

HyPer: Hybrid OLTP&OLAP High Performance Database System

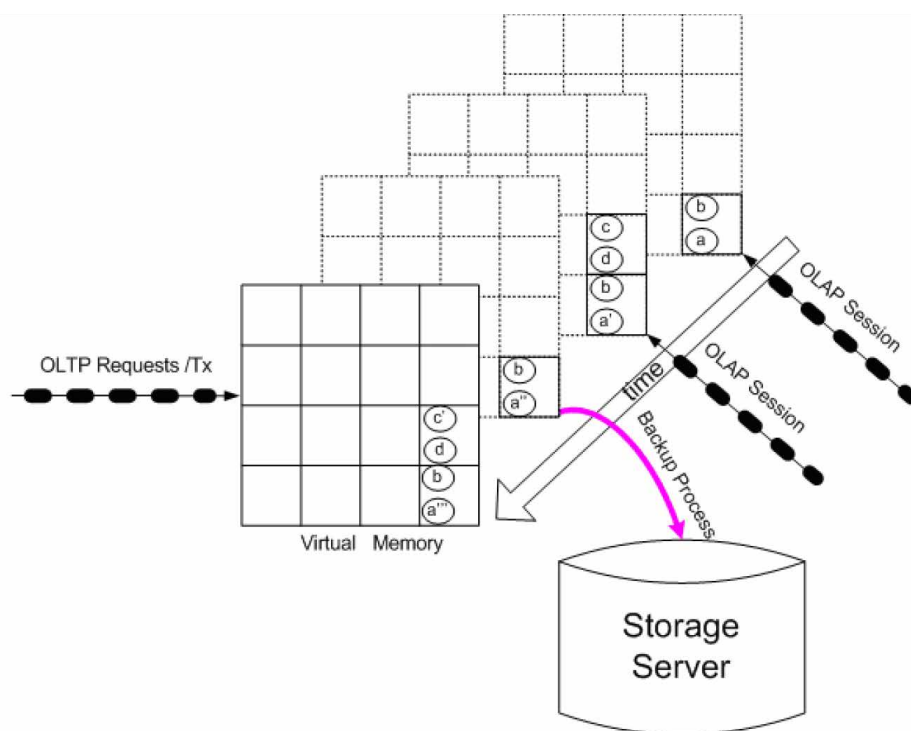
Reference No: B70096

CHALLENGE

Online transaction processing (OLTP) and online analytical processing (OLAP) present different challenges for database architectures. Currently, customers with high rates of mission-critical transactions have split their data into two separate systems, one database for OLTP and one so-called data warehouse for OLAP. While allowing for decent transaction rates, this separation has many disadvantages including data freshness issues due to the delay caused by only periodically initiating the Extract, Transform, Load-data staging and excessive resource consumption due to maintaining two separate information systems.

INNOVATION

We offer an efficient hybrid system, called **HyPer**, that can handle both **OLTP and OLAP simultaneously by using hardware-assisted replication mechanisms to maintain consistent snapshots of the transactional data**. It is a main-memory database system that guarantees the ACID properties of OLTP transactions and executes OLAP query sessions (multiple queries) on the same, arbitrarily current and consistent snapshot.



COMMERCIAL OPPORTUNITIES

The invention provides a main-memory database system that

- processes **OLTP transactions** at rates of tens of thousands per second, and, at the **same time**,
- processes **OLAP queries** on up-to-date snapshots of the transactional data
- guarantees the ACID properties
- creates transaction consistent backup archives of the entire database on non-volatile storage.

DEVELOPMENT STATUS

The two most prominent benchmarks for OLTP (TPC-C) and for OLAP (TPC-H) run in parallel on a single HyPer installation and produce unprecedented performance.