Release of getdns-0.1.0

DNSOPS, IETF 89

getdns core team

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Outline

- Background: getdns-api spec
- Open source implementation
- Major features of this release
- Coming soon

Background of getdns-api

- Paul Hoffman edited as an app-oriented DNS API, first publication April 2013. His slide from APPAREA, IETF 86:
  - "Fully asynchronous,* has multiple ways of using DNSSEC, supports new DNS types"
  - Expanded points
    - Default async
    - Eased leveraging of DANE, DNSSEC, SRV, etc
    - Extensible
- Updated getdns-api February 2014
    - Extensive discussions during the implementation

Acknowledgements

- Paul Hoffman, along with the original getdns-api design group, and the denizens of the getdns-api mailing list
- Matt Larson, who first envisioned this open source project

Open Source Implementation

- Two research labs, Verisign Labs and NLnet Labs, with long-standing interest in enabling DNS innovation and DNS-supported security
  - Also on team: OSS development and QA engineers
- Open source implementation in C with BSD-New license
  - https://github.com/getdnsapi/getdns
- Overview site
  - https://getdnsapi.net
  - Downloads and documentation available
  - https note – best with DANE TLSA

Dependencies

- Are linked outside the build tree, with configure finding them
- We strive to minimize them
- Current set
  - libldns and libunbound from Nlnet Labs (libldns requires openssl headers and libraries)
  - libexpat
  - libidn from FSF, version 1
- Packagers are at work - as of IETF 89
  - brew – formula exists
  - RHEL – in review
    - https://bugzilla.redhat.com/show_bug.cgi?id=1070510

Major features of this release

- Works with a variety of event loops, each built as a separate shared library
  - Details in wiki of the github repo
  - libevent
  - libev
  - libuv
- DNSSEC support fully implemented with well-tested Unbound at base
- Platforms as of IETF 89
  - RHEL/CentOS, MacOS
  - Soon to drop: FreeBSD, iOS (now rough but usable)
  - Windows, Android in view

DNSSEC in the API and implementation

- DNSSEC validation is off by default for stub mode (by design group consensus), but easy to turn on – use of extensions defined in API
  - dnssec_return_status
  - dnssec_return_only_secure
  - dnssec_return_validation_chain

- The API spec allows enabling DNSSEC on a per-request basis via setting the dnssec_return_status extension. For convenience, the implementation provides a means to enable this extension for every request in a given context
  - Documented in getdnsapi repo community wiki

Coming soon

- Planned series of updates (0.1.1, 0.1.2, …) along with more platforms
  - Several fixes ready, plus a patch was contributed by community the day after the release.
- Language bindings
  - Soon after IETF 89: github/getdnsapi/getdns-python
  - TBA: Node.js
  - TBA: Java
  - Join in!
- Release 0.1.0 hasn't implemented all of spec yet
  - MDNS and NetBIOS namespaces – included in spec
  - DNS search suffixes – getdns_context_set_append_name, getdns_context_set_suffix – following DNSOP discussions…
  - GETDNS_TRANSPORT_TCP_ONLY_KEEP_CONNECTIONS_OPEN
  - Full set of EDNS(0) and OPT extensions
  - Full list in README

API examples – getdns_general()

- Some API examples are included for Extra Reading
- getdns_general is typical of public entry points
- Handle arbitrary resource record types

```
getdns_return_t
getdns_general(
  getdns_context_t        context,
  const char              *name,
  uint16_t                request_type,
  struct getdns_dict      *extensions,
  void                    *userarg,
  getdns_transaction_t    *transaction_id,
  getdns_callback_t       callbackfn
);
```

API examples - getdns_address()

- Handles requests by host name
- Always returns both IPv4 and IPv6 addresses
- Uses all name spaces from the context

```
getdns_return_t
getdns_address(
  getdns_context_t        context,
  const char              *name,
  struct getdns_dict      *extensions,
  void                    *userarg,
  getdns_transaction_t    *transaction_id,
  getdns_callback_t       callbackfn
);
```

API examples - getdns_hostname()

- Accepts either IPv4 or IPv6 address

```
getdns_return_t
getdns_hostname(
  getdns_context_t        context,
  struct getdns_dict      *address,
  struct getdns_dict      *extensions,
  void                    *userarg,
  getdns_transaction_t    *transaction_id,
  getdns_callback_t       callbackfn
);
```

API examples - getdns_service()

- Returns the relevant SRV information

```
getdns_return_t
getdns_service(
  getdns_context_t        context,
  const char              *name,
  struct getdns_dict      *extensions,
  void                    *userarg,
  getdns_transaction_t    *transaction_id,
  getdns_callback_t       callbackfn
);
```

Questions?

Most answers will be found at

getdnsapi.net

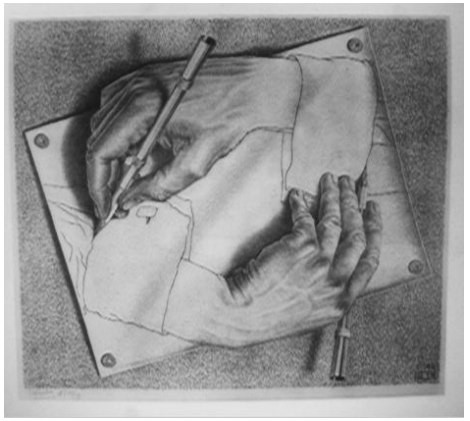
and

github.com/getdnsapi

Backup Material

One API, two modes

- Stub resolver
  - Often implemented via local library (e.g. libresolv)
  - Provides entry points for applications (e.g. gethostbyname)
  - Relies on a recursive name server
  - May not cache, but may implement e.g. single local cache
- Recursive Resolver
  - Typically receives DNS requests via wire protocol
  - Iterates on behalf of clients
  - Typically leverages caching
- getdns-api context controls which of these (2 modes)
- When DNSSEC is enabled for stub mode, the stub can iterate just DNSSEC validation on its own behalf



Stub resolver inDNS ecosystem