

# DNSharness for DNSSEC

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DNSSEC Workshop, ICANN 50

June, 2014

# DNSharness in one slide

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- A test harness for automated sending queries to numerous DNS authoritative and recursive servers
- Comes with lots of open source software prebuilt
- Aimed at DNS researchers, developers, and anyone who wants to iteratively test DNS against a variety of servers
- Can be used for many types of tests such as DNSSEC, new RRtypes, and so on
- Allows publishing of tests so that others can reproduce and tweak

# DNSharness basics

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- Python script running on a Linux box that also has VirtualBox for VMs
- All open source DNS lives on one VM, each built into its own directory
- You add projects, each of which lives in its own directory
- You can also test on systems running outside the Linux box, such as DNS hardware and open recursive resolvers

# What do you want to test in DNSSEC?

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- Does a recursive server properly report the DNSSEC status if an upstream is broken?
- Does an authoritative server send the correct records if the request is broken in various ways?
- How does a recursive respond to various kinds of recent rollovers?
- And many more...

# What a project directory looks like

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- Project description file (short JSON object)
- Program that runs on the Linux host at start up, for each test step, and on shutdown
- Program that sets up and tears down the software running on the VM with the open source, and associated config files

# Project description file, example #1

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```
{  
  "name" : "Authoritative with CD",  
  "comment1" : "Some comment goes here",  
  "targets" : [  
    { "opensource" : [ "bind-9.6.*",  
                       "bind-8.4.*", "nsd.*" ] }  
  ]  
}
```

# Project description file, example #2

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```
{  
  "name" : "Recurse with broken request",  
  "targets" : [  
    { "winserv2003" : [ "10.20.30.203" ] },  
    { "winserv2008" : [ "10.20.30.208" ] },  
    { "GoogleDNS" : [ "8.8.8.8", "8.8.4.4" ] }  
  ]  
}
```

# Program that runs on the Linux host

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- Actions for start up and shutdown
- Run each time a project step starts and stops
  - For example, start up a VM, alert the tester for a certain test, ...
- Runs in the middle of each step to send the request to the server being tested
  - Query can be `dig`, a `getdns`-based program, or from the new `ZoneBuilder`



# Program that runs on VM with open source software

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- Starts up the particular DNS server with the right config files and initialization commands
- Can be complex: DNSSEC sign a zone, do a quick key rollover, then respond to queries
- Tears it down, maybe saving any interesting log information

# DNSharness project status

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- First release in late 2012
- Available from [www.dnsharness.org](http://www.dnsharness.org)
- Development was funded by VeriSign Labs (thank you!)
- For more information, contact me at [paul.hoffman@vpnc.org](mailto:paul.hoffman@vpnc.org)
- Contact me this week if you want to see some demos