

An RDAP Extension for RPKI Registration Data

SIDR Operations (sidrops) WG

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Motivation

- Registration Data Access Protocol (RDAP) is used by Regional Internet Registries (RIRs) and Domain Name Registries (DNRs) to provide access to their resource registration information
- Resource Public Key Infrastructure (RPKI) enables Internet Number Resource (INR) holders to cryptographically assert about their registered IP addresses and autonomous system numbers to prevent route hijacks and leaks
- Making RPKI registration data available through RDAP could **complement existing RPKI diagnostic tools when troubleshooting** a route hijack or leak
- Beside troubleshooting, it could allow users to **explore the RPKI hierarchy in a human-friendly way**, without interacting with the signed objects directly

What It Is Not

- This extension **MUST NOT** be used to **directly influence internet routing**
- Neither RDAP nor this extension define the necessary security properties or distribution mechanisms required to securely add, remove, or modify internet routes

Salient Features

- Extension identifier: `rpki1`
- Object classes:
 - `rpki1_roa` for Route Origin Authorization (ROA)
 - `rpki1_aspa` for Autonomous System Provider Authorization (ASPA)
 - `rpki_x509_resource_cert` for X.509 Resource Certificate
- Search results:
 - `rpki1_roaSearchResults` for ROA objects
 - `rpki1_aspaSearchResults` for ASPA objects
 - `rpki1_x509ResourceCertSearchResults` for X.509 Resource Certificate objects
- Lookup, search, and reverse search
- Relationship with IP Network, Autonomous System Number, and Entity object classes

Example: Search ASPAs By Provider ASN

<https://example.net/rdap/rpki1/aspas?providerAutnum=65542>

```
{
  "rdapConformance": [ "rdap_level_0", "rpki1", ... ]
  "rpki1_aspaSearchResults": [
    {
      "objectClassName": "rpki1_aspa",
      "handle": "XXXX",
      "name": "ASPA-1",
      "autnum": 65536,
      "providerAutnums": [ 65542, ... ],
      "notValidBefore": "2024-04-27T23:59:59Z",
      "notValidAfter": "2025-04-27T23:59:59Z",
      "publicationUri":
        "rsync://example.net/path/to/XXXX.aspa",
      "notificationUri":
        "https://example.net/path/to/notification.xml",
      "entities": [ ... ],
      "rpkiType": "hosted",
```

```
    "events": [
      {
        "eventAction": "registration",
        "eventDate": "2024-01-01T23:59:59Z"
      }, ... ],
    "links": [
      {
        "value":
          "https://example.net/rdap/rpki1/aspa/XXXX",
        "rel": "related",
        "href":
          "https://example.net/rdap/autnum/65536",
        "type": "application/rdap+json"
      }, ... ],
      ... }, ... ],
    ...
  }
}
```

Draft Status

- Adopted in the Registration Protocols Extensions (regext) WG
- Includes input from some members of the RPKI community
- Requesting further feedback from the RPKI community

References

- Draft: <https://datatracker.ietf.org/doc/draft-ietf-regext-rdap-rpki/>
- GitHub: <https://github.com/jasdips/rdap-rpki>