Progress Report on
Legal Barriers to RPKI Adoption

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Overview of Talk

- Review of motivation for and concerns identified by the 2018 NSF Report I coauthored with David Wishnick

- Assessment of ARIN's steps to address these concerns
  - Changes to Relying Party Agreement (RPA): (1) Oct. 21, 2019; (2) Sept. 26, 2022; (3) Sept. 29, 2022
  - Change to Registration Services Agreement (RSA): Sept. 12, 2022
  - Additional information provided by ARIN

Issues Identified in 2018 NSF Report

- Prohibited Conduct Clause's limits on sharing info

- Indemnification Clause

- Property rights in IP addresses

- Barriers to including ARIN's TAL in validator software

- Choice of Law and Arbitration Clauses

- Need for additional info re ARIN's operational practices

- Need for better community awareness of best practices

(Caveat: language quoted below is sometimes paraphrased)

RPA's Prohibited Conduct Clause

Original language

ORCP-provided info may be shared with third parties only "solely for informational purposes… and…not in a readily machine-readable format"

Revision Oct. 21, 2019

Dropped prohibition to sharing ORCP-provided info in machine-readable formats; BUT added prohibition to using it for network routing

Our recommendation: permit sharing in machine-readable formats

Assessment of Concerns Raised by Report

Recommendation	Resolution
Prohibited Conduct Clause sharing limits	Partial
Blanket Indemnification Clause	
Property rights in IP addresses	
Inclusion of ARIN TAL in validator software	
Choice of Law and Arbitration Clauses	
Info re ARIN's operational practices	
Community awareness of best practices	

RPA's Indemnification Clause

Original language

"You shall indemnify… ARIN…from any and all claims…asserted by a third party in connection with use [of Online Resource Certification PKI (ORCP) services]"

Addition Oct. 21, 2019

Added exception for "third party claim[s] aris[ing] from ARIN's gross negligence or willful misconduct"

Our recommendation: shift to disclaimer of liability

Assessment of Concerns Raised by Report

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Property Rights in IP Addresses

Original LRSA language

Revision Sept. 12, 2022

No Property Rights
Holder agrees that IP addresses are not property and that the holder will not acquire or assert property rights in IP addresses

Acknowledged Rights
Holder agrees it acquires express contractual rights to the IP addresses by virtue of this Agreement

Our recommendation: decouple the issue of property rights from RPKI adoption

Assessment of Concerns Raised by Report

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Inclusion of ARIN's TAL in Validator Software

- Most important barrier to RPKI: inability to distribute RPKI validator software with ARIN's TAL preloaded
  - Other 4 RIRs permit distribution of their TALs
  - ARIN required downloading its TAL from its website
  - Rationale: need for clickwrap acceptance of RPA
- ARIN's initial policy change in Oct. 2018
  - Inclusion of RPA acceptance into software installation
  - Solution starting to be utilized

Inclusion of ARIN's TAL in Validator Software

Key obstacle

Section 5's prohibition of redistributing ARIN's TAL or sharing ORCP-provided info with third parties for network routing (see above)

Key question

How will operators respond to a certificate library outage?

ARIN test outages found that validators relied on cached state for ~24 hours

Our recommendation: remove prohibition on use of RPKI info for network routing

Inclusion of ARIN's TAL in Validator Software

Addition Sept. 26, 2022

Section 9: "Notwithstanding the foregoing, You may make available [ORCP-provided info] in a machine-readable format" if recipient has (a) signed the RPA or (b) agreed to the RPA's terms

Addition Sept. 29, 2022

Section 5: "Notwithstanding the foregoing, You are specifically allowed to publicly distribute the ARIN TAL, including by embedding the ARIN TAL in relying party software"

Analysis of Change

- A number of validators now include ARIN's TAL
- Lingering legal concern: ambiguous drafting of Section 5
  - Notwithstanding the foregoing, you may publicly distribute the ARIN TAL
  - You may not distribute ORCP-provided info for routing

  - "foregoing" applies only to preceding language
  - Does definition of ORCP include ARIN's TAL?

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Assessment of Concerns Raised by Report

Recommendation	Resolution
Prohibited Conduct Clause sharing limits	Complete
Blanket Indemnification Clause	Partial
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Inclusion of ARIN TAL in validator software	Addressed*
Choice of Law and Arbitration Clauses	
Info re ARIN's operational practices	
Community awareness of best practices	

Choice of Law and Arbitration Clause

Current language

- RPA and RSA require Virginia law & arbitration

- ARIN waives clauses if law bars agencies from agreeing to them

ARIN's planned changes

- ARIN reports it is planning a new webpage specifically for government agencies

Our recommendation: better publicity of waiver policy

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Property rights in IP addresses	Complete
Inclusion of ARIN TAL in validator software	Addressed*
Choice of Law and Arbitration Clauses	Pending
Info re ARIN's operational practices	
Community awareness of best practices	

Lack of Info re ARIN's Operational Practices

Community concern

Need for info on uptime, update frequency, response expectations, and similar matters

ARIN's response

ARIN has created a service dashboard, is updating its certificate practices statement, and is conducting an audit of services

Our recommendation: more complete disclosure of operational practices

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Lack of Community Awareness of Best Practices

Concerns

- Even at 5 nines, outages sometimes occur

- Operators must respond appropriately

ARIN's response

ARIN is providing more training to promote awareness

Our recommendation: better training for operators re best practices

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Info re ARIN's operational practices	Pending
Community awareness of best practices	Ongoing

Conclusions

- RPKI represents a prime example of cooperation among government, academics, community, and ARIN

- ARIN has taken steps to address the concerns and remains open to working with the community

- Some possible directions remain unaddressed

  - Replacement of the RPA with terms of service

  - Use of government procurement to drive adoption

  - Creation of a separate entity for RPKI

Questions?

Definition of ORCP

- "ORCP Services" means the validation of a Certificate, accessing or using an ARIN or ARIN-affiliate database of Certificate revocations, relying on any Certificate-related information, or otherwise accessing, using or relying on a Certificate, the ORCP (or any part thereof), and/or related services provided pursuant to any ORCP Service Terms. In connection with the ORCP Services, ARIN may provide you with a Trust Anchor Locator ("TAL").

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