv4, 0 IPv6

Network type: Unknown

Upstreams: Rankings

**This is a GIF, Sorry PDF users!**

# Network Ranking



Finland Network Rankings

Sort by: AS Cone

[Learn more about how these ranks are calculated](#)

| AS                         | Name                    | Peer Rank | Cone Rank | Eyeball Rank | Host Rank   |
|----------------------------|-------------------------|-----------|-----------|--------------|-------------|
| + <a href="#">AS199231</a> | Datalahti Oy            | #21 (4)   | #1 (260)  | #87          | #112 (15)   |
| + <a href="#">AS6667</a>   | Elisa Oyj               | #6 (114)  | #2 (131)  | #87          | #123 (4)    |
| + <a href="#">AS47605</a>  | FNE-Finland Ltd         | #1 (1025) | #3 (123)  | #50          | #120 (7)    |
| + <a href="#">AS16086</a>  | DNA Oyj                 | #4 (137)  | #4 (67)   | #2           | #11 (6.4 K) |
| + <a href="#">AS1759</a>   | Telia Finland Oyj       | #8 (68)   | #5 (66)   | #3           | #3 (27.6 K) |
| + <a href="#">AS719</a>    | Elisa Oyj               | #9 (64)   | #5 (66)   | #1           | #13 (5.8 K) |
| + <a href="#">AS16302</a>  | Suomi Communications Oy | #11 (40)  | #6 (29)   | #21          | #27 (756)   |

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



# Core points

- Built out of the frustration I had with other tools
- 990~ BGP sessions established
- Practically realtime BGP peer updates
- The horrors of WHOIS is handled, and in some cases is updated in near real time
- Frequently updated (~14 days):
  - ICMP Ping data scans of IPv4 /0
  - IPv4 and IPv6 RDNS data
  - Forward DNS data (Looking what A records point to a prefix)
- Peering IXP data is provided (MAC address vendors, ping data etc)

# 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

## New BGP Session:

Description for Router/Session: (max 16 chars)

LHR01

Select the ASN you would like us to use for you. We will only accept [AS212232 \(bgp.tools\)](#), AS206924 AS212232, and Private ASN ranges

212232

Select the ASN you are going to use with us. We will only accept AS206924 AS212232 and Private ASN ranges

206924

Select the IP you will be connecting from.

192.0.0.1 / 2001:db8::

You will get the remote (bgp.tools side) IP after you create the session.

Please send **Full tables** rather than just your peering routes/customer routes. bgp.tools may automatically switch your sessions to only import your peering routes to save RAM, but allow us to figure that out for future flexibility!

We support (and encourage) BGP AddPath, and MultiProtocol/MultiFamily BGP

If you absolutely need a MD5 Password on the session, please enter the desired MD5 password

Export this data into publicly available MRT files (also enables the public looking glass)

Also allow commercial products to use those MRT files

Send notifications if session is down for more than 2 hours

Create BGP Session

# Leak finding with Up/Downstreams

## Downstreams ⚡

|   | ASN                     | Description                                   | IPv4 | IPv6 |
|---|-------------------------|---|------|------|
|   | <a href="#">AS58626</a> | MAGSNET INC.                                  | ✓    | ✗    |
|   | <a href="#">AS52676</a> | C3 Desenvolvimento de Sistemas Computacionais | ✓    | ✓    |
|   | <a href="#">AS812</a>   | Rogers Communications Canada Inc.             | ✓    | ✗    |
|   | <a href="#">AS11670</a> | Toronto Internet Exchange Community           | ✓    | ✗    |
|   | <a href="#">AS6939</a>  | Hurricane Electric LLC                        | ✓    | ✓    |

# Leak finding with Up/Downstreams

## Downstreams ⚡

|   | ASN                     | Description                                   |
|---|-------------------------|---|
|   | <a href="#">AS58626</a> | MAGSNET INC.                                  |
|   | <a href="#">AS52676</a> | C3 Desenvolvimento de Sistemas Computacionais |
|   | <a href="#">AS812</a>   | Rogers Communications Canada Inc.             |
|   | <a href="#">AS11670</a> | Toronto Internet Exchange Community           |
|   | <a href="#">AS6939</a>  | Hurricane Electric LLC                        |










































The WTF Button is a paid feature (sorry!)

IPv4 IPv6

### View

This page shows *some* of the BGP AS paths (and their prefix) that bgp.tools uses to learn that AS40028 (1651884 Ontario Inc.) is a upstream of AS812 (Rogers Communications Canada Inc.).

This list is not exhaustive, and some paths might have been hidden due to the data feeds being non-exportable.

| Prefix                           | BGP Path  |
|----------------------------------|---|
| <a href="#">107.181.150.0/24</a> |  <a href="#">AS62193</a>  <a href="#">AS25291</a>  <a href="#">AS1299</a>  <a href="#">AS40028</a>  <a href="#">AS812</a>  |
| <a href="#">45.43.87.0/24</a>    |  <a href="#">AS57692</a>  <a href="#">AS47605</a>  <a href="#">AS1299</a>  <a href="#">AS40028</a>  <a href="#">AS812</a>  |
| <a href="#">45.43.87.0/24</a>    |  <a href="#">AS207616</a>  <a href="#">AS64515</a>  <a href="#">AS20473</a>  <a href="#">AS1299</a>  <a href="#">AS40028</a>  <a href="#">AS812</a> |
| <a href="#">45.43.87.0/24</a>    |  <a href="#">AS43099</a>  <a href="#">AS51519</a>  <a href="#">AS39351</a>  <a href="#">AS1299</a>  <a href="#">AS40028</a>  <a href="#">AS812</a>  |
| <a href="#">107.181.150.0/24</a> |  <a href="#">AS49544</a>  <a href="#">AS3356</a>  <a href="#">AS1299</a>  <a href="#">AS40028</a>  <a href="#">AS812</a>   |
| <a href="#">45.43.87.0/24</a>    |  <a href="#">AS34549</a>  <a href="#">AS3356</a>  <a href="#">AS3257</a>  <a href="#">AS40028</a>  <a href="#">AS812</a>   |
| <a href="#">107.181.150.0/24</a> |  <a href="#">AS35487</a>  <a href="#">AS8849</a>  <a href="#">AS5511</a>  <a href="#">AS1299</a>  <a href="#">AS40028</a>  <a href="#">AS812</a>    |
| <a href="#">107.181.150.0/24</a> |  <a href="#">AS396998</a>  <a href="#">AS1299</a>  <a href="#">AS40028</a>  <a href="#">AS812</a>   |



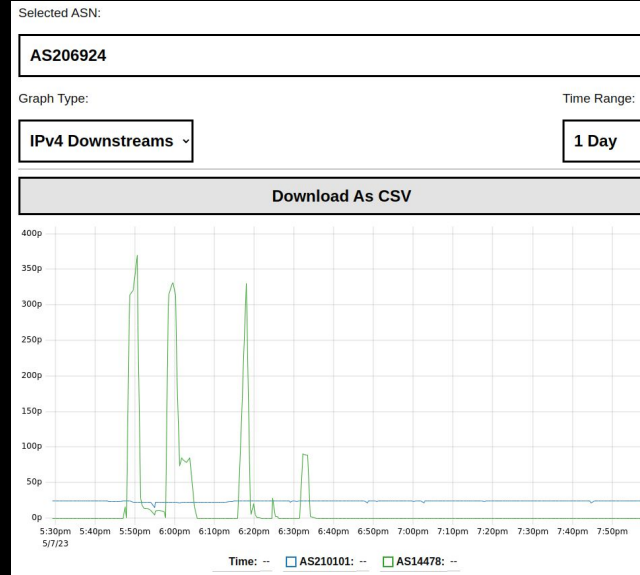
bgp.tools

# Other useful features

- BGP Community documentation
- AS-SET lookups, decoding, explorer
- Client side Agent software is available for testing (for traceroutes etc)
- RPKI ASPA support
- IX-F feeds are used over PeeringDB where available
- Data dumps for BGP table data and ASN Names available
- Automatic tagging for things like Residential Internet, Server Hosting, Universities, Government ASNs

# Monitoring services

- Goal is to fund the site (and myself) by providing nice paid tools like:
- Rapid BGP/RPKI/IRRdb monitoring
- Managed looking glasses
- BGP Session data recording (and replay for incident review)
- Logo placement on Looking Glass



21:22

Bgptools bot

Limited) has been lost as a upstream 13:50

[bgp.tools Alert] for AS206924  
AS14478 (Recurse Center) has been detected as a new downstream. More details on <https://bgp.tools/authed/manage-alerts?detail=e0c96f21-ce7f-49ec-95d6-a229cee621a5>  
bgp.tools  
Login - BGP.Tools  
bgp.tools allows you to do bgp debugging and gives insight into internet routing with ease in a user friendly way 16:57

[bgp.tools Alert] for AS206924  
AS14478 (Recurse Center) has been detected as a new downstream. More details on <https://bgp.tools/authed/manage-alerts?detail=b8143c47-abe0-4590-a14f-f5c171a6fa8c>  
bgp.tools  
Login - BGP.Tools  
bgp.tools allows you to do bgp debugging and gives insight into internet routing with ease in a user friendly way 16:59

Message



# ANYWAY

Sorry didn't mean to do a sales pitch



bgp.tools

202567238b372969189ebdc6dd22e153



Anyway, where does all of this data come from?

# RIS/RouteViews

- RIS/RV collectors live on IXPs
- Kind of a mess of IXP peers just sending their customer cone, not their full table
- Previously (Maybe still currently?) RIS has been limiting new sessions due to capacity concerns?

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



## In comparison

- 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!**

## In comparison

- 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 96% eBGP Multihop
  - 990~ Sessions online
  - 654 / 986 Full IPv4/IPv6 tables (!!)

# Problems with IXP Route Collection

- 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>
- **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 transit paths from the collector

# Solving for XC Fees / Colo

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

# Solving for XC Fees / Colo

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





# 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 or something
- Cheap, Around 150 USD all in
- Single core ARMv7, with 512M of RAM running Debian Jessie
- **Completely crazy.** Everyone is going to look at you like you lost the plot!
- Made by a company called PlumSpace (that **might** have some sanctions complications attached to them)



bgp.tools

<https://blog.benjojo.co.uk/post/smart-sfp-linux-inside>

202567238b372969189ebdc6dd22e153

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  $\mu$ Arch 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

# The actual IXP deployment 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 sunseting 1G ports
  - PlumSpace is working on a 10G SFP+ version, but it's projected to be expensive
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






# Dialing down the insanity

- A lot of IXPs have reseller programs, and with friends you can pick up very cheap ports and maybe a tagged vlan on a virtual machine.
- Downside is that even with this, a lot of the IXPs still require you to be a full member to be present on the LAN

# 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

# Current progress

- Online collectors:
  -  JINX, DINX, CINX (+ Building NMBINX)
  -  NL-IX (+ Building ERA-IX)
  -  BCIX (+ Building DE-CIX's)
  -  LONAP
  -  ONIX
- Some IXPs are setting up eBGP multihop sessions from their route servers!
  - Route server feeds from MINAP, ERA-IX Amsterdam, GPC Missouri, DO-IX
- Some I've got other real time route server data sources for:
  - KleyReX, LINX LON1, KCIX

You can feed BGP.tools over the IXP with these



# Questions?

Want to feed bgp.tools?

go to [bgp.tools](https://bgp.tools) and go to bottom link "Contribute Data"

More complex queries:

IRC: Benjojo-bgptools (terahertz) / benjojo (everything else)

Or email: [admin@bgp.tools](mailto:admin@bgp.tools)

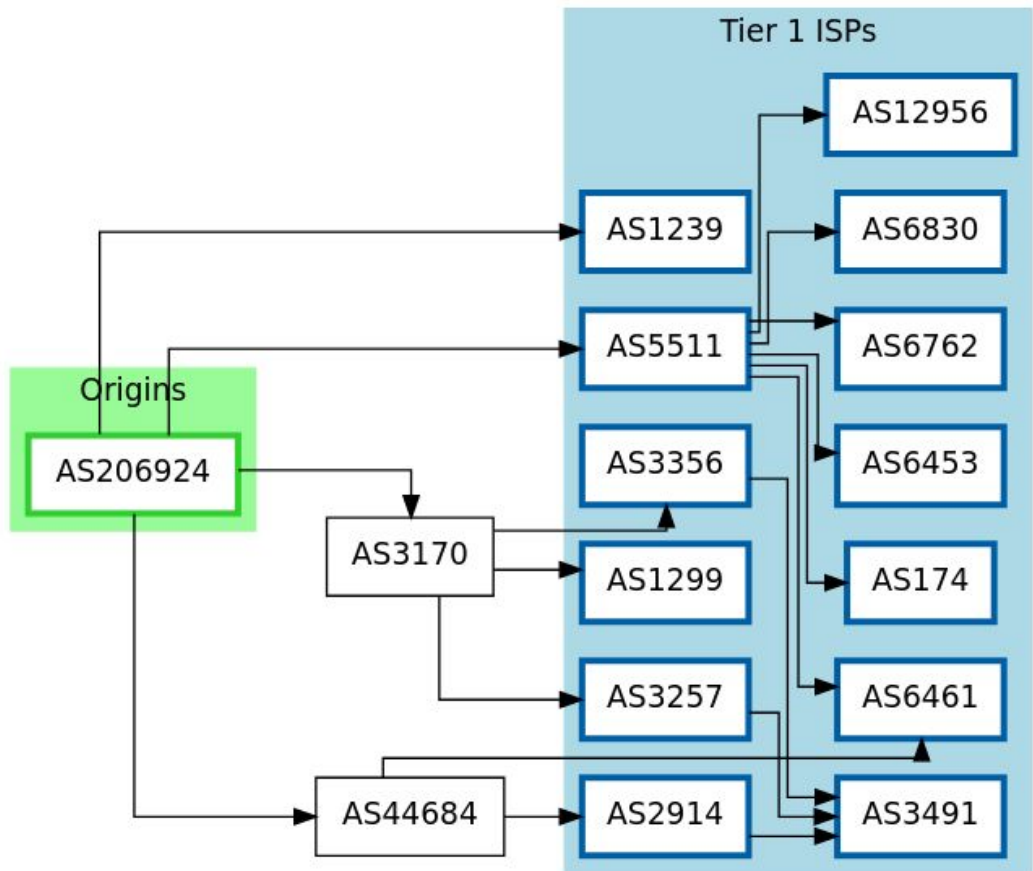


**bgp.tools**

# Bonus slides (just in case)

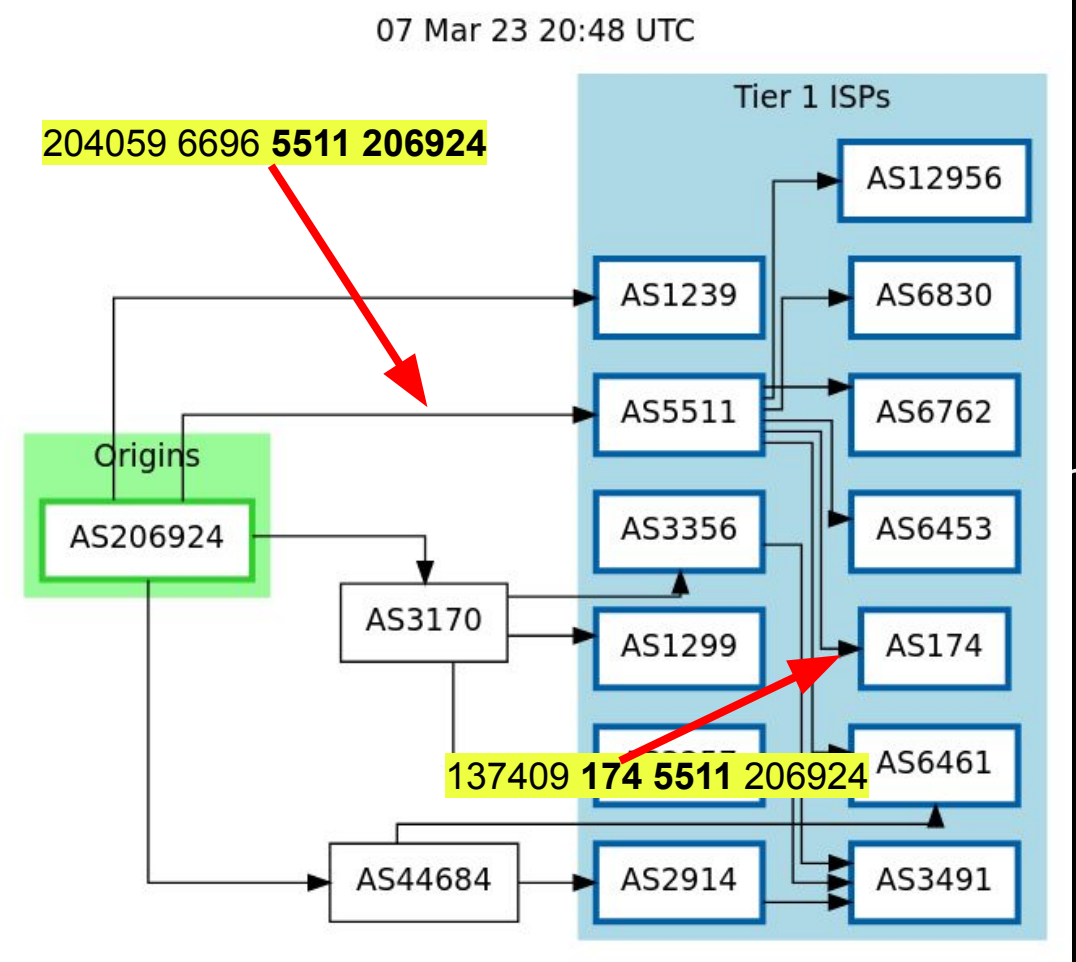
# Determining the upstream

- You have to have loads of
- You have to detect and so
- "Upstreams" is not really who sends you eventually



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EOF