

Ordering of RRsets in DNS Message Sections

draft-jabley-dnsop-ordered-answer-section-00

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What is this draft?

Problem:

- RFC 1034/1035 don't specify the order of RRSets in the answer section
- Some implementations have assumed: CNAME chain first, then the final records

What -00 proposes:

- Answer section MUST be an ordered list; new RRSets MUST be appended
- Other sections (authority, additional) may be non-ordered
- Updates RFC 1034 and RFC 1035

What triggered this:

- 8 Jan 2026: 1.1.1.1 briefly emitted A/AAAA before CNAME in answer sections
- glibc getaddrinfo() broke; Cisco switches entered a reboot loop

```
origin.example.com. A      192.0.2.1
www.example.com.   CNAME origin.example.com.
```

What the mailing list feedback said

The -00 language is too broad:

- "ordered list" could be read as prohibiting interleaved A+AAAA for the same owner
- Scope should be CNAME order, not general RRset ordering

The correct order:

- CNAME/DNAME chains must appear in traversal order
- DNAME before its synthesized CNAME; RFC 6672 implies this but doesn't require it

The correct wording:

- SHOULD emit in order; MUST accept any order
- Include clear examples showing expected behavior

Why this has value

The case for adoption:

- Documented, large-scale operational impact (1.1.1.1, Jan 2026)
 - <https://blog.cloudflare.com/cname-a-record-order-dns-standards/>
- Embedded clients and old firmware will never be updated
- Same bug has surfaced three times (2002, 2015, 2026)
 - <https://www.cve.org/CVERecord?id=CVE-2002-0400>
 - <https://mailarchive.ietf.org/arch/msg/dnsop/7KoE8Dr-SxuNToskxbvAwJ3BQLQ/>
 - <https://github.com/skynetservices/skydns/issues/217>

Relatively little work:

- Most implementations already behave this way; codifying practice
- List discussion has converged; a -01 with updated language is straightforward

Request: adopt as a DNSOP WG document