Understanding stub zones

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A stub zone is a copy of a zone that contains only those resource records necessary to identify the authoritative Domain Name System (DNS) servers for that zone. A stub zone is used to resolve names between separate DNS namespaces. This type of resolution may be necessary when a corporate merger requires that the DNS servers for two separate DNS namespaces resolve names for clients in both namespaces.

A stub zone consists of:

- The start of authority (SOA) resource record, name server (NS) resource records, and the glue A resource records for the delegated zone.
- The IP address of one or more master servers that can be used to update the stub zone.

The master servers for a stub zone are one or more DNS servers authoritative for the child zone, usually the DNS server hosting the primary zone for the delegated domain name.

For more information, see Using stub zones.

Stub zone resolution

When a DNS client performs a recursive query operation on a DNS server hosting a stub zone, the DNS server uses the resource records in the stub zone to resolve the query. The DNS server sends an iterative query to the authoritative DNS servers specified in the NS resource records of the stub zone as if it were using NS resource records in its cache. If the DNS server cannot find the authoritative DNS servers in its stub zone, the DNS server hosting the stub zone attempts standard recursion using its root hints.

The DNS server will store the resource records it receives from the authoritative DNS servers listed in a stub zone in its cache, but it will not store these resource records in the stub zone itself; only the SOA, NS, and glue A resource records returned in response to the query are stored in the stub zone. The resource records stored in the cache are cached according to the Time-to-Live (TTL) value in each resource record. The SOA, NS, and glue A resource records, which are not written to cache, expire according to the expire interval specified in the stub zone's SOA record, which is created during the creation of the stub zone and updated during transfers to the stub zone from the original, primary zone.

If the query was an iterative query, the DNS server returns a referral containing the servers specified in the stub zone.

Communication between DNS servers hosting parent and child zones

A DNS server that has delegated a domain to a child zone on a different DNS server is made aware of new authoritative DNS servers for the child zone only when the resource records for these new DNS servers are added to the parent zone hosted on the DNS server. This is a manual process and requires that the administrators for the different DNS servers communicate often. With stub zones, a DNS server hosting a stub zone for one of its delegated domains can obtain updates of the authoritative DNS servers for the child zone when the stub zone is updated. The update is performed from the DNS server hosting the stub zone and the administrator for the DNS server hosting the child zone does not need to be contacted