DOMAIN NAME SYSTEM (DNS) RECORD TYPES EXPLAINED

This report provides an overview of the various types of DNS records and their functions in the Domain Name System.

A RECORD (ADDRESS RECORD)

An **A record** maps a hostname to an IPv4 address. It is one of the most fundamental DNS record types, used to direct traffic to the correct server for a domain name.

AAAA RECORD (IPV6 ADDRESS RECORD)

Similar to an A record, an **AAAA record** maps a hostname to an IPv6 address. It is used to support the transition to IPv6 networking.

CNAME RECORD (CANONICAL NAME RECORD)

A **CNAME record** allows a hostname to be an alias of another, canonical hostname. This is useful for pointing multiple domain names or subdomains to a single destination without having to create separate A or AAAA records for each.

MX RECORD (MAIL EXCHANGER RECORD)

An **MX record** specifies the mail servers responsible for accepting email messages on behalf of a domain. It includes a priority value to indicate the preferred mail server.

NS RECORD (NAME SERVER RECORD)

An **NS record** delegates a DNS zone to use the given name servers. These records are used to identify the authoritative name servers for a domain.

PTR RECORD (POINTER RECORD)

A **PTR record** performs the reverse of an A or AAAA record; it maps an IP address back to a hostname. This is primarily used for reverse DNS lookups, often for security or logging purposes.

SOA RECORD (START OF AUTHORITY RECORD)

The **SOA record** provides authoritative information about a DNS zone, including the primary name server, the email of the domain administrator, the domain's serial number, and timers relating to zone refreshing.

TXT RECORD (TEXT RECORD)

A **TXT record** allows administrators to store arbitrary text in DNS. It is commonly used for domain verification (e.g., for Google Workspace or Microsoft 365), and for security policies like SPF (Sender Policy Framework) and DKIM (DomainKeys Identified Mail).

SRV RECORD (SERVICE LOCATOR RECORD)

An **SRV record** specifies the location (hostname and port number) of servers for specific services, such as VoIP or instant messaging. It allows clients to discover service endpoints dynamically.

CAA RECORD (CERTIFICATION AUTHORITY AUTHORIZATION RECORD)

A **CAA record** allows domain owners to specify which Certificate Authorities (CAs) are permitted to issue SSL/TLS certificates for their domain. This adds a layer of security against mis-issued certificates.

DNSKEY RECORD (DNS PUBLIC KEY RECORD)

A **DNSKEY record** stores the public key associated with a DNS zone, used for DNSSEC (DNS Security Extensions) to authenticate DNS responses.

DS RECORD (DELEGATION SIGNER RECORD)

A **DS record** links a DNS zone to its parent zone and contains a hash of the DNSKEY record for the child zone, forming part of the chain of trust in DNSSEC.

NSEC/NSEC3 RECORD (NEXT SECURE RECORD)

NSEC and NSEC3 records are part of DNSSEC and provide authenticated denial of existence. They prove that a specific record name or type does not exist within a zone.

OTHER RECORD TYPES

While the above are some of the most frequently used, other record types exist, such as RP (Responsible Person), SSHFP (SSH Fingerprint), and many others that serve specific, often niche, functions within the DNS ecosystem.

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