

DELEG

New DNS delegation work starting in the IETF

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DNS Delegations Today

- DNS Parents “delegate” parts of the DNS tree to children
 - Name server records
 - Address records, maybe
 - DNSSEC cryptographic ties (DS records)
- Children can then publish anything they need:
 - Name server records
 - Address records
 - Mail server records
 - DNSSEC keys and signatures
 - ...

Example delegation today

```
$ dig example.com NS
```

```
;; ANSWER SECTION:
```

```
example.com.      86400  IN  NS  a.iana-servers.net.
```

```
example.com.      86400  IN  NS  b.iana-servers.net.
```

```
$ dig example.com DS
```

```
example.com.      86346  IN  DS  370 13 2 BE743...7247C
```

DNS Delegation Challenges Today

- Thus, today a resolver has:
 - Name servers and address records – **who to talk to**
- But a resolver does not know:
 - **How to talk to** the name servers???
 - What are its capabilities
 - For example: what protocols can be used (UDP, TCP, TLS, QUIC)
 - Has the domain owner outsourced the operation to a DNS service provider?
 - Causes problems when the provider needs to change nameserver records

A new IETF DELEG working group has been formed

High level goals

- Enable signaling of transport availability (TLS, ...)
- Enable operational “aliasing”
- Enable extensibility
- Be backward compatible

DELEG working group details

- Deliverables
 - A document listing new signaling requirements for parents
 - A specification defining the new delegation information
 - including concept of operations
 - A specification for aliasing of delegation information.
 - A specification for use of additional transports for DNS.
- All other goals are tabled until this base work is complete!

Credit for the work

- Working group chairs:
 - Brian Haberman
 - Duane Wessels
- Proponents/authors/etc of DELEG:
 - Roy Arends
 - Manu Bretelle
 - Ben Schwartz
 - Peter Thomassen
 - David Blacka
 - David Lawrence
 - Ralf Weber

Paul Hoffman and I chaired the IETF BoF – we are not document authors

Example DELEG results: basic delegation

```
$ dig example.com DELEG  
example.com. 86400 IN DELEG 1 ns1.example.com. (  
  ipv4hint=192.0.2.1 ipv6hint=2001:DB8::1 )
```

(example courtesy
of slides from
David Blacka,
David Lawrence,
and Ralf Weber)

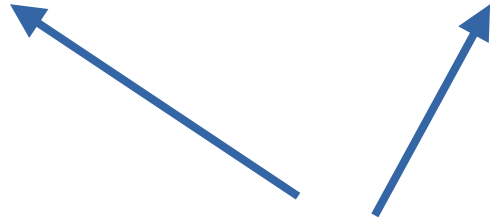
Potentially DNSSEC signed!

IMPORTANT NOTE: only an initial proposed design at all and may change drastically

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supplemental information: glue records

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Added a transport indicator

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Example DELEG results: alias mode

```
$ dig example.com DELEG
example.com. 86400 IN DELEG 0 config2.example.net.
config2.example.net 3600 IN SVCB . (
  ipv4hint=192.0.2.54,192.0.2.56
  ipv6hint=2001:db8:2423::3,2001:db8:2423::4 )
```

Effectively:

to find the *example.com* nameservers...

...go query the *config2.example.net* server for a SVCB record

Note: this handles multiple providers by using multiple alias records

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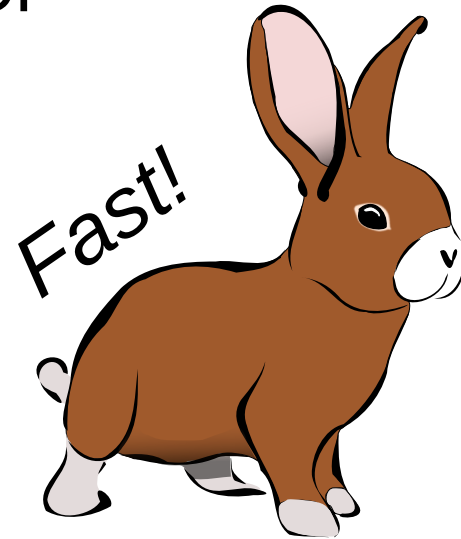
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The timeline to the DELEG working group

2023-11	IETF-118 hackathon	brainstorming
2023-11	IETF-118 DNSOP	results presentation
2024-01	draft-dnsop-deleg-00	initial idea write up
2024-02	Creation of the dd@ietf.org list	
2024-03	IETF-119 Birds of a Feather	successful BOF
2024-05	Charter heavily discussed	
2024-06	Charter approved by the IESG	
2024-07	First working group meeting!	



Come Play!

<https://datatracker.ietf.org/wg/deleg>

Questions?