



RIPE NCC

RIPE NETWORK COORDINATION CENTRE

RPKI

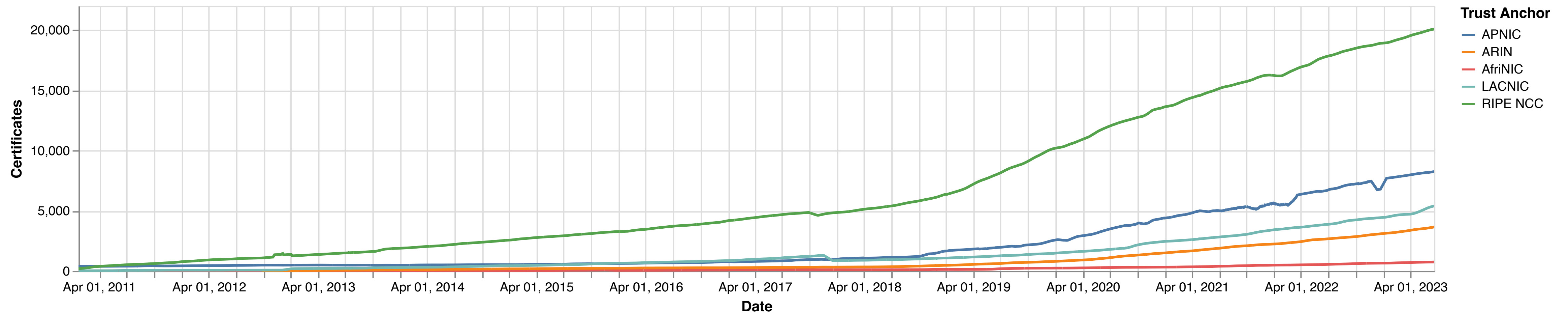
Current Developments in Routing Security

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**

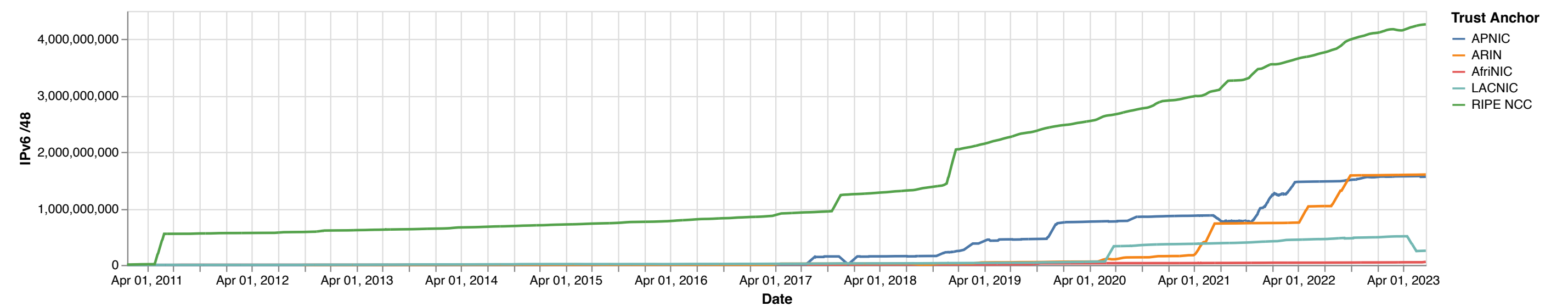
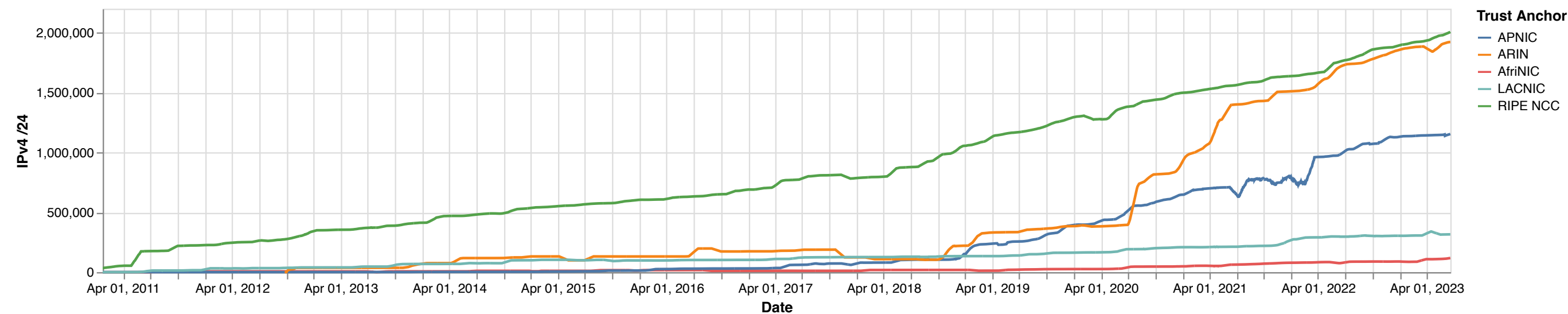


Source: <https://certification-stats.ripe.net/>

Covered Prefixes

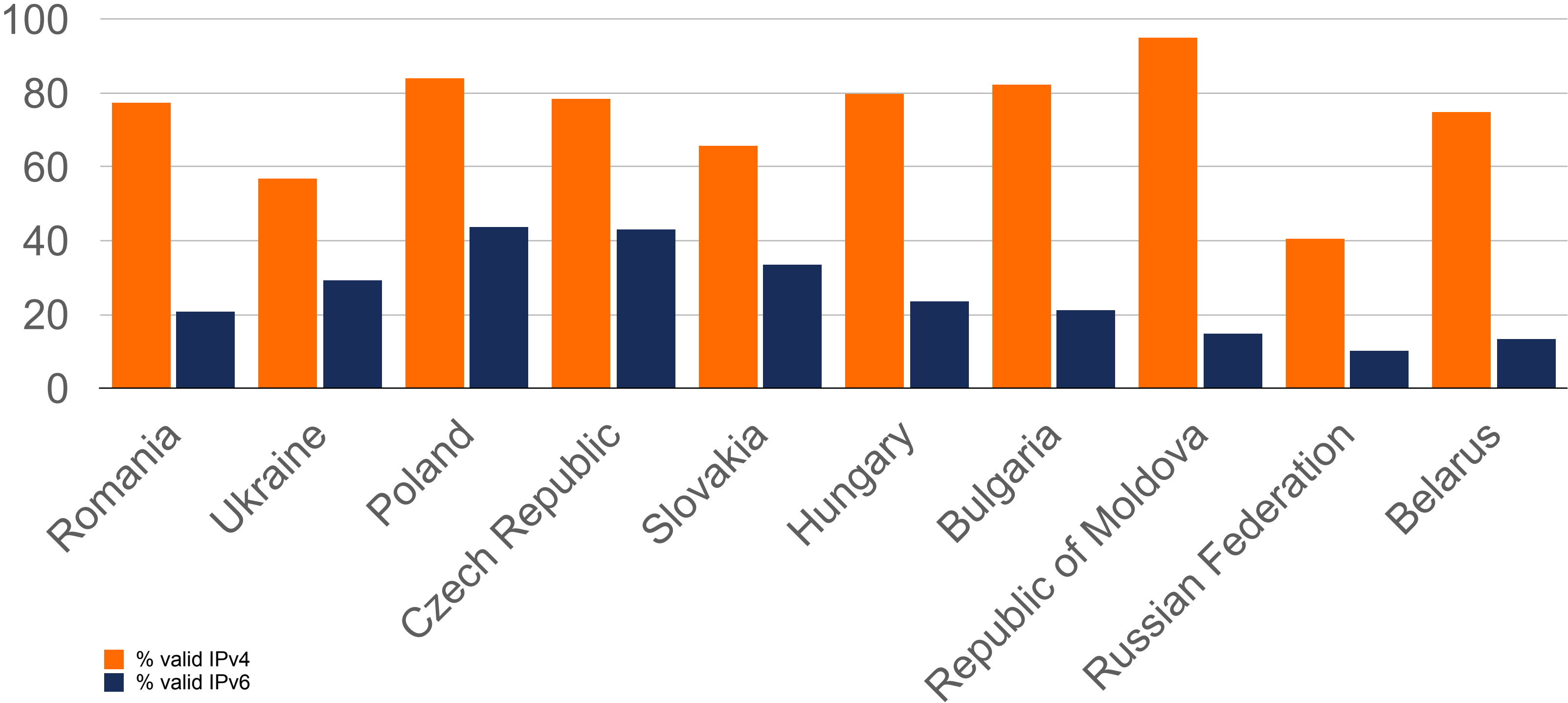


- 62.41% of RIPE NCC IPv4 space
- 37.14% of RIPE NCC IPv6 space



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

In-region ROAs

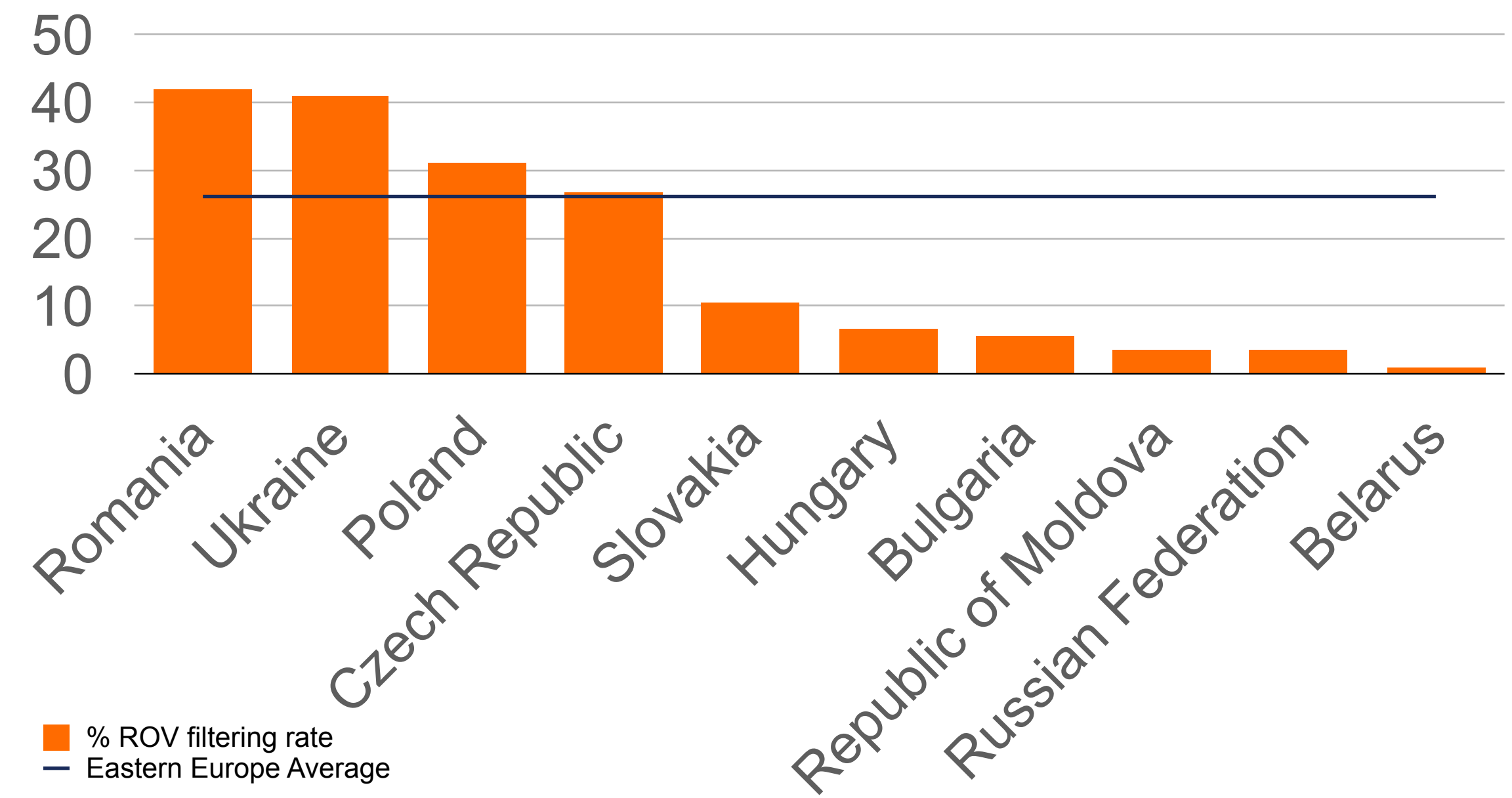


Source: [NRO Adoption stats \(21/06/2023\)](#)

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 ROAs

2 Valid 0 Invalid 0 Unknown 2 OK 0 Causing problems

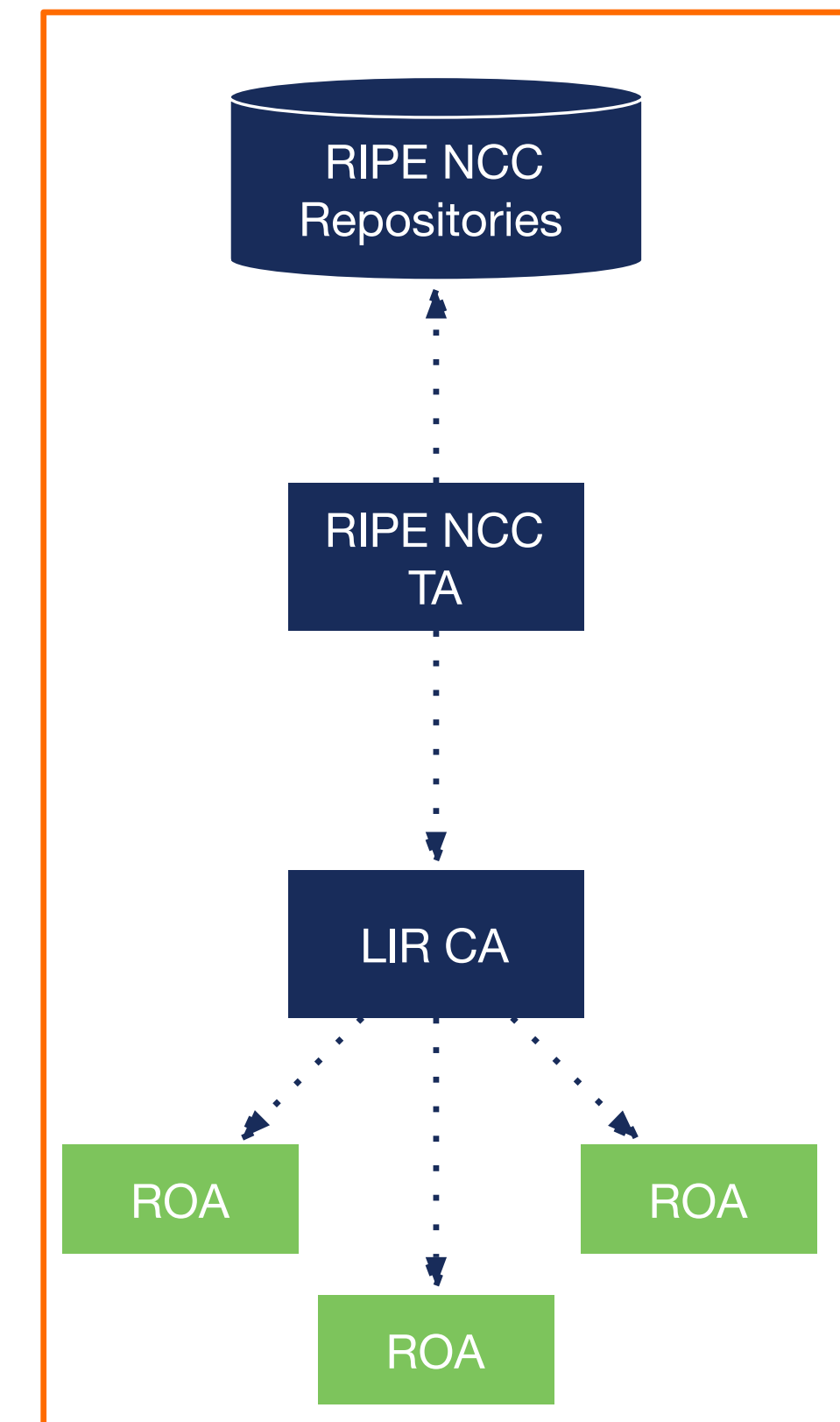
BGP Announcements Route Origin Authorisations (ROAs) History Search...

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

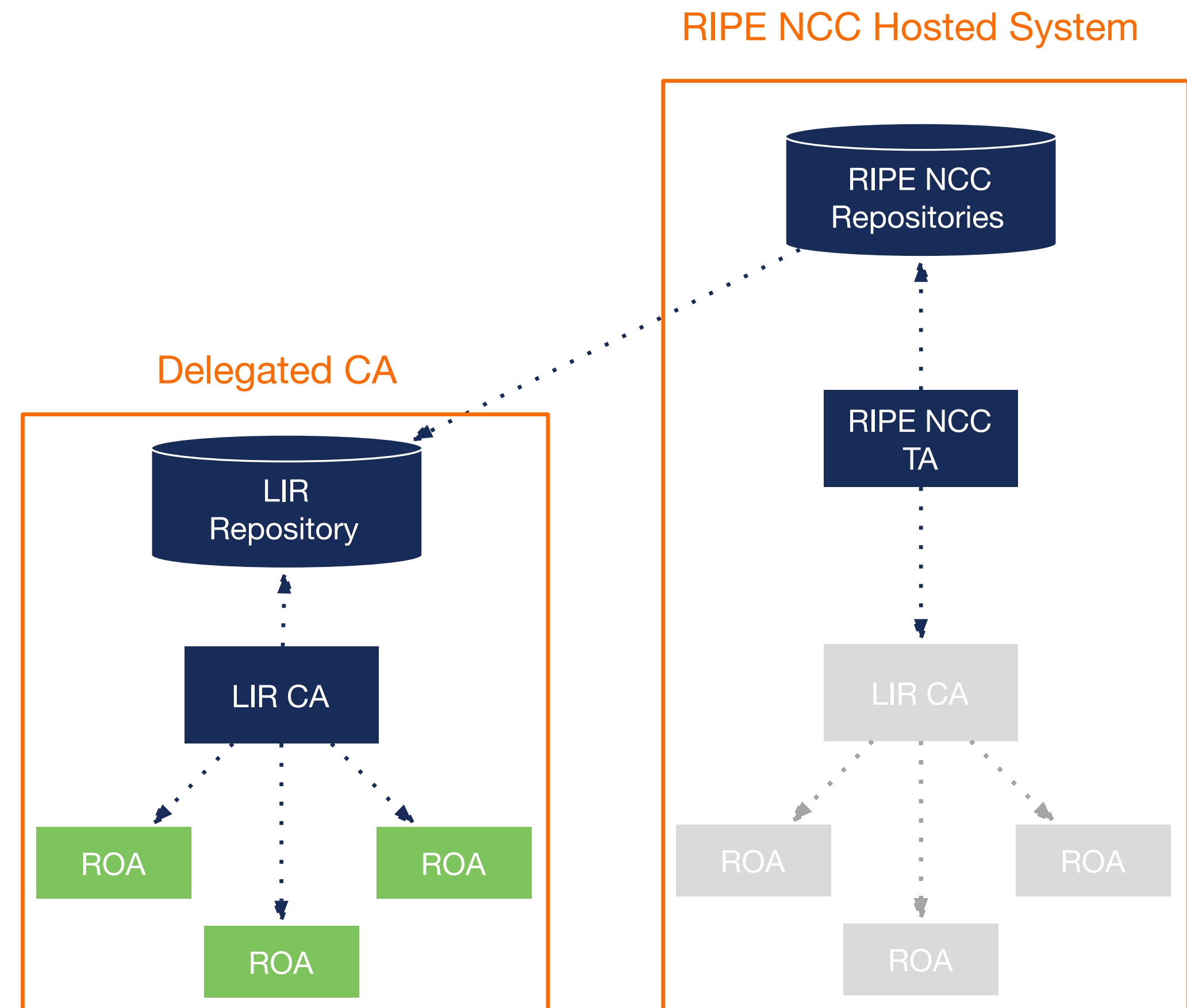
RIPE NCC Hosted System



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

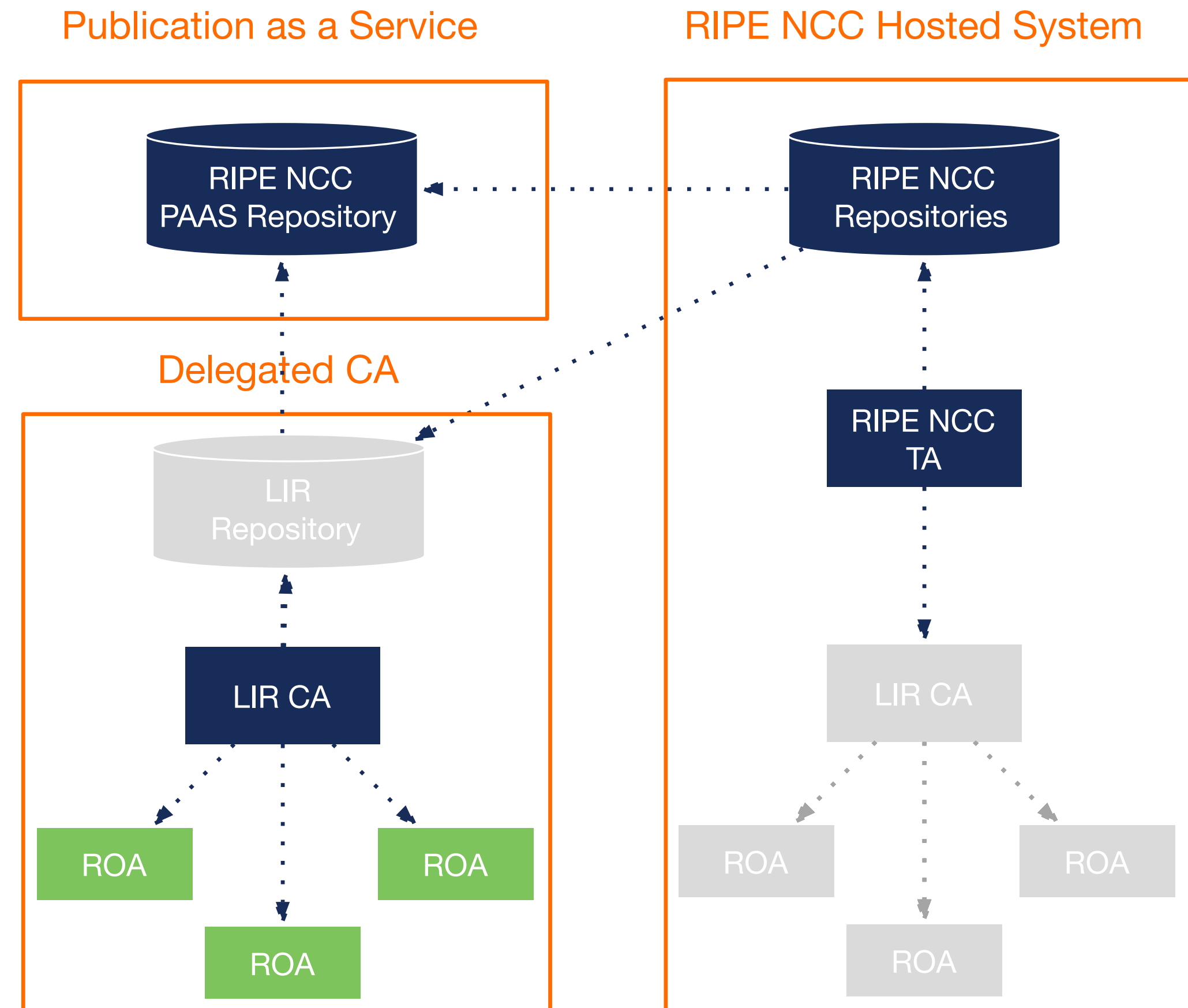


How our trust anchor works



- 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