DNS Workbench Update

DNS-OARC Workshop

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SIDN labs
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SIDN

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- SIDN's R&D team

- SIDN = .nl registry (Netherlands)

- 5.3M domain names, 1.600 registrars

- Largest DNSSEC zone in the world (1.5M signed)

Motivation

- Overheard: "Does anyone know a public zone with a wildcard record, using opt-out, signed by ldns, served on BIND 9?"

- Answer: "Oh yeah, there's one on that server, I think. Perhaps. Well at least there was one last year. I think. Maybe. I don't know."

- Need for a one-stop-shop for name server testing that is well-managed and supports multiple implementations

Enter the DNS Workbench

Overview
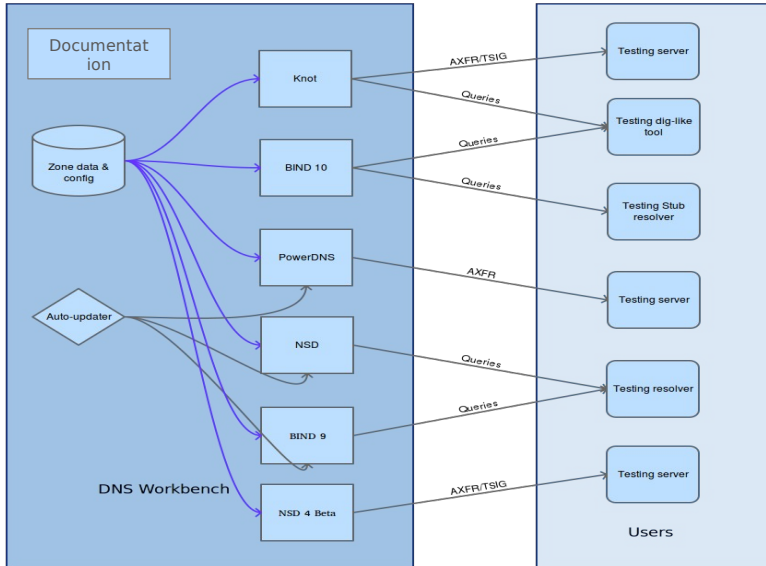
Added Value

- One-stop-shop and easy-to-use service for name server testing, supporting many RR types

- Well-documented set of zones, consistently available across multiple name server implementations

- DNS developers: interoperability testing, discovering and reporting bugs in name server software

- DNS operators: workbench as a reference point for production servers (compare responses)

Support for many RR Types


```
types.wb.sidnlabs.nl ✕
170
171    ; type 26
172    px → ⟶ ⟶ ⟶PX→10→map822 mapx400
173    type26 → ⟶ ⟶PX→10→map822 mapx400
174
175    ; type 27
176    gpos ⟶ ⟶ ⟶TYPE27→\# 18 05 32 33 2e 36 37 05 32 33 2
177    type27 → ⟶ ⟶TYPE27→\# 18 05 32 33 2e 36 37 05 32 33 2
178
179    ; type 28
180    aaaa ⟶ ⟶ ⟶  AAAA ⟶2001:7b8:c05::80:4
181    type28 → ⟶ ⟶AAAA ⟶2001:7b8:c05::80:4
182
```

Current Setup

- 3 'categories' of data
  - RRTypes under types.wb.sidnlabs.nl
  - DNSSEC errors under bad-dnssec.wb.sidnlabs.nl
  - All zones transferable with and without TSIG

- 6 implementations
  - NSD 3.2
  - BIND 10 1.1
  - Knot 1.2
  - PowerDNS 3.0
  - BIND 9.9
  - NSD 4 beta

Some Example Uses

○ Query directly:

dig +dnssec –t MINFO minfo.types-signed.wb.sidnlabs.nl
@knot.sidnlabs.nl

○ Use nsd.sidnlabs.nl as the primary for your secondary:

zone:
        name: "types.wb.sidnlabs.nl"
   request-xfr: 94.198.152.169 NOKEY

Some Example Uses

- Check DNSSEC validator, should result in data:

```
dig ok.ok.bad-dnssec.wb.sidnlabs.nl
```

- Check DNSSEC validator, should result in SERVFAIL:

```
dig bogussig.ok.bad-dnssec.wb.sidnlabs.nl
dig ok.sigexpired.bad-dnssec.wb.sidnlabs.nl
dig ok.nods.ok.bad-dnssec.wb.sidnlabs.nl
```

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Challenge: Complexity
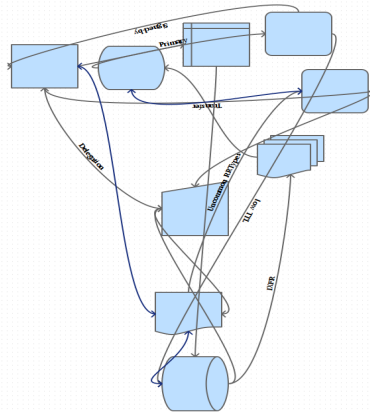
Approach: start small and let grow

Growth Path

- Started with 4 servers, now 6

- Started with 2 zones
  - Added TSIG options
  - Added 'bad dnssec' tree
  - ok   No error

  - bogussig   The RRSIG record contains bogus signature data

  - nods   The DS record is missing at the parent

  - sigexpired   The RRSIG record has an expiration date in the past

  - signotincepted The RRSIG record has an inception date in the future

  - unknownalgorithm   The RRSIG is signed correctly (with a known algorithm), but

    - has the algorithm field set to another value.

Growth Path

- Additional servers
  - Yadifa
  - ANS?

- Add more zones
  - Different signers and parameters
  - 'Delegation' corner cases
  - Other corner cases (wildcards, big rrsets)

Experimental Service -> Feedback Wanted!

- Other testables: what else might be useful to add to the workbench?

- Did the workbench help you as a developer or operator? Let us know when and how!

- Current "score"
  - Fixed handling of uncommon RR types
  - Tested recent TSIG issue

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Questions?

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