



# gTLD RDAP Profile

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# Limitations of (port-43) WHOIS

- Unformatted
- Not internationalized
- Unauthenticated
- Insecure
- Unable to provide differentiated service
- Non-extensible
- No bootstrapping mechanism
- Lack of standardized redirection/  
reference

# 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 .com, .name, .biz, .info, .org, 2012 Registry Agreement (new gTLDs) and 2013 Registrar Accreditation Agreement
- RDAP Request for Comments (RFCs) published in March 2015

# Open Questions

- How long after RDAP deployment to turn off (port-43) WHOIS?
- Should the requirement to offer web-based (HTML) RDDS remain?
- **How to map current RDDS (WHOIS) policy and contractual requirements in RDAP?**



gTLD RDAP Profile

# Need for an RDAP Profile

- Why do we need an RDAP profile?
  - RFC must, should, etc...
  - RDAP RFCs are transport protocols
    - Do not specify which elements are required
    - What are the details of the elements, etc.
- Evolution from WHOIS to RDAP
- Mapping the WHOIS ICANN requirements (RA, RAA, Advisories) to the new protocol using RDAP features, including updating terminology (RDDS = WHOIS, web + RDAP)



# RDAP Profile

# RDAP Protocol Compliance

- gTLD (registry and registrar) implementations **MUST** be compliant with RFCs 7480, 7481, 7482, 7483, and 7484
- **MUST** support HTTPS only
- RDAP extensions, if used, **MUST** be registered in the IANA RDAP Extensions registry
- RDAP services **MUST** be available over both IPv4 and IPv6 transport
- RDAP servers **SHOULD** avoid inserting JSON members that are not part of a registered extension



# Responses to RDAP Queries

- IDN RDAP queries **MUST** be supported if the target TLD supports IDNs
- A Registrar/Registry that does not possess the information for a particular query, but knows a party that may have more information, **MUST** redirect the request to the appropriate party, as described in RFC7480 section 5.2

# Responses to Domain Name RDAP Queries

- The top-level "domain" object MUST contain the a-label form of the domain in the "ldhName" member
- The top-level "domain" object MUST contain the internationalized Domain Name in u-label form in the "unicodeName" member, if the domain name is an IDN
- The top-level domain object MUST contain a list of all current domain statuses in the "status" member. The status MUST be valid status types per IANA's RDAP JSON Values registry
- Contact entities SHOULD use jCard structured addresses

# Searches

- Registries offering searchable WHOIS service, **MUST** support RDAP search requests for domains and entities
- Entities **MUST** be searchable by name search pattern as defined in RFC7482 section 3.2.3 in order to allow for searches by contact name or address
- Binary search capabilities (AND, OR) **MUST** be supported, when a RFC defining this capability is available

# Registry Functions Activity Report Additions

Field #	Field Name	Description
40	rdap-queries	Number of RDAP queries during the period.
41	rdap-rate-limit	Number of RDAP queries refused due to rate limiting for the period.
42	rdap-redirects	Number of HTTP redirects for the period.
42	rdap-authenticated	Number of authenticated RDAP queries for the period.
43	rdap-search-domain	Number of RDAP domain search queries for the period.
44	rdap-search-entity	Number of RDAP entity search queries for the period.
45	rdap-truncated-auth	Number of RDAP responses truncated due to authorization. Includes both results and object truncation events.
46	rdap-truncated-load	Number of RDAP responses truncated due to server load. Includes both results and object truncation events.
47	rdap-truncated-unexpl	Number of RDAP responses truncated due to unexplainable reasons. Includes both results and object truncation events.

# SLA and Monitoring (SPEC10)

- RDAP will be another mechanism for accessing RDDS information.
- For a period of time: whois/43, whois/http, and RDAP must be working to consider the service to be up.
- After a transition period, whois/http? and RDAP must be working to consider the service to be up.



# Bootstrapping Requirements

- The base URL of RDAP services **MUST** be registered in the IANA Bootstrap Service Registry for Domain Name Space, as described in RFC7484. A separate entry is required for each TLD
- When the RDAP service base URL needs to be changed, the previous URL and the new one **MUST** remain in operation until the IANA Bootstrap Registry for Domain Name Space is updated
- The bootstrap service entry **MUST** be populated only once the RDAP service is available over both IPv4 and IPv6

# Nameserver RDAP Queries

- The Server Name **MUST** be specified in the IdhName
- All known glue record IPv4 and IPv6 addresses for the server **MUST** be listed in the ipAddresses member
- The unicodeName member **MAY** be present if the nameserver has an IDN name
- The returned object **MUST** contain an entity with the “registrar” role when registry supports host objects

# Registrar Responses to Domain Name Queries

- The returned domain name object **MUST** contain registrar entities with the “abuse” roles
- The returned domain name object **MAY** contain an entity with the “reseller” role

# Other Registry Agreement provisions

- Nameserver object search is optional, but searches for nameserver information by nameserver IP address is required to be supported.
- Registries offering WHOIS contact lookups, **MUST** support analogous functionality using entities

# Remaining issues



# Remaining Issues

- Extensible Provisioning Protocol (EPP) status codes not fully mapped into RDAP status codes
  - Draft-gould-epp-rdap-status-mapping suggests to add RDAP codes to have a full mapping
- Lookup by IANA Registrar ID is not defined in base RDAP RFCs
  - To be updated
- Logical operators for search criteria (AND, OR, NOT) are not defined in base RDAP RFCs
  - To be updated
- How to provide Registrar RDAP base URL in the initial Registry RDAP response?
  - To be determined

# Conclusion and Next Steps

- RDAP Profile necessary for gTLD registry and registrar operators to adhere to existing policies and contractual terms
- A few issues have been identified around underspecified topics in RFCs
- Open question on when to retire WHOIS and whether to keep web-based (HTML) requirement
- Question on how to provide reference to registrar data
- RDAP Profile to be posted for Community Review

## ● Questions and Answers