DNS Security Tools (http://www.DNSSEC-Tools.org)

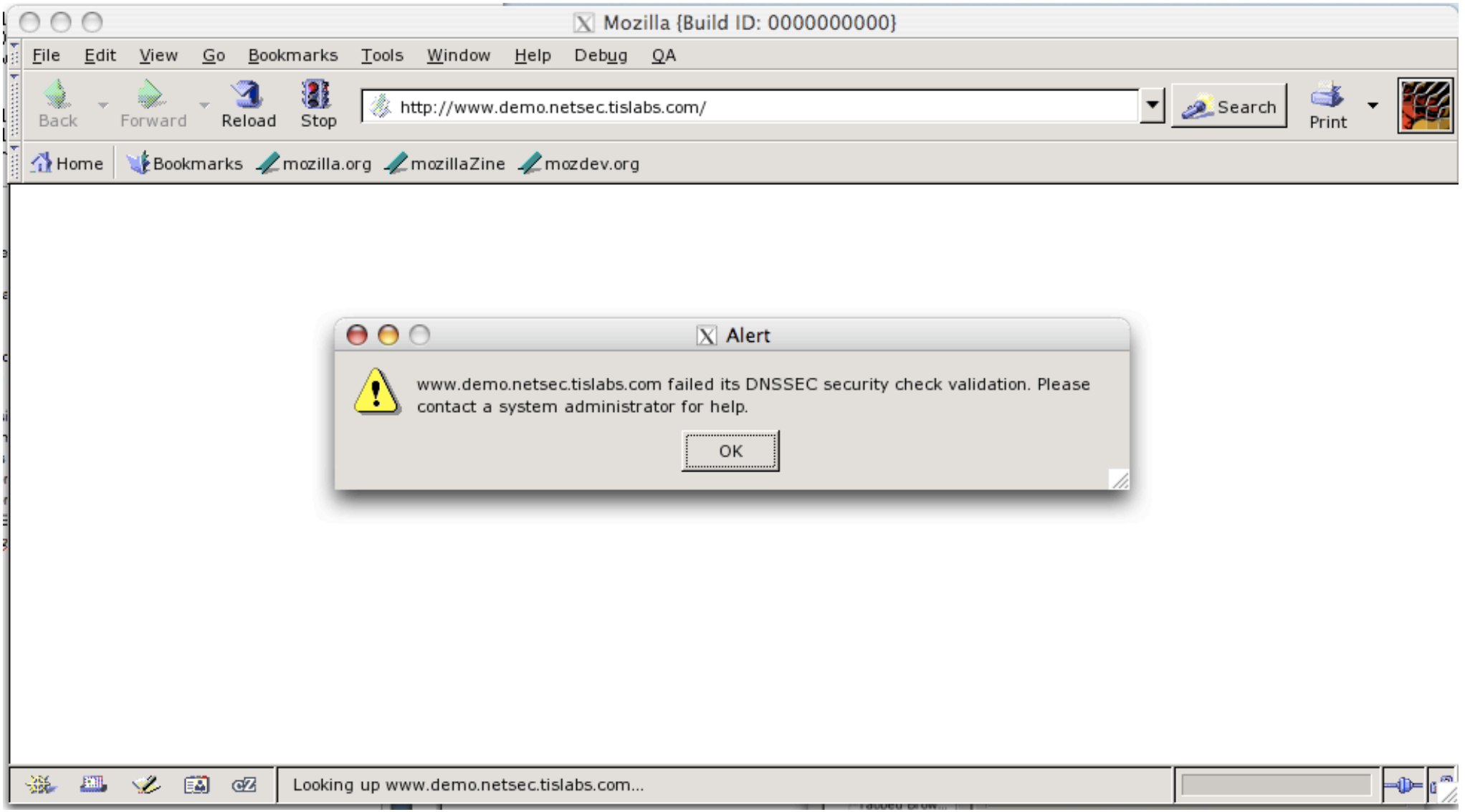
Russ Mundy
SPARTA, Inc.
<mundy@sparta.com>

DNSSEC-Tools

- SPARTA is developing DNSSEC applications
  - http://www.dnssec-tools.org/
- Components:
  - Applications, Utilities, ETC
  - Infrastructure: DNSSEC Libraries, Perl Modules, ...
  - Tools for managing DNSSEC Zones
  - Educational Materials

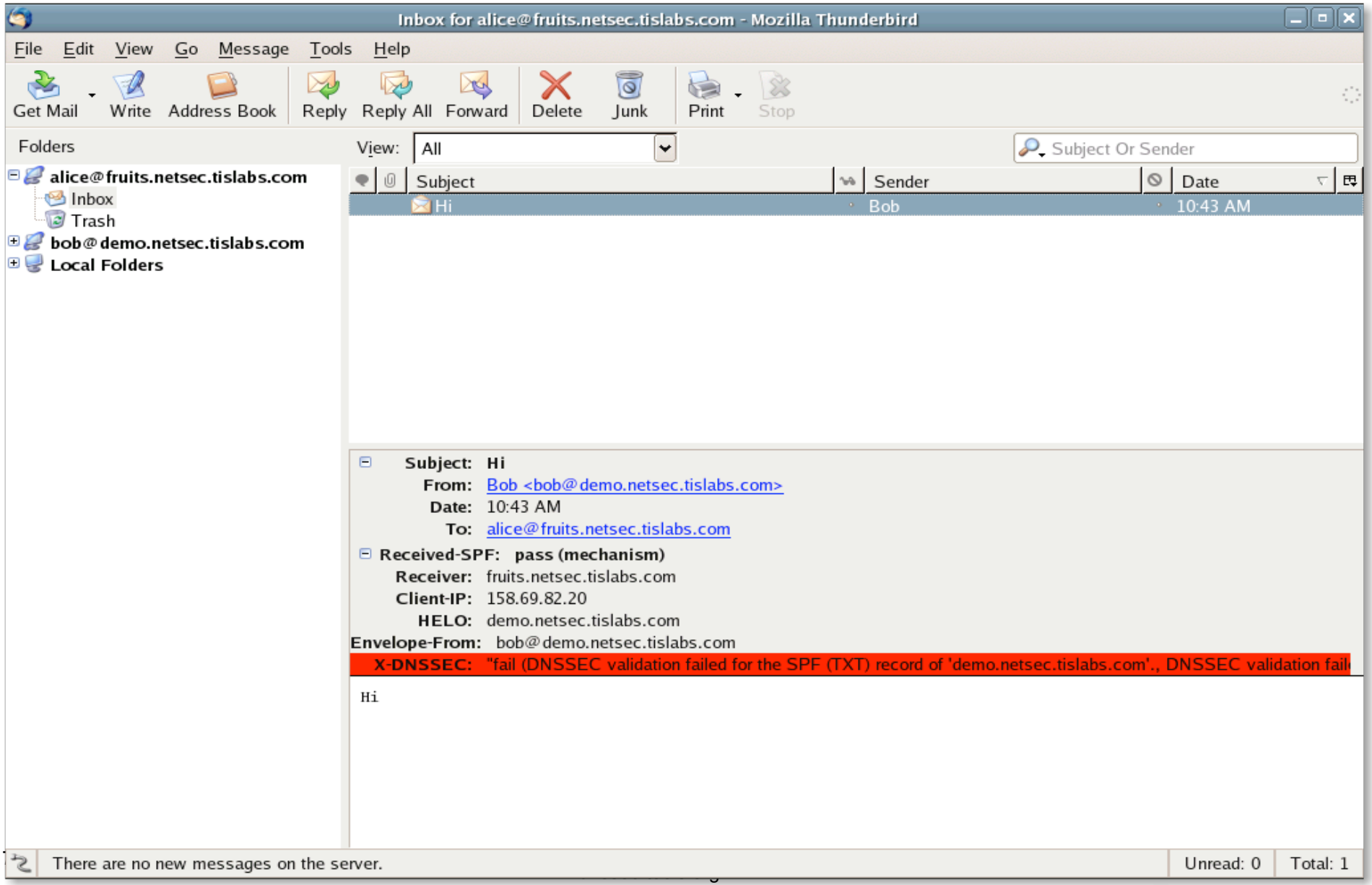
mundy@sparta.com
www.dnssec-deployment.org
www.dnssec-tools.org

Firefox detects validation failures



mundy@sparta.com
www.dnssec-deployment.org
www.dnssec-tools.org

Sendmail+spfmilter detecting validation failures



DNSSEC-Tools: Libraries

- DNSSEC validating resolver library
  - Verifies DNS(SEC) data at the library layer
  - Portable-ish (getting more so)
  - Based on libbind
  - Thread-safe
  - Reentrant
  - Can pull data directly or from a local caching resolver
  - BSD Licensed

mundy@sparta.com
www.dnssec-deployment.org
www.dnssec-tools.org

Zone Management Tools

- Zonesigner
  - Signs zones in one step
  - Defaults do the “right thing” most of the time
- Rollerd
  - Automatic Key-Rollover Daemon
  - Implements key-rollovers with proper timing
- Trustman
  - Trust Anchor Management Daemon
  - Client utility to watch zones for key rollovers

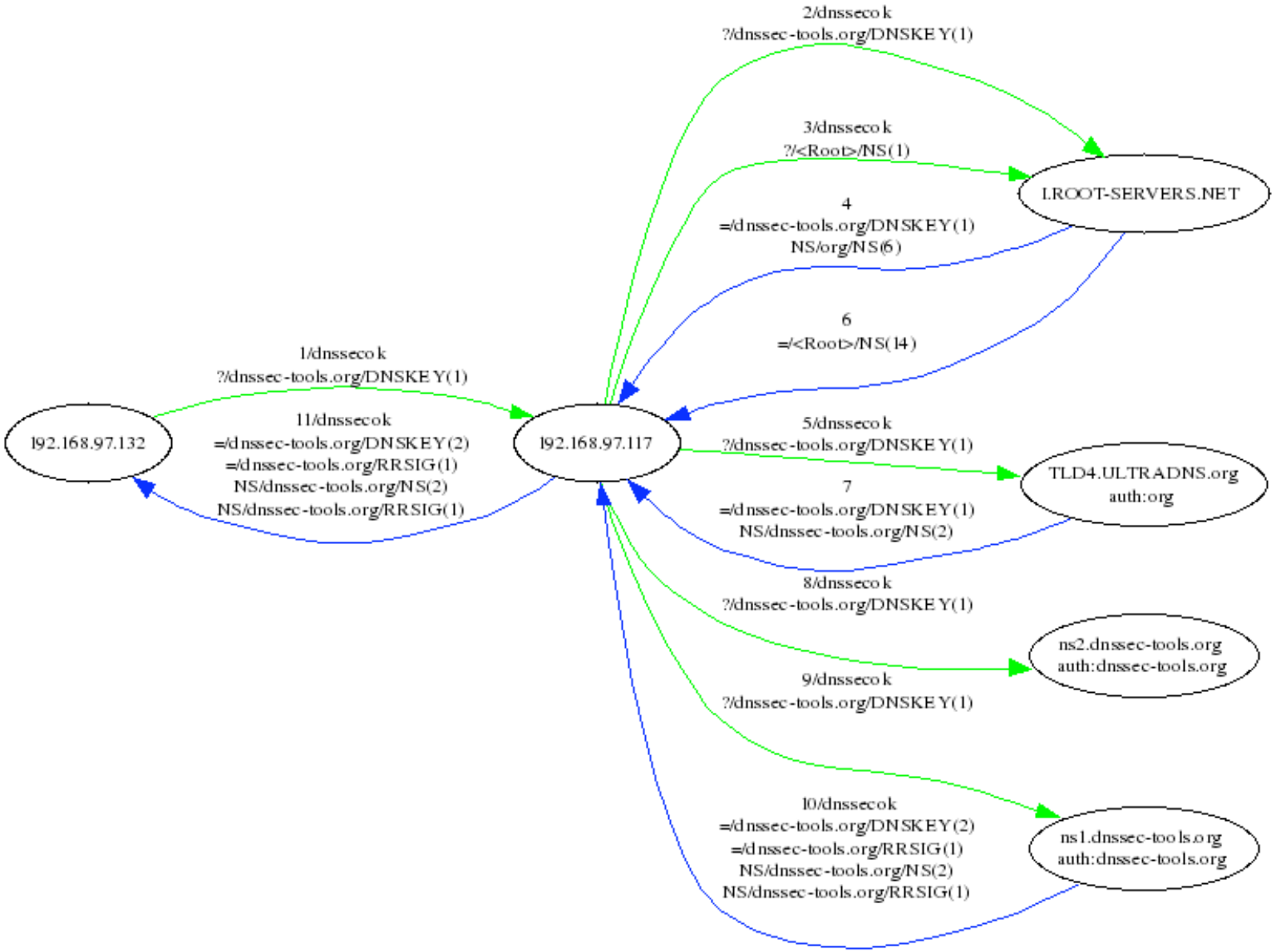
mundy@sparta.com
www.dnssec-deployment.org
www.dnssec-tools.org

Zone Management Tools

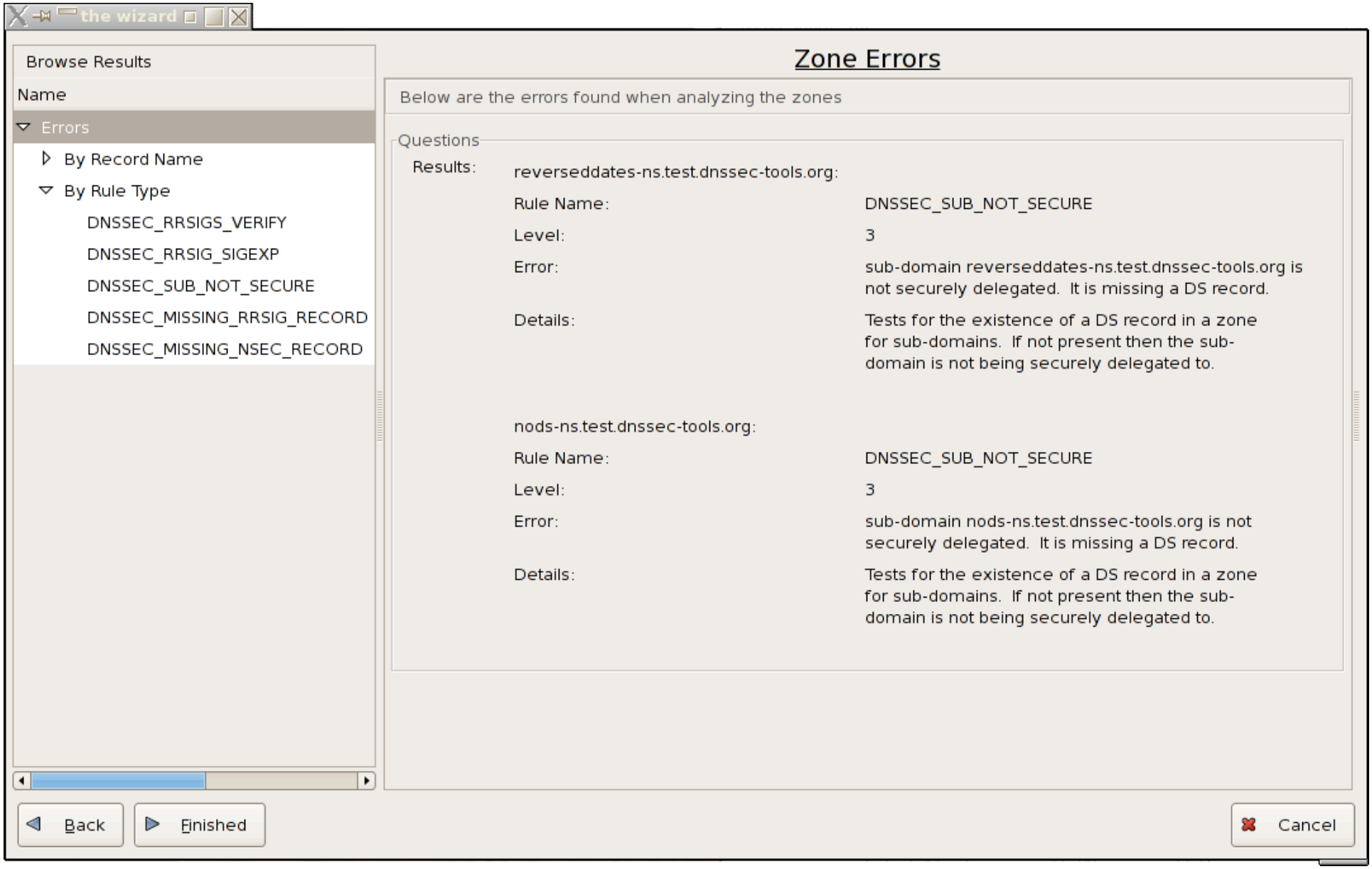
- Utilities:
  - lskrf
  - expchk

mundy@sparta.com
www.dnssec-deployment.org
www.dnssec-tools.org

Trace your queries: dnspktFlow



Check Your Zonefile: DoNutS



Check Your Zonefile: DoNutS

```
# donuts --level 8 -v example.com.signed example.com

--- loading rule file /usr/share/donuts/rules/dnssec.rules.txt
   rules: DNSSEC_RRSIG_TTL_MATCH_ORGTTL DNSSEC_MEMORIZE_NS_RECORDS DNSSEC_MISSING_NSEC_RECORD
DNSSEC_MISSING_RRSIG_RECORD DNSSEC_RRSIG_NOT_SIGNING_RRSIG DNSSEC_RRSIG_FOR_NS_GLUE_RECORD
DNSSEC_NSEC_FOR_NS_GLUE_RECORD DNSSEC_RRSIG_SIGEXP DNSSEC_NSEC_TTL DNSSEC_DNSKEY_MUST_HAVE_SAME_NAME
DNSSEC_DNSKEY_PROTOCOL_MUST_BE_3 DNSSEC_BOGUS_NS_MEMORIZE DNSSEC_MISSING_RRSIG_RECORD
DNSSEC_RRSIG_TTL_MUST_MATCH_RECORD DNSSEC_MISSING_NSEC_RECORD DNSSEC_RRSIG_SIGNER_NAME_MATCHES
DNSSEC_NSEC_RRSEC_MUST_NOT_BE_ALONE DNSSEC_RRSIGS_MUST_NOT_BE_SIGNED DNSSEC_MEMORIZE_KEYS DNSSEC_RRSIGS_VERIFY
--- loading rule file /usr/share/donuts/rules/parent_child.rules.txt
   rules: DNS_MULTIPLE_NS DNSSEC_SUB_NOT_SECURE DNSSEC_DNSKEY_PARENT_HAS_VALID_DS DNSSEC_DS_CHILD_HAS_MATCHING_DNSKEY
--- loading rule file /usr/share/donuts/rules/parent_child_temp.txt
   rules: DNSSEC_SUB_NS_MISMATCH
--- loading rule file /usr/share/donuts/rules/recommendations.rules.txt
   rules: DNS_REASONABLE_TTLS DNS_SOA_REQUIRED DNS_NO_DOMAIN_MX_RECORDS
--- Analyzing individual records in example.com.signed
--- Analyzing records for each name in example.com.signed
example.com:
  Rule Name:   DNS_NO_DOMAIN_MX_RECORDS
  Level:       8
  Warning:     At least one MX record for example.com is suggested

sub2.example.com:
  Rule Name:   DNSSEC_SUB_NOT_SECURE
  Level:       3
  Error:       sub-domain sub2.example.com is not securely delegated.  It
                     is missing a DS record.

results on testing example.com.signed:
  rules considered:       28
  rules tested:                        25
  records analyzed:       52
  names analyzed:         8
  errors found:                        2
```

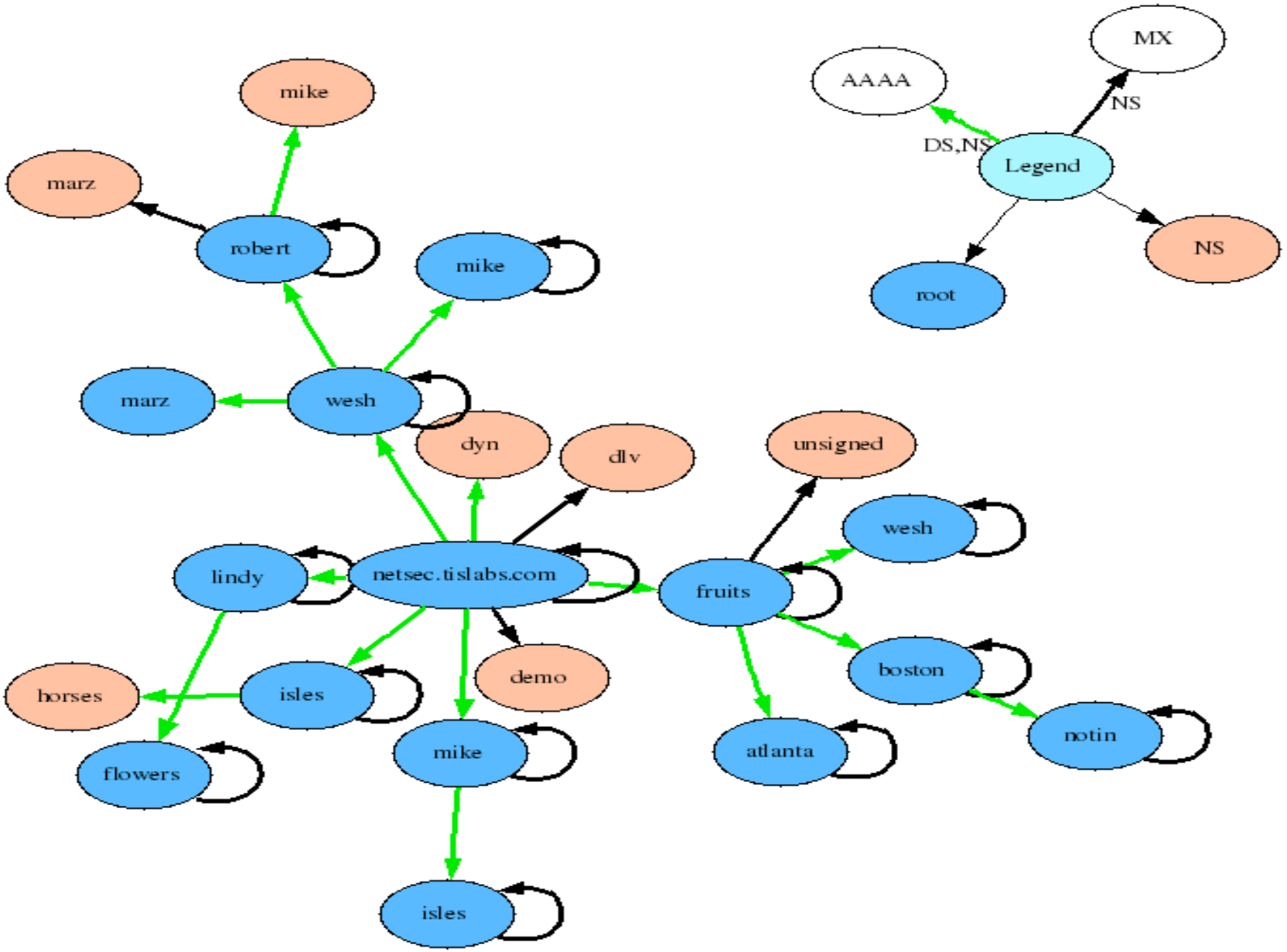

mundy@sparta.com
www.dnssec-deployment.org
www.dnssec-tools.org

Check your logfiles: Logwatch

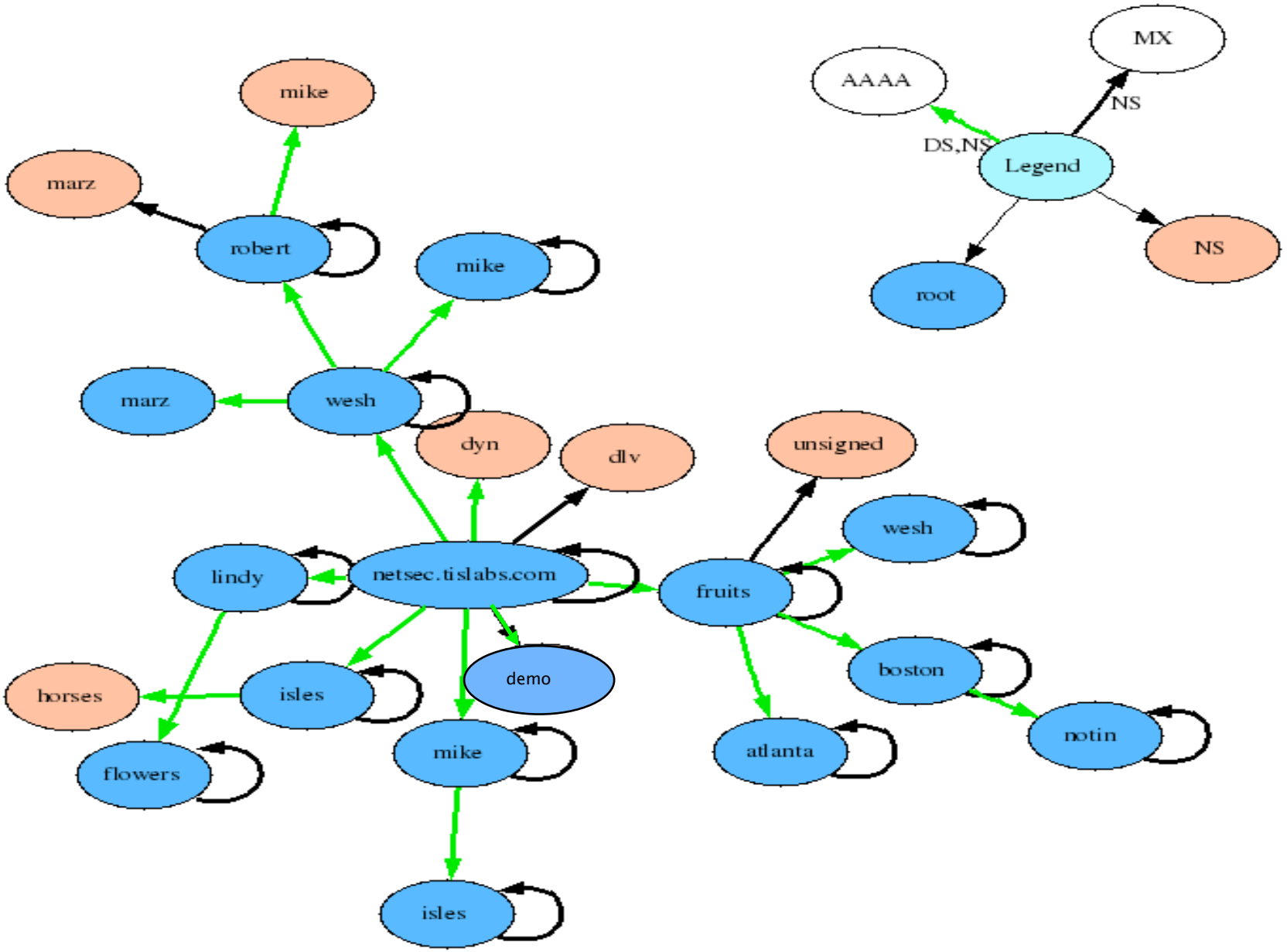
```
 ################### LogWatch 6.0.2 (04/25/05) ####################
        Processing Initiated: Thu Jul  7 10:13:34 2005
        Date Range Processed: all
      Detail Level of Output: 10
            Type of Output: unformatted
          Logfiles for Host: host.example.com
  ##################################################################

 ---------------------- DNSSEC Begin ------------------------

 No Valid Signature received 6 times

 Detail >= 5 log messages:
    Marking as secure 97 times
    Verified rdataset succeeded 97 times
    Attempted positive response validation 96 times
    Nonexistence proof found 20 times
    Attempted negative response validation 18 times
    Validation OK 2 times

 ---------------------- DNSSEC End ------------------------


 ---------------------- Resolver Begin ------------------------


    Received validation completion event  171 times
    Validation OK  125 times
    Nonexistence validation OK received  46 times

 ---------------------- Resolver End ------------------------

 ######################## LogWatch End #########################
```


mundy@sparta.com
www.dnssec-deployment.org
www.dnssec-tools.org

Use Mapper to view zone status (before)



Use Mapper to view zone status (after)



Documentation

- Step-by-step guide for DNSSEC operation using DNSSEC-Tools
- Step-by-step guide for DNSSEC operation using BIND tools
- Manual pages
- User Documentation

mundy@sparta.com
www.dnssec-deployment.org
www.dnssec-tools.org

Developer Resources

- Test zone test.dnssec-tools.org
  - Contains many DNSSEC “errors” to test against
- Validator standard API to be published
- Developers guide to using the validator and resolver libraries – work in progress

mundy@sparta.com
www.dnssec-deployment.org
www.dnssec-tools.org

Questions

?

mundy@sparta.com
www.dnssec-deployment.org
www.dnssec-tools.org