

# 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** ☐☐

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## Data center (in very simple words)

A data center is a place where **many powerful computers (servers)** run **24×7** to keep websites, apps, emails, databases, and company systems working.

Example:

- Google
- Amazon
- Banks
- Hospitals
- Government offices

All use data centers.

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## 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

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### 2 Colocation data center

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

Example: Nextra, STT, Equinix

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### 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**

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## Data center jobs (IT roles)

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

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## 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

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## Important interview / exam point ☐

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