

When we type "google.com" into our browser and hit enter, a complex series of events unfolds behind the scenes to bring us the familiar Google search page:

1. **Domain Name System (DNS) Request:** Your computer asks a DNS server to find the IP address linked to "<https://www.google.com>." Think of the DNS server as an internet address book. It quickly sends back the IP address.
2. **TCP/IP Handshake:** Your computer uses the IP address to connect to the server through what's called a "TCP" connection. This connection is made possible using "IP." It's like a virtual handshake, ensuring your computer and the server can talk.
3. **Firewall Check:** If you have a firewall on your computer, it checks to make sure your request is allowed. The server you're trying to reach might have a firewall too, and it also checks to allow the connection.
4. **Secure Connection (HTTPS):** Your browser sends a request to the server using an encryption method like "SSL" or "TLS." This encryption keeps the information you share between your computer and the server secure. It's why you see the "s" in "https."
5. **Load Balancer:** Big companies like Google use multiple servers to handle lots of requests. They have a "load balancer" that directs requests to the right server. The load balancer is the traffic cop that ensures everything runs smoothly.

6. **Request and Response:** Your browser's request first goes to the load balancer, which forwards it to a specific server based on a specific algorithm. The server processes your request and sends a response back to the load balancer, which then passes it back to your browser.
7. **Webpage Components:** The response typically includes HTML, CSS, and JavaScript files that create Google's homepage. HTML tells your browser how to show the content, CSS styles it and JavaScript adds interactive features.
8. **Dynamic Content:** If there's dynamic content, like Google search results, the web server may ask the application server for data. The application server, in turn, could talk to a database server to get the needed data. This information is added to the response sent back to your browser.
9. **Rendering:** Your browser takes all the components it receives and puts together the webpage you see on your screen. It's like assembling a puzzle, and the page is ready for you.