Results from project DNS

**IETF 113
19-20 March 2022
Vienna, Austria**

Hack

• Extended DNS Errors [RF

  • While implementing
    More situations
    came up

Extended DNS Error Codes

Reference
[RFC8914]
Available Formats

CSV

Range	Registration Procedures
0-49151	First Come First Served
49152-65535	Private Use

INFO-CODE	Purpose	Reference
0	Other Error	[RFC8914, Section 4.1]
1	Unsupported DNSKEY Algorithm	[RFC8914, Section 4.2]
2	Unsupported DS Digest Type	[RFC8914, Section 4.3]
3	Stale Answer	[RFC8914, Section 4.4][RFC8767]
4	Forged Answer	[RFC8914, Section 4.5]
5	DNSSEC Indeterminate	[RFC8914, Section 4.6]
6	DNSSEC Bogus	[RFC8914, Section 4.7]
7	Signature Expired	[RFC8914, Section 4.8]
8	Signature Not Yet Valid	[RFC8914, Section 4.9]

Hackathon Plan

- Extended DNS Errors [RFC8914]

  - While implementing –
    More situations for an EDE info-code emerged
  - Registry if First Come First Served

  - Draft-carpay-extra-ede-codes-dnssec-bogus

- Discussed between Tom Carpay, Petr Špaček, Libor Peltan, and *

Hackathon Plan
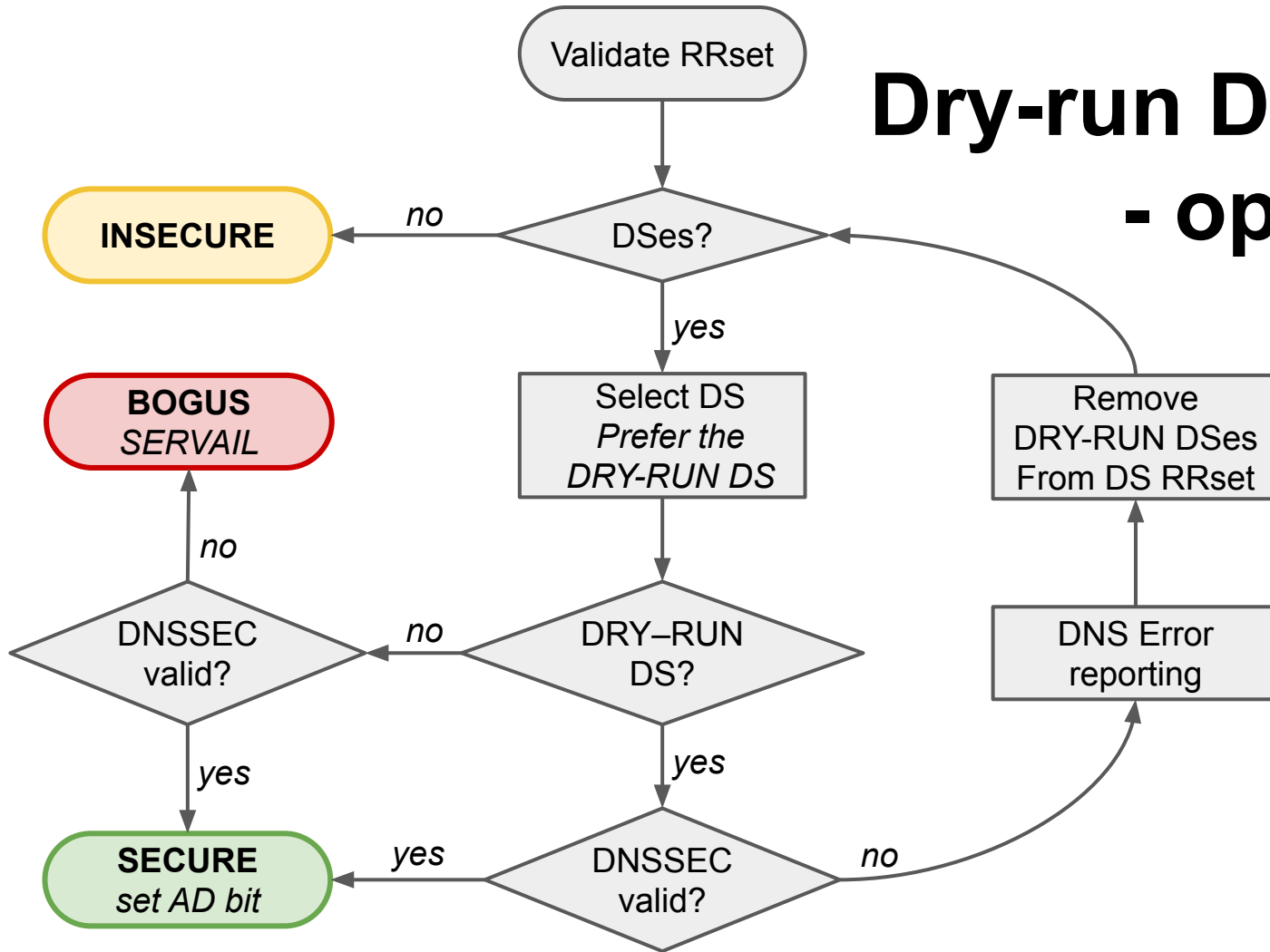
- Dry-run DNSSEC

  - Try out DNSSEC for your zone first, before going live
  - draft-yorgos-dnsop-dry-run-dnssec-00

  -
```
                                1 1 1 1 1 1 1 1 1 1 2 2 2 2 2 2 2 2 2 2 3 3
        0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1
       +-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+
       |              Key Tag              |    Algorithm   |   DRY-RUN  |
       +-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+
       |  Digest Type  |                                                /
       +-+-+-+-+-+-+-+-+-+             Digest                           /
       /                                                               /
       +-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+
```

Dry-run DNSSEC - operation

Validate RRset

DSes?
- no → **INSECURE**
- yes → Select DS *Prefer the DRY-RUN DS*

DRY–RUN DS?
- no → DNSSEC valid?
  - no → **BOGUS** *SERVAIL*
  - yes → **SECURE** *set AD bit*
- yes → DNSSEC valid?
  - yes → **SECURE** *set AD bit*
  - no → DNS Error reporting → Remove DRY-RUN DSes From DS RRset → DSes?

Dry-run DNSSEC

- RIPE Atlas measurements to measure backwards compatibility by Tom Carpay

Insecure

Dry-run

Dry-run BOGUS

Secure

Secure + Dry-run

Secure + Dry-run BOGUS
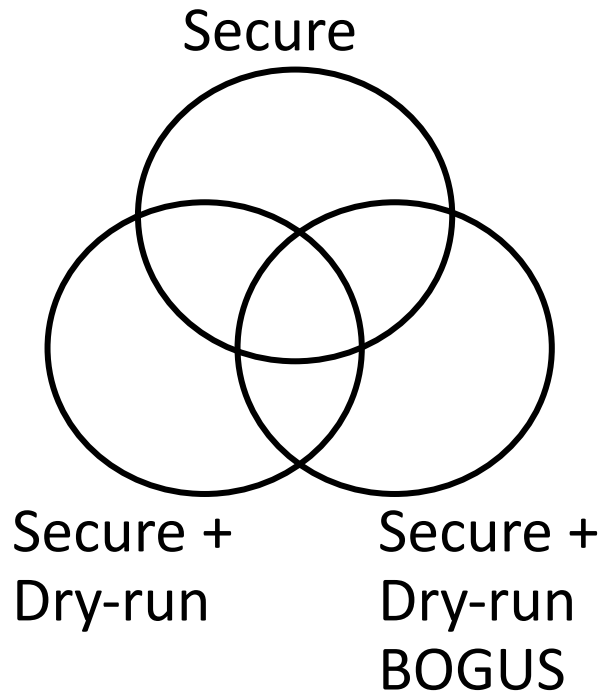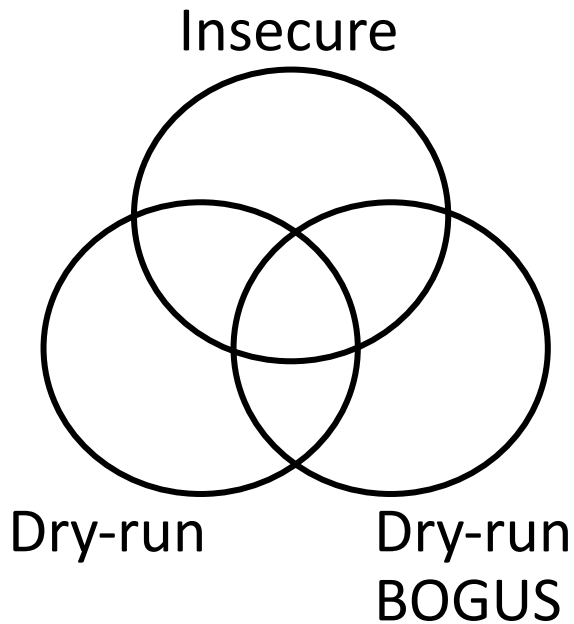
Hackathon Plan

- DNS Catalog Zones

    - draft-ietf-dnsop-dns-catalog-zones-05

- Interoperability testing

- New!   BIND implementation for draft version!

  - Petr Špaček, Libor Peltan, Willem Toorop

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wiki: 113hackathon / catalog-zones

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VM	IPv6	(outside) IPv4	(inside) IPv4	implementation	producing	consuming
ns1.zones.cat	2a05:d014:d33:2020::ca11	18.158.147.216	172.31.47.136	NSD	catalog1	
ns2.zones.cat	2a05:d014:d33:2020::ca12	3.122.223.241	172.31.34.139	NSD		catalog1 catalog3
ns3.zones.cat	2a05:d014:d33:2020::ca13	18.184.237.45	172.31.46.147	Knot		
ns4.zones.cat	2a05:d014:d33:2020::ca14	54.93.97.83	172.31.43.201	PowerDNS		
ns5.zones.cat	2a05:d014:d33:2020::ca15	3.120.238.22	172.31.32.247	BIND		catalog1. catalog3.
ns6.zones.cat	2a05:d014:d33:2020::ca16	3.122.254.99	172.31.47.17	Knot	catalog3.	
ns7.zones.cat	2a05:d014:d33:2020::ca17	3.68.72.20	3.68.72.20	NSD	catalog4.	

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Hackathon Plan

- DNS Dynamic Update over Encrypted Transport (Quic / TLS)

  - draft-ietf-dnsop-dns-catalog-zones-05

- Allison Mankin, Benjamin Fry, Han Zhang, John Dickinson, Pallavi Arres, Sara Dickinson, *Shane Kerr*, Shivan Kaul Sahib, Sidan Qi, Sile Yang

Hackath...

- DNS Dynamic Update over En...

  - [draft-ietf-dnsop-dns-catal...](#)

- Allison Mankin, Benjamin Fry,
Arres, Sara Dickinson, Shane K...
Sile Yang

qp-trie for NSD

- patches by Tony Finch, July 2021
- small fast DNS name lookup data structure
- discussion between Tony and NLnetLabs
- updated notes on experimental branches

What got done

- Lots and lots of excellent conversation!

- Open Source DNS Software developers align! (Extra EDEs)

- Developers align with operators!

What we learned

- **You can't beat an in person hackathon!**

Wrap Up

Team members:

Tom Carpay
Petr Špaček
Libor Peltan
Willem Toorop
Allison Mankin
Benjamin Fry
Han Zhang
John Dickinson
Pallavi Arres

John Dickinson
Pallavi Arres
Sara Dickinson
Shane Kerr
Shivan Kaul Sahib
Sidan Qi
Sile Yang
Benno Overeinder
more…