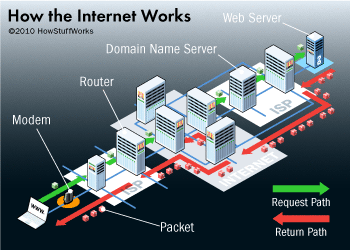
Frontend Roadmap.

# How does the internet work?

Internet is basically a place where multiple computers and servers are connected to each other and share data among them. Data is broken into packets and are delivered to the intended receiver. There are various factors that ensure reliable delivery of data (packets) such as Internet Protocol (IP), Transmission Control Protocol (TCP), and Domain Name System (DNS). These aspects work together to make Internet.



## Internet Protocol (IP)

In simple terms, IP is an address for a device that is unique. Internet knows who the data is for and where to send the data (packets) through IPs. Without IP address, the internet won’t know where to send the data (packets).

## Transmission Control Protocol (TCP)

TCP is a specific communication protocol that ensures reliable, ordered, and error-checked delivery of data between applications. TCP is responsible for breaking down data into packets and later reassembling it in the receiving end. TCP works in the Transport Layer of TCP/IP.

## TCP/IP

### Layers of TCP/IP

|  |  |  |
| --- | --- | --- |
| **Layer** | **Description** | **Example** |
| **Network Access Layer** | Handles data transmission over physical hardware. | Ethernet, Wi-Fi, ARP |
| **Internet Layer** | Handles addressing and routing of data across different networks. | IPv4, IPv6 |
| **Transport Layer** | Ensures reliable or fast data delivery between devices. | TCP, UDP |
| **Application Layer** | Handles user interaction and application-level communication. | HTTP, HTTPS, FTP, DNS, SMTP |

## Domain Name System (DNS)

DNS is also called the phone book of the internet. It translates the human readable names such as [www.google.com](http://www.google.com), [www.youtube.com](http://www.youtube.com), etc., to IP addresses which the internet uses to communicate. This removes the need to memorize long and complex IP addresses for a website. For example, without DNS, [www.google.com](http://www.google.com) would be 142.251.77.142.

## Hyper Text Transfer Protocol (HTTP)

HTTP is a protocol that allows servers and web browsers to communicate. When a website is opened, the browser sends an HTTP request to the server. The server then processes the request and returns a response to the browser. According to the response, the browser then displays the website.

### HTTP Methods

HTTP methods are request types. Different methods are used to perform different tasks.

#### HTTP GET

GET requests are primarily used to retrieve data from the server.

#### HTTP POST

POST requests are primarily used to create or submit data to the server.

#### HTTP PUT

PUT requests are primarily used to update existing data.

#### HTTP PATCH

PATCH requests are primarily used to partially update existing data.

#### HTTP DELETE

DELETE requests are primarily used to delete or remove existing data.

### Hyper Text Transfer Protocol Secure (HTTPS)

This is a kind of HTTP that is more secure as it uses **SSL/TLS encryption** to secure data transmission.

## Web Hosting

When developing a website, we run it locally. This will only be accessible locally meaning that the users of the internet can’t use this website. These websites can be hosted on the internet by registering a domain name. However, hosting is not free and require subscription. There are various web hosting service providers like Nest Nepal, WebHostNepal, A2 Hosting, etc., in Nepal.

In simple words, web hosting is just allocating space on the internet for your website. Hosting allows users around the world to access your website. There are various types of hosting such as:

* **Shared web hosting:** When a single physical server hosts multiple websites, it’s known as Shared Hosting.
* **Dedicated hosting:** A whole physical server and all its resources are allocated to a single customer.
* **VPS hosting:** A physical server is divided by virtualization software and allocated to different customers. This means each user has a virtual server that is isolated from the others.
* **Cloud hosting:** An effective method of running a website with resource-intensive applications or a large number of content assets such as images
* **Reseller hosting:** The account owner can offer their hard drive space and bandwidth to host third-party websites.