



Latest Improvements for a Community-Based IRR

February 2024

Thanks for Joining Us Today

- Larry Blunk, Senior Software Developer/Analyst, Merit
- David Dennis, CIO, Merit

About RADb

Internet Routing Registry

The screenshot shows the RADb website interface. The top navigation bar is blue with the RADb logo on the left, a hamburger menu, and the organization name 'Merit Network, Inc. [MAINT-AS237]' on the right. A dark blue sidebar on the left contains a list of navigation items: Welcome, Getting Started, Account, Objects (expanded), as-set (selected), aut-num, filter-set, inet-rr, mintner, peering-set, person, role, route, route6, route-set, rtr-set, and Trunk. The main content area is white and titled 'As-Set'. It has sub-tabs for 'Active' and 'Recommended'. The 'Active As-Set' section features a search bar and a table with two entries: 'AS-MICHNET' and 'AS237:AS-CUSTOMERS', each with 'Edit' and 'Delete' icons. An 'Add New' button is in the top right of this section. The 'Recommended As-Set' section has a 'Home' link and a table with five entries: 'AS10423:AS-CONE', 'AS11206:AS-CONE', 'AS1432:AS-CONE', 'AS19106:AS-CONE', and 'AS20379:AS-CONE', each with a 'Create' icon. A 'Help' section on the right contains a 'Purpose' heading and text explaining that as-set objects allow for grouping Autonomous Systems Numbers (ASNs) with similar properties. It also notes that as-set objects can be referenced across many RADb object types to represent a group of ASNs without the need for an expanded list. A 'Naming' section follows, stating that an as-set object must be named to prevent collisions and that prefixing the name will practically ensure that a name

- RADb.net
- Purpose: *Openly define networking policy in both human- and machine-readable format standards that allows network operators to assert network and autonomous system number usage.*
- Over 3,000 maintainers globally
- Multi-region support
- Proxy registration support
- Mirrors all major IRRs
- High touch live support

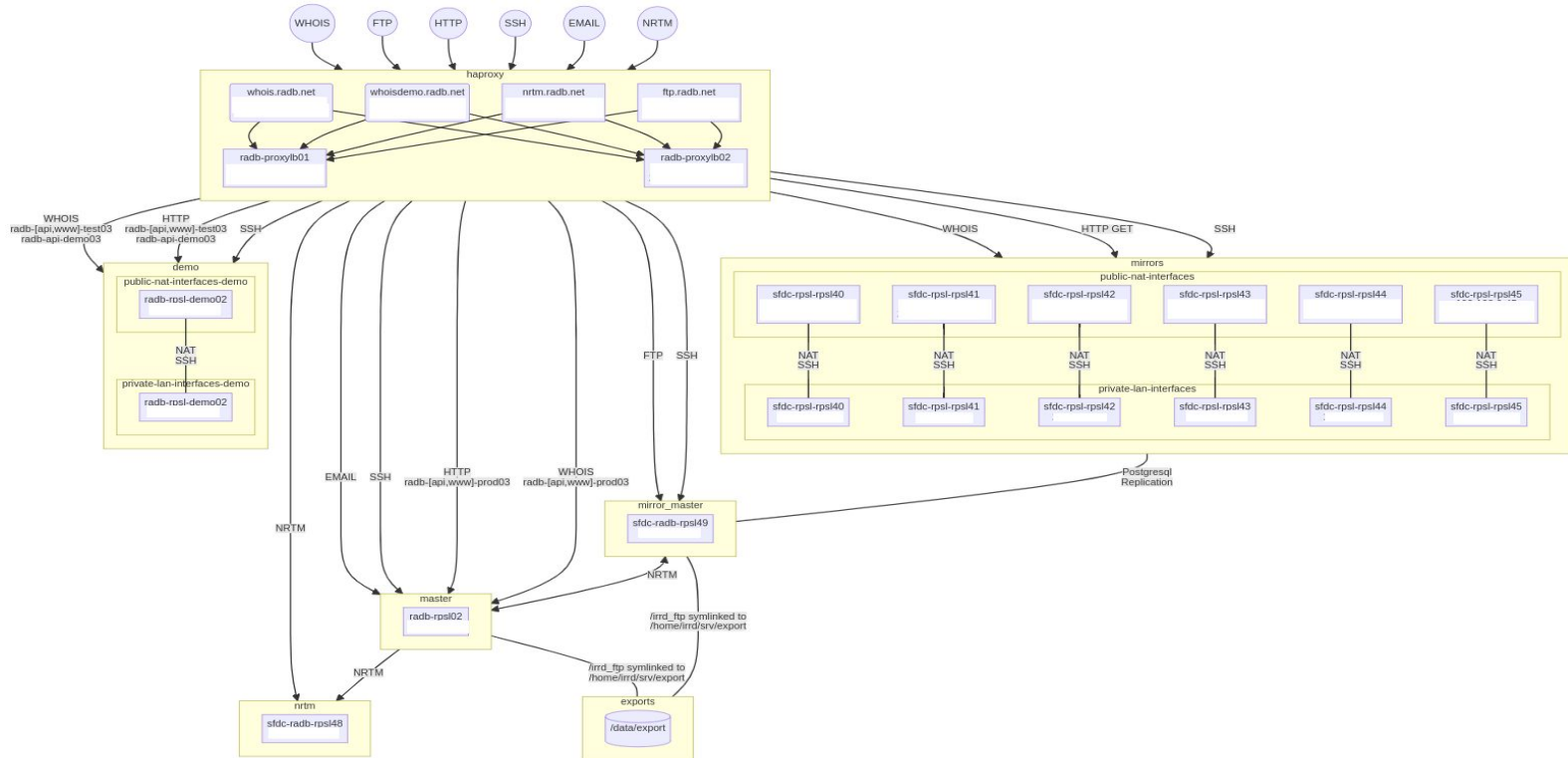
Who Do We Serve? 128 Countries - Top 10:

1. United States (1,821 Customers)
2. Brazil (380)
3. Canada (223)
4. Japan (133)
5. Hong Kong (121)
6. India (102)
7. China (88)
8. Indonesia (54)
9. Australia (47)
10. United Kingdom (39)

RADb IRRd migration

- *Internet Routing Registry Daemon v.4* (previously on v.3)
- Used for validating, cleaning and storing IRR data, object changes, mirroring
- **Migration occurred on November 13, 2023**
- Leveraged existing open source IRRd v4 development
- Improved RADb data quality: **Resource Public Key Infrastructure (RPKI) aligned**
- Prevention of new RPKI-invalid objects from being created in RADb
- Prevention of object creation for invalid prefixes (such as RFC 1918 space)
- Improved extensibility and maintainability

RADb IRRd v4 Architecture (obligatory eye-chart slide)



IRRDv4

RPKI
Badging

Organization: Merit Network, Inc. [MAIN:AS20210]		
+ 74.115.236.0/23		AS237 Edit Delete
+ 74.115.236.0/23		AS46871 Edit Delete
+ 74.115.236.0/22		AS46871 Edit Delete
+ 66.219.112.0/20	RPKI Invalid	AS237 Edit Delete
+ 66.202.224.0/19		AS30154 Edit Delete
+ 66.202.192.0/19		AS30154 Edit Delete
+ 66.202.192.0/18		AS30154 Edit Delete
+ 64.90.128.0/20		AS237 Edit Delete
+ 64.199.25.0/24	RPKI Invalid	AS40684 Edit Delete
+ 64.119.62.0/24		AS46970 Edit Delete
+ 64.119.61.0/24		AS46970 Edit Delete
+ 64.119.54.0/24		AS46970 Edit Delete
+ 64.119.53.0/24		AS46970 Edit Delete
+ 64.119.48.0/24		AS46970 Edit Delete
+ 50.227.122.0/24	RPKI Valid	AS15099 Edit Delete
+ 50.203.3.0/24	RPKI Valid	AS32285 Edit Delete
+ 44.103.48.0/22		AS20210 Edit Delete

RADb Migration Of Note:

- All RADb objects were migrated by Merit staff
- **Any existing RPKI-invalid objects remain in the database (for the present), however are filtered out of all whois queries.**
- Objects with RPKI status of *'not_found'* still allowed and appear in queries.
- Objects with invalid *admin-c/tech-c* will be required to be updated only when a modification is made (including deletions)
- Continuous performance tuning - will appreciate your feedback!

RADB Migration feedback

Early Appreciations from the Community (from NANOG list):

“RADB actively helps safeguard the interests of resource holders: it no longer is possible for adversaries to create IRR route objects which are in conflict with RPKI ROAs... this week's RADB migration certainly moves the needle in a significant way: now all the world's largest IRR mirrors apply RPKI-based filtering! :-)

...to the Merit crew who diligently worked to migrate RADB away from legacy IRRd - I believe we collectively benefit from their efforts.”

RADb Migration Lessons Learned

- Staying on top of technical debt
 - Did not fully anticipate IRRd v4 resource requirements vs. IRRd v3
 - VM refresh had been scheduled, but not in place for migration
 - Fortunately were able to deploy freed resources from other project
- Be careful to read all caveats and technical docs
 - Encountered slow lookup times - linear with numerical IP address values
 - Docs noted that inetnum objects are not indexed in Radix tree
 - Had to disable inetnum lookups for acceptable performance

RADb Resources:

- **whois.radb.net** - IRRd v4 with current RADb objects and live mirroring of other RIRs
- **whoisdemo.radb.net** - IRRd v4 with sample data
- **https://apidemo.radb.net** - demo RADb API
- <https://www.radb.net/support/> > **IRRD v4 Migration FAQ**
- **https://radb.net/contact**

RADb Roadmap:

Next: *Near-term optimizations*

- Simplification of UI / entry forms for object management
- RADb API improvements

default		▼
GET	/{source}/search	🔒
GET	/{source}/validate/asn/{asn}	🔒
POST	/{source}/{class}	🔒
GET	/{source}/{class}/{class_key}	🔒
PUT	/{source}/{class}/{class_key}	🔒
DELETE	/{source}/{class}/{class_key}	🔒
GET	/{source}/route/{cidr_prefix}/{cidr_suffix}/{asn}	🔒
PUT	/{source}/route/{cidr_prefix}/{cidr_suffix}/{asn}	🔒
DELETE	/{source}/route/{cidr_prefix}/{cidr_suffix}/{asn}	🔒
GET	/{source}/route/{cidr_prefix}/{cidr_suffix_asn}	🔒
PUT	/{source}/route/{cidr_prefix}/{cidr_suffix_asn}	🔒

RADb Roadmap:

Next: *Taking care of business*

- Back office system optimization
- Improved invoicing, payment and account management features

RADb Roadmap:

Longer-Term Enhancements: *Extend and improve the platform*

- New RADb portal authentication system
- Refine “stale” object detection and reporting - focus on route mismatches
- Ready-made tools, scripts, or utilities for network engineers
- *What will be the most beneficial for you?*

THANK YOU to the RADb Product Team!

- Chris Scheller
- Brian Foy
- Larry Blunk
- Julie Schneider
- Kevin Campbell
- Matthew Promenchenkel
- Geoff Cost
- The Merit Support Center
- ...many others



Questions & Discussion
radb.net