



RPKI on IXP Route Servers

RIPE77, Amsterdam, October 2018

Nick Hilliard

Chief Technical Officer

Internet Neutral Exchange Association CLG



RPKI at IXPs

Route Server Software

- BIRD 1.x: supports ROA tables
- BIRD 2.x: supports RTR protocol
- GoBGP: full support
- Quagga: RPKI patches never reached mainline
- FRR: supports RTR
- IOS-XE: RTR support available
- JUNOS: recent RS implementation
- Majority of IXPs use BIRD 1.x
- Many RPKI implementations do not support revalidation

RPKI at IXPs

Validator Software

- RIPE NCC RPKI Validator 3 released in 2018
- Dramatically reduces installation complexity
- Modest VM requirements, runs on standard OS distributions
- Requirement to download ARIN TAL separately
 - Prevents ARIN TAL from being packaged in BSD / Linux distributions

RPKI at IXPs

Creating ROAs

- RIPE NCC: Log in to RIPE Portal Account, click OK a couple of times
- ARIN: open ticket
- Legacy Resources require engagement with RIR
 - RIPE NCC: available if there is any relationship in place
 - ARIN: Requirement to sign LRSA

RPKI at IXPs

AS Paths

- No ability to validate AS paths in RPKI
- No ability to create AS sets in RPKI
 - draft-ietf-grow-rpki-as-cones will resolve this
- These are regressions over static IRRDB filtering
 - path validation is hard
 - AS Set / AS Cone support is critical

RPKI at IXPs

Implementation Considerations

- Needs to co-exist with current filtering mechanisms
- Temptation to create policy filtering which is too complicated
 - Consistency and simplicity is usually better
- Drop invalid / tag invalid?
- Implementation Requirements
 - Revalidation
 - AS Path filtering support
 - Consistent approach for handling RPKI Invalid
 - What to do with RPKI Unknown

RPKI at IXPs

Thoughts on Evaluation Policy

1. Allow RPKI to be enabled on a per-client basis
2. Compare against AS Path filtering from IRR. Drop if origin AS is not in accepted list.
3. RPKI Evaluation
 1. If RPKI valid, then accept
 2. If RPKI invalid, then drop
4. Continue with existing static IRR route / route6 prefix filters

THANK YOU

Any Questions?