AFRINIC Internet Routing Registry

Alan Barrett
CEO AFRINIC

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Introduction

- AFRINIC IRR
- How AFRINIC IRR functions
- Comparison between AFRINIC and RIPE NCC IRR
- RIPE NCC Announcement
- Analysis of impact on AFRINIC membership
- Communication to Membership
- Proposal for future IRR enhancements

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 downtimes** 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

AFRINIC IRR Roadmap June 2013 - June 2018

June 2013: Deployment of AFRINIC IRR

2013 to 2018:

Various AFRINIC initiatives to increase IRR adoption and member education on how to to use the AFRINIC IRR (bootcamps, documentation on website, tutorials during outreach, assistance during face to face consultations, migration tool)

Enhancements to Business Rules in **May 2016,** to address some issues experienced by the AFRINIC membership
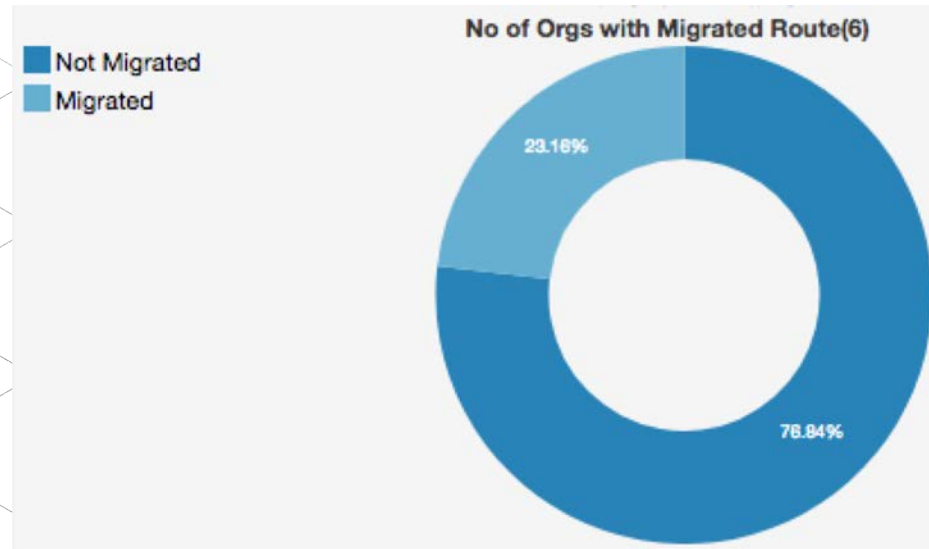
Adopted of the AFRINIC IRR

23% of AFRINIC members (277) adopted the IRR @30 June 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.

No of Orgs with Migrated Route(6)

- Not Migrated
- Migrated

23.16%

76.84%

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

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**

# AFRINIC Internet Routing Registry

- **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

AFRINIC Routing Registry Overview
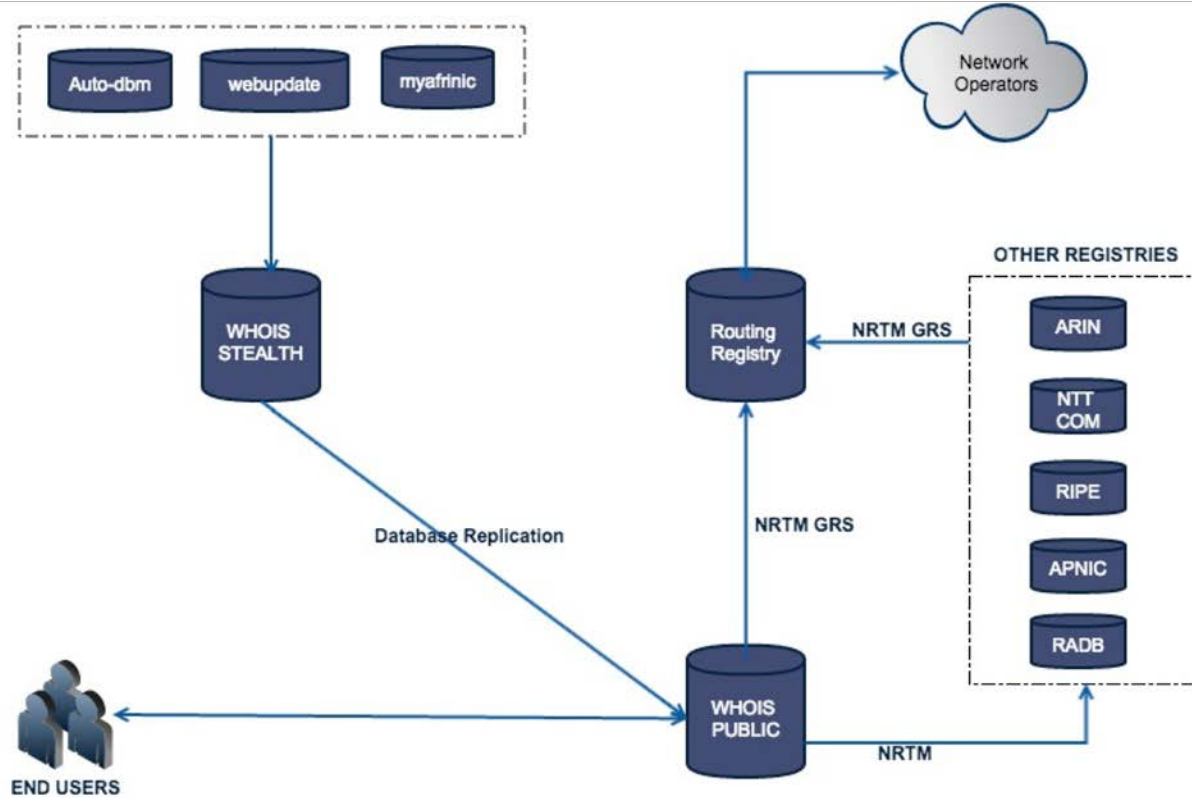
AFRINIC IRR and RIPE IRR NCC similarities

- RPSL
- Same object attributes
- Authentication against maintainers
- Mirrored
- Use WHOIS web-client
- Use Email updates

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)
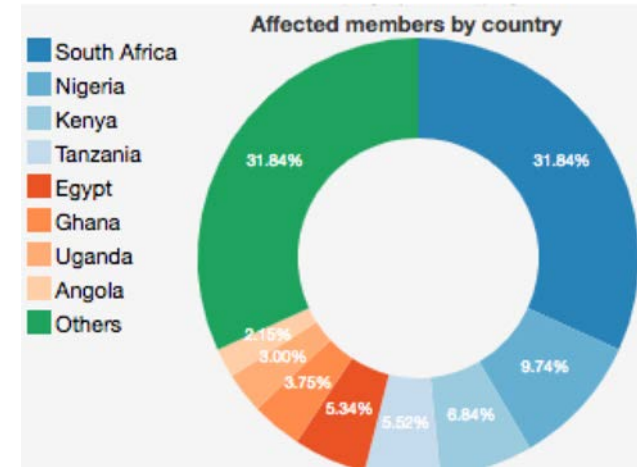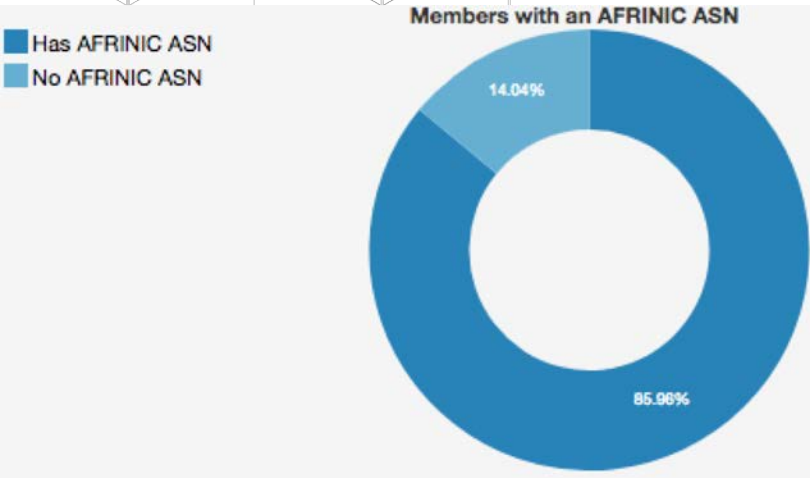
RIPE NCC Announcements

- 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

Statistics: Total RIPE NCC Route(6) for AFRINIC prefixes

48,594 route objects for AFRINIC prefixes exist on RIPE NCC
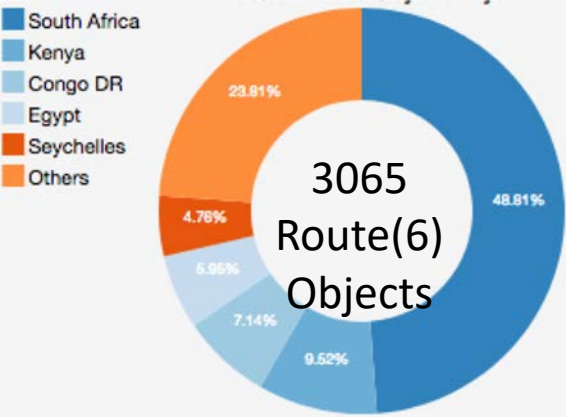
Created by 1,068 AFRINIC Resource Holders

Members with an AFRINIC ASN

Has AFRINIC ASN
No AFRINIC ASN

14.04%
85.96%

Affected members by country

South Africa
Nigeria
Kenya
Tanzania
Egypt
Ghana
Uganda
Angola
Others

31.84%
31.84%
9.74%
6.84%
5.52%
5.34%
3.75%
8.00%
2.15%

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

Statistics: Route(6) created in 2018 on RIPE NCC

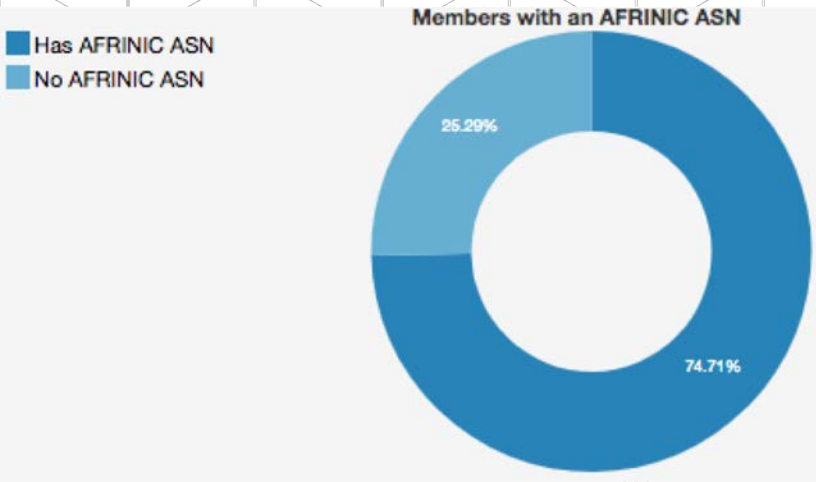**3065** Route objects created by **84** AFRINIC Resource Holder

Of which **2456** Route objects(with OOR ASN) were created by **26** AFRINIC Resource Holders

Only **8** out of these **26** AFRINIC Resource Holders do not hold an ASN from AFRINIC
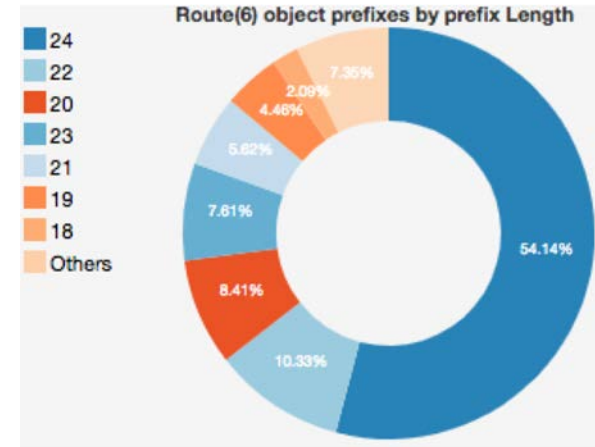

Legend:
- South Africa
- Kenya
- Congo DR
- Egypt
- Seychelles
- Others

3065 Route(6) Objects

- 48.81%
- 23.81%
- 9.52%
- 7.14%
- 5.95%
- 4.76%

Statistics relevant to South Africa

Members with Route(6) on RIPE NCC IRR: 340

Members with an AFRINIC ASN
- Has AFRINIC ASN
- No AFRINIC ASN

25.29%

74.71%

41 South African members created a Route(6) object on RIPE NCC DB in 2018

Route(6) object prefixes by prefix Length
- 24
- 22
- 20
- 23
- 21
- 19
- 18
- Others

7.35%
2.09%
4.46%
5.82%
7.61%
8.41%
10.33%
54.14%

Recommendations

AFRINIC recommends that:

1. Contact details are updated after staff joins in or leave your company
2. Maintainer passwords are kept up to date
3. If you hold resources from AFRINIC, have your route object registered in the AFRINIC IRR
4. Replicate route objects from other IRRs to AFRINIC to avoid being filtered after housekeeping by the other IRRs
5. Inform AFRINIC in case your upstream provider still insist to have the route objects created on other IRRs(such as RIPE NCC & RADB)

How to use the AFRINIC IRR

➢ Tools

● Whois web client – https://whois.afrinic.net

● Email client – mail to auto-dbm@afrinic.net

➢ Documentation

● https://www.afrinic.net/en/services/afrinic-irr/1197-creating-route-object

● https://www.afrinic.net/en/services/afrinic-irr

Communication to Membership

4th July 2018: General Announcement was sent by AFRINIC for the upcoming changes on RIPE NCC

Watch our Future communications:

1. Call for comments for changes on the AFRINIC IRR
2. Targeted Communication to affected Resource Members
3. Announcements for changes implemented

Proposed changes to the AFRINIC IRR

We are looking at:

1. Removal of the ASN authentication requirement for ROUTE(6) object creation
2. Removal the dual authentication functionality for ROUTE(6) creation, relates to ASN authentication in (1.) above
3. Publishing all the revamped IRR documentation and FAQs on AFRINIC website
4. Resuming bootcamps with the AFRINIC membership to facilitate their migration

AFRINIC IRR Enhancement Roadmap

Short term

1. AFRINIC internal IRRWG to do impact analysis of changes that can be brought to IRR business rules to cater for the membership impacted(whose route objects in RIPE NCC now and cannot be migrated to AFRINIC IRR)
2. Call for comments from the AFRINIC Community
3. Incorporate feasible changes
4. Announcement to AFRINIC community/members

Medium Term

1. Look at IRR best practices (RPKI, integration in member portal)
2. Increased technical community engagement to drive further enhancements on the AFRINIC IRR
3. Publication of best practice blogs

Long Term

1. Look at IRR best practices (RPKI, integration in member portal)

Be heard, Be Engaged!

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"

For any further help, contact irr@afrinic.net

Thank you for your Attention

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