



# Protecting Your Routes with RPKI

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# Agenda

How RPKI can help your routing security

Which RPKI service is right for you?

Enabling RPKI

A faint, light blue network diagram with nodes and connecting lines is visible in the background of the slide.

# How RPKI can help your Routing Security

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# What is RPKI?

RPKI is a public key infrastructure that creates a **chain of resource certificates that follows the same structure** as the way IP addresses and AS numbers are handed down<sup>1</sup>

RPKI gives the legitimate holder of a block of IP addresses the opportunity to make an **authoritative statement about which AS is authorized** to originate their prefix<sup>1</sup>

<sup>1</sup> - "RPKI Read the Docs." *Introduction - RPKI Documentation*, <https://rpki.readthedocs.io/en/latest/about/introduction.html>



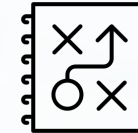
# Why is RPKI Important?



Establishes a **level of trust** that the RPKI information is authentic and is confirmed coming from the authorized holder of the resources



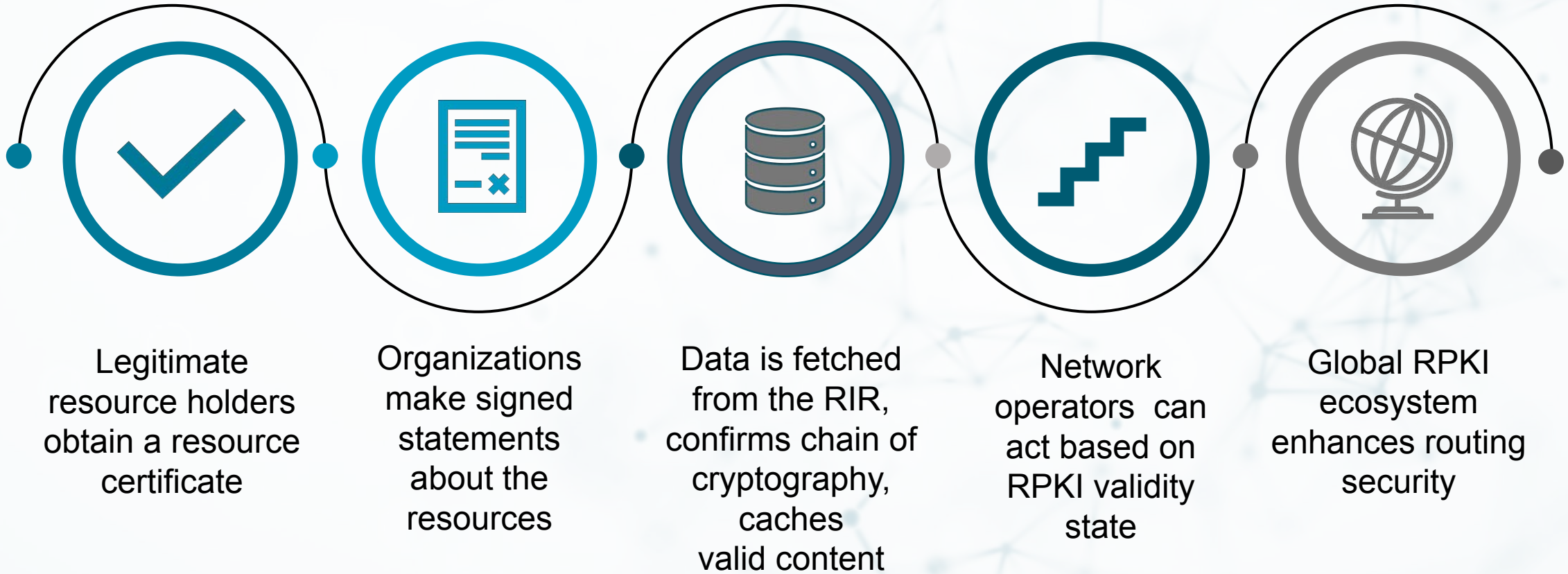
The RPKI gives network operators a **method to make better judgments** on which is the valid source (origin) of a route announcement



RPKI can **limit the impact** of a configuration mistake or nefarious activity of a bad actor



# Steps of RPKI





# How RPKI Data is Used



Route Origin  
Authorization  
(ROA) Objects

Resource holders state: This prefix should be originating from this ASN

ROAs are stored in databases called repositories





# How RPKI Data is Used



Relying Party  
Software  
(Validator)

Fetches the contents of the  
repositories

Confirms the cryptographic  
chain back to the RIR Trust  
Anchor





# How RPKI Data is Used



Routing  
Decisions

Data in Validator's cache is compared to announcements views in the global BGP table to establish the validity state

Network Operators can choose to make routing decisions based on the RPKI validity state



# How RPKI Data is Used

Performance  
and Value  
will grow

More resource holders create  
ROAs for their prefixes

More network operators act  
based on the validity state

A faint, light blue network diagram with nodes and connecting lines is visible in the background of the slide.

# ARIN's RPKI Services – which one is right for you?

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# Three RPKI Deployment Options at ARIN

## **HOSTED** – Used by Most

- Least effort to get up and running
- ARIN does the heavy lifting
- Create and maintain your ROAs

## **DELEGATED** – Added Flexibility and Responsibility

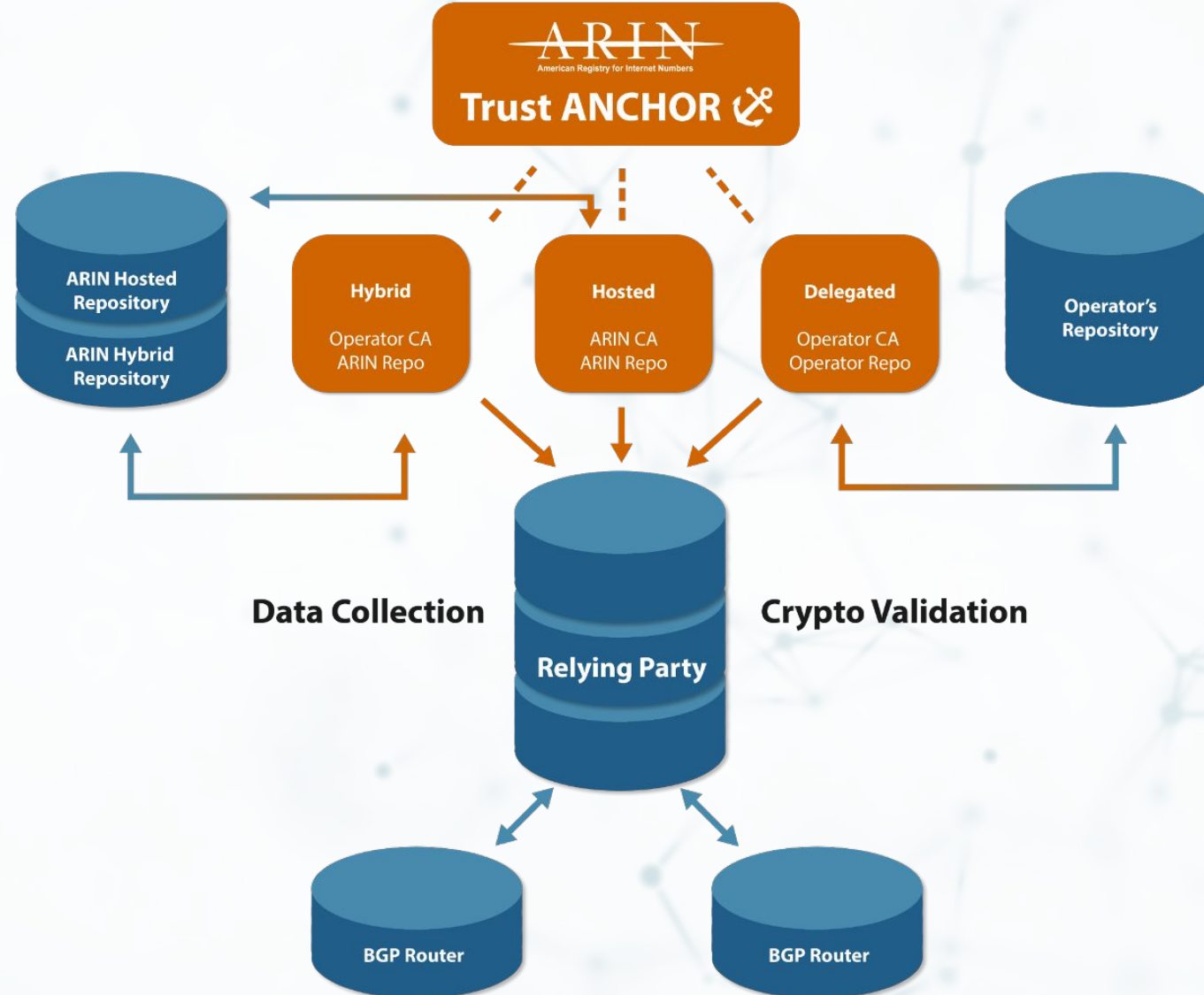
- Control of all cryptographic components
- Run high-availability systems and services
- Advanced knowledge of RPKI

## **'HYBRID'** – Publication Service for RPKI Customers

- Maintain cryptographic control
- ROA generation and upkeep
- Off-load the rest to ARIN



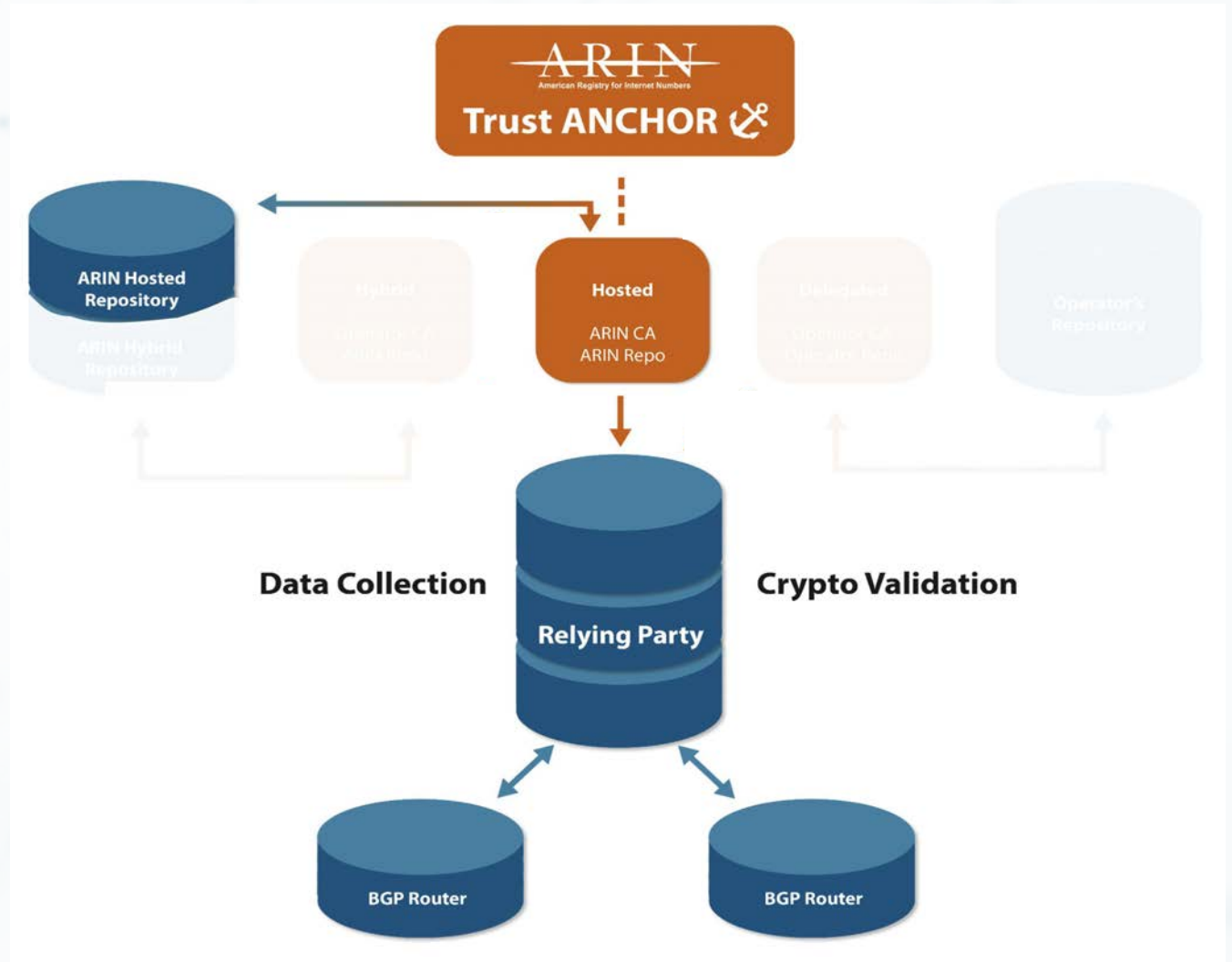
# ARIN's RPKI Services Hierarchy





# ARIN's Hosted RPKI Service

- Certificate Authority (CA) managed by ARIN
- Repository and Publication services run by ARIN
- Org creates and maintains their ROAs
- Accessed via ARIN Online portal or the RESTful API

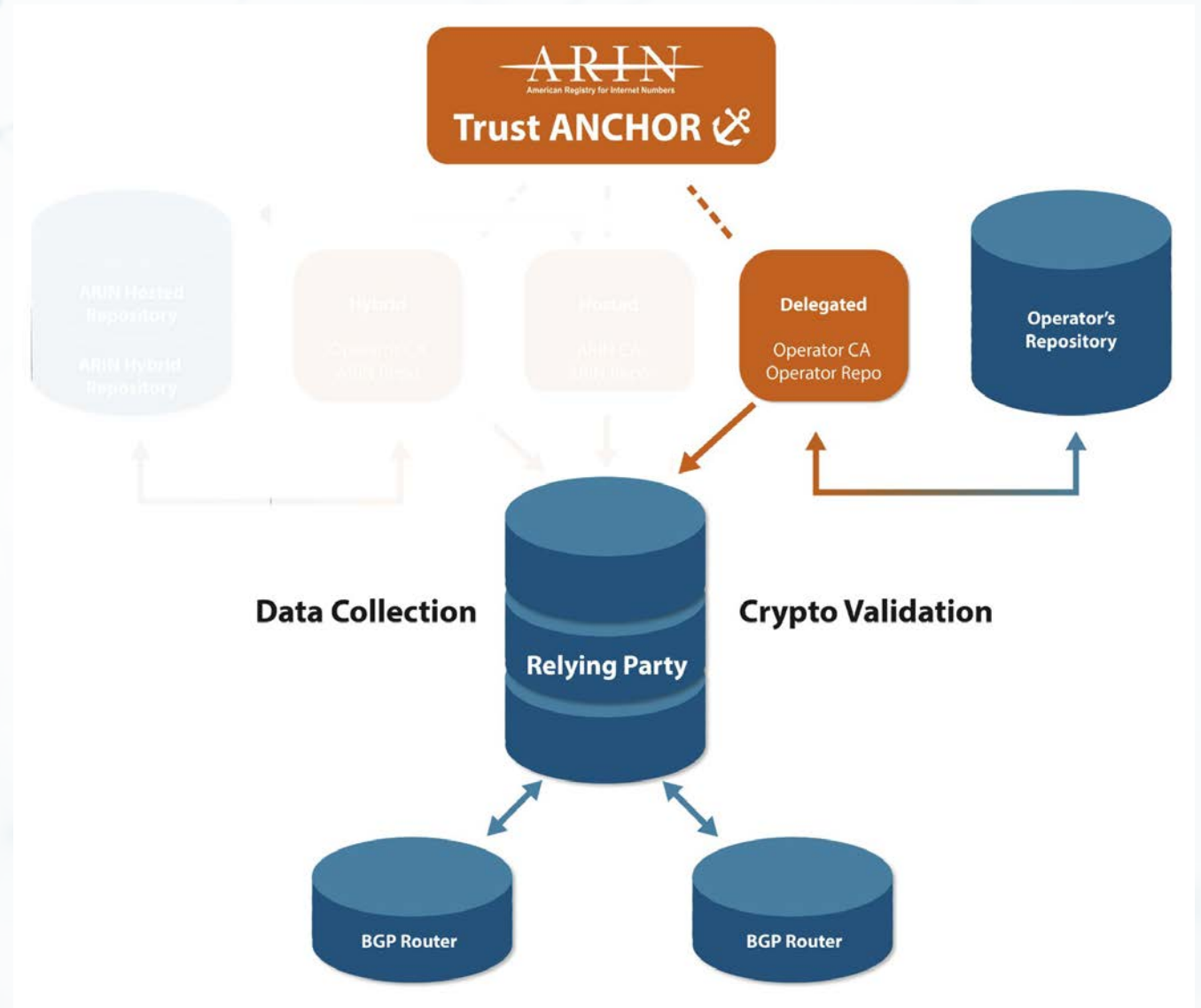






# ARIN's Delegated RPKI Service

- The organization has more control and independence
- Runs their own CA to manage object signing
- Separation of the publication of cryptographic functions

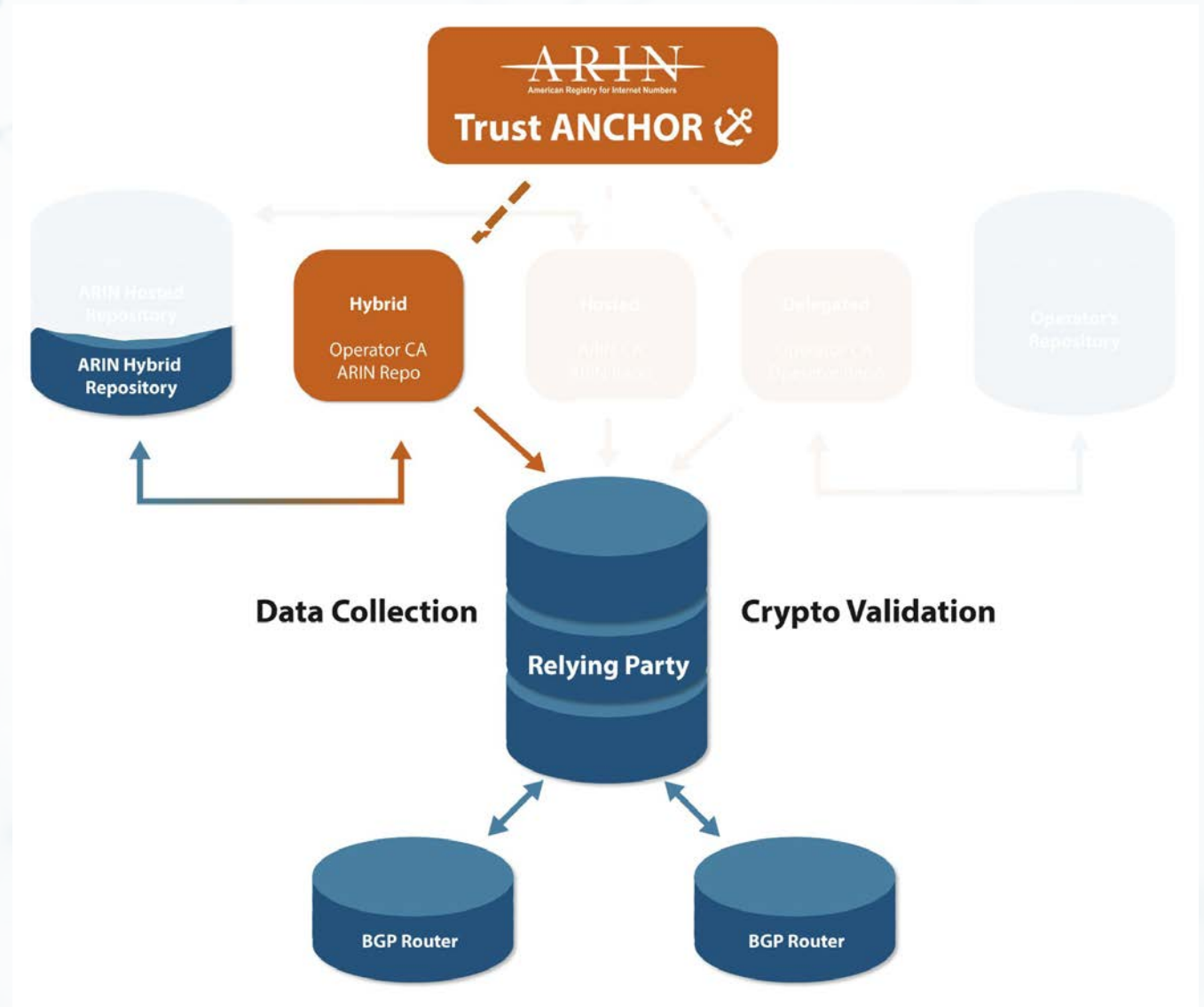






# ARIN's RPKI Publication Service (RPS)

- Maintain control and independence of Delegated RPKI
- Runs their own CA to manage object signing
- Off-load Repository and Publication services to ARIN



A faint, light blue network diagram is visible in the background, consisting of several interconnected nodes and lines, suggesting a complex system or data structure.

You've Convinced Me ...  
Now What?

# ARIN RPKI for Legacy Blocks

- Entering into an ARIN Registration Services Agreement (RSA) or Legacy RSA (LRSA) is required to use RPKI
- An RSA/LRSA provides access to all ARIN services under the Registration Services Plan (RSP) as a paid customer



# ARIN Agreements

Convinced to use RPKI? Here's how:

Resources already  
under an RSA or  
LRSA?



You are ready - get  
started now under the  
RPKI Terms of Service  
and Relying Party  
Agreement

# ARIN Agreements

Convinced to use RPKI? Here's how:

Resources **NOT** under  
an RSA or LRSA?



## It's time to “get it in writing”

- Sets expectations for both parties
- Know what services you can expect
- Prevents misunderstandings and mitigates risk
- May provide benefits if situations or conditions change (e.g., expiration of legacy fee cap)



# Tips for Governmental Entities

ARIN is amenable to limited modifications of the RSA/LRSA for governmental agencies where an agency cannot, by law, agree to certain terms (e.g., indemnification)

Efficient Approach for Limited Modifications



Identify the specific term(s) that are problematic



Provide the legal citation demonstrating the need to modify



# ARIN Agreements

Recent change to Section 7 of the RSA/LRSA, which has been the subject of notable community feedback over the years

Removed representations in the previous version

Renamed from "No Property Rights" to "Acknowledged Rights To Included Number Resources"



# ARIN RPKI Relying Party Agreement

Each Regional Internet Registry (RIR) has a TAL needed to access its RPKI repository's trusted, verified routing data

Comprises a set of terms and restrictions applicable to any entity wishing to access and/or utilize ARIN's TAL or RPKI repository

Use of either the TAL or ARIN's RPKI repository data is subject to the RPA

## Expiration of annual legacy maintenance fee cap

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- Beginning January 1, 2024, no fee cap on annual legacy maintenance fees for new legacy resources brought under an LRSA
- Fee cap will continue for legacy resources brought under an LRSA **before January 1, 2024**

The logo for ARIN Fees is a circular graphic composed of three concentric rings. The outermost ring is dark blue, the middle ring is yellow, and the innermost ring is white. The text "ARIN Fees" is centered within the white ring. The background of the slide features a faint, light blue network diagram with nodes and connecting lines.

**ARIN  
Fees**





# We are Here to Help



Or email questions to:  
[routing.security@arin.net](mailto:routing.security@arin.net)



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**ANY QUESTIONS**

**?**

**Thank You**