Horizontal vs Vertical Scaling

Vertical Scaling

Vertical Scaling, also known as "scaling up" involves boosting the power of an existing machine within your system to handle increase loads.

- Upgrading CPU
- Increasing RAM
- Enchasing Storage

Pros:

- Simplicity
- Lower latency
- Reduced software costs
- No Major Code Changes

Cons:

- Limited scalability
- Single point of failure
- Downtime
- Higher Costs in Long Run

Horizontal Scaling

Horizontal Scaling, or **scaling out** involves adding more servers or nodes to the system to distribute the load across multiple machines.

Pros:

- Near-Limitless Scalability
- Improved fault tolerance
- Cost-effective

Cons:

- Complexity
- Increased latency
- Cost
- Application Compatibility

When to choose Vertical Scaling

1. Limited Scalability

2. Legacy Applications
3. Low latency
4. Cost-sensitive projects

When to choose Horizontal Scaling

1. Rapid Growth
2. High availability needs
3. Easily Distributable
4. Microservices Architecture
5. Cost effectiveness