RIPE NCC
RIPE NETWORK COORDINATION CENTRE

View on Japanese peering from RIPE Atlas

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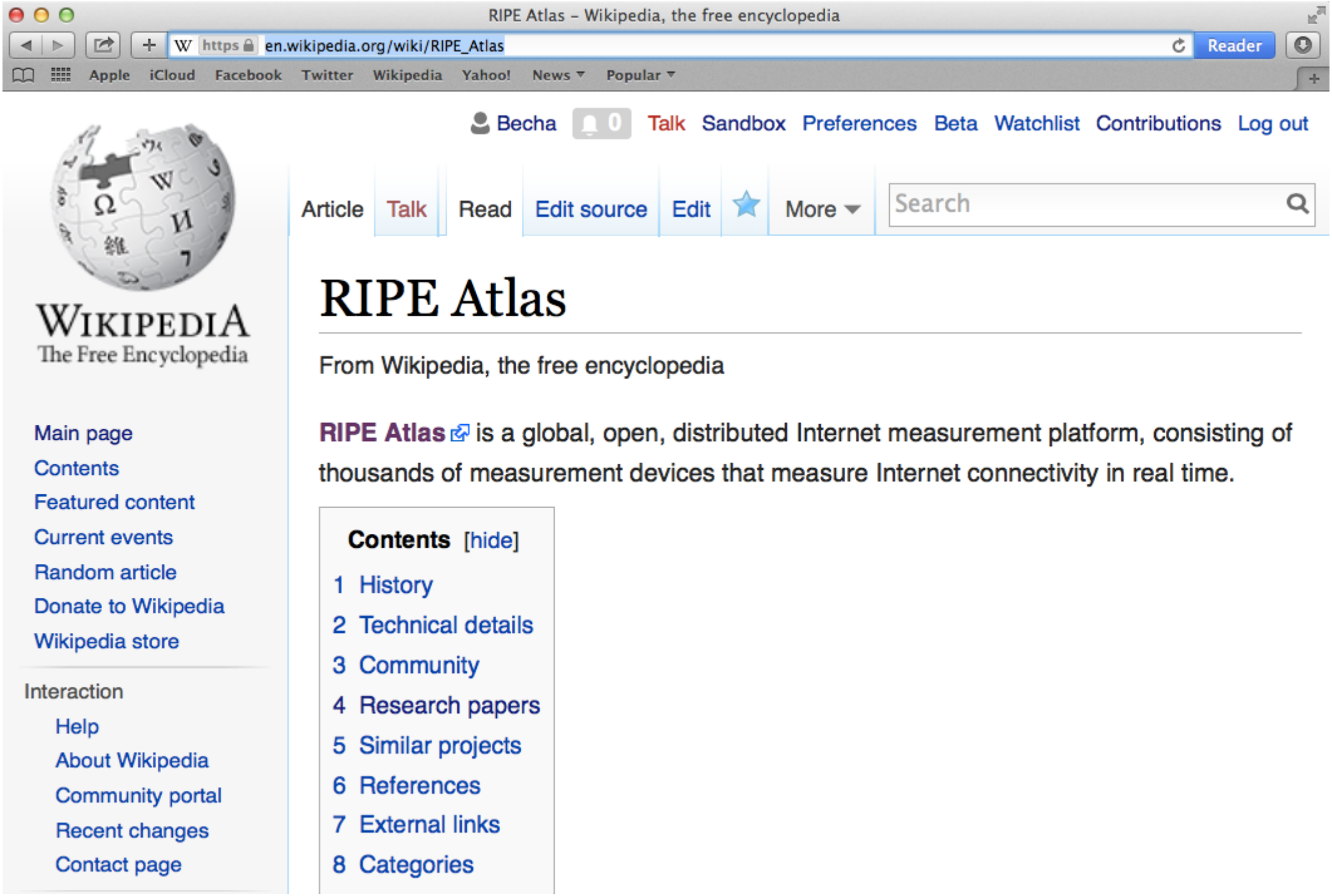
(thanks to Randy Bush for presenting!)

Randy Bush | 22 January 2016 | JANOG 37, Nagoya

Overview

- RIPE Atlas introduction
- IXP-Country-jedy
  - Are the paths between ASs staying in the country?
  - What is the difference between IPv6 & IPv4?
  - How many paths go via local IXP?
  - Which peer should you add to improve reachability?
- Call to actions
- Other views of Japan


RIPE Atlas – Wikipedia, the free encyclopedia
https
en.wikipedia.org/wiki/RIPE_Atlas
Reader
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RIPE Atlas
From Wikipedia, the free encyclopedia
RIPE Atlas is a global, open, distributed Internet measurement platform, consisting of thousands of measurement devices that measure Internet connectivity in real time.
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2 Technical details
3 Community
4 Research papers
5 Similar projects
6 References
7 External links
8 Categories

RIPE Atlas Coverage

- Countries covered: 181
- Originating ASNs covered:
  - 3,333 (IPv4) = 6,33%
  - 1,212 (IPv6) = 11,22%

Country	Probes
United States of America	1032
Germany	966
France	772
United Kingdom	610
Netherlands	514
Russia	481
Czech Republic	262
Italy	260
Switzerland	256
Ukraine	220

Most Popular Features

- Six types of measurements: ping, traceroute, DNS, SSL/TLS, NTP and HTTP (to anchors)
  - built-in towards root nameservers from all probes
  - towards targets defined by users, from up to 500 probes per measurement
- Streaming data: real-time results available
- Compressed data download available
- APIs for getting results & starting measurements
- Powerful & informative visualizations provided

Newest Feature: CLI Tools

- Command-line interface to RIPE Atlas API
  - Simple, familiar usage from the terminal
  - Human-readable results
- Open-source development: code on GitHub
- Documentation: https://ripe-atlas-tools.readthedocs.org/
- Included in the Linux / *BSD distributions: OpenBSD, FreeBSD, Gentoo & Arch
  - in progress: Debian & Fedora
  - join & contribute!

More New Features

- HTTP measurements to anchors
- “Time Travel”
- LatencyMON
- DomainMON
- Sharing your probe with a group
- Whitelisting and blacklisting targets, on request
- Other recent features: RIPE Labs article

Measuring country's paths

IXP Country Jedi

- Tool & concept by Emile Aben
  - https://github.com/emileaben/ixp-country-jedi
  - https://labs.ripe.net/Members/emileaben/measuring-ixps-with-ripe-atlas
- traceroute mesh between RIPE Atlas probes
  - Identify ASNs in the country using RIPEstat
  - Identify IXPs & IXP LANs using PeeringDB
  - Construct mesh: from all (*) country probes to each other
    - max 2 probes per ASN;
    - only “public” probes with “good” GeoLoc
  - Hops geolocated using “OpenIPMap” database

Benefits (1)

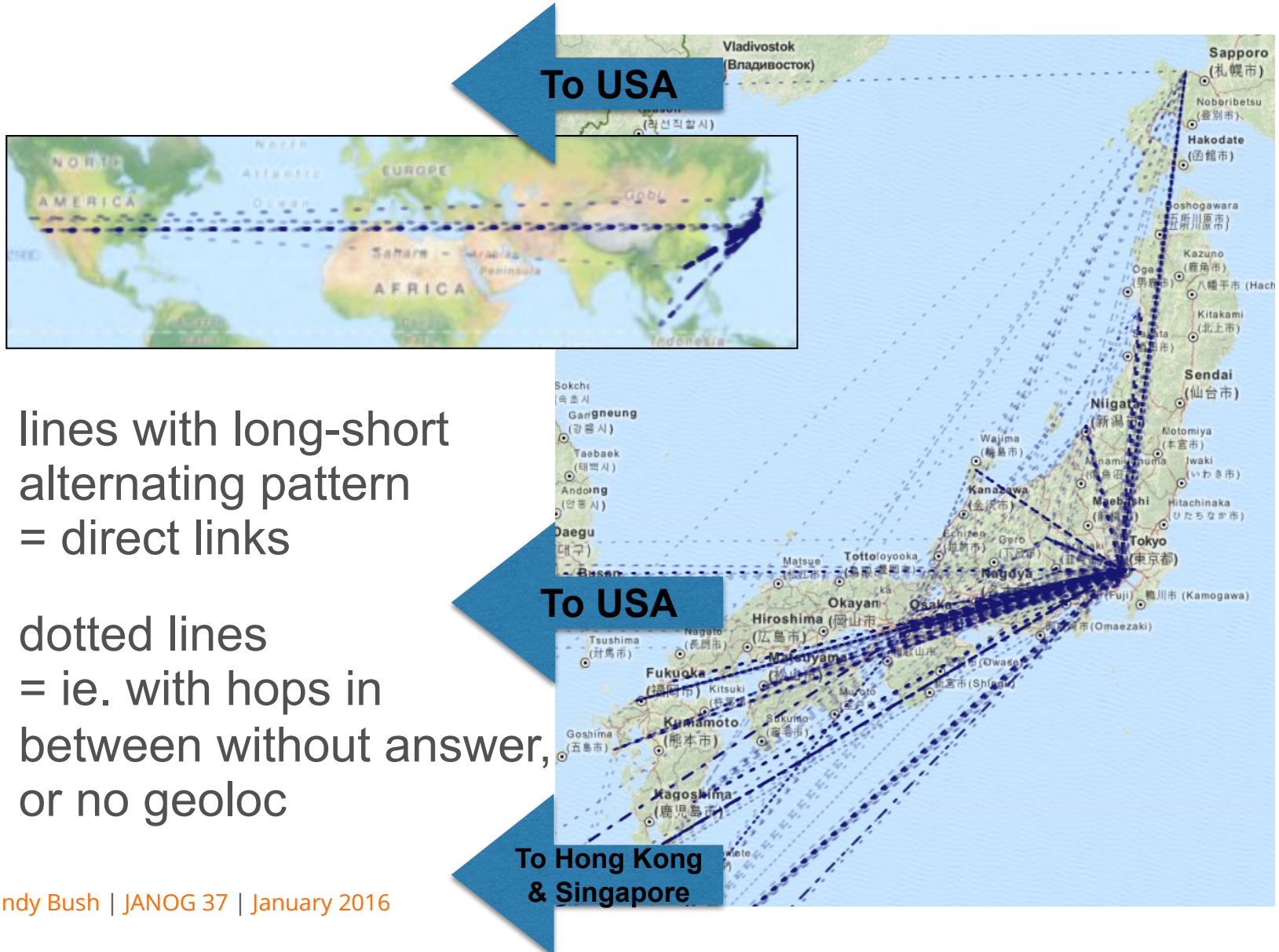
- Country: regulators, politicians, cyber-security…
  - how many paths stay within the country? where else do the paths go?
  - comparing countries performance with each other
- Operators
  - routing & traffic optimization
- IPv6 advocates (or IPv4 advocates!)
  - comparing IPv4 and IPv6 paths

Benefits (2)

- IXP operators
  - shows how IXPs help to keep traffic local & regional
- RIPE Atlas community
  - more probes in more networks = higher quality of measurement data
- Geolocation data community
  - use case for improving the data quality

Paths staying in the country?

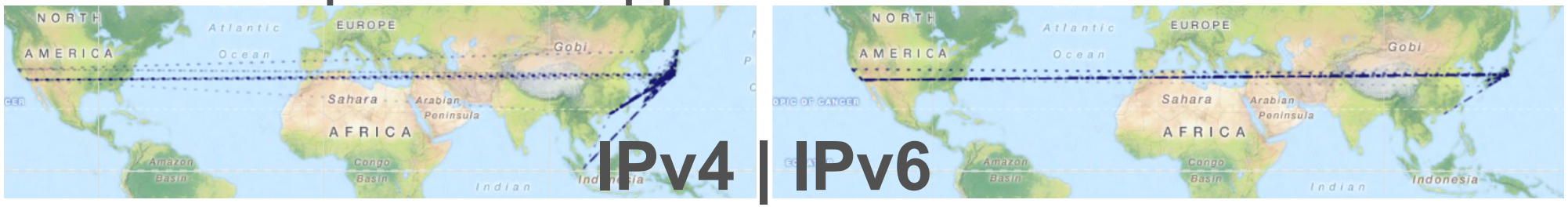
- Snapshot of the paths that do, or not, stay local



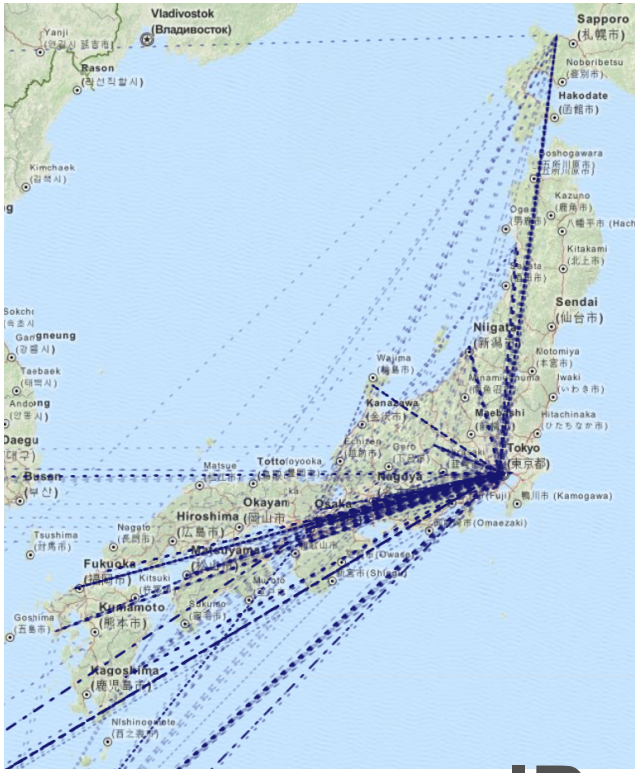
- lines with long-short alternating pattern = direct links
- dotted lines = ie. with hops in between without answer, or no geoloc

The difference between IPv4 & IPv6?

- Fewer probes support IPv6



IPv4 | IPv6



IPv4 | IPv6

How many paths go via local IXP?

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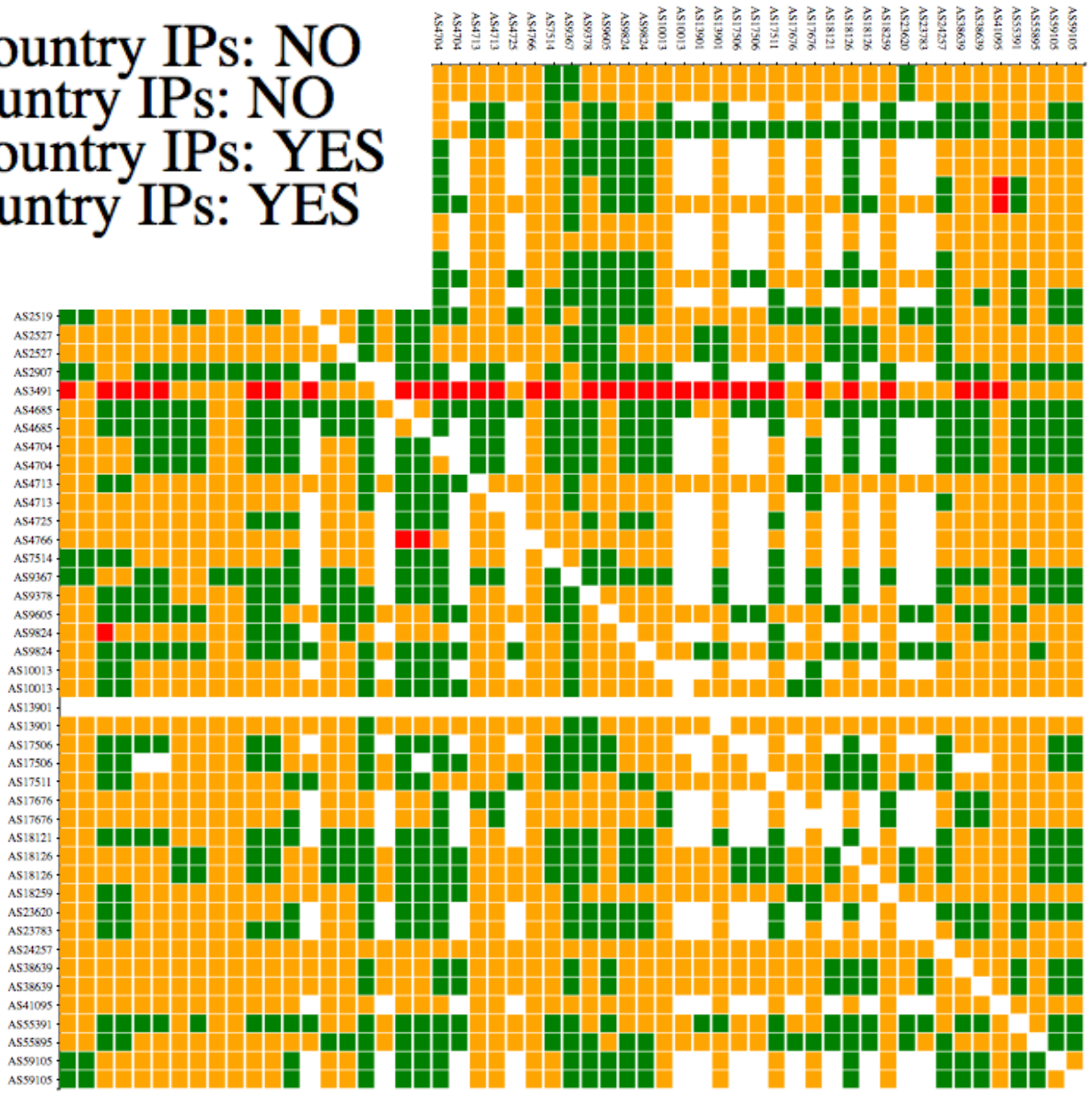
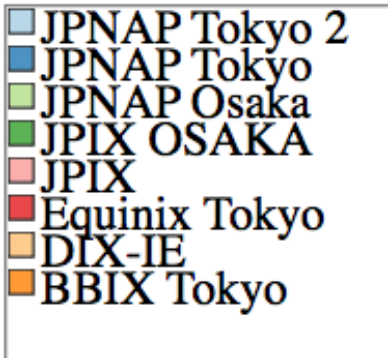
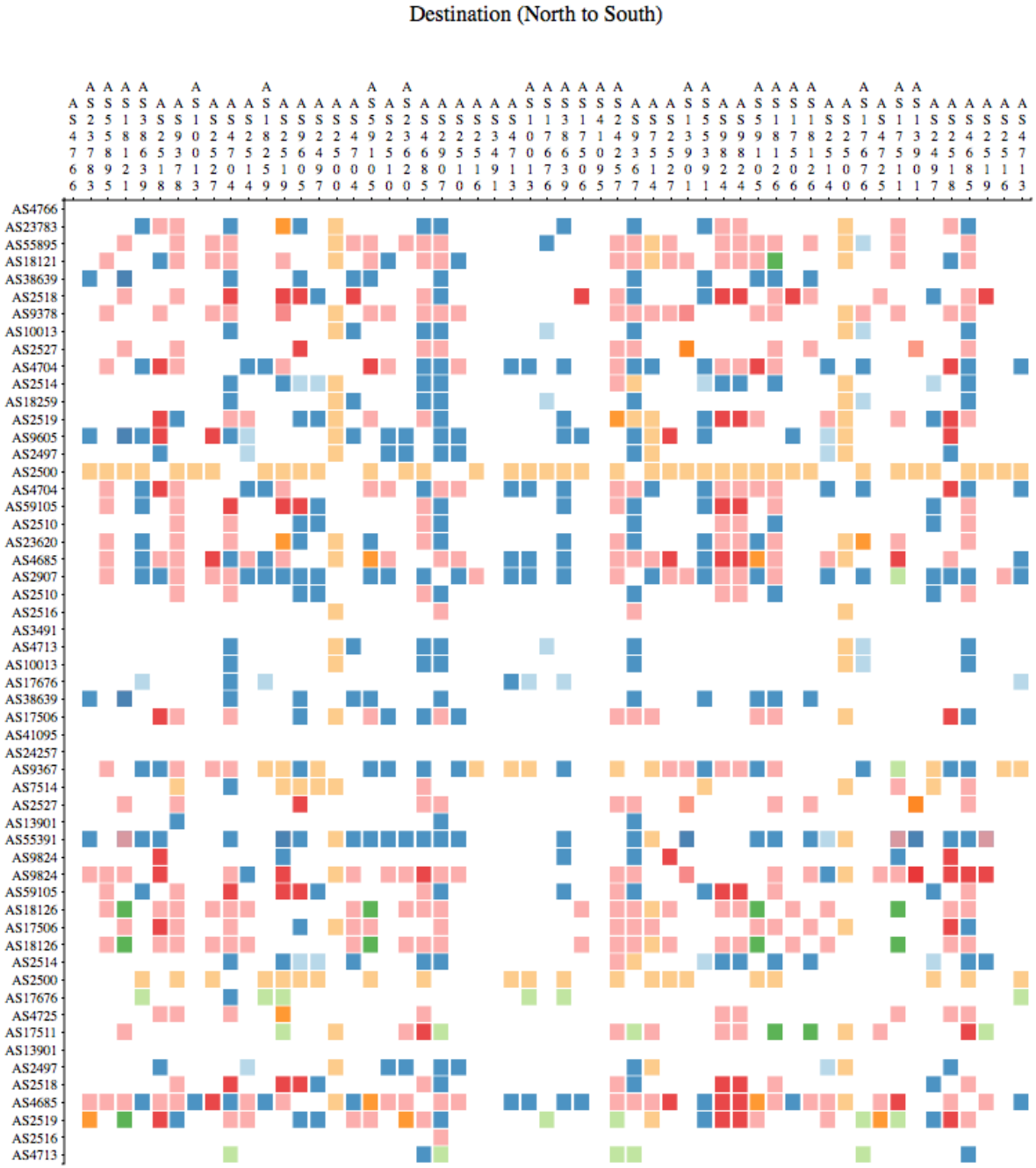


- Red or blue: the path is going out of the country
  - (as far as OpenIPmap GeoLoc can say!)

Multiple IXPs in Japan

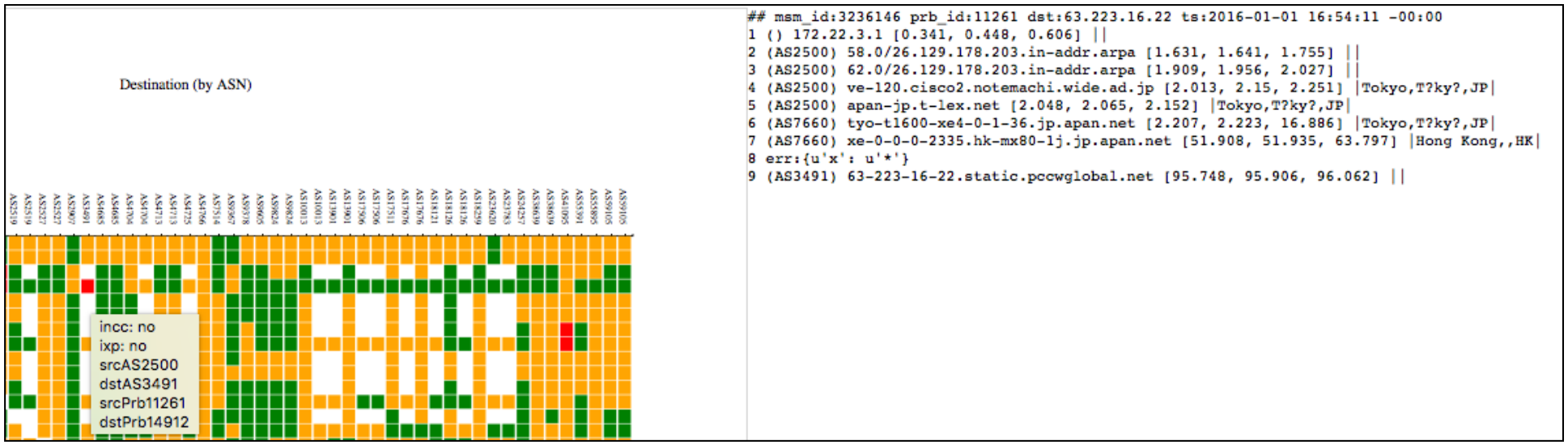


- Cells color = IXP peering



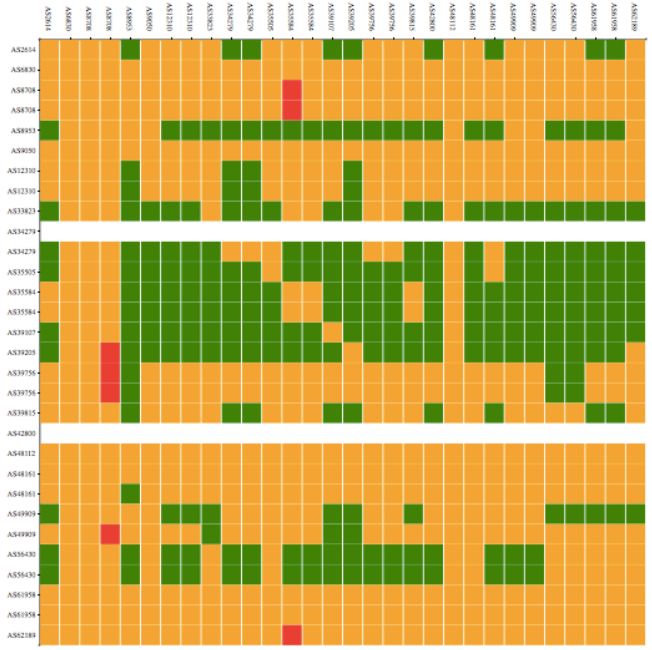
Diagnose potential routing optimization

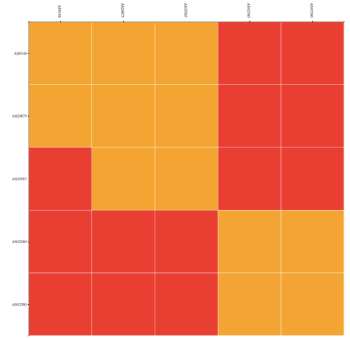
- Interactive tool! (Hover Over the Cell…)
  - http://sg-pub.ripe.net/emile/ixp-country-jedi/latest/JP/ixpcountry

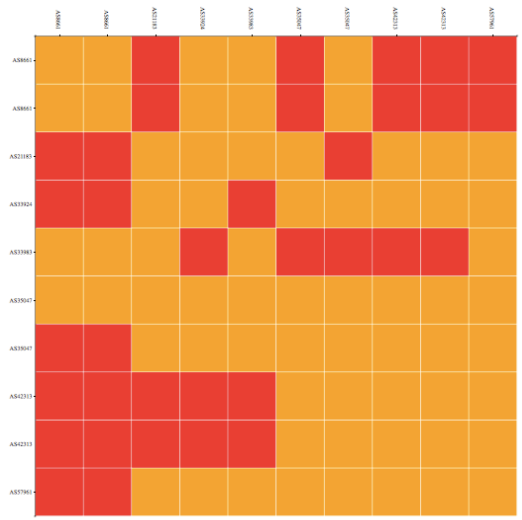


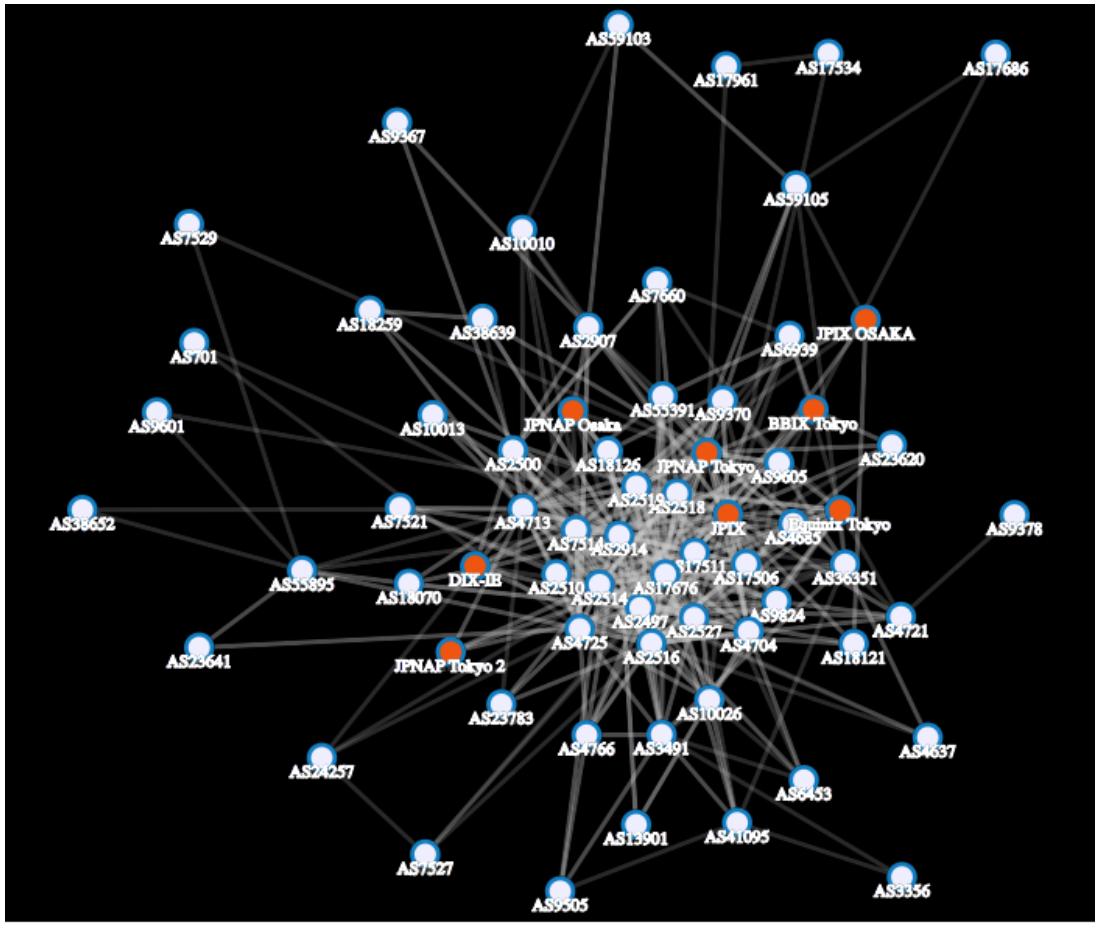
- Red or blue: the path is going out of country
  - if this is a surprise: talk to your upstream(s)
- Yellow: the path that is not going via a local IXP
  - if this is undesired: make a new peering agreement

More probes, better data quality









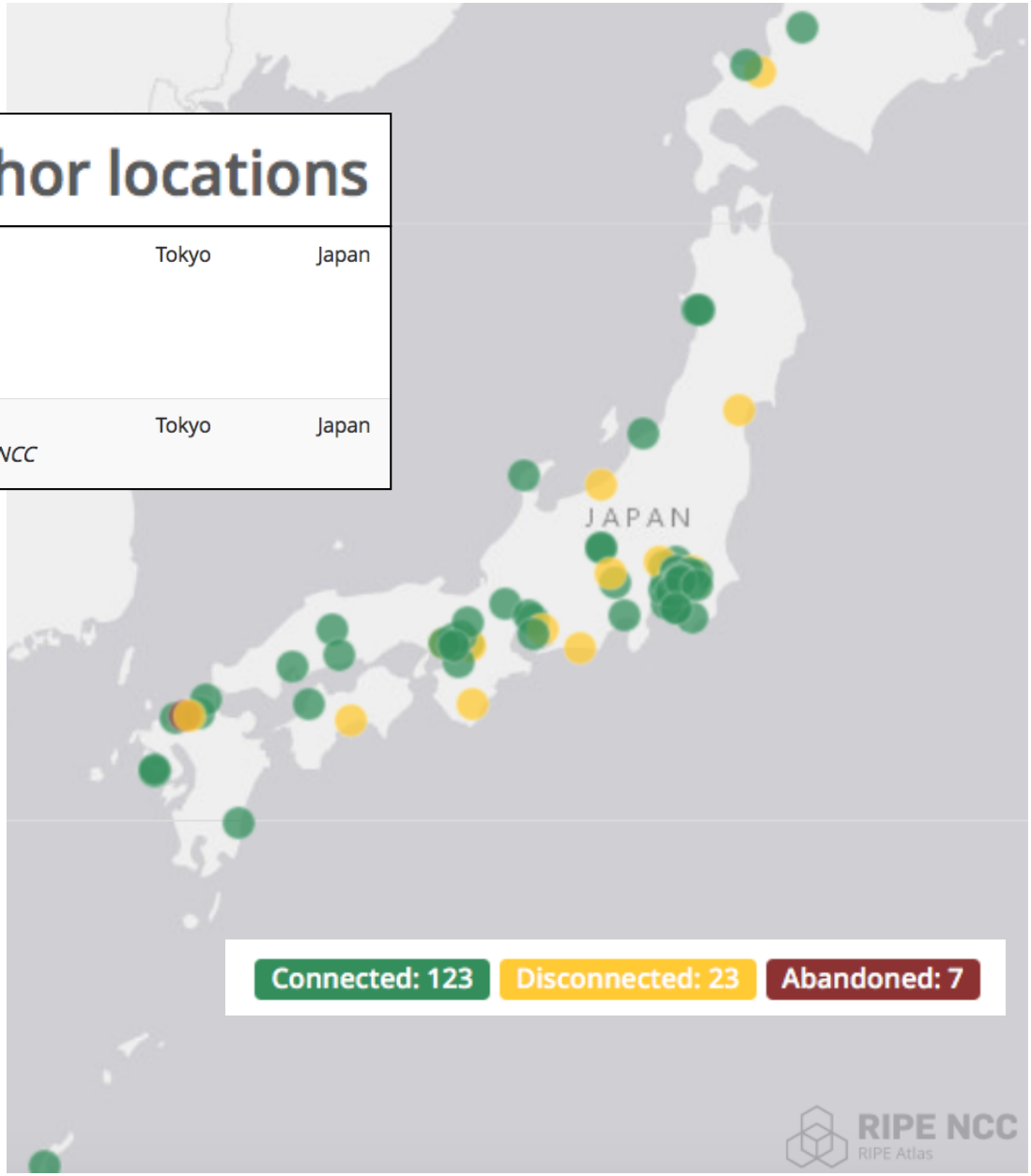
Actions

- Use this tool to find possible suboptimal routing
  - Find your ASN in the mesh, find the person from another ASN, have tea :)
- To improve accuracy of this diagnostic tool
  - If your ASN is not on the graph, **apply for RIPE Atlas probe**
  - If you move, remember to update your probe's geolocation
- Re-use & re-write the code: it is free & open source software
- Improve infrastructure geolocation: contribute data to OpenIPMap!

RIPE Atlas probes & anchors in .JP

RIPE Atlas anchor locations

jp-tyo-as13901	6158	Afilias	Tokyo	Japan
jp-tyo-as2500	6033	WIDE BB/UTokyo *Sponsored by: RIPE NCC*	Tokyo	Japan



Coverage in top-20 eyeball networks

- https://labs.ripe.net/Members/emileaben/improving-ripe-atlas-coverage-what-networks-are-missing

#asn	cc	users	con	disco	other	pct	asname
4713	JP	26977967	12	2	3	23.54	OCN NTT Communications Corporation
2516	JP	18824494	11	0	2	16.43	KDDI KDDI CORPORATION
17676	JP	16396203	5	0	2	14.31	GIGAINFRA Softbank BB Corp.
2527	JP	4025960	4	1	0	3.51	SO-NET So-net Entertainment Corporation
9605	JP	3817385	0	0	0	3.33	DOCOMO NTT DOCOMO, INC.
2518	JP	3361954	3	2	0	2.93	BIGLOBE BIGLOBE Inc.
9824	JP	3084838	0	0	0	2.69	JTCL-JP-AS Jupiter Telecommunication Co. Ltd
17511	JP	3050401	1	0	0	2.66	K-OPTICOM K-Opticom Corporation
2510	JP	2933569	2	0	0	2.56	INFOWEB FUJITSU LIMITED
10010	JP	2262371	0	0	0	1.97	TOKAI TOKAI Communications Corporation
10013	JP	2146202	1	0	0	1.87	FBDC FreeBit Co.,Ltd.
2519	JP	1905842	2	1	0	1.66	VECTANT VECTANT Ltd.
17506	JP	1888607	3	1	0	1.65	UCOM UCOM Corp.
38895	JP	1875184	0	0	0	1.64	AMAZON-AS-AP Amazon.com Tech Telecom
2497	JP	1754043	14	0	0	1.53	IIJ Internet Initiative Japan Inc.
2514	JP	1426050	7	1	1	1.24	INFOSPHERE NTT PC Communications, Inc.
4685	JP	1347068	6	1	0	1.18	ASAHI-NET Asahi Net
9617	JP	1306169	0	0	0	1.14	ZAQ KANSAI MULTIMEDIA SERVICE COMPANY
18126	JP	1136406	2	0	0	0.99	CTCX Chubu Telecommunications Company, Inc.
37903	JP	993887	0	0	0	0.87	EMOBILE Ymobile Corporation

Get in touch with RIPE Atlas

- Big thanks to our “ambassadors” in Japan: Izumi Okutani, Maz & Randy Bush!

- https://atlas.ripe.net
- Mailing list for active users: ripe-atlas@ripe.net
- Articles and updates: https://labs.ripe.net/atlas
- Questions: atlas@ripe.net
- Twitter: @RIPE_Atlas and #RIPEAtlas