



riswhois.ripe.net or IP to AS mapping

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Motivation

- TTM service shows (a.o) routes at the IP level
- Routing change:
 - Inside an AS usually not that interesting
 - Except for a few very big ISP's
 - Load balancing, backup-router, renumbering
 - Different AS path usually very interesting
- Added AS information
- Used IRR to do the mapping

How accurate is the IP to AS mapping?

Motivation (2)

- Study:
 - IRR: Which IRR? There are 60 of them!
 - RIPE NCC, plus ARIN, APNIC, CW, RADB, VERIO
- 1 day of TTM data
 - 3618 unique IP addresses
 - IRR finds an AS for 2856 IP's (79%)
 - Looking at Routing Table, one finds an AS for 3584 (99%)
 - Differences:
 - 54 not in IRR
 - 17 outdated IRR information (AS no longer there!)
 - 11 in aggregates (less specific in IRR)
 - 9 multiple objects in IRR
 - 5 not in routing tables (IX's)

Solution

- Build a better tool for IP2ASN mapping
 - Use routing tables
 - RIS has views from all over the world
 - 10 collectors
 - 325 peers
- Side effect:
 - This tool can be useful for other tools and services
 - Add a public interface to the tool



Introducing: riswhois.ripe.net

- A **new** interface to RIS data
 - provide quick, summarized, view of prefixes seen in an entire set of RIS collected RIB dumps
 - use existing RIS tools to dig deeper
- Listens on port 43, *whois*
- Answers are formatted like RPSL route objects
- Fast response
 - *no* SQL databases to query
 - *no* connecting to remote RRC looking-glasses



Example (0)

```
$ whois -h riswhois.ripe.net 193.0.1.49
```

```
% This is RIPE NCC's Routing Information Service
```

```
% whois gateway to collected BGP Routing Tables
```

```
% IPv4 or IPv6 address to origin prefix match
```

```
%
```

```
% For more information visit http://www.ripe.net/ris/riswhois.html
```

```
route:          193.0.0.0/21
```

```
origin:         AS3333
```

```
descr:          RIPE-NCC-AS RIPE NCC
```

```
source:
```

```
rrc00,rrc01,rrc02,rrc03,rrc04,rrc05,rrc06,rrc07,rrc08
```



Example (1)

```
$ whois -h riswhois.ripe.net 193.63.74.233
```

```
% This is RIPE NCC's Routing Information Service
```

```
% whois gateway to collected BGP Routing Tables
```

```
% IPv4 or IPv6 address to origin prefix match
```

```
%
```

```
% For more information visit http://www.ripe.net/ris/riswhois.html
```

```
route:          193.60.0.0/14
```

```
origin:         AS786
```

```
descr:          JANET The JANET IP Service
```

```
source:
```

```
rrc00,rrc01,rrc02,rrc03,rrc04,rrc05,rrc06,rrc07,rrc08,rrc09
```

```
route:          193.63.74.0/24
```

```
origin:         AS8548
```

```
descr:          G-MING/NNW
```

```
source:         rrc00,rrc01,rrc03
```

**The more specific /24 announcement is
only seen by three of the ten Route
Collectors**



Example (1b)

```
$ whois -a -T route -h whois.ripe.net 193.63.74.233
```

```
% This is the RIPE Whois server.  
% The objects are in RPSL format.  
%  
% Rights restricted by copyright.  
% See http://www.ripe.net/ripenncc/pub-services/db/copyright.html
```

```
route:          193.60.0.0/14  
descr:          JANET  
descr:          c/o ULCC  
descr:          20 Guilford Street  
descr:          London  
descr:          WC1N 1DZ  
descr:          UNITED KINGDOM  
origin:         AS786  
mnt-by:         JIPS-NOSC  
changed:        selina@ans.net 19951011  
source:         RIPE
```

**Only JANET's /14 was registered in the
RIPE routing registry**



Example (2) IPv6

```
$ whois -h riswhois.ripe.net 2001:610:240:0:193:0:0:202
```

```
% This is RIPE NCC's Routing Information Service
% whois gateway to collected BGP Routing Tables
% IPv4 or IPv6 address to origin prefix match
%
% For more information visit
  http://www.ripe.net/ris/riswhois.html
```

```
route:      2001:610::/32
origin:     AS1103
descr:     SURFNET-NL SURFnet, The Netherlands
source:    rrc01,rrc03,rrc05
```

```
route:      2001:610:240::/42
origin:     AS3333
descr:     RIPE-NCC-AS RIPE NCC
source:    rrc01,rrc03,rrc05
```

RIPE NCC has a /42 allocated by SURFnet
Announced at AMS-IX (multihoming)
Some peers reannounce at LINX or VIX.

What is it good for?

- A quick view in the distributed route collector data
 - how is my address space announced worldwide?
- Assigning origin AS numbers to IP addresses
 - traceroute with AS info, AS level traces
 - up to now, tools consulted routing registry
 - not well maintained, 20% unmatched in TTM study
 - whois style format allows for easy replacement, e.g. in NANOG traceroute:
 - *setenv RA_SERVER riswhois.ripe.net (csh)*
 - *export RA_SERVER=riswhois.ripe.net (bash)*
 - *traceroute -A 193.0.0.1*

Limitations

- A (recent) snapshot of the RRC routing tables
- No sense of history
 - if route not present at time of RIB dump (session reset) that RRC will be missing from list of sources
 - Can run the tool on older RIB's though
- Misconfigurations
 - if a default route or other bogus short prefix length is present in the RIB dumps, otherwise unmatched prefixes will be marked as originating in that AS
- Existing RIS tools invaluable for more detailed info
 - but they take longer to answer user queries ...

How to query?

- Default output: any whois client
 - `whois -h riswhois.ripe.net <query>`
- Pass options to the server:
 - RIPE whois client (`ftp://ftp.ripe.net/tools/ripe-whois-latest.tar.gz`)
 - `whois -h riswhois.ripe.net <option> <query>`
 - netcat
 - `netcat riswhois.ripe.net 43 <option> <query>`
- Options
 - `-F` Fast, short output (AS & prefix in one line)
 - `-m` return only most specific match
 - `-k` persistent connection, don't close but allow multiple queries on one connection. Useful for bulk queries.

Questions, Discussion

