NS1.

DNS Records Explained

DNS (Domain Name System) records are what keeps the internet working the way consumers expect, and new records are being added as our needs grow. They're what make a domain name such as `ns1.com` point to a webserver's IP address like `104.131.238.165`. We need the DNS system and its records to keep the internet functioning and connected. A, AAAA, CNAME, and TXT records are but a few of the types of records that can be used by your domains, but what do these do?

A and AAAA Records

The most common DNS record used, the A record simply points a domain to an IPv4 address, such as `11.22.33.44`. To set up an A record on your domain all you'll need is an IP address to point it to.

*.exampleweb.com Ⓐ STATIC	0 Queries — 24H	**1 Answers** 1.1.1.1
blog.exampleweb.com Ⓐ STATIC	0 Queries — 24H	**1 Answers** 2.2.2.2
exampleweb.com Ⓐ STATIC	0 Queries — 24H	**1 Answers** 3.3.3.3
subdomain.exampleweb.com Ⓐ STATIC	0 Queries — 24H	**1 Answers** 4.4.4.4

Example A Records in the NS1 Control Panel

The screenshot above is from the NS1 control panel. You can see the different types of records you can use. A blank record (sometimes seen as the '`@`' record) points your main domain to a server. You can also set subdomains to point to other IP addresses as well, if you run multiple webservers. Finally, a wildcard record, shown usually as '`*`' or '`*.yourdomain.com`,' acts as a catch-all record, redirecting every subdomain you haven't defined elsewhere to an IP address.

AAAA Records operate in the exact same way as A records, except they point to an IPv6 address, which look similar to `FE80::0202:B3FF:FE1E:8329`.

ALIAS, CNAME, and DNAME Records

CNAME records are very commonly used to link a subdomain to a domain's A or AAAA record, instead of making 2 A records. For example, you could link `blog.example.com` with a CNAME record to an A record set on `example.com`, and they would both point to the same server. Additionally, if you change the A record on example.com, all the CNAME records pointing to it would update to the new server. One limitation to CNAME records is that they can only be placed on subdomains, such as `blog.example.com`, but not the root domain, `example.com`.

DNAME records essentially make a CNAME record for every subdomain of a domain, and point it to another. For instance, a DNAME on `domain.com` pointed to `example.com` will link `blog.domain.com` to `blog.example.com`, `www.domain.com` to `www.example.com`, `a.b.c.d.domain.com` to `a.b.c.d.example.com`, and so on. It however will not link `domain.com` to `example.com`, you would need to use an A, AAAA, or ALIAS record for that purpose.

The ALIAS record is an NS1 specific record that works the same as the CNAME record does, except it can be placed on the root domain (`example.com`), not only subdomains. This allows you to link another domain you own, say `domain.com` to an A record on another domain such as `example.com`. Updating the A record on `example.com` will change where `domain.com` points to.

AFSDB Records

AFSDB Records are used to connect domain names to AFS servers, AFS being a network filesystem, similar to NFS but more suited to handle the latency of wide area networks, like the internet, and locally caches files. The AFSDB record is key to this operation, by providing the location to the file database.

Note: This record is experimental and not recognized by all services, and not all nameservers recognize or implement it. Additionally, it is being depreciated by the SRV record in the future.

HINFO Records

HINFO Records simply define the specifications and operating system of the computer behind an email. For instance, if example.com was running Ubuntu 16.04 with a 3.2 GHz Intel

CPU, you could enter "PC-Intel-3200mhz" and "Ubuntu 16.04" in the Hardware and OS fields, respectively. This record is used by some services like FTP to determine special procedures to use when connecting to known server configurations.

MX Records

MX, or Mail eXchange records are used to direct emails sent to your domain. MX Records, coupled with a mail server can provide you and your employees, clients, etc. with emails on your own domain such as `user@example.com`. You can also add multiple MX records with varying priorities for redundancy, if you have multiple mailservers configured.

NAPTR Records

NAPTR records are most commonly used with Internet Telephony (or VoIP) services. It can be used to map telephone numbers and email addresses for VoIP users to SIP servers via SRV records to initiate calls.

NS Records

NS records are usually set with your registrar, and are used to delegate a domain or subdomain to a set of name servers. Name servers, such as NS1, hold all the other DNS records for your domain and tell all the other computers connected to the internet what records your domain holds. Setting the NS record is therefore a very important part of getting your domains and servers online.

PTR Records

PTR, or Pointer records are usually described as the opposite of an A record. While A records point the domain to an IP address, a PTR record points an IP to a domain. This is commonly used as spam verification with certain email programs to confirm a mailserver is really authorized to use the domain the email is coming from. PTR records usually have to be defined by the owner of the IP address for your server, usually your server hosts. Many hosting companies will set this up for you when you set up a server.

SRV Records

SRV, or Service records, define the location for certain services, commonly SIP and XMPP (chat) servers. It allows you to define a port and hostname for a service that applications can use to connect to it.

SPF Records

SPF records are used for email verification, to prevent your domain name from being used by spammers or malicious users. Simply creating an SPF record on your main domain with the `content: v=spf1 ip4:11.11.11.11 a -all` (replacing `11.11.11.11` with your mailserver's IP address) will tell email recievers that your mailserver is the only server allowed to send emails from your domain, and all emails recieved from another server are to be rejected or marked as spam. If you have multiple mailservers, you can add another `ip4:x.x.x.x` after the previous one to allow another IP address.

Note: *The SPF record is still supported but shouldn't be used in new installs. Making a TXT record with the same content used with SPF records above is the new standard. Commonly, mail servers will define both an SPF and a TXT record for the most compatibility.*

TXT Records

TXT Records allow you to contain any textual information on a domain or subdomain. Applications can use this to check information about a service you are running, commonly SPF records, DomainKeys, and DKIM (two other email verification processes). Usage with SPF can be read about above in the SPF Records section. TXT Records may contain any information up to 255 characters.

Summary

Overall, there are many DNS records to suit your system's needs, and more are added and expanded upon all the time as our usage of the internet grows. These records, kept on various name servers worldwide are what let's us browse the internet with the ease we do today, and should be set up by any serious businesses on a reliable network.

About NS1

NS1 is defining the future of application delivery and performance by converging real-time user, infrastructure and network data, enabling organizations control their applications at the extreme edge. Our intelligent DNS + traffic management platform delivers the speed, performance and reliability needed to drive digital transformation and enhance customer experience, all through an elegant, integrated and unified platform. With ground-up, next-generation architecture, the NS1 Platform is purpose-built to maximize the potential of elastic, scalable and distributed applications & infrastructure all while simplifying the management of complex, mission critical pathways to your digital estate. Launched in 2013 in New York City, NS1 counts well known brands including Imgur, Algolia, Collective Media, OneLogin and other top-tier organizations as customers. NS1 is backed by leading venture capital firms including Flybridge Capital Partners, Sigma Prime Ventures, Founder Collective and Center Electric.

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