NICK BOUWHUIS @ NOG.FI - 2026-06-16

NLNOG TOOLS DEEP-DIVE

QUICK INTRO

- Nick Bouwhuis
- Board member since 2024
- Network Engineer @ Speakup
- Behind various side-hustles

ABOUT NLNOG

- Started in 2002 with a mailing list
- Formal foundation since 2015
- 3 events per year
  - New Years Drink
  - Summer event (2 weeks ago)
  - NLNOG day

ABOUT NLNOG

- IRC: IRCnet - irc.nlnog.net - #nlnog
- Discord: https://nlnog.net/discord/
- Mailing List / other channels: nlnog.net

TOOLS

- RING
- RING Looking Glass
- IRRexplorer
- BGP Filter Guide
- Ride Share (new!)


NLNOG
RING

THE PROBLEM

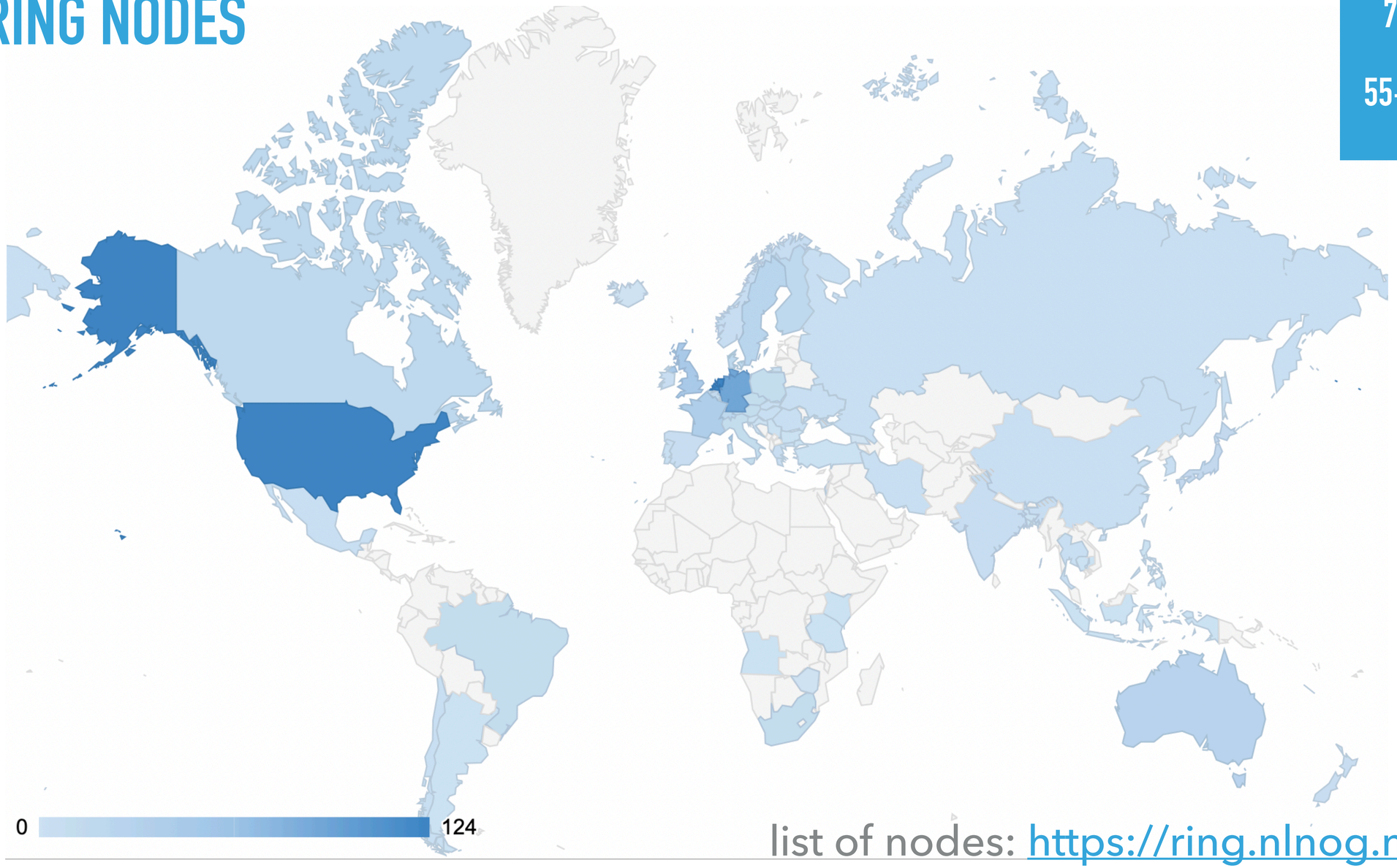
- Debugging network-related issues between networks can be hard
- Having vantage points in many different networks can help
- Having proper debugging tools helps even more!

THE SOLUTION: THE NLNOG RING

- You provide a (virtual) machine in your network
- You get shell (SSH) access to machines of all participants in return
- … and access to some cool tools to do debugging and testing

NLNOG RING NODES

700+ NODES
50+ ASNS
55+ COUNTRIES



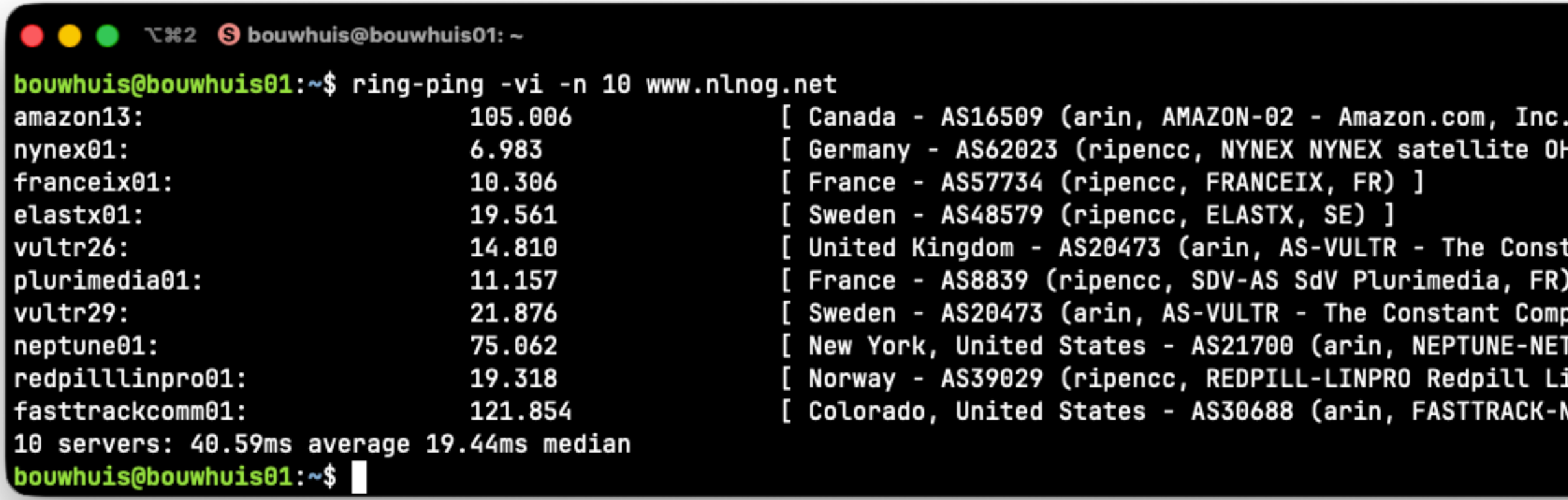
list of nodes: https://ring.nlnog.net/nodes

NLNOG RING TOOLS

- **ring-ping**: ping a specified target from a number of RING nodes
- **ring-trace**: visualise traceroutes to a target from a selection of RING nodes in a diagram
- **ring-http**: compare answers to HTTP requests to a specified URL
- **ring-sqa**: alert on sudden changes in the number of other RING nodes that can be reached
- **ring-all**: perform any available Linux CLI command on a set of nodes and gather all results
- And of course: there's an extensive set of CLI tools available, for example: **mtr**, **traceroute**, **tcptraceroute**, **ping**, **curl**, **dig**, **python**, etc

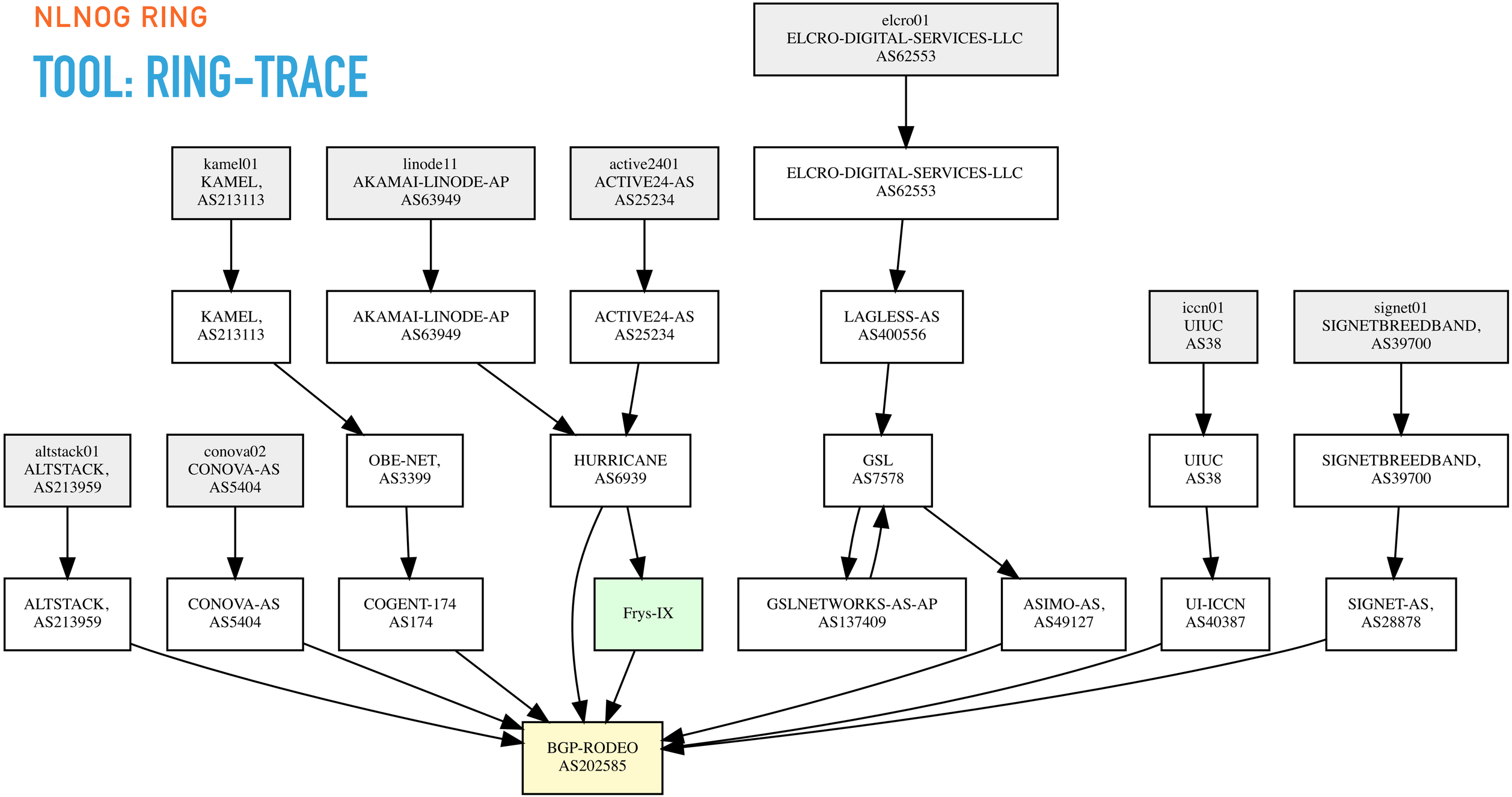
TOOL: RING-PING

Ping a target from a random selection of nodes:

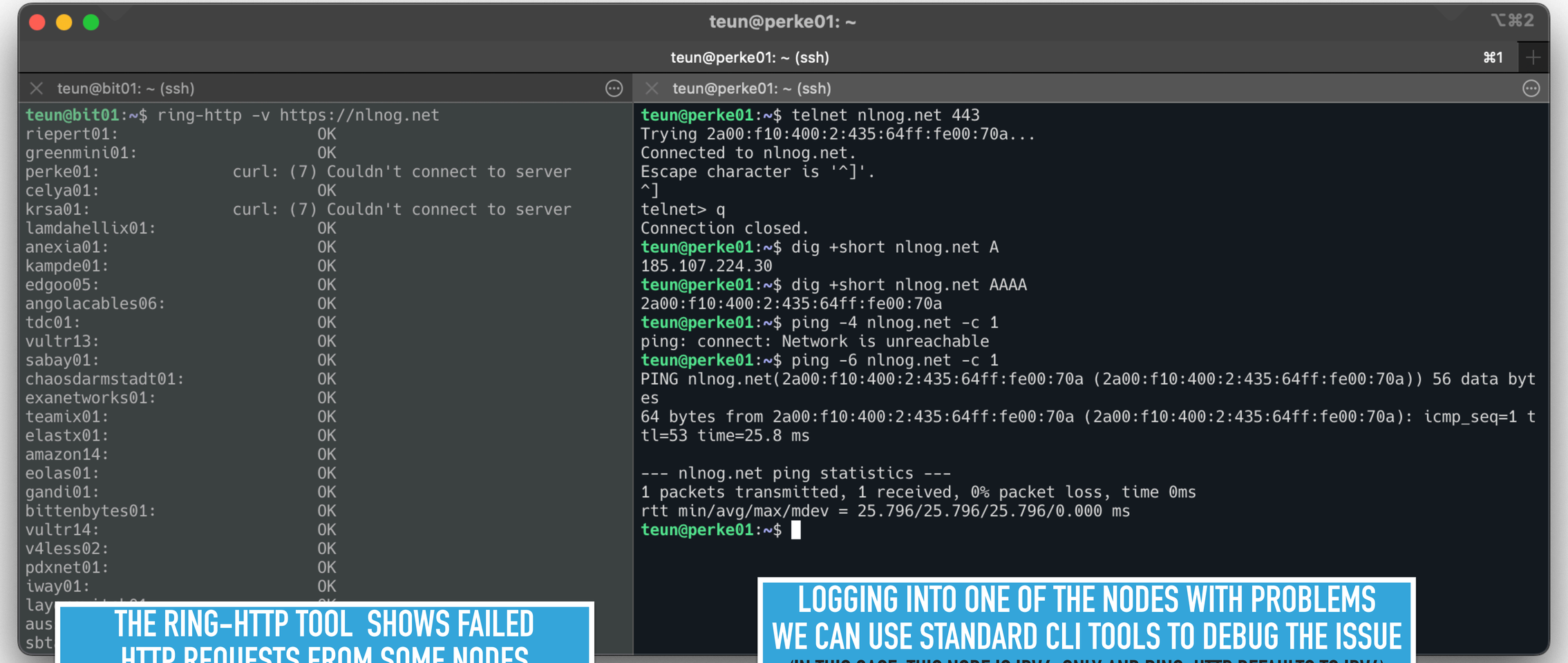


NLNOG RING

TOOL: RING-TRACE



TOOLS: RING-HTTP AND AN EXTENSIVE LINUX SSH TOOLSET



RING NODE REQUIREMENTS

- A physical or virtual machine running Ubuntu 22.04
- You represent the ASN hosting the RING node and provide working contact information for this ASN
- A publicly accessible IPv6 address (and optionally IPv4)
- At least 20GB disk space and 2GB RAM
- No firewalling to and from the internet
- NLNOG RING Admins get full control (sudo access)

MORE INFORMATION, APPLICATION & CONTACT

- Information and application form: **https://ring.nlnog.net**
- Email: ring-admins@nlnog.net
- IRC Channel: **#ring** on the IRCNet network
- Discord Channel: **#ring** on NLNOG's Discord server (**https://nlnog.net/discord**)
- Configurations, code and playbooks: **https://github.com/nlnog/ring-ansible**

NLNOG Looking Glass

Please enter an IP address, prefix or hostname to look up in our routing tables.

Search | 2001:db8::/32 | Exact match | on | All peers (311) | Show routes

IPv4: 157 peers up, 51 down, 147,821,326 prefixes received
IPv6: 162 peers up, 57 down, 34,740,014 prefixes received

20 BITTERBAL1-v4

AS-Path	200995 202585 via next-hop 212.72.236.1
Origin validation state	valid
ASPA validation state	unknown
Only To Customer (OTC)	yes, ASN: 200995
Origin	IGP
MED	0
Last update	2026-03-31 09:55:27 UTC (03w6d23h ago)

NLNOG RING LOOKING GLASS

69 KAPSI1-v4

AS-Path	57692 199508 1299 57866 202585 via next-hop 91.232.154.62
Origin validation state	valid
ASPA validation state	unknown
Only To Customer (OTC)	yes, ASN: 57692
Origin	IGP
MED	0
Last update	2026-04-22 13:21:28 UTC (5d20h24m ago)
Communities	1299:30000 (EU Customers)


IRR
EXPLORER

IRR EXPLORER SHOWS THE ROUTING, IRR AND RPKI STATUS FOR RESOURCES, AND HIGHLIGHTS POTENTIAL ISSUES.

IRR EXPLORER

Prefix, IP, ASN or AS/route-set

Search

Data source status

Reduced colour mode Show

Report for prefix 193.169.138.0/23

What does the prefix table show?

Explanation of different messages

Directly overlapping prefixes of 193.169.138.0/23

Prefix	RIR	BGP	RPKI	RIPE	Advice
193.169.138.0/23	RIPE NCC	49627	49627 /24	49627	Everything looks good
193.169.138.0/24	RIPE NCC			49627	Route objects exist, but prefix not seen in DFZ
193.169.139.0/24	RIPE NCC			49627	Route objects exist, but prefix not seen in DFZ

Report for ASN AS49627

What does the prefix table show?

Explanation of different messages

Prefixes originated by AS49627

Prefix	RIR	BGP	RPKI	RIPE	Advice
91.232.130.0/24	RIPE NCC	49627	49627 /24	49627	Everything looks good
185.68.160.0/22	RIPE NCC	49627	49627 /24	49627	Everything looks good
185.68.160.0/24	RIPE NCC			49627	Route objects exist, but prefix not se
185.68.161.0/24	RIPE NCC			49627	Route objects exist, but prefix not se
185.68.162.0/24	RIPE NCC			49627	Route objects exist, but prefix not se
185.68.163.0/24	RIPE NCC			49627	Route objects exist, but prefix not se
193.169.138.0/23	RIPE NCC	49627	49627 /24	49627	Everything looks good
193.169.138.0/24	RIPE NCC			49627	Route objects exist, but prefix not se

IRR EXPLORER

Prefix, IP, ASN or AS/route-set

Search

Data source status

Report for prefix 2a07:cd40::/32

What does the prefix table show?

Explanation of different messages

Directly overlapping prefixes of 2a07:cd40::/32

Prefix	RIR	BGP	RPKI	RIPE	Advice
2a07:cd40::/29	RIPE NCC			213822	Route objects exist, but prefix not seen in DFZ No (covering) RPKI ROA found for route objects
2a07:cd40::/32	RIPE NCC	213822	213822 /32		No route objects match DFZ origin

All overlaps of least specific match 2a07:cd40::/29

Prefix	RIR	BGP	RPKI	RIPE	Advice
2a07:cd40::/32	RIPE NCC	213822	213822 /32		No route objects match DFZ origin
2a07:cd40::/29	RIPE NCC			213822	Route objects exist, but prefix not seen in DFZ No (covering) RPKI ROA found for route objects

IRR EXPLORER

Prefix, IP, ASN or AS/route-set

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2a07:cd40::/29	RIPE NCC			213822	Route objects exist, but prefix not seen in DFZ No (covering) RPKI ROA found for route objects
2a07:cd40::/32	RIPE NCC	213822	213822 /32	213822	Everything looks good

All overlaps of least specific match 2a07:cd40::/29

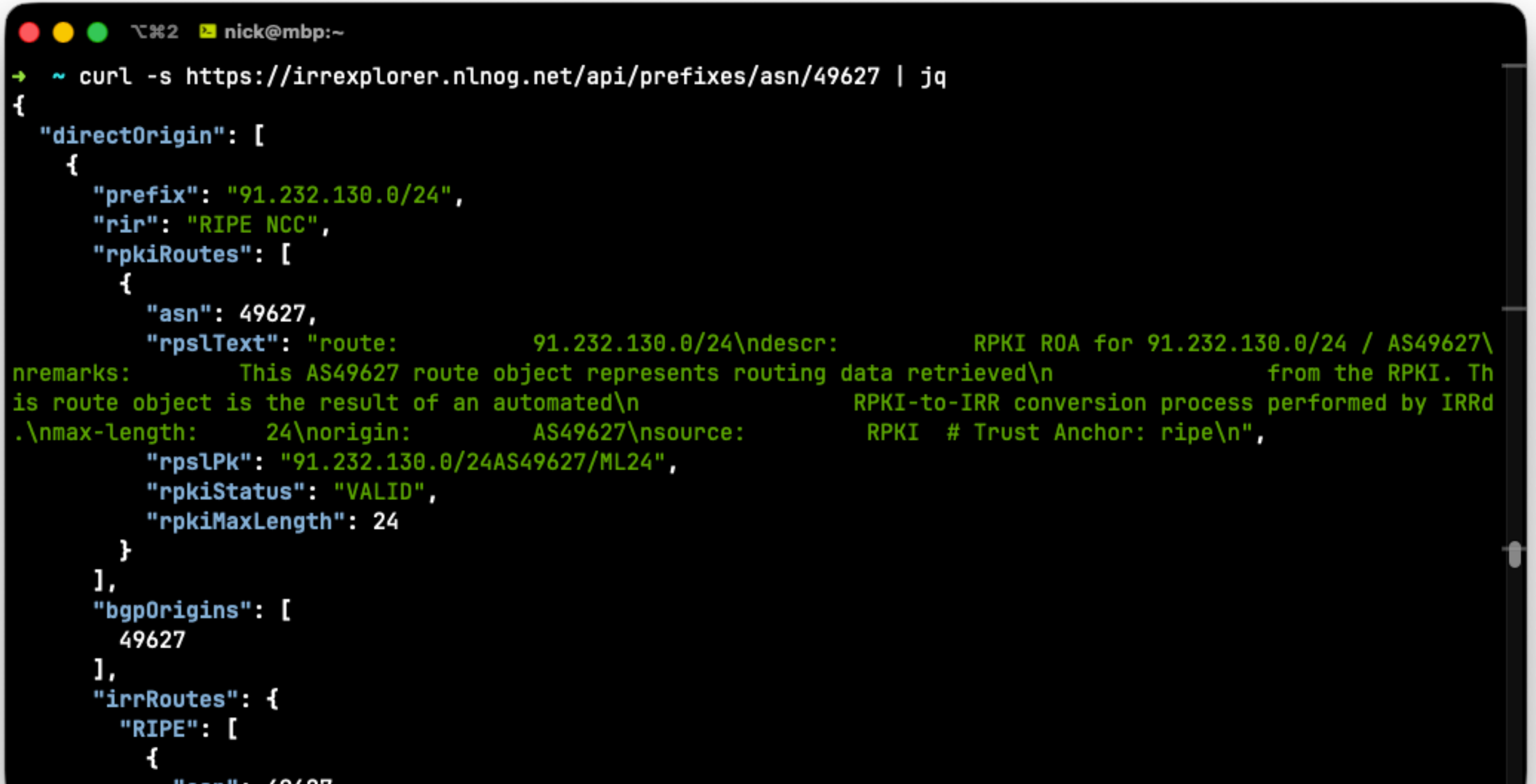
Prefix	RIR	BGP	RPKI	RIPE	Advice
2a07:cd40::/32	RIPE NCC	213822	213822 /32	213822	Everything looks good

Included in the following AS sets

Name	ARIN	RIPE
AS-31576-PEERS		✓
AS-ATOM86CUST4		✓
AS-ATOM86CUST6		✓
AS-ECHELON-PEERS		✓
AS-EUROACCESS		✓
AS-EUROACCESS-V6		✓
AS-FRYS-IX-CONNECTED		✓
AS-IX		✓

Source	Last update
BGP and RIRstats	40 minutes ago (2026-04-28 08:46 UTC)
AFRINIC	an hour ago (2026-04-28 08:25 UTC)
ALTDB	8 hours ago (2026-04-28 01:38 UTC)
APNIC	an hour ago (2026-04-28 08:23 UTC)
ARIN	an hour ago (2026-04-28 08:23 UTC)
BBOI	4 days ago (2026-04-24 19:04 UTC)
BELL	6 days ago (2026-04-22 11:08 UTC)

IRR EXPLORER



BGP Filter Guides

RPKI

Rejecting RPKI invalid BGP Routes: reject_invalids.

RPKI FAQ at the RPKI Documentation project

Locally attest well-known Trust Anchor publication point prefixes slurm_ta.

Bogon ASN filtering

Rejecting routes which have a Bogon ASN anywhere in the AS_PATH: bogon_asn.

Rejecting RPKI Invalid BGP Routes

BIRD

BIRD 2.0 supports RTR. However, the current implementation does not perform an automatic revalidation of routes upon receipt of new ROAs.

The RPKI-RTR protocol receives and maintains a set of ROAs from a cache server (also called validator). You can validate routes (RFC 6483) using function `roa_check()` in filter and set it as import filter at the BGP protocol. BIRD should re-validate all of affected routes after RPKI update by RFC 6811, but we don't support it yet! You can use a BIRD's client command `reload in bgp_protocol_name` for manual call of revalidation of all routes. (https://bird.network.cz/?get_doc&v=20&f=bird-6.html#ss6.13)

BIRD 3.0 *does* support automatic revalidation. It is enabled by default (`rpki reload on`), but, for BGP channels, you must configure `import table yes` and/or `export table yes`, for respective direction.

The rtrsub utility can be used to generate static ROA tables for BIRD 1.6.

Set up RTR as following:

```
roa4 table r4;
roa6 table r6;

protocol rpki {
  roa4 {
    table r4;
  };
  roa6 {
    table r6;
  };
  remote "10.1.1.6" port 323;
}
```

EASY WAY FOR NLNOG EVENT VISITORS

TO FIND OR OFFER RIDES TO/FROM NLNOG EVENTS

Dashboard

Event: **nlnog-day-2026**

Edit my ride | Request a ride

You have **1** pending seat request. Review

Rides offered

Driver	Direction	Location	Departure	Return	Seats	
Pieter Janssen	round trip	Groningen, P+R Hoogkerk	Thu 10 Sep 06:30	Thu 10 Sep 19:00	2/3 free	Details
Sanne de Vries	to event	Eindhoven Centraal (Kiss & Ride)	Thu 10 Sep 07:15	-	2/2 free	Details
Jeroen van der Berg	round trip	Amsterdam Sloterdijk P+R	Thu 10 Sep 07:45	Thu 10 Sep 18:30	2/3 free (yours) 1 pending	Details

Ride requests

Who	Direction	Location	When	Notes

UPCOMING NLNOG EVENTS

- NLNOG Day: 4 september, Gooiland Theater, Hilversum, NL
- NLNOG New Years Drink: January 2027 (probably) Utrecht, NL
- NLNOG Summer Event (with BBQ!): June 2027

- Check nlnog.net for details

THANK YOU!

https://nlnog.net/get-involved