

# Advanced DNS Operations & Security

## Software overview



These materials are licensed under the Creative Commons *Attribution-Noncommercial 3.0 Unported* license (<http://creativecommons.org/licenses/by-nc/3.0/>) as part of the ICANN, ISOC and NSRC Registry Operations Curriculum.

# DNS software overview

- Many vendors and software platforms out there
- Commercial and Open Source solutions
- Good overview here

[http://en.wikipedia.org/wiki/Comparison\\_of\\_DNS\\_server\\_software](http://en.wikipedia.org/wiki/Comparison_of_DNS_server_software)

- On the Internet, historically Berkeley/ISC BIND has been the dominant software platform

# DNS software mini-comparison

- Many Open Source solutions, both for recursive/caching and authoritative use:

Software	Authoritative	Recursive	DNSSEC	DB / API
ISC BIND	X	X	X	X
PowerDNS	X	X	X	Native
Unbound		X	X	Native
NSD	X		X	patch
DJB djbdns		X		?
DJB tinydns	X			?

- Note: tinydns/djbdns have incomplete v6, EDNS0 support and no DNSSEC support

# DNS software overview (2)

- BIND is the most popular
- TinyDNS is still second most popular, though this might change with IPv6 and DNSSEC
- We'll focus on 3 implementations
  - BIND 9.7
  - Unbound 1.4
  - NSD 3.2

# DNS software: BIND

- Version 4 released with BSD 4.3 in 1986
- Currently at version 9.8 (beta) in 02/11
- Stable release is 9.7.x
- BIND 10 is in development – but 3-4 years away
- Most feature rich DNS implementation out there
- Often considered "the reference"
  - BIND zone format is the de-facto notation
- Used in many commercial products

# DNS software: BIND (2)

- Features include
  - ACLs
  - Views
  - DB API
  - Dynamic DNS support
  - DNSSEC signing and validation
  - Many more...

# DNS software: NSD

- Developed by NLNetLabs
- Authoritative only
- Developed to mitigate risk of a single bug taking out all BIND implementations
- At least 1 root server uses NSD
- Zones are "compiled" into a precalculated "on the wire" format
  - all possible answers are calculated, then stored into a binary DB, ready to send out
  - very fast

# DNS software: Unbound

- Developed by NLNetLabs
- Caching only
- Developed with performance in mind
- Much more lightweight than BIND
  - More efficient memory usage
  - More features to control caching
  - Fast...

# Questions

?

# DNS software: UNBOUND