RIPE NCC
RIPE NETWORK COORDINATION CENTER

IXP and Internet Measurements

Lia Hestina | APIX 34| 2026

Today’s session

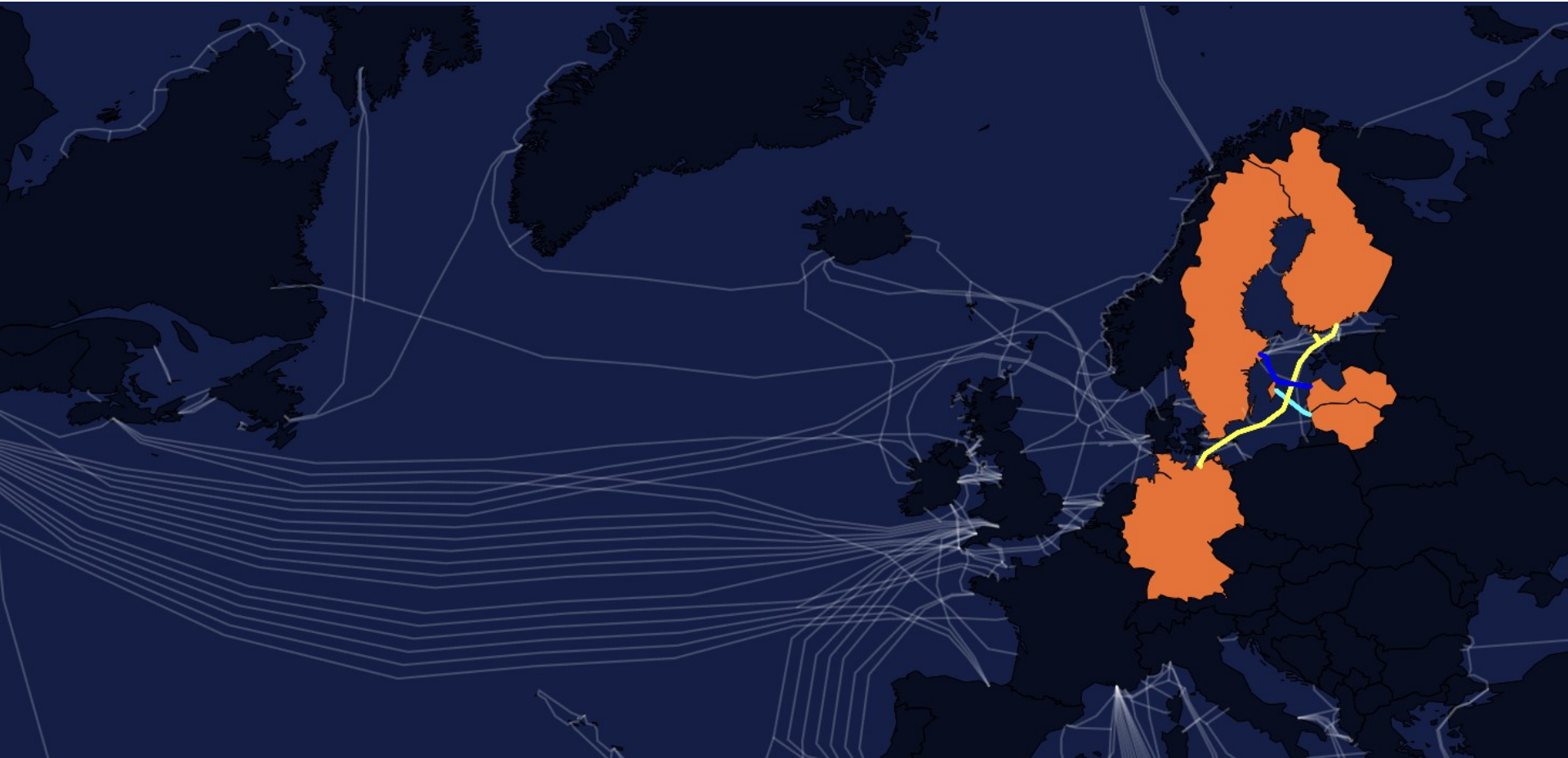
What we’ll cover:

1. RIPE Atlas & Internet Measurements
2. Baltic Sea Outage Use Case

By the end of this session, we want to answer:

1. Can IXPs play a bigger role in measuring the internet?
2. How can RIPE Atlas be more useful to IXPs & their members?

Baltic Sea Cable Damage: What Did We Notice?



Baltic Sea Cable Damage

Media coverage

Two Baltic Sea cables disrupted – is this 'hybrid warfare'?

By **Annie Turner** - 19 November 2024

European governments point finger at Russia over Baltic cable cuts

Investigations are underway into two subsea cable breaches in the Balt
and European governments are starting to suggest that Russia is behin

Mary Lennighan
November 20, 2024

3 Min Read



Sweden opens inquiry into damaged undersea cable as Nato deploys ships

A vessel has been seized al
optic line, probably due to

Damaged cables appear to be accident, Finland says

3 December 2024

Share Save

George Wright
BBC News



December 31, 2024

Christmas Day Cable Cuts in the Baltic Sea

Written by Alexander Lott

bmarine telecommunic
Lithuania, Russia, an
In addition, an underv
ut by a ship anchor. Th
ll involving a foreign c
or over a hundred kilom
cident occurred in Oct
nber 2024, and the Ea
ndicated on the map b
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Baltic subsea cable damage was accidental, not sabotage - US and European officials

Refutes all claims of Russian sabotage

January 20, 2025 By: Niva Yadav Have your say

Subsea cable damage in the Baltic Sea in recent months was likely the result of maritime accidents, not Russian sabotage, according to several US and European intelligence officials.

As reported by The Washington Post, US and European officials have gathered evidence - including intercepted communications - which have concluded that anchors were dragged across the seabed accidentally because of inexperienced crews aboard poorly maintained



Sweden Investigates New Cable Break Under Baltic Sea

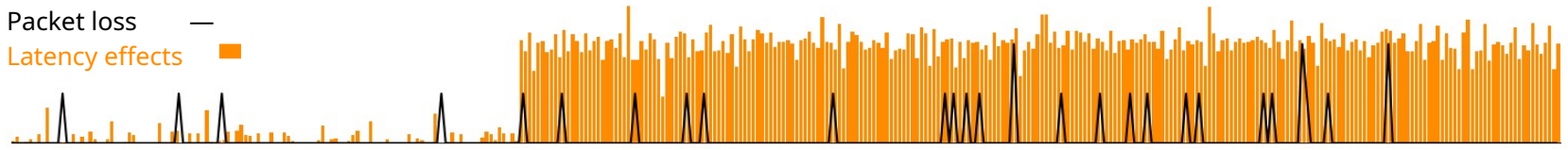
e authorities are looking into possible damage to an undersea
east of Gotland island. NATO has stepped up its surveillance
he region.

l article

edish Coast Guard vessel in the Baltic Sea. Sweden also investigated the severing

BCS East West Cable

Sweden → Lithuania



Measuring Damage with RIPE Atlas

RIPE Atlas

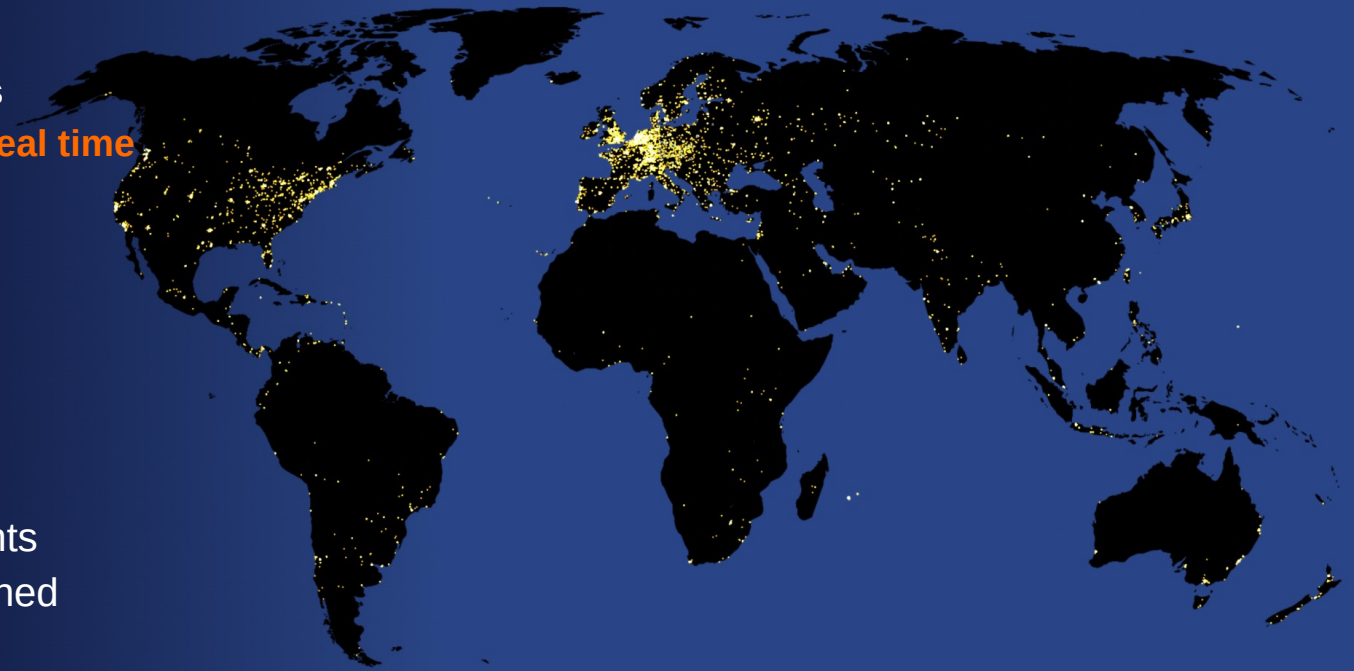
A global network of probes measuring the Internet in real time

14,000+ probes connected

1000+ anchors deployed

190+ countries

35,000+ daily measurements on average (both user-defined and built-in)



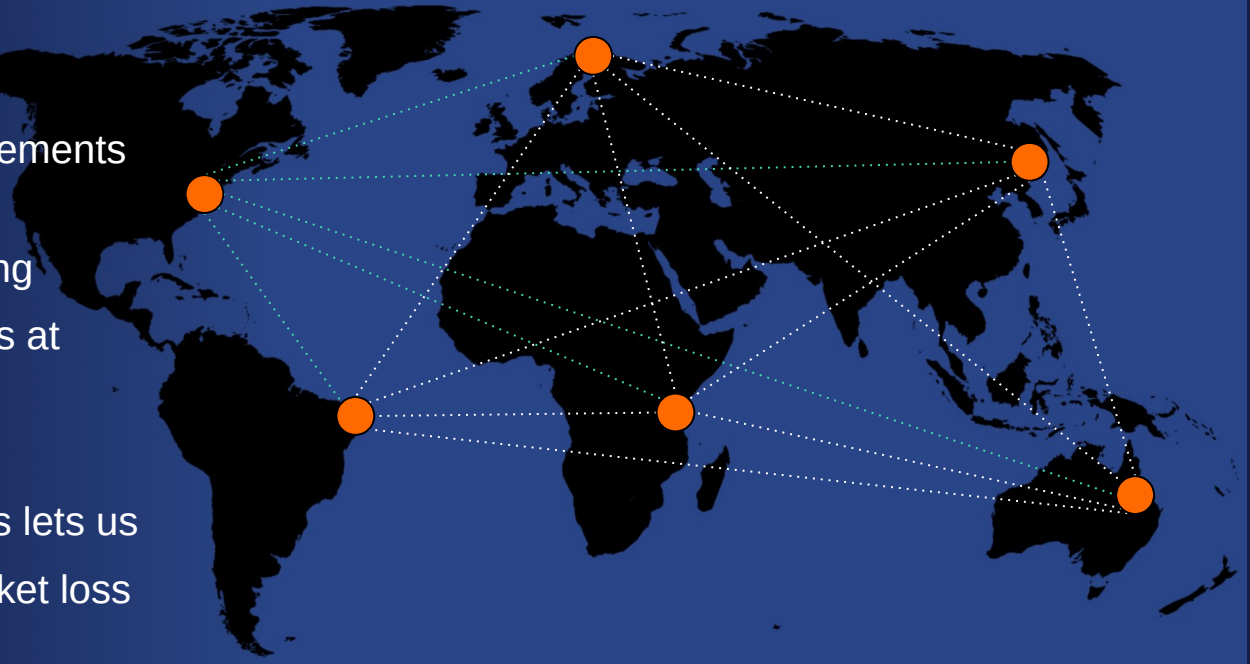
Measuring Damage with RIPE Atlas

Anchor Mesh

RIPE Atlas anchors support ping, traceroute, DNS, HTTP/S measurements

Each anchor performs ongoing ping measurements to all other anchors at four-minute intervals

Resulting ‘mesh’ of measurements lets us observe latency changes and packet loss between anchors



Coverage in the Four Countries Affected

BCS East-West: Sweden-Lithuania

C-LION1: Germany-Finland

We looked at results in the RIPE Atlas anchor mesh between these countries around reported time of the event

Country	# anchors
Germany:	100
Sweden:	15
Finland:	12
Lithuania:	5

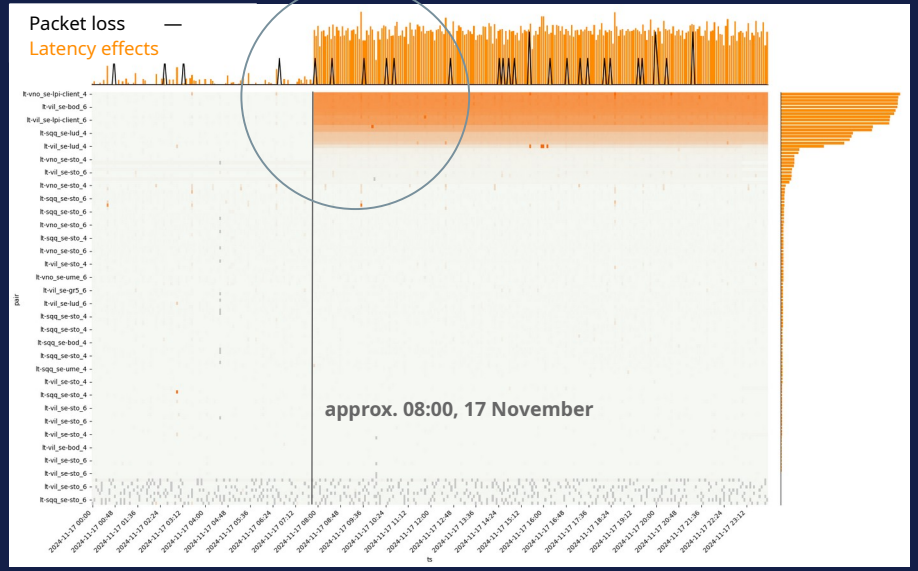


BCS East-West Latency shift

Before
Outage

17 Nov 2024
Outage

27 Nov 2024
Restored

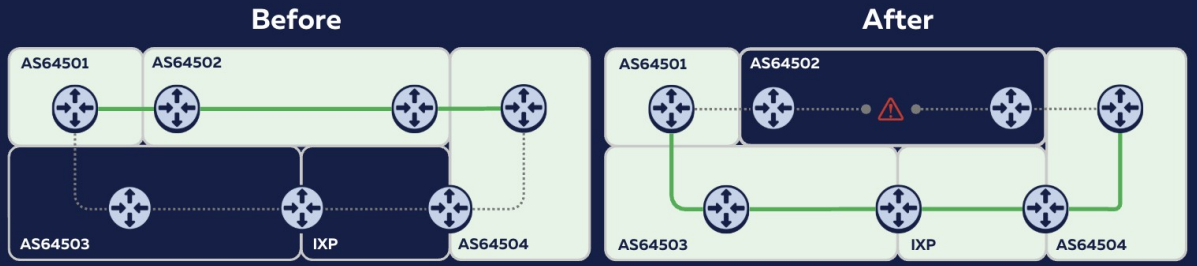


We have measurements!

The Internet Remained Resilient in the Affected Countries

Inter-domain rerouting:

Traffic rerouted through alternative ASes/IXPs (eBGP routing protocol)

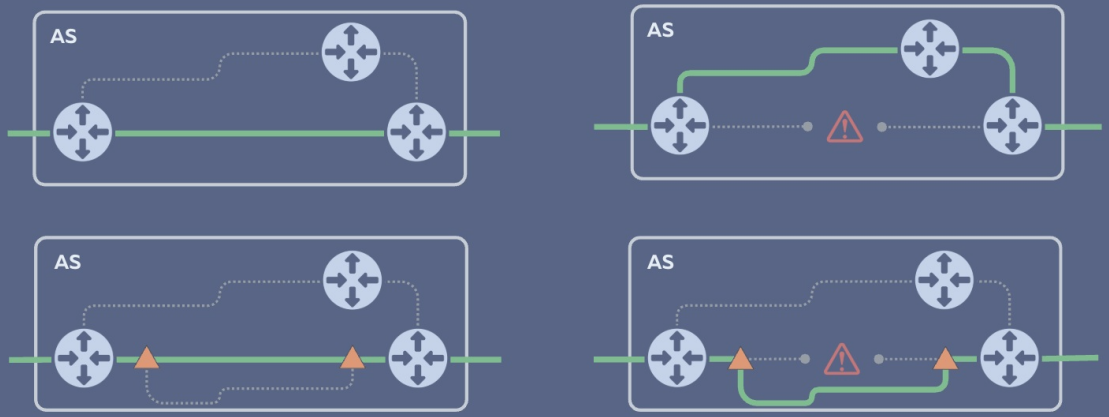


Intra-domain rerouting:

Rerouting *within* networks over alternative paths (IGP: OSPF, IS-IS)

Circuit-level rerouting:

Rerouting along alternative circuit-level connections between routers (same IP address!)





Measurements are only useful

if they exist before the incident

Now Comes the Challenge



Where Are the Gaps in APAC Region?

Country	Total	Cities	ASN	Landings
ID	14	7	13	139
PH	6	5	5	71
JP	17	5	15	67
IN	9	8	8	26
AU	24	6	17	26
CN	4	2	4	25
PF	0	0	0	23
MY	4	2	4	20
TW	13	5	11	20
NZ	8	3	8	20
MV	1	1	1	16
PG	0	0	0	15
KR	5	2	4	10
SG	22	1	22	8
TH	2	2	2	7
NC	1	1	1	7
MP	0	0	0	6
GU	0	0	0	5
SB	0	0	0	4
FM	1	1	1	4
VN	2	1	2	3
FJ	0	0	0	3
TK	0	0	0	3
TO	0	0	0	3
MM	0	0	0	2
BN	0	0	0	2

Country	Total	Cities	ASN	Landings
TL	0	0	0	1
KH	1	1	1	1
LA	0	0	0	1
PK	2	1	2	1
VU	0	0	0	1
NR	0	0	0	1
PW	1	1	1	1
AS	0	0	0	1
NU	0	0	0	1
TV	1	1	1	1
NP	2	1	2	0
BT	0	0	0	0
AF	1	1	1	0
MN	1	1	1	0
HK	1	1	1	0
TF	0	0	0	0
NF	0	0	0	0
PN	0	0	0	0

Let’s make these cells green!

- 5 anchors
- 3 different cities
- 3 ASNs

The more the merrier!

No Measurements = No Evidence

The Role of IXPs

- Can IXPs be the coordinators of Internet Measurements in a country?
- Facilitators and advocates of the local Internet visibility strategy
- Community leaders

Why Would You (as an IXP) Care?



When incidents happens…the minister, the media, the members call..

With RIPE Atlas **anchor mesh data**, you can quickly understand:

- Reachability dropped at 12:20AM
- Two ISPs **rerouted** successfully…
- One ISP experienced **congestion**….
- Issue **lasted** from 20 minutes
- Domestic traffic remains **stable**….
- Pain points and **bottleneck** are….

IXP don’t need to host an anchor, instead:

Help us build the

Internet measurement infrastructure in a country

Takeaway

“When the next incident happens,

will your country have enough measurements to understand it?”

If not, who better than IXP

to lead the change and bring the community together?

Discussion

How can RIPE Atlas be more useful to IXPs & their members?

Using RIPE Atlas for IXPs

Use RIPE Atlas to understand what is happening beyond the IXP itself

- Understand how networks outside IXP experience connectivity
- Compare before and after a network joins the IXP
- Use RIPE Atlas to spot issues and troubleshoot

RIPE Atlas is your other set of eyes outside the IXP

Questions & Comments



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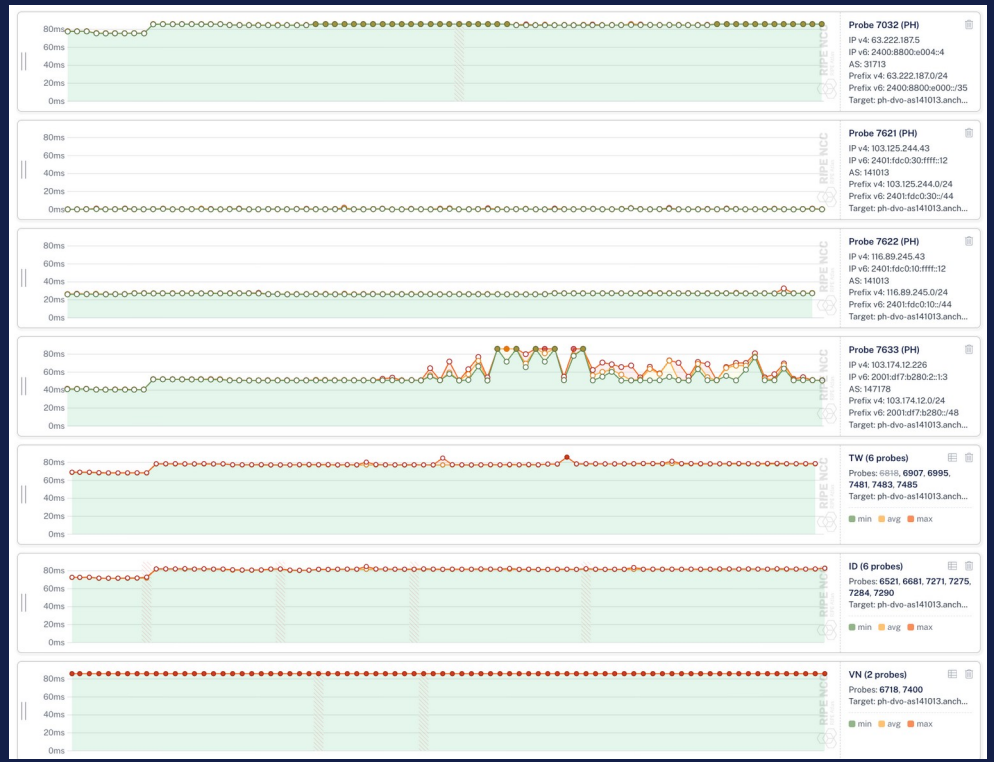
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THANK YOU!

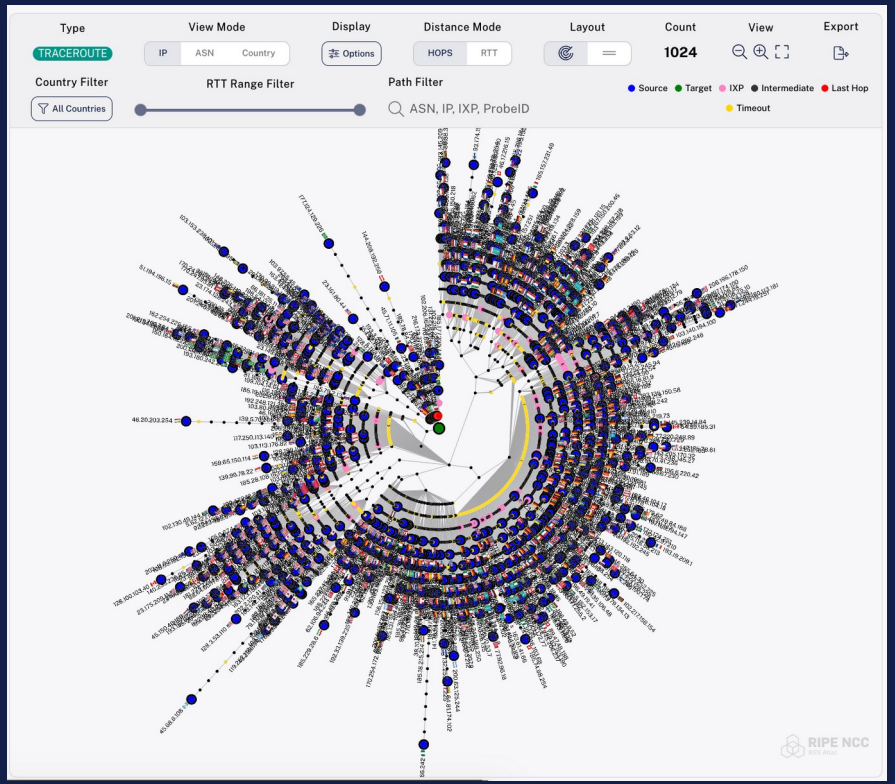
RIPE Atlas New Features - Live Demo

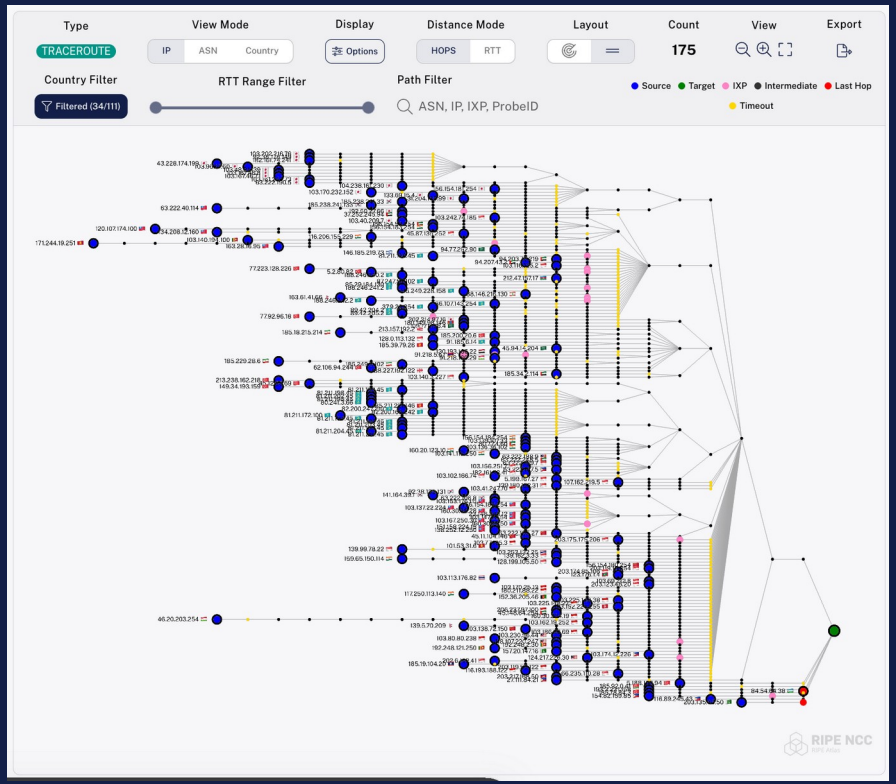
- Compare your Network Reachability with **LatencyMON**
- Is my member’s peering actually improving connectivity? See **Khipu** Feature
- How any network in my region/country don’t go through an IXP?
- How well connected are you to **popular services**?
- Does the path stay within the region/continent? See **region Meshes**
- Monitor domain or ccTLDs with DomainMON

LatencyMON


80ms
60ms
40ms
20ms
0ms
RIPE NCC
Probe 7032 (PH)
IP v4: 63.222.187.5
IP v6: 2400:8800:e004::4
AS: 31713
Prefix v4: 63.222.187.0/24
Prefix v6: 2400:8800:e000::/35
Target: ph-dvo-as141013.anch...
Probe 7621 (PH)
IP v4: 103.125.244.43
IP v6: 2401:fdc0:30:ffff::12
AS: 141013
Prefix v4: 103.125.244.0/24
Prefix v6: 2401:fdc0:30::/44
Target: ph-dvo-as141013.anch...
Probe 7622 (PH)
IP v4: 116.89.245.43
IP v6: 2401:fdc0:10:ffff::12
AS: 141013
Prefix v4: 116.89.245.0/24
Prefix v6: 2401:fdc0:10::/44
Target: ph-dvo-as141013.anch...
Probe 7633 (PH)
IP v4: 103.174.12.226
IP v6: 2001:df7:b280:2::1:3
AS: 147178
Prefix v4: 103.174.12.0/24
Prefix v6: 2001:df7:b280::/48
Target: ph-dvo-as141013.anch...
TW (6 probes)
Probes: 6818, 6907, 6995, 7481, 7483, 7485
Target: ph-dvo-as141013.anch...
min
avg
max
ID (6 probes)
Probes: 6521, 6681, 7271, 7275, 7284, 7290
Target: ph-dvo-as141013.anch...
min
avg
max
VN (2 probes)
Probes: 6718, 7400
Target: ph-dvo-as141013.anch...
min
avg
max

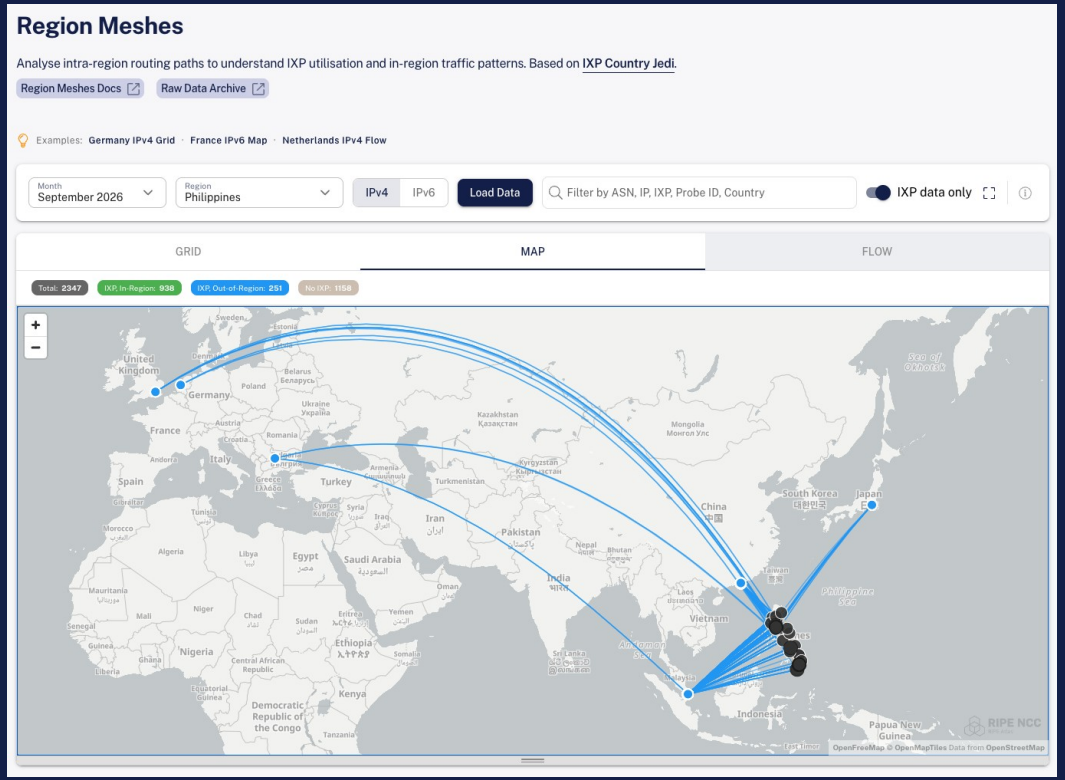
Khipu - Traceroute





Region Meshes





Popular Destinations

