ReferralServer Field in ARIN WHOIS

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Problems with RWhois

- Non-standard format. Many ISPs report RWhois reassignment information different.

- Difficult to enhance protocol, does not meet RFC2167

- Difficult to setup and administer, no documentation

- RWhois client software not widely distributed. Difficult to be directly used by end-users. Referrals do not work.

  In January 2003, ARIN asked group of volunteers to review and make suggestions on how ARIN can improve presentation and use of RWhois, this was done as part of "rwhois-design" team

RWhois Design Team Recommendations

RWhois Design Team Generally supported these actions:

1. Create new policy requiring ISPs to maintain RWhois servers up to date and always respond to queries - see policy proposal 2003-5

2. Fix root RWhois server and make sure referrals work.

3. Create preferred RWhois data format (schema) for reporting information through RWhois (possibly use new ARIN whois schema for that).

4. Establish standard way for users and automated software (which is what many use) to know for sure which RWhois server ISP uses (to be able to do automatic redirect and query of that server)

Referral Server Field - part of the solution to RWhois problems

- Referral Server field was an idea introduced that can help with RWhois problems and can be implemented fairly easily

- With this separate field added to whois output it is possible for ISP to specify exact URL of their RWhois server in a standard way (URL format) and this can easily be recognized by users and by automated software and will allow majority to easily follow the referrals (see recommendation #4)

- Additionally having this standard field will make it easier to maintain RWhois referral server on ARIN side (see recommendation #2)

Implementation proposals (as proposed 6 months ago)

1. Add referral server (RWhois) field to NETWORK and ORG objects as one optional field for each.

2. Create separate "Referral" contact that will include referral server field, comments particular to referral service and contact information for technical maintenance of RWhois server

First choice is what ARIN preferred to do as was discussed during ARIN XI meeting but unfortunately the actual implementation included adding ReferralServer to only ORG (ARIN queried RWhois users for what would be best but when doing so only choice given was NET or ORG and not both)

Problems that resulted from only ORG having ReferralServer Field

1. Organizations that have one netblocks using RWhois to display suballocations data and other blocks where they use SWIP are now in the situation that they MUST have all netblocks using RWhois even if only one does.

   - This is against ARIN policies that allow ISPs to choose how they provide allocation utilization on per-network basis.
   - This is particularly a problem when companies are combined together and netblocks are transferred from one entity to another.
   - If policy 2003-5 is adapted all these companies will be put in the situation where they have to very quickly add RWhois data for number of extra netblocks.

Problems that resulted from only ORG having ReferralServer Field

2. Large organizations are forced to have one and only one RWhois server for all their netblocks.

- This is not scalable
- Some organizations may prefer to have multiple RWhois servers for different parts of organization (by region or for example different RWhois implementations/schemas for web hosting and for dedicated connectivity customers)

3. Referral Server is supposed to be only used for direct blocks assigned and allocated by ARIN or reallocations

- There are organizations that also have SWIPs and ASNs listed under their ORG object, for those blocks ReferralServer is also shown
- When referral server is shown for wrong objects it is confusing to users and may even result in them not getting any whois record.

Example of the problem

[whois.arin.net]
OrgName: Elan Communications, Inc.
OrgID: ELANCO
Address: 500 Laurelwood Rd, Suite 12
City: Santa Clara
StateProv: CA
PostalCode: 95054
Country: US

ReferralServer: rwhois://rwhois.elan.net:4321/

ASNumber: 13620
ASName: ASN-ELAN
ASHandle: AS13620
Comment:
RegDate: 1999-07-15
Updated: 2003-09-17

Example of the problem (part 2)

[root@cwhois1 root]# jwhois 13620

[Querying whois.arin.net]

[Redirected to rwhois.elan.net:4321]

[Querying rwhois.elan.net]

[rwhois.elan.net]

%rwhois V-1.5:003fff:00 rwhois.elan.net (by Network Solutions, Inc. V-1.5.7)

%error 230 No Objects Found

The above was done using jwhois client which is included as standard with Redhat 9.0. As you can see because it detects RWhois referral, it will automatically query our RWhois server but fails to get any information there (not surprisingly since there is no standard or schema for displaying AS info in RWhois and NOBODY is doing it). As a result whoever wants to know about AS13620 can not find this info with jwhois

Proposal to solve current implementation problems

ARIN should

- Add ReferrelServer as property for both network and ASN objects (in addition to ORG as it is now)

- Display in whois only most specific ReferralServer field value (i.e. one from NET or ASN objects if both those and ORG exist)

- Allow opt-out for specific resource (most likely this would involve introducing special "BLANK" field value that if used in NET or ASN would cause original ORG ReferralServer value to be ignored)

Advantages to the community

- This allows for multiple scenarios of how ISPs can designate which netblocks have RWhois servers and which ones do not:
  - They can can have one standard ReferralServer entered under Org object but can "exclude" specific netblocks from using RWhois by entering value "BLANK" for ReferralServer field in those netblock's Referral Server property
  - If using RWhois is not default policy for the ISP, they can enter RWhois server specifically for each netblock.
  - Some netblocks can be designated with different RWhois server to allow for scalability reasons and scenarios that require different implementation of RWhois for some netblocks
- ASN problem is fixed if the default is opt-out value which will suppress output of ReferralServer from ORG

New Use for Referral Server field specifically for ASNs

Additionally it is proposed that new use of ReferralServer be introduced specifically for ASNs. Rather then being used to reference server providing reallocations it is proposed that for ASNs Referral Server should provide information about routing preferences and specifically about designated routing database (which MUST run whois server conforming to RPSL standards) that ISP is using, for example the field output could look like this:

ReferralServer: whois://whois.radb.net/

ASNumber: xxxxx

Advantages in using ReferralServer for ASN Routing Database Reference

- This provides common reference for ISPs using different routing databases and allows ISPs to run routing database directly on their own (such can be necessary in some cases for security reasons for example).

- This is inline with system adapted by ARIN as it (unlike RIPE for example) does not require to be the only location for whois data and allows ISPs to provide same data directly. ARIN then acts only as a central reference informing where the actual data can be obtained

Advantages in using ReferralServer for ASN Routing Database Reference

- When whois queries are done on ASNs that are in RIPE and APNIC whois, their whois server will automatically include routing database information. Now whois clients can be modified (and some may not even require additional modifications) to provide same capabilities for all ASNs in ARIN database. This in turn should result in network engineers being better informed about routing preferences of all other networks

- Adding this capability would not require any serious additional programming from ARIN if ReferralServer is added for objects other then ORG as previously described

Questions for community

1. Should ARIN add ReferralServer field to Network and ASN objects as described in this presentation?

2. Should we allow use of ReferralServer field for use as reference to routing database?

   - If yes - should ARIN fill out these values automatically for companies that use its RADB server?