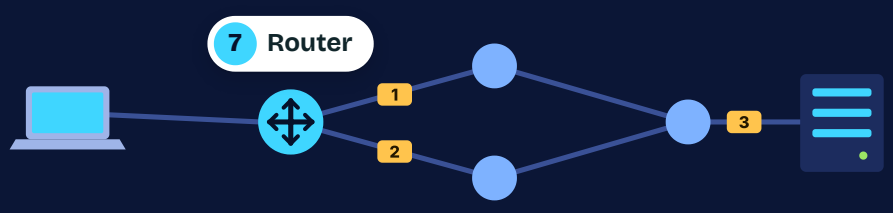
HOW THE INTERNET WORKS · PART 3 OF 9 · AGES 11–16

Data Packets Explained

Everything online travels in small packets. Here is what one packet carries, and how routers move it.



IP header

- From 192.0.2.10
- To 198.51.100.7
- TTL 64 hops

1 Source IP
2 Destination IP
3 Time to live

TCP header

- Ports 51000 → 443
- Sequence 2921

4 Port numbers
5 Sequence number

Payload

6 Payload

1 Source IP

The IP address of the device that sent the packet, like a return address on an envelope. Replies are sent back to it.

2 Destination IP

The IP address the packet is going to. It is the field every router reads to decide where to send the packet next.

3 Time to live

A counter that drops by one at every router. If it reaches zero the packet is discarded, so lost packets cannot circle forever.

4 Port numbers

In the TCP header: which program the data is for. Secure websites use port 443; your device picks a temporary port for the reply.

5 Sequence number

Says where this piece belongs in the whole message, so packets that arrive out of order can be put back in the right order.

6 Payload

The data itself: a small slice of a photo, video or web page. A packet is at most about 1,500 bytes, about 40 of them headers.

7 Router

Reads the destination address, checks its routing table and forwards the packet one hop closer. Packets of one message may take different routes.

Lost a packet? Send it again

The receiving computer uses TCP to acknowledge the packets it gets. If one goes missing or arrives damaged, only that packet is sent again, not the whole file.

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4. The Internet vs the Web: What's the Difference?

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