# System Design

System Design is the using concept from computer science such as network, distributed system and parallel computing to build large scale system.

Like Facebook, Google, Amazon, twitter etc.

# Scalability

The ability to handle more requests by buying more or bigger machines.

* Buying more machines – Horizontal Scaling.
* Buying bigger machine – Vertical Scaling.

# Horizontal vs Vertical Scaling

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| --- | --- |
| 1. Load Balancing is required. | NA. |
| 1. Resilient. | Single Point of Failure. |
| 1. Network calls (RPC- Remote procedure call) - Slow | Inter Process communication. - Fast |
| 1. Data Inconsistency | Consistent. – No dirty reads and writes. |
| 1. Scales well as users increases | Hardware limit. |
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Real world we use both like we take some of the good qualities from both sides as highlighted. The hybrid solution is essential horizontal scaling only where each machine has a big box which is feasible of money wise.

**Initially take vertical scaling, we the customer becomes bigger changed to horizontal scaling.**