* **DNS (DOMAIN NAME SYSTEM):**

The Domain Name System (DNS) Server is a server that is specifically used for matching website hostnames (like[example.com](http://example.com/))to their corresponding Internet Protocol or IP addresses(like 125.74.31.8).

* A DNS or a domain name system is used to translate domain names into IP addresses, allowing the browsers to access other internet resources.
* Resolves name to numbers.
* Resolves domain name to I.P addresses.
* Its work like a Phonebook(look a Name first and then look a number).
* Example: yahoo.com 74.125.44.25
* **How Does DNS Work?**
* When users enter a domain name into the address bar of their web browser, they will be taken to the site they want to visit. However, this seemingly instant task consists of several steps known as the [DNS lookup](https://www.hostinger.com/tutorials/reduce-dns-lookups)or **DNS resolution process**.
* Here’s an example of what the DNS resolution process is typically like to illustrate better how DNS works.
* You want to be taken to Hostinger’s website, so you enter the domain name **hostinger.com** into the web browser’s address bar. What you’re doing here is submitting a **DNS request**.
* Next, your computer will check whether it already stored a DNS entryof the domain you submitted locally. A **DNS record** is an IP address that matches the [**fully-qualified domain name**](https://www.hostinger.com/tutorials/fqdn).
* First, your computer will search its hosts file and cache. The **hosts file**is a plain text file that maps hostnames to IP addresses in an operating system, while the **cache**is temporary data stored by a hardware or software component.
* Matching IP addresses for the DNS service are commonly found in your [**browser cache**](https://www.hostinger.com/tutorials/clear-browser-cache) or internet service provider (ISP) cache.
* However, if no matching IP address is found in your hosts file and cache, other additional steps will be added to the DNS resolution process.

A picture containing graphical user interface

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* What DNS Servers Are Involved in Loading a Website?

If your computer can’t find a matching IP address in your hosts file or cache, it will submit your DNS query or request to a network of four DNS servers. The following section will cover each DNS server and how they work.

* DNS Resolver

The **DNS resolver**or **recursive resolver** acts as the primary intermediary between a computer and other DNS servers. Its purpose is to forward a request to other DNS servers and then send it back once fulfilled.

When the DNS resolver receives a request, it will first search its cache to find a matching IP address for the domain name. If said IP address found, the request sent to the DNS servers ends here, and you will immediately see the site you want to visit.

However, if no match is found in its cache, the DNS resolver will send the request to the next DNS server – the root nameserver.

* Root Nameserver

The **root nameserver**or **root DNS server**is at the top of the DNS hierarchy. Think of it as a bank of reference.

It doesn’t keep the information you’re looking for, which is the IP address to match the domain name – but it gives directions to where it can be found.

Once the root nameserver receives a request from the recursive DNS resolver, it will identify the [**top-level domain**](https://www.hostinger.com/tutorials/what-is-tld) of the domain name. Then, it will tell the recursive resolver to go to the correct TLD nameserver.

* TLD Nameserver

The **TLD nameserver**is a DNS server responsible for storing and managing information about domain names that use a specific **top-level domain (TLD)**. A TLD is the far end of a domain name, such as [**.com**](https://www.hostinger.com/tld/com-domain)**,**[**.org**](https://www.hostinger.com/tld/org-domain)**,**[**.online**](https://www.hostinger.com/tld/online-domain), and [**.net**](https://www.hostinger.com/tld/net-domain).

If your query is to find the IP address of **hostinger.com**, the root nameserver will redirect the DNS recursive resolver to the **.com**TLD nameserver. Next, the TLD nameserver will inform the resolver about the location of the matching IP address at a specific authoritative nameserver.

* Authoritative Nameserver

The **authoritative nameserver**or **authoritative DNS server**is the final authority in the DNS resolution process. It stores all information related to the domain name you want to visit, including its IP address. The recursive resolver will obtain the IP address and send it back to your computer, directing you to the site.

Finally, the domain name system resolver performs**DNS caching**, storing IP addresses collected from authoritative nameservers as temporary data. In other words, DNS caching makes it so that the next time you want to visit the same site, it will simply send back the IP address match obtained before.

* What Are Domain Nameservers?

A **domain nameserver’s** job is to store all types of DNS records of a domain name. Whenever someone sends a query about your domain name, the nameserver will send back the necessary information of your domain name, allowing them to find your website.

A nameserver address looks similar to a domain name. Hosting providers usually have two or more nameserver addresses. For example, here are Hostinger’s DNS nameservers:

ns1.dns-parking.com

ns2.dns-parking.com

In practice, nameserver addresses are often used to [**point a domain name to a hosting account**](https://www.hostinger.com/tutorials/how-to-point-domain-to-hostinger) via the DNS services.

If you purchased a domain name from a hosting provider, this action is not needed. However, it must be done if the domain registrar isn’t the same as your hosting provider’s. You can check what your currently set nameservers are using [**DNS checkup**](https://dnschecker.org/) tools or **[Hostinger’s WHOIS](https://www.hostinger.com/whois)**.

For example, if you host a website at Hostinger but purchased a domain from [**Google Domains**](https://domains.google/), you’ll have to change the domain’s nameservers to point it to Hostinger. Only then will the domain name be connected to the website.

* How to Change the Nameservers?

You can only [**change nameservers**](https://www.hostinger.com/tutorials/how-to-change-domain-nameservers) where the domain is registered. For example, if you purchased a domain name at Hostinger, you can change the nameservers on hPanel. If you bought it from Google Domains, you can only change them on Google Domains.

Domain names purchased at Hostinger use its nameservers by default. There is no need to change the nameservers if you [**buy a domain from Hostinger**](https://www.hostinger.com/domain-checker).

In the following steps, we’ll show you how to change the nameservers from your hosting account. We’ll use Hostinger as an example, but the steps should be similar across most hosting providers.

1. Log into hPanel, navigate to **Domains**, and select the domain name you want to edit.

Graphical user interface, text, application

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1. Under **Domain Information** next to your **Nameservers,**select **Change**.

Graphical user interface, text, application, email

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1. Under the **Select Nameservers**section, choose **Hostinger nameservers**or **Change nameservers**. The latter allows you to enter custom nameserver addresses. We recommend simply selecting the former if you want to point your domain to Hostinger.

Graphical user interface, application, Teams

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1. **Save**your changes.

Once the nameservers are correctly pointing to your hosting account, you will be able to control the DNS zone from your hosting management panel. For example, if your Google Domains domain is pointing at Hostinger, the DNS zone is now controlled by Hostinger.

* What Is a DNS Zone and How to Make Changes for the Domain?

A **DNS zone**is a portion of the DNS namespace divided up for administrative purposes by a person or an organization. Each DNS zone contains at least one DNS entry.

If you use the web hosting’s nameservers for your domain name, you’ll be able to make changes to the DNS zone using the tools provided. There are different reasons to modify a DNS zone, one of which is to point the domain to another address.

It’s simple to modify the DNS zone files or records using the [**DNS Zone Editor**](https://www.hostinger.com/tutorials/how-to-use-hostinger-dns-zone-editor). If you use Hostinger, find the editor by simply logging into**hPanel** and then going to **Advanced -> DNS Zone Editor**.

Graphical user interface, application, website

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On the DNS Zone Editor page, you’ll see a form to add new DNS records. There are eight types of DNS Records that you can add.

Graphical user interface, application, Teams

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Underneath is a table of existing records. Use the search bar to find the exact DNS zone file you’re looking for, then **Delete**or modify an existing record by selecting **Edit**.

Graphical user interface, table

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Underneath is a table of existing records. Use the search bar to find the exact DNS zone file you’re looking for, then **Delete**or modify an existing record by selecting **Edit**.

* A Record

An **A record**or a **DNS host record** points a hostname or domain to an IPv4 address. For example, it converts **hostinger.com** to **104.19.184.120**. An **AAAA record**works similarly, but it transforms a hostname to an IPv6 address instead.

Each domain name can only have one A record DNS entry. However, by default, there are two A records you’ll find on hPanel, one for your **domain (@)**and one for **FTP**. Both point to the same IP address.

Graphical user interface, application, email

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Modifying your A records helps you point your domain name to a different IP address. To do so, simply click **Edit**and make your changes accordingly in the required fields**:**

* **Type** – only change the type to AAAA if the new IP address is IPv6.
* **Name**– the @ symbol refers to your root domain, for example, **yourdomain.com.**If you modify the A record of a subdomain, such as **sub.yourdomain.com**, fill in this field with the subdomain instead.
* **Points to**– fill in this field with the new IP address.
* **TTL**– standing for **“time-to-live”**, the value entered here will tell the DNS resolver how long it must cache a DNS query. The default value is usually **14400**or **four hours**.

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* CNAME Records

A **CNAME record** or a **“canonical name” record** establishes a particular domain as an alias for another domain. When end-users enter one of the alias domain names in their web browsers, they’ll be taken to the same IP address.

This helps domain administrators because they don’t need to create multiple A records to point multiple domain names to the same IP address.

For example, you want your subdomains **alias1.yourdomain.com**and **alias2.yourdomain.com** to point to **main.yourdomain.com**. Adding a CNAME record for each alias domain will do the job.

Graphical user interface, application

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When you add a new CNAME record, aside from the TTL, enter the name of the alias domain or subdomain in the **Name**field, and in the **Target**field, enter the domain to which the alias domain will point to.

Graphical user interface, text, application

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* MX Records

An **MX record**, which stands for **mail exchanger**,identifies a mail server used to process incoming emails received by a particular domain name. For example, if an MX record was created for **yourdomain.com**, you’ll be able to receive emails via the **@yourdomain.com** email address.

Hostinger has two default MX records:

mx1.hostinger.com

mx2.hostinger.com

If you want to use a third-party email client like Google [**Workspace**](https://www.hostinger.com/google-workspace), you have to change each default MX record to Google’s.

Here’s how to fill the required fields when modifying or adding a new MX record, aside from **Name** and **TTL**:

* **Mail server** – paste the address of the mail server you want to use. For example, if you use Google Workspace, the addresses will look like **ASPMX.L.GOOGLE.COM.**
* **Priority** – you can add multiple mail servers and sort them by which one to use first when receiving incoming emails. The lower the number is, the higher it is on the list.

Graphical user interface

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* TXT Records

A **TXT record**allows domain administrators to include readable notes for both humans and machines. It doesn’t directly impact your DNS settings, but it tells other parties important information about your domain. TXT records serve different purposes, and you can have more than one in your DNS zone.

A common purpose of a TXT record is to create a **Sender Policy Framework (SPF) record**. SPF records specify which hostnames or IP addresses are authorized to send emails on behalf of your domain. If you use Hostinger, you’ll see that there’s one SPF record already created by the domain name system.

Graphical user interface, text, application

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Modifying and adding a new TXT record works similarly to other types of records. The **TXT value**should be filled with the information you want to specify in the entry.

The default TXT value for Hostinger’s SPF record is:

v=spf1 include:\_spf.mail.hostinger.com ~all.

Graphical user interface, text, application

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* SRV Records

An **SRV record**connects a hostname to a particular service. Compared to other DNS records, SRV records store more information, including the port number. Configuring an SRV record will guide applications to find your preferences for certain services.

If you use Hostinger, there is no SRV Record in place by default, but you can add one. For example, if you want to add an SRV record for an XMPP instant messaging service.

Graphical user interface, website

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Here’s how to fill each required field aside from TTL and Priority:

* **Name**– fill in the name of the service in the format of **\_service.\_protocol.example.com**. For XMPP services, the format would be something like**\_xmpp-client.\_tcp.example.net**.
* **Weight**– if multiple SRV records have the same **Priority** value, **Weight** will determine which one will go first. The higher the value, the more it will be prioritized first.
* **Port**– a port is a number that helps a computer differentiate types of traffic. Simply enter the port number that was assigned to the service.
* **Target**– enter the address of the designated server.
* DNS Propagation

Each time you modify or add a new DNS record, there will be a period where the DNS record is being updated across the world’s servers. This is called the **DNS propagation**period.

Besides adding or modifying a DNS record, changing your domain nameservers and adding a new subdomain will also trigger DNS propagation.

It may take up to 24 hours for a DNS record to propagate fully. During this time, your site may become unavailable. To check the DNS propagation progress in real-time, type in your domain into a DNS checker like **[WhatsMyDNS](https://www.whatsmydns.net/" \t "_blank)**.

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* DNSSEC

**DNSSEC**is a security technology for the domain name system. This [**premium DNS**](https://www.hostinger.com/tutorials/premium-dns) adds a layer of protection to existing DNS records by adding cryptographic signatures for authentication. This can prevent attackers from gaining access to DNS records.

Not all domain names support DNSSEC. For example, on Hostinger, you can only enable DNSSEC for some domains registered to Hostinger and hosted elsewhere.

No matter which hosting provider you use, we recommend contacting their support team if you’re interested in DNSSEC.

* Conclusion

DNS matches IP addresses to human-readable domain names, making it easier for people to visit websites. There are four types of DNS servers involved in the resolution process – **DNS** **resolver**, **root** **nameserver**, **TLD** **nameserver**, and **authoritative** **nameserver**.

A domain’s nameservers store all the DNS records of a domain name, while a DNS zone is a portion of the DNS namespace divided up for administrative purposes.

On hPanel, you can change your nameservers and add or modify records in your DNS zone. To understand DNS records, there are five primarytypes you should be familiar with – **A**, **CNAME**, **MX**, **TXT**, and **SRV**.

Whenever you make changes to any DNS record, it will take some time for the domain name system to process the changes – this is called **DNS** **propagation**.

* **DNS Caching:**
* DNS caching can be done at the browser level or at the operating system (OS level).
* **How to Perform DNS Lookup**
* Open cmd ns lookup 🡪set query-ns 🡪’www.ultacaresupport.com’