Mitigating centralization through standards

What's the problem?

Centralization is being raised as a major concern in deployment trends

Many agree that this isn't objectively "good", but there aren't many suggestions about what we can positively do

Why does centralization occur?

Hypothesis:

Centralization stems from a few main reasons:

1. Economic pressures make it easier to reuse large-scale infrastructure

2. Proprietary protocols are often more attractive than standards to major deployments

3. Well-known "central" entities have become easier to use than discovering distributed entities

...we can address #3

Case Study: DoH

DNS over HTTPS has been cited as a centralization problem

Major deployments are public resolvers that now can receive large swaths of traffic

Regardless of debating if this is "good", it is notable that we've yet to see DoH being used in most traditional recursive resolver deployments

What went wrong?

Timeline

- DoH WG chartered 2017

- RFC 8484 published 2018

- DoH WG concluded / ADD WG chartered 2020

- ADD still working on discovery drafts

DoH WG Charter

Proposed:

Specification of how the DNS data may be used for new use cases, and the discovery of the DOH servers, are out of scope for the working group.

Final:

The working group may define mechanisms for discovery of DOH servers similar to existing mechanisms for discovering other DNS servers if the chairs determine that there is both sufficient interest and working group consensus.

Could we have done better?

Discovery problem was predicted early on

ADD struggled as a BoF, difficult to charter

Treating decentralized deployments as a "nice to have" did not prove to be successful

Proposal

Defining protocols that "centralized" deployments can use isn't the problem...

   ... it is defining protocols such that *only* centralized deployments can use them

If we believe centralization is a problem for the strength of standardization, we need to treat it like our standards for security, etc.

What can we do?

Recommend that we include discovery mechanisms for all protocols?

Recommend that discovery mechanisms are part of WG charters?

Recommend that we have specific WGs to handle discovery/deployments (in the OPS area)?

Ideas?