



# DNSSEC and Security Workshop

# DNSSEC and Security Workshop

ICANN85

Eric Osterweil, Distinguished Scientist

11 March 2026

# Program Committee

- Gautam Akiwate
- Steve Crocker, Shinkuro
- Mark Elkins
- Layal Jebran, Moubarmij
- Russ Mundy, Parsons
- Ram Mohan, Identity Digital
- Peter Thomassen, deSEC
- Yoshiro Yoneya
- Dan York, Internet Society
- Daniel Gluck and Kathy Schnitt, ICANN Org

# Support

The DNSSEC Workshop and associated activities at ICANN are an organized activity of the:

- ICANN Security and Stability Advisory Committee (SSAC)



With additional assistance from the:

- Internet Society



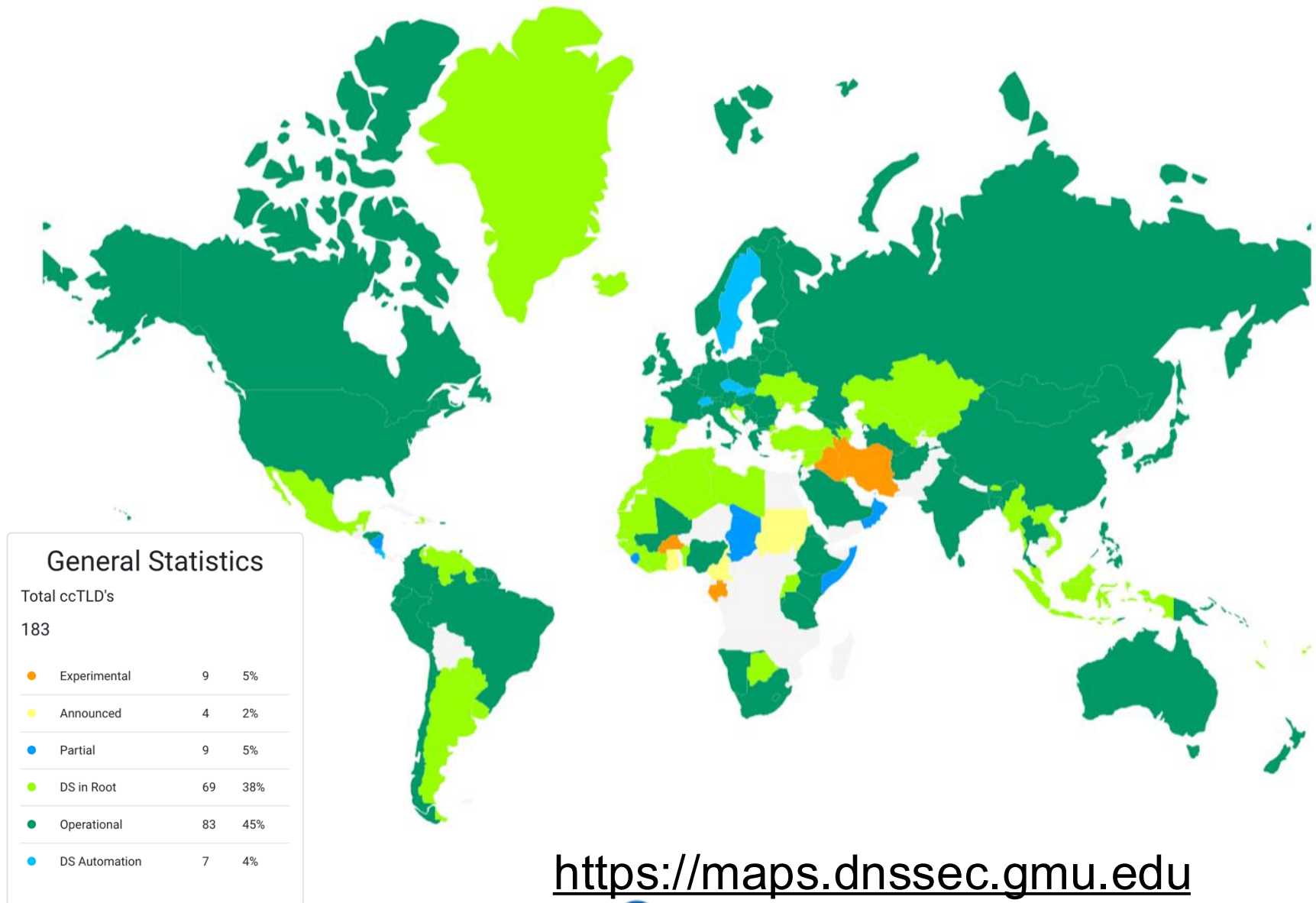
# DNSSEC, DANE & RPKI Deployments Around the World

ICANN85

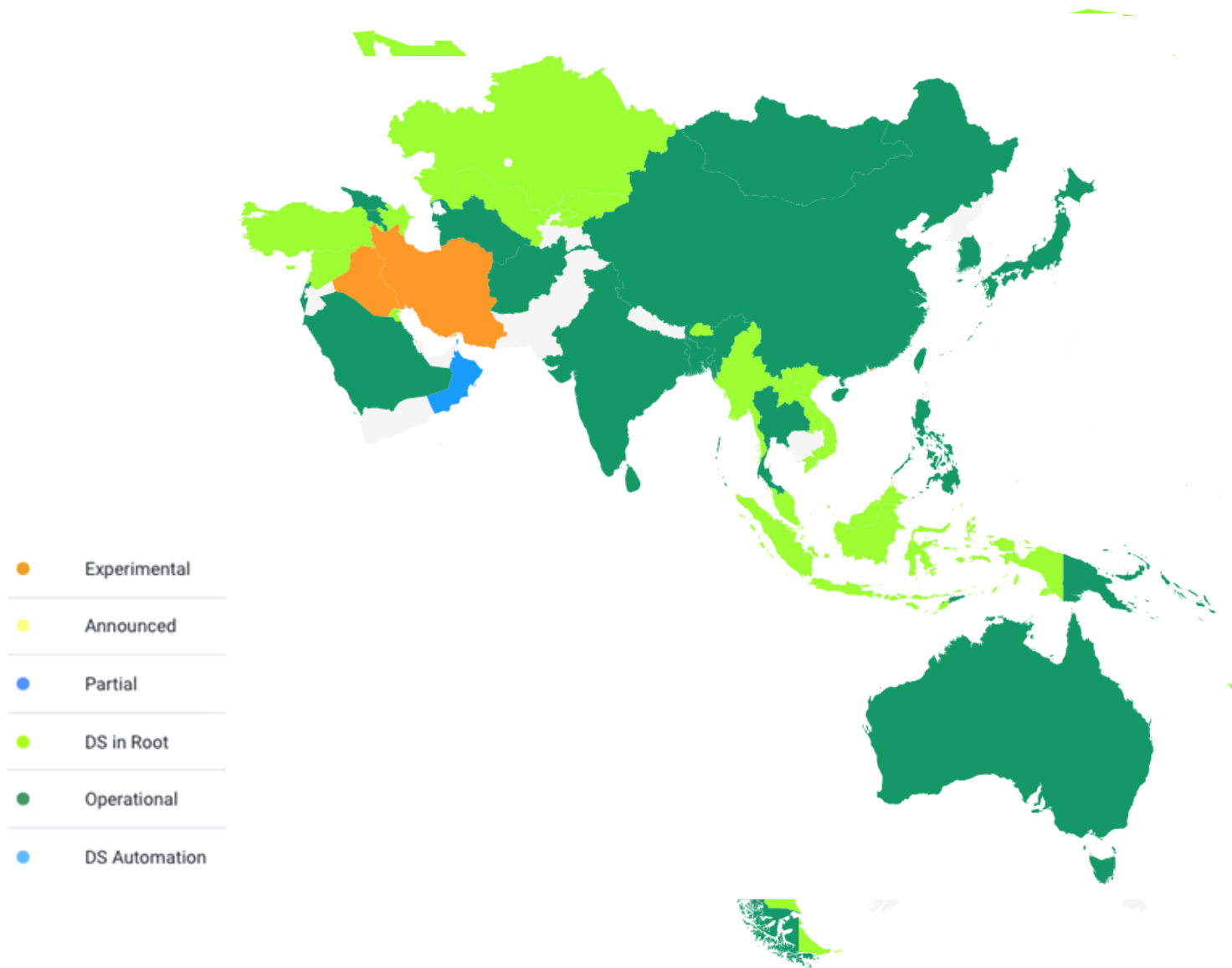
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# DNSSEC Deployment Maps



# DNSSEC Deployment Maps



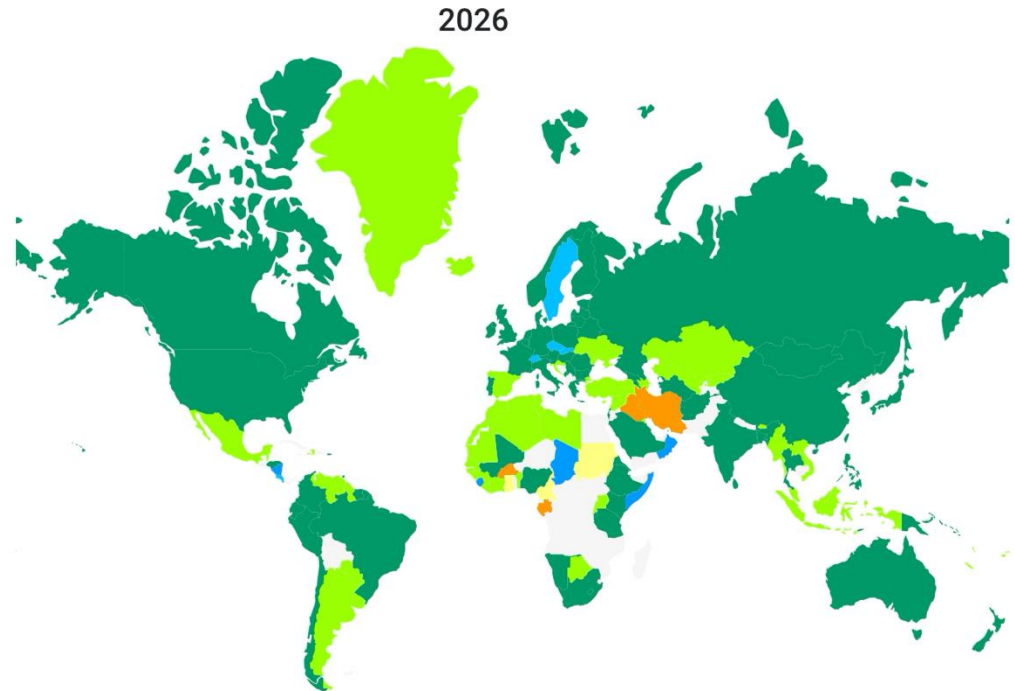
# A View of Our Progress

## General Statistics

Total ccTLD's

183

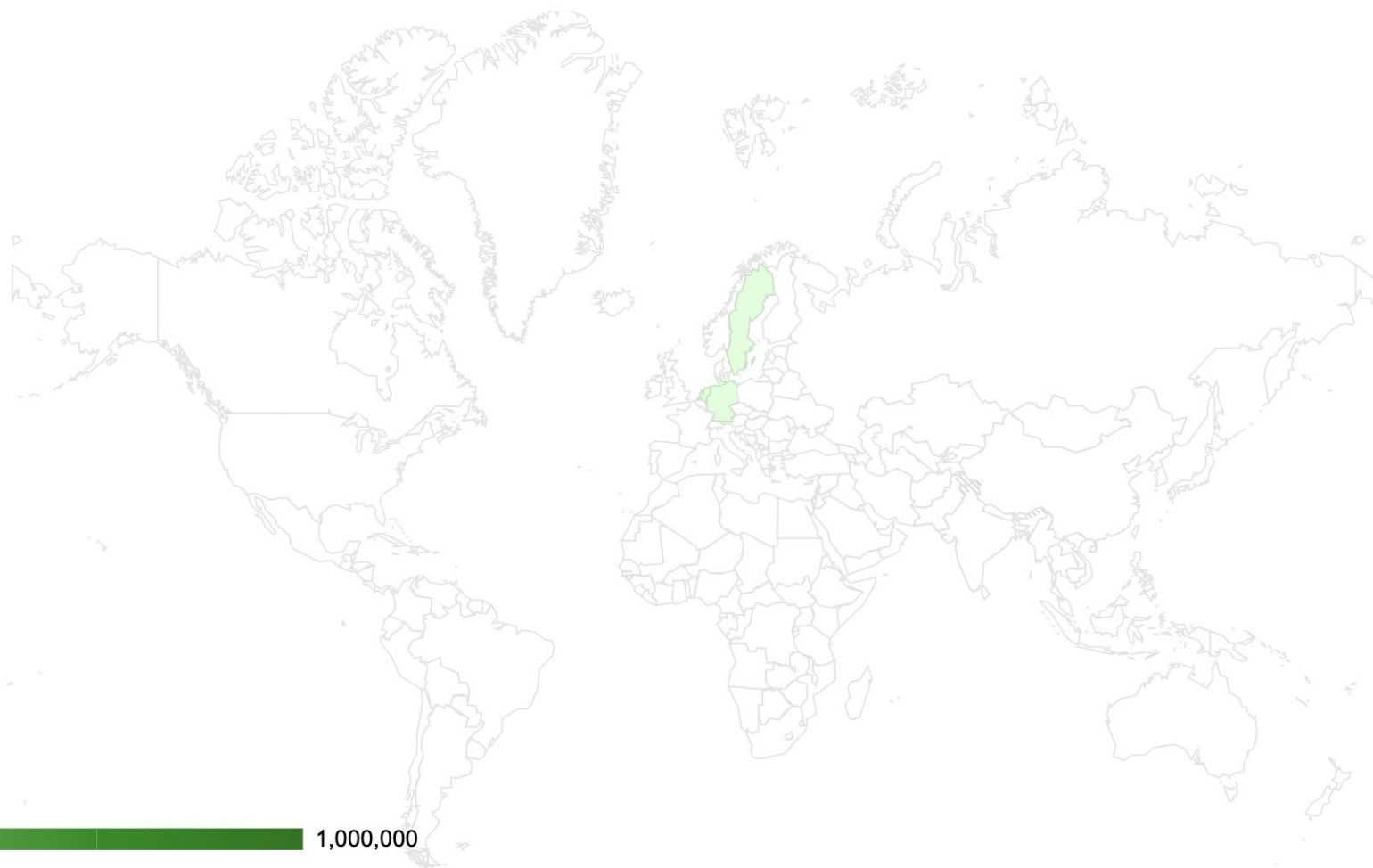
|               |    |     |
|---------------|----|-----|
| Experimental  | 9  | 5%  |
| Announced     | 4  | 2%  |
| Partial       | 9  | 5%  |
| DS in Root    | 69 | 38% |
| Operational   | 83 | 45% |
| DS Automation | 7  | 4%  |



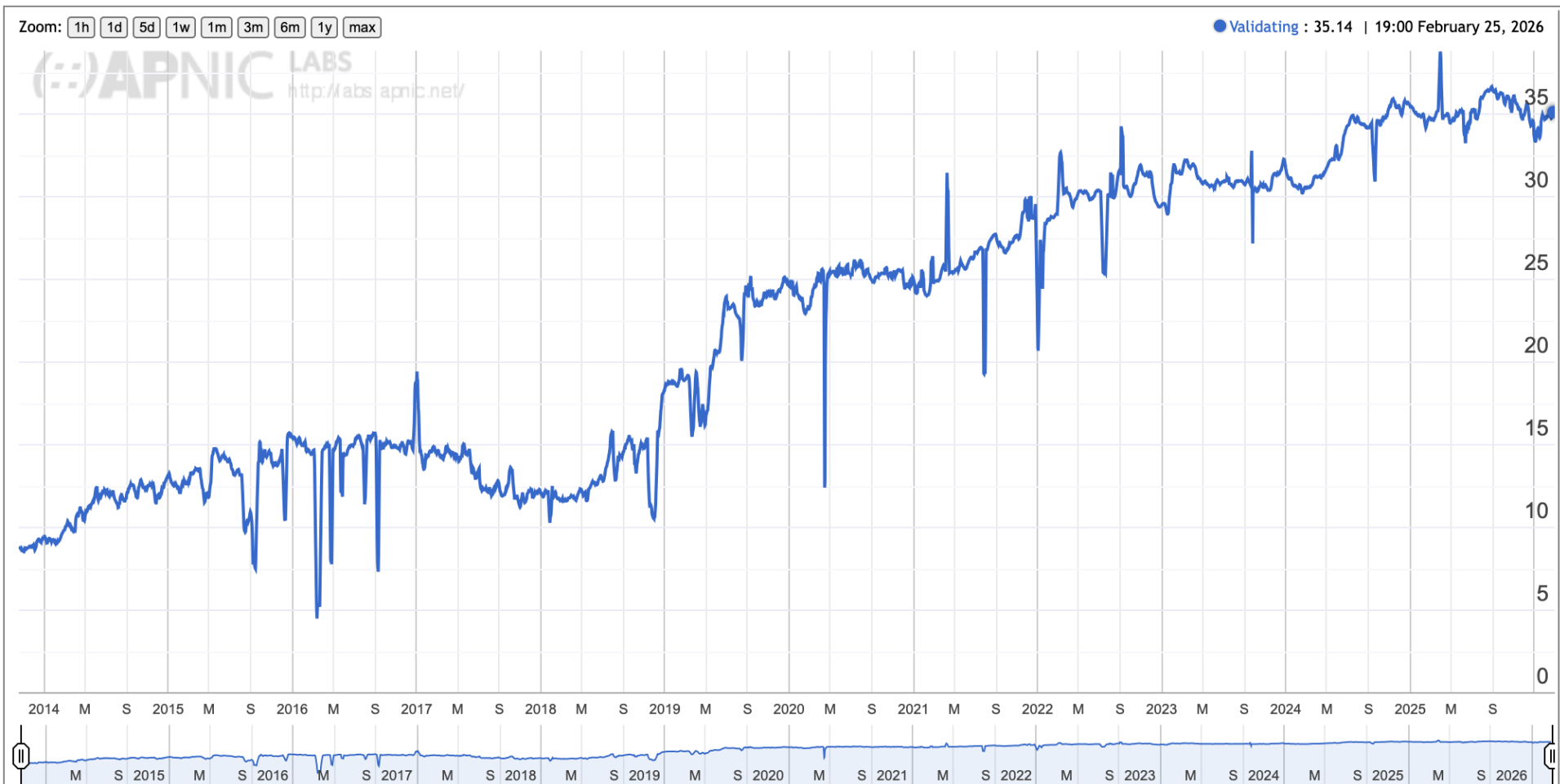


<https://inso.gmu.edu>

Heatmap of DNSSEC zones by ccTLD



# DNSSEC Validation



<https://stats.labs.apnic.net/dnssec/XA?hc=XA&hx=0&hv=1&hp=0&hr=1&w=7>

# DNSSEC Validation

| Code | Region       | DNSSEC Validates | Samples    | Weight | Weighted Samples |
|------|--------------|------------------|------------|--------|------------------|
| XA   | World        | 34.94%           | 20,042,651 | 1      | 20,042,651       |
| XF   | Oceania      | 55.17%           | 85,405     | 1.76   | 150,167          |
| XB   | Africa       | 47.24%           | 2,259,536  | 0.95   | 2,136,901        |
| XE   | Europe       | 45.47%           | 2,748,796  | 1.04   | 2,851,593        |
| XC   | Americas     | 35.93%           | 4,345,620  | 0.83   | 3,585,288        |
| XD   | Asia         | 29.38%           | 10,603,272 | 1.07   | 11,318,690       |
| XG   | Unclassified | 9.37%            | 3,382      | 0      | 9                |

~477,000 more samples in February  
2026 than October 2025

<https://stats.labs.apnic.net/dnssec/XA?hc=XA&hx=0&hv=1&hp=1&hr=1&w=7&p=0>

# Observed DS Record Count Growth

Increase of 795,410 since October 2025  
(from 10/7/2025 to 2/28/2026)

Friday, Feb 27, 05:00  
• Zones with a DS record: **24911351**

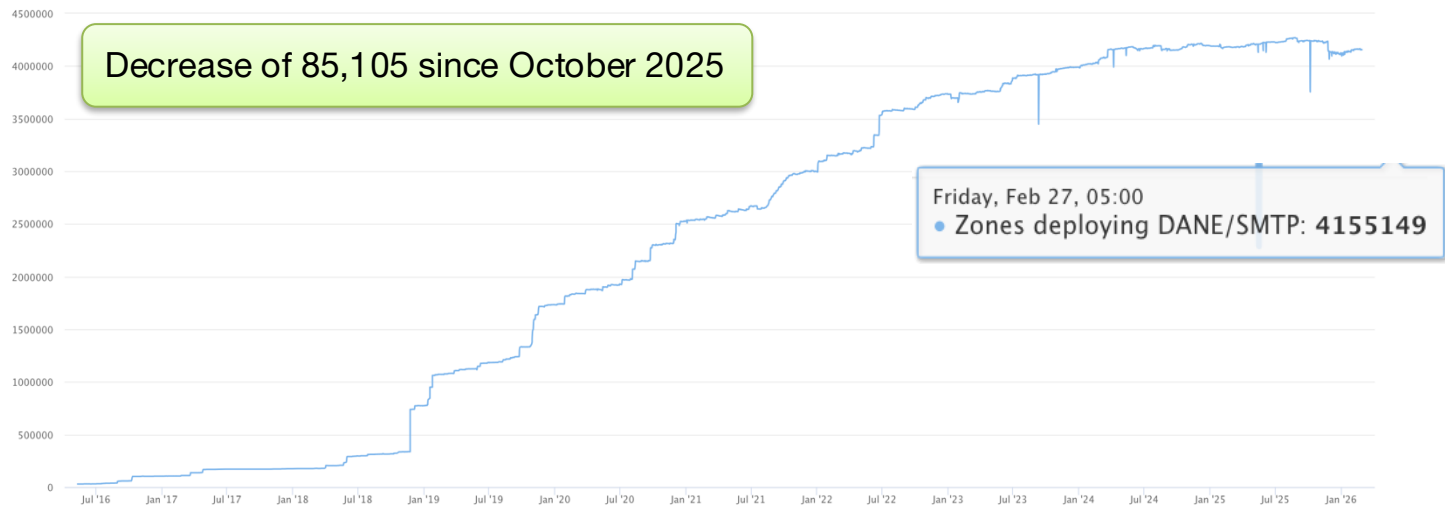


Tuesday, Oct 7, 04:00  
• Zones with a DS record: **24115941**

Friday, Feb 27, 05:00  
• Zones with a DS record: **24911351**

<https://stats.dnssec-tools.org/>

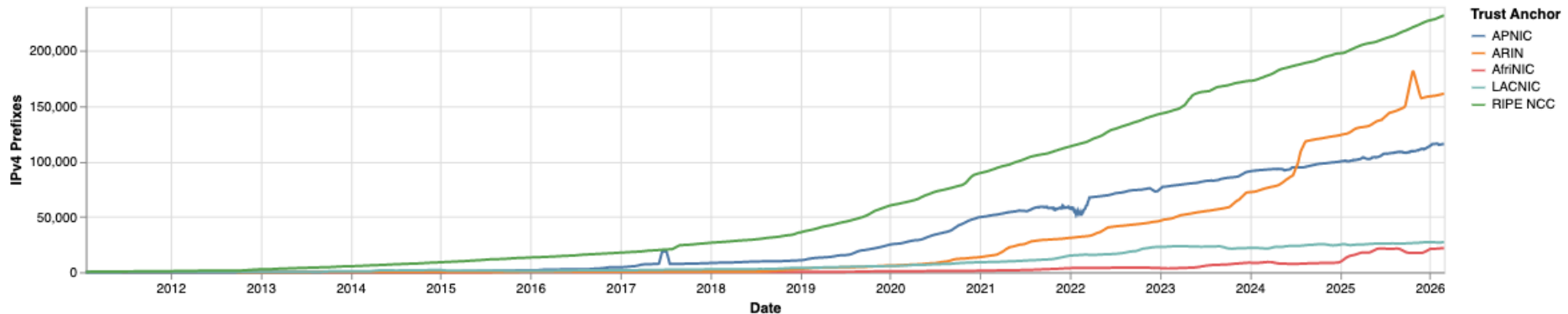
# Zones with Signed MX and DANE Records



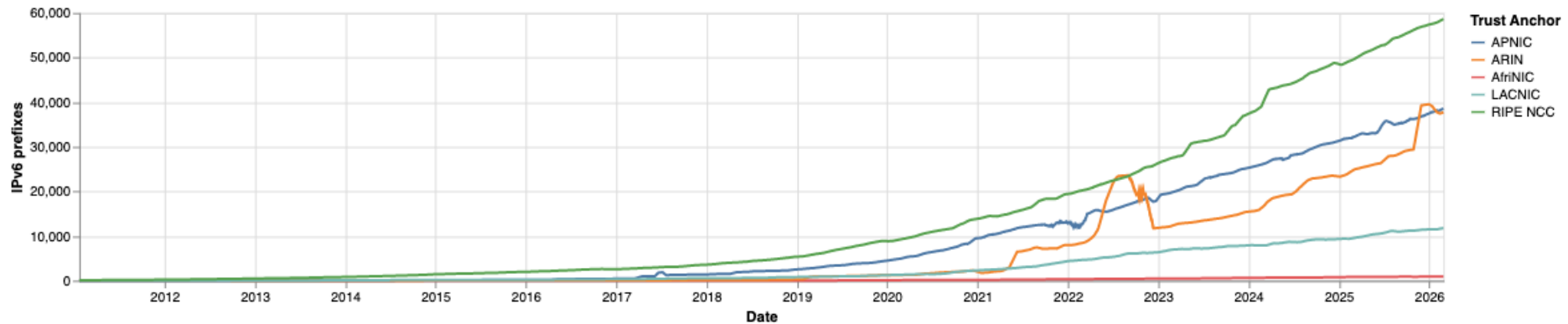
<https://stats.dnssec-tools.org/>

# Prefixes by RPKI ROAs, by RIR

## IPv4 prefixes in ROAs

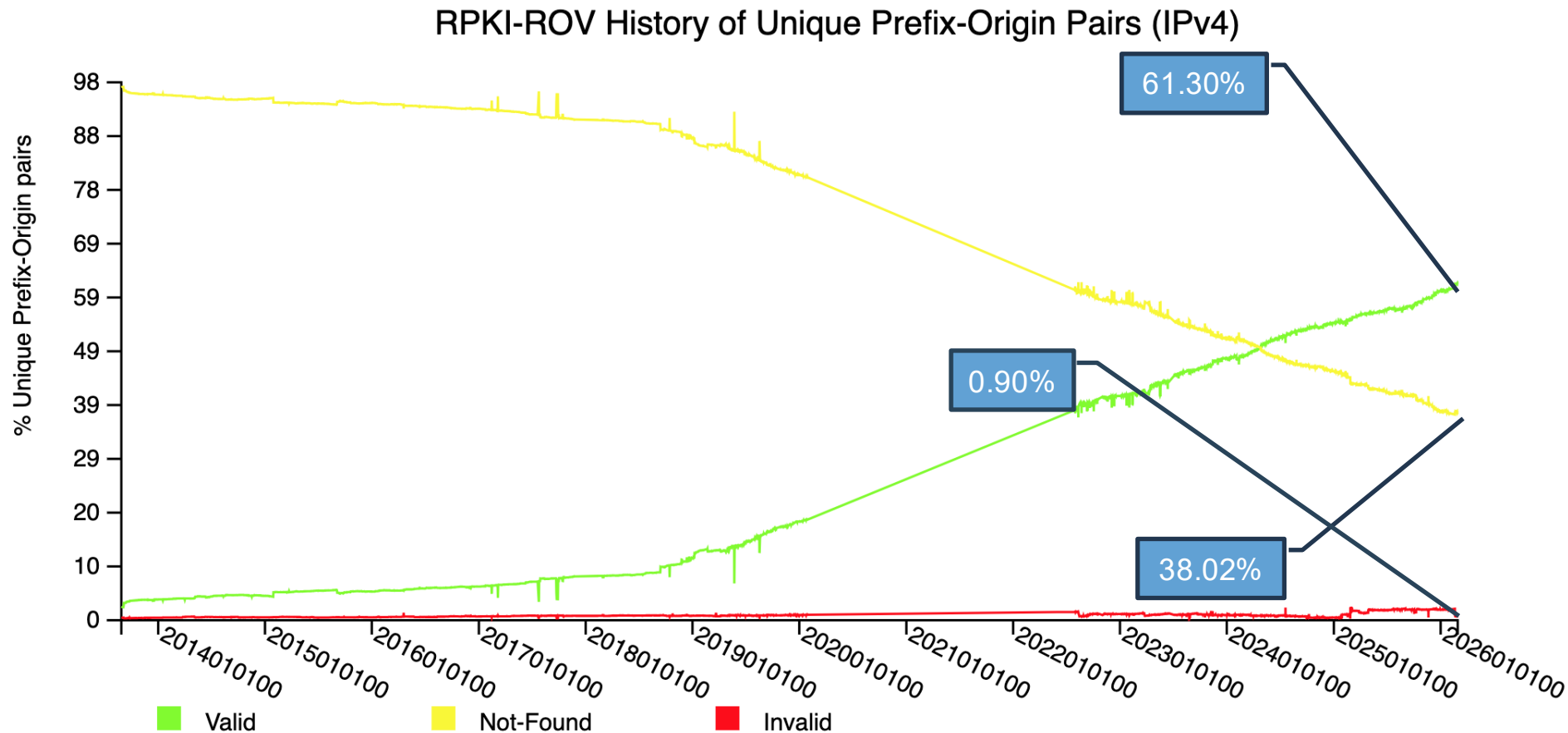


## IPv6 prefixes in ROAs



<https://certification-stats.ripe.net/>

# RPKI Global IPv4 Prefixes



NIST RPKI Monitor:RPKI-ROV Analysis

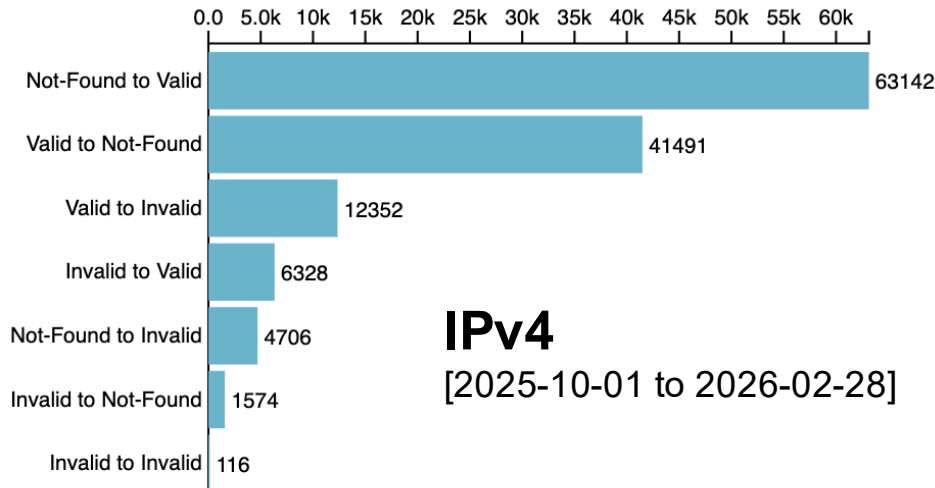
Protocol: IPv4

RIR:All

URL: <https://rpki-monitor.antd.nist.gov/ROV#div2>

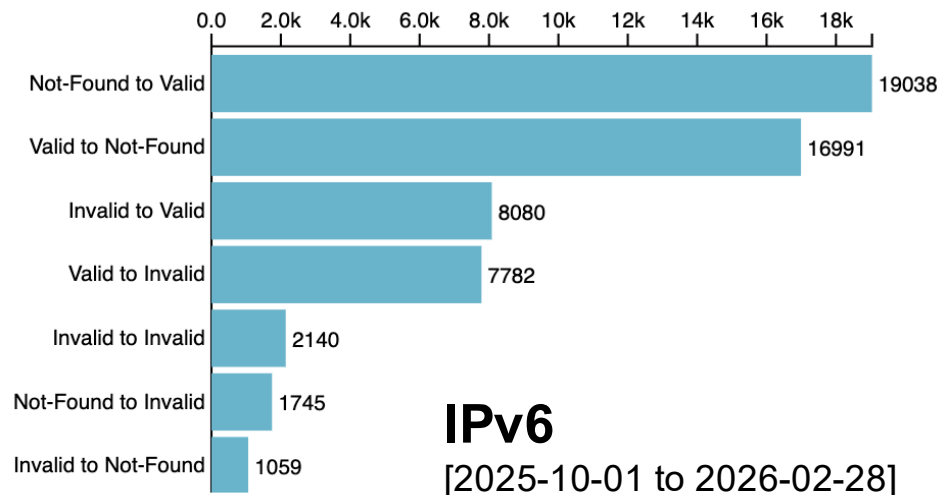
<https://rpki-monitor.antd.nist.gov/>

# RPKI-ROV Changes in Prefix-Origin Pairs



**IPv4**

[2025-10-01 to 2026-02-28]



**IPv6**

[2025-10-01 to 2026-02-28]

- ROV status changes, measure of utility
  - Security **context** (e.g., “Valid to Invalid,” “Not-Found to Invalid,” “Valid to Not-Found”)

<https://rpki-monitor.antd.nist.gov/ROVChang>



# Questions?

# Resources

## DNSSEC

- <https://inso.gmu.edu/>
- <https://maps.dnssec.gmu.edu>
- <https://www.dnssec-tools.org>
- <https://stats.dnssec-tools.org>
- <https://stats.labs.apnic.net/dnssec>
- <https://secspider.net>

## RPKI

- <https://rpki-monitor.antd.nist.gov>
- <https://certification-stats.ripe.net>
- <https://www.securerouting.net>



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