ONE PAGE SUMMARY

IT & Software › System Design › Distributed Systems

Introduction to Distributed Systems

Master the fundamentals of distributed systems for modern computing.

DEFINITION

> Distributed systems are networks of independent computers that work together to achieve a common goal. They enable resource sharing and improve reliability and performance.

KEY CONCEPTS

Scalability

The ability of a system to handle increased load by adding resources.

Fault Tolerance

The capability of a system to continue functioning even when some components fail.

Consistency

Ensuring that all nodes in a distributed system reflect the same data at the same time.

Replication

The process of storing copies of data on multiple nodes to enhance availability.

Latency

The time delay between a request and its response in a distributed system.

EXAMPLES

→ Cloud storage services like Google Drive and Dropbox.

→ Online multiplayer games where players interact in real-time.

→ Distributed databases like Apache Cassandra.

MEMORY TIPS

★ Think of 'distributed' as 'shared' to remember resource sharing.

★ Use the acronym 'S-F-C-R-L' for Scalability, Fault Tolerance, Consistency, Replication, Latency.

★ Visualize a team working together to recall the collaborative nature of distributed systems.

COMMON MISTAKES

✗ Confusing distributed systems with centralized systems.

✗ Overlooking the importance of network latency.

✗ Ignoring the trade-offs between consistency and availability.

QUICK RECAP

Distributed systems consist of multiple computers working together, enhancing scalability and fault tolerance. Key concepts include consistency, replication, and latency, which are crucial for system design.