Abstract

This document describes a new DNS record type, ALIAS, which is used by authoritative name servers to resolve a stored host name to its corresponding A or AAAA records at request time.

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1. Introduction

1.1. Background and Motivation

DNS [RFC 1035] forbids the use of CNAME records on a node with other records. It is common practice for web sites publish content on their second-level domain name, and currently the only standards-compliant way to achieve this is to use A and AAAA records on the zone apex.

The challenge with this limitation is that service providers would like to have flexibility over their network addressing but are required to communicate any address changes to all customers and give appropriate time for customers to update their DNS entries to ensure a smooth transition to a new address space. As the number of customers increases for a service provider, this approach becomes increasingly difficult to manage and results in difficulties for both the service provider and their customers.

The ALIAS record type (also known as ANAME or flattened CNAME) provides a way for DNS managers to specify a hostname in their DNS records which is then resolved to the correct A or AAAA records at request time.

1.2. Terminology

"QTYPE" - The query type as defined in [RFC1035] and subsequent DNS RFCs.

The key words "MUST", "MUST NOT", "REQUIRED", "SHALL", "SHALL NOT", "SHOULD", "SHOULD NOT", "RECOMMENDED", "MAY", and "OPTIONAL" in this document are to be interpreted as described in RFC 2119 [RFC2119].

2. The ALIAS Resource Record

Its RDATA is comprised of a single field, "target", which contains a fully qualified domain name that MUST be sent in uncompressed form [RFC1035]. The "target" field MUST be present. The presentation format of "target" is that of a domain name [RFC1035].

The presentation format of the RR is as follows:

owner ttl class ALIAS target

An ALIAS record includes a TTL value that represents the maximum time-to-live for a cached ALIAS record response in a resolver.

The ALIAS RDATA wire representation is only used for zone transfers.
3. Implementation

3.1. Resolution Guidelines

Authoritative name servers with support for ALIAS records MUST support both A and AAAA materialization. When an authoritative name server receives a request for a name, and the zone contains an ALIAS record at that location, the authoritative name server MUST respond as follows:

The server will respond with one or more A records (for a QTYPE A) or one or more AAAA records (for a QTYPE AAAA) obtained by either: * executing a recursive query for the ALIAS content or, * returning a previously cached response.

If the recursive query returns an NXDOMAIN response, then the authoritative name server MUST return an NXDOMAIN response as well.

If the recursive query fails, then the server MAY return a cached response as long as the cache value is not older than the specified TTL value.

3.2. TTL Calculation

As described in section [3.1] the ALIAS is stored with its own TTL value. When an ALIAS is resolved to its corresponding A or AAAA records, the authoritative name server MUST return the TTL from the resolver response.

When the authoritative name server uses a cached value, it returns the lower TTL value.

3.3. Handling CNAME QTYPE

Authoritative name servers that receive a CNAME request at a an ALIAS node should treat the request as a QTYPE A.

Authoritative name servers that receive a CNAME request at an ALIAS node MUST treat the request as a QTYPE A.

3.4. Handling ANY QTYPE

Authoritative name servers that receive an ANY request at an ALIAS node SHOULD respond with any A and AAAA records materialized from the ALIAS record.
4. Security Considerations

To function properly with DNSSEC-aware resolvers, authoritative name servers MUST sign the materialized records produced by the ALIAS resolution.

Implementors MAY either materialize A and AAAA records offline and sign the resulting records at that time, or sign the resulting materialized records at request time.

5. Privacy Considerations

There are no additional privacy concerns introduced by this document.

6. IANA Considerations

This document uses a new DNS RR type, ALIAS, whose value must be allocated by IANA from the Resource Record (RR) TYPES subregistry of the Domain Name System (DNS) Parameters registry.

7. Normative References


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