

Multiple questions in a single DNS message (QDCOUNT=2?)

Stuart Cheshire & Ted Lemon, Apple
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The Current Situation

Capacity is precious on Thread networks

For efficiency, some creative Thread clients query for both SRV + TXT in a single DNS query message, so QDCOUNT is set to 2

Some liberal Thread DNS servers respond to these queries

Problems with QDCOUNT > 1

There are many problems...

- E.g., Response message only has one RCODE field

Discussions about this resulted in new DNSOP draft

- “In the DNS, QDCOUNT is (usually) One”
- draft-ietf-dnsop-qdcount-is-one

Ideas

Just do two separate queries?

- Inefficient — wastes airtime
- Every millisecond counts

Try with QDCOUNT=2 first, and retry separately if that fails?

- Might need 3 queries
- Potentially even less efficient
- Potentially even slower

Possible Solution?

Create normal DNS query giving service instance name and QTYPE SRV

Add new EDNS(0) option indicating client would also like TXT answer for the same QNAME

Server responds with both records in answer section, if available, and includes EDNS(0) option to confirm support for this feature

Nonzero RCODEs (e.g., NXDOMAIN) apply to both queries, because the QNAME is the same

Ray Bellis already thought of it

Internet draft from Ray Bellis in March 2012

- “DNS Multiple QTYPES”
- draft-bellis-dnsext-multi-qtypes

We should revive this

Transition Strategy

Current Thread Border Routers will continue to support QDCOUNT=2, so that we don't break existing deployed clients

We will fix OpenThread DNS client to stop using QDCOUNT=2

- This should address the majority of new products

Thread certification testing will enforce QDCOUNT=1 to prevent new products being introduced that use QDCOUNT=2

Later we will evaluate when it becomes safe to drop QDCOUNT=2 support from Thread Border Routers