Additional Records for DNS Push

Achieving parity with mDNS (?)
Status

- After some discussion, -00 published in March for IETF 119
- No implementation done yet
- Original idea was to do additional data much in the same way as mDNS and DNS
- This isn’t quite right, though...
How additional data works now

• Do a query for e.g. _matter._tcp.local IN PTR

• Get back:
  • Answers: multiple _matter._tcp.local answers
  • Additional:
    • SRV and TXT records corresponding to above answers
    • A and AAAA records for SRV records
  • Pack as much as possible into the response to avoid a second round trip
What we need for DNS Push

- DNS Push is a TCP protocol, so while we care about round trips, the problem is a bit different.
- DNS Push is being used on constrained networks, should just shovel data at us.
- The constrained network application has pushed this in a somewhat different direction.
  - We want the data we need, but not tons of extra data.
  - We want to avoid re-sending stuff we’ve already sent.
  - Still want to avoid extra round trips.
Current thinking

• Can we leave out the question name?

• Maybe offset 0 in the message (or offset end) could be used
  • but now our algorithm is slightly different
  • could create a security vulnerability if the implementor doesn’t account for this

• Can we provide a hint about what PTR match we care about?

• Definitely want address records for hostname

• Probably need an additional TLV that indicates these two things
Who is the consumer of this data?

• Historically DNS-SD was for things like printers, but now the key app appears to be IoT

• (My) current work is on Matter for IoT

• Matter has a key assumption that’s different than printers: the device name is chosen and made unique as part of the provisioning process.

• This means that the pattern we see in matter is not that it says “give me a list of services to browse,” but rather “give me what you know about the service with this name, which I already have in my list.”
Matter query flow

- Matter browses continuously try to notice configuration changes (which doesn’t work)
- When actuating a specific device, Matter starts that process with a “resolve,” not a “browse”
- This means that DNS Push is starting with two queries: “SRV” and “TXT”
- Additionally we will always want usable address records
- So as a practical matter, ’twould be nice to be able to query for SRV and TXT on a name and indicate interest in address records, and have all the answers stream back together, in a single round trip
What we’d need to change

• TCP already will group multiple writes into a single segment if they are sent back to back

• So we can just do two subscribes for the TXT and SRV records

• We want the SRV subscribe TLV to include an additional TLV saying “send address records.”

• Or “use the target name to lookup records of the following types,” e.g. A, AAAA or both.

• Responder might want to try to group responses: don’t send any answers until we have the additional records

• Would work equally well if it didn’t, though—this would just be an optimization
What’s next

• Write some code
• See how it works
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