

Distributed System 1

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Internet is a big distributed system.

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1 Definition

1. concurrency
2. absence of a global clock
3. absence of a shared memory
4. independent (and partial) failures

failure probability: n dependent hosts, p probability of failure \rightarrow availability $(1 - p)^n$

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2 Security

1. confidentiality
2. integrity
3. availability

3 Scalability

1. increase number of users, hosts, or resources
2. tradeoff between scale and performance

4 Transparency

Hide differences with respect to a centralized system

5 Distributed Consensus

It is impossible to design an algorithm to guarantee success or no attack if the messenger can be lost.