Practice Problem: Cloud App Expansion Scenario

You have a new cloud-based application with the following details:

Functions and Capacity per Server:

- Data Analysis: 600 records/min
- File Upload: 250 files/min
- Chat Messaging: 400 messages/min

System Configuration:

- Servers available: 4

Current User Demand:

- Data Analysis: 1,200 records
- File Upload: 800 files
- Chat Messaging: 1,000 messages

Latency:

- Data Analysis: 150 ms
- File Upload: 250 ms
- Chat Messaging: 100 ms

Failure Rates:

- Data Analysis: 1.5%
- File Upload: 0.5%
- Chat Messaging: 1.0%

Server Costs:

- First Server = $3,000

- Each Additional Server = $2,000

New Demand Forecast:

- Data Analysis: 3,000 records

- File Upload: 1,500 files

- Chat Messaging: 2,000 messages

Practice Questions:

1. Calculate total throughput for each functionality with 4 servers.

2. What is the latency for 3 users requesting file uploads simultaneously?

3. If new demand is: Data = 3000, File = 1500, Chat = 2000 - How many additional servers needed for each service?

4. Calculate 20-day reliability for each service.

5. What is total current cost and the cost for scaling to meet full demand?