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Verisign's RDAP Pilot Implementations

ICANN 63

21 October 2018

Agenda

- Verisign Pilot Implementation History
- Verisign Pilot Implementation Features
- Verisign Implementation and Query Observations

Verisign Pilot Implementation History

RDAP Pilot Implementation History

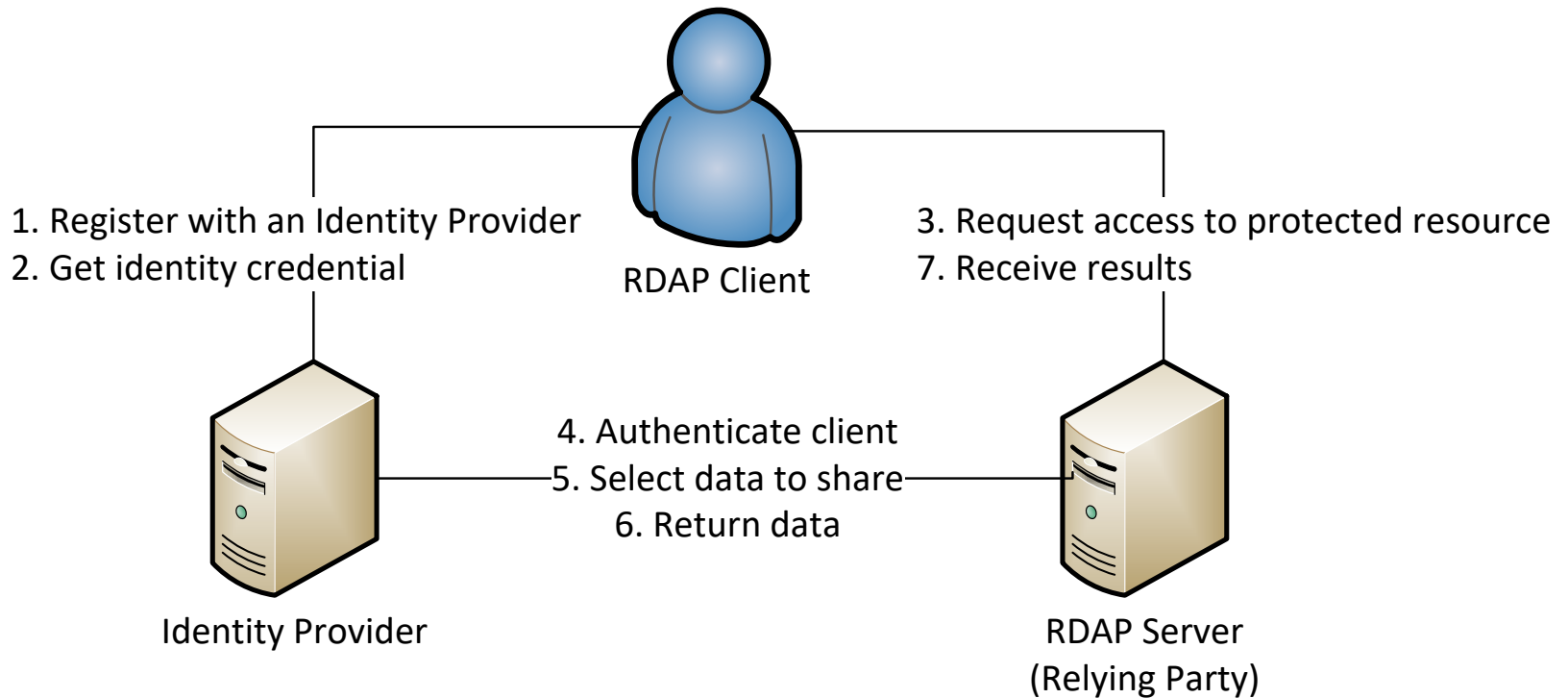
- Launched web client and server implementation for .cc and .tv ccTLDs in November 12, 2015
- Launched web client and server implementation for .com and .net gTLDs on October 5, 2017
 - Part of ICANN's RDAP gTLD pilot program
 - “Thin” TLDs
- Launched web client and server implementation for .career gTLD on March 5, 2018
 - “Thick” TLD
- Each includes support for some number of experimental RDAP features

Verisign Pilot Implementation Features

Experimental Feature: Federated Authentication

- Similar to the “single sign-on” concept
- A means of identifying and authenticating entities based on mutual trust between members of a common community, or federation
- Credentials are issued to clients by identity providers
- Credentials are presented by clients to server operators (relying parties)
- Credentials are sent from server to identity provider for validation
- Client selects information to be shared with server
- If all is well – access granted!
- <https://datatracker.ietf.org/doc/draft-hollenbeck-regext-rdap-openid/>

Federated Authentication: How it Works



Federated Authentication: Software We're Using

- OpenID Connect
 - <https://developers.google.com/identity/protocols/OpenIDConnect>
 - Apache License 2.0
- OpenID Connect Identity Provider
 - <https://www.gluu.org/>
 - MIT License
- Other Providers
 - <http://openid.net/developers/libraries/>
 - Many languages supported with FREE software!

Experimental Feature: Object Tagging

- Core RDAP doesn't support entity query bootstrapping
- Practice of tagging entity handles with an operator-specific suffix such as “-VRSN”
 - Suffixes are registered with IANA
 - Adds structure that supports entity query bootstrapping
- <https://datatracker.ietf.org/doc/draft-ietf-regext-rdap-object-tag/>

Experimental Feature: Regular Expression Search

- Core RDAP has limited search capability
 - Simple asterisk-based pattern matching of trailing characters, e.g. “example*” or “example.*”
- Extends RDAP search capabilities using POSIX regular expression syntax
 - Supported by many operating systems and databases
- <https://datatracker.ietf.org/doc/draft-fregly-regex-rdap-search-regex/>

RDAP Pilot for .cc and .tv (Features)

- Data set: “thin” ccTLD
- Core RDAP
 - Domain, name server, and entity lookup
 - Domain, name server, and entity search
- Experimental RDAP
 - Entity object tagging
 - Regular expression search
 - Federated client identification, authentication, and authorization

RDAP Pilot for ccTLDs (Web Interface)

<https://rdap.verisignlabs.com/rdap/v1/>



Search Options:

Lookup ▼

Domain ▼

.cc .tv

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RDAP Pilot for .com and .net (Features)

- Data set: “thin” gTLD
- Core RDAP
 - Domain, name server, and entity lookup
 - Domain, name server, and entity search
- Experimental RDAP
 - Entity object tagging
 - Federated client identification, authentication, and authorization

RDAP Pilot for .career (Features)

- Data set: “thick” gTLD
- Core RDAP
 - Domain, name server, and entity lookup
 - Domain, name server, and entity search
- Experimental RDAP
 - Entity object tagging
 - Federated client identification, authentication, and authorization

RDAP Pilot for gTLDs (Web Interface)

<https://rdap-pilot.verisignlabs.com/rdap/v1/>



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Registration Data Access Protocol (RDAP) Pilot

Search Options:

Lookup ▼

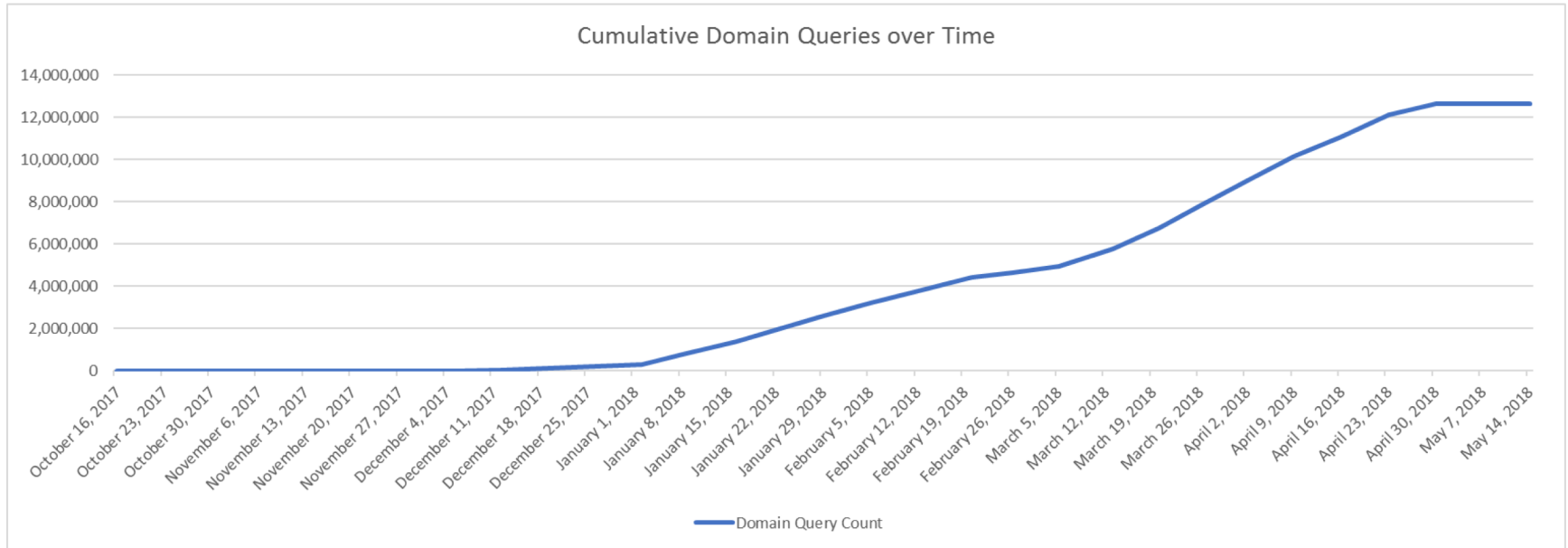
Domain ▼

.com .net .career

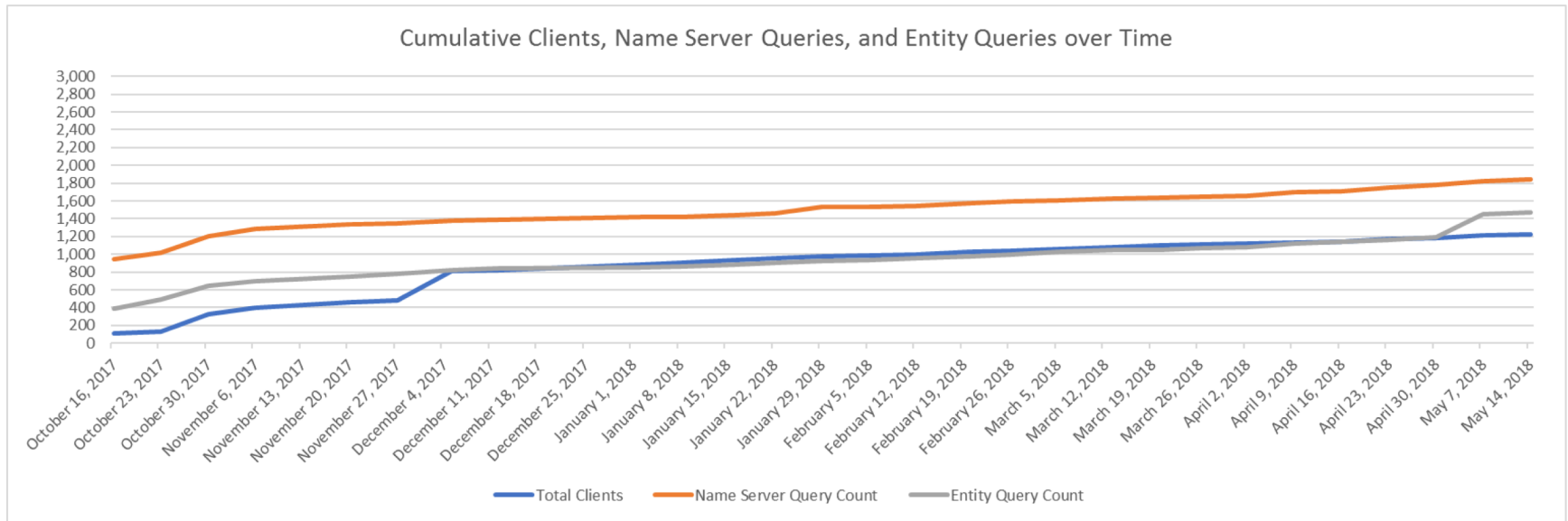
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Verisign Implementation and Query Observations

gTLD Domain Queries



Clients, Name Server, and Entity Queries



Observations

- Protocol test suites help ensure implementation correctness
 - Viagénie: contact support@viagenie.ca
 - <https://github.com/APNIC-net/rdap-conformance>
- Clients, name server queries, and entity queries have increased slowly over time
- Domain name queries experienced a rapid increase in early January and ended in early May
 - One university client was a steady customer
- Experimental features work well and help fill gaps in the core RDAP specifications

To Do

- Release open source demonstrator for the OAuth device flow
 - Needed for UI-limited interfaces, such as command line clients
- Registrar integration
 - “Thin” registries can appear “thick” with registrar support for RDAP

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