Designing data intensive applications by martin kleppmann pdf

Data today is at the center of many problems in system design. Complex issues such as scalability, cost, and usability need to be considered. In addition, we have a huge variety of tools including relational databases, NoSQL data stores, streaming or package processors and message brokers. The right choice for your app? How do you understand all these buzzwords? In this practical and comprehensive guide, author Martin Kleppmann will help you navigate this diverse landscape by exploring the pros and cons of different data processing and storage technologies. The book is written in an easy-to-digest style, so that both software engineers and applied mathematicians will find this book valuable. The book includes a wide range of tools and approaches, so you can explore what works for your team. The book is written in an easy-to-digest style, so that both software engineers and applied mathematicians will find this book valuable. The book includes a wide range of tools and approaches, so you can explore what works for your team.

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Two types of distributed transactions are common: the first is called distributed two-phase commit (2PC) and the second is known as the commit protocol for distributed transactions. In both cases, the two main mechanisms are used to ensure the consistency of the data:

- Two-phase commit (2PC): This protocol ensures that all participants in a distributed transaction agree on the outcome of the transaction. It works by breaking the transaction into two phases.
  - Phase 1: All participants are asked to prepare the transaction. Any participant that cannot prepare the transaction sends a rollback request to all other participants.
  - Phase 2: If all participants agree to commit, the transaction is committed; otherwise, all participants rollback.

- Commit protocol for distributed transactions: This protocol is similar to 2PC but uses a different approach to ensure the consistency of the data. It works by breaking the transaction into two phases:
  - Phase 1: All participants are asked to prepare the transaction. Any participant that cannot prepare the transaction sends a rollback request to all other participants.
  - Phase 2: If all participants agree to commit, the transaction is committed; otherwise, all participants rollback.

In both cases, the transaction is not considered committed until all participants have agreed on the outcome. This ensures that the data is consistent across all participants in the distributed system.