Using Cloud DNS for Low-latency Serving

Vitthal Srinivasan
CO-FOUNDER, LOONYCORN

www.loonycorn.com

Overview

Introducing Cloud DNS

Working with the web console and gcloud command line

Managing zones and records

Migrating to Cloud DNS

Cloud DNS

Domain Name System (DNS)

Mechanism to translate domain names to IP addresses, so that browsers can load websites. Implemented via a worldwide, distributed system of servers
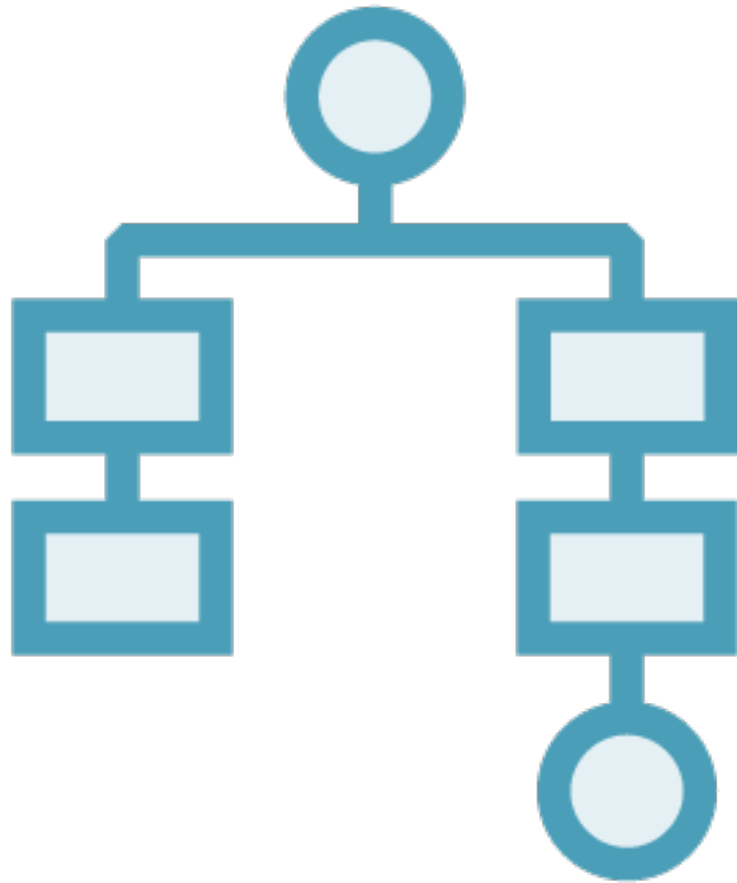
DNS

Map user-friendly browser URLs to IP addresses

Look up IP addresses by name

Hierarchical database
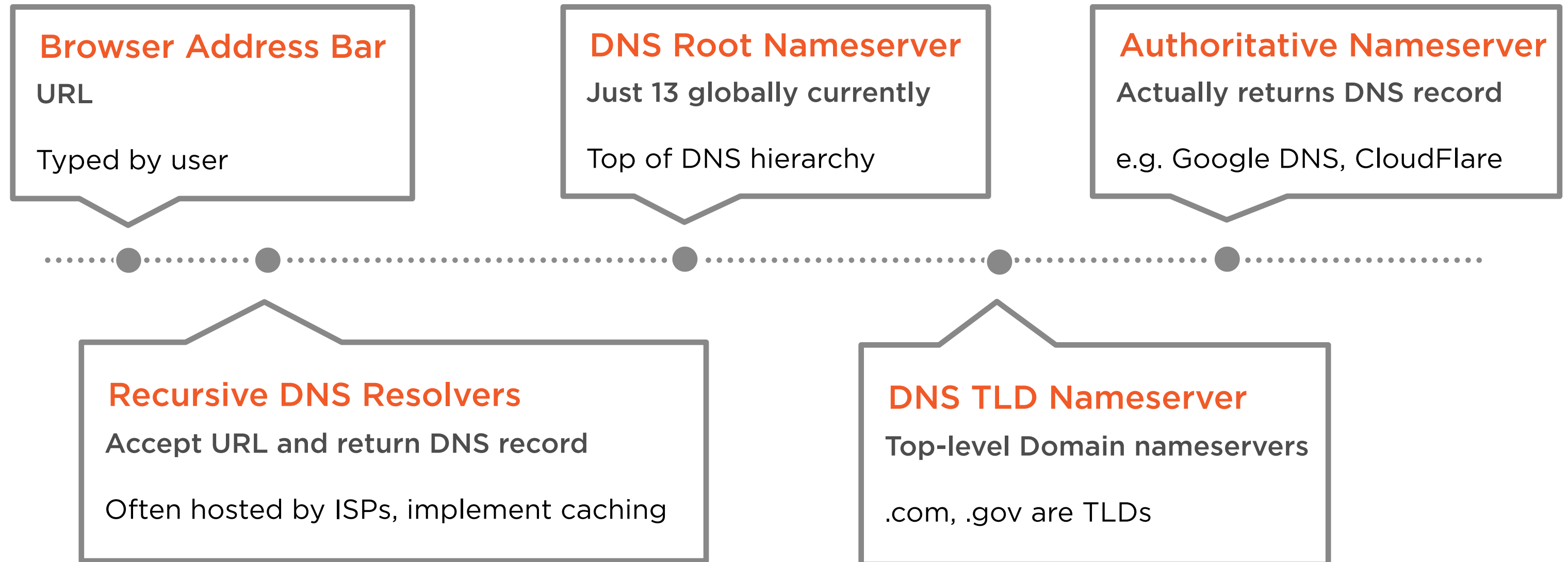
Hierarchical Database
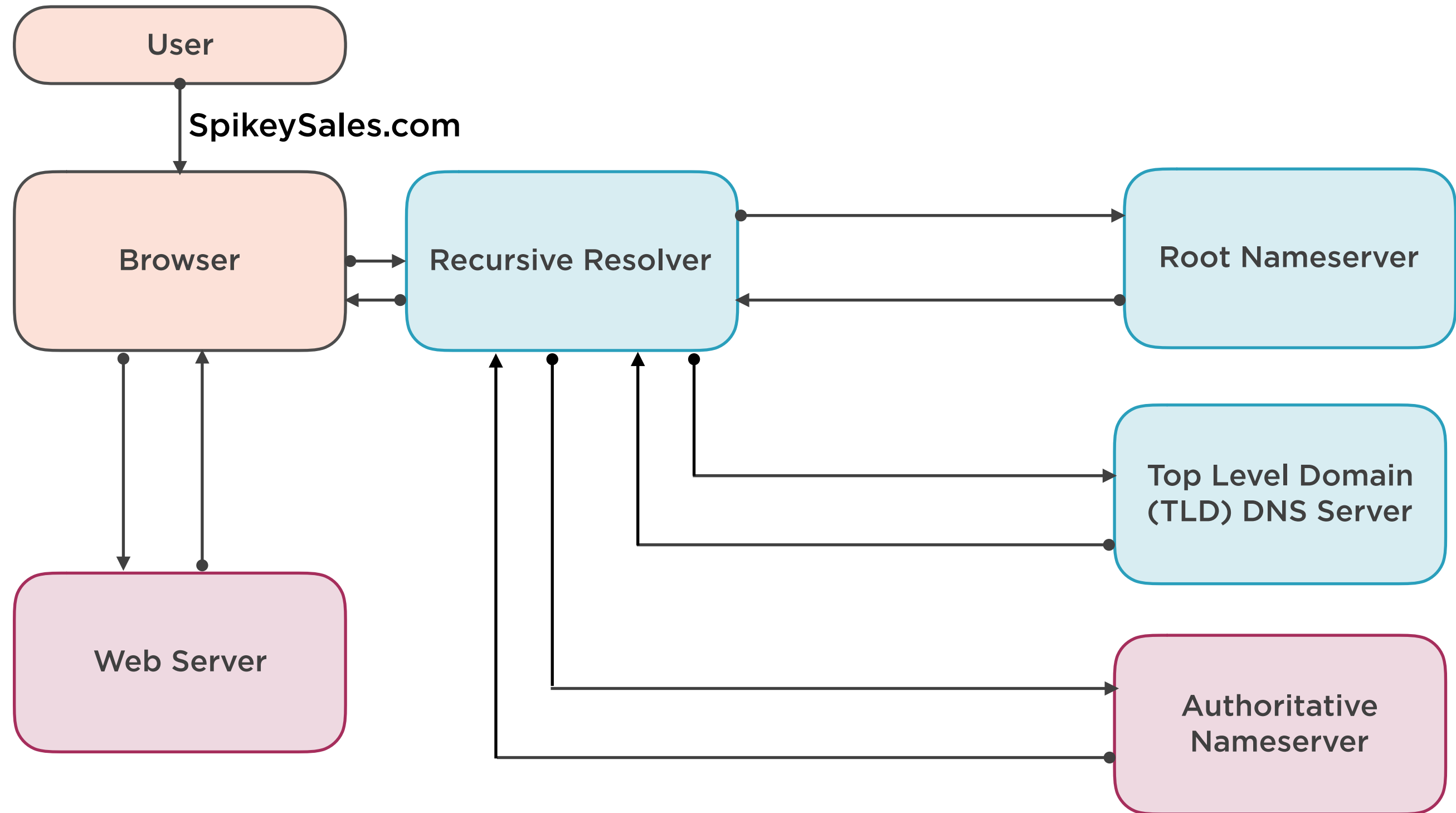
mail.google.com.
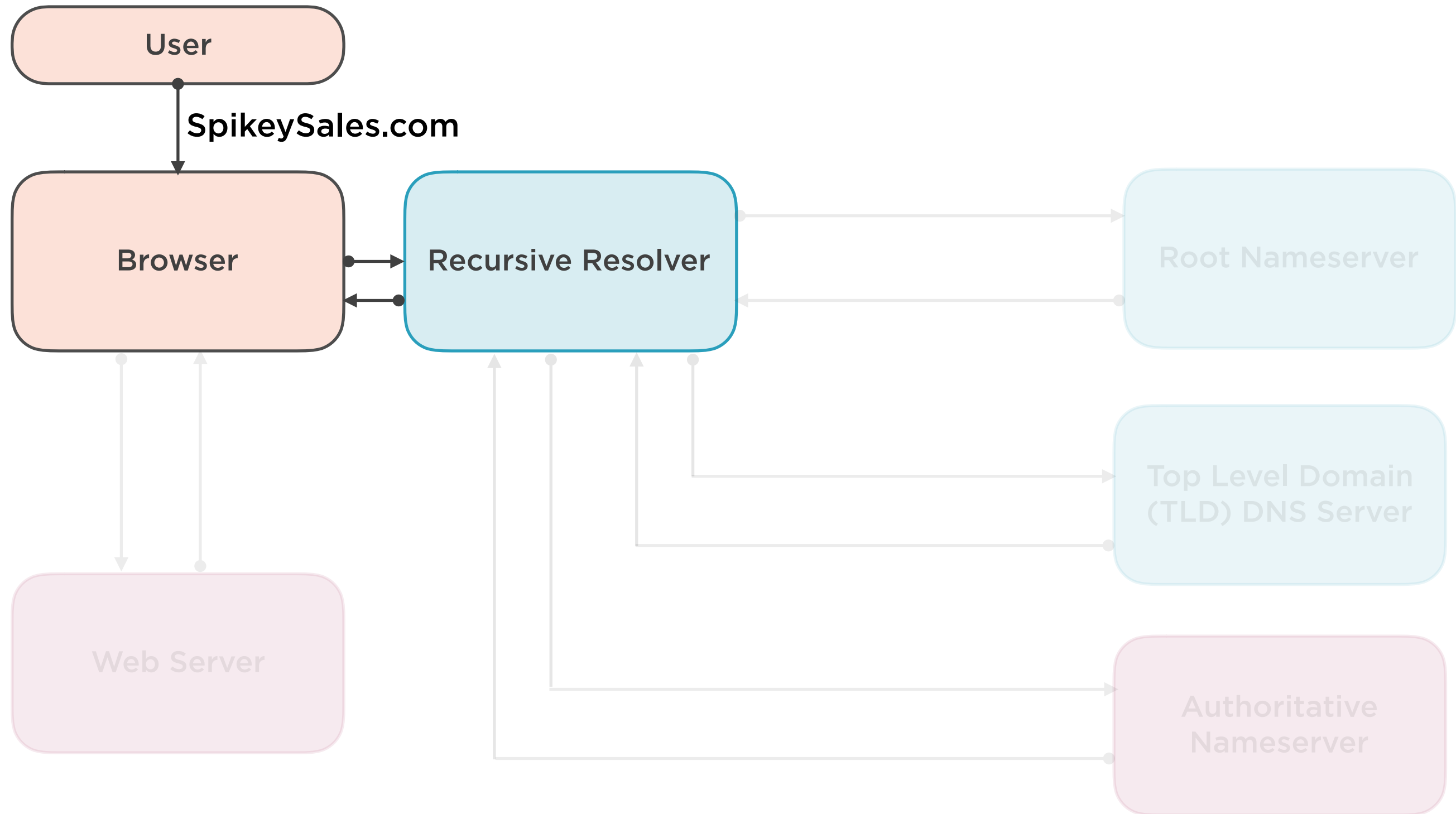
.

.com

google.com

mail.google.com

DNS Resolution

Browser Address Bar

URL

Typed by user

DNS Root Nameserver

Just 13 globally currently

Top of DNS hierarchy

Authoritative Nameserver

Actually returns DNS record

e.g. Google DNS, CloudFlare

Recursive DNS Resolvers

Accept URL and return DNS record

Often hosted by ISPs, implement caching

DNS TLD Nameserver

Top-level Domain nameservers

.com, .gov are TLDs

Steps in DNS Lookup

User

SpikeySales.com

Browser

Recursive Resolver

Root Nameserver

Web Server

Top Level Domain (TLD) DNS Server

Authoritative Nameserver

Query Received by Recursive Resolver

User

SpikeySales.com

Browser

Recursive Resolver

Root Nameserver

Top Level Domain (TLD) DNS Server

Web Server

Authoritative Nameserver

Resolver Queries DNS Root Nameserver

User

SpikeySales.com

Browser

Recursive Resolver

Root Nameserver

Top Level Domain
(TLD) DNS Server

Web Server

Authoritative
Nameserver
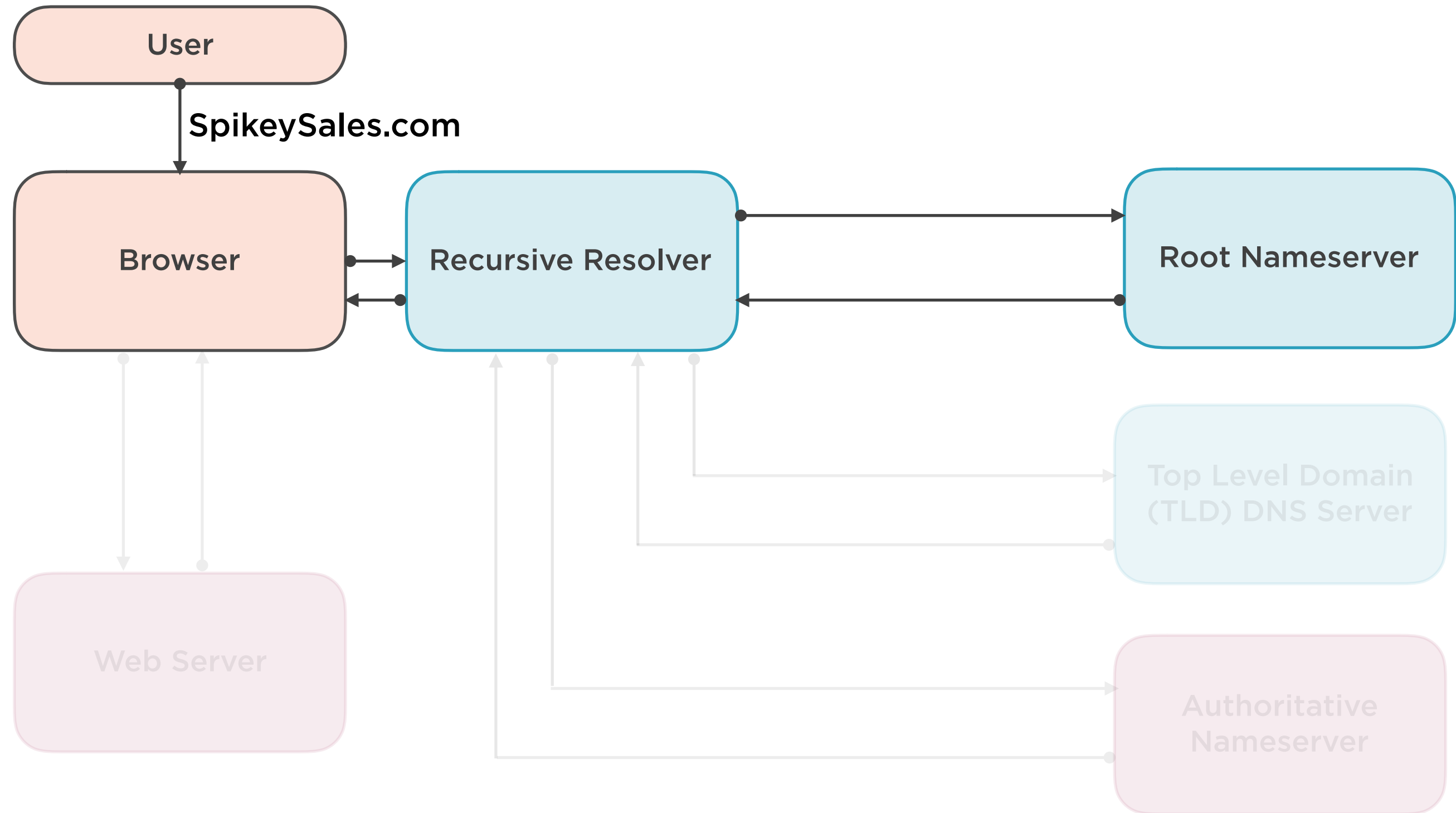
Resolver Queries TLD
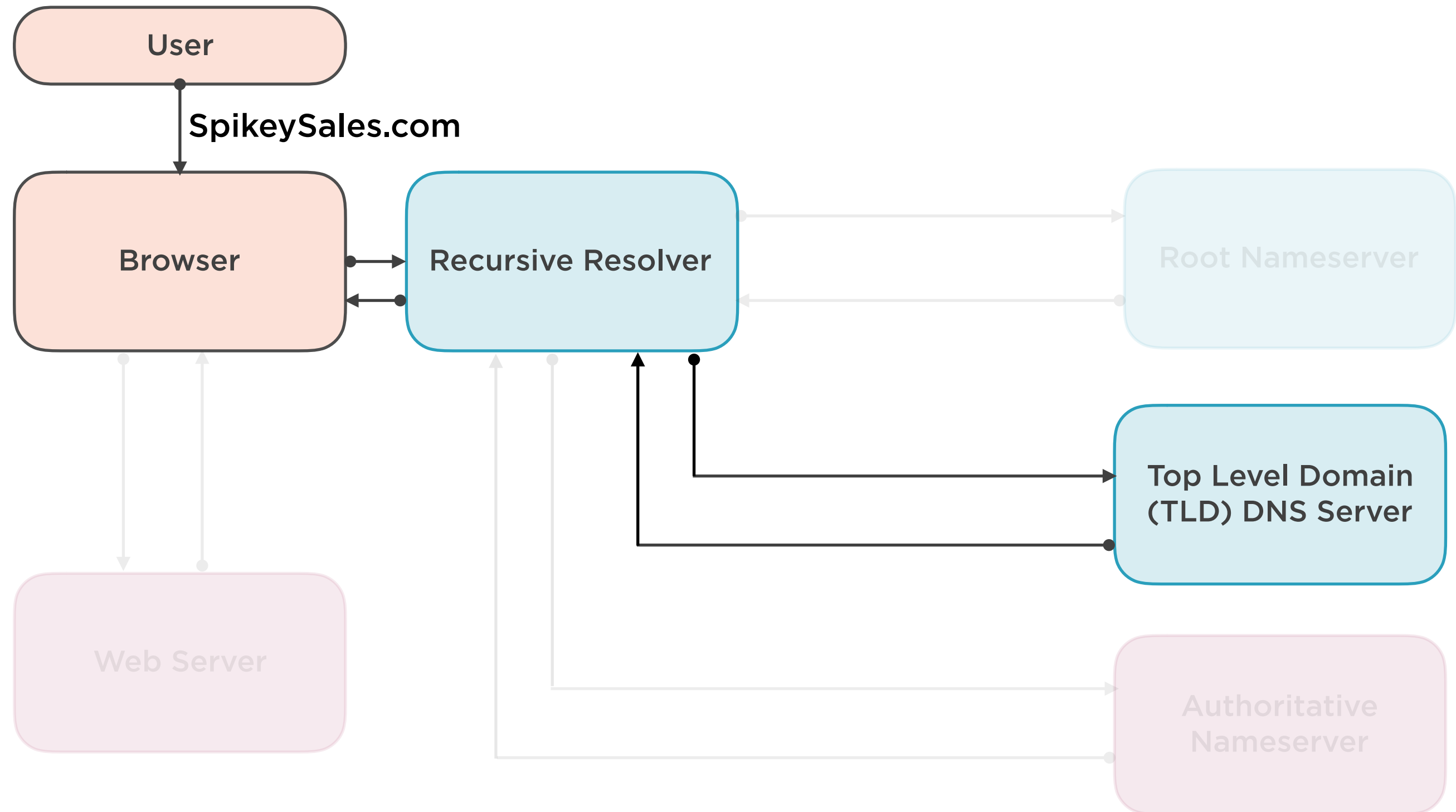
Resolver Queries Authoritative Nameserver

User

SpikeySales.com

Browser

Recursive Resolver

Root Nameserver

Web Server

Top Level Domain (TLD) DNS Server

Authoritative Nameserver
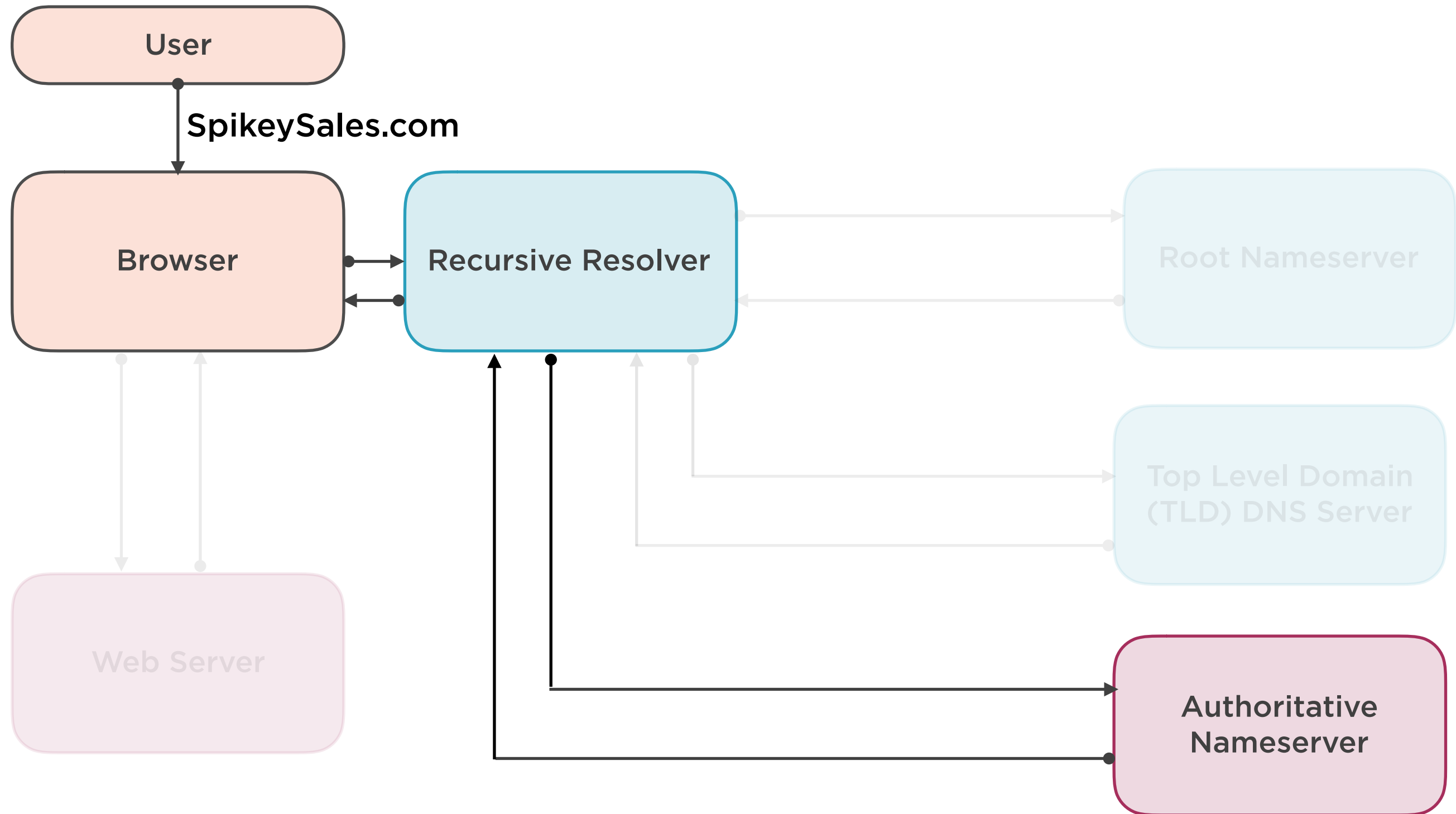
Steps in DNS Lookup

Google DNS

User

SpikeySales.com

Browser

Recursive Resolver

Root Nameserver

Top Level Domain (TLD) DNS Server

Web Server

Google Cloud DNS

Google Cloud DNS

Google Cloud DNS

User

SpikeySales.com

Browser

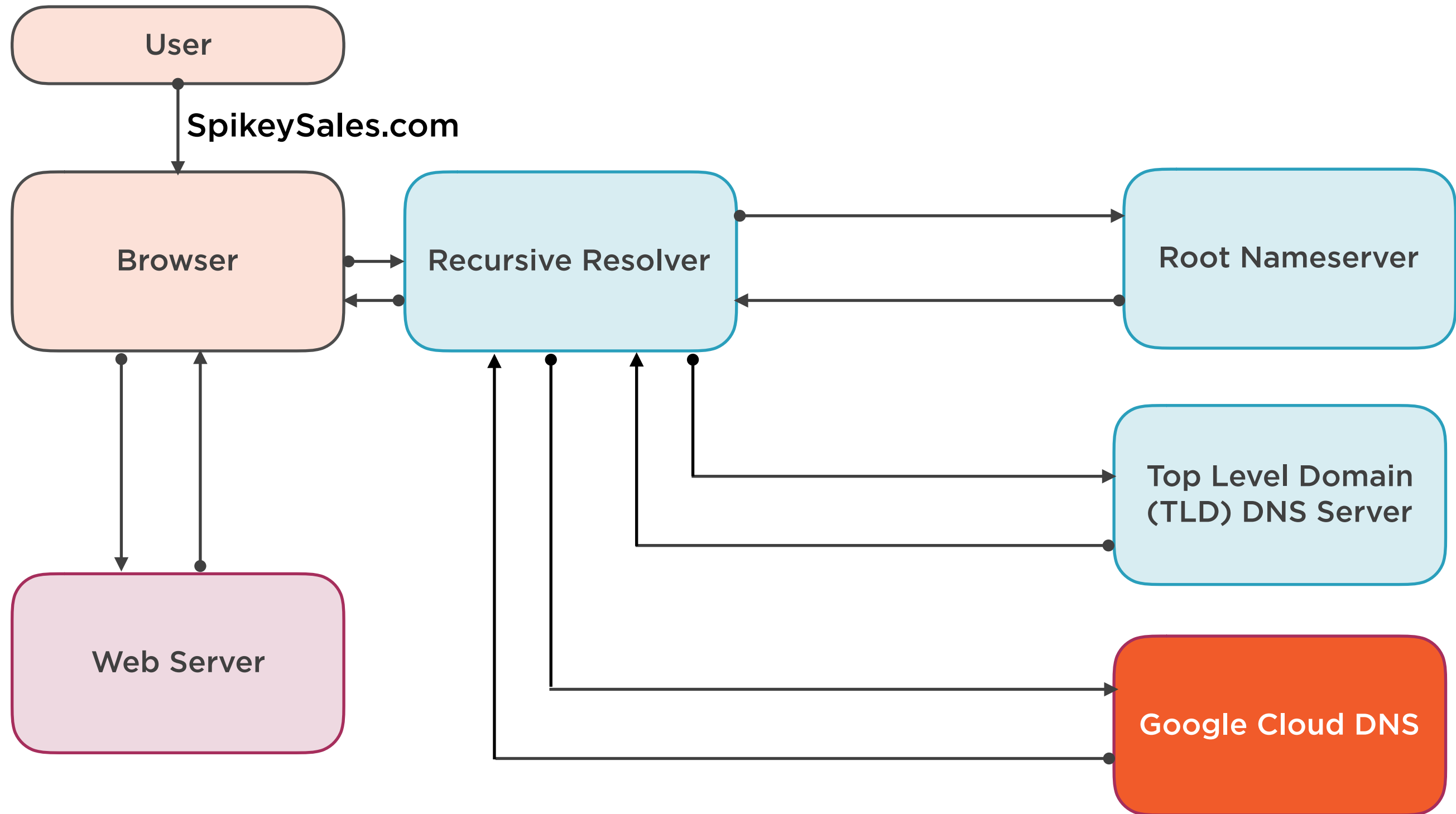Recursive Resolver

Root Nameserver

Top Level Domain
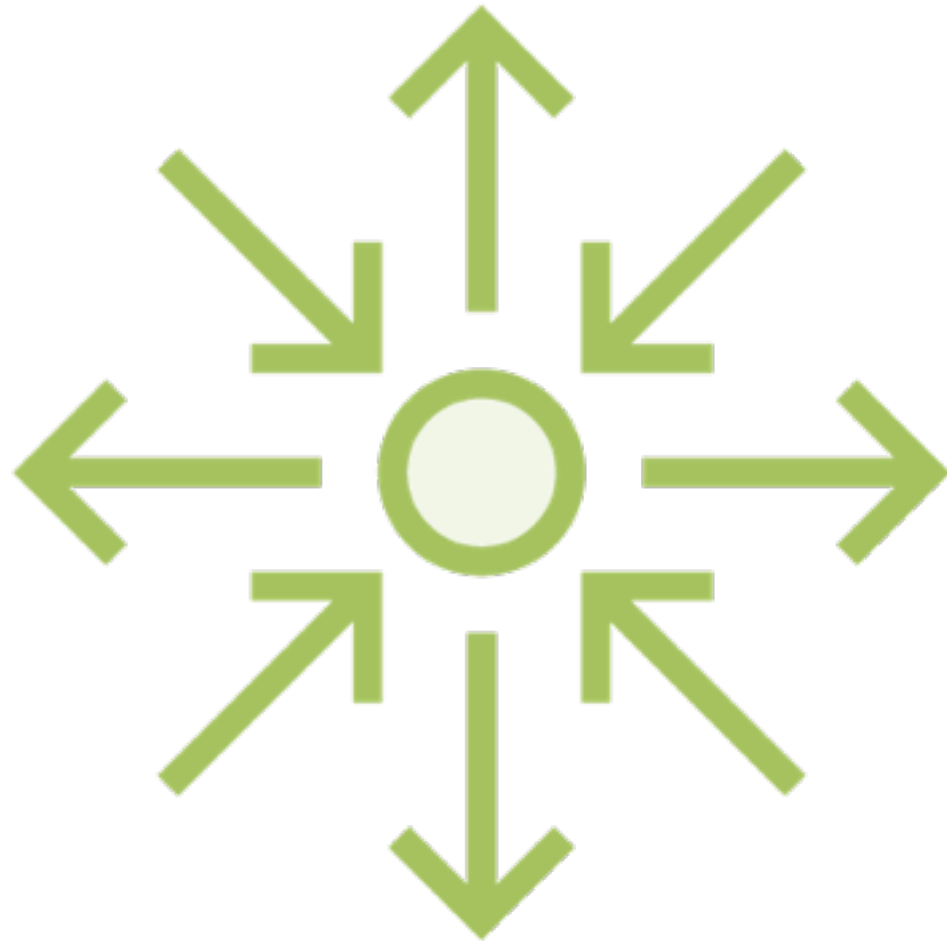(TLD) DNS Server

Web Server
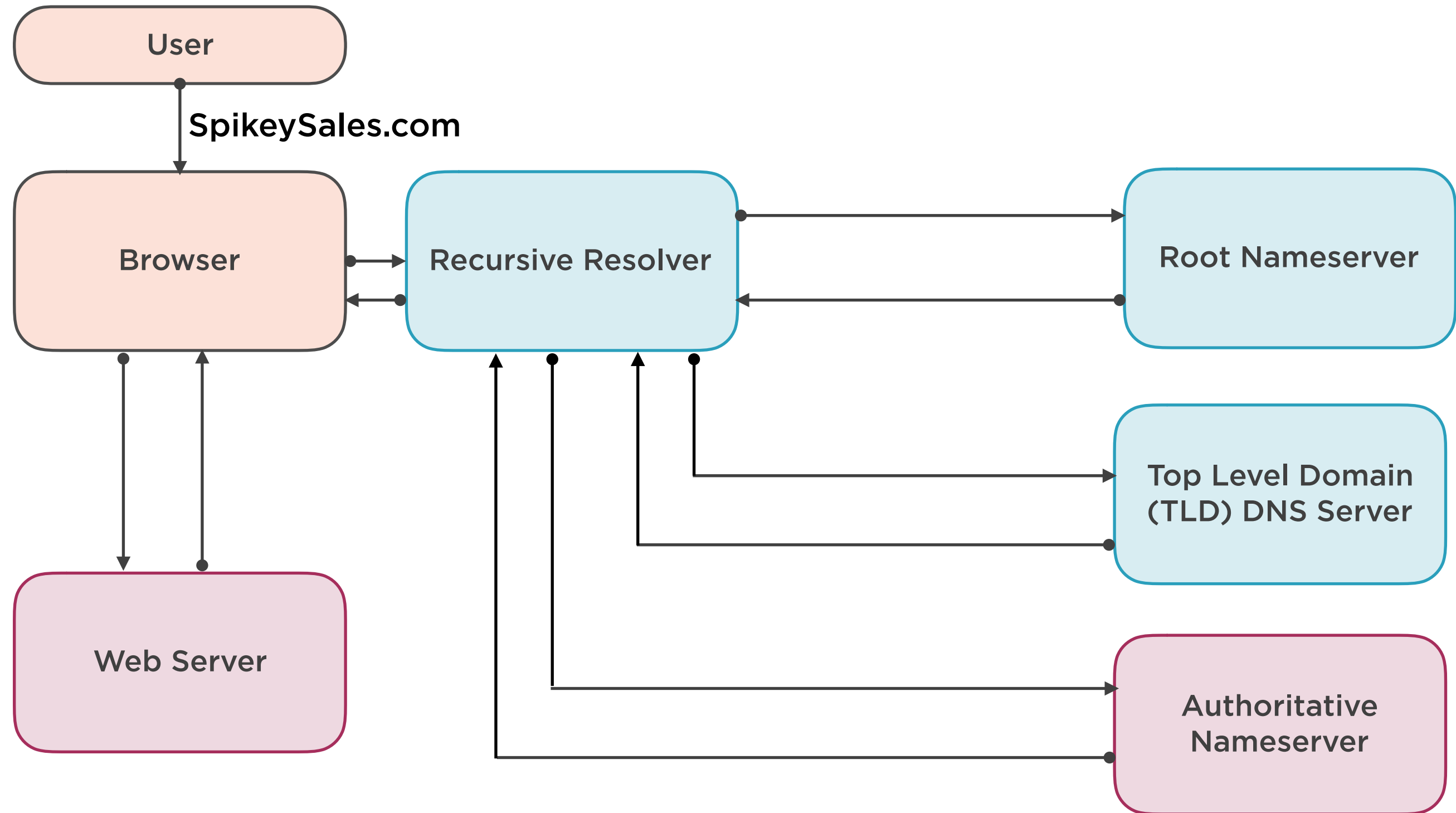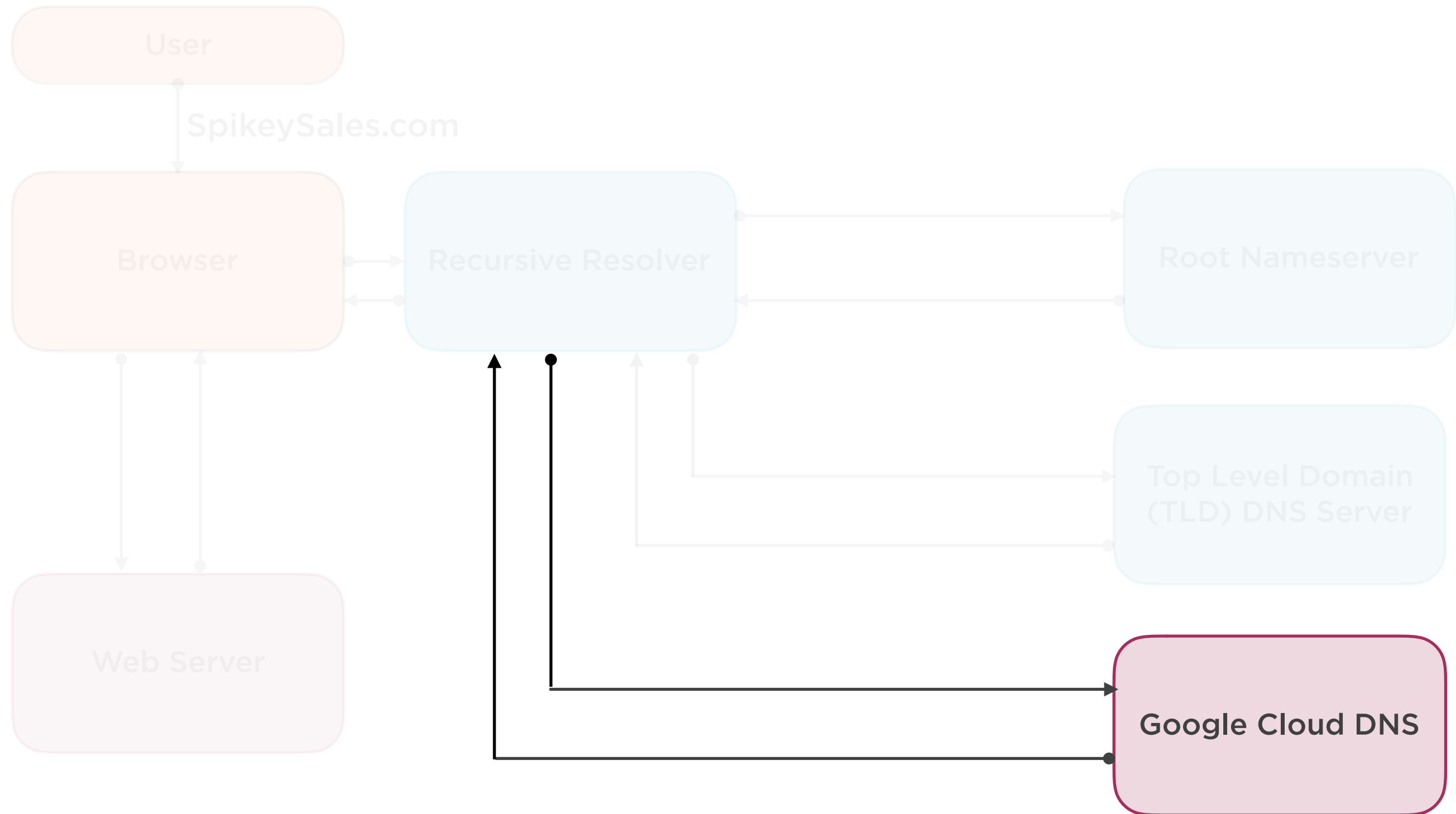
Google Cloud DNS

Google Cloud DNS

Authoritative DNS service

Cloud DNS

Scalable, reliable, managed authoritative DNS service

100% availability, low latency, automatic scaling

Zone and project management

Web console, command line and REST APIs

Managed Zones

Holds DNS records for the same DNS name suffix e.g. spikeysales.com

All records hosted on the same Google operated name servers

Public zones visible to the internet

Private zones help you manage custom domains for resources within your VPC

Resource Records

- Holds current state of DNS records for a managed zone

- Create change requests to make changes to these records

- Additions and deletions can be done in bulk as atomic transactions

- May be a delay before records are reflected in the authoritative name servers

Supported Record Types

SOA:

- Start of authority record which specifies authoritative information about a DNS zone
- Created when managed zone is created

A:

- Address record to map host names to IPv4 address

AAAA
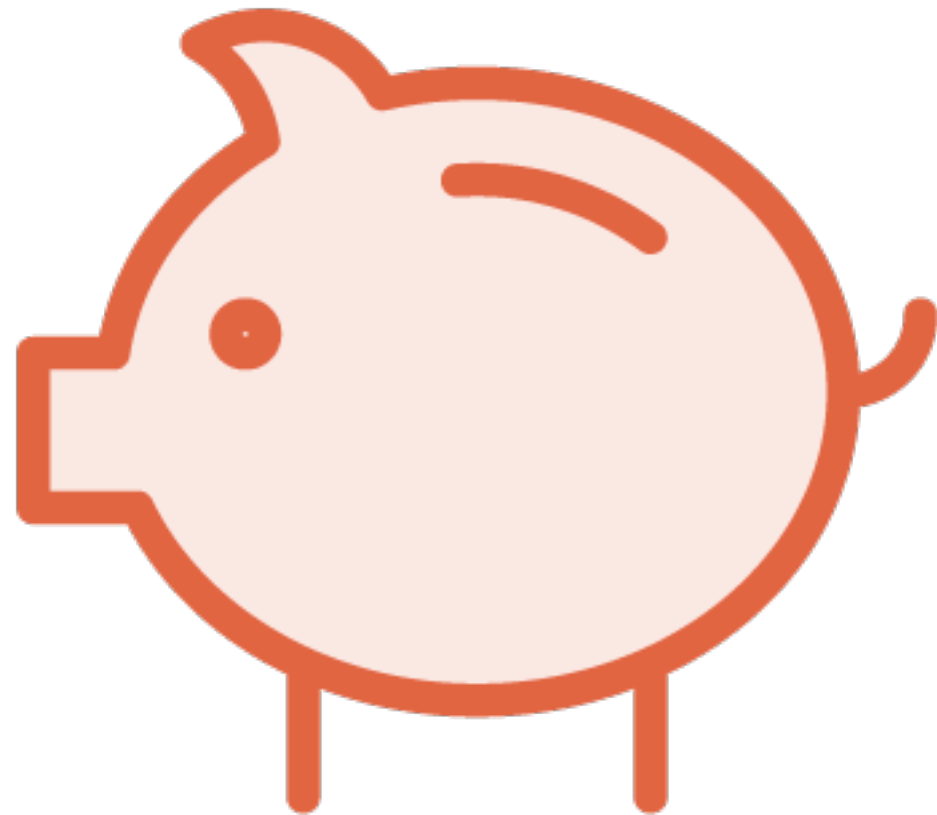
- Address record to map host names to IPv4 address

Supported Record Types

Complete list here:

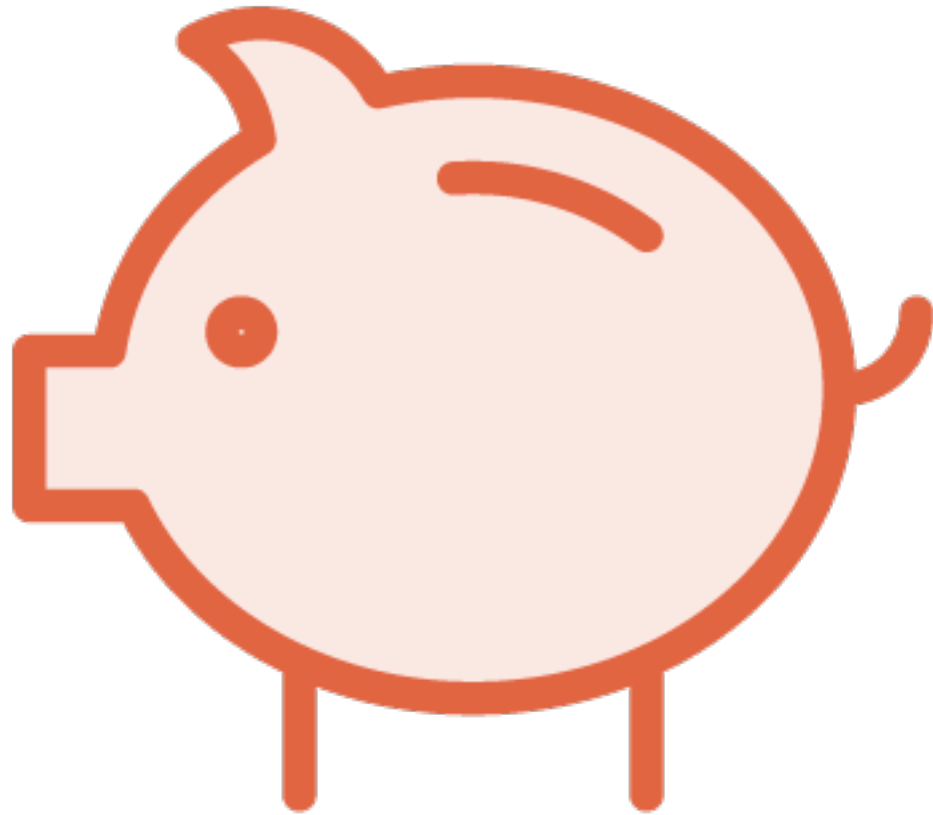**https://cloud.google.com/dns/docs/overview**

Managed Zone Costs

First 25 managed zones: $0.20 per managed zone per month

Managed zone 26 - 10,000: $0.10 per managed zone per month
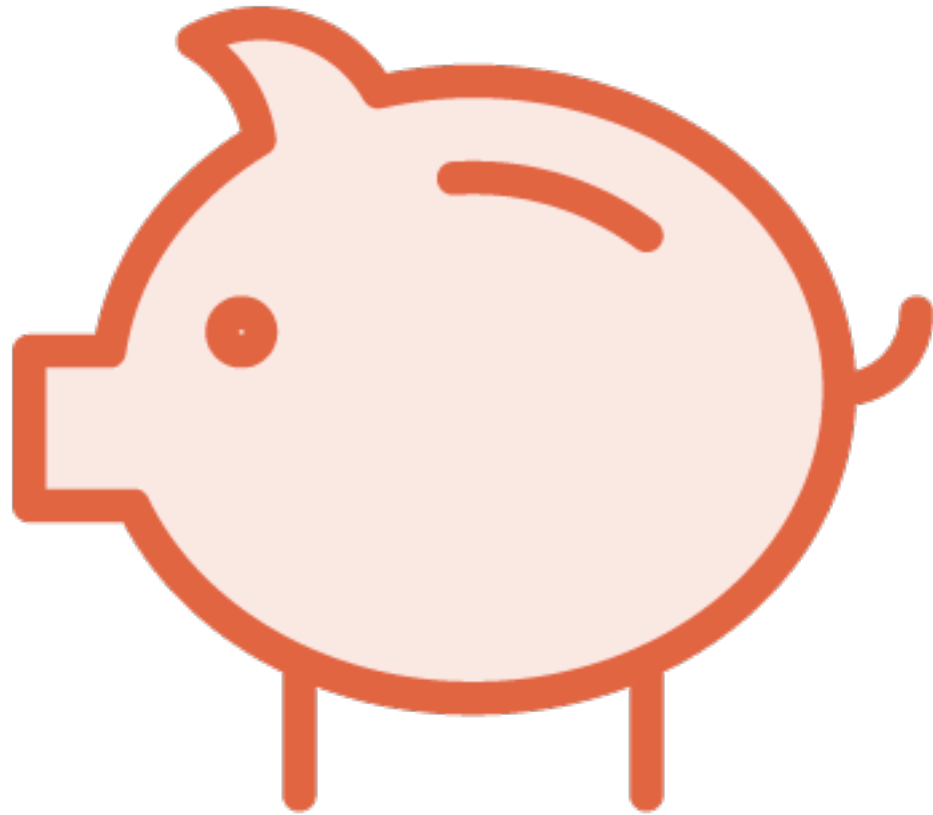
Managed zones > 10,000: $0.03 per managed zone per month

Query Traffic Costs

First 1 billion queries: $0.40 per million queries per month

Queries over 1 billion: $0.20 per million queries per month

Query Traffic Costs

https://cloud.google.com/pricing/

Demo

Creating a managed zone and update A records using the web console

Demo

Using the gcloud command line

Creating a managed zone and
updating records using transactions

Demo

Migrating to Cloud DNS

Summary

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