HOW THE INTERNET WORKS · PART 2 OF 9 · AGES 11–16

What Happens When You Open a Website?

Seven steps between pressing Enter and seeing the page, and most of them are over in a fraction of a second.

1

You enter a URL

The browser splits https://www.example.com/news into a scheme (https), a domain name (www.example.com) and a path (/news).

2

DNS finds the IP address

Computers use number addresses, not names. A DNS resolver asks root, .com and example.com name servers in turn, then hands the browser the IP address.

3

TCP opens a connection

A three-way handshake: the browser sends SYN, the server replies SYN-ACK, the browser answers ACK. Both sides are now ready to send data.

4

TLS makes it secure

For https, the server shows a certificate proving who it is, and both sides agree secret keys. Everything after this is encrypted.

5

The browser sends a request

An HTTP request asks the server for the page: GET /news. It also says which browser you use and what kinds of file it accepts.

6

The server responds

It replies with a status code (200 OK means success, 404 means not found) and the page's HTML, split into many small packets.

7

The browser builds the page

Packets are put back in order. The browser reads the HTML, fetches CSS, JavaScript and images, then paints the finished page on screen.

Why the second visit is faster

Browsers, computers and DNS resolvers remember (cache) recent answers. On a return visit the IP address, and often the images and styles, are already stored, so several steps are skipped.

NEXT IN THE SERIES

3. Data Packets Explained: What's Inside a Packet

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