DNS QTYPE to retrieve IPv4 and IPv6 address
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Abstract

This document proposes a new query type to be used in the DNS [RFC1035] implementation. This is used to retrieve all the IPv4 as well as IPv6 addresses of a host using a single query.

1. Introduction

Currently there is no mechanism to get all the v4 and v6 addresses of a host with a single query. This proposal defines a new query type "ADDR" which can be used by a client while querying the DNS server. While processing this query type, the server should return all the records of type T_A & T_AAAA for the QNAME in question, in the answer section of the response.
2. Rationale

In DNS IPv4 address is identified by the RR type T_A and IPv6 address by T_AAAA. As the IPv6 deployment is increasing, the dual stack implementations are becoming more common. In this case each hosts will have IPv4 as well as IPv6 address. This calls for the need of retrieving all the v4 as well as v6 address for a particular host. Currently this is achieved by using more than one queries.

Most of the internet services need to know the addresses of a host inorder to communicate with it. When DNS is used for address resolution, the queries and responses has to travel over the network and so the time taken to resolve the address of a host becomes very critical.

3. The ADDR qtype

The ADDR query type is defined with mnemonic ADDR and type code [TBD]. This is defined for the IN class. Using this query type, client can request for all the addresses of a host using a single query.

While processing this query type, the server should return all the records of type T_A & T_AAAA for the host in question. All these records should be provided in the answer section of the response.

The server may order all the T_AAAA types first and followed by T_A types. A6 record type is not considered as it is deprecated.

4. Advantage over "ALL" QTYPE

The query type denoted by "*" with a value of 255 [see RFC1035 Section 3.2.3] will cause the server to return all types of records corresponding to the QNAME in question. This include A, NS, MX, SOA, CNAME, HINFO etc. For a client looking for the addresses of a host, it is inefficient to process all these records and choose the T_A and T_AAAA.

For a DNS server, it has to provide all the RR types of the QNAME if queried with "ALL" QTYPE. This is an overhead to the server. Moreover the DNS packet size will be a limitation to provide all the types of records in a response.
5. Operational Consideration

The existing clients can be easily modified to use this QTYPE and if does not get an answer, fall back to the two query sequence as they do now.

The old servers which does not support this query type, will return a not implemented RCODE whereas the servers which supports this query type will return the T_A and T_AAAA RRs.

6. Security Consideration

The ADDR query type as such does not introduce any new security problems into the DNS.

7 - References


8. IANA Considerations

IANA is requested to allocate a QTYPE value for the ADDR query type.

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