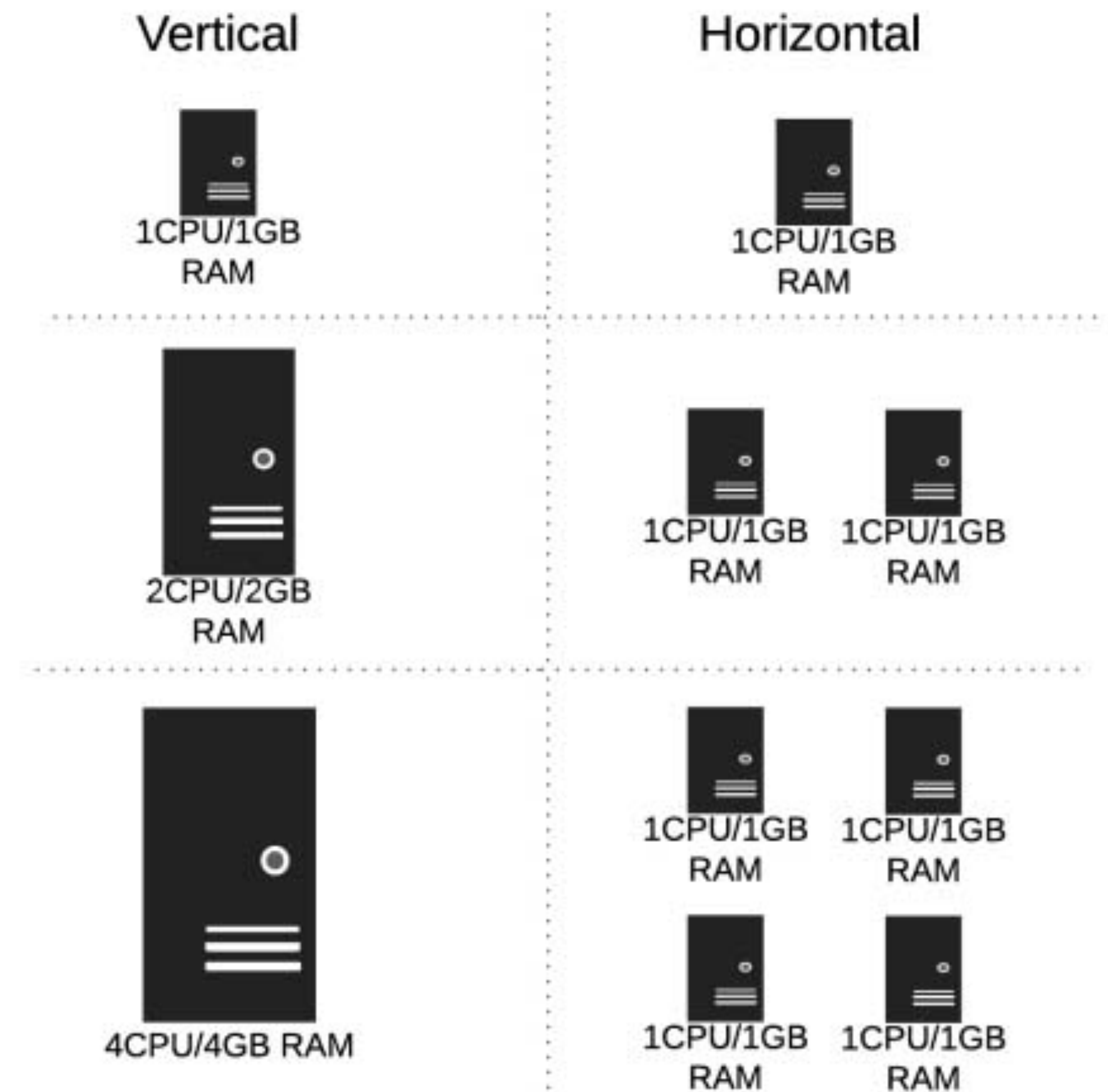# VIII. Concurrency

**What is concurrency?**

- Twelve-factor apps should only grow up to a certain limit (**vertical scaling**).

- They must also be able to span multiple processes running on multiple physical machines (**horizontal scaling**).



Vertical | Horizontal

1CPU/1GB RAM

2CPU/2GB RAM

4CPU/4GB RAM

1CPU/1GB RAM | 1CPU/1GB RAM

1CPU/1GB RAM | 1CPU/1GB RAM

1CPU/1GB RAM | 1CPU/1GB RAM

# VIII. Concurrency

**What is concurrency?**

- They should rely on the operating system's **process manager** (such as systemd) to manage output streams, respond to crashed processes, and handle user-initiated restarts and shutdowns.

- This makes adding more concurrency a **simple and reliable** operation.