

Release of getdns-0.1.0

INTAREA, IETF 89

getdns core team

Allison Mankin, Duane Wessels (Verisign Labs)

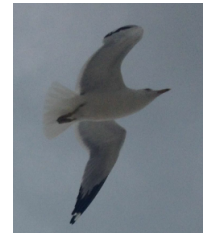
Craig Despeaux, Neel Goyal, Glen Wiley (Verisign)

Olaf Kolkman, Willem Toorop, Wouter Wijngaards (NLnet Labs)

Melinda Shore, No Mountain Software

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

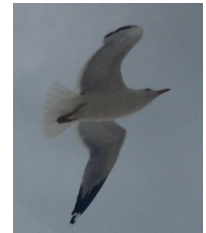
- Paul Hoffman, along with the original getdns-api design group, and the denizens of the getdns-api mailing list
- Matt Larson, who first envisioned this open source project

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

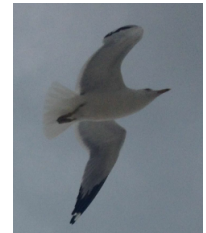
- Planned series of updates (0.1.1, 0.1.2, ...) along with more platforms
 - Several fixes ready, plus a patch was contributed by community the day after the release.
- Language bindings
 - Soon after IETF 89: [github/getdnsapi/getdns-python](https://github.com/getdnsapi/getdns-python)
 - TBA: Node.js
 - 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

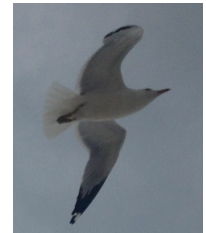
```
getdns_return_t
getdns_address(
    getdns_context_t      context,
    const char            *name,
    struct getdns_dict    *extensions,
    void                  *userarg,
    getdns_transaction_t *transaction_id,
    getdns_callback_t    callbackfn
);
```



API examples - getdns_hostname()

- Accepts either IPv4 or IPv6 address

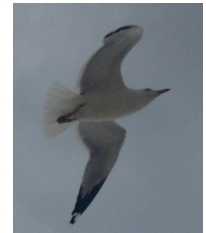
```
getdns_return_t  
getdns_hostname(  
    getdns_context_t          context,  
    struct getdns_dict        *address,  
    struct getdns_dict        *extensions,  
    void                      *userarg,  
    getdns_transaction_t     *transaction_id,  
    getdns_callback_t        callbackfn  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



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?

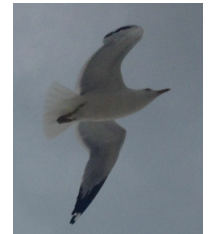
Most answers will be found at

getdnsapi.net

and

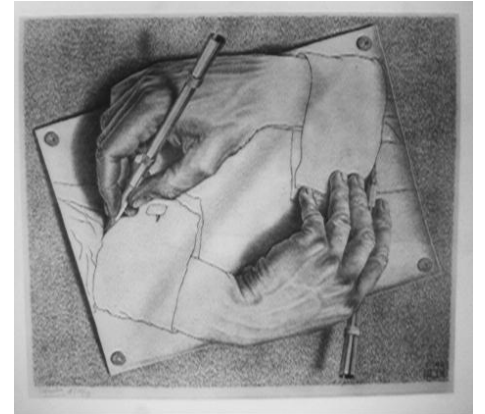
github.com/getdnsapi

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 in DNS ecosystem

