RIPE NCC
RIPE NETWORK COORDINATION CENTRE

RIPE Atlas

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Introduction

- [RIPE Atlas](#) is an active Internet measurement network

- Built and operated by the RIPE NCC

- Based on the community to deploy and host vantage points ("probes")

- Operating since 2010 - almost 14 years now!

- World-wide presence, though the focus is our service region

- Primary objective: support network operations

- Secondary objectives:

  - Understanding the state of the Internet

  - Support research

Main Uses

- To measure a network "target" from virtually anywhere in the world

- Can use ping, traceroute, DNS, NTP, SSL/TLS, and limited HTTP

- Continuous monitoring, anomaly detection

  - When you want to establish a baseline

  - Or monitor planned or unplanned changes, improvements, anomalies, etc.

  - These measurements run periodically

- Ad hoc, immediate tests

  - When there's a problem to be discovered or understood

  - Support pinpointing where a current problem is, thereby helping recovery

Concepts: Probes

- Variations: hardware (~8200), software (~3500), anchors (~800)

- Hardware

  - Limited supply, one needs to apply to get one

  - We aim to distribute new hardware probes to increase diversity

  - Plug-and-play: auto-configured, automatically updated,
    no maintenance needed

- Software

  - Same functionality but without the hardware

  - Installable on almost any Linux machine

  - Needs more expertise: run the underlying OS plus upgrade the probe every now and then

Concepts: Anchors

- An anchor is a probe *and* a willing measurement target

- Meant to be installed in the core network with stable connectivity

- Can be hardware or VM

- The OS, the services and the probe firmware is managed by the RIPE NCC

- Automatically measured by every other anchor in a full mesh

  - Ping, traceroute, HTTP

  - Therefore there's a constant data flow about connectivity to the anchor's network

Concepts: Hosts

- Each probe/anchor has a "host" who owns it

- The host is responsible to keep the probe connected

- The host role can be shared within the LIR/ISP

- Hosts earn credits proportionally to the uptime of the probe

- Anyone can host multiple probes

  - Including hardware, software and anchor

Concepts: Measurements

- All measurements have a single target and multiple vantage points

- Periodic measurements:

  - They have a predefined interval

  - The set of probes to use is set at the beginning, can be changed later

  - They can have a predefined start and stop time

  - Relevant use case: monitoring, determining a baseline, tracking changes

- One-off measurements

  - The only run once - most likely "immediately"

  - Response time is measured in seconds

  - Relevant use case: issue resolution, debugging, ad-hoc questions

Concepts: Credits

- Measurements cost credits

  - Proportional to the number of results and measurement type

- Credits can be earned:

  - By hosting a probe or anchor

  - By being a RIPE NCC member

  - By being a sponsor

  - By getting a transfer from another user

- Credits can be pooled, given access to, …

Concepts: Data

Web Interface

API

CLI

User

Streaming

BigQuery

Controller

Data Repository

Anchor

Probes

RIPE Atlas

Concepts: Ambassadors & Sponsors

- Ambassadors: individuals or institutions

  - Help with the distribution of hardware probes

  - Help spreading the word and supporting (local) users

- Sponsors

  - They provide monetary support for RIPE Atlas. [In return they get](#):

    - Recognition and visibility in the system

    - A number of hardware probes

    - Becoming time-limited sponsors for other probes - and credits income from that
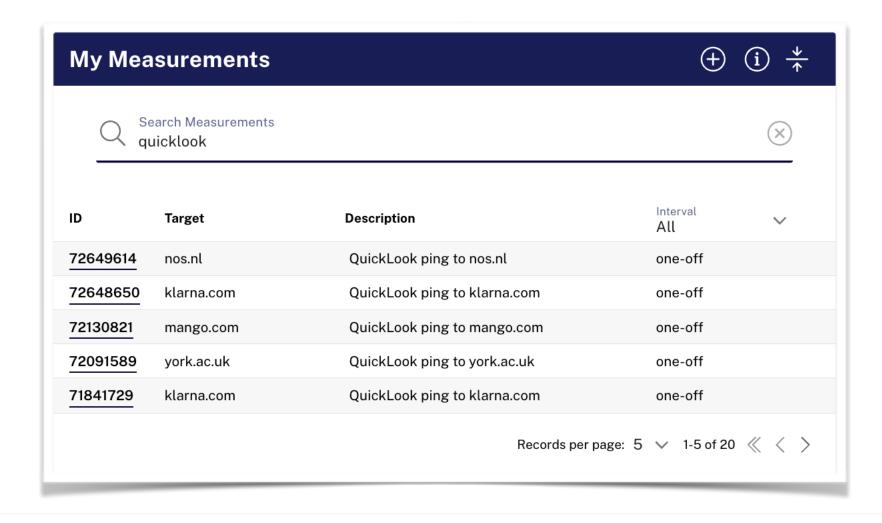
    - One-off credits

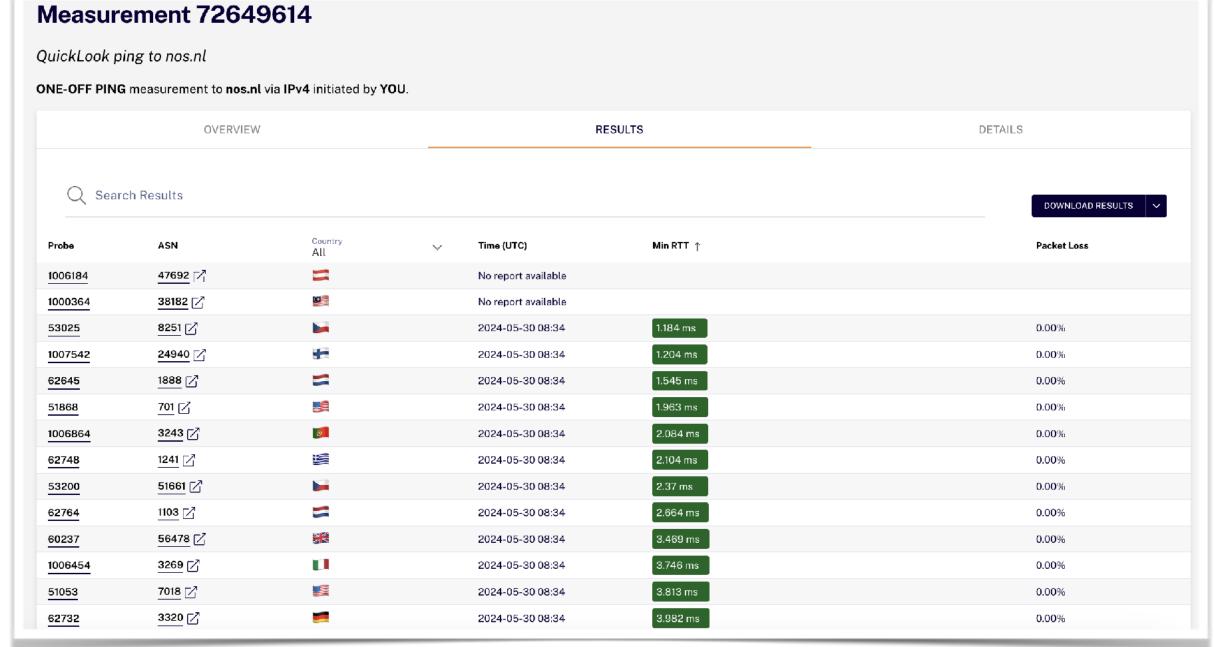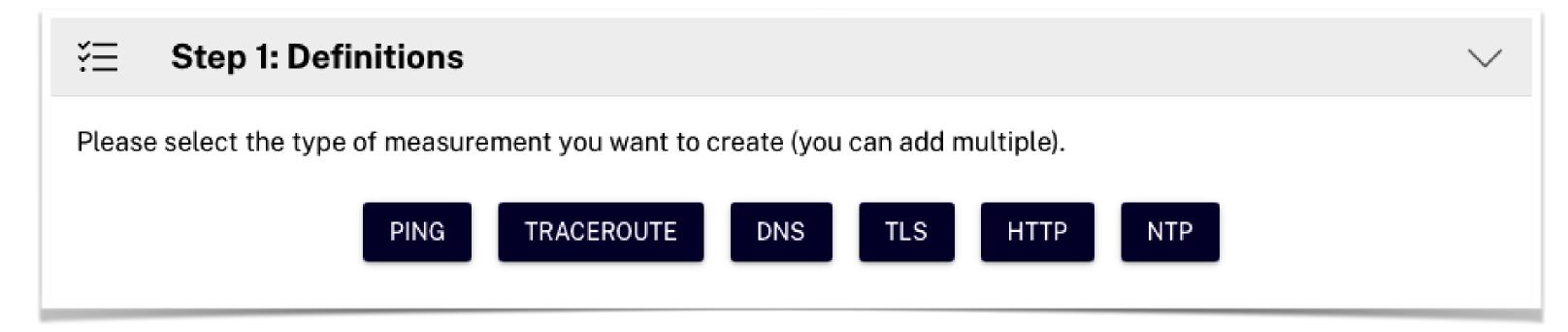   - Ability to run many anchors
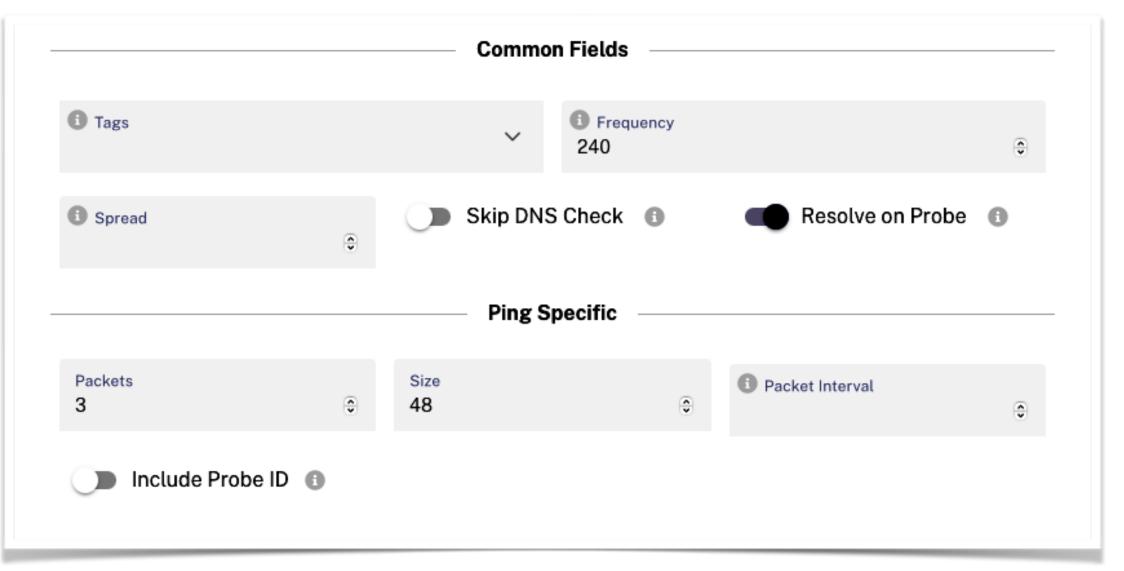
Current Status

you are here

Measurements: Quick Look

Measurements: Specification

Measurements: Specification

Step 2: Probe Selection

SEARCH   RANDOM BY... ⌄   IDS LIST   REUSE FROM EXISTING MEASUREMENT

Probe Selection

50 Random Probes AREA: Worldwide ⊗

Step 3: Timing

Please select if this is a one-off (vs. periodic) measurement and start and end times (if needed). All times are displayed in your local time (but submitted in UTC).

This is a One-off: 🔘

Start Time:

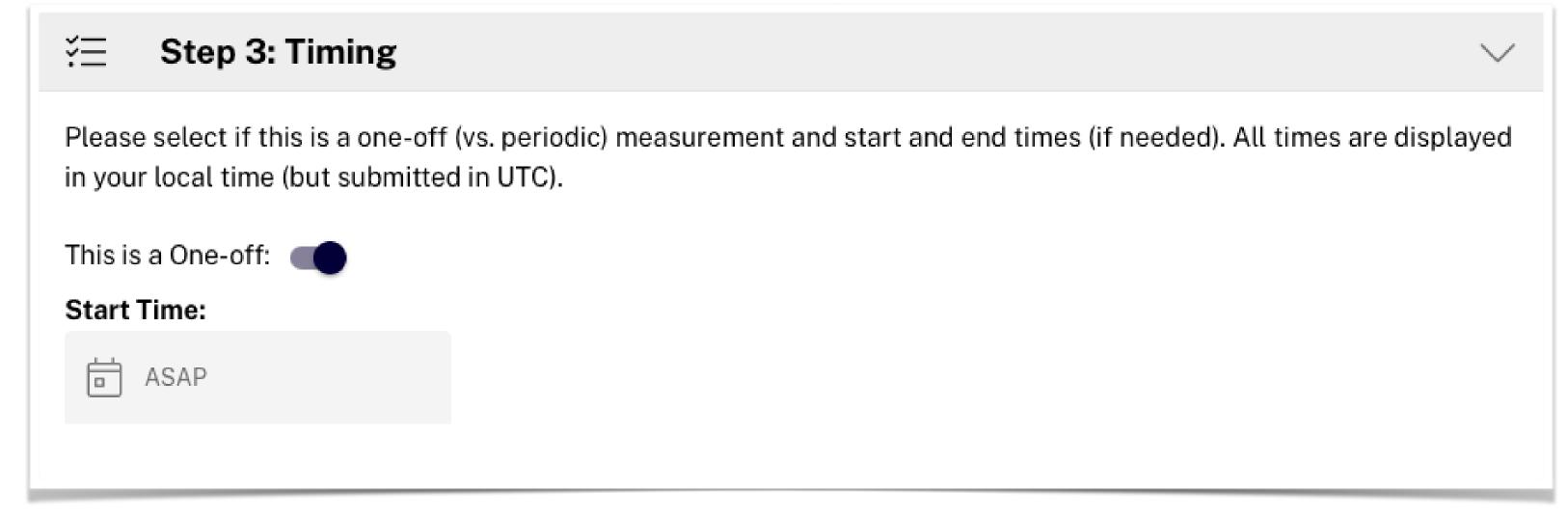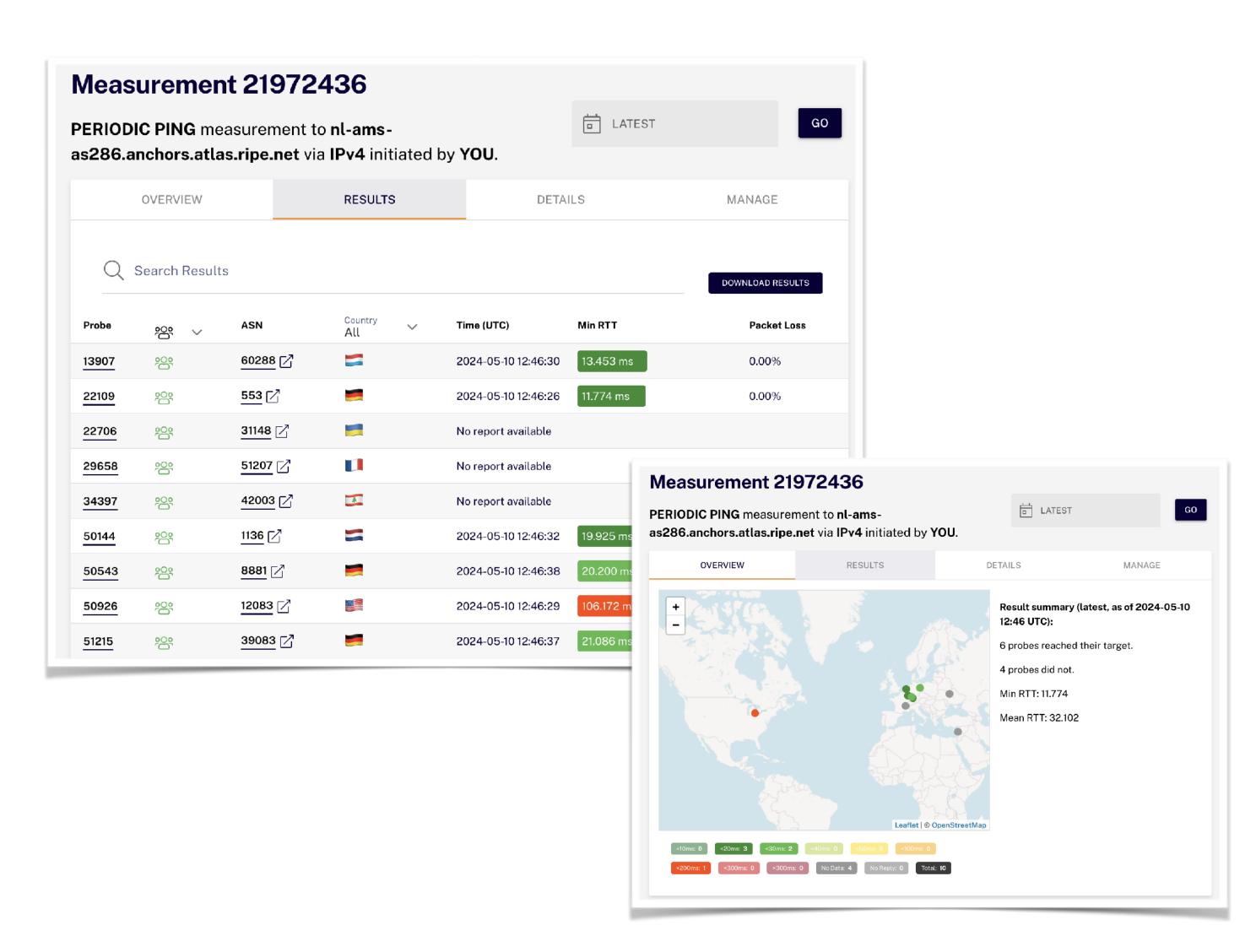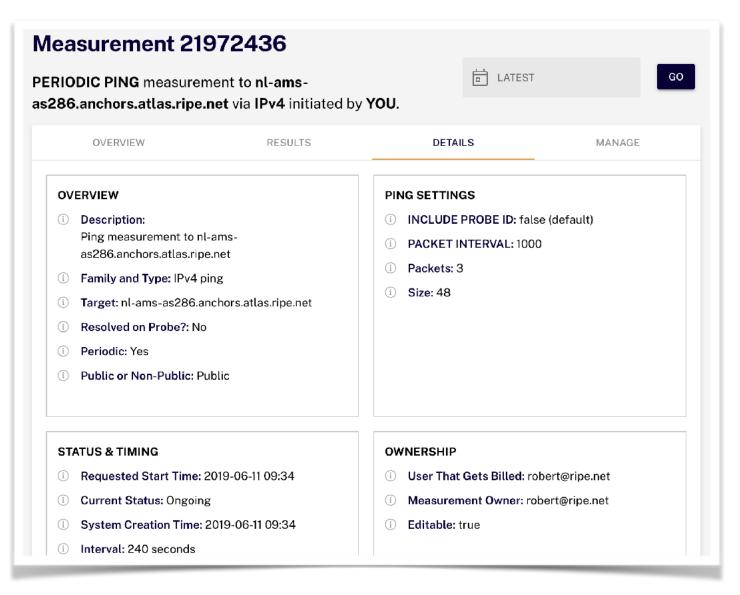📅 ASAP

Measurements: Specification

API Spec

WITH CURL COMMAND | JSON OBJECT

```
curl -H "Authorization: Key YOURKEY" -H "Content-Type: application/json" -X POST -d '{
"definitions": [
 {
  "type": "ping",
  "af": 4,
  "resolve_on_probe": true,
  "description": "Ping measurement to ",
  "packets": 3,
  "size": 48,
  "skip_dns_check": false,
  "include_probe_id": false,
  "interval": 240
 }
]
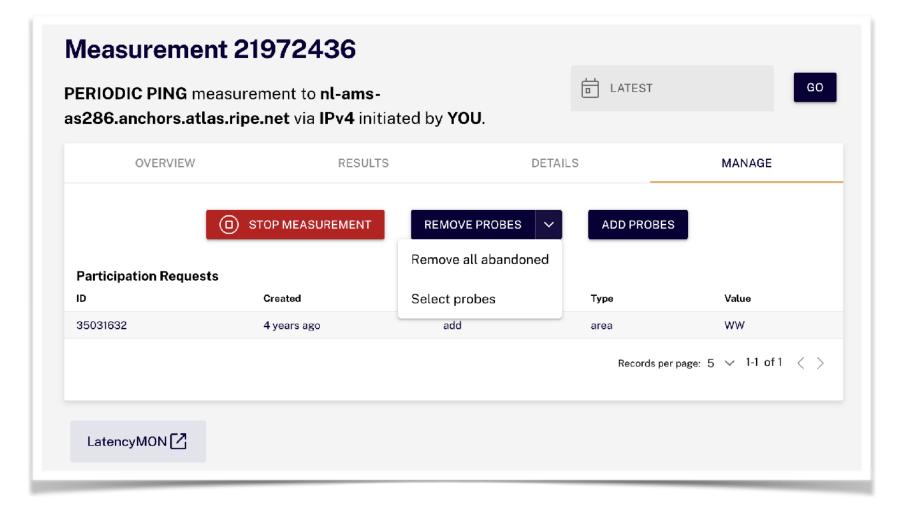```

COPY TO CLIPBOARD

Measurement(s) created! 64841204          DISMISS

# Measurements: Results

# Using the CLIs

- RIPE NCC's Python based tools have been available for some time now:

  - [RIPE Atlas Sagan](#): raw result parser

  - [RIPE Atlas Cousteau](#): API wrapper

  - [RIPE Atlas Magellan](#): command line tools

- New:

  - [goat](#), a Go implementation of an API wrapper / result parser / CLI

  - CLI binaries are available if you don't want to compile

- All these are open source

# But Wait, There's More!

- APIs

- LatencyMON, TraceMON

- Data analysis
  - Daily dumps
  - BigQuery

- Related services
  - DNSMON / DomainMON
  - IPmap

# Who Knows What The Future Brings?

- Current activities:
  - Renewing the UI and the infrastructure
  - Easier use (packaging) of the probe software package
  - …

- In 2025:
  - Improve support and simpler access to known use cases
  - Increasing RIPE NCC members' benefits

# Questions

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