DNS Error Reporting

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What is the problem

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loosely connected
fault tolerant
configure and go

Any warnings and errors are buried in the logs of recursive resolvers

Then came DNSSEC
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figuratively
generally

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Problem Statement

Resolver encounters an error

does nothing
What if ...

... the resolver can notify the operator and domain owner?
Requirements

• Reporting should be lightweight.
  • The camel is hurting

• Should not rely on additional complexities
  • No email, no PDFs, no whois lookups, no shaming

• Should not have any guesswork
  • No guessing who owns what domain
  • No guessing what the cause of a failure may be
  • No heuristics, trial & error, etc.
How?

• Send an error report

Where?

• Can’t send it to the authoritative server of the broken domain.
  • It’s broken

• Can’t send it to the owner of the domain.
  • No clue who that is.
    • don’t want to burden the poor resolver with secure whois/rdap and rich email client
How?

• Send an error report

Where? (continued)

• Introducing

Reporting Agent
How?

• Send an error report to a Reporting Agent
  • This error report is just another query

• How does the resolver learn about the Reporting Agent?
  • Don’t want to do another round trip to the broken server

• Via EDNS0 option
• Resolver indicates support
• Server includes Reporting Agent Domain in EDNS0 option
Then what?

- on error:
  - Resolver sends query bad-qname._er.a01.error.com
  - ”a01.error.com.” (reporting agent) learned via EDNS0 option
  - + plus prepend qtype & error....., but you get the idea

7.1.bad-qname._er.a01.error.com

- Responses can be cached, and caching helps against sending too many reports

- The reporting agent can be an intermediary dedicated to deal with these problems, analogy here is ”intermediaries” for DMARC
Does that work?

• The reporting part:
  • We have experience with _ta- (trust-anchor) reports being send to a dedicated nameserver, by appending rfc8145.research.icann.org. to a “trust anchor report”

• On the EDNS0 part:
  • EDNS0 options work, nothing new here.

• Many little caveats documented in the draft
  • Including security and privacy related
What else?

What is with the _er label?
• To have a separator between the reporting agent domain and the reported query.

What else is in the report?
• qtype and the error.

What errors can be reported?
• Extended-DNS-Errors
  • Extended-DNS-Errors are meant to inform the Stub-Resolver why a name could not be resolved.
  • Our idea is to inform the domain-owner or operator of an error.
Questions