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# DNS Record Types & CLI Troubleshooting Cheat Sheet

Authoritative DNS resource records, RFC standards, zone file formats, and terminal diagnostic commands.

**Live Interactive DNS Resolver: https://lotsofnetwork.com/dns-lookup**

| Type | Record Name | Standard | Zone File Example | Operational Purpose |
|---|---|---|---|---|
| A | Host Address | RFC 1035 | `example.com. IN A 93.184.216.34` | Maps a hostname to an IPv4 32-bit address |
| AAAA | IPv6 Host Address | RFC 3596 | `example.com. IN AAAA 2606:2800:220:1::` | Maps a hostname to an IPv6 128-bit hexadecimal address |
| CNAME | Canonical Name | RFC 1035 | `www.example.com. IN CNAME example.com.` | Alias that points one domain/subdomain to another canonical |
| MX | Mail Exchange | RFC 1035 | `example.com. IN MX 10 mail.example.com.` | Specifies mail server and priority (lower number = higher prio |
| TXT | Text Record | RFC 1464 | `"v=spf1 include:_spf.google.com ~all"` | Human/machine readable data: SPF, DKIM keys, and DMAR |
| NS | Name Server | RFC 1035 | `example.com. IN NS ns1.cloudflare.com.` | Delegates a DNS zone to an authoritative nameserver |
| SOA | Start of Authority | RFC 1035 | `Primary NS, Admin Email, Serial, Refresh, TTL` | Core zone metadata: serial number, refresh intervals, and ne |
| PTR | Pointer Record | RFC 1035 | `34.216.184.93.in-addr.arpa. IN PTR example.com.` | Reverse DNS mapping IP addresses back to canonical hostn |
| SRV | Service Locator | RFC 2782 | `_sip._tcp.example.com. 10 60 5060 sip.com` | Defines hostname and port for specific services (SIP, LDAP, |
| CAA | Certification Authority | RFC 6844 | `example.com. IN CAA 0 issue "letsencrypt.org"` | Specifies which Certificate Authorities are permitted to issue |

## Essential CLI Diagnostic Commands (dig, nslookup, host)

| Terminal Command Syntax | Troubleshooting Action |
|---|---|
| `dig example.com A +short` | Fastest way to get clean IPv4 addresses |
| `dig example.com ANY +noall +answer` | Query all available DNS records for domain |
| `dig @8.8.8.8 example.com +trace` | Trace full iterative resolution from Root to Authoritative NS |
| `dig -x 8.8.8.8 +short` | Query Reverse DNS (PTR) pointer record |
| `dig example.com TXT +short` | Verify SPF, DKIM, and DMARC verification strings |
| `nslookup -type=mx example.com` | Cross-platform check for mail exchange priority servers |