Load Balancer

🧠 **Load Balancer — Why Needed?**

🔹 **Simple Answer (One Line)**

👉 **Load Balancer multiple servers-এর মধ্যে incoming traffic ভাগ করে দেয়**
যাতে কোনো একটায় বেশি চাপ না পড়ে।

🍽️ **Real-Life Analogy**

Restaurant example:

- অনেক customer আসে
- একটাই waiter হলে slow হবে
- Head waiter (Load Balancer) customer ভাগ করে দেয়

👉 Result: Fast service, no chaos

🧱 **Without Load Balancer (Problem)**

Client

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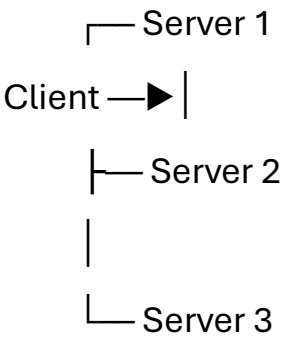
Server (💥 overloaded)

❌ Server crash
❌ Slow response
❌ Downtime

🧩 **With Load Balancer (Solution)**



✅ Even traffic distribution
✅ High availability
✅ Scalability

🎯 **Why FAANG Systems NEED Load Balancer**

1. Traffic Distribution

- Thousands / millions request
- Load evenly spread হয়

2. High Availability

- 1 server down?
- Load balancer automatically skip করে

📌 Interview line:

“Load balancer removes single point of failure.”

3. Scalability

- New server add করলেই traffic যাবে
- Client কিছু জানে না

📌 “Horizontal scaling becomes easy.”

4. Better Performance

- Less server overload
- Lower latency

5. Security (Bonus)

- Server IP hide
- Rate limiting
- DDoS protection

🍔 **Food Delivery App Example**

Lunch time:

- 1 million users order করছে
- Order service spike

👉 Load balancer:

- Order request multiple instances-এ ভাগ করে

- App crash হয় না

🧠 Interview-Ready Summary

Problem	Without LB	With LB
Traffic	Overload	Balanced
Server failure	System down	Auto recover
Scaling	Hard	Easy
Latency	High	Low

🏆 FAANG Golden Sentence

এই sentence মুখস্থ রাখো:

“Load balancer distributes traffic, improves availability, and enables horizontal scaling.”

🔚 One-Line Summary

Load Balancer = Traffic manager of your system