

**ICANN**

**VIRTUAL COMMUNITY FORUM**

**70**

DNSSEC and Security Workshop  
Wednesday, 24 March 2021



# DNSSEC and Security Virtual Workshop

ICANN70

Dan York, Internet Society

24 March 2021



# Program Committee

- ⊙ Mark Elkins, DNS/ZACR
- ⊙ Jean Robert Hountomey, AfricaCERT
- ⊙ Jacques Latour, CIRA
- ⊙ Russ Mundy, Parsons
- ⊙ Ondřej Filip, CZNIC
- ⊙ Yoshiro Yoneya, JPRS
- ⊙ Fred Baker, ISC
- ⊙ Dan York, Internet Society
- ⊙ Andrew McConachie and Kathy Schnitt, ICANN

# 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

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24 March 2021



# DNSSEC Validation

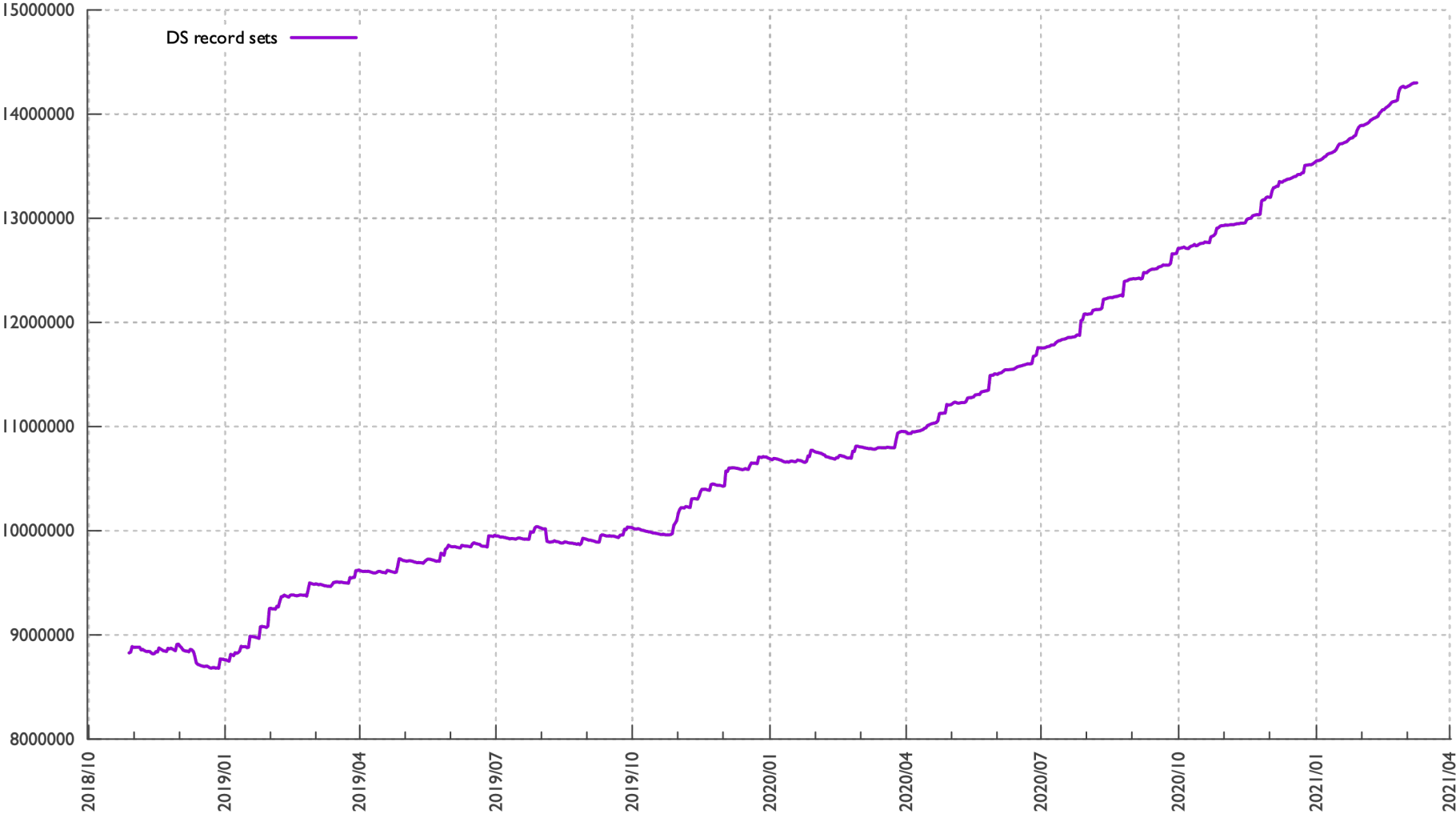


<https://stats.labs.apnic.net/dnssec/XA?hc=XA&hx=0&hv=1&hp=0&hr=1&w=7>

Code	SubRegion	DNSSEC Validates
QR	Micronesia, Oceania	68.26%
QS	Polynesia, Oceania	59.66%
QQ	Melanesia, Oceania	55.53%
XV	Western Asia, Asia	50.99%
XT	Southern Asia, Asia	47.37%
QO	Western Europe, Europe	43.07%
QP	Australia and New Zealand, Oceania	35.89%
QM	Northern Europe, Europe	32.18%
XQ	Northern America, Americas	31.98%
XP	South America, Americas	31.50%
XK	Southern Africa, Africa	30.11%
XW	Eastern Europe, Europe	28.50%
XR	Central Asia, Asia	24.40%
XH	Eastern Africa, Africa	20.26%
XL	Western Africa, Africa	19.83%
XN	Caribbean, Americas	19.78%
XI	Middle Africa, Africa	16.46%
QN	Southern Europe, Europe	15.19%
XU	South-Eastern Asia, Asia	14.65%
XO	Central America, Americas	10.28%
XJ	Northern Africa, Africa	10.12%
XS	Eastern Asia, Asia	3.38%

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

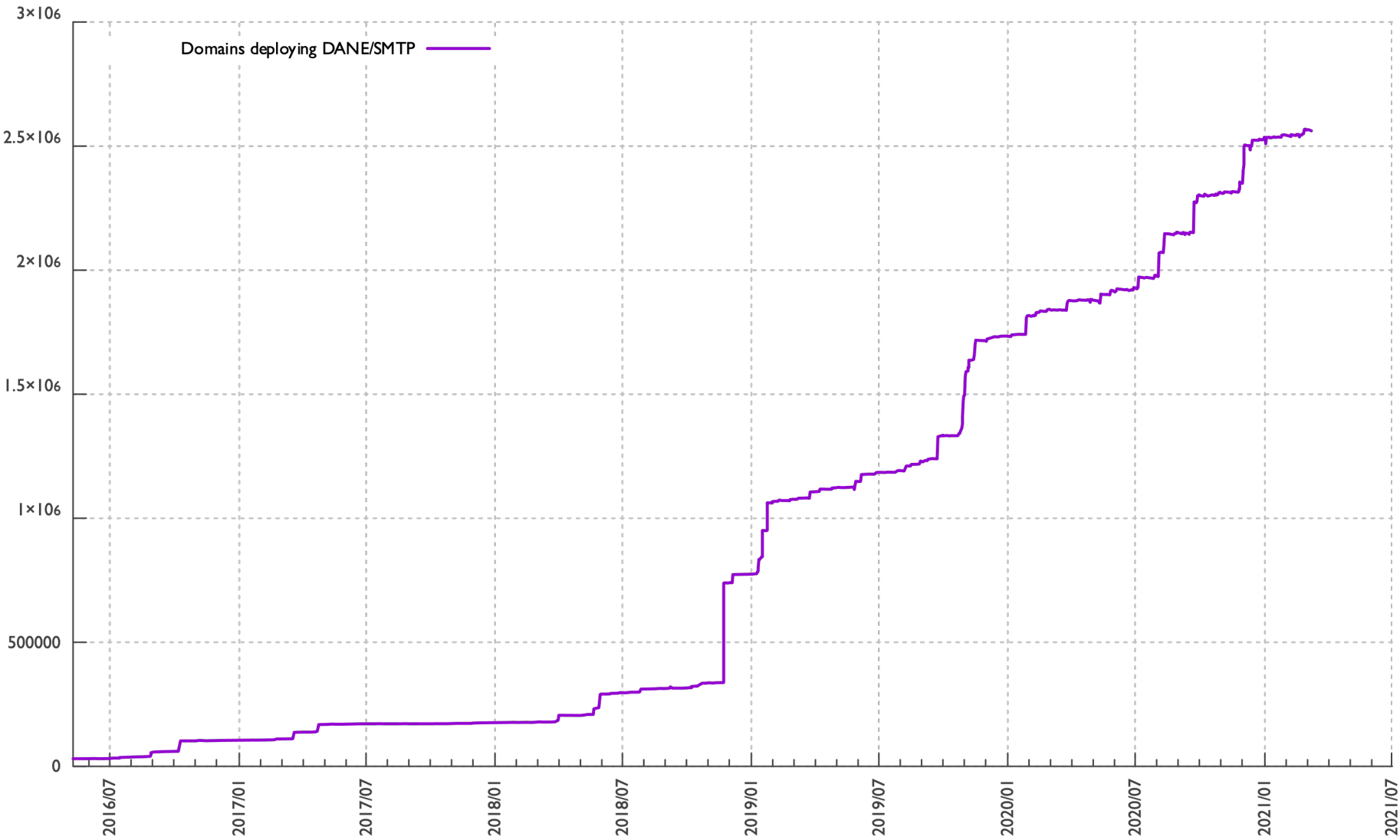
# Observed DS Record Count Growth



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



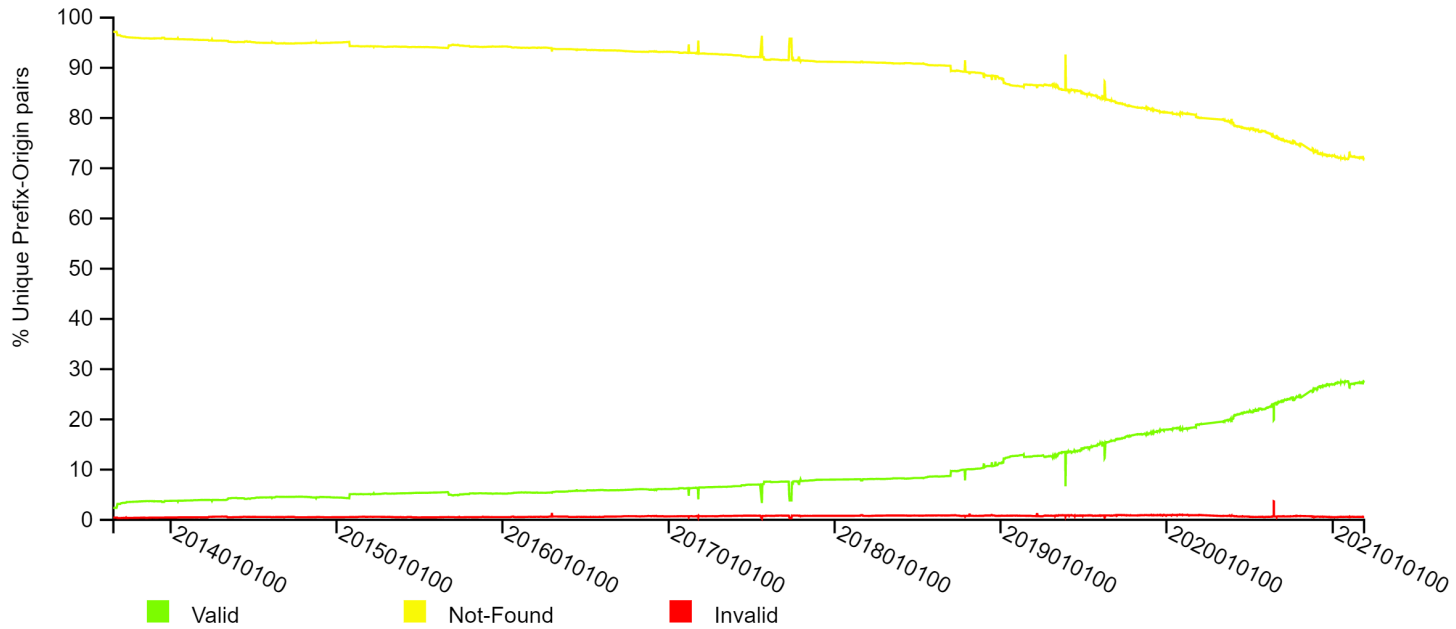
# Domains with signed MX and DANE records



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

# RPKI Global IPv4 Prefixes

RPKI-ROV History of Unique Prefix-Origin Pairs (IPv4)



NIST RPKI Monitor: RPKI-ROV Analysis

Protocol: IPv4

RIR: All

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

# RPKI Covered IPv4 Prefixes by RIR

Number of ROAs



Afrinic



Apnic



Arin

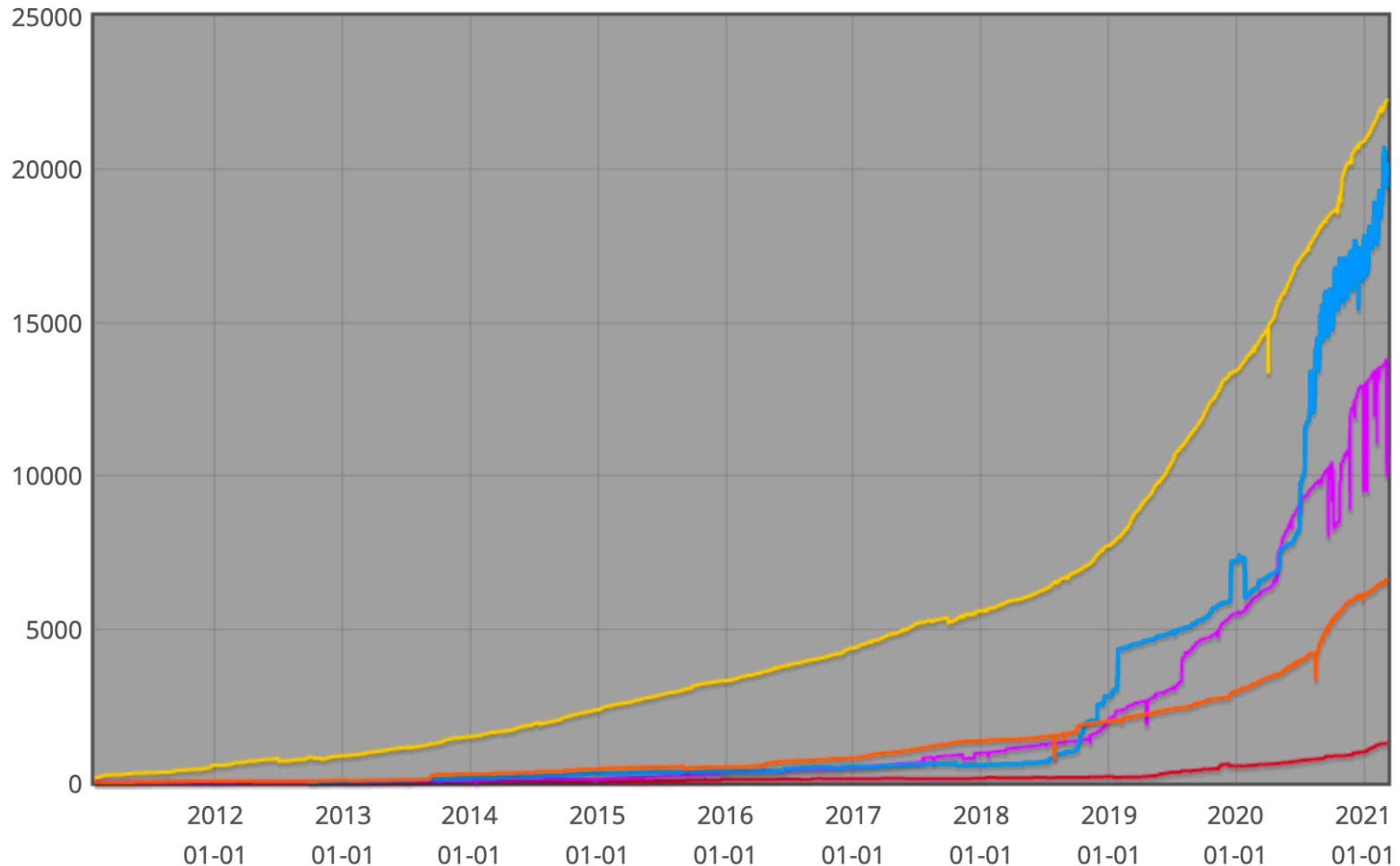


Lacnic



Ripe NCC

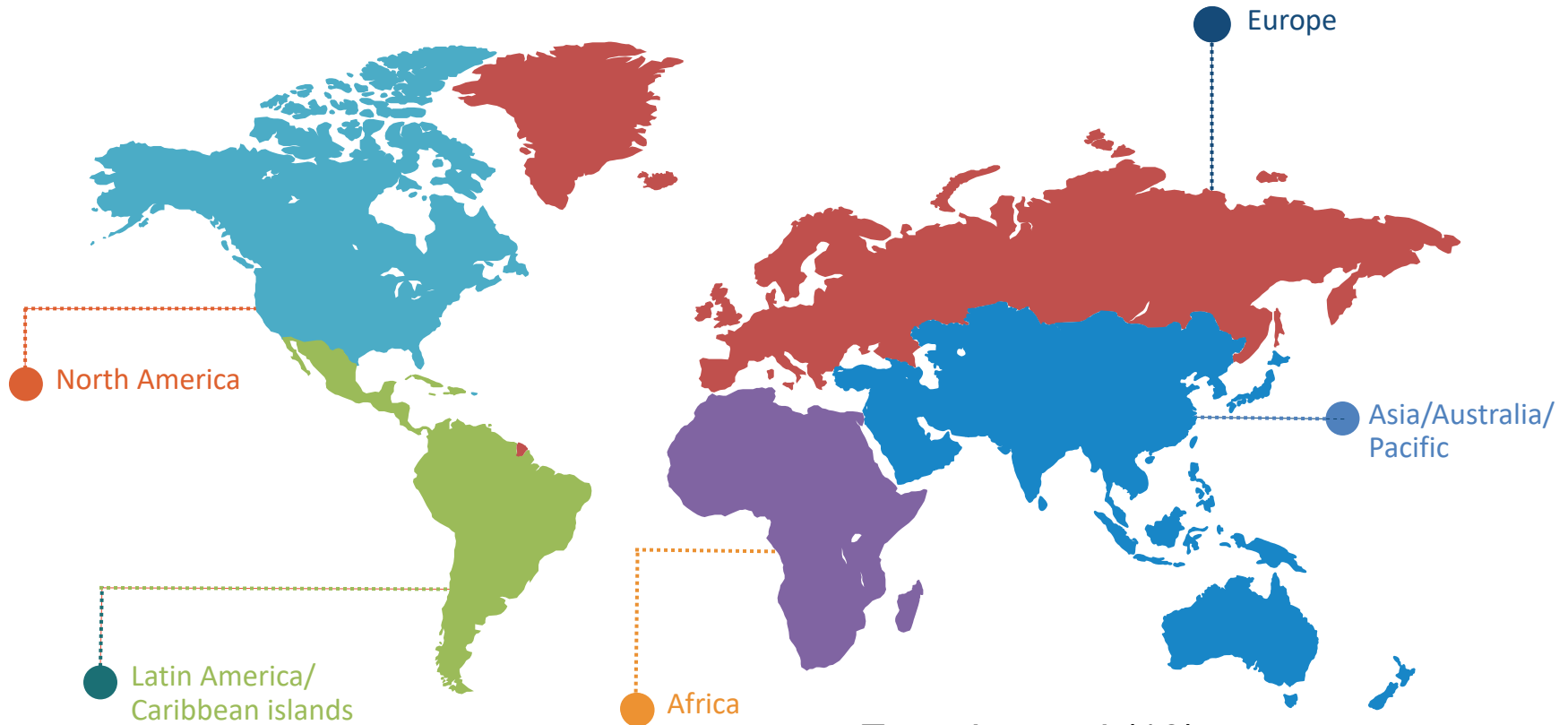
This graph shows the total number of valid Route Origin Authorisation (ROA) objects created by the holders of a certificate



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

# ccTLD DNSSEC Deployment Status

# ccTLD DNSSEC Status 2021-03-22



Experimental (10)  
Announced (4)  
Partial (1)  
DS in Root (54)  
Operational (83)

# Evolving DNSSEC Deployment Maps

- DNSSEC deployment maps emailed out weekly
  - <https://www.internetsociety.org/deploy360/dnssec/maps/>
- Subscribe:
  - <https://elists.isoc.org/mailman/listinfo/dnssec-maps>
- Success of ccTLD deployment means much of the maps are now “green”
- Q: How can we evolve the maps to show the next desired state of DNSSEC deployment?

# Evolving DNSSEC Deployment Maps

- Current deployment states:

**Experimental** – Internal experiments

**Announced** – Public commitment to deploy

**Partial** – Zone is signed but not in operation

**DS in Root**

**Operational** – Accepting signed delegations

# Evolving DNSSEC Deployment Maps

- Future deployment states:

**Experimental** – Internal experiments

**Announced** – Public commitment to deploy

**Partial** – Zone is signed but not in operation

**DS in Root**

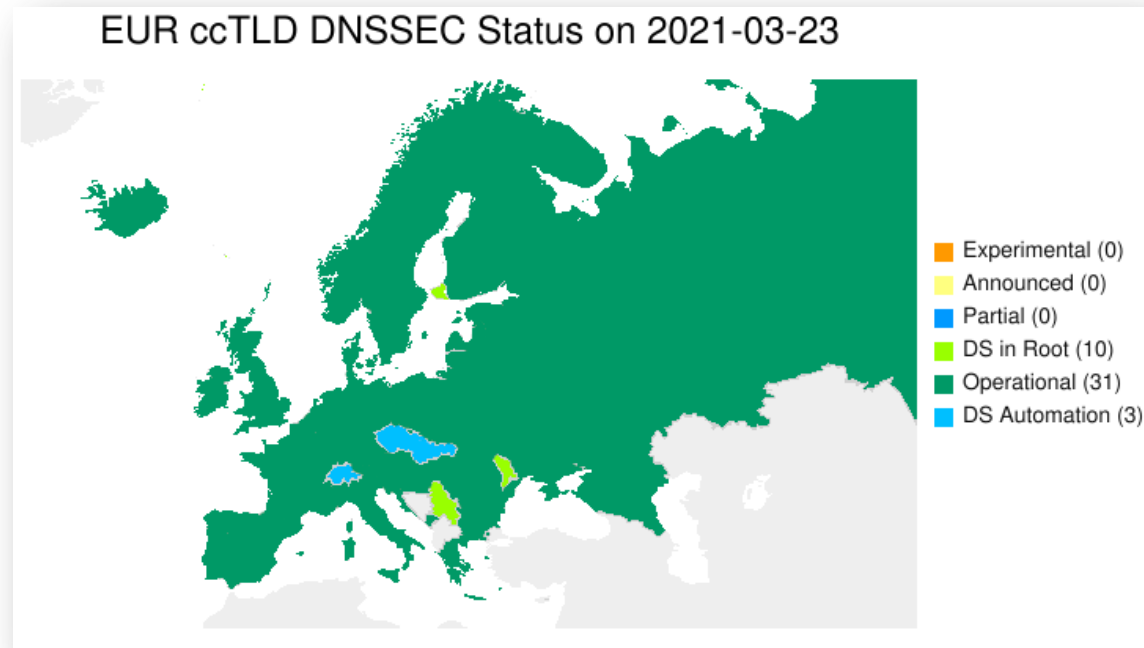
**Operational** – Accepting signed delegations

**DS Automation** – Automating DS record updates



# Evolving DNSSEC Deployment Maps

- What it will look like (the blue areas)...



- Please send updates to [york@isoc.org](mailto:york@isoc.org)

# Evolving DNSSEC Deployment Maps

- See what the maps look like at:
  - <https://www.internetsociety.org/deploy360/dnssec/maps/>
- Subscribe:
  - <https://elists.isoc.org/mailman/listinfo/dnssec-maps>
- Please send updates to [york@isoc.org](mailto:york@isoc.org)

If we CAN have the map, delete this slide. If not, delete the previous slide.

# Questions & Answers

## DNSSEC Resources

[www.dnssec-tools.org](http://www.dnssec-tools.org)

[stats.dnssec-tools.org](http://stats.dnssec-tools.org)

[www.internetsociety.org/ose/](http://www.internetsociety.org/ose/)

[www.dnssec-deployment.org](http://www.dnssec-deployment.org)

[stats.labs.apnic.net/dnssec](http://stats.labs.apnic.net/dnssec)

## RPKI Resources

[rpki-monitor.antd.nist.gov](http://rpki-monitor.antd.nist.gov)

[certification-stats.ripe.net](http://certification-stats.ripe.net)

[www.securerouting.net](http://www.securerouting.net)

# Thank You