1. History of Replacing WHOIS protocol
2. gTLD RDAP Profile
3. RDAP Profile Details
4. Open Issues – gTLD RDAP Profile
5. Conclusion and Next Steps
History of Replacing the WHOIS Protocol
Why WHOIS (port-43) should be replaced?

- Non standardized format
Why WHOIS (port-43) should be replaced?

- Not internationalized
Why WHOIS (port-43) should be replaced?

- Unauthenticated
  - Unable to differentiate between users

- Unable to provide differentiated service
  - The same fields are provided to all users

- Insecure
  - No support for an encrypted response

- No bootstrapping mechanism
  - No standardized way of knowing where to query

- Lack of standardized redirection/reference
  - Different workarounds implemented by TLDs
History on Replacing the WHOIS Protocol

- SSAC’s SAC 051 Advisory (19 Sep 2011):
  - The ICANN community should evaluate and adopt a replacement domain name registration data access protocol
- Board resolution adopting SAC 051 (28 October 2011)
- Roadmap to implement SAC 051 (4 June 2012)
- Registration Data Access Protocol (RDAP) community development within IETF working group started in 2012
- Contractual provisions in: .biz, .com, .info, .name, .org, 2012 Registry Agreement (new gTLDs), and 2013 Registrar Accreditation Agreement
History on Replacing the WHOIS Protocol

- RDAP Request for Comments (RFCs) published in March 2015
- First draft of the gTLD RDAP profile shared for discussion with the community in September 2015.
Why do we need an RDAP profile?

RDAP RFCs:
• SHOULDs, MAYs, MUSTs
• Do not specify required elements

ICANN gTLD policies

RDDS provisions in the RA, RAA 2013, Whois advisory

gTLD RDAP profile

Clear Requirements

gTLD RDAP service
How the transition looks like

<table>
<thead>
<tr>
<th>Present</th>
<th>Short term</th>
<th>Future</th>
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<tbody>
<tr>
<td>RDDS</td>
<td>RDDS</td>
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<td>Web-based RDDS</td>
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<tr>
<td>WHOIS (port-43)</td>
<td>WHOIS (port-43)</td>
<td>RDAP</td>
</tr>
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</table>
Implementation Timeline

- **ICANN 54**: RDAP Operational Profile shared with contracted parties for input
- **ICANN 55 (A)**: Public Comments
- **ICANN 56 (B)**: Legal Notices
- **ICANN 57 (C)**: Implementation of RDAP by Registries and Registrars
- **ICANN 58 (A)**: EPP statuses and Registrar exp. date / last RDAP database update I-Ds published as RFC
- **ICANN 59 (B)**: Boolean search capabilities I-D published as an RFC
- **ICANN 60 (C)**: Final stages of RDAP implementation

Timeline:
- **2015**: Start of RDAP Operational Profile
- **2016**: Implementation of RDAP by Registries and Registrars
- **2017**: Final stages of RDAP implementation
Transition open questions

- How long after RDAP deployment before turning off (port-43) WHOIS?

- Should the requirement to offer web-based (HTML) RDDS remain after the transition to RDAP?
  - R. Yes
Registration Data Directory Services refers to the collective of: WHOIS (port 43), Web-based RDDS and RDAP (after the implementation of the RDAP service).

Through the RAA and RA, all references to Registration Data Directory Services (RDDS) apply to the following services: WHOIS (port 43), Web-based RDDS and RDAP.
Main work items for Registries/Registrars

- **HTTPS:**
  - Connections received on WHOIS (port-43) will be received in RDAP at some point.
  - RDAP connections will be done over HTTPS, therefore the load of WHOIS (port-43) will migrate to HTTPS.

- **DNSSEC:**
  - The resource records related to the RDAP service MUST be properly signed with DNSSEC.
Main work items for Registries / Registrars

- Registrar’s RDAP base URL
  - The RDAP domain name response must contain the URL of the RDAP service of the Registrar for the queried domain name.
  - Registries will need to collect the RDAP base URL from every Registrar.
Monitoring:

- The gTLD monitoring system will monitor RDAP.
- The emergency contacts may receive alerts for RDAP.
- Registries and registrars should modify their internal procedures to handle alerts regarding RDAP.
Main work items for Registries

- Monthly reports:
  - The following rows are added to the Registry Functions Activity Report:

    - rdap-queries
    - rdap-rate-limit
    - rdap-redirects
    - rdap-authenticated
    - rdap-search-domain
    - rdap-search-entity
    - rdap-truncated-authorization
    - rdap-truncated-load
    - rdap-truncated-unexplainable
RDAP Profile - details
RDAP extensions

- RDAP extensions must be registered in the IANA Registry.
  - Deployment of RDAP extensions in gTLD Registries operated under agreement with ICANN, are subject to approval by ICANN via the RSEP process.
Registries offering searchable Whois service (e.g., per exhibit A of their RA) MUST support RDAP search requests for domains and entities.
The source data used to generate the RDAP responses MUST be the same across all RDDS services (i.e. port-43 WHOIS, web-based RDDS and RDAP).
Transport requirements

- RDAP must be supported over IPv4 and IPv6.

- The RDAP service must be available over HTTPS only.
Internationalized Domain Name (IDN) RDAP lookup must be supported.

Variant names must be included in the domain response.
Thick Whois policy

- The RDAP profile allows to include reseller information.
- The RDAP profile requires to include in the RDAP response, the link to the “Whois Inaccuracy Complaint Form”.
- The RDAP profile requires to include in the RDAP response, the registrar abuse contact details.
- The RDAP profile requires to include the “Registrar Registration Expiration Date”.
Name server attributes

- The existence of a name server used as an attribute for an allocated domain name is equivalent to the existence of a host object.

- The nameserver object MUST NOT contain the following members: events, handle and status.
Differentiated access

- An RDAP response may contain redacted registrant, administrative, technical and/or other contact information in accordance with the appropriate Registry Agreement.
The base URL of RDAP services MUST be registered in the IANA's Bootstrap Service registry for Domain Name Space.

A IANA's Bootstrap registry for Domain Name Space entry MUST be populated after the RDAP service is available over both IPv4 and IPv6.
Responses by Registrars

- A Registrar is REQUIRED to respond with information regarding domain names for which the Registrar is the Sponsoring Registrar.

- A Registrar MUST return a 404 response when the Registrar is not the Sponsoring Registrar for the domain name.
Open issues – gTLD RDAP Profile
Open issues – gTLD RDAP Profile

1. Status Codes for Domains
2. Last update of RDAP database
3. Boolean Search Capabilities
4. Multiple host objects for the same name server name
5. Registrar expiration date
Status Codes for Domains

- The current Whois provisions require the use of EPP domain statuses codes in responses.
- Not all the EPP domain statuses codes are defined as RDAP values in the base RFCs.

Possible solution:
- There is an Internet Draft that addresses this issue.
The base RDAP specification does not define an element to map the "Last update of WHOIS database" RDDS field.

Possible solution:

- There is an Internet Draft that addresses this issue.
Boolean Search Capabilities

- Searchable Whois requires a set of logical operators for search criteria (AND, OR, NOT operators) that are not supported in the base RDAP specifications.

Possible solution:

- The RDAP specifications would need to be extended to support this requirement.
Multiple host objects – one name

- The base RDAP specification does not support the existence of multiple host objects for the same name server name.

Possible solution:
- Use a link member with a rel:collection.
Registrar expiration date

- RDAP does not include an event to specify the registrar registration expiration date as described in the RAA 2013.

Possible solution:
- There is an Internet Draft that addresses this issue.
Conclusion and Next Steps
Conclusion and Next Steps

- The RDAP Profile is necessary for gTLD registry and registrar operators to adhere to existing policies and contractual terms.

- A few issues (5) have been identified around underspecified topics in RFCs.

- Open question on when to retire (port-43) WHOIS.
Engage with ICANN

Thank You and Questions
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