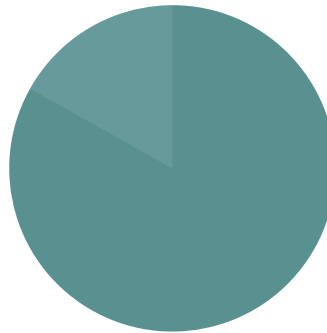# AFRINIC RPKI-IRR integration

DBWG @AIS'19

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Statistics

IRR

- 21187 route objects
  - 20791 route
  - 396 route6
- 367 as-set
- 84 ASNs with import/export
- 54 route-set
- 1 rtr-set
- 1 peering-set
- 1 filter-set

RPKI

- 306 active ROAs
  - 79 IPv6 prefixes
- Broken down into 440 route authorizations
- 228 loose authorizations (max length)
- 212 minimal authorizations

Coverage

Question: How are the current route objects covered by valid ROAs?

- Out of 1884 surveyed:
    - 159 Valid
    - 1 Invalid
    - 1724 Not-Found

Problem statement

- Members have 2 different interfaces for "route object" creation
  - WHOIS auto-dbm for route(6) objects
  - MyAFRINIC interface for ROA objects
- No sync between IRR and RPKI
- There is currently no IRR interface on MyAFRINIC, only way is through auto-dbm - difficult to use

Questions/Challenges

1. What should we do with the 20k route(6) objects in the IRR? Can we create equivalent ROAs?
   a. Can we create ROAs on members' behalf?
   b. Are the route(6) objects accurate?
   c. What about BPKI certificate enrolment?
2. Should we do a 'loose' or 'tight' coupling between route(6) and ROAs?
   a. Loose: Create ROA -> Create one or more route(6) objects? Delete/Edit not handled
   b. Tight: Create/Edit/Delete all sync'ed
3. How to deal with ROAs having multiple prefixes?
4. How to deal with max-length in ROAs?
   a. Minimal ROAs?
   b. Loose ROAs?
5. How to deal with expiry dates? Auto-renewal? 10 years ROA?
6. How and where to handle "route-set", "AS-SET", ASN-import/export, etc?

Challenges

- Data schema differences:
  - ROA: multiple prefixes, max length and start/end date
  - Route(6): prefix only, remarks
- Authentication:
  - RPKI -> BPKI and MyAFRINIC Access
  - IRR -> WHOIS ACCESS i.e. correct maintainer
- ROAs cannot be modified unlike route objects
- IRR: route-set, AS-SET, filter-set, rtr-set, peering-set, etc
- Initial bootstrap: Sync ROA->Route(6), Route(6)->ROA

Requests

1. Easy-to-use GUI for IRR management
2. Integration with RPKI upon creation of IRR Route(6) objects
3. Automatic "suggestions" based on routing table:
   a. ROA = BGP Announcement = Route object
   b. Alert users when "bad" objects found
4. API

Suggestions from DBWG

1. Go for tight coupling i.e. only 1 central interface for ROA/Route object creation
2. Make the IRR read-only (only feeder is RPKI)
3. Use a separate 'AFRINIC-RPKI' source with new data only
4. Existing ROAs -> we create corresponding Route(6) objects
5. Stop using maxlength

AFRINIC Proposal - Phase 1 (Loose coupling)

RPKI	IRR	Note
Create ROA	Create Route(6) object	MINIMAL ROAs
View ROA	View corresponding Route(6)	
Revoke ROA	Delete Route(6)	
Reporting (Covered ROAs)	Reporting Covered Route(6)	
	AS-SET add/edit/delete	

Sample new route object

route: 192.0.2.0/24
descr: myRouteObject
origin: AS65536
mnt-by: MY-MNT
remarks: roa-url:
http://rpki.afrinic.net/repository/member_repository/F36AA888/2FD269E2886111E9BD00DA62F8AEA228/06F644A2886211E9862C9963F8AEA228.roa
remarks: roa-start-date: 2019-06-16
remarks: roa-end-date: 2020-06-15
changed: sysadmin@afrinic.net 20140916
source: AFRINIC

Questions

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