

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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