

## 1.3 EXCHANGING DATA · 1.3.3

# The Internet: TCP/IP, DNS & packet switching

The TCP/IP stack, DNS, protocol layering, and packet vs circuit switching. Spec 1.3.3(b).

## 01 TCP/IP stack (top → bottom)

**Application** Network apps & protocols: HTTP(S), SMTP, FTP.

**Transport** Splits into packets · TCP reliable delivery · ports.

**Internet** Adds IP addresses · routes packets.

**Link** Physical hardware (Ethernet/Wi-Fi) · MAC.

## 02 DNS & layering

**DNS** Translates a **domain name** → **IP address** (internet's phone book).

**Layering** Independent layers; each can change behind a fixed interface.

**Benefit** Easier to build/maintain; swap one layer without breaking others.

## 03 Packet vs circuit switching

### ● Packet (the internet)

Message split into packets; travel by **different routes**; reassembled in order; lost packets resent. Efficient, shared links.

### ● Circuit

One **dedicated path** reserved for the whole call. Guarantees bandwidth; wastes capacity when idle.

## FINAL PASS BEFORE THE EXAM

## Rapid exam tips

Six slips on internet questions.

### 01

Layers in order: **application** → **transport** → **internet** → **link**.

### 02

IP addressing/routing = **internet** layer; packets + TCP = **transport**; HTTP = **application**.

### 03

DNS **translates** a domain name into an IP address — it is not the address itself.

### 04

Packet switching: packets take **different routes**, reassembled **in order** by sequence number.

### 05

Circuit switching reserves a **dedicated path**; the internet uses **packet** switching.

### 06

Layering benefit: change one layer **independently** behind a fixed interface.