

Routing Security Update

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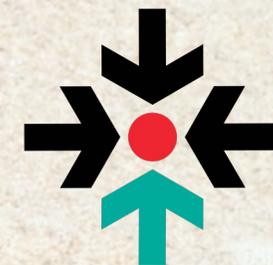
Agenda



- Team Update
- Resource Public Key Infrastructure (RPKI) adoption
- New and upcoming features

Team Update

New to the Team



Nathan Newman, Technical Support Specialist

- ARIN staff member for over two years
- Previously worked on the Registration Services Department team responding to technical services requests
- Now focusing on routing security topics (RPKI, Internet Routing Registry, Domain Name System Security Extensions, etc.)

Reach out! Email routing.security@arin.net with questions or issues

RPKI Adoption

What is RPKI?

RPKI provides a cryptographically signed method for an Internet number resource holder to make an authoritative statement about the origin of a prefix(s) announced to the Internet (Route Origin Authorization, ROA).

Benefits of RPKI



- Provides operators another data set to make more informed routing decisions (RPKI Validity State)
- Protects resource holders from impact resulting from human error or nefarious activity
- Reduces the overall attack vector for attempted hijacks on the greater Internet

Key Terms



A Trust Anchor (TA) is an established point of trust from which an entity begins the validation of an authorized process.

The Certificate Authority (CA) is responsible for signing the cryptographic objects.

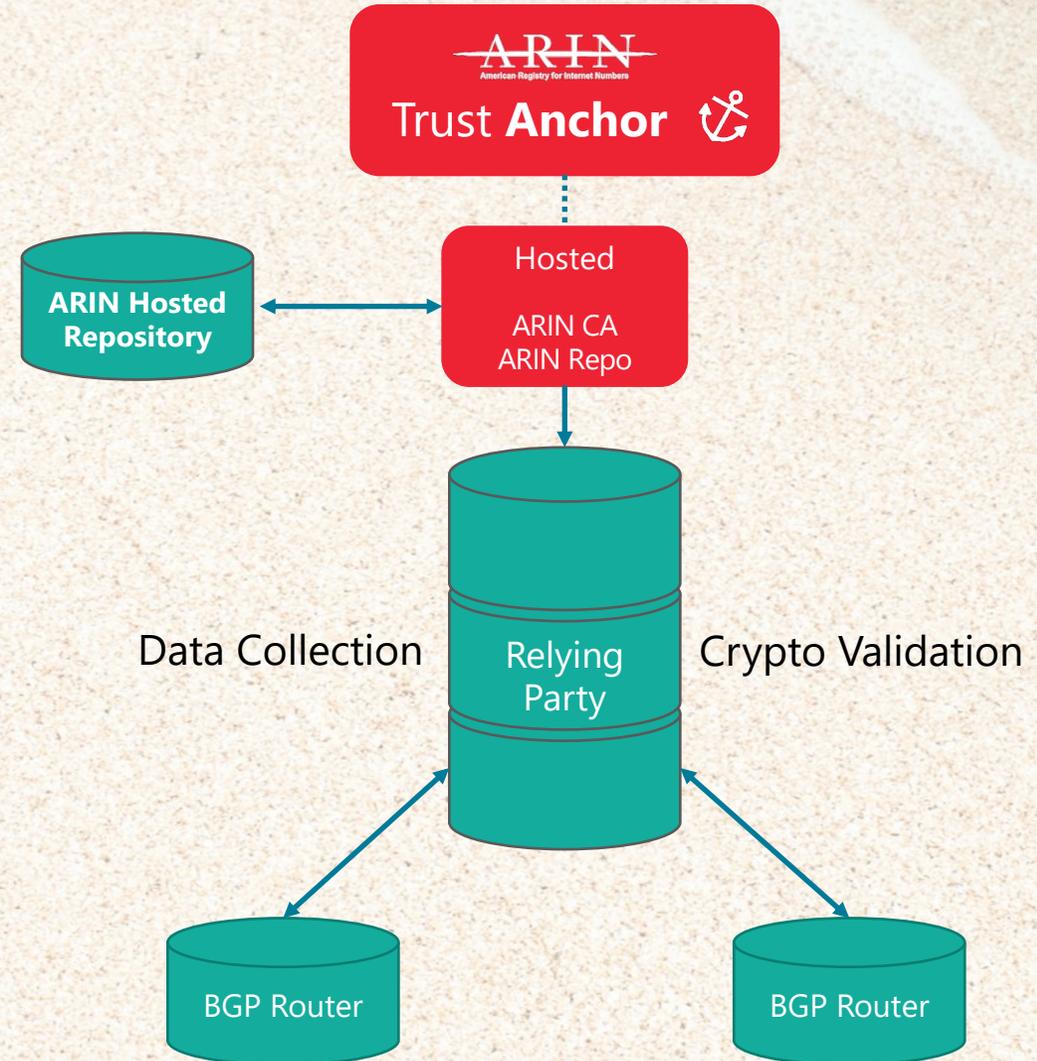
A Route Origin Authorization (ROA) is a signed statement made by the authenticated resource holder that consists of a prefix, a maximum prefix length, and originating ASN.

RPKI Services at ARIN



Hosted

- Resource holders make and manage authoritative statements, Route Origin Authorizations (ROAs) for their resources
- ARIN serves as the Certificate Authority (CA), managing all cryptographic components, and the repository and publication services for customer ROAs

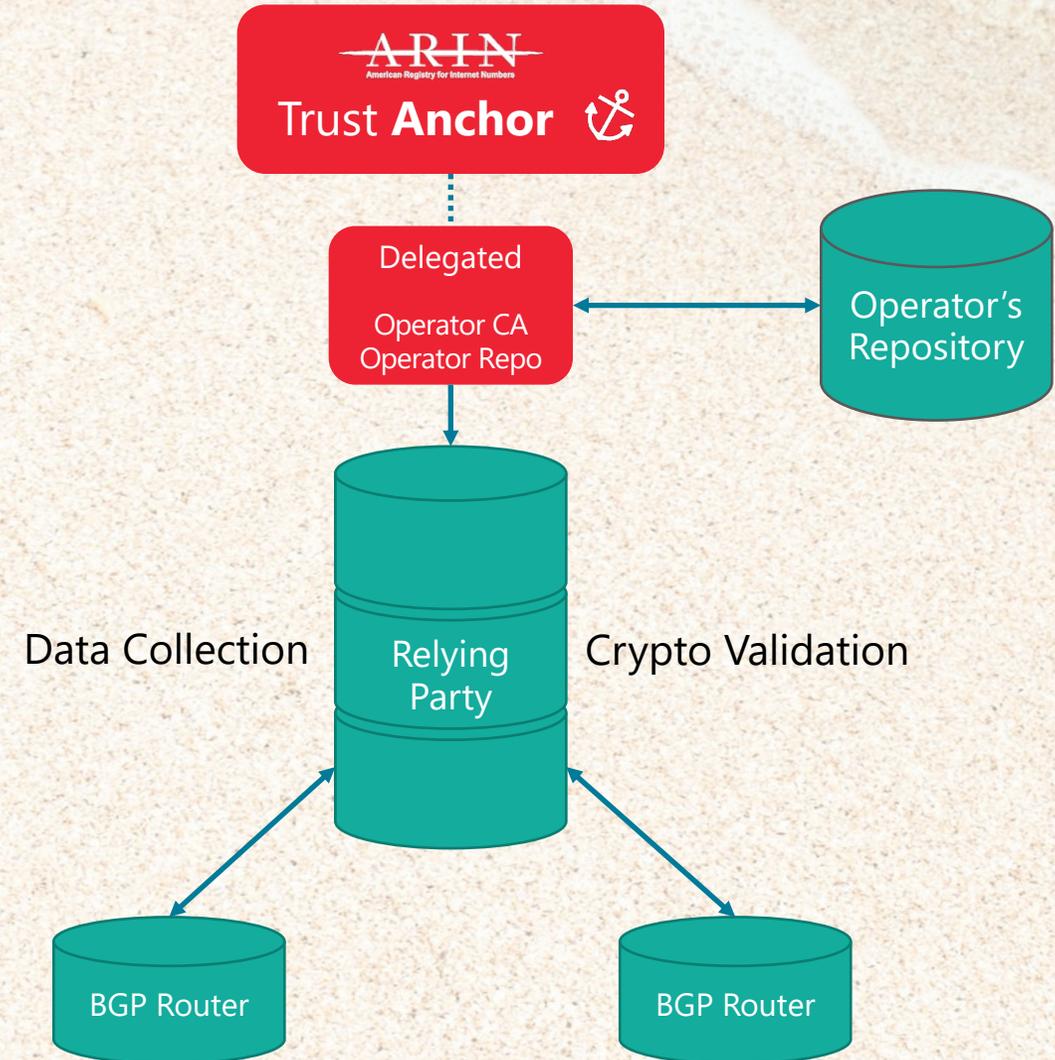


RPKI Services at ARIN



Delegated

- When an org runs cryptographic services (Certificate Authority or CA), repository, and publication services for their ROAs
- ARIN confirms the resources are assigned to the ROA's creator and the location of the repository where the ROA is stored
- Customers may choose to hand off the repository and publication functions to ARIN and use our **Repository Publication Service (RPS)**

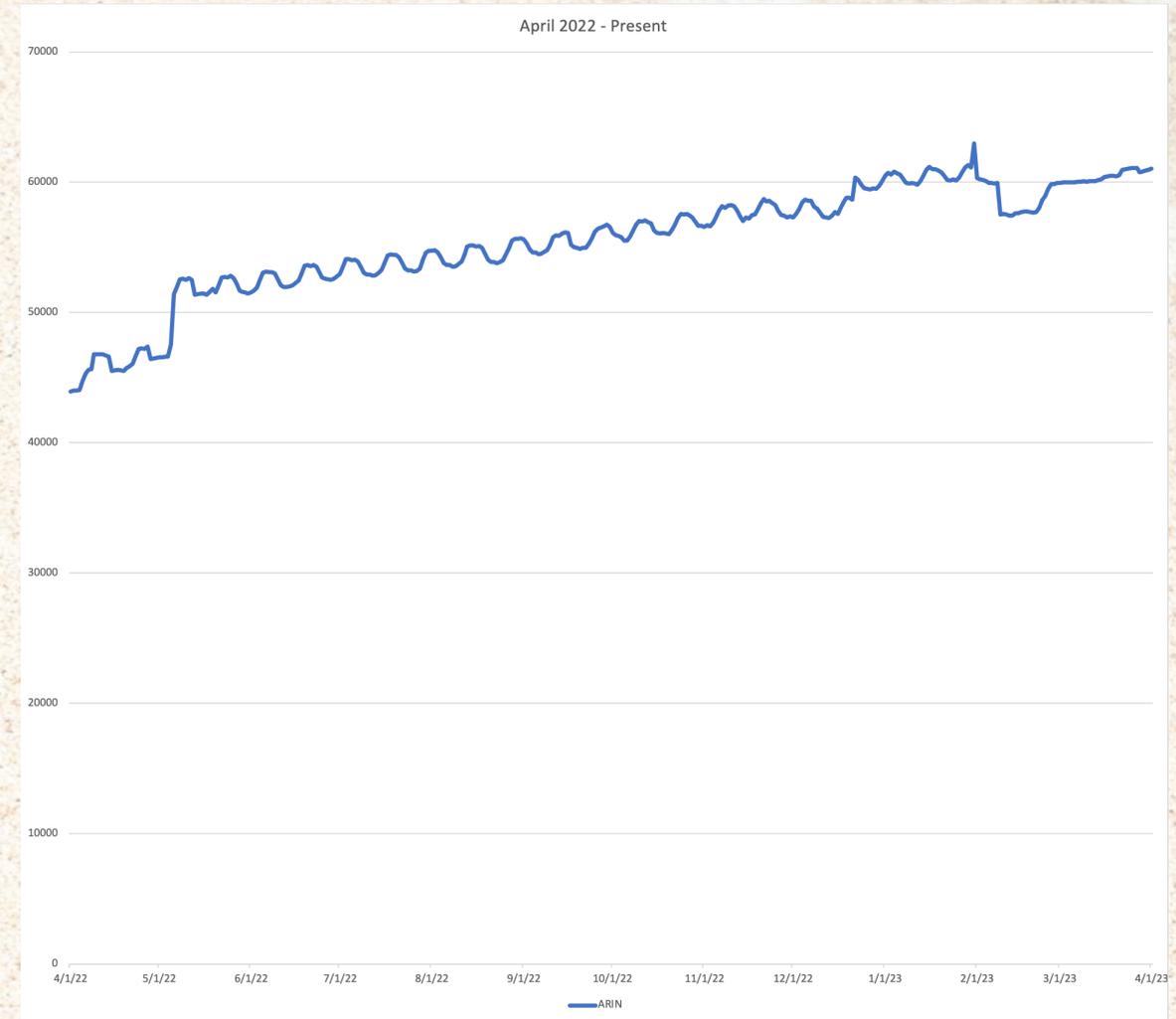


RPKI Adoption – ROA Count



- ARIN's Hosted Repository
 - Route Origin Authorizations (ROAs): **54,892**
 - Validated ROA Payloads (VRPs*): **66,774**
- ARIN's RPS Repository
 - ROAs: **1,150**
 - VRPs*: (prefixes): 2,979

* VRPs contain an IP prefix, a maximum length, and an origin AS number derived from a validated ROA, (validated by ARIN to contain authoritative data).

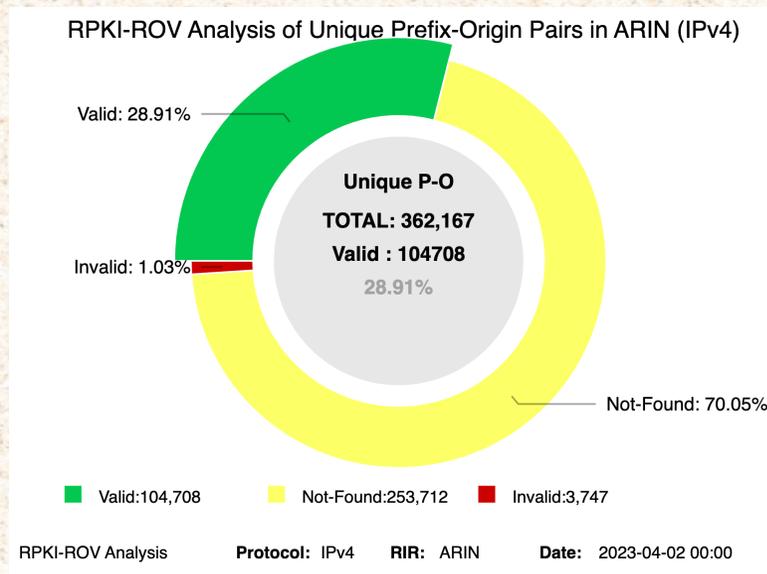


RPKI Valid Route Announcements



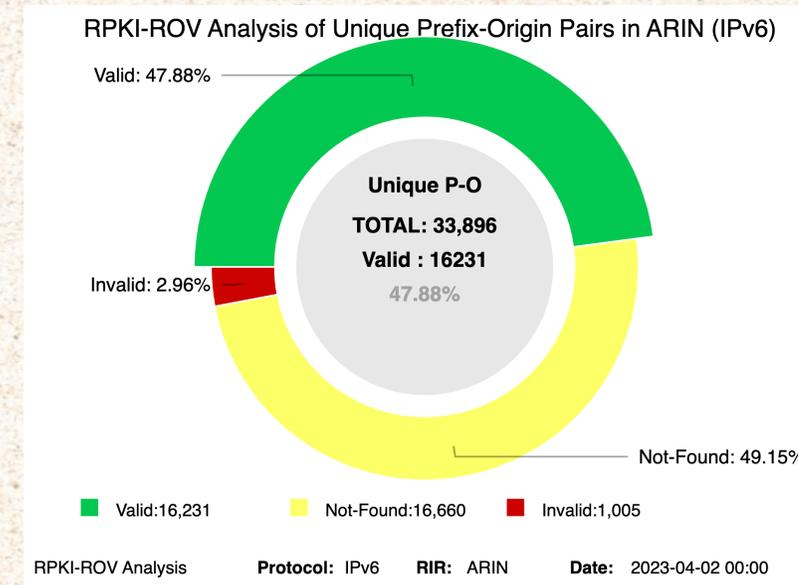
28.91% of Internet routes with ARIN IPv4 resources, marked as RPKI Valid

- **Up 6.5% year over year**



47.88% of Internet routes with ARIN IPv6 resources, marked as RPKI Valid

- **Up 4.2% year over year**



*charts collected from the NIST RPKI Monitor - <https://rpki-monitor.antd.nist.gov/ROV>

RPKI Valid IP Resources



45.3% of eligible* ARIN IP resources announced are marked as RPKI valid**

- 508M (eligible) / 1.12B (allocated to ARIN)
- 5.0% increase year-over-year
- Globally, 38.2% of announced IP resources are RPKI valid

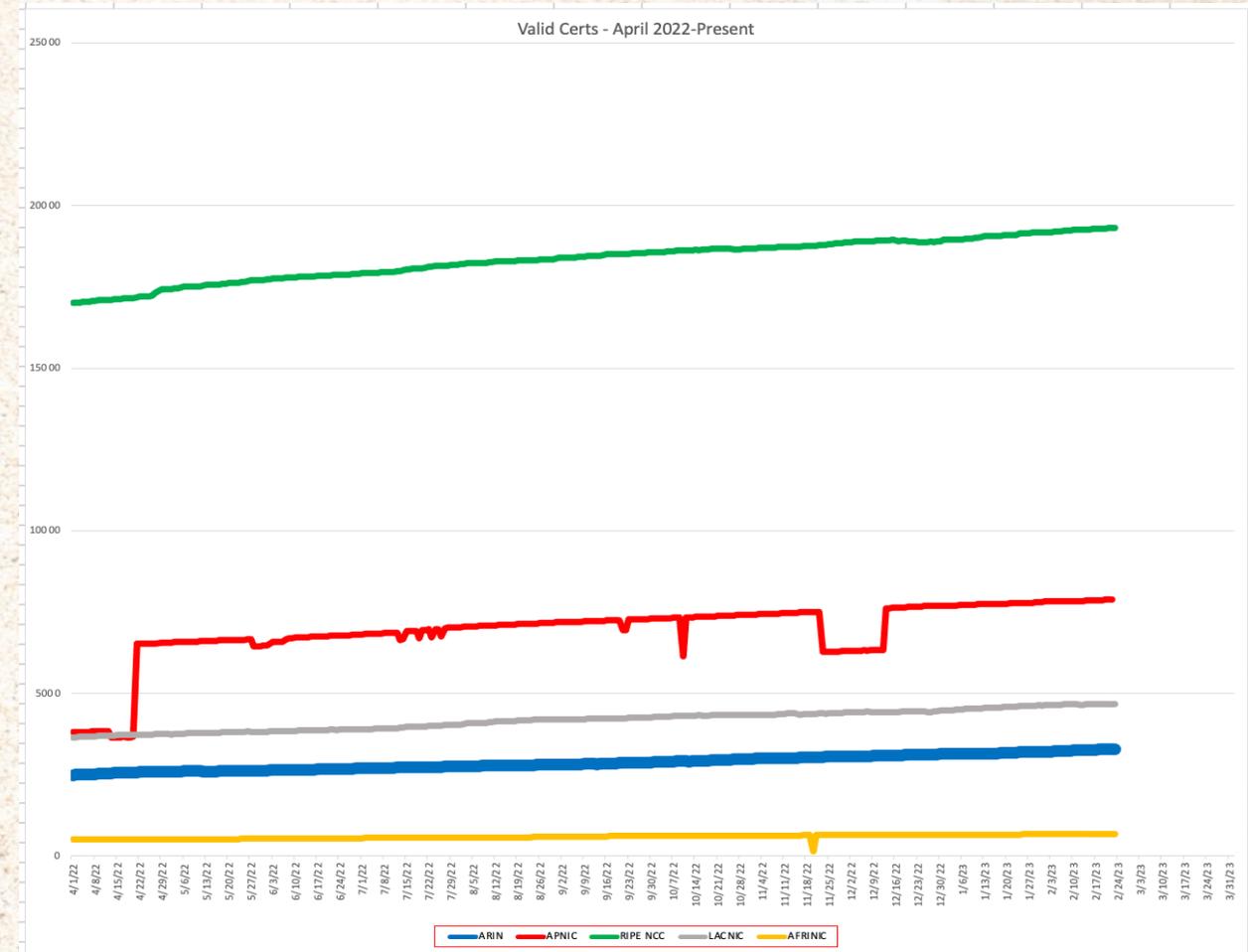
* Resources must be covered by a valid (L)RSA agreement to be eligible for RPKI services at ARIN

** To be considered RPKI valid there must be a VRRP that exactly matches an existing route announcement in the global BGP table

RPKI Adoption - Organization Participation



- Organizations registered to use ARIN RPKI services: **3,422**
 - Hosted: **3,330**
 - Delegated: **92**
 - Repository Service (RPS): **31**



New Features

New Features – Simplified Navigation



ARIN Feedback 14 Welcome, SPO

ACCOUNT MANAGER

- Dashboard
- Tickets
- Your Records
- IP Addresses
- ASNs
- Routing Security**
- RPKI
Get Resource Certificate or Manage ROAs
- IRR
Manage Your Objects
- Transfer Resources
- Payments & Billing
- Downloads & Services
- Ask ARIN
Create a help desk ticket

Dashboard

Alerts

You have **14 unread messages.**

Account Snapshot

2 Point of Contact records (POCs)	2 Organization Identifiers (Org IDs)
3 Networks (NETs)	2 Autonomous System Numbers (ASNs)

What's New With ARIN Online

Visit [ARIN Online Functionality](#) for an overview of all the functionality currently available within ARIN Online.

RPKI Navigation Changes

- **Routing Security dropdown**
- List of all linked Orgs
- Org "Picker"

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Manage RPKI

ARIN's Resource Public Key Infrastructure (RPKI) service allows users to publish authorized routes for their certified Internet number resources to help secure Internet routing.

For more information about RPKI, visit [Resource Certification](#).

Your Organizations

Organizations associated with your user account are listed alphabetically by Org ID.

Org ID	Certification Status	Action
ARIN-2	No Direct Resources	Request Resources
ARINL	Hosted	View Details Manage ROAs

ARIN's RPKI Trust Anchor Locator (TAL)

Relying party software (validator) must incorporate the ARIN TAL to fetch data from ARIN's RPKI repository.

[Access RPKI TAL](#)

RPKI Navigation Changes

- Routing Security dropdown
- **List of all linked Orgs**
- Org "Picker"

New Features – Simplified Navigation



ARIN [Feedback](#) 14 Welcome, SPO

ACCOUNT MANAGER

Manage RPKI

Org ID: **ARINL** [Overview](#) [ROAs](#) [Create ROA](#) [Certified Resources](#) [Hosted Certificate](#)

Choose the item you want to access, or create a new Route Origin Authorization (ROA).
For more information about RPKI, visit [Resource Certification](#).

Status Overview

Last Updated: 02-28-2023 [Current Certificate](#)

Certified Resources: [2 ASNs](#), [3 Nets](#)

ROAs: [12](#)

[Create ROA](#)

Navigation Sidebar:

- Dashboard
- Tickets
- Your Records
- IP Addresses
- ASNs
- Routing Security
 - RPKI
 - Get Resource Certificate or Manage ROAs
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Development Pipeline



No ROA signing requirement

- No more keys
- Simplified input method

Auto renewal for ROAs

- ROAs do not expire
- 90-day lifespan, renewal at 30 days

New RESTful API

- New knobs for new features
- Future-proof for new standards
- Legacy API still supported

Thank You

