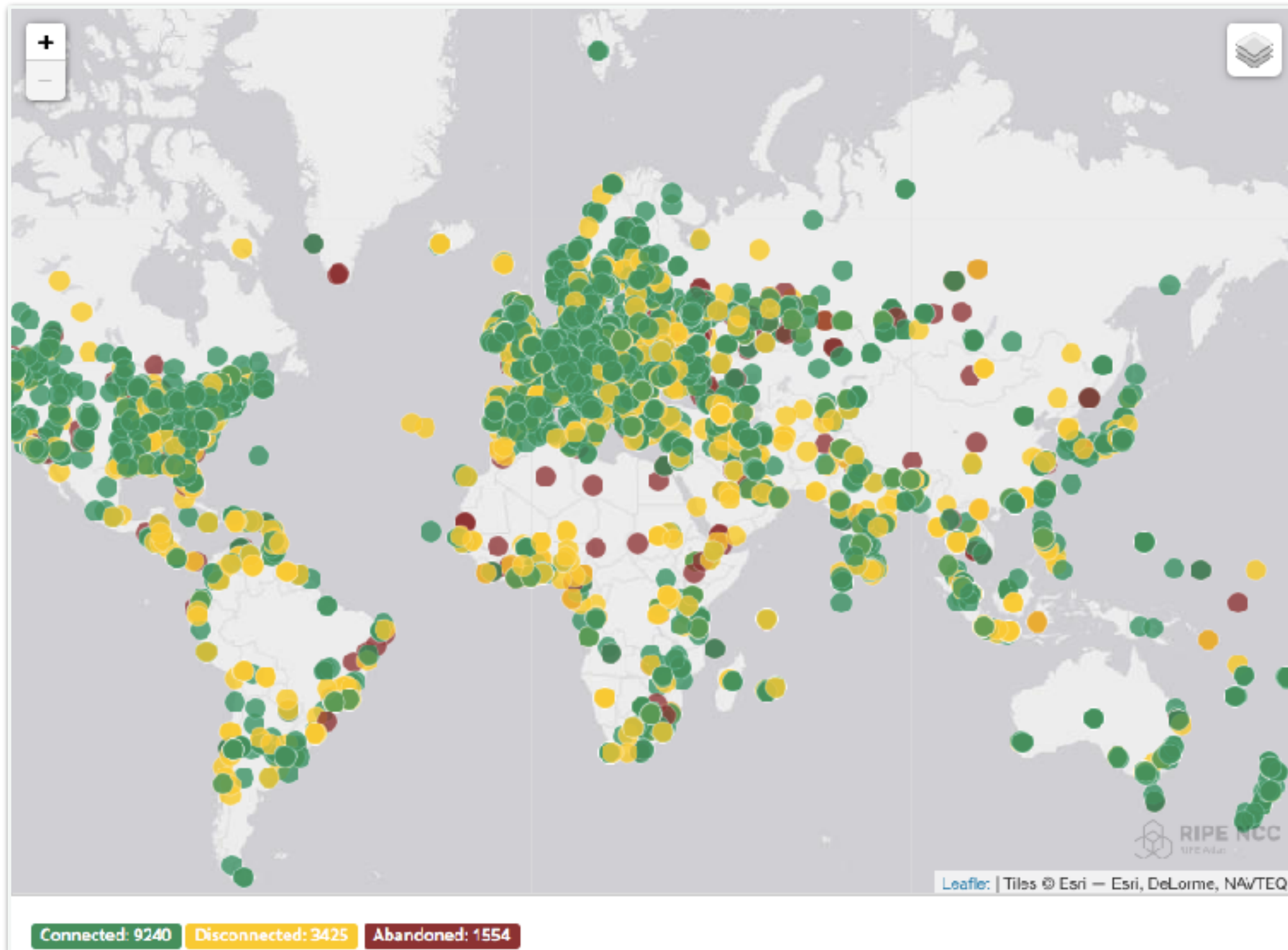




RIPE NCC
RIPE NETWORK COORDINATION CENTRE

IXP-Jedi : A use case for RIPE ATLAS data for IXP operators

RIPE Atlas Coverage



Probes



Credits



- Running a User Defined Measurement costs credits
- You earn these credits by hosting a probe or an anchor
- You can also sponsor probes
- Occasionally we give credits to students and researchers

What can they do?



- Perform Built-in measurements towards the root name servers
- Participate in User Defined Measurements
- Measurements are done from the probe's perspective

Measurements



- Types of measurements
 - Ping
 - Trace route
 - DNS
 - SSL Cert
 - HTTP
 - NTP

Anchors



What can anchors do?



- Anchors can do anything a probe can do
- They participate in Anchoring Measurements
- They can also be a target for a measurement, ie you measure towards an anchor

Security Disclosures



Security of the RIPE Atlas system is important for us. The development team is continually improving the controlling infrastructure as well as the probes themselves, in order to increase its resiliency against issues potentially caused by network problems, misbehaving components or users, or attackers. The architectural design of the system includes many controls to prevent potential overload, unauthorised use, and "takeover" of the network.

For more info please see:

<https://atlas.ripe.net/docs/security/>



Use cases

Examples of RIPE Atlas use

Use cases (1)



Using RIPE Atlas to Validate International Routing Detours

[Anant Shah](#) — 30 Jan 2017

A Quick Look at the Attack on Dyn

[Massimo Candela](#) — 24 Oct 2016

Contributors: [Emile Aben](#)

Using RIPE Atlas to Monitor Game Service Connectivity

[Annika Wickert](#) — 14 Sep 2016

Using RIPE Atlas to Measure Cloud Connectivity

[Jason Read](#) — 06 Sep 2016

Using RIPE Atlas to Debug Network Connectivity Problems

[Stéphane Bortzmeyer](#) — 10 May 2016

RIPE Atlas IXP Country Jedi (1)

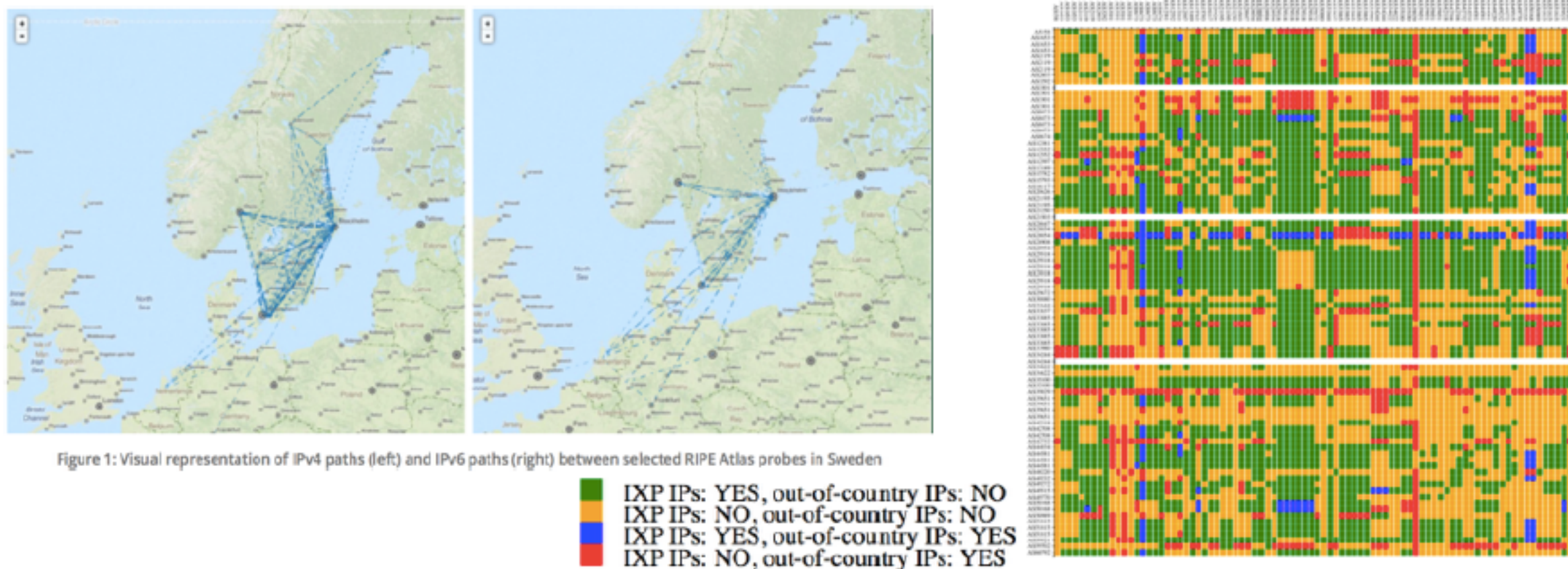


- Do paths between ASes stay in country?
- Any difference between IPv4 and IPv6?
- How many paths go via local IXP?
- Could adding peers improve reachability?
- Experimental tool
 - Feature requests welcome!
 - Depends on probe distribution in country

RIPE Atlas IXP Country Jedi (2)



- Methodology
 - **Trace route mesh** between RIPE Atlas probes
 - Identifying ASNs in country using RIPEstat
 - Identifying IXP and IXP LANs in PeeringDB



Use Cases (2)



- DDoS Attack on Dyn DNS Servers (Oct. 2016)
 - 10s millions devices - Mirai botnet
 - Legitimate requests



Use Cases (3)



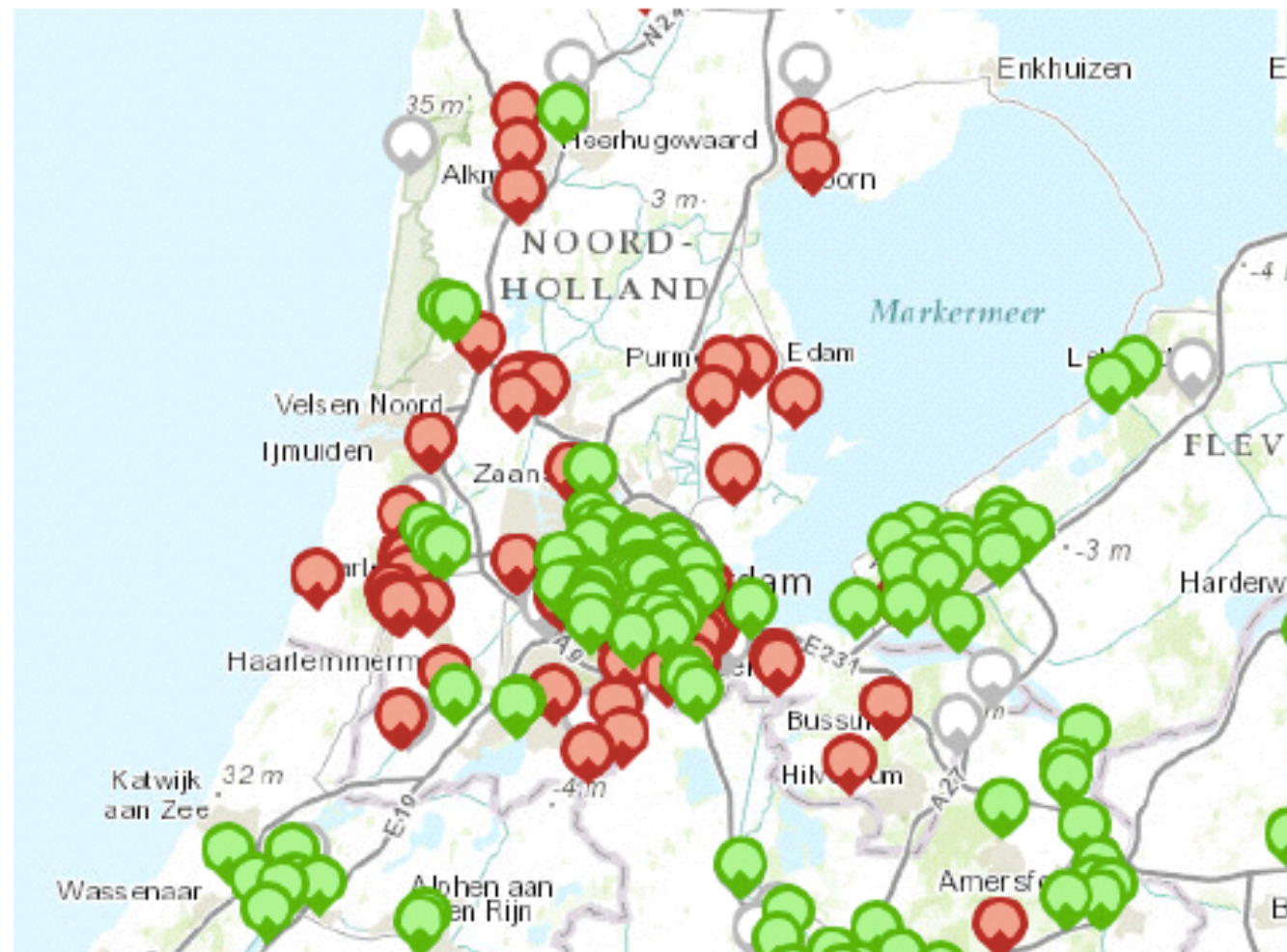
- Monitor Game Service Connectivity (Sept. 2016)
- Requirements:
 - Check General Reachability, Latency, Historical data
 - Supported by an active and helpful community
 - Integrate with their existing logging system
- Track down an outage in one upstream
- Became sponsors





Use Cases (4)

- Amsterdam Power Outage (March 2015)
- When and where the outage was happening



Tanzania

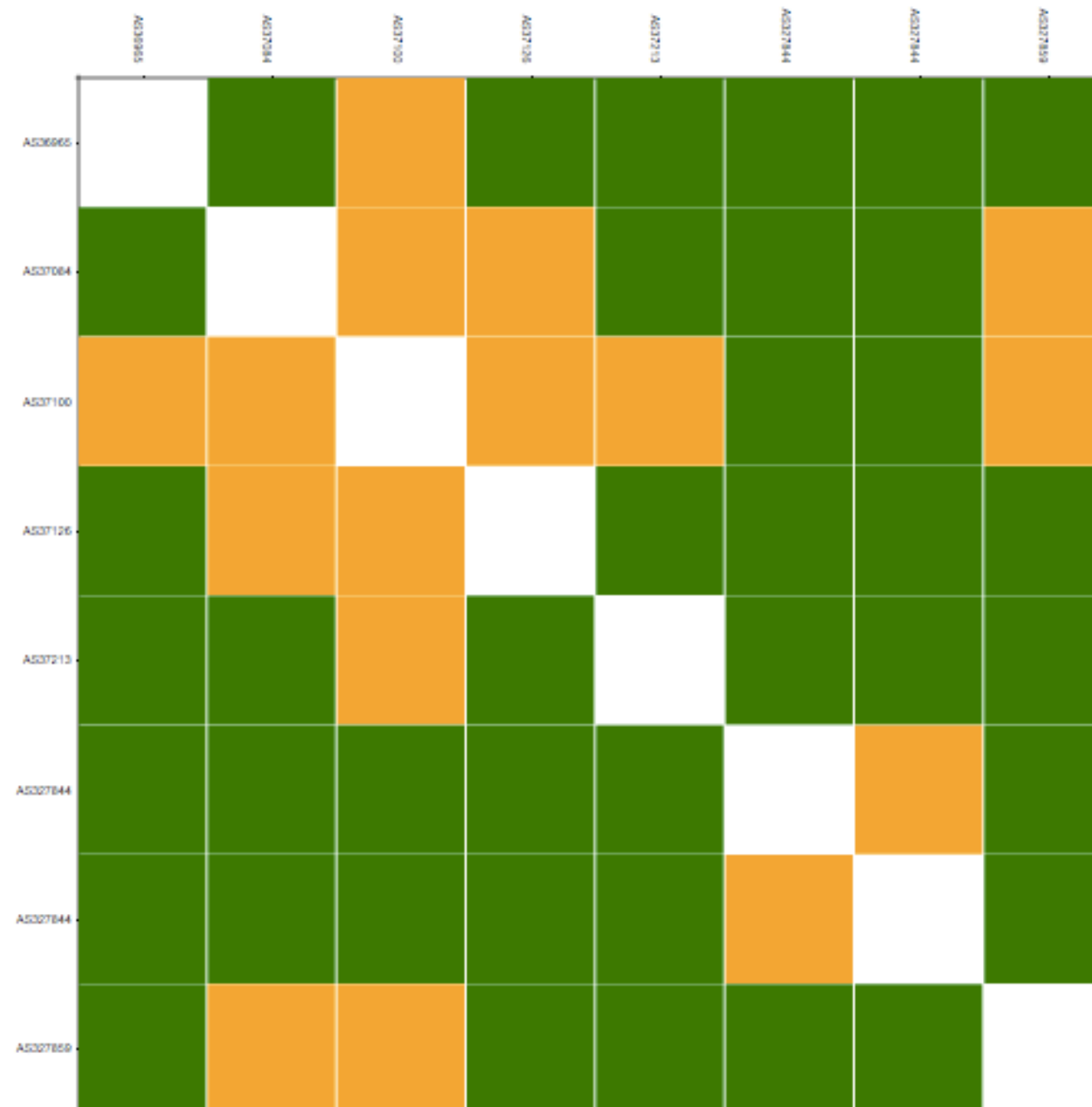


Mouse click on every box to see the traceroute path. | Showing 7 of 7 ASNs.

Show Filter ASNs

Hide Legend

- IXP IPs: NO, out-of-country IPs: NO
- IXP IPs: YES, out-of-country IPs: YES
- IXP IPs: YES, out-of-country IPs: NO
- IXP IPs: NO, out-of-country IPs: YES



Show Filter ASNs

Hide Legend

■ XP IPs: NO, out-of-country IPs: YES



South Africa

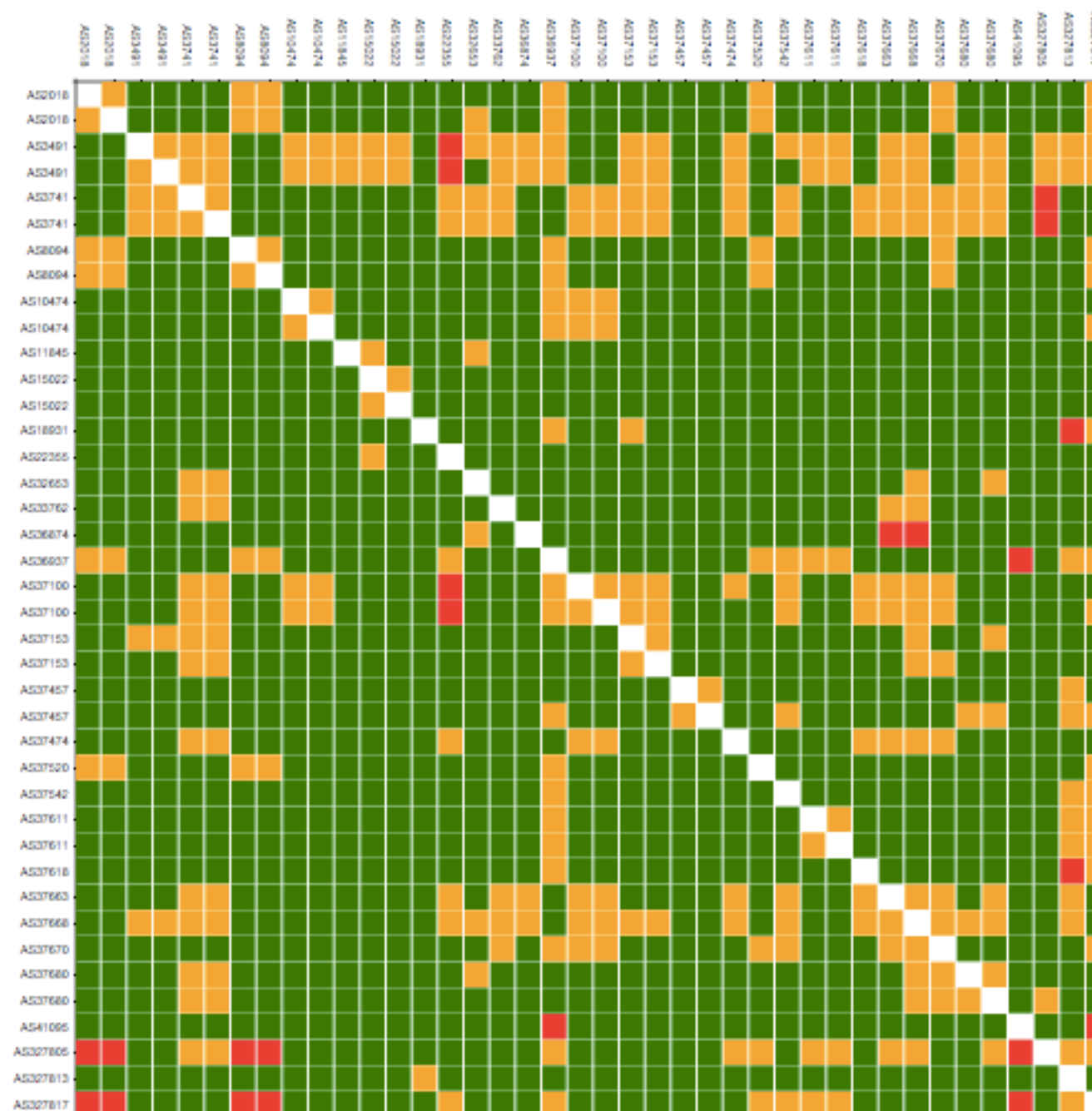


Mouse click on every box to see the traceroute path. | Showing 29 of 29 ASNs.

Show Filter ASNs

Hide Legend

- IXP IPs: NO, out-of-country IPs: NO
- IXP IPs: YES, out-of-country IPs: YES
- IXP IPs: YES, out-of-country IPs: NO
- IXP IPs: NO, out-of-country IPs: YES



South Africa



Mouse click on every box to see the traceroute path. | Showing 29 of 29 ASNs.

Show Filter ASNs

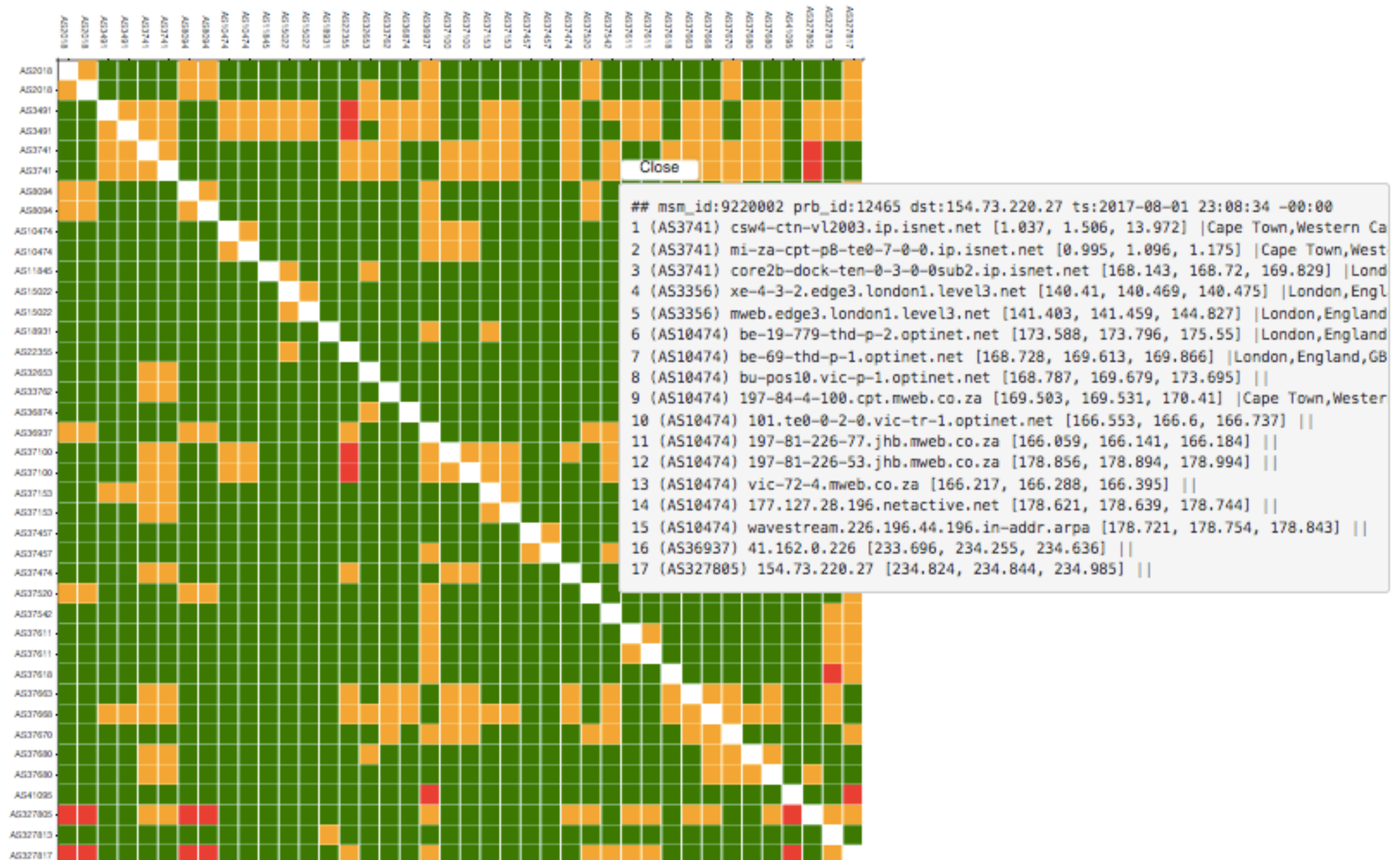
Hide Legend

IXP IPs: NO, out-of-country IPs: NO

IXP IPs: YES, out-of-country IPs: NO

IXP IPs: YES, out-of-country IPs: YES

IXP IPs: NO, out-of-country IPs: YES



South Africa



```
## msm_id:9220002 prb_id:12465 dst:154.73.220.27 ts:2017-08-01 23:08:34 -00:00
1 (AS3741) csw4-ctn-vl2003.ip.isnet.net [1.037, 1.506, 13.972] |Cape Town,Western Cape,ZA|
2 (AS3741) mi-za-cpt-p8-te0-7-0-0.ip.isnet.net [0.995, 1.096, 1.175] |Cape Town,Western Cape,ZA|
3 (AS3741) core2b-dock-ten-0-3-0-0sub2.ip.isnet.net [168.143, 168.72, 169.829] |London,England,GB|
4 (AS3356) xe-4-3-2.edge3.london1.level3.net [140.41, 140.469, 140.475] |London,England,GB|
5 (AS3356) mweb.edge3.london1.level3.net [141.403, 141.459, 144.827] |London,England,GB|
6 (AS10474) be-19-779-thd-p-2.optinet.net [173.588, 173.796, 175.55] |London,England,GB|
7 (AS10474) be-69-thd-p-1.optinet.net [168.728, 169.613, 169.866] |London,England,GB|
8 (AS10474) bu-pos10.vic-p-1.optinet.net [168.787, 169.679, 173.695] ||
9 (AS10474) 197-84-4-100.cpt.mweb.co.za [169.503, 169.531, 170.41] |Cape Town,Western Cape,ZA|
10 (AS10474) 101.te0-0-2-0.vic-tr-1.optinet.net [166.553, 166.6, 166.737] ||
11 (AS10474) 197-81-226-77.jhb.mweb.co.za [166.059, 166.141, 166.184] ||
12 (AS10474) 197-81-226-53.jhb.mweb.co.za [178.856, 178.894, 178.994] ||
13 (AS10474) vic-72-4.mweb.co.za [166.217, 166.288, 166.395] ||
14 (AS10474) 177.127.28.196.netactive.net [178.621, 178.639, 178.744] ||
15 (AS10474) wavestream.226.196.44.196.in-addr.arpa [178.721, 178.754, 178.843] ||
16 (AS36937) 41.162.0.226 [233.696, 234.255, 234.636] ||
17 (AS327805) 154.73.220.27 [234.824, 234.844, 234.985] ||
```

Source: AS3741

Destination: AS327805

South Africa



```
## msm_id:9219992 prb_id:18135 dst:196.21.99.2 ts:2017-08-01 23:08:05 -00:00
1 (AS327817) 154.73.216.241 [0.331, 0.372, 0.653] ||
2 (AS36937) 41.162.57.253 [6.588, 6.652, 6.734] ||
3 ( ) 172.18.1.164 [7.134, 7.184, 8.209] ||
4 (AS6453) ix-ae-7-0.tcore1.jso-johannesburg.as6453.net [7.649, 7.729, 33.694] |Johannesburg,Gauteng,ZA|
5 (AS6453) if-ae-4-2.tcore1.klt-cape-town.as6453.net [174.645, 174.86, 175.22] |Cape Town,Western Cape,ZA|
6 (AS6453) if-ae-5-2.tcore2.pv9-lisbon.as6453.net [179.695, 179.856, 180.599] |Lisbon,Lisbon,PT|
7 (AS6453) if-ae-2-2.tcore1.pv9-lisbon.as6453.net [174.724, 174.761, 174.834] |Lisbon,Lisbon,PT|
8 (AS6453) if-ae-1-3.tcore1.sv8-highbridge.as6453.net [174.341, 174.382, 174.429] |Highbridge,England,GB|
9 (AS6453) if-ae-2-2.tcore2.sv8-highbridge.as6453.net [182.636, 183.481, 187.368] |Highbridge,England,GB|
10 (AS6453) if-ae-11-2.tcore1.l78-london.as6453.net [173.056, 173.211, 173.325] |London,England,GB|
11 (AS6453) if-ae-17-2.tcore1.ldn-london.as6453.net [173.58, 173.589, 173.648] |London,England,GB|
12 (AS174) be3040.ccr21.lon01.atlas.cogentco.com [174.501, 174.595, 174.867] |London,England,GB|
13 (AS174) be2866.rcr21.b015533-1.lon01.atlas.cogentco.com [171.041, 171.244, 171.319] |London,England,GB|
14 (AS174) 149.14.80.210 [181.242, 181.283, 181.474] ||
15 (AS36944) xe-0-0-0-ua-nl-ams1-01.ubuntunet.net [180.168, 180.179, 180.187] ||
16 (AS36944) xe0-0-2-2018-mtz1-pe1.tenet.ac.za [183.232, 183.486, 184.634] ||
17 (AS2018) xe0-0-3-dur1-pe2.tenet.ac.za [202.884, 203.02, 203.172] ||
18 (AS2018) te0-1-0-0-els1-pe2.tenet.ac.za [202.693, 202.786, 202.842] |East London,Eastern Cape,ZA|
19 (AS2018) te4-1-plz1-pe1.tenet.ac.za [202.768, 202.837, 202.878] |Port Elizabeth,Eastern Cape,ZA|
20 (AS2018) te0-12-0-0-cpt1-pl-n.tenet.ac.za [202.592, 202.602, 202.667] |Cape Town,Western Cape,ZA|
21 (AS2018) eth47-cpt2-p2.net.tenet.ac.za [203.173, 203.184, 203.476] ||
22 (AS2018) remote.tenet.ac.za [202.559, 202.635, 202.66] ||
23 (AS2018) remote.tenet.ac.za [202.37, 202.544, 202.729] ||
```

Source: AS327817

Destination: AS2018



Questions

