Research Project 1 - DNSCurve Analysis

In cooperation with ON2IT B.V.

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What is wrong?

July 2008 - CERT announced that Dan Kaminsky had found a fundamental problem in the DNS protocol

Privacy: Sniffing

Legacy: DNS was never meant to last this long
What is DNSCurve?

DNSCurve adds link-level public-key protection to DNS packets by using the elliptic-curve library "NaCl"

- Confidentiality
- Integrity
- Availability
How can I deploy it?

DNSCurve for incoming DNS data
- Upgrade your DNS cache to a DNS cache that supports DNSCurve

DNSCurve for outgoing DNS data
- Upgrade your DNS server to a DNS server that supports DNSCurve
- Install a DNSCurve forwarder
Install the DNSCurve forwarder on a new IP address.

Configure the DNSCurve forwarder to forward to your existing DNS server’s IP address.

Add, in your DNS data, a special DNSCurve server name for the DNSCurve forwarder.

Add the same DNSCurve server name in your parent DNS data.

After a week, remove the old non-DNSCurve server names.

uz5ptjftdvugccb1sbb3im9etbtfnu0mh2vsicfqa1ohme9qi940st.os3.nl
Implementation status and issues

So can I deploy DNSCurve today? NO!

- The NaCl elliptic-curve library isn’t released yet.
- DNSCurve forwarder source code still needs a lot of programming
But what about DNSSEC?

DNSCurve and DNSSEC have complementary security goals

- DNSSEC project adds public-key signatures to DNS records
- DNSCurve adds link-level public-key protection to DNS packets
**Recommendations**
- Finish the code and make it publicly available
- More documentation

**Further research**
- DNSCurve and DNSSEC influences on each other
- How to make a DNS server support DNSCurve
DNSCurve: Usable security for DNS:
http://dnscurve.org

NaCl: Networking and Cryptography library:
http://nacl.cr.yp.to

Michiel Timmers: RP1 - DNSCurve Analysis:
https://www.os3.nl/2008-2009/students/michiel_timmers/rp1

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Questions?