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DNS records

DNS records are sets of instructions that live on DNS servers. These instructions are vital to the success of a DNS lookup.

Learning Objectives

After reading this article you will be able to:

- Define 'DNS record'
- Identify several types of DNS records

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What is a DNS record?

DNS records (aka zone files) are instructions that live in authoritative DNS servers and provide information about a domain including what IP address is associated with that domain and how to handle requests for that domain. These records consist of a series of text files written in what is known as DNS syntax. DNS syntax is just a string of characters used as commands that tell the DNS server what to do. All DNS records also have a 'TTL', which stands for time-to-live, and indicates how often a DNS server will refresh that record.

You can think of a set of DNS records like a business listing on Yelp. That listing will give you a bunch of useful information about a business such as their location, hours, services offered, etc. All domains are required to have at least a few essential DNS records for a user to be able to access their website using a domain name, and there are several optional records that serve additional purposes.

What are the most common types of DNS record?

- **A record** - The record that holds the IP address of a domain. Learn more about the A record.

- **AAAA record** - The record that contains the IPv6 address for a domain (as opposed to A records, which list the IPv4 address). Learn more about the AAAA record.

- **CNAME record** - Forwards one domain or subdomain to another domain, does NOT provide an IP address. Learn more about the CNAME record.

- **MX record** - Directs mail to an email server. Learn more about the MX record.

- **TXT record** - Lets an admin store text notes in the record. These records are often used for email security. Learn more about the TXT record.

- **NS record** - Stores the name server for a DNS entry. Learn more about the NS record.

- **SOA record** - Stores admin information about a domain. Learn more about the SOA record.

- **SRV record** - Specifies a port for specific services. Learn more about the SRV record.

- **PTR record** - Provides a domain name in reverse-lookups. Learn more about the PTR record.

What are some of the less commonly used DNS records?

- **AFSDB record** - This record is used for clients of the Andrew File System (AFS) developed by Carnegie Melon. The AFSDB record functions to find other AFS cells.

- **APL record** - The 'address prefix list' is an experiment record that specifies lists of address ranges.

- **CAA record** - This is the 'certification authority authorization' record, it allows domain owners state which certificate authorities can issue certificates for that domain. If no CAA record exists, then anyone can issue a certificate for the domain. These records are also inherited by subdomains.

- **DNSKEY record** - The 'DNS Key Record' contains a public key used to verify Domain Name System Security Extension (DNSSEC) signatures.

- **CDNSKEY record** - This is a child copy of the DNSKEY record, meant to be transferred to a parent.

- **CERT record** - The 'certificate record' stores public key certificates.

- **DCHID record** - The 'DHCP Identifier' stores info for the Dynamic Host Configuration Protocol (DHCP), a standardized network protocol used on IP networks.

- **DNAME record** - The 'delegation name' record creates a domain alias, just like CNAME, but this alias will redirect all subdomains as well. For instance if the owner of 'example.com' bought the domain 'website.net' and gave it a DNAME record that points to 'example.com', then that pointer would also extend to 'blog.website.net' and any other subdomains.

- **HIP record** - This record uses 'Host identity protocol', a way to separate the roles of an IP address; this record is used most often in mobile computing.

- **IPSECKEY record** - The 'IPSEC key' record works with the Internet Protocol Security (IPSEC), an end-to-end security protocol framework and part of the Internet Protocol Suite (TCP/IP).

- **LOC record** - The 'location' record contains geographical information for a domain in the form of longitude and latitude coordinates.

- **NAPTR record** - The 'name authority pointer' record can be combined with an SRV record to dynamically create URI's to point to based on a regular expression.

- **NSEC record** - The 'next secure record' is part of DNSSEC, and it's used to prove that a requested DNS resource record does not exist.

- **RRSIG record** - The 'resource record signature' is a record to store digital signatures used to authenticate records in accordance with DNSSEC.

- **RP record** - This is the 'responsible person' record and it stores the email address of the person responsible for the domain.

- **SSHFP record** - This record stores the 'SSH public key fingerprints'; SSH stands for Secure Shell and it's a cryptographic networking protocol for secure communication over an unsecure network.

Cloudflare DNS supports a wide variety of DNS records. Learn about Cloudflare's authoritative DNS service, or about managing DNS records in Cloudflare.

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