

RDAP

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Background



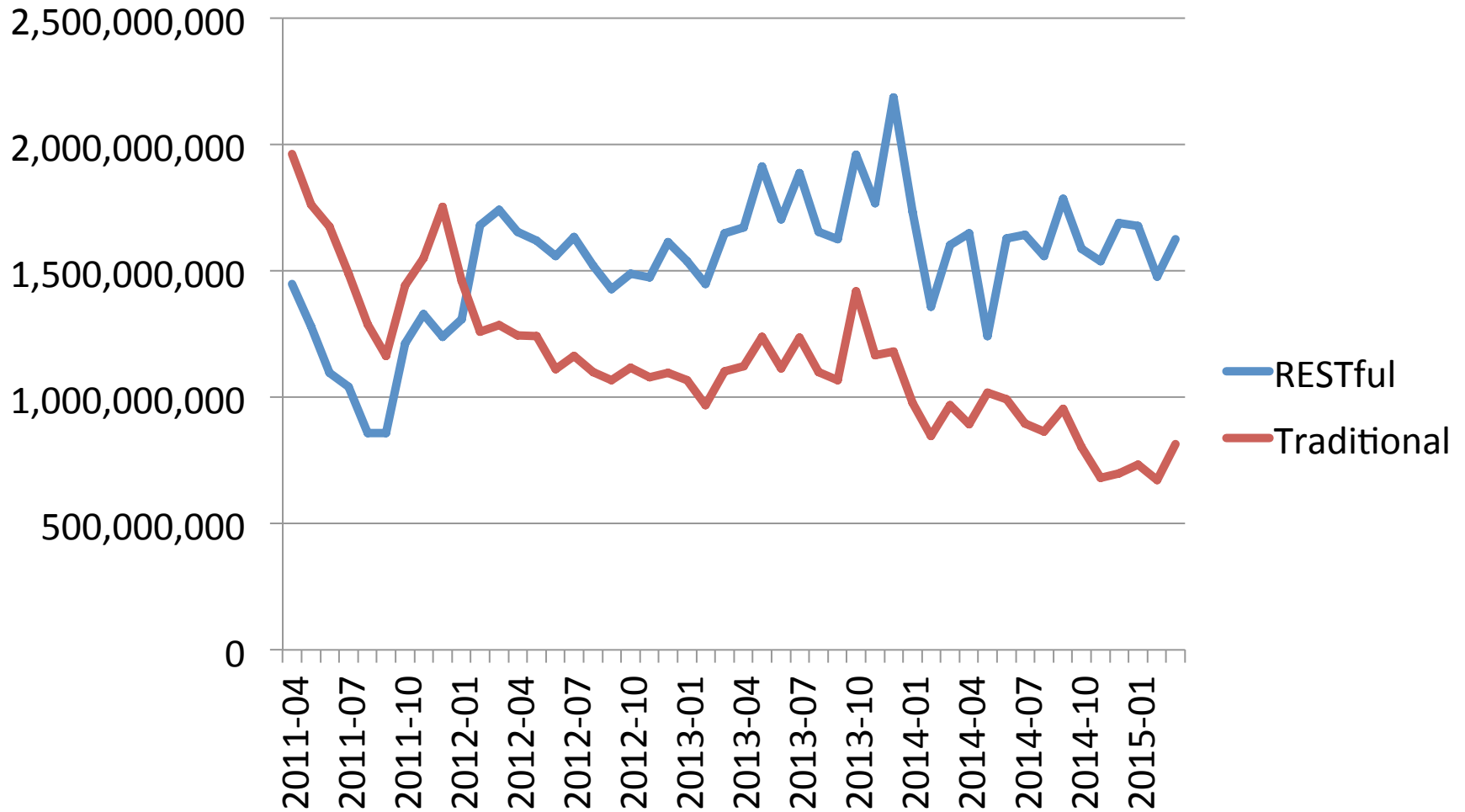
- WHOIS (Port 43)
 - **Old, very old**
 - **Lot's of problems**
 - Under specified, no I18N, insecure, no authentication, etc...

RIRs Begin To Play with RESTful Whois Services



- ARIN
 - **Pilot in October 2009**
 - Flash and AJAX apps written against it by unknown parties
 - **Full Production as of July 2010**
- RIPE NCC
 - **Announced their RESTful proxy to Whois March 2010**
 - **Now in production**

RESTful Whois Becomes Quite Popular



ICANN / IETF Take Notice



- IETF 81 (July 2011) – Bar-BOF
- IETF 82 (November 2011) – Official BOF
- IETF 83 (March 2012) – WG Formed
- IETF 92 (March 2015) – RFCs Published

Registration Data Access Protocol (RDAP)



- Long, fancy, official-sounding name for a simple idea:
 - ***All the RIRs will now have a common query interface***
 - **Also will be used by many domain registries**

IETF Standard



- Published March 25, 2015
 - **RFC 7480 – Usage of HTTP by RDAP**
 - **RFC 7481 – Security Considerations**
 - **RFC 7482 – Query Format**
 - **RFC 7483 – JSON Responses**
 - **RFC 7484 – Bootstrapping**

RDAP vs Whois-RWS



- Both are RESTful Web Services
- Data formats
 - **Whois-RWS is based on XML, though it has translations into JSON, XHTML, and plain text**
 - **RDAP is only JSON**
- Complexity
 - **Whois-RWS does more, but it is more complex too**
- Universality
 - **Whois-RWS is specific to ARIN, whereas RDAP is supported by all RIRs**

Examples

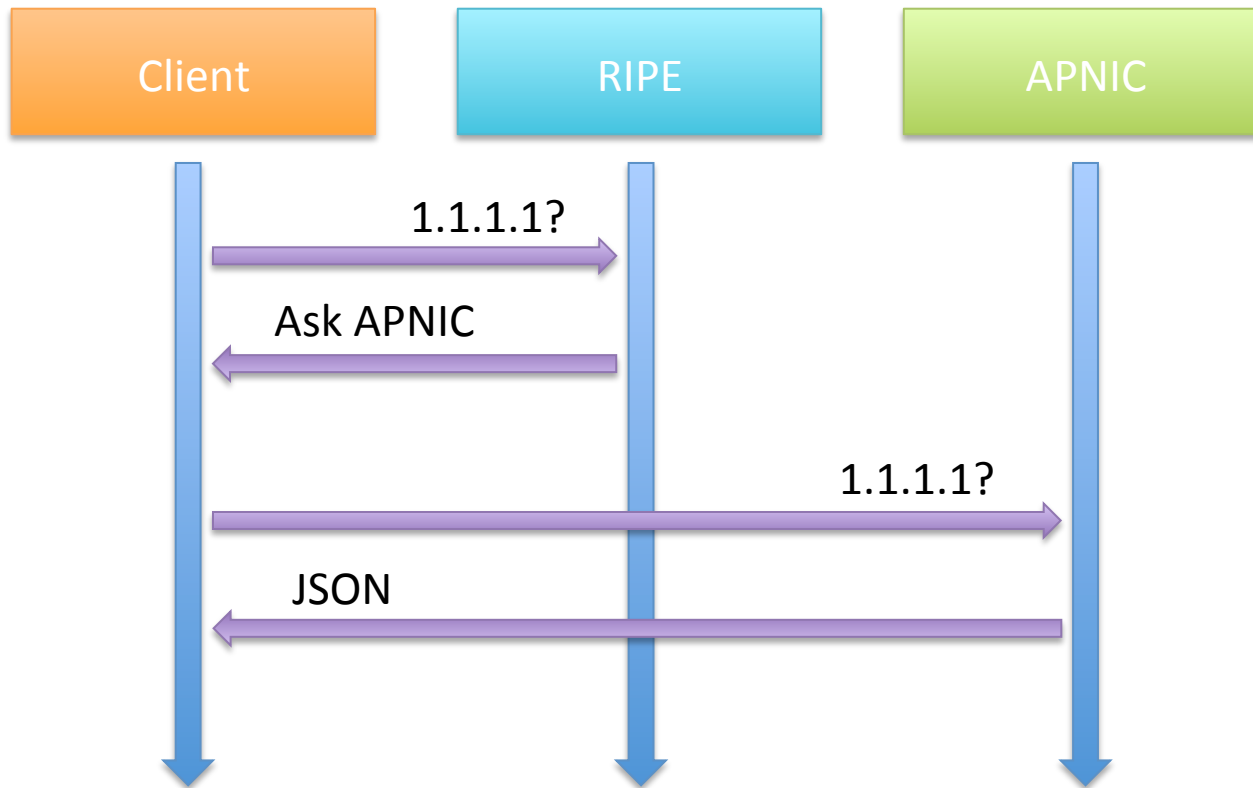


<http://rdap.apnic.net/ip/1.1.1.1>

<http://rdap.db.ripe.net/ip/1.1.1.1>

[9](http://rdappilot.arin.net/restfulwhois/rdap/<u>ip/1.1.1.1</u></p></div><div data-bbox=)

1.1.1.1



1.1.1.1 - JSON



```
"startAddress" : "1.1.1.0",
"endAddress" : "1.1.1.255",
"ipVersion" : "v4",
"name" : "APNIC-LABS",
"type" : "ASSIGNED PORTABLE",
"country" : "AU",
"parentHandle" : "1.0.0.0 - 1.255.255.255",
"objectClassName" : "ip network",
"entities" : [ {
  "handle" : "AR302-AP",
  "vcardArray" : [ "vcard", [ [ "version", { }, "text", "4.0" ], [ "fn", { }, "text", "APNIC RESEARCH" ], [ "kind",
{ }, "text", "group" ], [ "adr", {
  "label" : "PO Box 3646\\nSouth Brisbane, QLD 4101\\nAustralia"
}, "text", [ "", "", "", "", "", "", "" ] ], [ "tel", {
  "type" : "voice"
}, "text", "+61-7-3858-3188" ], [ "tel", {
  "type" : "fax"
}, "text", "+61-7-3858-3199" ], [ "email", { }, "text", "research@apnic.net" ] ] ],
"roles" : [ "technical", "administrative" ],
"objectClassName" : "entity",
"remarks" : [ {
  "title" : "remarks",
  "description" : [ "+++++", "+ Address blocks listed with this contact", "+ are withheld from
general use and are", "+ only routed briefly for passive testing.", "+", "+ If you are receiving unwanted traffic",
"+ it is almost certainly spoofed source", "+ or hijacked address usage.", "+", "+ http://en.wikipedia.org
/wiki/IP_address_spoofing", "+ http://en.wikipedia.org/wiki/Regional_internet_registry", "+", "+++++" ]
} ],
"links" : [ {
  "value" : "http://rdap.apnic.net/ip/1.1.1.0/24",
  "rel" : "self",
  "href" : "http://rdap.apnic.net/entity/AR302-AP",
  "type" : "application/rdap+json"
} ]
}, {
  "handle" : "IRT-APNICRANDNET-AU",
  "vcardArray" : [ "vcard", [ [ "version", { }, "text", "4.0" ], [ "fn", { }, "text", "IRT-APNICRANDNET-AU" ], [
"kind", { }, "text", "group" ], [ "email", {

```

1.1.1.1 - NicInfo



```
[ NOTICE ] Terms and Conditions
1 This is the APNIC WHOIS Database query service. The objects are in RDAP format.
TOS http://www.apnic.net/db/dbcopyright.html
```

```
[ RESPONSE DATA ]
```

```
1= 1.1.1.0 - 1.1.1.255
```

```
|— 1= APNIC RESEARCH ( AR302-AP )
`— 2= IRT-APNICRANDNET-AU ( IRT-APNICRANDNET-AU )
```

```
[ IP NETWORK ]
```

```
Handle: 1.1.1.0 - 1.1.1.255
Start Address: 1.1.1.0
End Address: 1.1.1.255
IP Version: v4
Country: AU
Type: ASSIGNED PORTABLE
Last Changed: Mon, 12 May 2014 04:16:03 -0000
Remarks: — description —
1: Research prefix for APNIC Labs
2: APNIC
```

```
[ ENTITY ]
```

```
Handle: AR302-AP
Name: APNIC RESEARCH
Email: research@apnic.net
Phone: +61-7-3858-3188 ( voice )
Phone: +61-7-3858-3199 ( fax )
Roles: Administrative, Technical
Excessive Remarks: Use "-v" or "-data extra" to see them.
```

```
[ ENTITY ]
```

```
Handle: IRT-APNICRANDNET-AU
```

1.1.1.1 - Web



Terms and Conditions

1.1.1.0 - 1.1.1.255

- AR302-AP
- IRT-APNICRANDNET-AU

| IP Network | | 1.1.1.0 - 1.1.1.255 |
|---------------|--|---|
| Handle | | 1.1.1.0 - 1.1.1.255 |
| Port 43 Whois | | whois.apnic.net |
| Start Address | | 1.1.1.0 |
| End Address | | 1.1.1.255 |
| Name | | APNIC-LABS |
| Type | | ASSIGNED PORTABLE |
| Parent Handle | | 1.0.0.0 - 1.255.255.255 |
| IP Version | | v4 |
| Country | | AU |
| Last Changed | | Mon, 12 May 2014 04:16:03 GMT (Mon May 12 2014 local time) |
| Up | | http://rdap.apnic.net/ip/1.0.0.0/8 |
| Self | | http://rdap.apnic.net/ip/1.1.1.0/24 |
| Remarks | | Research prefix for APNIC Labs APNIC |

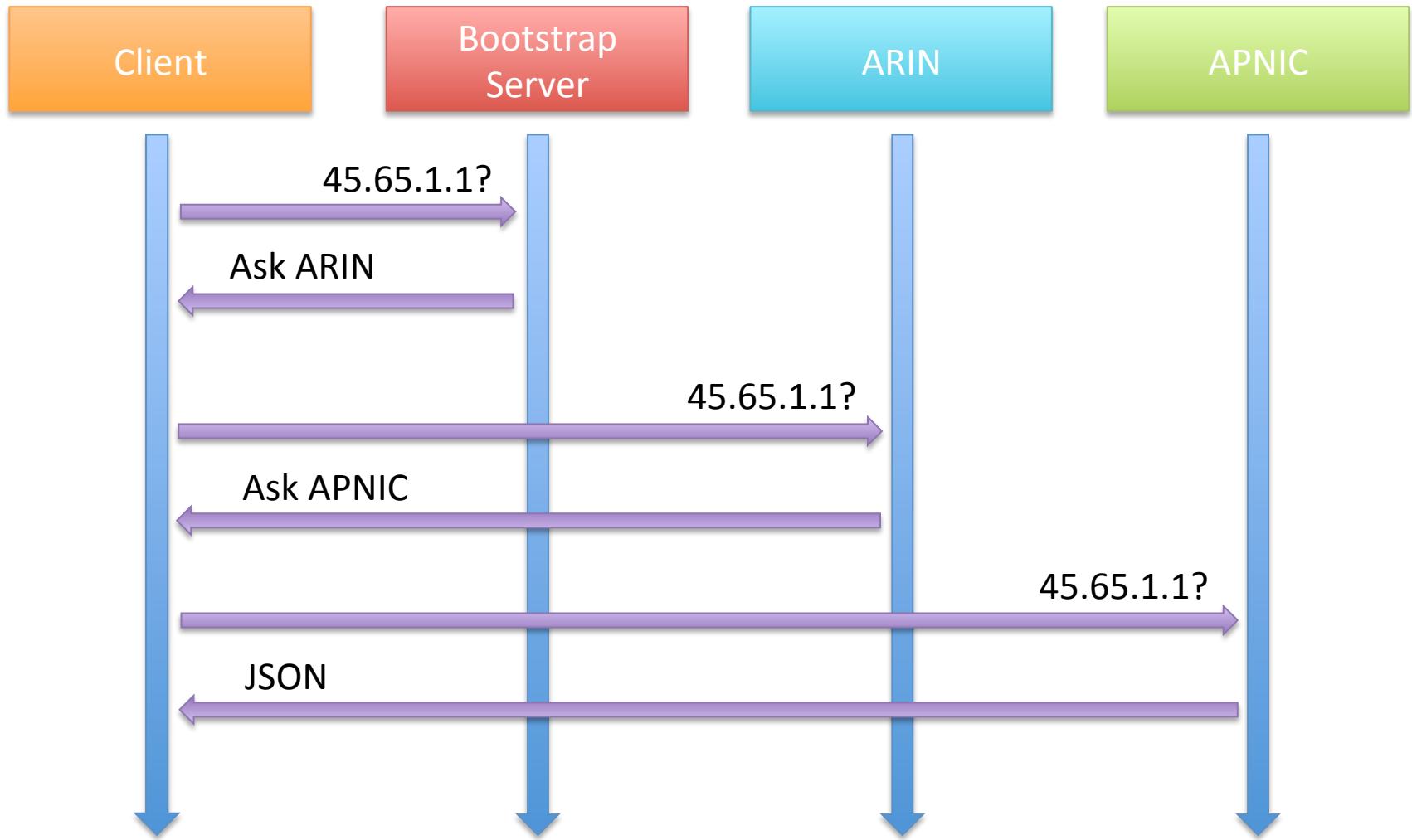
Protocol Information

Bootstrapping (RFC 7484)



- IANA will publish a set of JSON files containing IP Address, Autonomous System Number, and Domain Name allocations with URLs to authoritative servers.
 - **Clients will be able to pre-determine where to initiate queries.**

Bootstrapping In the Real World



Bootstrap Servers



- Help clients, especially clients running in a constrained environment such as a web browser
- Can be more helpful than the official IANA bootstrap files
 - **Formulating Reverse DNS redirects**
 - **Synthesizing Nameserver redirects**
 - **Educated guesses regarding authoritative servers for Entities**

Tiered Access and Authentication



- RDAP is built on HTTP(S)
- Thus enabling tiered access and many authentication schemes, such as federated authentication
- Policy implications
 - **Policies can now be geared toward different levels of visibility of Whois data and centralization of approving access credentials.**

Status



- IANA is still working on the bootstrap registry, but should have it figured out soonish
- All 5 RIRs have pilot RDAP servers
 - **LACNIC Web queries are now RDAP queries**
- ARIN to start production service with our June software release

ARIN's URLs



- Pilot
 - <http://rdappilot.arin.net/rdapbootstrap>
 - <http://rdappilot.arin.net/restfulwhois/rdap>
- Production
 - <http://rdap.arin.net/bootstrap>
 - <http://rdap.arin.net/registry>

Software



- projects.arin.net
 - **NicInfo – command-line RDAP client (open source)**
 - **RDAP Bootstrap – bootstrap server (open source)**
- Prototyping a pure JavaScript client
- ICANN
 - **Contract with CNNIC to produce open source client and server**



Questions?