



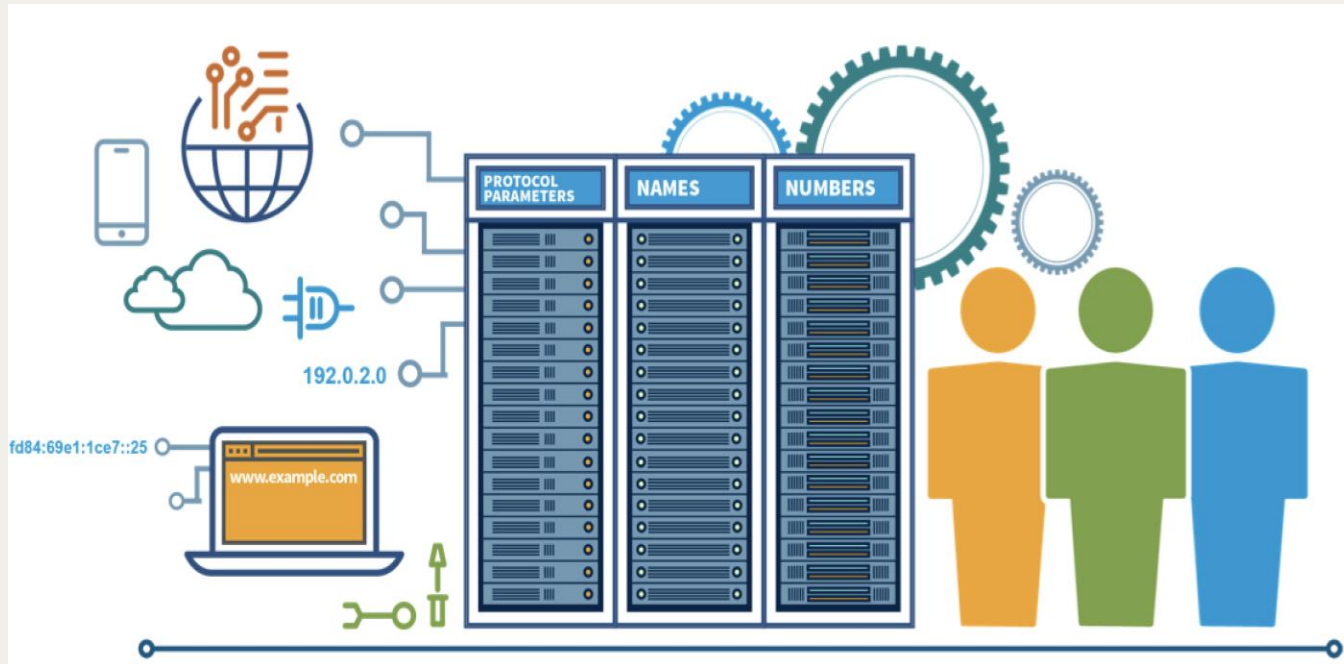
# Registry Data Access Protocol (RDAP)

Ulrich Wisser, Technical Engagement Manager Europe

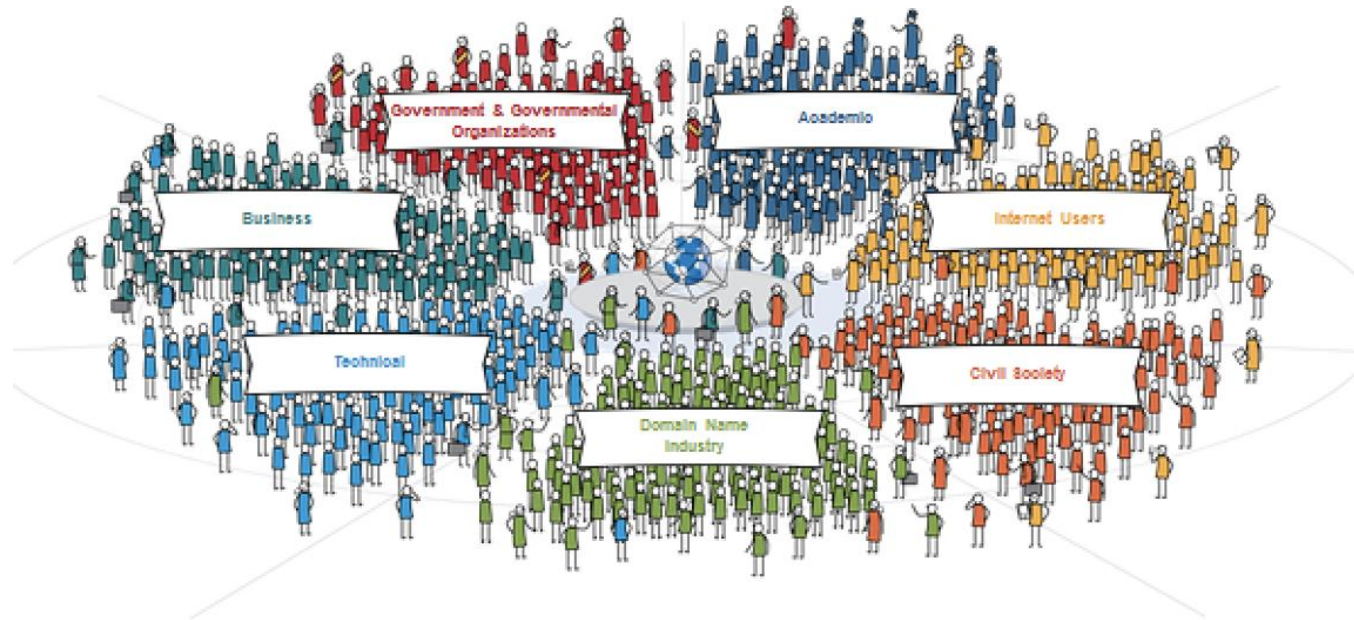
November 2025

**I**nternet  
**C**orporation for  
**A**ssigned  
**N**ames and  
**N**umbers





# Multistakeholder model



# Introduction: Accessing Registration Data

To identify **who** is responsible for a given *Internet identifier* (e.g., domain names, IP addresses) the WHOIS protocol was developed in 1982

WHOIS protocol developed for ARPANET users

With the growth of the Internet, WHOIS users included others: law enforcement agencies, Intellectual Property and trademark owners, businesses, consumers.

History of WHOIS: <https://whois.icann.org/en/history-whois>



# Introduction: From WHOIS to RDAP

Why did we need another registration data access protocol?

WHOIS suffers from several issues

No standardized output format

No internationalization

No authentication

No security

No clear method for finding authoritative services

Around 2011, RIPE NCC & ARIN developed *incompatible* RESTful services for WHOIS (rWHOIS, WHOIS++, IRIS, WEIRDS)

In 2015, the IETF standardized RDAP (RFCs 7480, 7481, 7482, 7483, 7484, 7485 and 8056)

In 2017, RySG and RrSG advised to speed up implementation

# Introduction: From WHOIS to RDAP

From August 2019, ICANN requires that generic top-level domain (gTLD) registries and ICANN-accredited registrars must implement an RDAP service.

Learn more about RDAP timeline at: <https://www.icann.org/resources/pages/rdap-background-2018-08-31-en>

January 2025 Whois became optional for gTLD's



# What are the benefits of RDAP?

Main benefits in contrast to WHOIS:

- *Standardized* responses: HTTP-based REST-style protocol specificized in JSON
- Offers secure access to data when used over HTTPS
- Is fully extensible (easy to add query and output elements)
- Support for *internationalization*: response data objects can be translated into any language (including language with non ASCII characters)
- *Bootstrapping* mechanism to easily find the authoritative server for a given query
- Standardized *redirection*/reference mechanism
  - From a registry to a registrar
  - From an RIR to another or an NIR to an RIR
- Possible to define *access rights for* different groups



# More than IPv4 Addresses and Domain Names

## RDAP is useful for other unique identifiers

RDAP can be used to lookup **Autonomous System Numbers** (“AS numbers” or “ASNs”)

Very useful if you are performing attribution on a range of IP addresses where you cannot get useful contact detail. ASNs allow you to move upstream to find the ISPs being paid to route the traffic.

Subpoena power here is very useful.

RDAP works just as well for **IPv6 addresses**

Unlike in IPv4, no practical difference between public vs. private IP addresses (not in a lot of real-world implementations)

Can probably treat most addresses as public IP addresses

# RDAP Can be Automated

But RDAP's raw output is JSON, meaning it can be scripted

There are many command line tools available for scripts to use so that attribution can be **automated**.

NicInfo

OpenRDAP

... and others

# RDAP In Action

# LOOKUP.ICANN.ORG

[العربية](#) [简体中文](#) [English](#) [Français](#) [Русский](#) [Español](#)

ICANN | LOOKUP

## Registration data lookup tool

Enter a domain name or an Internet number resource (IP Network or ASN) [Frequently Asked Questions \(FAQ\)](#)

Lookup

By submitting any personal data, I acknowledge and agree that the personal data submitted by me will be processed in accordance with the ICANN [Privacy Policy](#), and agree to abide by the website [Terms of Service](#) and the [registration data lookup tool Terms of Use](#).

## About ICANN's registration data lookup tool

The ICANN registration data lookup tool gives you the ability to look up the current registration data for domain names and Internet number resources. The tool uses the Registration Data Access Protocol (RDAP) which was created as a replacement of the WHOIS (port 43) protocol. RDAP was developed by the technical community in the [Internet Engineering Task Force \(IETF\)](#).

RDAP has several advantages over the WHOIS protocol, including more secure access to data, a standardized and user-friendly format, support for internationalization, and the ability to provide differentiated access to registration data. More information can be found [here](#).

# LOOKUP.ICANN.ORG

## Domain Information

**Name:** icann.org

**Registry Domain ID:** D2347548-LROR

**Domain Status:**

[clientDeleteProhibited](#)

[clientRenewProhibited](#)

[clientTransferProhibited](#)

[clientUpdateProhibited](#)

[serverDeleteProhibited](#)

[serverRenewProhibited](#)

[serverTransferProhibited](#)

[serverUpdateProhibited](#)

**Nameservers:**

ns.icann.org: 199.4.138.53, 2001:500:89::53

a.icann-servers.net

b.icann-servers.net

c.icann-servers.net

## Dates

**Registry Expiration:** 2027-12-07 17:04:26 UTC

**Updated:** 2020-09-24 16:37:31 UTC

**Created:** 1998-09-14 04:00:00 UTC

# The RDAP CLI

### Domain icann.org

Summary	Domain icann.org <ul style="list-style-type: none"><li>• Registrant</li><li>• 299 (Registrar)<ul style="list-style-type: none"><li>• b75f0932183049c78ee7ff3c76e102fd-LROR (Abuse)</li></ul></li><li>• Nameserver ns.icann.org</li><li>• Nameserver a.icann-servers.net</li><li>• Nameserver b.icann-servers.net</li><li>• Nameserver c.icann-servers.net</li></ul>
Identifiers	
LDH Name	icann.org
Unicode Name	icann.org
Handle	*REDACTED*
IANA Registrar ID	299
Information	
Status	<ul style="list-style-type: none"><li>• Server Delete Prohibited</li><li>• Client Transfer Prohibited</li><li>• Server Transfer Prohibited</li><li>• Server Update Prohibited</li></ul>
Whois	



```

ulrich.wisser@ULWI-9588 labinstances % rdap icann.org | jq .
2025-09-16T08:08:05.070101Z INFO rdap: ICANN RDAP 0.0.22 Command Line Interface
2025-09-16T08:08:05.070134Z INFO rdap: query type is Domain Lookup for value 'icann.org'
2025-09-16T08:08:05.073988Z INFO rdap::query: Querying domain name from registrar.
{
  "rdapConformance": [
    "rdap_level_0",
    "icann_rdap_response_profile_1",
    "icann_rdap_technical_implementation_guide_1",
    "redacted"
  ],
  "notices": [
    {
      "title": "Terms of Service",
      "description": [
        "Public Interest Registry provides this RDAP service for informational purposes only, a
        taining information about or related to a domain name registration record. Public Interest Regis
        s accuracy. Users accessing the Public Interest Registry RDAP service agree to use the data only
        under no circumstances may this data be used to: a) allow, enable, or otherwise support the tra
        phone, or facsimile of mass unsolicited, commercial advertising or solicitations to entities oth
        wn existing customers and b) enable high volume, automated, electronic processes that send queri
        of Public Interest Registry or any ICANN-accredited registrar, except as reasonably necessary t
        r modify existing registrations. When using the Public Interest Registry RDAP service, please co
        RDAP service is not a replacement for standard EPP commands to the SRS service. RDAP is not cor
        registered domain objects. The RDAP service may be scheduled for downtime during production or
        Queries to the RDAP services are throttled. If too many queries are received from a single IP a
        time, the service will begin to reject further queries for a period of time to prevent disrupti
        . Abuse of the RDAP system through data mining is mitigated by detecting and limiting bulk query
        es. Where applicable, the presence of a [Non-Public Data] tag indicates that such data is not ma
      ]
    }
  ]
}

```

```
% rdap icann.org |  
  jq '.entities[] |  
    select(.roles[]? == "registrar") |  
    .vcardArray[1][] |  
    select(.[0] == "fn") |  
    .[3]'  
"CSC Corporate Domains, Inc."  
"CSC Corporate Domains, Inc."
```

# RDAP Deployment

# WHOIS Sunset

WHOIS no longer required for most gTLDs as of 28 January 2025.

74 gTLDs dropped WHOIS in February.

(according to ICANN reachability scan)

As of September:

374 gTLDs do not have available WHOIS.

(according to the TLD RDAP Monitor)

139 gTLDs do not have reachable WHOIS

(according to ICANN reachability scan)

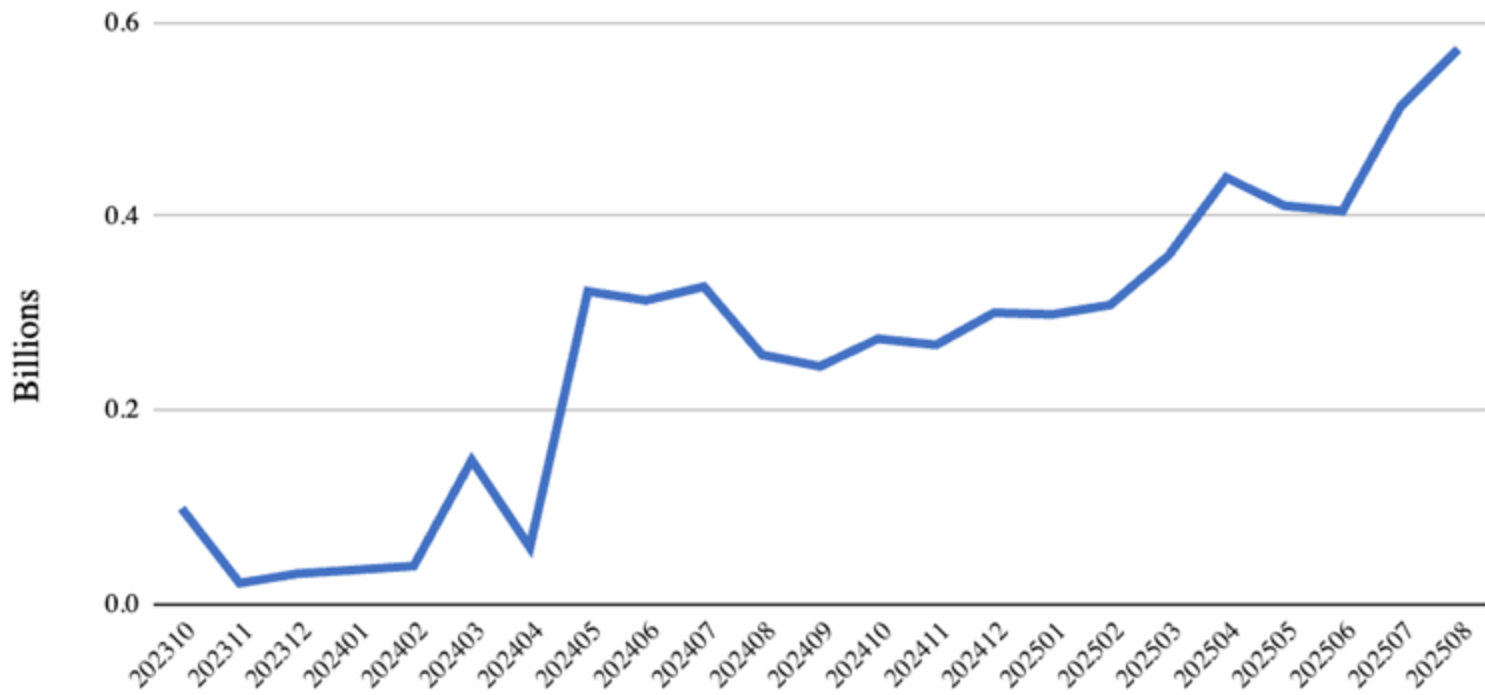
# gTLD WHOIS Query Numbers

WHOIS Queries Last 2 Years



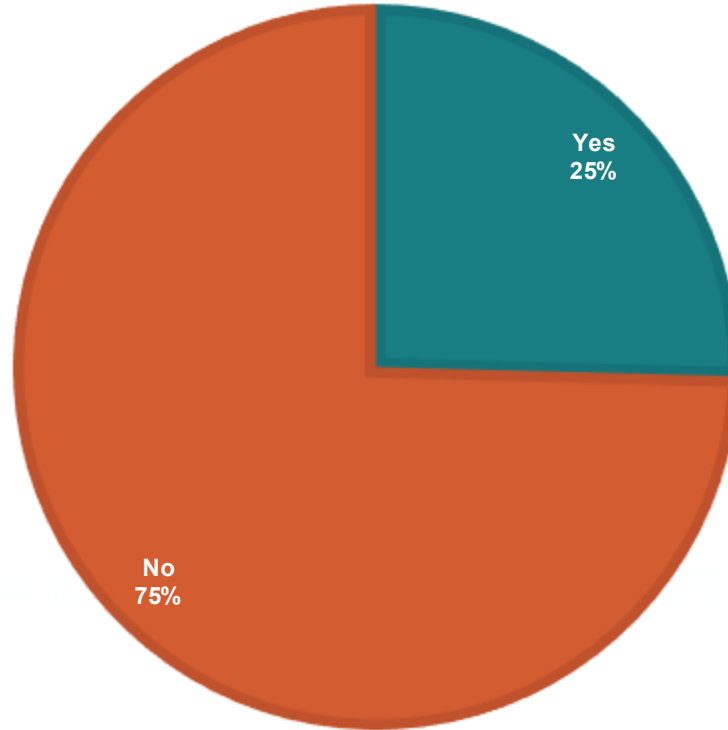
# gTLD RDAP Query Numbers

RDAP Queries Last 2 Years



# Deployment: [deployment.rdap.org](https://deployment.rdap.org)

CCTLD'S WITH RDAP





# Deployment: [rdap.wxapros.com](https://rdap.wxapros.com)



## RDAP Overview

**1,440**

TOTAL TLDS

**78%**

COVERAGE

**1,194**

RDAP READY

**22**

STEALTH FOUND

Monitoring of 1440 top-level domains across RDAP and WHOIS protocols. 84.5% service reliability with 1009 working endpoints. Plus 22 stealth RDAP servers discovered.

# Client Software: [rdap.rcode3.com](https://rdap.rcode3.com)

Type	How Many
Online Web Clients	9
Web Client Software	4
Mobile Clients	3
CLI Clients	10
Client Libraries	21
Total	47

# Server Software: [rdap.rcode3.com](https://rdap.rcode3.com)

Type	How Many
Authoritative Servers	11
Redirect Servers	6
Conformance Tools	5

# What's to Come...

## RDAP RIR Search

- Closes the functionality gap between RDAP and WHOIS for the RIRs.
- Already approved by the IETF (in the RFC Editor's queue).
- Deployed by ARIN. Other RIRs soon to follow.

## RDAP RPKI

- Information on RPKI via RDAP.
- `draft-ietf-regext-rdap-rpki`

## JSContact

- Moves RDAP beyond vCard/jCard.
- Becomes even more interesting if RPP uses JSContact.



# ICANN Webpage and Social Media Links



[icann.org](https://icann.org)



[@icann](https://twitter.com/icann)



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