AFRINIC Routing Registry Overview
Example IRR Objects (many details omitted)

route: 192.0.2.0/24
origin: AS64496
mnt-by: EXAMPLE1-MNT
source: AFRINIC

route6: 2001:db8::/32
origin: AS64496
mnt-by: EXAMPLE1-MNT
source: AFRINIC

inetnum: 192.0.2.0/24
mnt-by: AFRINIC-HM-MNT
mnt-lower: EXAMPLE1-MNT
mnt-routes: EXAMPLE1-MNT
source: AFRINIC

inet6num: 2001:db8::/32
mnt-by: AFRINIC-HM-MNT
mnt-lower: EXAMPLE1-MNT
mnt-routes: EXAMPLE1-MNT
source: AFRINIC

aut-num: AS64496
mnt-by: AFRINIC-HM-MNT
mnt-routes: EXAMPLE1-MNT
import: ...
export: ...
source: AFRINIC

mntner: EXAMPLE1-MNT
mnt-by: EXAMPLE1-MNT
auth: MD5-PW $1$xxxxx
source: AFRINIC
AFRINIC IRR Features

- Open to AFRINIC Resource members and Legacy Resource Holders in AFRINIC service region. The AFRINIC IRR is a free service.
- AFRINIC IRR is mirrored by the other IRRs such as APNIC, RIPE NCC, NTTCOM, AMS-IX, Work Online(SA), Moscow IXP and RADB.
- Stable and secure source of routing information. No downtime recorded since the go-live of the AFRINIC IRR.
- Easy to Use: AFRINIC IRR is a one-stop-shop as it is part of the AFRINIC WHOIS service.
- AFRINIC is the single point of contact for both Internet Resource Management and Routing Registry.
Adoption of the AFRINIC IRR

AFRINIC encourages adoption of the IRR through:

1. BoFs at AFRINIC meetings and outreach at regional events
2. Tools to ease replication of existing Route(6) objects to AFRINIC IRR
3. During IRR tutorials and workshop:
   - Inform the community the AFRINIC IRR is ready and invite members to use it
   - Provide support to replicate existing route(6) objects on AFRINIC IRR
   - Encourage resource members to clean up the various registries to avoid inconsistencies using tools such as http://irrexplorer.nlnog.net
Adoption of the AFRINIC IRR

32% of AFRINIC members (338) adopted the IRR @20 Sept 2018

23% of AFRINIC members (277) adopted the IRR @Aug 2018

We target adoption by at least 50% of AFRINIC members in the next 12 months

Majority of AFRINIC members are still using RIPE NCC IRR (free service)

Some members use paid IRR services.
Adoption of the AFRINIC IRR

Route(6) objects creation over time show a slow adoption by AFRINIC resource holders. But after the NWI-5 changes were implemented at RIPE NCC, a sharp increase has been observed.
RIPE NCC Announcements

- Changes requested by RIPE NCC community
  - Creation of out-of-region ASN will not be allowed
  - Creation of route(6) objects for non RIPE managed resources will not be allowed
  - Existing route objects with out-of-region ASNs will have a new source “RIPE-NONAUTH”
  - RIPE-NCC-RPSL-MNT will be locked - There will be no maintainer object with public password available
  - Existing route(6) objects protected by RIPE-NCC-RPSL-MNT will not be allowed to be modified or deleted

In summary, RIPE NCC IRR will no longer support the creation of route(6) and aut-num objects that refer to out-of-region resources (Resources that were not delegated to the RIPE NCC by IANA)
Statistics: Total RIPE NCC Route(6) for AFRINIC prefixes

48,594 route objects for AFRINIC prefixes exist on RIPE NCC

Created by 1,068 AFRINIC Resource Holders

150(80 AFRINIC Resource Members & 70 Legacy Resource Holders) of 1,068 Resource holders do not hold an ASN from AFRINIC.
Impact of RIPE NCC changes

● Possible Issues for AFRINIC members
  ○ Operators can limit their queries to "source: RIPE" only, or they can filter the results locally based on this attribute. This allows operators to disregard out-of-region route(6) objects (as their authorisation is questionable) or treat them with a lower preference.
  ○ No longer able to create route(6) objects in the RIPE IRR DB

● Mitigation/solution
  ○ If you are an AFRINIC member, we highly recommend using the AFRINIC IRR to publish your routing policy
AFRINIC recommends that:

1. Members read through AFRINIC IRR docs published, to ensure ease of use of the AFRINIC IRR
2. Contact details kept up to date after staff movements.
3. Maintainer passwords are kept up to date
4. If you hold resources from AFRINIC, have your route object registered in the AFRINIC IRR
5. Replicate route objects from other IRRs to AFRINIC to avoid being filtered after housekeeping by the other IRRs
6. Inform AFRINIC in case your upstream provider does not accept routes from the AFRINIC IRR, but insists on you using some other IRR.
Recommendations

If you are an upstream provider in the AFRINIC service region:

1. Ensure your filters have been updated after the RIPE changes with source “RIPE-NONAUTH” to allow objects still on RIPE NCC’s IRR

2. Ensure your filters are updated with the AFRINIC IRR

3. Encourage adoption of AFRINIC IRR by your customers to ensure reliable routing information.
How to use the AFRINIC IRR

➢ Tools

- Whois web client – [https://whois.afrinic.net](https://whois.afrinic.net) (can be used for updates as well as queries)
- Email client – mail to auto-dbml@afrinic.net

➢ Documentation

- [https://www.afrinic.net/en/services/afrinic-irr](https://www.afrinic.net/en/services/afrinic-irr)
- Email irr@afrinic.net for help
Current AFRINIC IRR Business Rules

- At this moment, the route(6) object creation are possible for the following scenario:
  - Both ASN and IPv4/IPv6 prefix(es) are issued to your organisation
    - Authentication for IPv6/IPv6 and ASN in route(6) object is required
  - IPv4/IPv6 is issued to one ORG and ASN to another ORG.
    - Both ASN and IPv4/IPv6 prefixes are registered in AFRINIC WHOIS
      - Dual Authentication of IPv6/IPv6 & ASN holders is required
  - **Dual Authentication** means the same object needs to be submitted to the database twice, with different passwords from the two organisations
Current AFRINIC IRR Business Rules

- **Out Of Region (OOR) ASN** (ASN not registered in AFRINIC WHOIS but registered as delegated in other RIRs whois db)
  - Currently Supported: OOR ASN Registered under member’s org details in another RIR’s whois db.
    
    Manual Hostmaster intervention is required
    
    Hostmasters create the route object after validation.
  
- Not supported: OOR ASN not delegated to member as per organisation details
New AFRINIC IRR Business Rules

- As from 27th Sept 2018, the route(6) object creation are possible as follows:
  - route(6) objects will no longer need to be authenticated by the ASN holder
  - They will still need to be authenticated by the IPv4 or IPv6 address holder
  - IPv4 or IPv6 must be from the AFRINIC service region
    - Only authentication required against IP prefix’s maintainer
    - Regardless of where the ASN is domiciled or who is the holder of the ASN
    - No hostmaster intervention required for route(6) creation where the ASN is not issued by AFRINIC
Be heard, Be Engaged, Get Help!

The AFRINIC Database Working Group is an open mailing list available for knowledge sharing and for proposing new ideas/solutions. Feel free to contribute your ideas on this list.

Subscribe to our DBWG via https://lists.afrinic.net/ then “dbwg”

See the IRR web page at https://afrinic.net/en/services/afrinic-IRR, and the comprehensive guide linked from that page.

For any further help, contact irr@afrinic.net
Thank you for your Attention

Questions?

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