Operational Update RIPE Database

RIPE NCC Database Team

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The RIPE NCC Database Team

Progress Since RIPE 85

Whois Releases

- Whois 1.105 (December)

  - NWI-19: Change to AS-SET object naming rules (only create hierarchical as-sets)

- Whois 1.106 (February)

  - NWI-19: Implement AS-SET for RIPE-NONAUTH source

  - NWI-12: Initial NRTMv4 implementation (snapshots)

  - RDAP improvements

- Whois 1.106.1 (April)

  - NWI-12: NRTMv4 improvements (deltas and notification file)

  - RDAP improvements

Whois Outages

- From 28-29 December, large Whois mail updates messages were not processed, due to a misconfiguration during a server migration.

- On 23 March, the NRTM service was unreachable between 15:03 - 15:22 (UTC+1) due to a load balancer misconfiguration.

- From 7-10 April, there were intermittent interruptions to the Whois query service due to spikes in RDAP queries.

- Check https://status.ripe.net/ for outages

Whois Features - Statistics

- **2017-02** Regular Abuse-c Validation

  - **93K** abuse-c addresses, **55K** to be validated this year (on track)

- **2018-06** "RPKI" NONAUTH Route(6) Cleanup

  - Deleted **147** route(6) objects since RIPE85

- **"Unregistered Prefix"** NONAUTH Route(6) Cleanup

  - Deleted **77** route(6) objects since RIPE85

- NWI-8 (Synchronise LIR Portal users to Default Maintainer)

  - **1,486** LIR organisations synchronising users (less than RIPE85)

- NWI-9 (Open NRTM Service)

  - **863** distinct client IPs using NRTM in May 2022 (3x more than RIPE85)

Database Cleanups

- NWI-19 "Change to AS-SET object naming rules"

  - Updated **76** AS-SET objects "source:" attribute to "RIPE-NONAUTH"

  - Matches the AUT-NUM "source:"

  - Notified maintainers

- Unlocked Resources

  - Set default maintainer on **438** ASSIGNED PA and **13** LEGACY resources

  - Previously locked due to the <u>deprecation of the NONE authentication scheme</u> in 2004

  - Notified maintainers

Operational Work

- Support greylisted responses in abuse-c email validation

- Protect secrets in deploy pipeline

- Improve password rotation

Web Application

- Making the Web application Open Source

  - Removed identifying data from tests

  - External security review (planned)

RIPE Database Documentation

- Migrating existing documentation to <u>its own website</u>

    - Separate <u>open source repository</u> maintained by DB team

    - Uses Markdown syntax for text; build pipeline to generate & deploy static site

- In Progress

    - Migrating documentation from across the website

    - Redirects in place from previous locations

RDAP

- Redirect RDAP inverse domain queries to authoritative source

- Implement "networks" and "autnums" elements in RDAP entity response

- Don't return as-block for aut-num query (flat model)

- Include description in error responses

- Order elements alphabetically

- Events and notices

Full Text Search API

- Switched Full Text Search engine to Elasticsearch

  - Better availability for API (clustering) and Whois reliability (separate process)

  - Faster development (not tied to Whois releases)

- Improved Full Text Search API

  - Features no longer tied to web application

  - Raised per-request limit from 100 to 10,000 objects

  - Removed 10 page request limit

  - Bug fixes

- Improving Documentation (in progress)

Full Text Search API: Examples

- API endpoint is https://rest.db.ripe.net/fulltextsearch/select

- XML or JSON response

- Query for string in most attributes

  - Example "q=AS3333"

- Limit by object type and attribute

  - Example "q=(import:(AS3333))%20AND%20(object-type:aut-num)"

- Pagination

  - Example "q=(AS3333)&start=10&rows=10"

Numbered Work Items

NWI - Progress Since RIPE85

- NWI-4 "Role of status: field in multivalued status context"

  - Published impact analysis for NWI-4 in December 2022

  - Propose to add new status "ALLOCATED-ASSIGNED PA"

    - Drawback of combined status is that LIR and end user cannot share object

      - Cannot add both LIR and end user organisations to resource

      - LIR and End User cannot co-maintain object

      - **Is this acceptable to the DB-WG?**

  - Alternative is to use a tuple of {inet(6)num, status} attributes as the primary key, similar to route(6)

    - Drawback is clients need to use tuple to query for the correct object

NWI - Progress Since RIPE85

- NWI-10 "Definition of Country"

  - Populated "country:" Attribute for End User Organisations

    - Country code taken from legal address of the organisation

    - For ~20K organisations with resources allocated or assigned by the RIPE NCC

  - Changes synchronised from internal registry

  - Country code is now **editable** in organisations without co-maintained resources

    - Consistent with other attributes

    - What it means is not defined

NWI - Progress Since RIPE85

- NWI-12 "NRTMv4"

  - Contributed to NRTMv4 draft RFC document

  - Server-side implementation in RC environment for testing

    - Available at https://nrtm-rc.db.ripe.net/nrtmv4/

      - RIPE database https://nrtm-rc.db.ripe.net/nrtmv4/RIPE/update-notification-file.json

        - Links to latest snapshot and delta files

  - Not enabled in production yet (not feature complete)

    - Working on signing notifications and key rotation

    - Also CDN setup

  - Upcoming client-side implementation (IRRd)

NWI - Progress Since RIPE85

- NWI-14 "Protecting References to Objects in the RIPE Database"

    - Add "mnt-ref:" as an optional, multiple attribute to mntner, irt, person, role object types

    - Works in same way as for organisation

    - Published Solution Definition and Impact Analysis (May 2023)

    - Implementation in upcoming Whois release

NWI - Progress Since RIPE85

- NWI-19 "Change to AS-SET object naming rules"
  - Do not allow short format AS-SETs to be created (e.g. "AS-SOMETHING")
  - Only hierarchical AS-SETs can be created (e.g. "AS3333:AS-SOMETHING")
    - Authentication with AUT-NUM mntner is required
  - Existing short format AS-SETs are unaffected
  - AS-SETs referencing NONAUTH AUT-NUM have NONAUTH source

Upcoming Changes

Upcoming Changes

- Client Certificate Authentication (HTTPS)

  - Moving TLS from loadbalancer to backend Whois servers

  - Allows us to better support client certificates

- Cleanup "remarks:" Attributes

  - ERX Transfer (2002)

  - References by names (2003)

  - NONE authentication deprecated (2004)

  - "rev-srv:" attribute deprecated (2009)

Upcoming Changes - RDAP Features

- ## RDAP Redacted Fields

    - Identify redacted RDAP response fields (e.g. mntner upd-to:, notify:, mnt-nfy:)

    - RIPE NCC RDAP implementation uses redaction by removal

- ## RDAP RIR Search

    - Can already search for entities (e.g. org-name, person, role) in RDAP

    - This RFC defines cross-RIR compatible syntax for resource search

    - Search for inet(6)num by netname, search for aut-nums by as-name

    - Relation search (e.g. find parent or child) for inet(6)num, aut-num, domain

    - Search by status

Using the Cloud

Why Use the Cloud?

- What are the issues we want to address?

  - Availability

  - Resiliency

  - Security

  - Services (flexibility)

- A cloud architecture will help us deliver a better service

  - Maintain an on-premise environment for failover

Using the Cloud: The Framework

- Recently updated <u>Cloud Strategy Framework</u>, together with the <u>Service Criticality</u> definitions agreed with the community

- External criticality questionnaire and form published in the DB-WG last year. Also determined impact levels on internal areas.

- We use these criticality ratings to help determine our services' architecture

- Final <u>service criticality ratings</u> for RIPE Database

Service	Data Confidentiality	Data Integrity	Data Availability
RIPE Database	High	Very High	**High**

Using the Cloud: **Next Steps**

- Start a Consultation with the Community

  - Create a high-level architecture in the coming weeks

  - Publish on the website with discussion in the DB-WG

- Have a consultation period

  - Address concerns previously raised

  - Refine the architecture based on feedback

- Decide to use cloud or stay on-premise

Questions ?

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