

what is data centers?

A **data center** is a **special building or facility** where companies keep their **servers, storage, and networking equipment** that store, process, and deliver data and applications.

Think of a data center as the **brain + store room of the internet** ☐☐

Data center (in very simple words)

A data center is a place where **many powerful computers (servers)** run **24x7** to keep websites, apps, emails, databases, and company systems working.

Example:

- Google
- Amazon
- Banks
- Hospitals
- Government offices

All use data centers.

What is inside a data center?

1 Servers

- Physical computers
- Run Linux/Windows
- Host applications, databases, websites

2 Storage

- Hard disks / SSDs
- SAN, NAS
- Store huge amounts of data

3 Networking

- Switches
- Routers
- Firewalls
- Load balancers

4 Power systems

- UPS
- Diesel generators
- Dual power supply

5 Cooling systems

- AC units
- Precision cooling
- Hot aisle / cold aisle

6 Security

- Biometric access
 - CCTV
 - Fire suppression systems
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Why data centers are needed

- ✓ 24×7 availability
 - ✓ High performance
 - ✓ Data security
 - ✓ Backup & disaster recovery
 - ✓ Centralized management
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Types of data centers

1 On-premises data center

- Owned by company
- Inside company building

Example: Bank's own DC

2 Colocation data center

- Company rents space
- Power, cooling provided by DC vendor

Example: Nxtra, STT, Equinix

3 Cloud data center

- Owned by cloud providers
- You rent servers virtually

Example:

- AWS
 - Azure
 - Google Cloud
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4 Edge data centers

- Small DCs close to users
 - Used for low latency (5G, IoT)
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Real-world example

When you open **YouTube**:

1. Your request goes to a **data center**
2. Servers process the request
3. Video is streamed from storage
4. Network sends data to your phone

All happens in **milliseconds**

Data center jobs (IT roles)

- Linux System Administrator
- Network Engineer
- Data Center Engineer
- Cloud Engineer
- DevOps Engineer
- Security Analyst

Data center vs server room

| Server Room | Data Center |
|----------------|----------------------|
| Small | Very large |
| Few servers | Thousands of servers |
| Basic cooling | Advanced cooling |
| Low redundancy | High redundancy |

Important interview / exam point

A data center is designed for **high availability, fault tolerance, and scalability**.