Challenges and Opportunities in Distributed Systems

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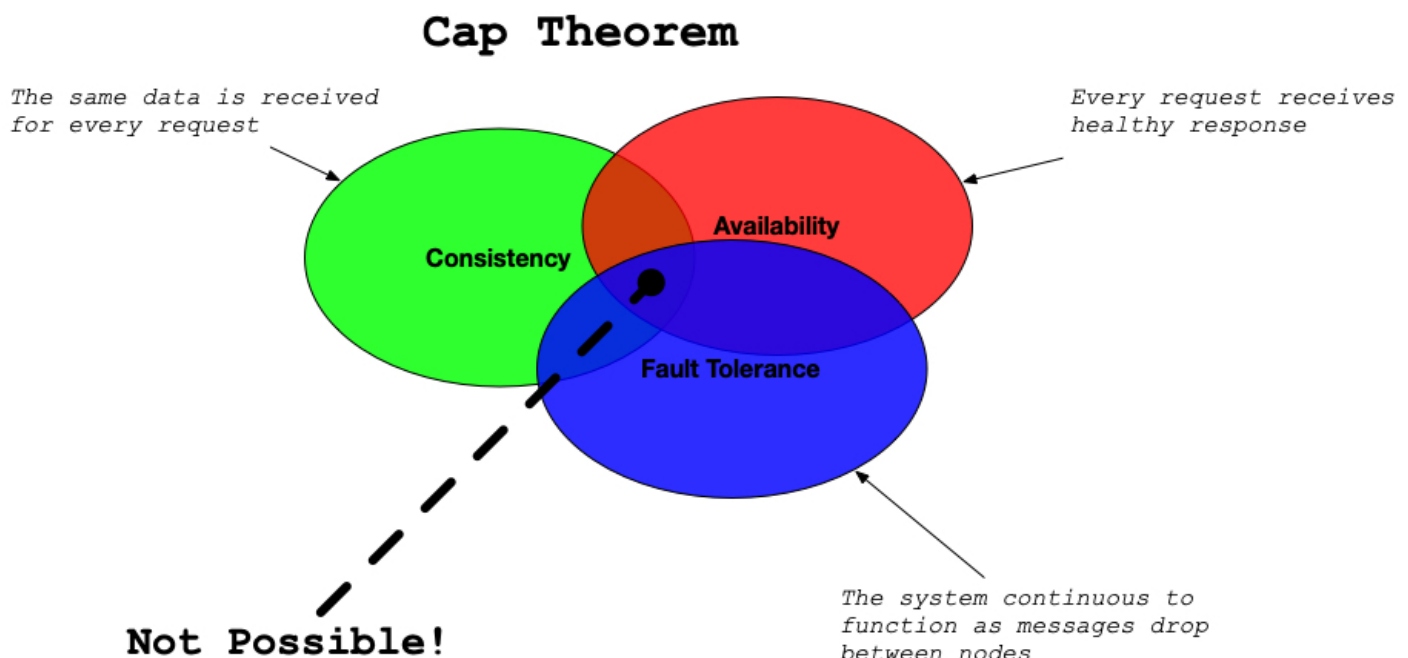
Eventual Consistency

The foundational infrastructure of the cloud is built upon the concept of eventual consistency.
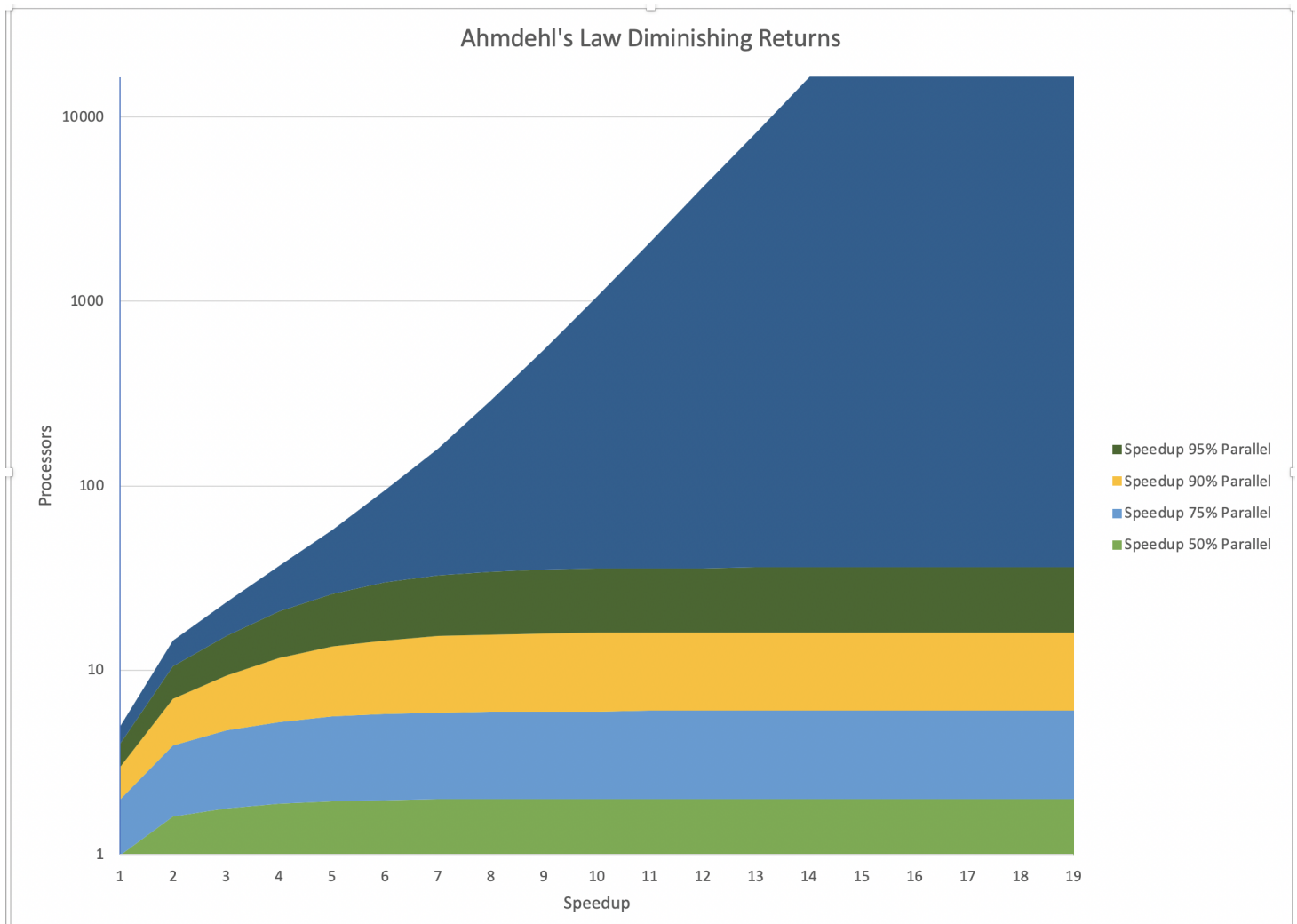
A good example of this is Amazon DynamoDB.

CAP Theorem

There is a tradeoff between consistency, availabilty and fault-tolerance.
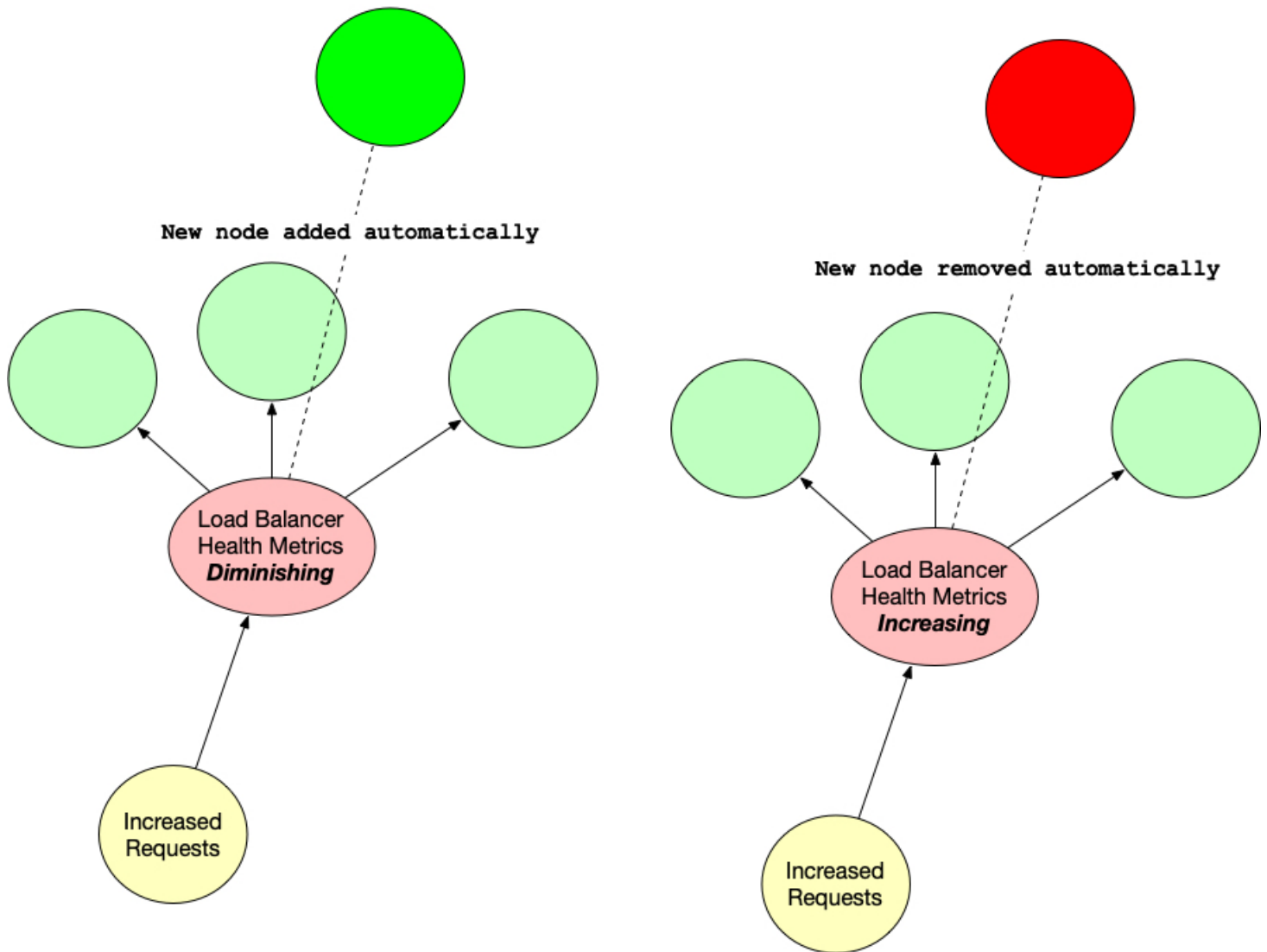

Amdahl's Law

There are diminishing returns with parallelization.

Elasticity

The ability to adapt to a varying workload. You should only pay for what you use.

Elasticity

New node added automatically

New node removed automatically

Load Balancer
Health Metrics
Diminishing

Load Balancer
Health Metrics
Increasing

Increased
Requests

Increased
Requests

Highly Available

Does the system always respond with a healthy response? A good example of a highly availability
system is Amazon S3

Highly Available "nine nines"

Yearly downtime of 31 milliseconds