

RFC 7706 - Local Root

Running a Root Server Local to a Resolver
draft-ietf-dnsop-7706bis

What is this thing?

- ◆ All the root-servers serve the same content
 - ◆ they are all slaves
- ◆ RFC7706(bis) - Running a Root Server Local to a Resolver
 - ◆ Now everybody can run a root....
 - ◆ ... this may be a feature or a bug.

What is this thing?

“The primary goals of this design are to provide more reliable answers for queries to the root zone during network attacks, and to prevent queries and responses from being visible on the network.”

RFC7706 vs RFC7706bis

- ◆ RFC7706 was started 2014 (published 2015)
 - ◆ “Decreasing Access Time to Root Servers by Running One on Loopback”
- ◆ See 7706bis, Section 1.1
 - ◆ Summary: loosens restrictions
 - ◆ No longer requires loopback interface
 - ◆ Allows distributions to include this
 - ◆ Fallback
 - ◆ Distribution sources
 - ◆ Examples

Current Sources of the Root Zone

- ◆ HTTP / AXFR:
 - ◆ xfr.lax.dns.icann.org, xfr.cjr.dns.icann.org
- ◆ AXFR:
 - ◆ [\[b,c,d,f,g,k\].root-servers.net](http://[b,c,d,f,g,k].root-servers.net)
- ◆ Other:
 - ◆ <https://localroot.isi.edu/about/>
 - ◆ Napkins

Enabled by...

Message Digest for DNS Zones
draft-wessels-dns-zone-digest-06

Implementations / Examples

- ◆ “Regular” slaves
 - ◆ BIND 9.12
 - ◆ Unbound 1.8
- ◆ “Magic”
 - ◆ BIND 9.14
 - ◆ Unbound 1.9
 - ◆ Knot Resolver (prefill)
- ◆ Couldn't be bothered to figure out
 - ◆ Microsoft Windows Server 2012

Implications

- ◆ DoS - minimized / localized
- ◆ Privacy - not leaking queries?!
- ◆ Resiliency - control your destiny
- ◆ Performance
- ◆ Loss of measurement - DITL
- ◆ Root -> less important?
- ◆ Additional complexity...
- ◆ Generic solution - feature or bug?

Questions?

References / Backup

- ◆ Hyperlocal Root Service - David Conrad
- ◆ Running a Root Server Local to a Resolver - draft-ietf-dnsop-7706bis
- ◆ Analyzing and Mitigating Privacy with the DNS Root Service
 - ◆ Talk:
 - ◆ <https://youtu.be/bSKBRMNQ7s0>
 - ◆ <https://www.isi.edu/~hardaker/presentations/2018-02-NDSS-Root-Privacy-Hardaker.pdf>