

Zonemaster

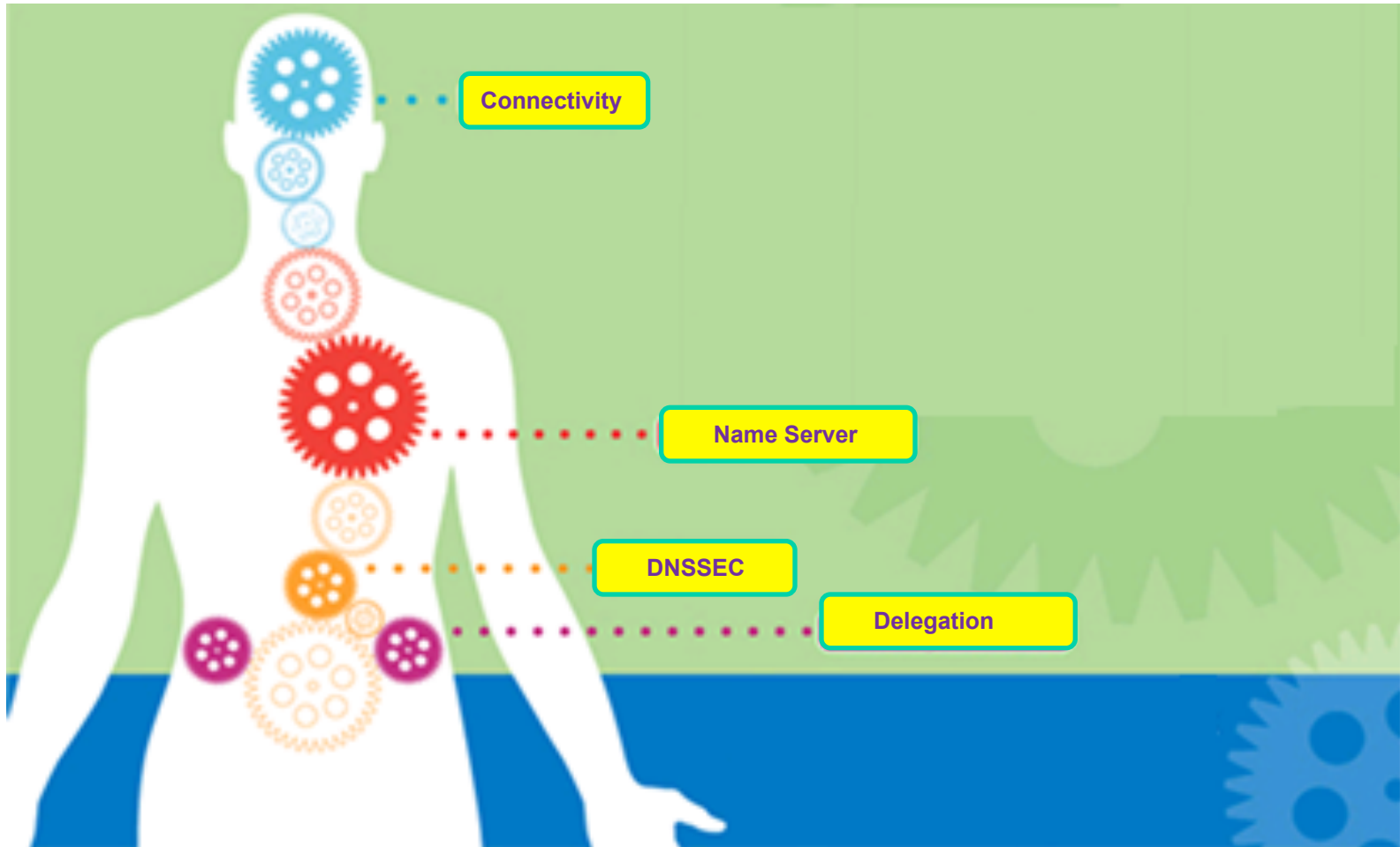
- A Comprehensive tool for DNS validation

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Health check



DNS Health check



Basic tools

✓DNS errors – dig, nslookup

```
afnic@zonemaster:~$ dig rml.info

; <<>> DiG 9.9.5-9+deb8u8-Debian <<>> rml.info
;; global options: +cmd
;; Got answer:
;; ->>HEADER<<- opcode: QUERY, status: NOERROR, id: 2014
;; flags: qr rd ra; QUERY: 1, ANSWER: 1, AUTHORITY: 2, ADDITIONAL: 3

;; OPT PSEUDOSECTION:
; EDNS: version: 0, flags:; udp: 4096
;; QUESTION SECTION:
;rml.info.                IN      A

;; ANSWER SECTION:
rml.info.                 3600    IN      A      80.67.169.65

;; AUTHORITY SECTION:
rml.info.                 86399   IN      NS     ns0.abul.org.
rml.info.                 86399   IN      NS     rml1.rml.info.

;; ADDITIONAL SECTION:
ns0.abul.org.             86400   IN      A      195.214.228.104
rml1.rml.info.            86399   IN      A      80.67.169.65

;; Query time: 214 msec
;; SERVER: 127.0.0.1#53(127.0.0.1)
;; WHEN: Thu Jun 22 09:26:10 CEST 2017
;; MSG SIZE rcvd: 132
```

Comprehensive verification of a DNS zone using Zonemaster – from the CLI (1/2)

```
afnic@zonemaster:~$ zonemaster-cli --level DEBUG rml1.info
Seconds Level Message
=====
0.00 DEBUG SYSTEM:START_TIME string=2017-06-22 09:16:17 +0200; time_t=1498115777
0.00 DEBUG SYSTEM:TEST_TARGET module=all; zone=rml1.info
0.00 DEBUG Using module Zonemaster::Test::Basic version v1.0.2.
0.00 INFO Using version v1.0.15 of the Zonemaster engine.
0.01 DEBUG Using prerequisite module Net::LDNS version 0.75.
0.01 DEBUG Using prerequisite module IO::Socket::INET6 version 2.72.
0.01 DEBUG Using prerequisite module Moose version 2.1213.
0.01 DEBUG Using prerequisite module Module::Find version 0.12.
0.01 DEBUG Using prerequisite module JSON version 2.61.
0.01 DEBUG Using prerequisite module File::ShareDir version 1.102.
0.01 DEBUG Using prerequisite module File::Slurp version 9999.19.
0.02 DEBUG Using prerequisite module Net::IP version 1.26.
0.02 DEBUG Using prerequisite module List::MoreUtils version 0.33.
0.02 DEBUG Using prerequisite module Mail::RFC822::Address version 0.3.
0.02 DEBUG Using prerequisite module Scalar::Util version 1.38.
0.02 DEBUG Using prerequisite module Hash::Merge version 0.200.
0.02 DEBUG Using prerequisite module Readonly version 2.
0.03 INFO Configuration was read from /usr/local/share/perl/5.20.2/auto/share/dist/Zonemaster/config.json.
0.03 INFO Policy was read from /usr/local/share/perl/5.20.2/auto/share/dist/Zonemaster/policy.json.
2.28 INFO Nameserver for zone info replies when trying to fetch glue.
2.28 INFO Nameserver for zone info listed these nameservers as glue: ns0.abul.org.,rml1.rml1.info..
3.67 INFO IPv4 is enabled, can send "NS" query to ns0.abul.org/195.214.228.104.
3.70 INFO Nameserver ns0.abul.org listed these servers as glue: ns0.abul.org.,rml1.rml1.info..
3.70 INFO IPv4 is enabled, can send "NS" query to rml1.rml1.info/80.67.169.65.
3.72 INFO Nameserver rml1.rml1.info listed these servers as glue: ns0.abul.org.,rml1.rml1.info..
3.72 INFO Functional nameserver found. "A" query for www.rml1.info test skipped.
3.73 DEBUG Module Zonemaster::Test::Basic finished running.
3.73 DEBUG Using module Zonemaster::Test::Address version v1.0.1.
4.84 INFO All Nameserver addresses are in the routable public addressing space.
7.80 INFO Reverse DNS entry exists for each Nameserver IP address.
7.80 NOTICE Nameserver ns0.abul.org has an IP address (195.214.228.104) with mismatched PTR result (hier0.abul.org.).
7.81 DEBUG Module Zonemaster::Test::Address finished running.
7.81 DEBUG Using module Zonemaster::Test::Connectivity version v1.0.6.
7.81 INFO Nameserver ns0.abul.org/195.214.228.104 accessible over UDP on port 53.
7.83 INFO Nameserver rml1.rml1.info/80.67.169.65 accessible over UDP on port 53.
7.86 INFO Nameserver ns0.abul.org/195.214.228.104 accessible over TCP on port 53.
7.88 INFO Nameserver rml1.rml1.info/80.67.169.65 accessible over TCP on port 53.
14.57 DEBUG [ASN:RAW] 195.214.228.104;9180 | 195.214.228.0/24 | FR | ripenc | 2003-12-09
```

Comprehensive verification of a DNS zone using Zonemaster – from the CLI (2/2)

```
14.94 INFO All the nameservers have SOA record.
14.95 INFO All of the nameserver names are listed both at parent and child.
14.95 DEBUG Module Zonemaster::Test::Delegation finished running.
14.95 INFO The module Example was disabled by the policy.
14.96 DEBUG Using module Zonemaster::Test::Nameserver version v1.0.5.
14.99 INFO None of the following nameservers is a recursor : ns0.abul.org,rml11.rml1.info.
15.03 INFO The following nameservers support EDNS0 : ns0.abul.org/195.214.228.104,rml11.rml1.info/80.67.169.65.
15.07 INFO AXFR not available on nameserver ns0.abul.org/195.214.228.104.
15.09 INFO AXFR not available on nameserver rml11.rml1.info/80.67.169.65.
15.10 INFO All nameservers reply with same IP used to query them.
15.14 INFO The following nameservers answer AAAA queries without problems : rml11.rml1.info/80.67.169.65,ns0.abul.org/195.214.228.104.
15.15 INFO All nameservers succeeded to resolve to an IP address.
15.18 INFO None of the following nameservers returns an upward referral : ns0.abul.org,rml11.rml1.info.
15.21 INFO Nameserver ns0.abul.org/195.214.228.104 preserves original case of queried names (www.RmLl.InFo).
15.22 INFO Nameserver rml11.rml1.info/80.67.169.65 preserves original case of queried names (www.RmLl.InFo).
15.27 DEBUG When asked for SOA records on "www.rMLL.INfO" and "www.rml1.inFo", nameserver ns0.abul.org/195.214.228.104 returns same RCODE "NOERROR".
15.30 DEBUG When asked for SOA records on "www.rMLL.INfO" and "www.rml1.inFo", nameserver rml11.rml1.info/80.67.169.65 returns same RCODE "NOERROR".
15.30 INFO When asked for SOA records on "www.rml1.info" with different cases, all servers reply consistently.
15.31 DEBUG Module Zonemaster::Test::Nameserver finished running.
15.31 DEBUG Using module Zonemaster::Test::Syntax version v1.0.1.
15.31 INFO No illegal characters in the domain name (rml1.info).
15.31 INFO Neither end of any label in the domain name (rml1.info) has a hyphen.
15.31 INFO Domain name (rml1.info) has no label with a double hyphen ('--') in position 3 and 4 (with a prefix which is not 'xn--').
15.32 INFO Nameserver (ns0.abul.org) syntax is valid.
15.32 INFO Nameserver (rml11.rml1.info) syntax is valid.
15.33 INFO There is no misused '@' character in the SOA RNAME field (root.admin.rml1.info).
15.34 INFO The SOA RNAME field (root@admin.rml1.info) is compliant with RFC2822.
15.34 INFO SOA MNAME (admin.rml1.info) syntax is valid.
15.36 INFO Domain name MX (rml11.rml1.info) syntax is valid.
15.37 DEBUG Module Zonemaster::Test::Syntax finished running.
15.37 DEBUG Using module Zonemaster::Test::Zone version v1.0.1.
16.46 NOTICE SOA 'mname' nameserver (admin.rml1.info) is not listed in "parent" NS records for tested zone (ns0.abul.org;rml11.rml1.info).
16.47 INFO SOA 'refresh' value (21600) is greater than the minimum recommended value (14400).
16.47 INFO SOA 'refresh' value (21600) is greater than the SOA 'retry' value (3600).
16.48 DEBUG SOA 'retry' value (3600) is greater than the minimum recommended value (3600).
16.48 INFO SOA 'expire' value (604800) is higher than the minimum recommended value (604800) and not lower than the 'refresh' value (21600).
16.48 INFO SOA 'minimum' value (86400) is within the recommended ones (300/86400).
16.87 NOTICE SOA 'mname' value (admin.rml1.info) refers to a NS which is an alias (CNAME).
17.24 NOTICE SOA 'mname' value (admin.rml1.info) refers to a NS which is an alias (CNAME).
17.25 WARNING No IP address found for SOA 'mname' nameserver (admin.rml1.info).
17.25 DEBUG MX record for the domain is not pointing to a CNAME.
17.26 INFO Target (MX=rml11.rml1.info) found to deliver e-mail for the domain name.
17.26 DEBUG Module Zonemaster::Test::Zone finished running.
```

Target Users

- ✓ End-user (connect directly to the public GUI “zonemaster.net”)
- ✓ Domain administrators (install your own Engine and the CLI)
 - ✓ Engine - <https://github.com/dotse/zonemaster-engine/blob/master/docs/Installation.md>
 - ✓ CLI - <https://github.com/dotse/zonemaster-cli/blob/master/docs/Installation.md>
- ✓ If you want to have control of your uses :
 - ✓ Backend with database -
<https://github.com/dotse/zonemaster-backend/blob/master/docs/Installation.md>
 - ✓ GUI - <https://github.com/dotse/zonemaster-gui/blob/master/docs/Installation.md>
- ✓ You can also use it from your application

Comprehensive verification of a DNS zone using Zonemaster – from the GUI

Domain check Pre-delegated domain FAQ

Domain name

rml1.info

Advanced options

Test # 424521

Executed at 2017-06-22T07:19+0200

Link
<https://zonemaster.net/test/faf823ff7640e31f>

Basic Advanced Export History

- ✓ SYSTEM
- ✓ BASIC
- ✓ ADDRESS
- ✓ CONNECTIVITY
- ✓ CONSISTENCY
- ✓ DNSSEC
- ✓ DELEGATION
- ✓ NAMESERVER
- ✓ SYNTAX
- ⚠ ZONE

SOA 'mname' nameserver (admin.rml1.info) is not listed in "parent" NS records for tested zone (ns0.abul.org, rml1.rml1.info).

SOA 'refresh' value (21600) is greater than the minimum recommended value (14400).

SOA 'refresh' value (21600) is greater than the SOA 'retry' value (3600).

SOA 'expire' value (604800) is higher than the minimum recommended value (604800) and not lower than the 'refresh' value (21600).

SOA 'minimum' value (86400) is within the recommended ones (300/86400).

SOA 'mname' value (admin.rml1.info) refers to a NS which is an alias (CNAME).

SOA 'mname' value (admin.rml1.info) refers to a NS which is an alias (CNAME).

No IP address found for SOA 'mname' nameserver (admin.rml1.info).

Target (MX=rml1.rml1.info) found to deliver e-mail for the domain name.

Zonemaster Test Engine Version: v1.0.16 - IP address: 2001:67c:1348:7::86:48

How to run a test from the CLI?

```
afnic@zonemaster:~$ zonemaster-cli rml1.info
Seconds Level    Message
=====
17.83 NOTICE    Nameserver ns0.abul.org has an IP address (195.214.228.104) with mismatched PTR result (hiero.abul.org.).
29.90 NOTICE    There are neither DS nor DNSKEY records for the zone.
29.90 NOTICE    The zone is not signed with DNSSEC.
31.56 NOTICE    SOA 'mname' nameserver (admin.rml1.info) is not listed in "parent" NS records for tested zone (ns0.abul.org;rml1.rml1.info).
31.96 NOTICE    SOA 'mname' value (admin.rml1.info) refers to a NS which is an alias (CNAME).
32.35 NOTICE    SOA 'mname' value (admin.rml1.info) refers to a NS which is an alias (CNAME).
32.35 WARNING    No IP address found for SOA 'mname' nameserver (admin.rml1.info).
```

Options from the CLI

```
afnic@zonemaster:~$ zonemaster-cli --usage
usage: zonemaster-cli [-?h] [long options...]
-h -? --usage --help Prints this usage information.
--version Print version information and exit.
--level The minimum severity level to display. Must be
one of CRITICAL, ERROR, WARNING, NOTICE, INFO or
DEBUG.
--locale The locale to use for messages translation.
--json Flag indicating if output should be in JSON or
not.
--json_stream Flag indicating if output should be streaming
JSON or not.
--json_translate Flag indicating if streaming JSON output should
include the translated message of the tag or not.
--raw Flag indicating if output should be translated
to human language or dumped raw.
--time Print timestamp on entries.
--show_level Print level on entries.
--show_module Print the name of the module on entries.
--ns A name/ip string giving a nameserver for
undelegated tests, or just a name which will be
looked up for IP addresses. Can be given
multiple times.
--save Name of a file to save DNS data to after running
tests.
--restore Name of a file to restore DNS data from before
running test.
--ipv4 Flag to permit or deny queries being sent via
IPv4. --ipv4 permits IPv4 traffic, --no-ipv4
forbids it.
--ipv6 Flag to permit or deny queries being sent via
IPv6. --ipv6 permits IPv6 traffic, --no-ipv6
forbids it.
--list_tests Instead of running a test, list all available
tests.
--test Specify test to run. Should be either the name of
a module, or the name of a module and the
name of a method in that module separated by a
"/" character (Example: "Basic/basic1"). The
method specified must be one that takes a zone
object as its single argument. This switch can
be repeated.
--stop_level As soon as a message at this level or higher is
logged, execution will stop. Must be one of
CRITICAL, ERROR, WARNING, NOTICE, INFO or DEBUG.
--config Name of configuration file to load.
--policy Name of policy file to load.
--ds Strings with DS data on the form
"keytag,algorithm,type,digest"
--count Print a count of the number of messages at each
level
--progress Boolean flag for activity indicator. Defaults to
on if STDOUT is a tty, off if it is not.
--encoding Name of the character encoding used for command
line arguments
--nstimes At the end of a run, print a summary of the
times the zone's name servers took to answer.
--dump_config Print the effective configuration used in JSON
format, then exit.
--dump_policy Print the effective policy used in JSON format,
then exit.
--sourceaddr Local IP address that the test engine should try
to send its requests from.
--elapsed Print elapsed time at end of run.
```

Comprehensive verification of a DNS zone using Zonemaster – from the API

```
$ curl -H "Content-Type: application/json" -d '{"jsonrpc": "2.0", "method": "start_domain_test", "id": "2017:0001000", "params": {"domain": "rml1.info", "profile": "default_profile"}}' http://localhost:5000/
```

```
{ "jsonrpc": "2.0", "id": "2017:0001000", "result": "e701a3d252608c6b" }
```

```
$ curl -H "Content-Type: application/json" -d '{"jsonrpc": "2.0", "id": "2017:0001000", "method": "get_test_results", "params": {"id": "e701a3d252608c6b", "language": "en"}}' http://localhost:5000/
```

```
$ curl -H "Content-Type: application/json" -d '{"jsonrpc": "2.0", "id": "2017:0001000", "method": "get_test_results", "params": {"id": "e701a3d252608c6b", "language": "en"}}' http://localhost:5000/
{"result": {"hash_id": "e701a3d252608c6b", "id": "10", "params": {"profile": "default_profile", "domain": "rml1.info"}, "results": [{"module": "SYSTEM", "level": "INFO", "message": "Using version v2.0.1 of the Zonemaster engine.\n"}, {"module": "SYSTEM", "level": "INFO", "message": "Configuration was read from DEFAULT CONFIGURATION\n"}, {"level": "INFO", "message": "Policy was read from DEFAULT POLICY\n", "module": "SYSTEM"}, {"level": "INFO", "message": "Policy was read from /usr/local/share/perl/5.20.2/auto/share/dist/Zonemaster-Engine/iana-profile.json.\n", "module": "SYSTEM"}, {"message": "Parent domain 'info' was found for the tested domain.\n", "level": "INFO", "module": "BASIC"}, {"level": "INFO", "message": "IPv4 is enabled, can send \"NS\" query to ns0.abul.org/195.214.228.104.\n", "module": "BASIC"}, {"module": "BASIC", "level": "INFO", "message": "Nameserver ns0.abul.org listed these servers as glue: ns0.abul.org., rml1.rml1.info.\n"}, {"level": "INFO", "module": "BASIC", "message": "IPv4 is enabled, can send \"NS\" query to rml1.rml1.info/80.67.169.65.\n"}, {"level": "INFO", "message": "Nameserver rml1.rml1.info listed these servers as glue: ns0.abul.org., rml1.rml1.info.\n", "module": "BASIC"}, {"message": "Functional nameserver found. \"A\" query for www.rml1.info test skipped.\n", "level": "INFO", "module": "BASIC"}, {"level": "INFO", "message": "All Nameserver addresses a
```

Running a batch test from the backend using JSON-RPC (1/2)

```
{
  "jsonrpc": "2.0",
  "id": 147559211348450,
  "method": "add_batch_job",
  "params" : {
    "api_key": "fromage",
    "username": "citron",
    "test_params": {},
    "domains": [
      "zonemaster.net",
      "domain1.se",
      "domain2.fr"
    ]
  }
}
```

Example response:

```
{
  "jsonrpc": "2.0",
  "id": 147559211348450,
  "result": 8
}
```

Running a batch test from the backend using JSON-RPC (2/2)

```
{
  "jsonrpc": "2.0",
  "id": 147559211994909,
  "method": "get_batch_job_result",
  "params": "8"
}
```

Example response:

```
{
  "jsonrpc": "2.0",
  "id": 147559211994909,
  "result": {
    "nb_finished": 5,
    "finished_test_ids": [
      "43b408794155324b",
      "be9cbb44fff0b2a8",
      "62f487731116fd87",
      "692f8ffc32d647ca",
      "6441a83fcee8d28d"
    ],
    "nb_running": 195
  }
}
```

<https://github.com/dotse/zonemaster-backend/blob/develop/docs/API.md> (Documentation is being

Updated)



Using Zonemaster from your application

Use Zonemaster;

```
# execute a test
```

```
my @log = Zonemaster->test_zone( 'fosdem2018.org' );  
my @json = Zonemaster->logger->json( 'NOTICE' );
```

```
# get name servers of a zone
```

```
my @zone = Zonemaster->zone( 'fosdem2018.org' );  
my @nameservers = join( ' ', @{ $zone->ns_names } );
```

You can implement Zonemaster tool for your internal use

iis Zonemaster

Domain check Pre-delegated domain check Common questions | Svenska

Test your DNS server today.

Option - check domain with : IPv4 IPv6

Input `zpbne.tld` **Test Now**

Secure | <https://kommunermeddnssec.se>

ookmarks afnic extra Tech conf org ietf Translation Maths dict Network Tools MBA motounit House IoT



Zonemaster in brief

- ✓ Open Source Project
 - ✓ Source code written in Perl & Java Script (BSD-2 License)
 - ✓ Documentation (CC BY 4.0 License)
- ✓ Aim – to be the state-of-art checking tool for Internet domain names
- ✓ Can check delegated and non-delegated zones
- ✓ Provides CLI/Web/API interfaces
- ✓ Provides high/medium/low levels of output
- ✓ Provides different output formats – Web/Text/JSON
- ✓ Currently supports outputs in English, French, Swedish and Danish
- ✓ Can be tailored for your needs
- ✓ OS versions supported – Debian, CentOS, FreeBSD, Ubuntu

Requirements to test case mapping

<https://github.com/dotse/zonemaster/blob/master/docs/requirements/TestRequirements.md>

Req	Requirement description	Level and Test Case
R01	UDP connectivity	CONNECTIVITY
R02	TCP connectivity	CONNECTIVITY
R03	Address in a private network	ADDRESS
R04	Address should not be part of a bogon prefix	ADDRESS
R05	Illegal symbols in domain name	SYNTAX
R06	Dash ('-') at start or beginning of domain name	SYNTAX
R07	Double dash in domain name	SYNTAX
R08	The child domain has atleast one working name server	BASIC
R09	At least two nameservers for the domain	DELEGATION
R10	Identical addresses	DELEGATION
R11	Nameserver addresses on same subnet	CONNECTIVITY
R12	Nameserver addresses are all on the same subnet	CONNECTIVITY

Documentation (1/3)

✓ 84 requirements Classified into 8 categories (<https://github.com/dotse/zonemaster/tree/master/docs/specifications/tests>)

- ✓ Basic
 - ✓ Address
 - ✓ Connectivity
 - ✓ Consistency
 - ✓ Delegation
 - ✓ DNSSEC
 - ✓ Name Server
 - ✓ Syntax
- ✓ All test specifications are documented

Documentation (2/3)

🔗 BASIC00: Domain name must be valid

Test case identifier

BASIC00 Domain name must be valid

Objective

In order to begin testing the domain name from the input must be a valid domain name. The domain name must follow the rules defined in section 2.3.1 of [RFC 1123](#). The objective of this test is to see if it is possible to have the domain name mapped into a DNS packet in order to proceed with further testing.

Inputs

The label of the domain name to be tested.

Documentation (3/3)

Ordered description of steps to be taken to execute the test case

1. If the input domain name starts with a "." character or has two or more consecutive "." characters the test case fails.
2. Remove any trailing "." character from the input domain name.
3. If the domain name contains non-ASCII characters, try to convert it to an ASCII domain, without a trailing "." character, with the IDN rules (see above). If the conversion fails, then this test case fails.
4. If the domain name does not meet the requirement of permissible characters of an ASCII domain above, this test case fails.
5. If the total length of the input is more than 253 octets, this test case fails.
6. Separate the input by the dividing it into labels separated by the "." character.
7. If any of the labels from step 6 has more than 63 octets, this test case fails.

Outcome(s)

The outcome is PASS or FAIL.

Special procedural requirements

If this test fails, it's impossible to continue and the whole testing process is aborted.

Intercase dependencies

None.

Implementation

- ✓ Perl
 - ✓ Engine
 - ✓ Perl library (Zonemaster::*), which implements all functionality for testing
 - ✓ Functionality for logging results
 - ✓ CLI
 - ✓ Backend API
 - ✓ JSON RPC interface to the engine. Can be used by other apps
- ✓ Javascript + Perl
 - ✓ GUI – *A completely updated version of the GUI is planned for may 2018 release*
- ✓ C
 - ✓ LDNS
 - ✓ Resolver functionality built on Idns (Net::LDNS)

Log – Human readable

```
afnic@zonemaster:~$ zonemaster-cli rml1.info
```

```
Seconds Level   Message
```

```
=====
```

```
17.83 NOTICE Nameserver ns0.abul.org has an IP address (195.214.228.104) with mismatched PTR result (hiero.abul.org.).
```

```
29.90 NOTICE There are neither DS nor DNSKEY records for the zone.
```

```
29.90 NOTICE The zone is not signed with DNSSEC.
```

```
31.56 NOTICE SOA 'mname' nameserver (admin.rml1.info) is not listed in "parent" NS records for tested zone (ns0.abul.org;rml1.rml1.info).
```

```
31.96 NOTICE SOA 'mname' value (admin.rml1.info) refers to a NS which is an alias (CNAME).
```

```
32.35 NOTICE SOA 'mname' value (admin.rml1.info) refers to a NS which is an alias (CNAME).
```

```
32.35 WARNING No IP address found for SOA 'mname' nameserver (admin.rml1.info).
```

Log – Raw format

```
afnic@zonemaster:~$ zonemaster-cli --raw rml1.info
17.76 NOTICE ADDRESS:NAMESERVER_IP_PTR_MISMATCH address=195.214.228.104; names=hiero.abul.org.; ns=ns0.abul.org
24.70 NOTICE DNSSEC:NEITHER_DNSKEY_NOR_DS child=195.214.228.104; parent=199.254.31.1
24.70 NOTICE DNSSEC:NOT_SIGNED zone=rml1.info
26.33 NOTICE ZONE:MNAME_NOT_IN_GLUE mname=admin.rml1.info; ns=ns0.abul.org;rml11.rml1.info
26.72 NOTICE ZONE:MNAME_IS_CNAME mname=admin.rml1.info
27.10 NOTICE ZONE:MNAME_IS_CNAME mname=admin.rml1.info
27.10 WARNING ZONE:MNAME_HAS_NO_ADDRESS mname=admin.rml1.info
```

Log – JSON

```
afnic@zonemaster:~$ zonemaster-cli --json rml1.info
[{"args":{"address":"195.214.228.104","names":"hier0.abul.org.","ns":"ns0.abul.org"},"level":"NOTICE","module":"ADDRESS","tag":"NAMESERVER_IP_PTR_MISMATCH","timestamp":17.8147161006927}, {"args":{"child":"195.214.228.104","parent":"199.254.31.1"},"level":"NOTICE","module":"DNSSEC","tag":"NEITHER_DNSKEY_NOR_DS","timestamp":4.8285620212555}, {"args":{"zone":"rml1.info"},"level":"NOTICE","module":"DNSSEC","tag":"NOT_SIGNED","timestamp":24.8302659988403}, {"args":{"mname":"admin.rml1.info","ns":"ns0.abul.org;rml11.rml1.info"},"level":"NOTICE","module":"ZONE","tag":"MNAME_NOT_IN_GLUE","timestamp":26.4367871284485}, {"args":{"mname":"admin.rml1.info"},"level":"NOTICE","module":"ZONE","tag":"MNAME_IS_CNAME","timestamp":26.8380980491638}, {"args":{"mname":"admin.rml1.info"},"level":"NOTICE","module":"ZONE","tag":"MNAME_IS_CNAME","timestamp":27.2167479991913}, {"args":{"mname":"admin.rml1.info"},"level":"WARNING","module":"ZONE","tag":"MNAME_HAS_NO_ADDRESS","timestamp":27.2176601886749}]
```


Log Levels

DEBUG 1, 2, 3

INFO

NOTICE

WARNING

ERROR

CRITICAL



Configured
by
policy

Policy – to decide on the severity level of the results

```
afnic@zonemaster:~$ zonemaster-cli --dump_policy
{
  "ADDRESS" : {
    "NAMESERVERS_IP_WITH_REVERSE" : "INFO",
    "NAMESERVER_IP_PRIVATE_NETWORK" : "ERROR",
    "NAMESERVER_IP_PTR_MATCH" : "INFO",
    "NAMESERVER_IP_PTR_MISMATCH" : "NOTICE",
    "NAMESERVER_IP_WITHOUT_REVERSE" : "WARNING",
    "NO_IP_PRIVATE_NETWORK" : "INFO",
    "NO_RESPONSE_PTR_QUERY" : "WARNING"
  },
  "BASIC" : {
    "A_QUERY_NO_RESPONSES" : "INFO",
    "DOMAIN_NAME_LABEL_TOO_LONG" : "CRITICAL",
    "DOMAIN_NAME_TOO_LONG" : "CRITICAL",
    "DOMAIN_NAME_ZERO_LENGTH_LABEL" : "CRITICAL",
    "HAS_A_RECORDS" : "ERROR",
    "HAS_GLUE" : "INFO",
    "HAS_NAMESERVERS" : "INFO",
    "HAS_NAMESERVER_NO_WWW_A_TEST" : "INFO",
    "IPV4_DISABLED" : "INFO",
    "IPV4_ENABLED" : "INFO",
    "IPV6_DISABLED" : "INFO",
    "IPV6_ENABLED" : "INFO",
    "NOT_A_ZONE" : "CRITICAL",
    "NO_DOMAIN" : "CRITICAL",
    "NO_GLUE" : "CRITICAL",
    "NO_GLUE_PREVENTS_NAMESERVER_TESTS" : "INFO",
    "NO_PARENT_RESPONSE" : "ERROR",
    "NS_FAILED" : "ERROR",
    "NS_NO_RESPONSE" : "NOTICE",
    "PARENT_REPLIES" : "INFO"
  },
  "CONNECTIVITY" : {
    "ASN_INFOS_ANNOUNCE_BY" : "DEBUG",
    "ASN_INFOS_ANNOUNCE_IN" : "DEBUG",
```

Policy – to decide which test cases to run

```
{
  "__testcases__": {
    "syntax01": 1,
    "syntax02": 1,
    "syntax03": 1,
    "syntax04": 1,
    "syntax05": 1,
    "syntax06": 0,
    "syntax07": 1,
    "syntax08": 1
  }
}
```

Config

```
{
  "asnroots" : [ "asnlookup.zonemaster.net", "asnlookup.iis.se",
"asn.cymru.com"],
  "net" : {
    "ipv4" : 1,
    "ipv6" : 1
  },
  "no_network" : 0,
  "resolver" : {
    "defaults" : {
      "debug" : 0,
      "dnssec" : 0,
      "edns_size" : 0,
      "igntc" : 0,
      "recurse" : 0,
      "retrans" : 3,
      "retry" : 2,
      "usevc" : 0
    }
  }
}
```

Config filter – to have fine grained control over the tests

```
"logfilter" : {
  "BASIC" : {
    "IPV6_ENABLED" : [
      {
        "when" : {
          "rrtype" : "NS",
          "ns" : "f.ext.nic.fr",
          "address" : "2001:67c:1010:11::53"
        },
        "set" : "WARNING"
      },
      {
        "when" : {
          "ns" : "h.ext.nic.fr"
        },
        "set" : "ERROR"
      }
    ]
  },
}
```

All configurable features will be integrated to a one profile file (planned for may 2018 release)

Configurable features from the GUI

The screenshot displays the ZONEMASTER web interface. At the top left is the logo for ZONEMASTER, with 'by iis and afnic' written below it. A navigation bar contains links for 'Domain check', 'Pre-delegated domain', and 'FAQ'. A light blue notification box contains the text: 'Notice! This is an undelegated test. What is an undelegated domain test?'. The main section is titled 'Domain name' and features a large white input field with a play button icon to its right. Below this are three expandable sections: 'Nameservers' with a '+' icon, containing two input fields labeled 'NS' and 'IP' with a '-' icon; and 'Digests' with a '+' icon. A 'Fetch data from parent zone' button is located below these sections. Underneath, there is a checked checkbox for 'Advanced options', which includes two sub-checked checkboxes for 'IPv4' and 'IPv6'. At the bottom, there is a dropdown menu labeled 'IANA profile'.

Standardisation efforts

- ✓ <https://tools.ietf.org/html/draft-wallstrom-dnsop-dns-delegation-requirements-03>
- ✓ Also planning to introduce a the specifications as a best practices document at RIPE

Zonemaster Usage & other information

- ✓ IIS, CIRA, DK Hostmaster, Pingdom, RIPE NCC has their own Zonemaster implementation
- ✓ ICANN have recently confirmed that it will be starting to use Zonemaster for PDT.
- ✓ Registrars like ovh and GoDaddy have recommended Zonemaster to their users
- ✓ CENTR (Council for European Top Level Domains) is planning to use Zonemaster
- ✓ IIS and Afnic have dedicated support for Zonemaster (Currently around 6 people are partly working on ZM)
- ✓ Users and contributors are welcome

References

- ✓ Try out Zonemaster at <https://zonemaster.net>
- ✓ Information regarding installation, OS support, documentation, different modules can be found here : <https://github.com/dotse/zonemaster>
- ✓ To contact the team
 - ✓ contact@zonemaster.net
 - ✓ zonemaster-users@lists.iis.se
 - ✓ zonemaster-devel@lists.iis.se (Development related questions)

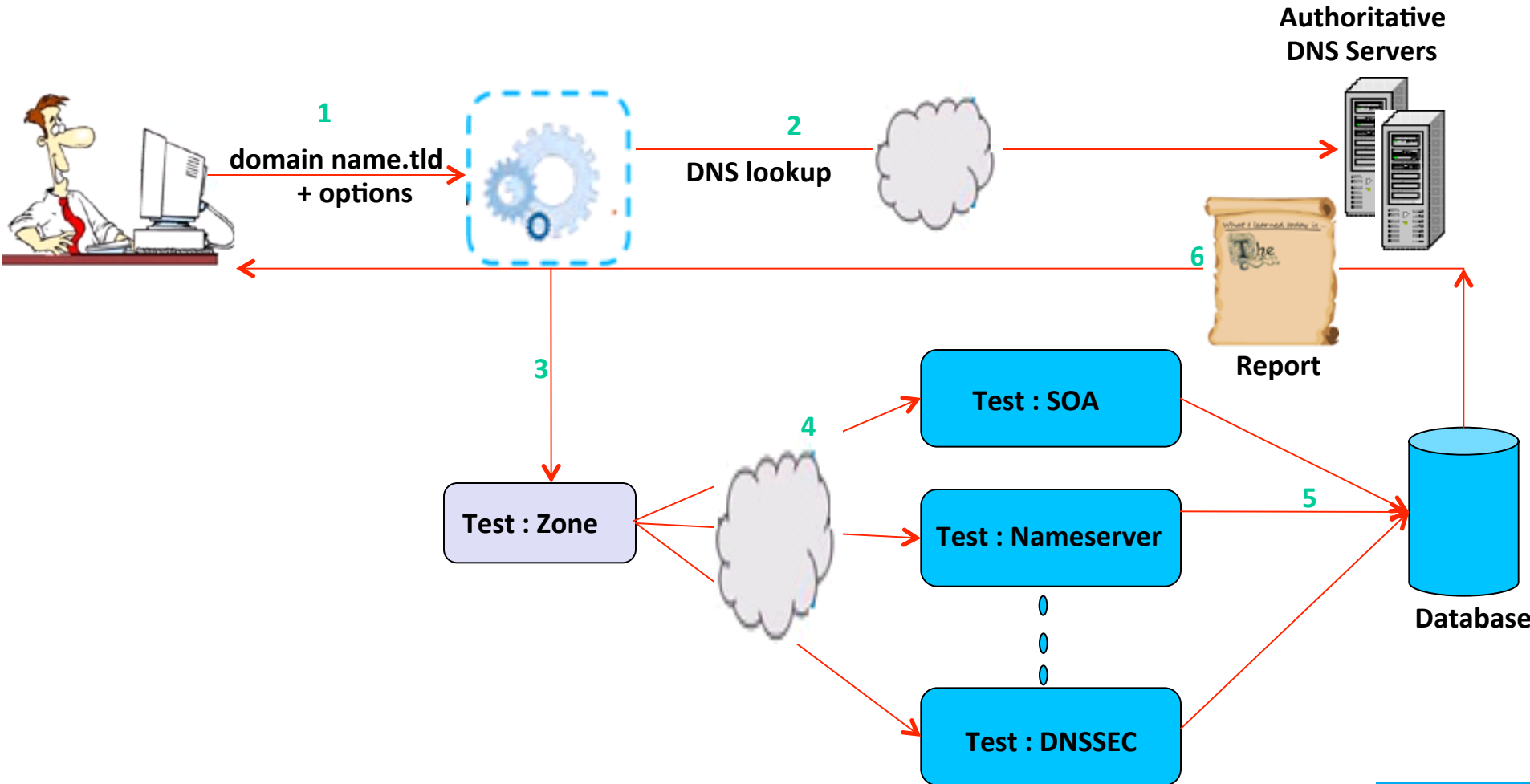
Thank you !

afnic


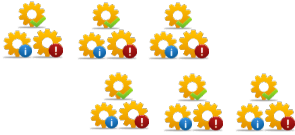
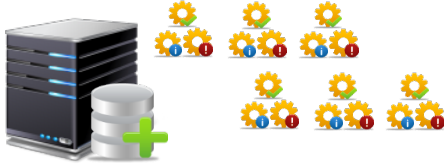
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Architecture



Functional breakdown

Usage method	Test engine	Output type
CLI method		CLI output
Web GUI method		Machine parsable output
Batch method		Web output
		Reports Statistics
		JSON Data