

ICANN 72
VIRTUAL ANNUAL GENERAL



RDAP Conformance Tool

ICANN 72 - TechDay

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ICANN org's RDAP Conformance tool

- A stand-alone, open-source tool to verify that an RDAP server implements the specifications developed by the IETF and optionally, the [gTLD RDAP profile](#).
 - Free.
 - Developed in Java 11.
 - Command line.
 - Flexible configuration to enable/disable specific checks as needed.

	Test groups	Tests
RDAP Standards/RFCs	27	212
gTLD RDAP Profile 2019	11	74

Conformance tests

- Tests are the atomic unit of processing of the tool
- Identified with a “code”, “value” and “message”
- Aggregated in test groups

Example:

Test group

7.2.1. RDAP Conformance validation [stdRdapConformanceValidation]

The following steps should be used to test that an *RDAP Conformance* data structure is valid:

1. The *RDAP Conformance* data structure must be a syntactically valid JSON array.

```
{  
  "code": -10500, } Test identifier (Error code)  
  "value": "<rdapConformance structure>",  
  "message": "The RDAP Conformance structure is not syntactically valid."  
}
```

2. ...

Supported RDAP query types

1

Domain lookup

../domain/<domain name>

2

Entity lookup

../entity/<handle>

3

Nameserver lookup

../nameserver/<nameserver name>

4

Nameserver search

../nameservers?ip=<nameserver search pattern>

5

Help query

../help

Tool workflow



User Input

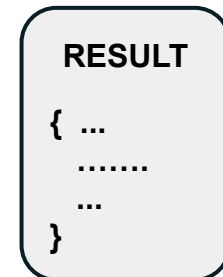
- Configuration file
- Execution parameters
- RDAP URI

RDAP CONFORMANCE TOOL

- Retrieve public datasets from IANA
- Perform RDAP query(ies)
- Verify response against RDAP standards (RFC 7480-7484, 8605, 9082, 9083)
- Optionally gTLD RDAP profile

Output

- Results file



User input

- **Configuration definition file**
 - Specify which single tests are considered to be:
 - Error (default)
 - Warning
 - Ignored (not tested)
- **Execution parameters**
 - Use gTLD RDAP profile 2019
 - As gTLD Registry
 - As gTLD Registrar
 - Verify as “thin” Registry
 - Use locally persisted datasets
 - Connection timeout
- **RDAP URI**
 - The full RDAP URI to verify

Results file

- JSON formatted text file, includes:
 - Tested URI
 - Tested date
 - Received HTTP status code
 - Test groups that passed
 - Test groups that had errors or warnings
 - Results
 - Each test triggering an error or warning is listed in an array of JSON objects that contain failing test identifier:
 - **code**: a JSON number containing the test identifier.
 - **value**: a JSON string where the issue was found.
 - **message**: a JSON string explaining the issue.
 - **notes**: a JSON string containing the notes defined in the configuration definition file.

Sample output

```
{
  "testedDate": "2021-09-22T07:30:27.561327Z",
  "groupOK": [
    "stdRdapDomainLookupValidation",
    "domainNameValidation",
    ...
  ],
  "definitionIdentifier": "My custom configuration for checking RDAP",
  "groupErrorWarning": [
    "stdRdapEventsValidation"
  ],
  "results": {
    "warning": [],
    "ignore": [],
    "error": [
      {
        "code": -10901,
        "notes": "",
        "message": "The name in the name/value pair is not of: eventAction,
                    eventActor, eventDate, links.",
        "value": "#/nameservers/0/events/0/extra:I do not belong here"
      }
    ]
  },
  "testedURI": "https://rdap.example/domain/domain.example",
  "receivedHttpStatusCode": 200
}
```

"groupOK" lists check groups without issues

Each non-conformant issue is added as an "error" object

Commonly found issues

Seen on TLD servers published in the [IANA bootstrap file for DNS registrations](#).

- Vcard array syntax issues in entity objects:
 - Use of invalid JSON names
 - Missing required elements (e.g. “fn”)
 - Invalid value syntax (e.g. invalid URI)
- Use of values not registered in the [RDAP JSON values](#) IANA registry.
For example:
 - type
 - status
 - eventAction
- Incorrect capitalization used in JSON names.

Commonly found issues

- rdapConformance includes extensions not registered in the [RDAP Extensions](#) IANA registry.
- Invalid “remarks”/“notices” array (e.g. missing elements).
- Missing HTTP header (Access-Control-Allow-Origin).
- “links” type does not correspond to a registered mediaType.
- Unrecognized elements included in dsData element.

Future work

- Publish open source tool
- Additional development:
 - Support for JSContact ([draft-ietf-jmap-jscontact](#))
 - Support future versions of the gTLD RDAP Profile
 - Evaluating incorporating other RDAP extensions and RFC updates



Thank You and Questions

Comments and questions are welcome at our public mailing list:

 gtld-tech@icann.org