

## 1.1 PROCESSORS, INPUT/OUTPUT AND STORAGE · 1.1.3

# Storage, RAM, ROM & virtual storage

Magnetic, flash and optical storage, the **RAM vs ROM** distinction, and **virtual storage**. Spec 1.1.3(b) (c)(d).

## 01 Storage types

**Magnetic** Spinning platters magnetised. Cheap, huge, fragile. (HDD)

**Flash** NAND cells, no moving parts. Fast, low power, rugged, pricier. (SSD)

**Optical** Laser reads pits/lands. Cheap to distribute, low capacity. (CD/DVD/Blu-ray)

## 02 RAM vs ROM

### ● RAM

**Volatile.** Read/write.  
Holds OS, apps & data in use.

### ● ROM

**Non-volatile.** Read-only. Holds boot program/BIOS & firmware.

### More

### RAM

less disk swapping → faster.

## 03 Virtual storage & choosing a medium

### Virtual storage

Remote/cloud storage used as if local. Off-site, anywhere-access, scalable → ideal for **backups**.

### vs virtual memory

Virtual storage = extra space; **virtual memory** = using disk to extend RAM. Don't confuse them.

**Choosing** Weigh capacity, speed, cost per GB, power, durability and portability for the scenario.

## FINAL PASS BEFORE THE EXAM

## Rapid exam tips

Seven slips on storage and memory questions.

**01**

**RAM is volatile**, ROM and all secondary storage are non-volatile. State this clearly.

**02**

The OS lives in **secondary storage**; ROM holds the small **boot program** that loads it into RAM.

**03**

**Flash** = solid-state chips (SSD, USB). **Optical** = laser-read discs. Don't merge them.

**04**

More RAM helps because there is **less swapping** to slow disk (virtual memory).

**05**

"Which is most suitable?" → justify on capacity, speed, cost/GB, power, durability for that scenario.

**06**

Don't confuse **virtual storage** (extra space) with **virtual memory** (disk extends RAM).

**07**

For "magnetic vs SSD for servers", weigh both sides: HDD = cheaper, bigger; SSD = faster, lower power, more reliable (no moving parts) — then reach a justified conclusion.