Brushing up DNSThought

NLNETLABS
Willem Toorop

DNS-OARC 39
23 October 2022
Belgrade, RS

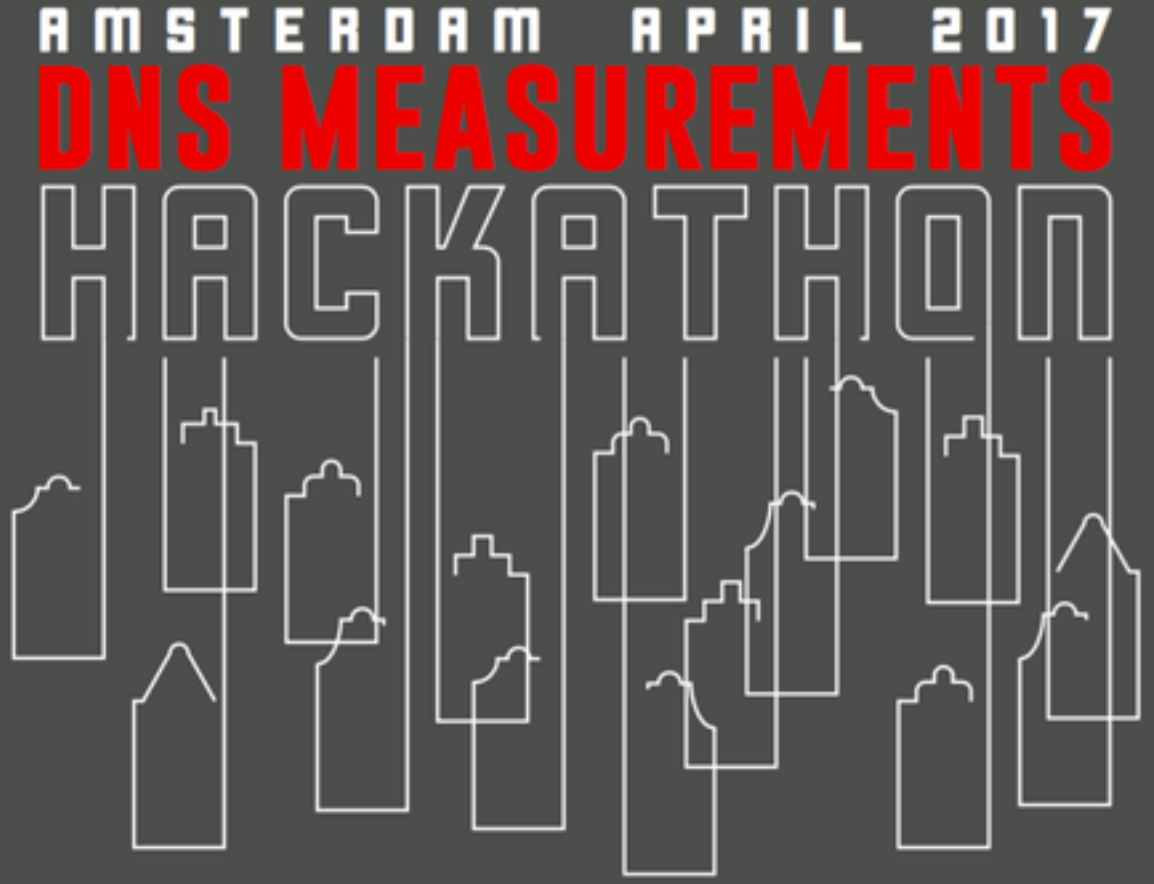
Everything you ever wanted to know about caching resolvers but were afraid to ask

Pariticpants:

Andrea Barberio,
Petros Gigis,
Jerry Lundström,
Teemu Rytilahti,
Willem Toorop

Goal:

Provide insight into caching resolver capabilities



Capabilities

Basic

- IPv6, TCP

Security

- DNSSEC validation, Algorithm support, TA's Root KSK Sentinel

Privacy

- Qname minimization, EDNS Client Subnet

DNSThought in research

Roll, Roll, Roll your Root: A Comprehensive Analysis of the First Ever DNSSEC Root KSK Rollover [PDF] nsf.gov

…, D Wessels, W Hardaker, T Chung, W **Toorop**… - Proceedings of the …, 2019 - dl.acm.org

The DNS Security Extensions (DNSSEC) add authenticity and integrity to the naming system of the Internet. Resolvers that validate information in the DN

☆ Save 99 Cite Cited by 12 Related articles All 10 versions

The reality of algorithm agility: Studying the DNSSE

M Müller, W **Toorop**, T Chung, J Jansen… - Proceedings of the …,

The DNS Security Extensions (DNSSEC) add data origin authentica the Domain Name System (DNS), the naming system of the Interne

☆ Save 99 Cite Cited by 12 Related articles All 10 versions

The root canary: Monitoring and measuring the DN

…, T Chung, D Choffnes, A Mislove, W **Toorop** - Proceedings of the

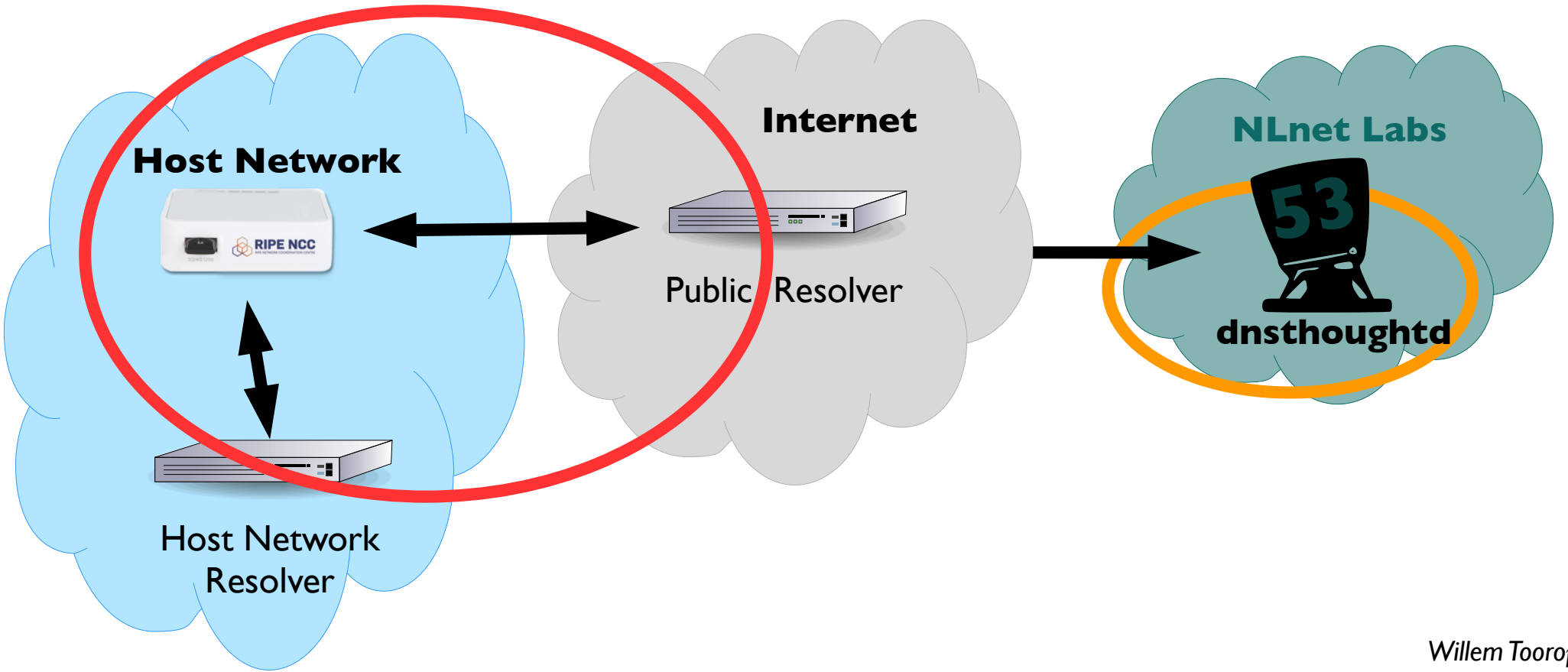
The Domain Name System (DNS) is part of the core of the Internet. much-needed security features were added to this protocol, with the

☆ Save 99 Cite Cited by 7 Related articles All 4 versions

A first look at QNAME minimization in the domain n

WB Vries, Q Scheitle, M Müller, W **Toorop**… - … Conference on Pa

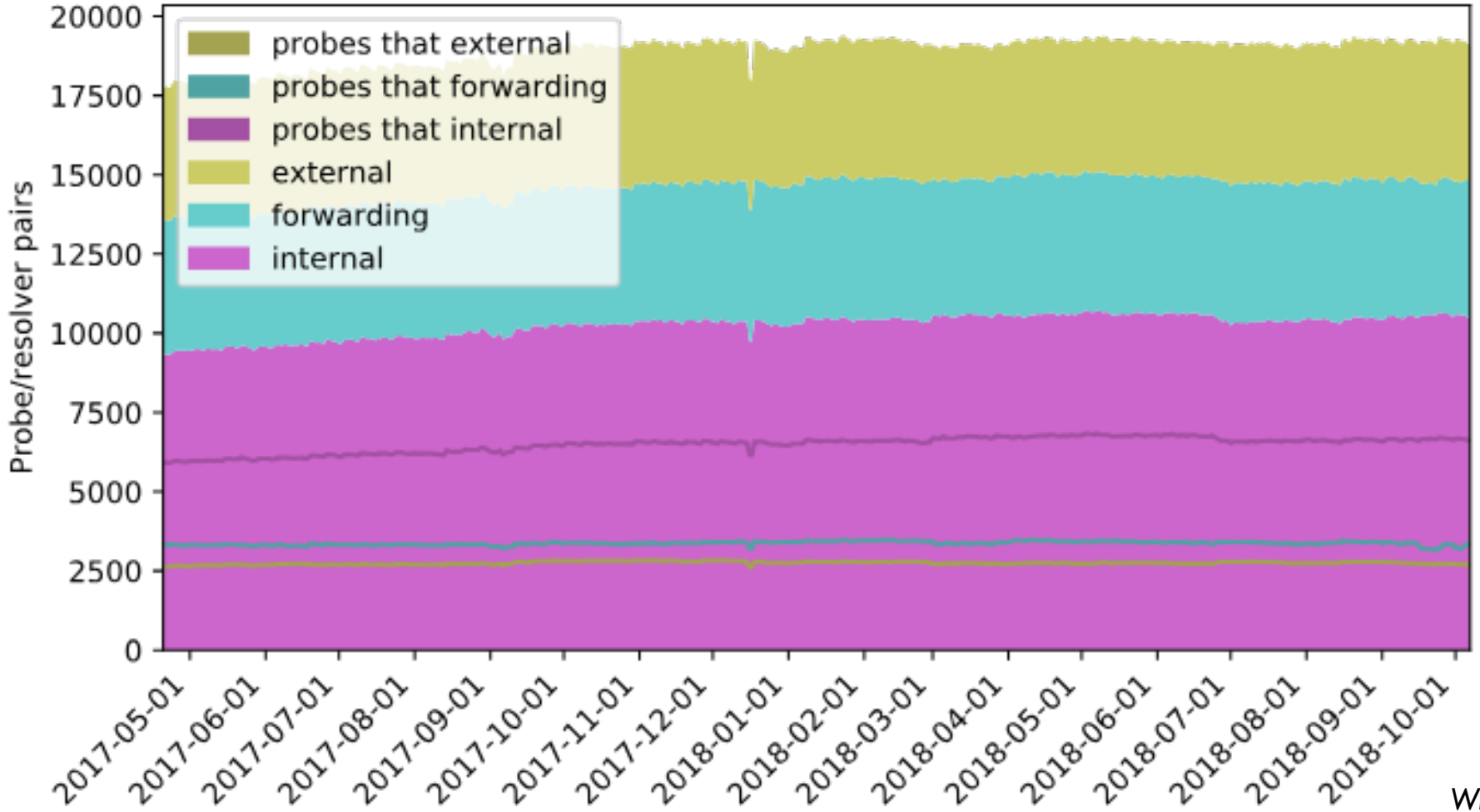
The RIPE Atlas perspective



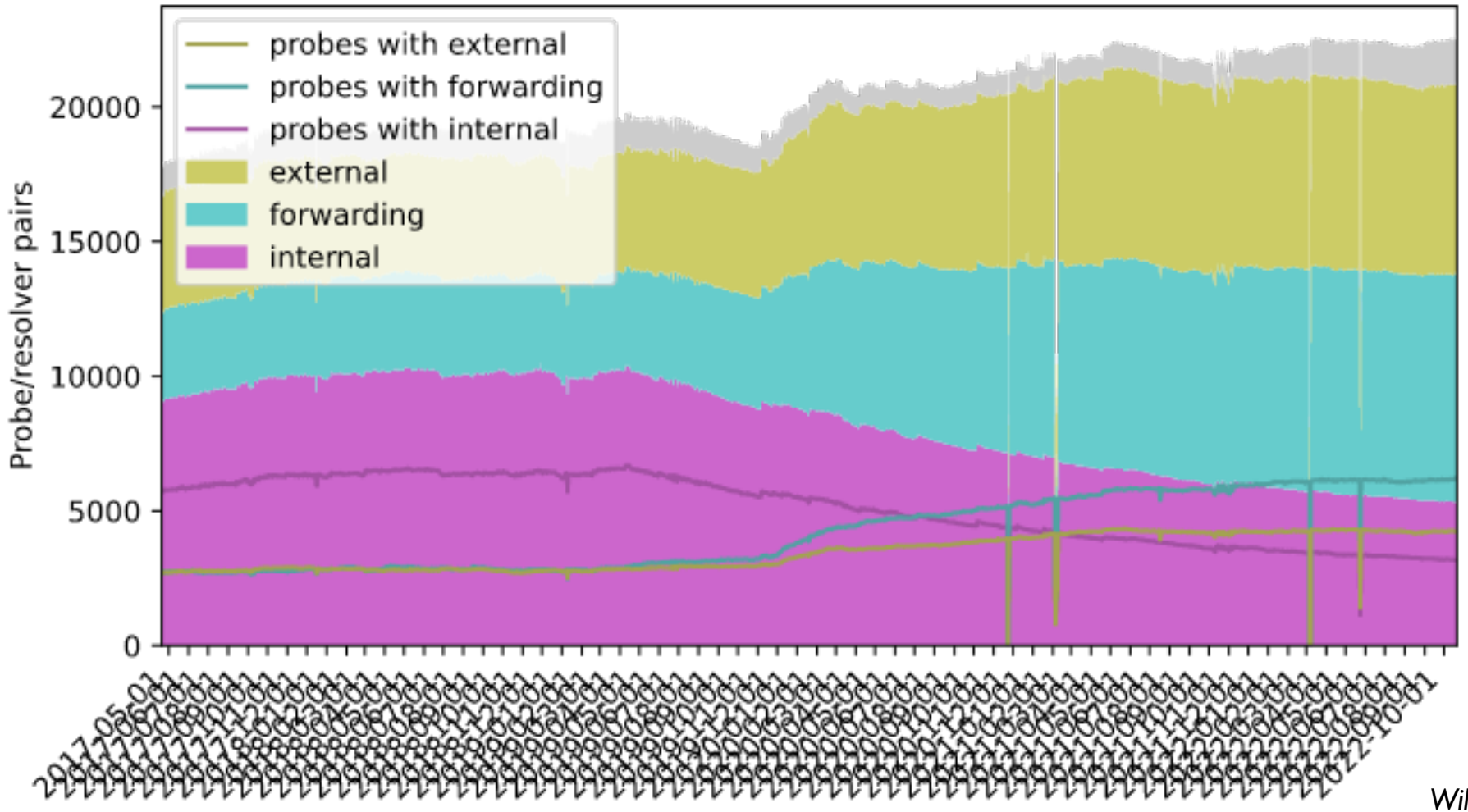
The RIPE Atlas perspective

	Probe ASN	Resolver ASN	Authoritative ASN
Internal	X	=	X
Forwarding	X	X	Z
	X	Y	Z
External	X	Z	Z

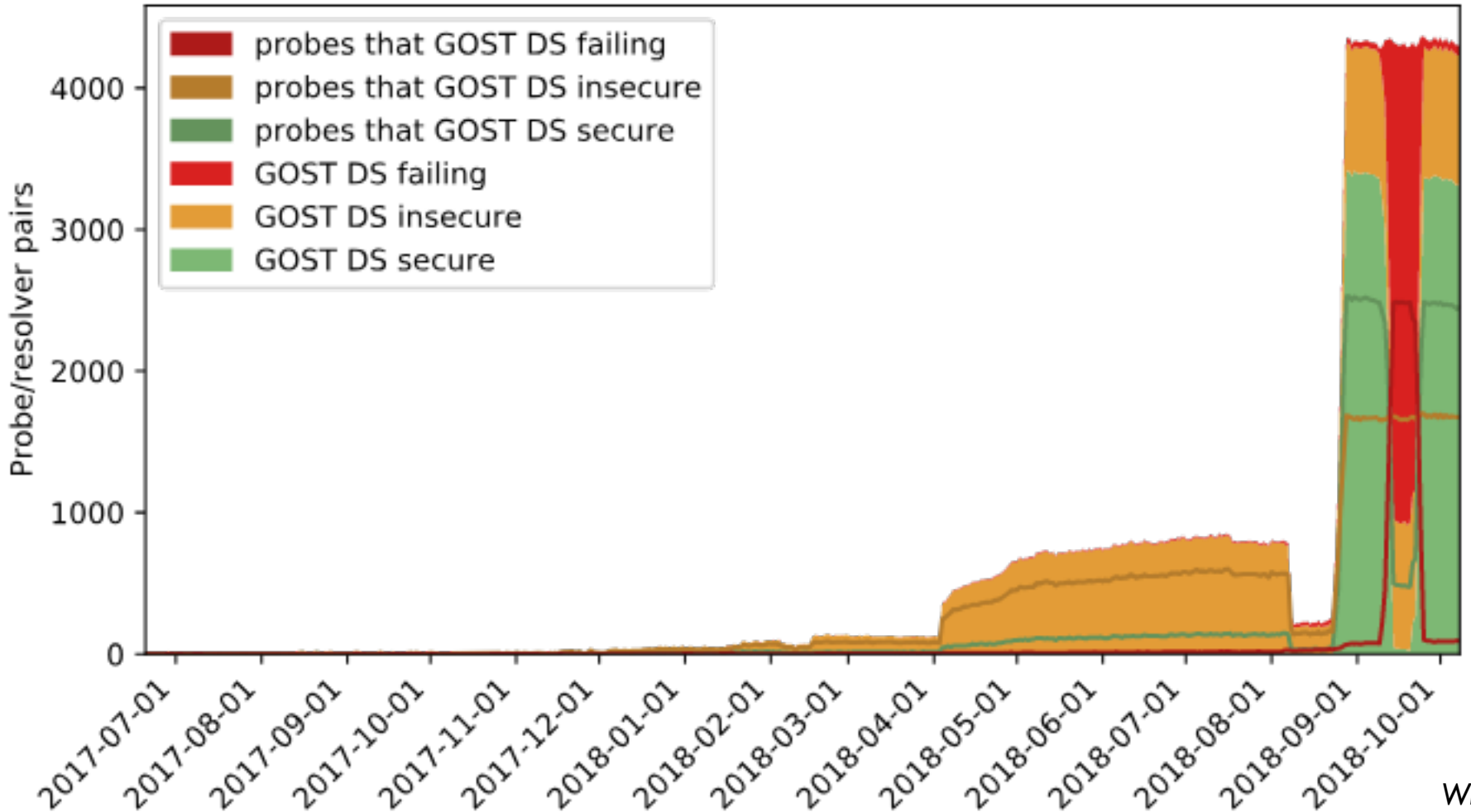
1½ years of measurements



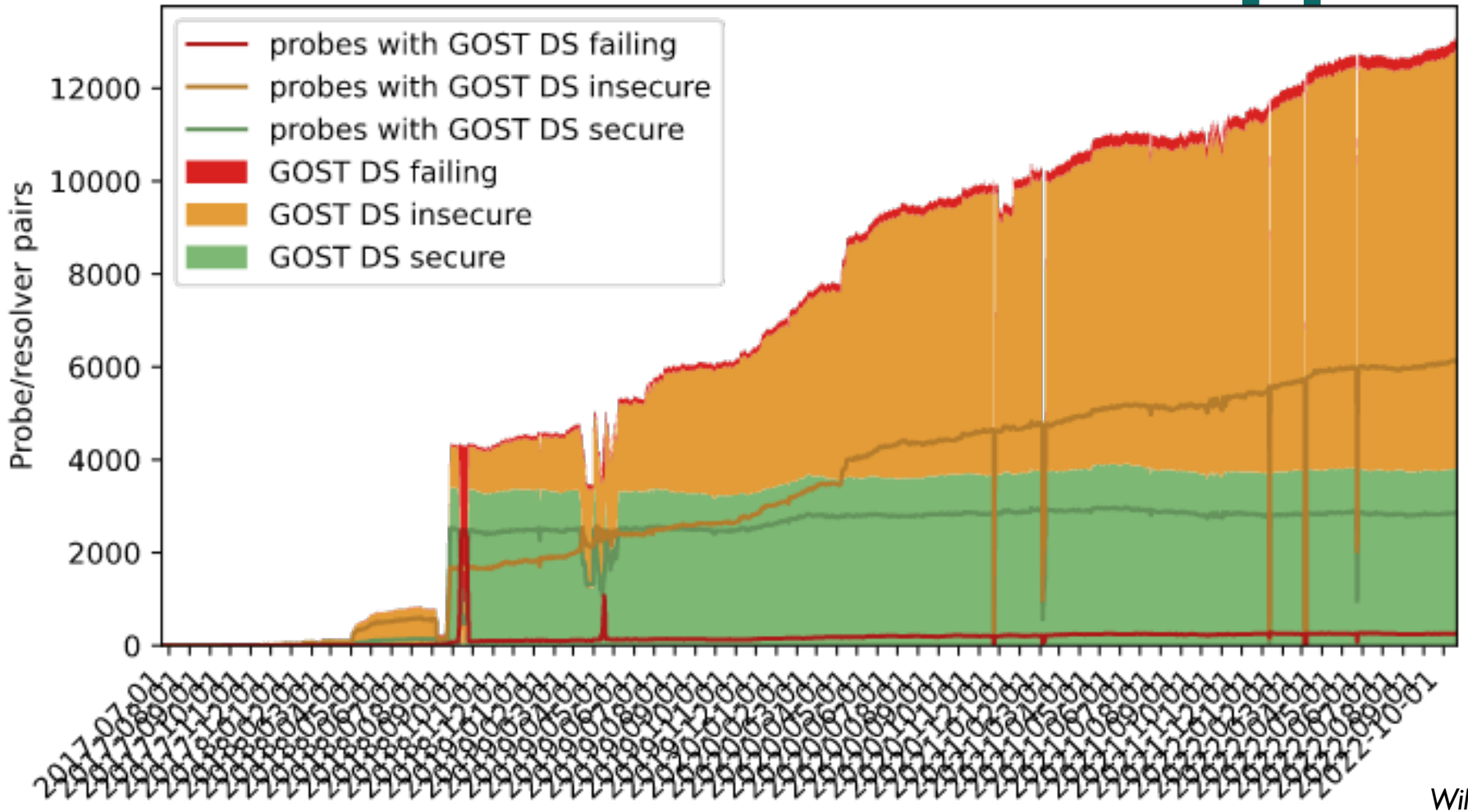
5½ years of measurements



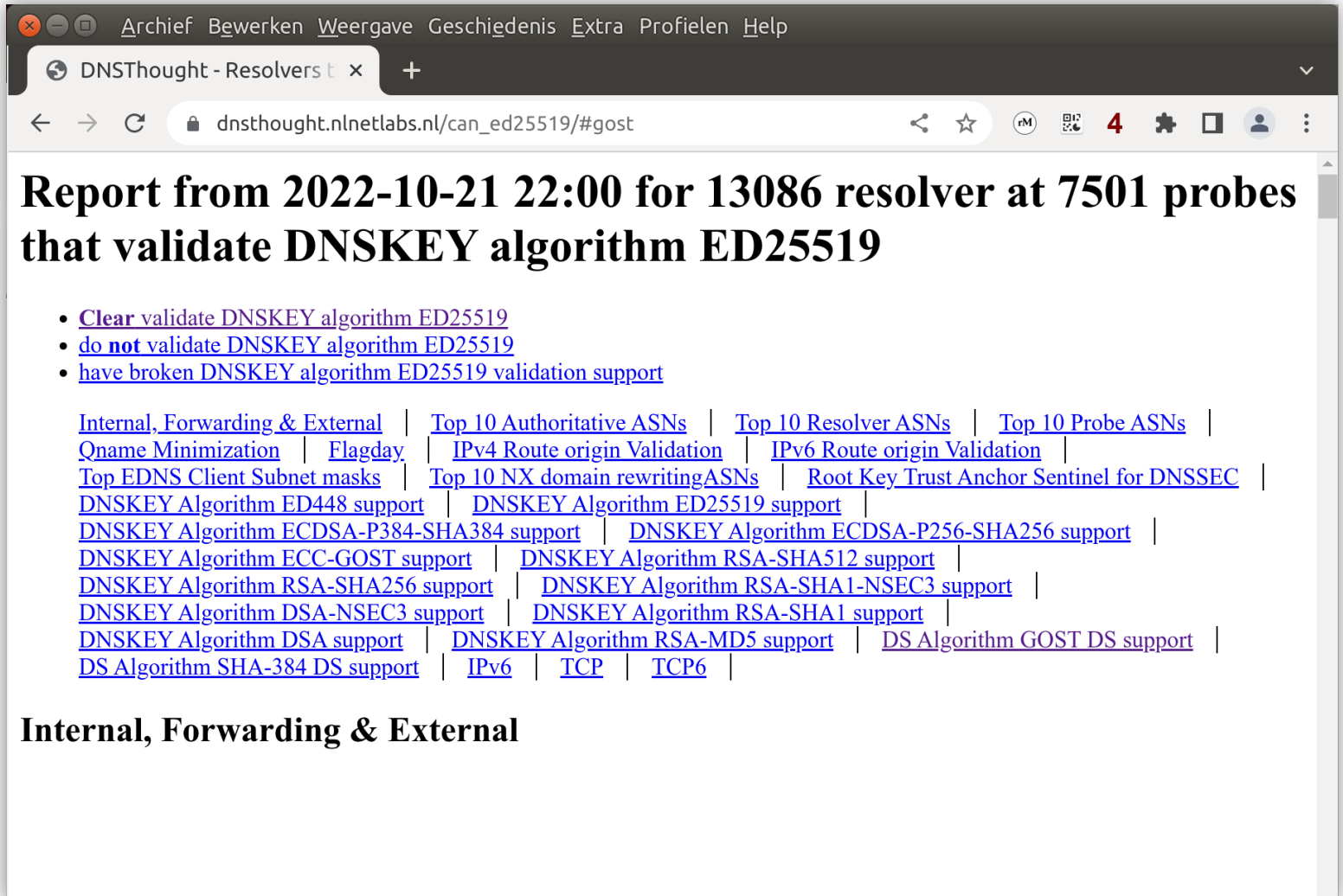
GOST DS and ED25519 support



GOST DS and ED25519 support



Horrible user interface



RIPE NCC Community Projects Fund

The RIPE NCC has supported a range of projects and innovative ideas over its 25-year history, and we are now formalising these efforts through the RIPE NCC Community Projects Fund. We know there's no shortage of brilliant minds in the Internet technical community working on groundbreaking projects, but securing funding to support these projects can be challenging.

We started working with a professional data visualiser

Archief Bewerken Weergave Geschiedenis Extra Profielen Help

Test DNSThought

dnsthought.nlnetlabs.nl/vis/test4/

DNSThought test visualisations

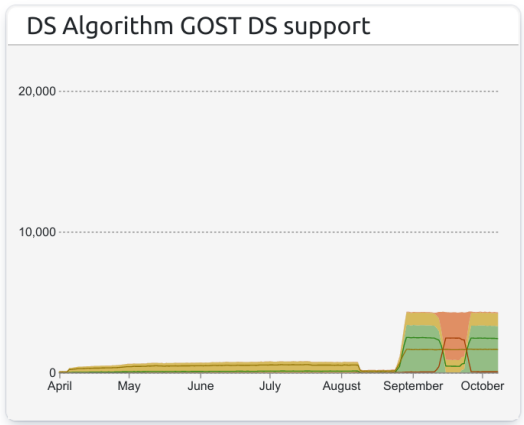
- (•) Totals
- ( ) Percentages
- ( ) Percentages without remaining resolvers

Reset

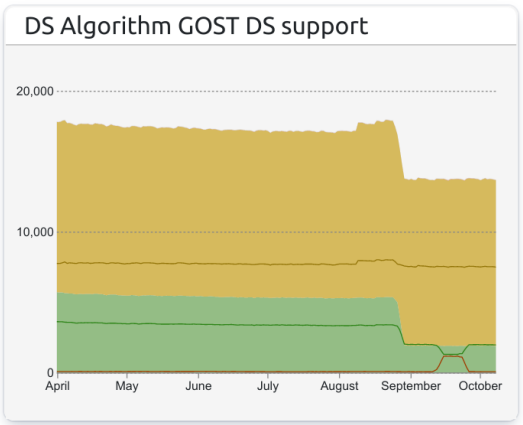
Compare:

- ( ) Internal, Forwarding & External
- ( ) Qname Minimization
- ( ) Root Key Trust Anchor Sentinel for DNSSEC
- ( ) DNSKEY Algorithm ED448 support
- (•) DNSKEY Algorithm ED25519 support
- ( ) DNSKEY Algorithm ECDSA-P384-SHA384 support
- ( ) DNSKEY Algorithm ECDSA-P256-SHA256 support
- ( ) DNSKEY Algorithm ECC-GOST support
- ( ) DNSKEY Algorithm RSA-SHA512 support
- ( ) DNSKEY Algorithm RSA-

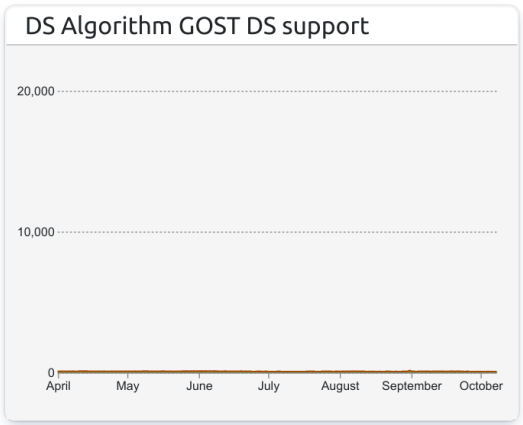
ED25519 secure



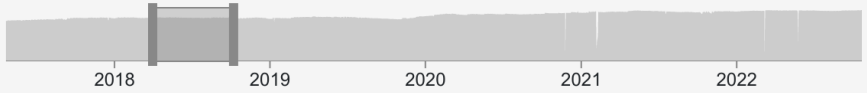
ED25519 insecure



ED25519 failing

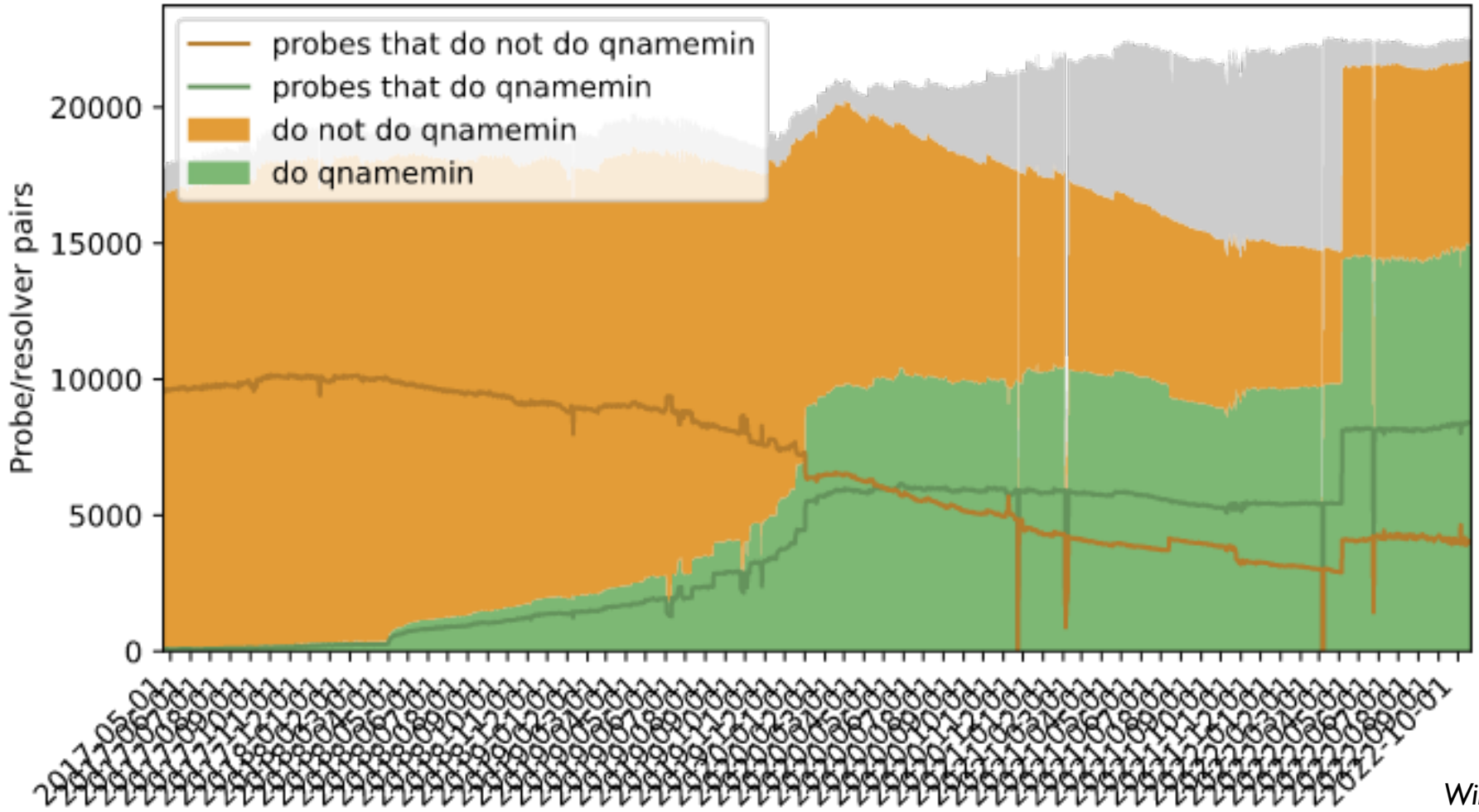


Select time range:



Select and compare

RIPE Atlas bug (qname min)



Test DNSThought

dnsthought.nlnetlabs.nl/vis/tes...

DNSThought test visualisations

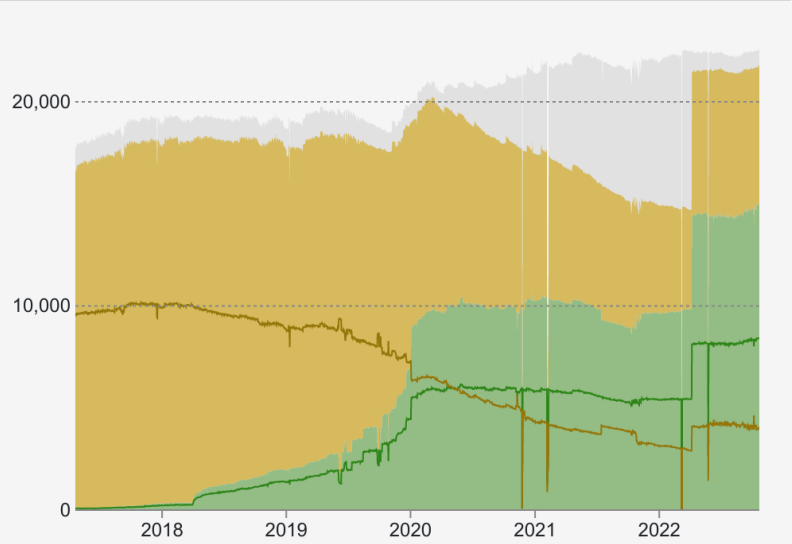
- (•) Totals
- ( ) Percentages
- ( ) Percentages without remaining resolvers

Reset

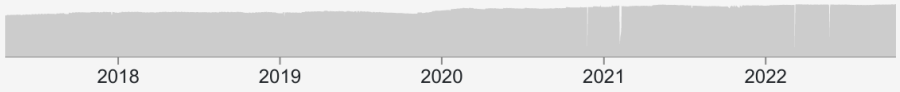
Compare:

- ( ) Internal, Forwarding & External
- ( ) Root Key Trust Anchor Sentinel for DNSSEC
- ( ) DNSKEY Algorithm ED448 support
- ( ) DNSKEY Algorithm ED25519 support
- ( ) DNSKEY Algorithm

Qname Minimization



Select time range:



Test DNSThought

dnsthought.nlnetlabs.nl/vis/tes...

DNSThought test visualisations

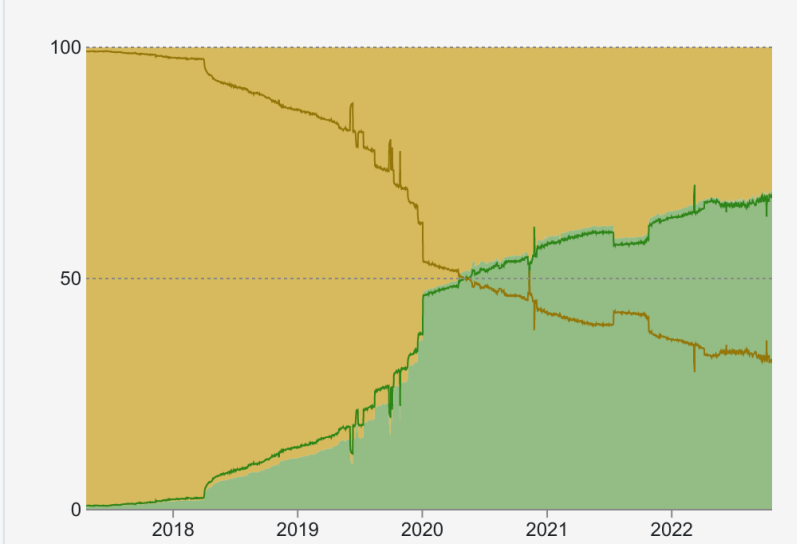
- ( ) Totals
- ( ) Percentages
- (•) Percentages without remaining resolvers

Reset

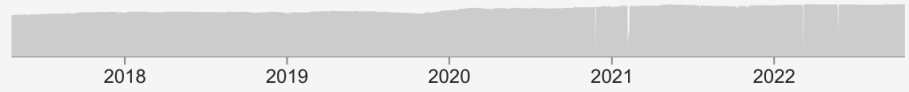
Compare:

- ( ) Internal, Forwarding & External
- ( ) Root Key Trust Anchor Sentinel for DNSSEC
- ( ) DNSKEY Algorithm ED448 support
- ( ) DNSKEY Algorithm ED25519 support
- ( ) DNSKEY Algorithm

Qname Minimization



Select time range:



Brushing up DNSThought

- Can you take a look?
  - https://dnsthought.nlnetlabs.nl/vis/test4/
- Does this make sense (UI wise)?
- How to improve?
- Send it all to me please
  - Willem Toorop <willem@nlnetlabs.nl>