RIPE NCC
RIPE NETWORK COORDINATION CENTRE

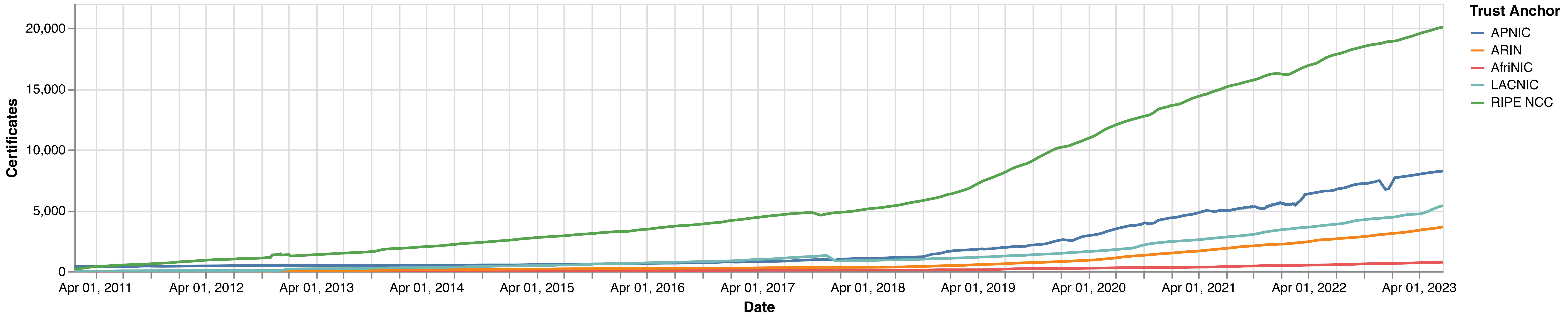
RPKI

Current Developments in Routing Security

Bart Bakker | June 27, 2023 | RIPE NCC Days Sofia

RPKI Adoption

CA Certificates

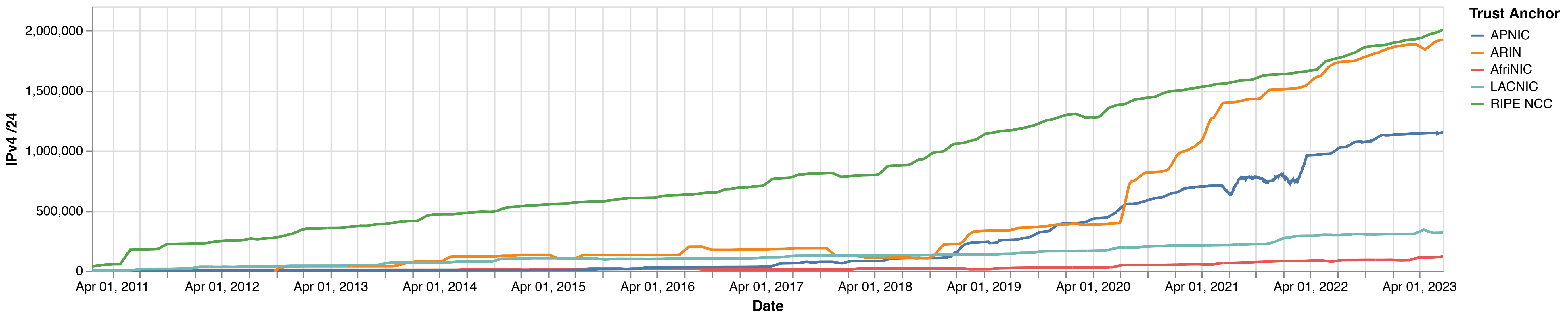


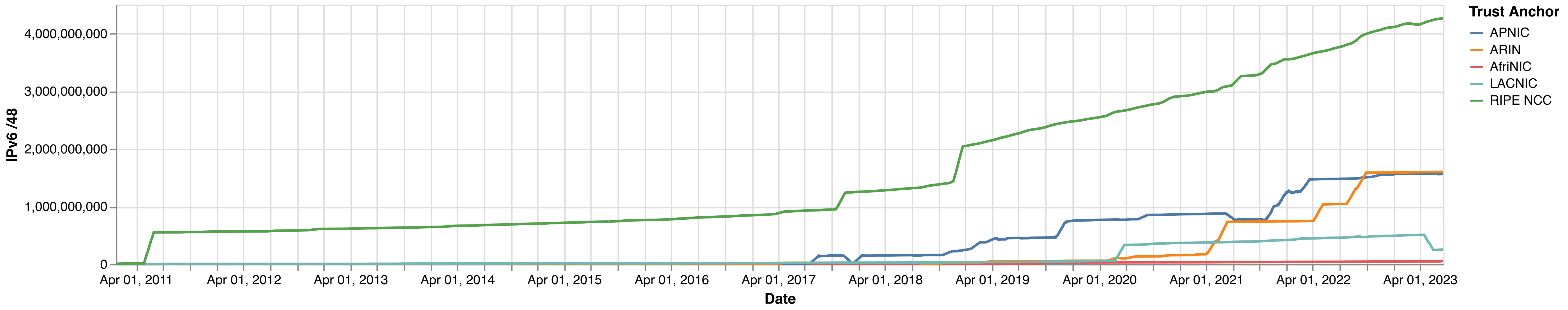
- At May 22, the RIPE NCC Trust Anchor reached **20,000 CA certificates**

Source: https://certification-stats.ripe.net/

Covered Prefixes

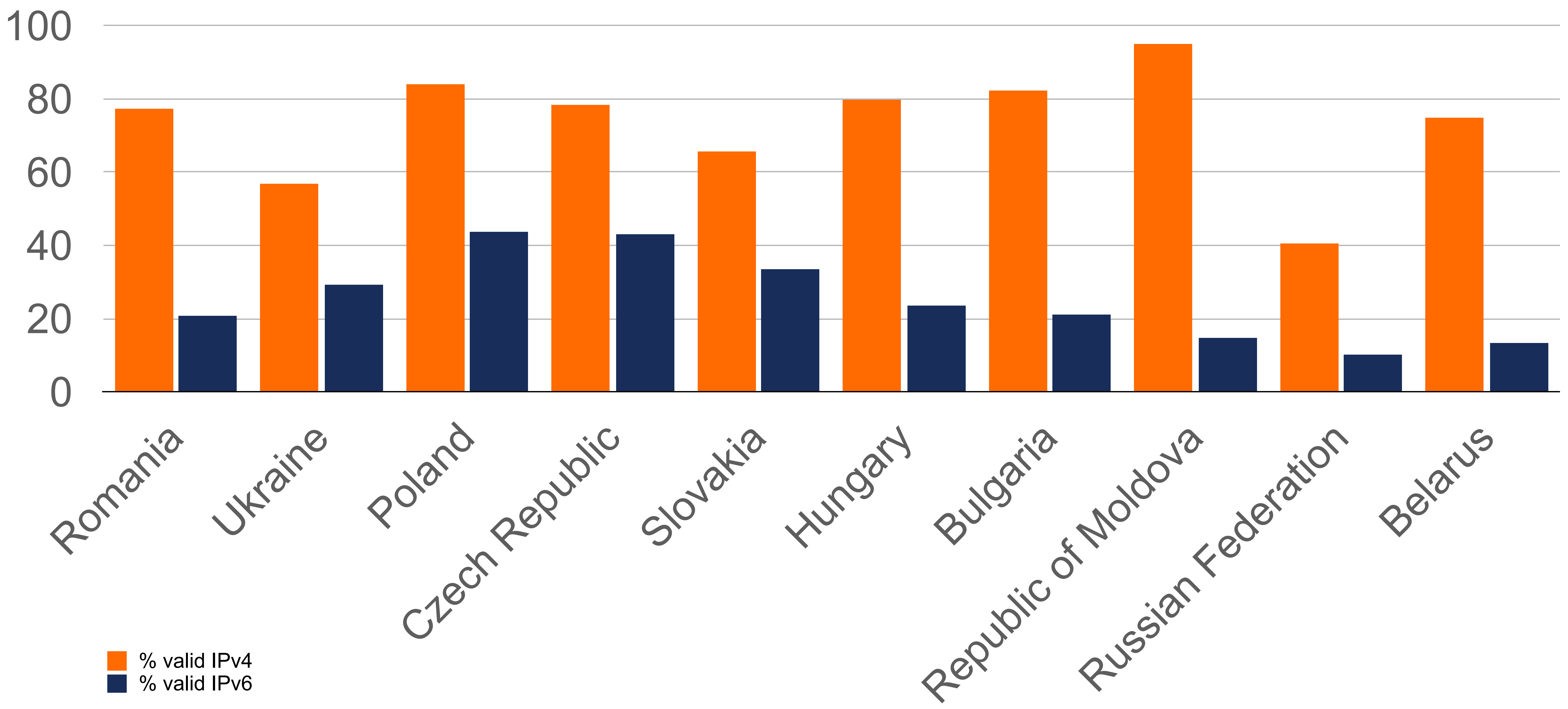
- **62.41%** of RIPE NCC IPv4 space
- **37.14%** of RIPE NCC IPv6 space





Source: https://certification-stats.ripe.net/

In-region ROAs

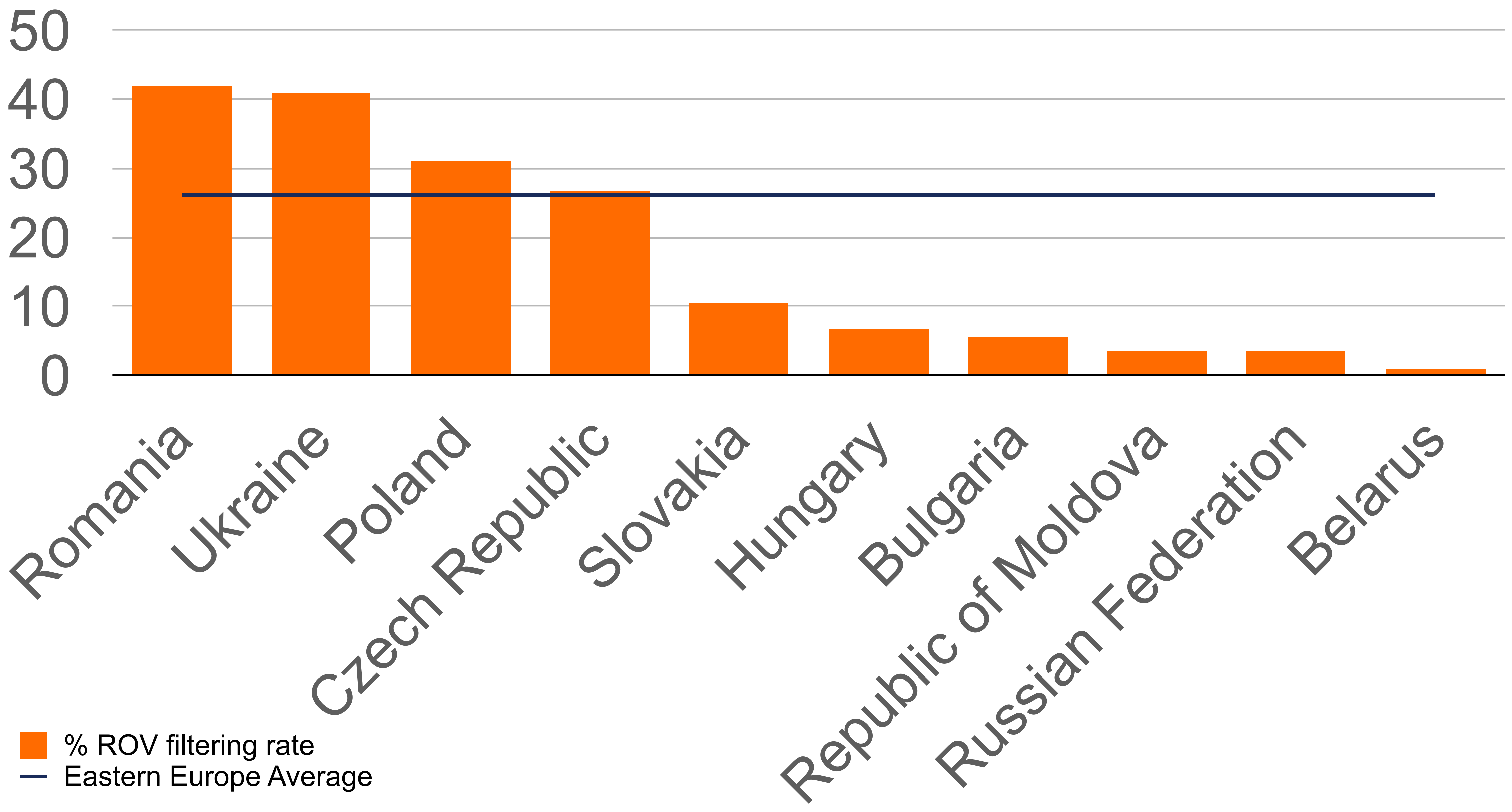


Source: NRO Adoption stats (21/06/2023)

Source: https://certification-stats.ripe.net/

Validation

- Filter RPKI invalid routes with ROV
- Ask your providers to do ROV



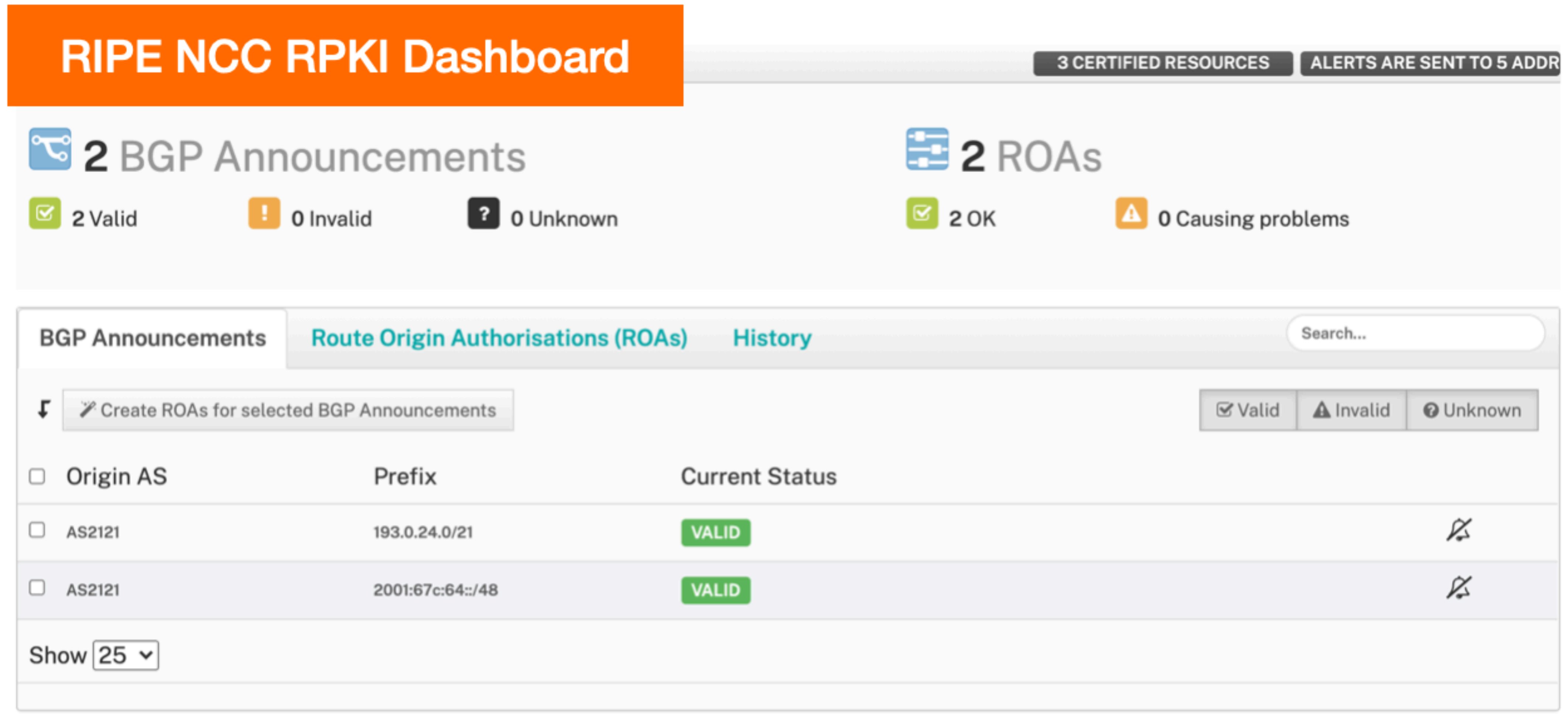
Source: APNIC Labs Table (21/06/2023)

RPKI Team

Trust Anchor

How our trust anchor works

- Hosted
  - RIPE NCC maintains key pairs and publishes your objects
  - Manage your objects with RPKI Dashboard



RIPE NCC RPKI Dashboard

3 CERTIFIED RESOURCES | ALERTS ARE SENT TO 5 ADDR

2 BGP Announcements

✓ 2 Valid ! 0 Invalid ? 0 Unknown

2 ROAs

✓ 2 OK ⚠ 0 Causing problems

BGP Announcements | Route Origin Authorisations (ROAs) | History | Search...

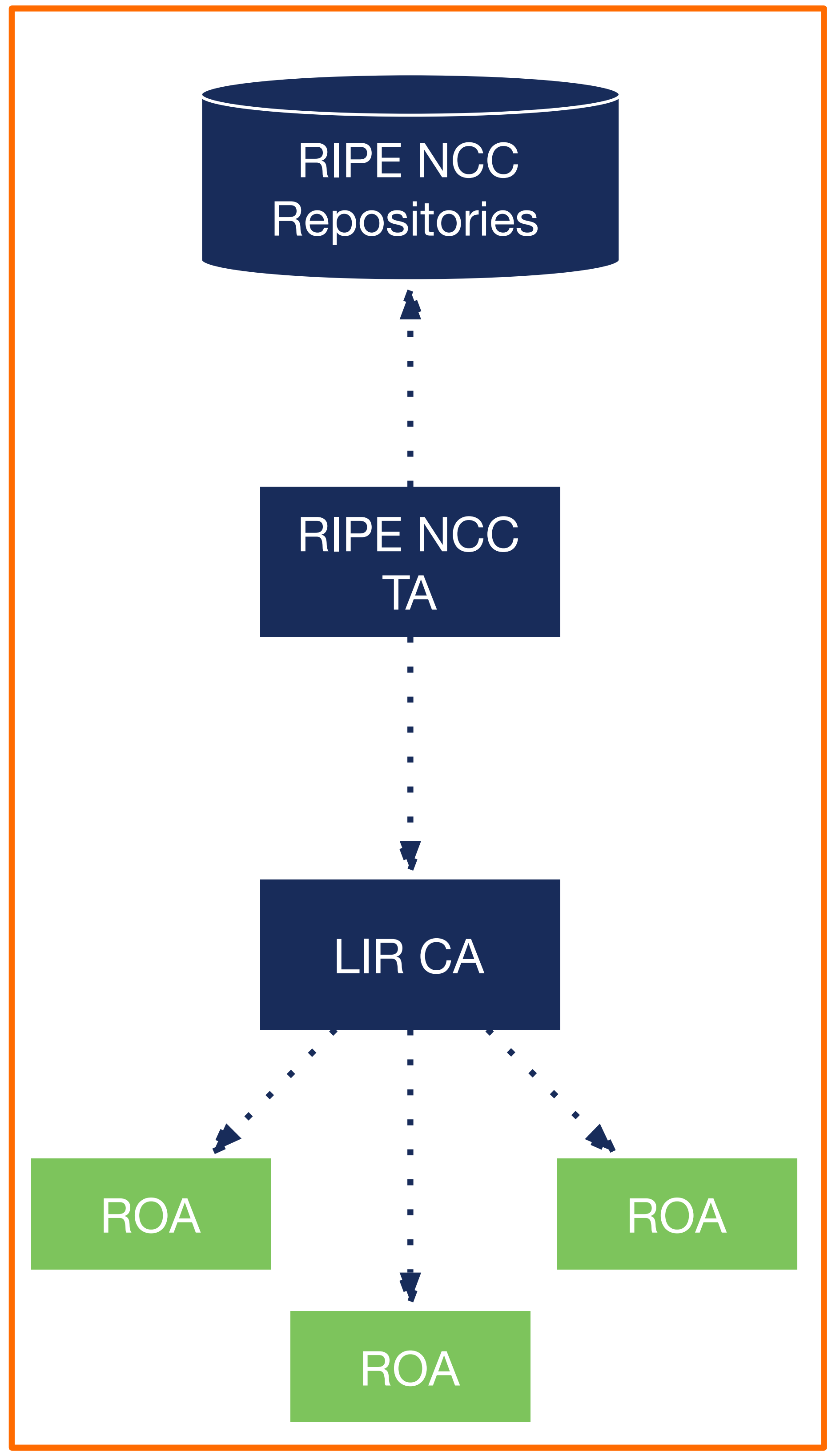
Create ROAs for selected BGP Announcements

✓ Valid | ⚠ Invalid | ? Unknown

□	Origin AS	Prefix	Current Status
□	AS2121	193.0.24.0/21	VALID
□	AS2121	2001:67c:64::/48	VALID

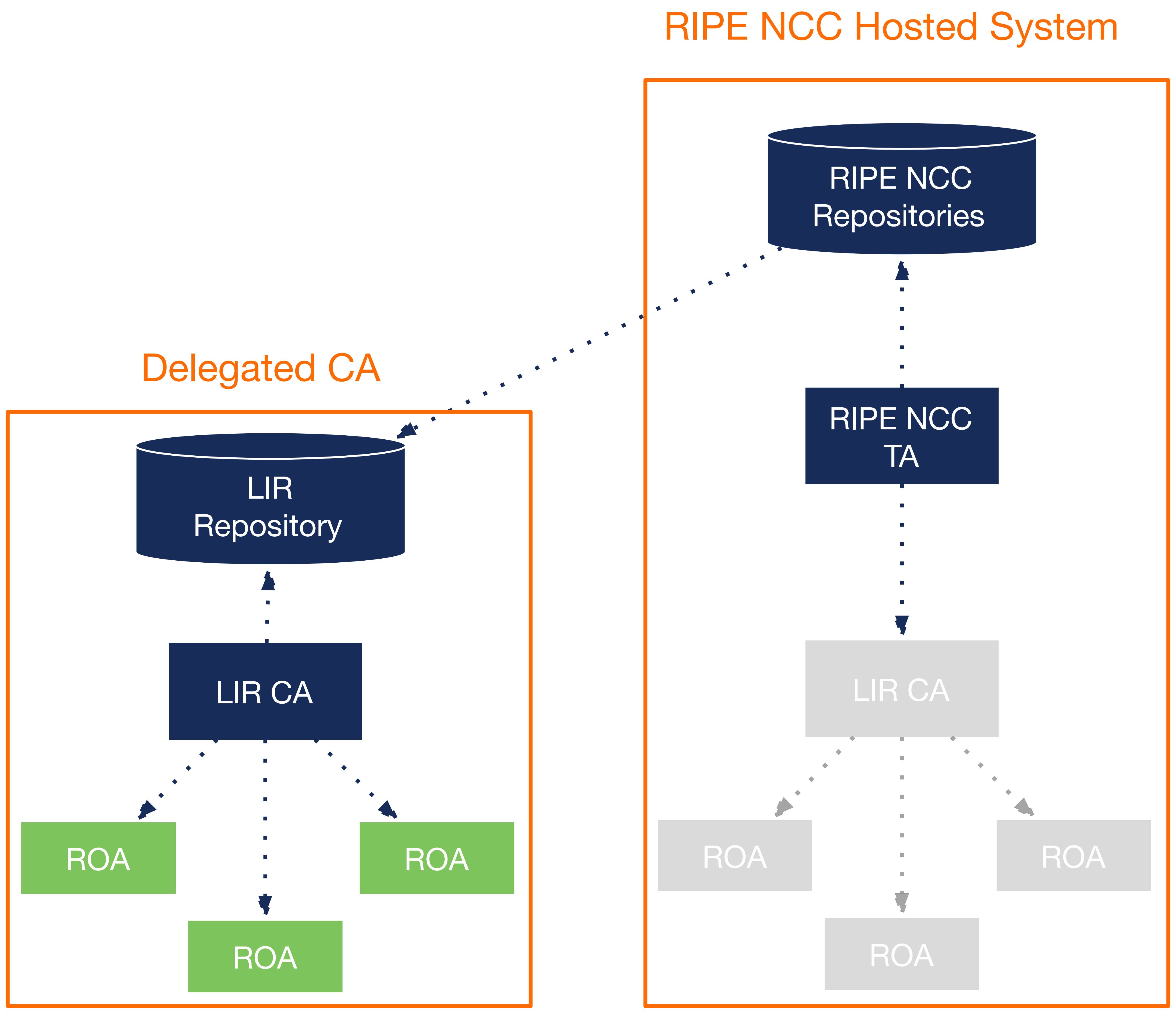
Show 25

RIPE NCC Hosted System



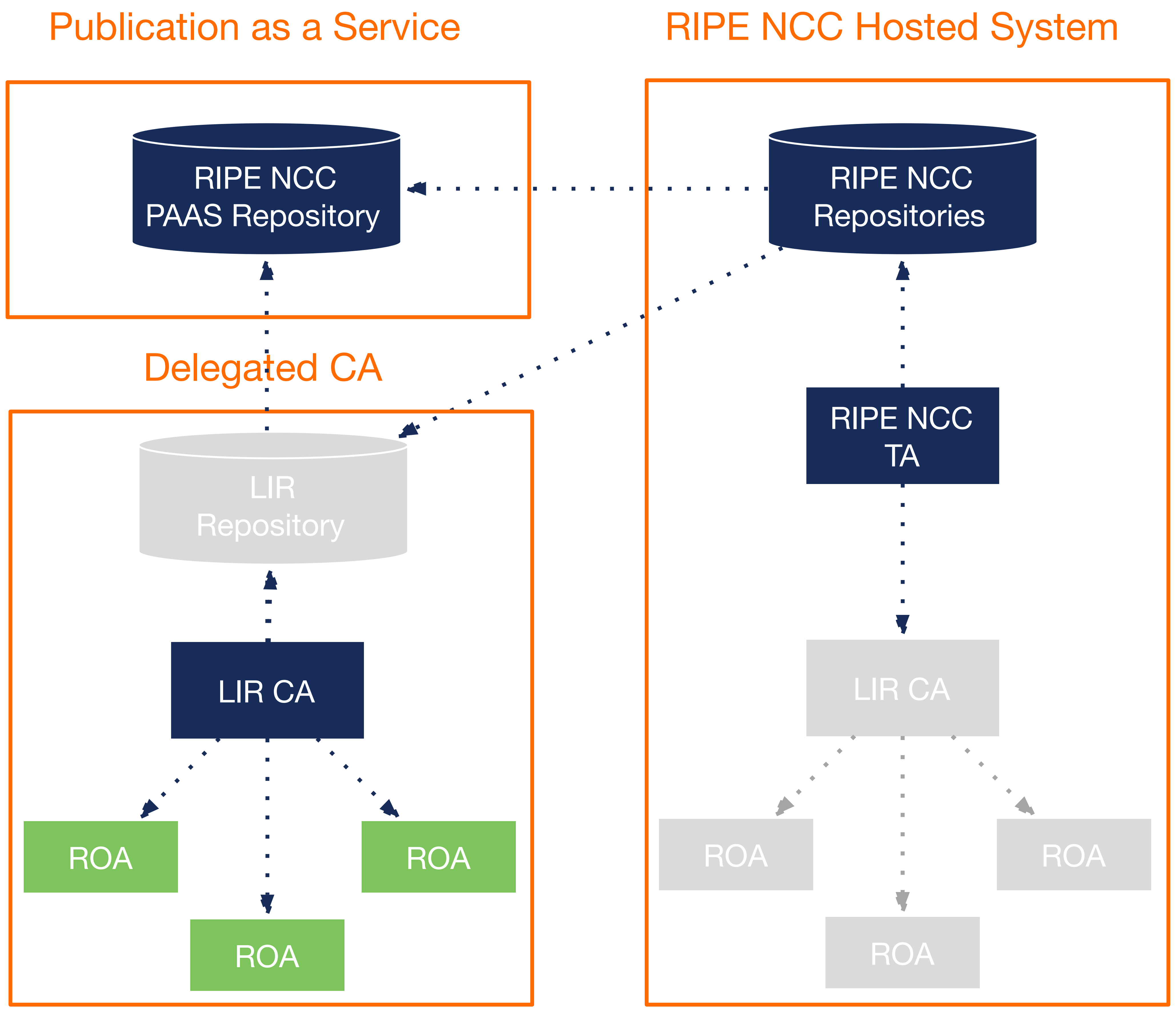
How our trust anchor works

- Delegated CA
  - You maintain key pairs
  - Publish your objects to your own repository
  - Have to host your own repository
  - You are responsible for repository uptime



How our trust anchor works

- Publication as a Service
  - You maintain key pairs
  - Publish your objects to a dedicated repository
  - Repository is high-available and monitored by RIPE NCC
  - Supported by RIPE NCC, APNIC, ARIN, NIRs
  - Also known as "Publish in Parent" or "Hybrid RPKI"



Resiliency

- Redundant CDNs for RRDP
- Scaling up rsync
- External hot-standby repository

RPKI Validators

- Mature ecosystem with different validators
  - Routinator
  - rpki-client
  - OctoRPKI
  - Fort
  - RPKI prover
  - RIPE NCC RPKI Validator [end of life, stop using it if you still do]
- Security research done in 2021
  - Published at: https://arxiv.org/pdf/2203.00993.pdf
  - Resulted in fixes in all validators

Open Source

- RPKI Core
- RPKI Publication Server
- rsyncit
- RPKI Monitoring [future]
- See https://github.com/RIPE-NCC

Future Developments

RIPE NCC Developments

- New RPKI Dashboard
  - Rewrite of the 10-year old code base
  - Focus on better user experience
- SOC-2 compliancy
- New on-line HSMs
- Integrated ROUTE object management

Thank you