RSSAC002-style traffic datasets for .nl

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The problem: TLD traffic stats don't compare

- Several TLDs already publish traffic statistics
  - .nl since 2015 (`stats.sidnlabs.nl`), .cz (`stats.nic.cz`), .ie (annual reports)
- But each uses its own metrics, definitions and formats
  - Not comparable with each other
  - Not comparable with the root
- The root server operators solved this years ago: **RSSAC002**
  - Same daily counters, same YAML format, all 13 operators

Why not do the same one level down?

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What we did: .nl in RSSAC002v5 format

- Daily YAML files for all .nl authoritative servers
- To our knowledge, first TLD to publish RSSAC002
- 4 of 6 metrics:
  - traffic-volume, traffic-sizes
  - rcode-volume, unique-sources
- We publish per server and **all servers combined**

```yaml
version: rssac002v5
service: nl_servers
metric: unique-sources
start-period: '2026-03-10T00:00:00+00:00'
num-sources-ipv4: 1542672
num-sources-ipv6: 283085
num-sources-ipv6-aggregate: 131897
```

Unique IP addresses seen by ns1.dns.nl, ns3.dns.nl, ns4.dns.nl

Why we did it

- **Open data on core infrastructure**
  - Measurement data about the DNS should be public
- **Giving back**
  - We used the roots' RSSAC002 data in our own research (Anycast vs. DDoS, IMC 2016)
- **Same format ⇒ comparable**
  - .nl vs. the root, today; .nl vs. other TLDs, once they join
- **Open source, end to end**
  - ENTRADA + tool by TU Delft students: any operator can run it

Nobody can compare TLDs until more of us publish

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traffic-volume: queries and responses

```
version: rssac002v5
service: nl_servers
metric: traffic-volume
start-period: '2026-09-30T00:00:00+00:00'
dns-udp-queries-received-ipv4: 7981303011
dns-udp-queries-received-ipv6: 4028605654
dns-tcp-queries-received-ipv4: 74257375
dns-tcp-queries-received-ipv6: 76571412
dns-udp-responses-sent-ipv4: 8121791872
dns-udp-responses-sent-ipv6: 4114877445
dns-tcp-responses-sent-ipv4: 75435979
dns-tcp-responses-sent-ipv6: 78827850
```

12.2 B
queries on 30 Sep 2026

34 %
over IPv6

1.2 %
over TCP

rcode-volume: responses per RCODE

```
version: rssac002v5
service: nl_servers
metric: rcode-volume
start-period: '2026-09-30T00:00:00+00:00'
-1: 41778109
0: 11384221157      # NOERROR
1: 8124             # FORMERR
2: 11               # SERVFAIL
3: 1002838867       # NXDOMAIN
4: 2477             # NOTIMP
5: 530              # REFUSED
9: 4626             # NOTAUTH
16: 132             # BADVERS
23: 3857222         # BADCOOKIE
```

91.6 %
NOERROR

8.1 %
NXDOMAIN: names that don't exist

3.9 M
BADCOOKIE

traffic-sizes: query and response size histograms

```
version: rssac002v5
service: nl_servers
metric: traffic-sizes
start-period: '2026-09-30T00:00:00+00:00'
udp-request-sizes:
  16-31: 99194195
  32-47: 7700266650
  64-79: 578200868
  80-95: 69418666
  96-111: 4647267
  ...
  288-: 140
...                  # + response sizes, TCP
```

64 %
of UDP queries are 32–47 bytes

16-byte bins
for UDP and TCP, requests and responses

unique-sources: distinct sources per day

```
version: rssac002v5
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start-period: '2026-03-10T00:00:00+00:00'
num-sources-ipv4: 1542672
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```

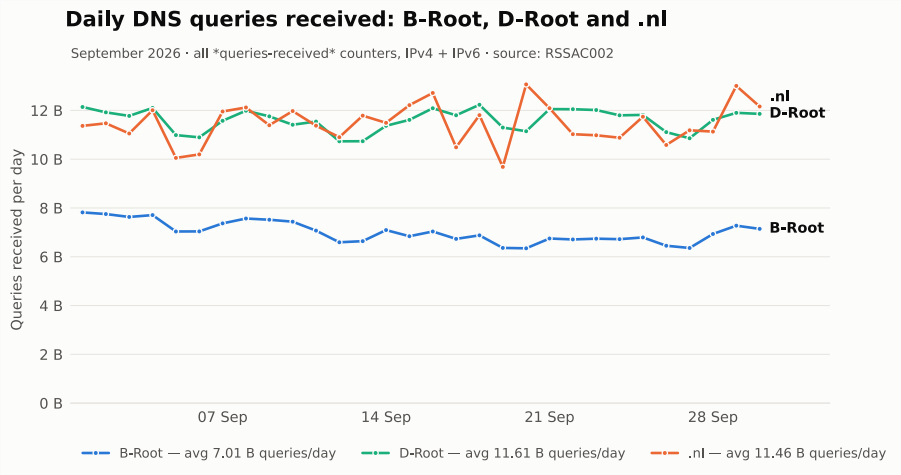
Unique IP addresses seen by ns1.dns.nl, ns3.dns.nl, ns4.dns.nl

1.8 M
distinct source addresses

15 %
of them IPv6

132 k
IPv6 /64 prefixes

Example: .nl handles about as much traffic as D-Root

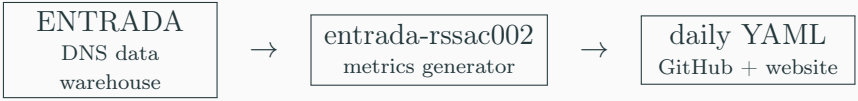


What you can do with it

- **Protocol adoption:** IPv6 and TCP share over time
- **Response sizes:** DNSSEC impact, fragmentation risk
- **Junk traffic:** NXDOMAIN share at a large ccTLD
- **Anomalies:** peaks that point to outages or attacks
- **Benchmark:** compare your own servers with a large ccTLD and with the root

Existing root tooling works unchanged, e.g. `rssac-caucus/rssac002-charts`

How: open source, no personal data



- Generator written by **TU Delft** bachelor students (Software Project course); we forked it
- Any ENTRADA user can produce the same files for their own servers
- No PII: aggregated daily counters only, no IPs, no queries, no domain names
- Next: fully automated daily releases (now in batches)

Ask: publish yours too

- **TLD and authoritative operators:** publish RSSAC002 for your zones
  - The more who do, the more we can compare TLDs with each other
- **Researchers:** use the data
- **ENTRADA users:** the tool is ready

Website	https://rssac002.sidnlabs.nl
Data	https://github.com/SIDN/nl-rssac002
Tool	https://github.com/SIDN/entrada-rssac002
Blog	https://www.sidnlabs.nl/en/news-and-blogs/sidn-publishes-rssac002-traffi