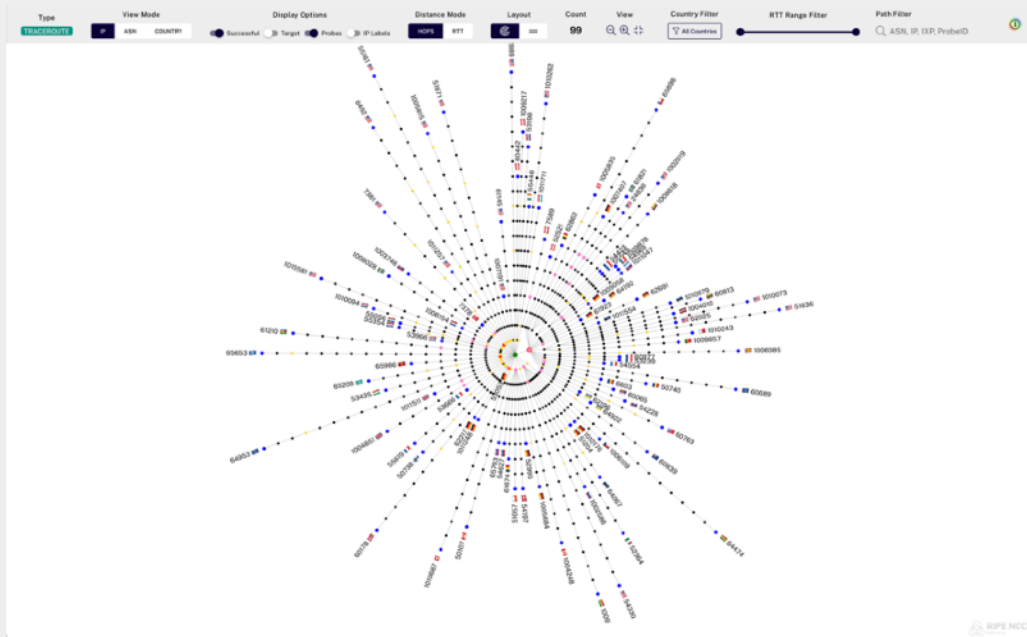


RIPE Atlas Khipu

nog.fi

A new way to look at complex information

- Addresses the challenge of analysing large-scale traceroute measurements
- Named for its resemblance to Incan recording system using knotted strings
- Use cases include detecting outages, troubleshooting latency, validating routing paths, checking dns resolution/responses, filtering IXPs and more





Measurement Types

- Traceroute (primary), but also DNS and ping

The screenshot displays the Khipu interface with three measurement type panels. The top panel is for Traceroute, showing a count of 191. The middle panel is for DNS, showing a count of 49. The bottom panel is for Ping, showing a count of 96. Each panel includes controls for Type, View Mode, Display Options, Country Filter, RTT Range Filter, Path Filter, and Layout. The Traceroute panel also includes a Distance Mode section with HOPS and RTT options. A legend on the right side of the Traceroute panel identifies the colors for Source, Target, IXP, Intermediate, Last Hop, and Timeout.

Traceroute Panel:

- Type: TRACEROUTE
- View Mode: IP, ASN, COUNTRY
- Display Options: Successful, Target, Probes, IP Labels
- Distance Mode: HOPS, RTT
- Layout: [Icon]
- Count: 191
- View: [Icon]
- Country Filter: [Dropdown: All Countries]
- RTT Range Filter: [Slider]
- Path Filter: [Search: ASN, IP, IXP, ProbeID]
- Legend: Source (Blue), Target (Green), IXP (Pink), Intermediate (Black), Last Hop (Red), Timeout (Yellow)

DNS Panel:

- Type: DNS
- Display Options: Successful, Target, Probes
- Count: 49
- View: [Icon]
- Country Filter: [Dropdown: All Countries]
- RTT Range Filter: [Slider]
- Path Filter: [Search: IP, ASN, RCODE, NSID, answer]
- Info: [Icon]

Ping Panel:

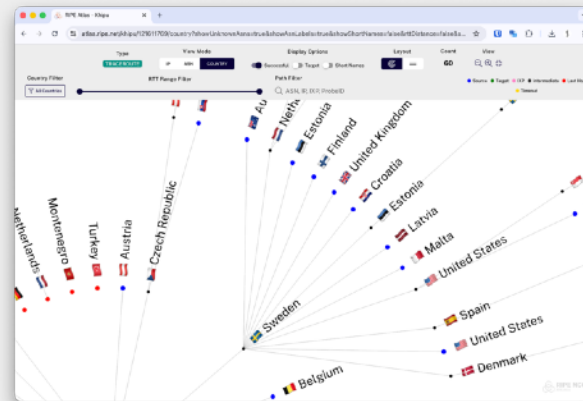
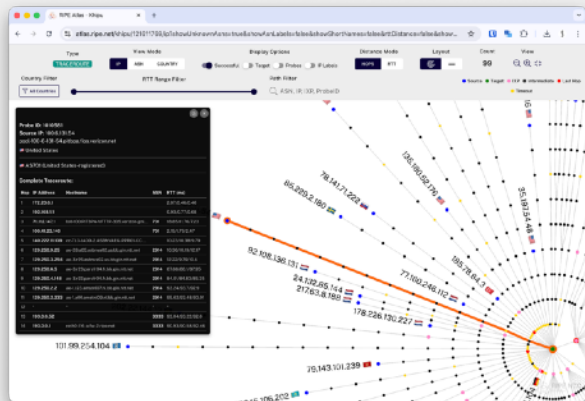
- Type: PING
- Display Options: Successful, Target, Probes
- Count: 96
- View: [Icon]
- Country Filter: [Dropdown: All Countries]
- RTT Range Filter: [Slider]
- Path Filter: [Search: Filter by IP]
- Info: [Icon]

Khipu Key Features



Visualisation Modes

- IP View: Detailed hop-by-hop analysis with individual IP addresses
- ASN View: Network-level topology showing AS paths and IXP interconnections
- Country View: Country paths (currently derived from ASN/IXP/IPLocate cache)

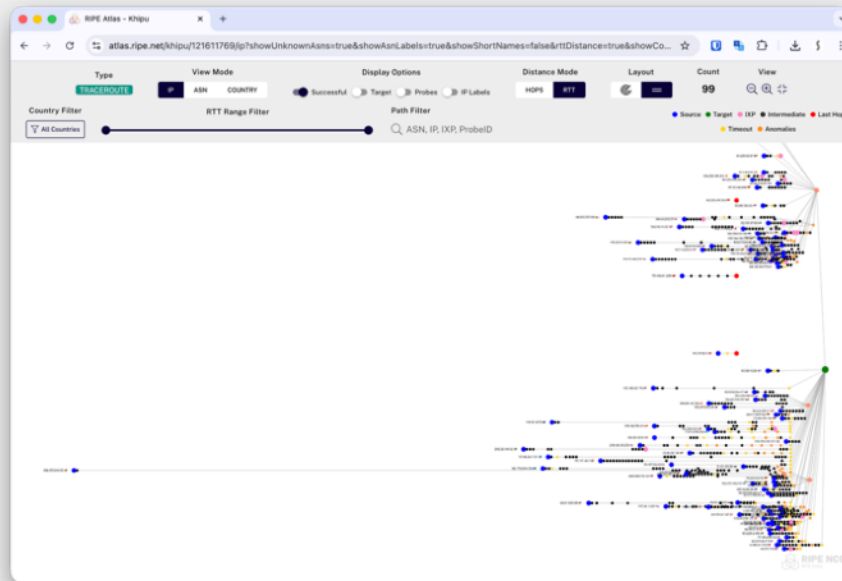
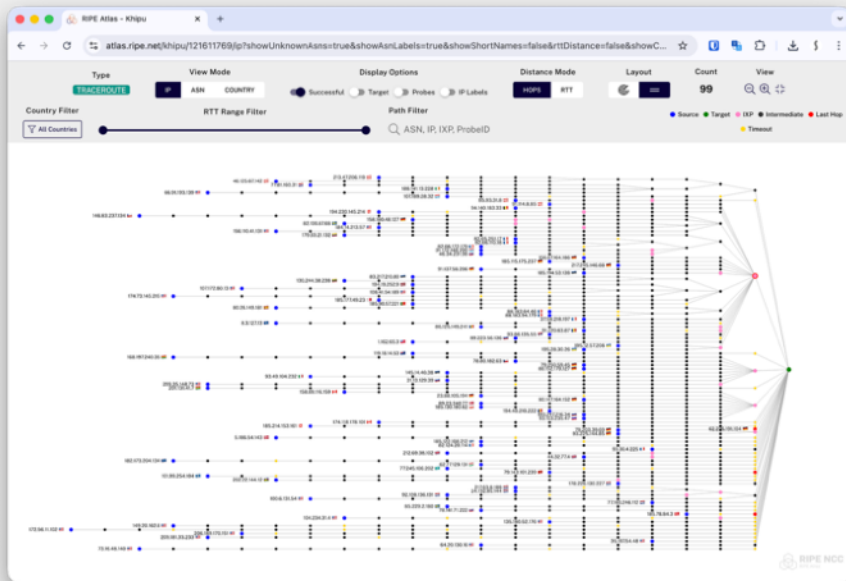


Khipu Key Features



Distance Modes (IP View)

- Hops
- RTT

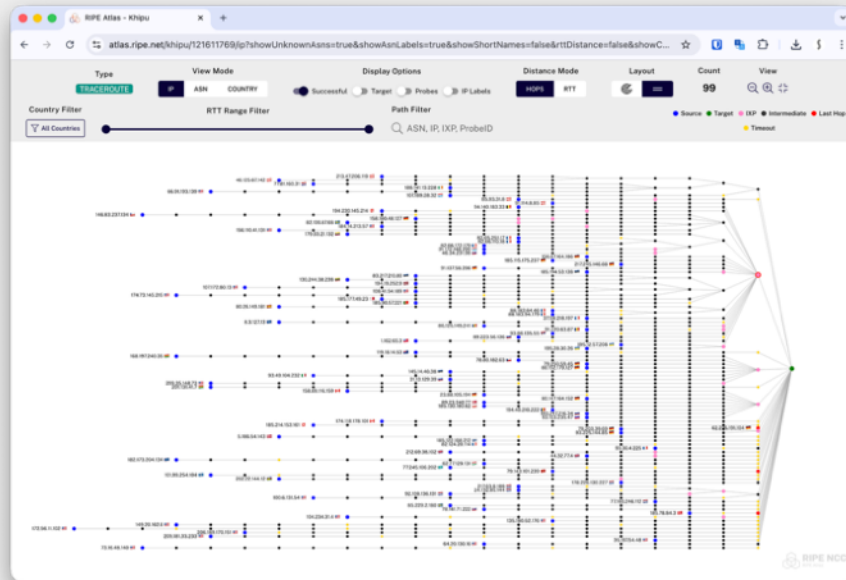
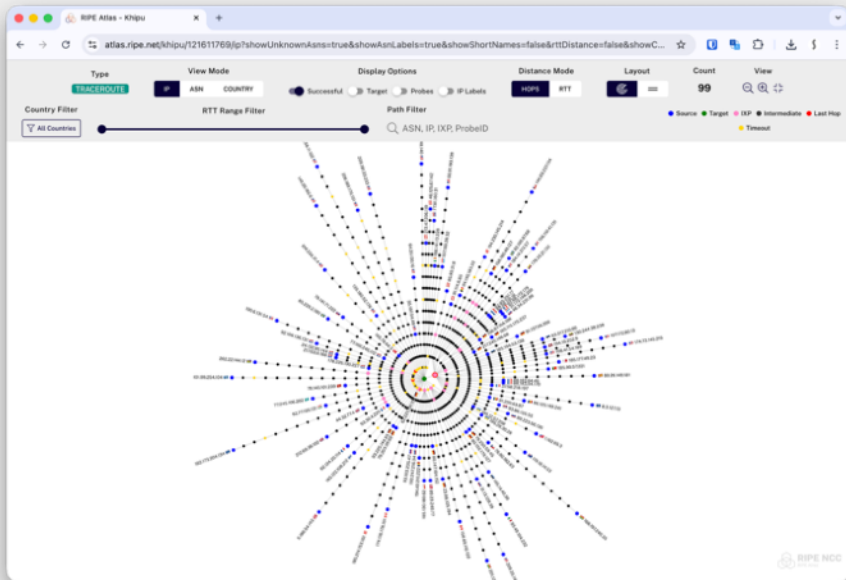


Khipu Key Features



Layout

- Radial (default)
- Horizontal

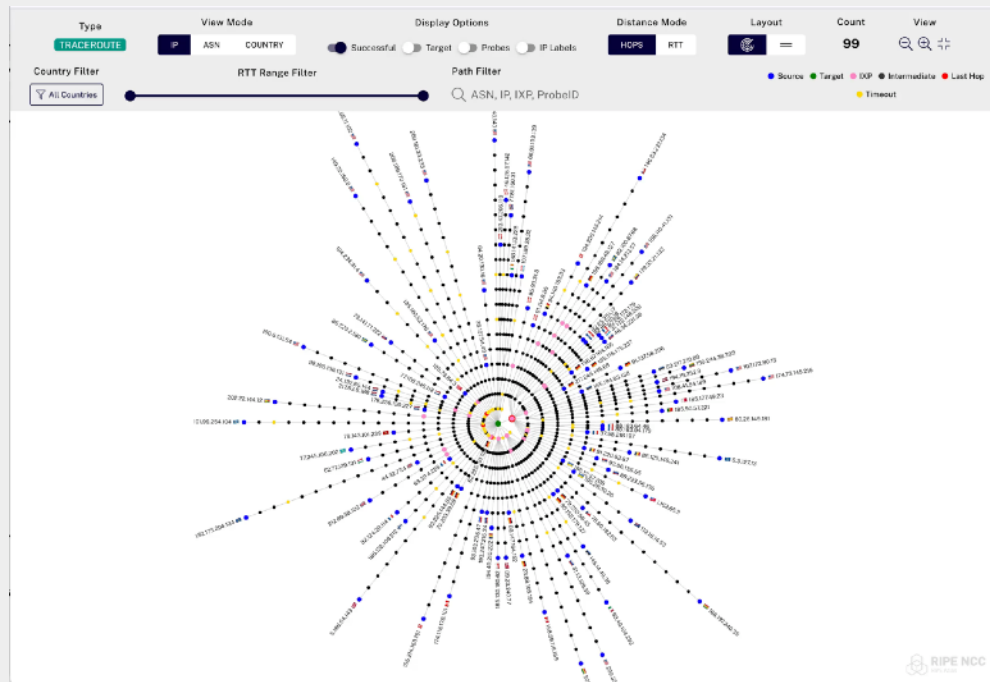


Khipu Key Features



Interactive Capabilities

- Real-time pan, zoom, and node selection
- Toggle successful, target, Probe IP/ID, labels
- Dynamic filtering by country, RTT ranges, IP, ASN, Probe ID (and more)
- Hover popups with copy, links to probe details and RIPEstat info
- Sharable links



Advanced Analysis Features

- Data enrichment with asn, ixp, country, rDNS lookup, anycast target identification
- Multi-target support (when domain and resolve on probe)

Technical Foundation

- Built with Vue (the same framework as the rest of the Atlas frontend)
- Pre-built data caches for ip2asn (RISWhois), ixp (peeringDB), asn2country (delegated stats), ip2country (IPLocate)
- D3 for data processing and hierarchical layouts
- WebGL for high-performance rendering - enables smooth interaction with thousands of nodes



Khipu Resources

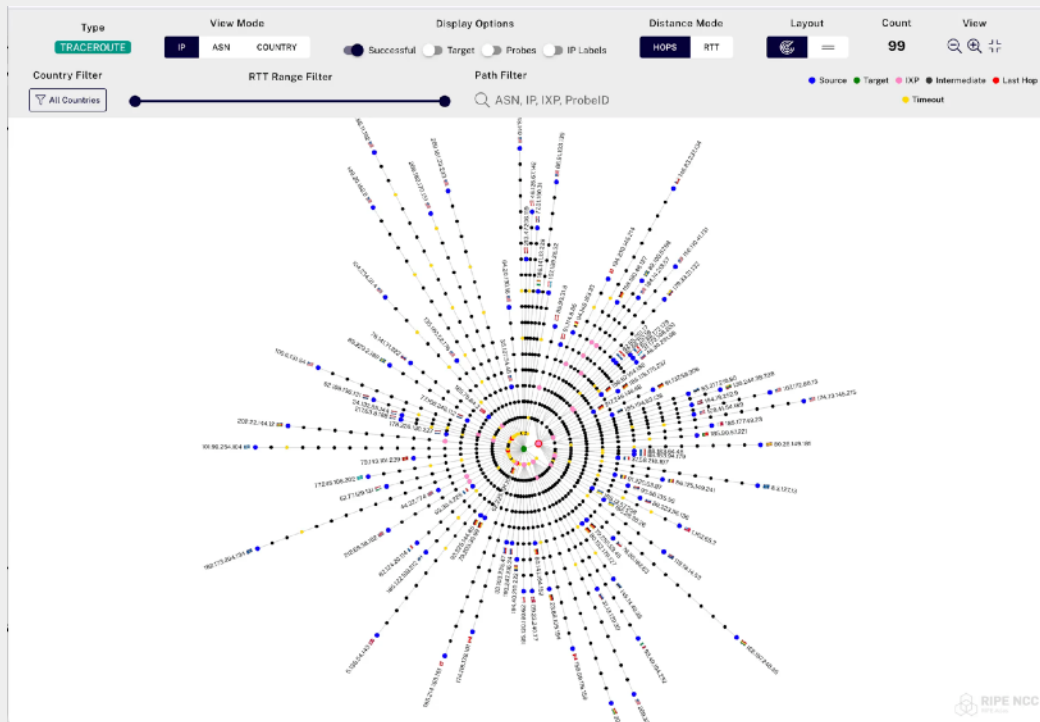


Docs: <https://atlas.ripe.net/docs/tools-and-code/khipu>

Labs:

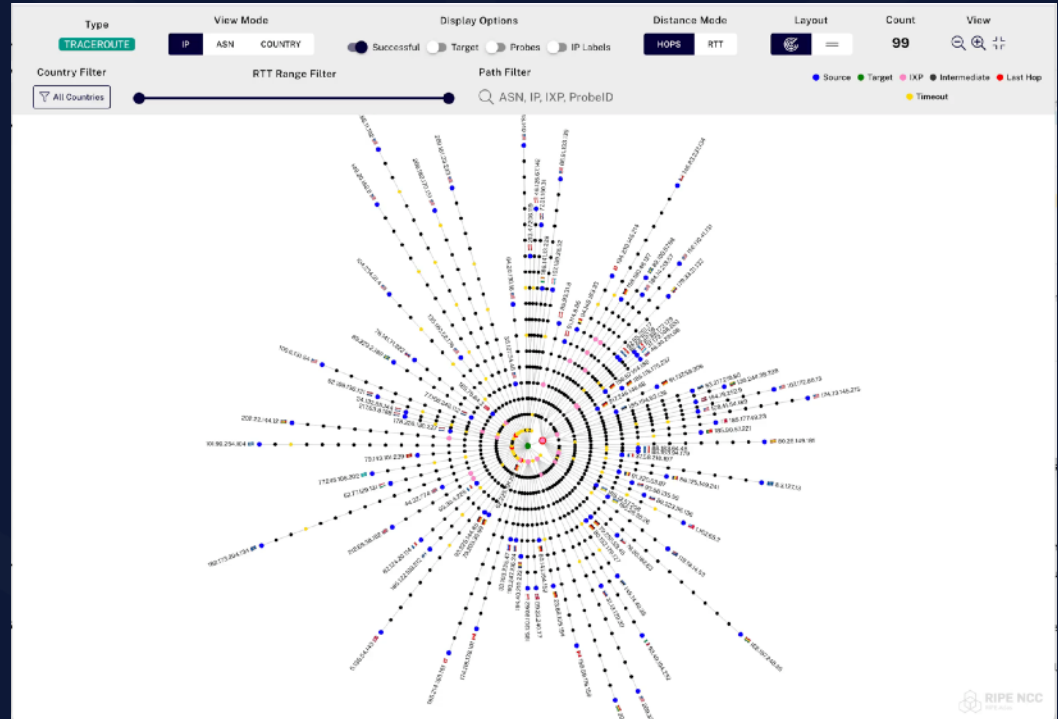
https://labs.ripe.net/author/stephen_suess_1/six-ways-to-use-khipu-to-see-and-solve-network-problems/

https://labs.ripe.net/author/stephen_suess_1/khipu-prototype-ripe-atlas-traceroute-visualisation-tool/





Questions & Comments



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