Advanced DNS
Operations & Security

Software overview

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DNS software overview

- Many vendors and software platforms out there
- Commercial and Open Source solutions
- On the Internet, historically Berkeley/ISC BIND has been the dominant software platform
Many Open Source solutions, both for recursive/caching and authoritative use:

<table>
<thead>
<tr>
<th>Software</th>
<th>Authoritative</th>
<th>Recursive</th>
<th>DNSSEC</th>
<th>DB / API</th>
</tr>
</thead>
<tbody>
<tr>
<td>ISC BIND</td>
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<td>X</td>
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<tr>
<td>PowerDNS</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>Native</td>
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<td>Unbound</td>
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<td>X</td>
<td>X</td>
<td>Native</td>
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<td>NSD</td>
<td>X</td>
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<td>X</td>
<td>patch</td>
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<td>DJB djbdns</td>
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<td>?</td>
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<tr>
<td>DJB tinydns</td>
<td>X</td>
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</tbody>
</table>

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 9.9
  - Unbound 1.4
  - NSD 3.2
DNS software: BIND

- Version 4 released with BSD 4.3 in 1986
- Currently at version
- BIND 10 is in development – but still at least 1-2 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