

Server Hardware Types

Tower, rack and blade servers, and what makes a server different from a PC.

01 What it is

A server is a computer built to run services for many users, around the clock. It uses the same basic parts as a PC but adds redundancy, remote management and room to grow: dual power supplies, ECC memory, hot-swap disks and a management controller.

02 Why it matters in a UAE IT job

Companies in the UAE run servers on site, in server rooms, or in data centres. A fresher may be asked to check a failed disk light, replace a power supply or log in to the management port.

Knowing the types and parts lets you read a quote, plan a rack and talk to vendors such as Dell, HPE and Lenovo.

03 Key terms

Term	Meaning
Tower server	Looks like a large desktop. Suits small offices with one or two servers.
Rack server	Slides into a 19-inch rack. Height is measured in U, where 1U is 44.45 mm (1.75 in).
Blade server	A thin server that slots into a shared chassis with common power and network.
ECC memory	Memory that detects and corrects single-bit errors.
RAID	Combining disks for speed, safety or both. RAID 1 mirrors, RAID 5 and 6 use parity, RAID 10 mirrors and stripes.
Redundant PSU	Two power supplies, so one can fail without shutting the server.
iDRAC / iLO	Dell and HPE out-of-band management. It gives remote console, power control and hardware alerts, even when the OS is down.

04 How it works

Small offices choose a tower for simplicity. Growing companies choose rack servers because they save space and share power and cooling. Large data centres use blade systems or hyperconverged nodes that combine compute and storage. Whatever the shape, the server's strength comes from redundancy: if a disk, fan or power supply fails, it keeps running while you replace the part.



Density and scale increase from left to right.

05 Hands-on lab

Goal: study a real server model from public documents and produce a one-page hardware profile. Use a manufacturer datasheet for a rack server such as a Dell PowerEdge R-series, an HPE ProLiant DL-series or a Lenovo ThinkSystem SR-series.

Step 1. Download the public datasheet for one rack server and note its form factor in U.

- Find the model name, form factor in U, and the intended use on the first page of the datasheet.
- Note how many rack units it takes and how many fit in a 42U rack.
- Record the datasheet's name and revision date so you can cite it.

Step 2. List the CPU options, maximum RAM, memory type and number of DIMM slots.

- Note the CPU family and the maximum number of processors the board supports.
- Record the memory type (for example DDR5 ECC) and the maximum RAM.
- Check how many DIMM slots exist and whether the datasheet lists a preferred population order.

Step 3. List the drive bays, drive types supported and the RAID controller options.

- Count the front drive bays and note whether they are hot-swap.
- List the supported drive types (SAS, SATA, NVMe) and sizes (2.5 in or 3.5 in).
- Note which RAID levels the controller supports and whether it has cache.

Step 4. Record the power supply options, wattage and whether they are hot-swap.

- Record the available wattages and the power supply efficiency rating.
- Check that the supplies are hot-swap and redundant (1+1).
- Work out how many amps the server could draw on a 230 V feed.

Step 5. Find the remote management feature (iDRAC, iLO or equivalent) and write down three things it lets an admin do.

- Note the name and licence tiers of the management feature (iDRAC, iLO or similar).
- Write three admin tasks it supports, such as remote console, power control and alerts.
- Find out whether it has a dedicated network port and why that port should sit on a separate management network.

Step 6. Write which type of server you would choose for a 30-person office and for a data centre, with a reason for each.

- Compare size, cost, noise, cooling and growth for each environment.
- Mention power and rack space for the data centre option.
- State one risk of your choice and how you would reduce it.

06 Common mistakes

- Treating a server as a bigger PC and skipping redundancy.
- Mixing up RAID and backup. RAID protects against a disk failure, not against deletion, ransomware or fire.
- Ignoring the management port and having to walk to the server room for every issue.
- Choosing RAID 0 for important data. It has no protection.
- Forgetting power and cooling needs when adding a server.

07 Five interview questions

1. What is the difference between a tower and a rack server?

A tower stands alone and suits small sites. A rack server mounts in a 19-inch rack, saves space and is the standard in server rooms and data centres.

2. What is 1U?

One rack unit, 44.45 mm (1.75 inches) of vertical rack space.

3. Why do servers use ECC memory?

It detects and corrects single-bit memory errors, which prevents silent data corruption and crashes.

4. What is RAID 1 versus RAID 5?

RAID 1 mirrors two disks. RAID 5 stripes data with parity across three or more disks, tolerates one disk failure and gives better capacity than mirroring.

5. What is iDRAC or iLO?

A dedicated management controller on the server that gives remote console, power control, hardware monitoring and alerts, even when the operating system is off.

08 Check yourself

1. How tall is 1U?

- a) 100 mm
- b) 44.45 mm
- c) 10 mm

2. Which RAID level mirrors two disks?

- a) RAID 0
- b) RAID 5
- c) RAID 1

3. What does ECC memory do?

- a) Corrects single-bit errors
- b) Makes the CPU faster
- c) Cools the server

4. Is RAID a replacement for backups?

- a) Yes
- b) Only RAID 10
- c) No

5. What does iLO or iDRAC provide?

- a) Extra RAM
- b) Remote management
- c) Wi-Fi

Answer key: 1-b, 2-c, 3-a, 4-c, 5-b

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