

# **Siemens CMT Communications, Media and Technology**

## **TimesTen & RAC**

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**17th Conference – HrOUG**  
Rovinj, Croatia – October 16<sup>th</sup> - 20<sup>nd</sup> 2012

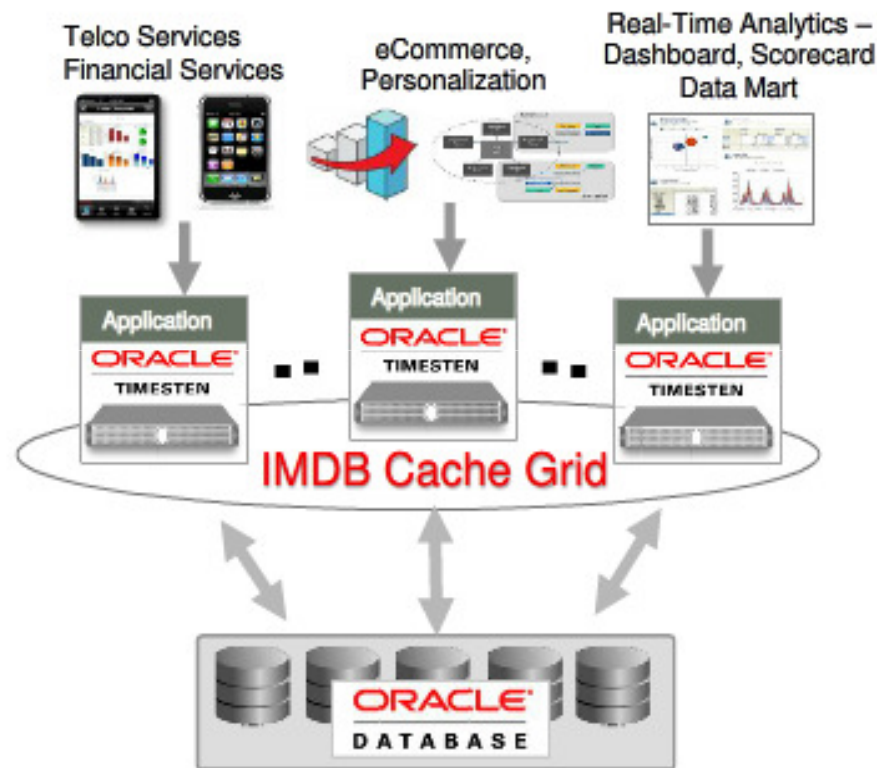
Version 1.0.  
19th of October 2012.

## Agenda



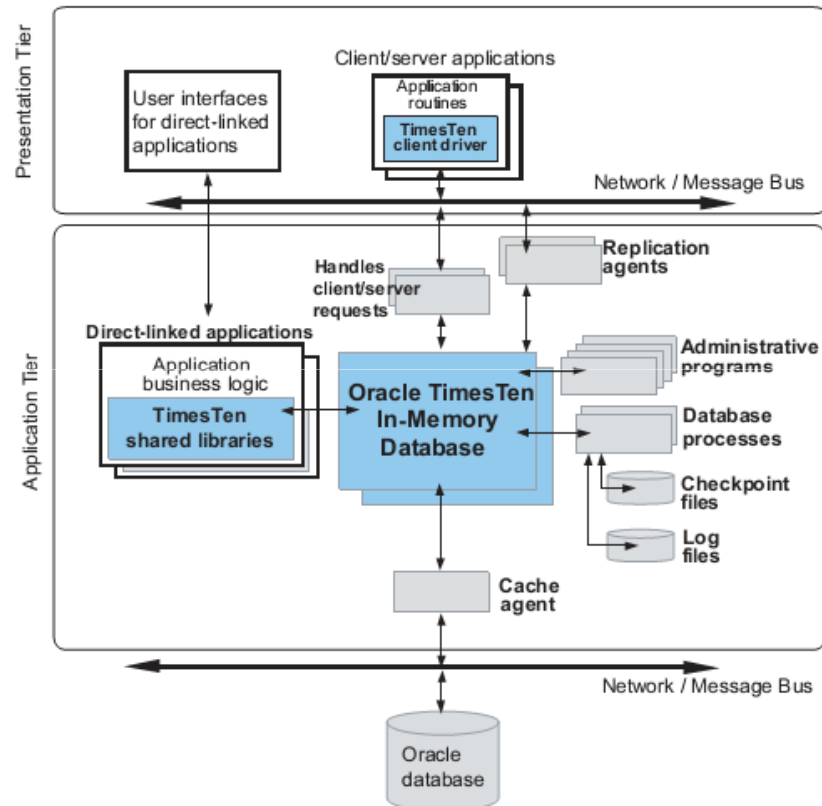
- **TimesTen Architecture overview**
- **TimesTen XLA (Transaction Log API)**
- **TimesTen Cache connect**
- **High Availability & Failover**
- **Measurements**

## TimesTen Architecture overview



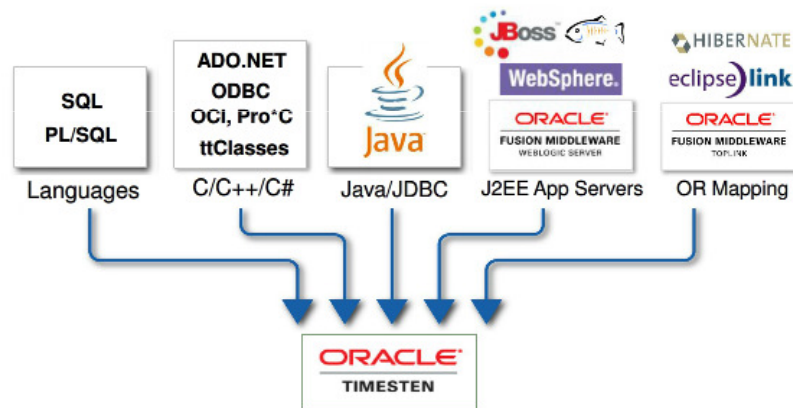
- Application-tier In-memory RDBMS
- Standard SQL & PL/SQL
- Caches Oracle Db tables
  - RW caching
  - Dynamic & Static
  - Automatic Synchronization
- Scales Up & Out
- Built in HA

# TimesTen component overview



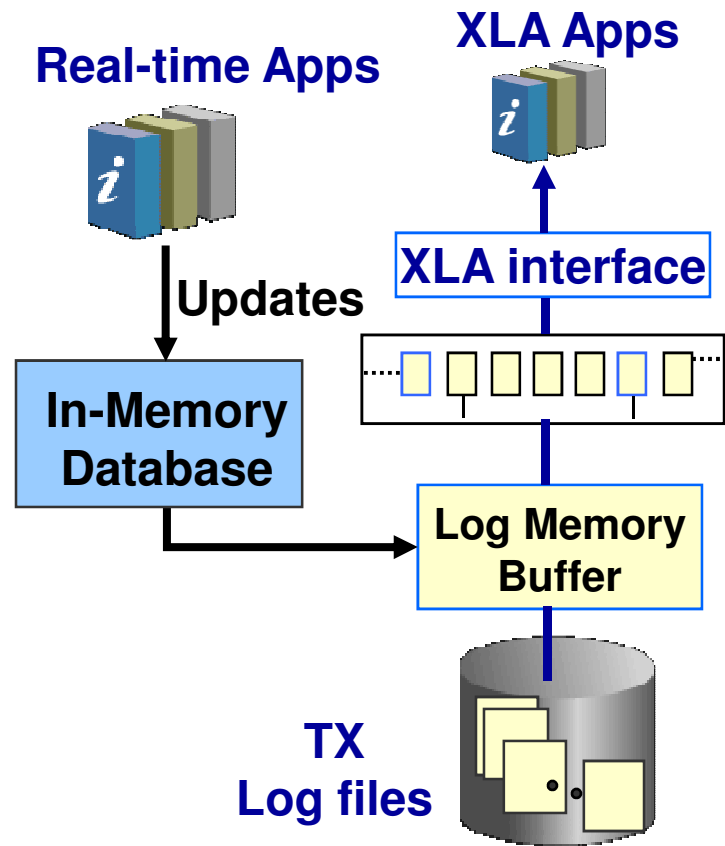
- Shared libraries
- Memory-resident data structures
- Database processes
- Administrative programs
- Checkpoint and log files

# Application library support



- C/C++ support
  - Standard ODBC interface
- Java support
  - Standard JDBC interface
- Oracle APIs: OCI, ODP.NET, Pro\*C/C++ support
  - Identical API signatures as used for the Oracle Database
  - Subset of functions
- PL/SQL support
  - PL/SQL engine implemented inside TimesTen database
  - Same Oracle PL/SQL language; subset of packages
- Minimal application changes
  - Extremely fast response time and high throughput

# Transaction Log API (XLA)



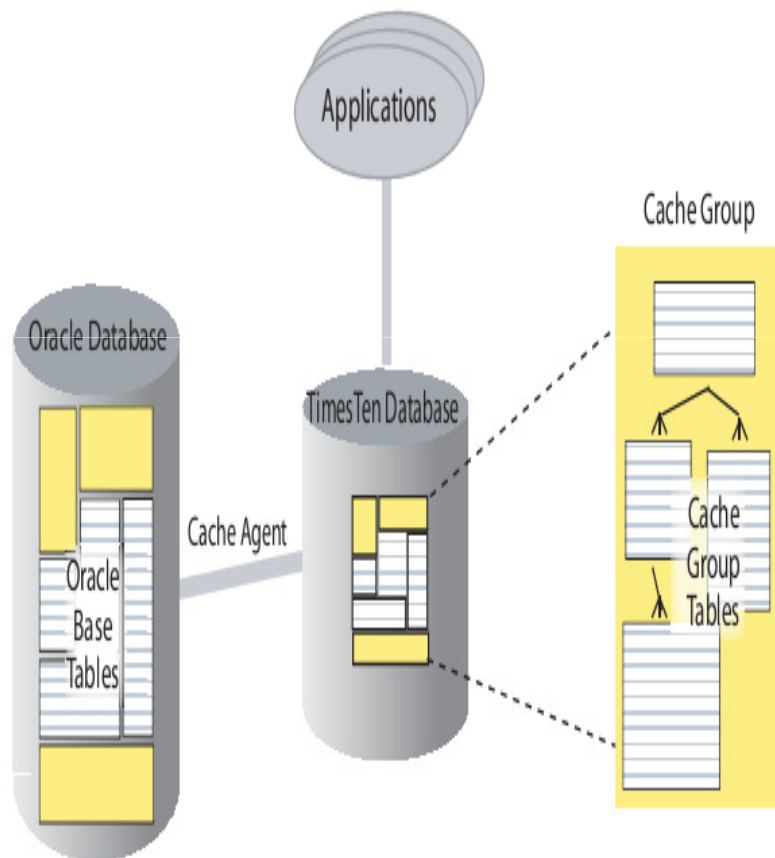
- Track real-time data changes
- Monitor transaction updates
- Propagate changes to external applications
- Implement real-time event notification and processing

## XLA Applications



- XLA API available in C and Java
  - Data store must be directly linked with applications
- Java interface is based on standard JMS specification
  - No JMS Server is required to use the JMS/XLA interface
- XLA can track changes to both Tables and Materialized Views
  - XLA obtains updates directly from transaction log buffer or log files
  - Only records for committed transactions are returned
- Maintain log positions via *Bookmarks*
  - Persistent across connections and system shutdowns

## Cache connect to Oracle



### Flexible cache content:

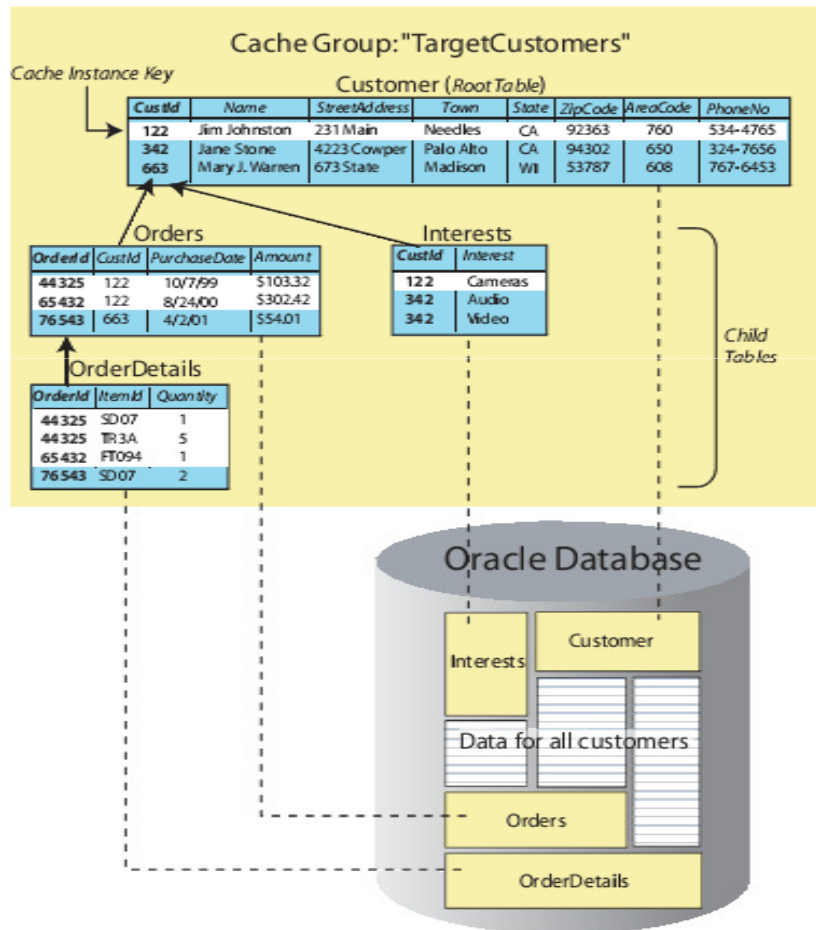
- Cache individual tables or related tables
- Cache all or subset of rows and columns
- Maintain parent-child tables relationship

### Features:

- Applications can both read from and write to cache groups
- Cache groups can be refreshed
- Cache updates can be sent to the Oracle database automatically or manually
- Oracle-to-TimesTen updates
- TimesTen-to-Oracle updates
- Aging feature
- Passthrough feature

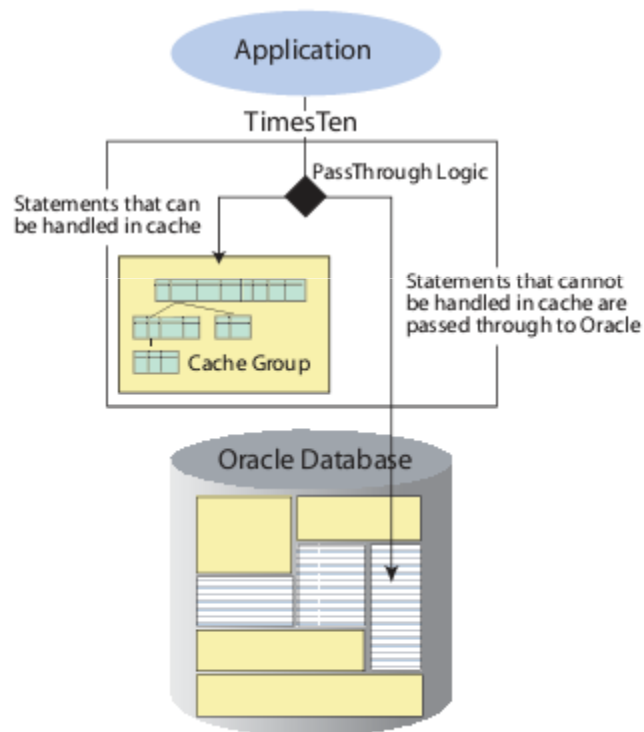


# Cache connect – Cache group



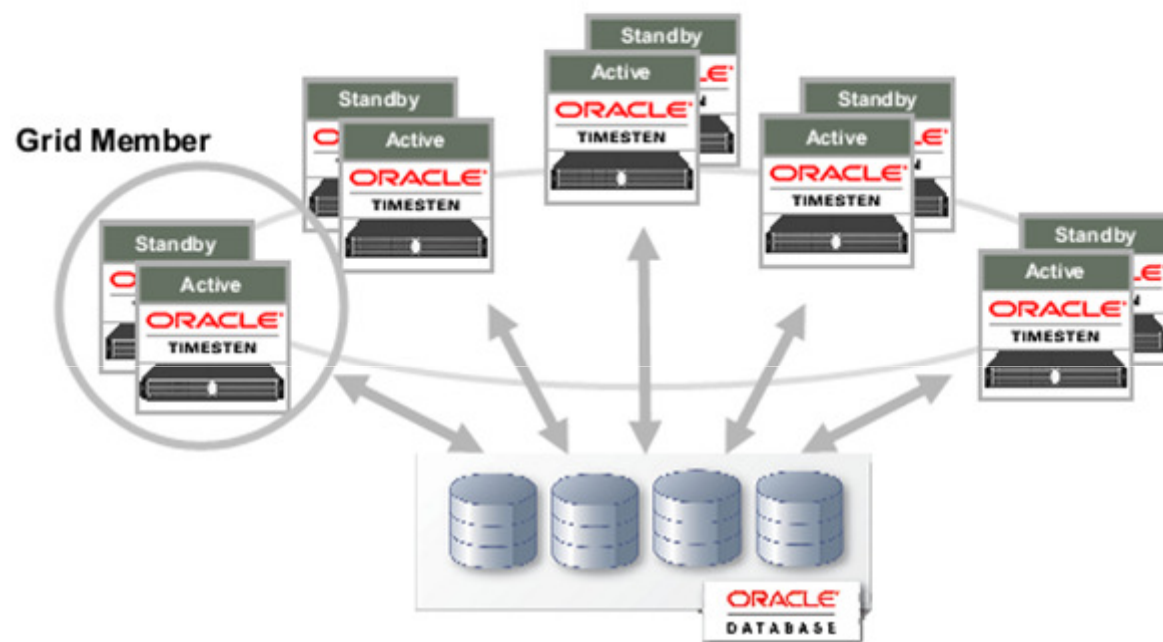
- Cache subset of Oracle Database tables in TimesTen
- Applications access cache tables like regular relational tables
- Standard SQL with JDBC, ODP.NET, ODBC, OCI, Pro\*C, PL/SQL
- Read-only and read/write cache tables
- Transactions with ACID properties
- Persistent and durable
- Automatic data synchronization with the Oracle database

# Cache group & PassThrough



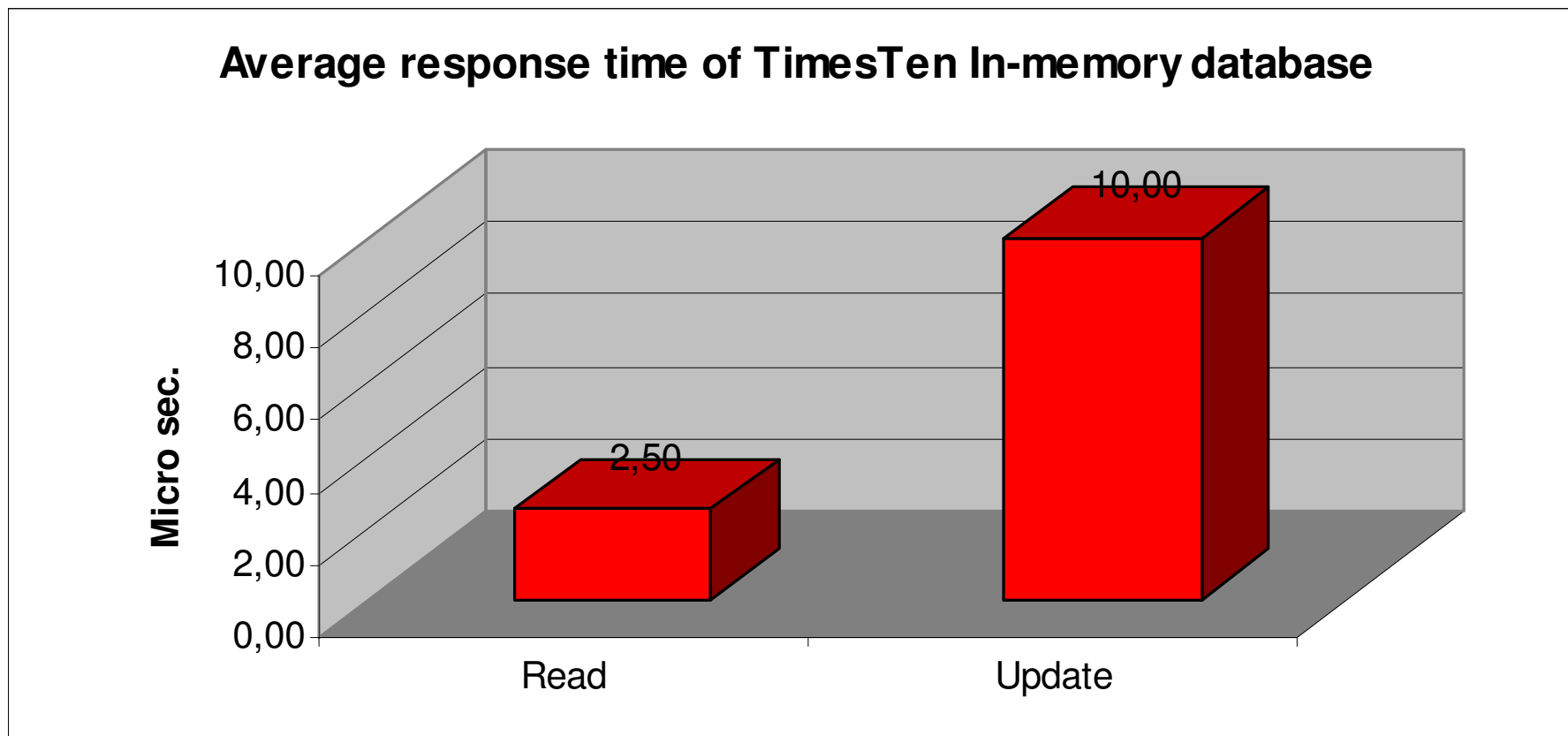
- Cache Group describes the data in the Oracle database to cache
  - Groups of related tables
  - All or subset of rows and columns
  - Defined via SQL clause
- CREATE CACHE GROUP FROM owner.tab1 (col1, col2), owner.tab2 (col1, col4)  
...  
WHERE <predicate>
- Cache tables are regular database tables in TimesTen
- Joins/search, insert/update/delete

# High Availability

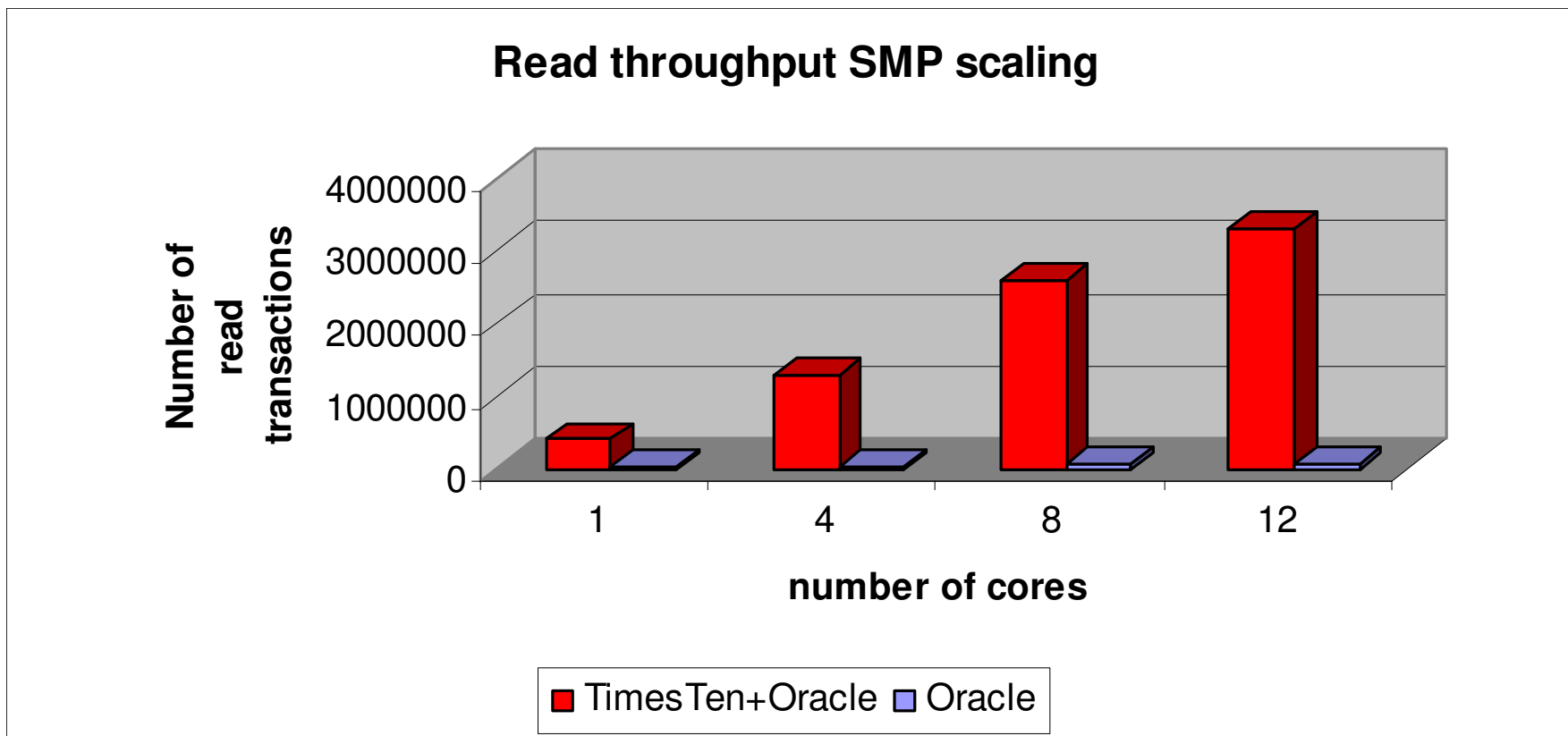


- Integration with Oracle clusterware for automated failover and recovery
- Grid members are failsafe
- Cache Grid is resilient to Grid member failures

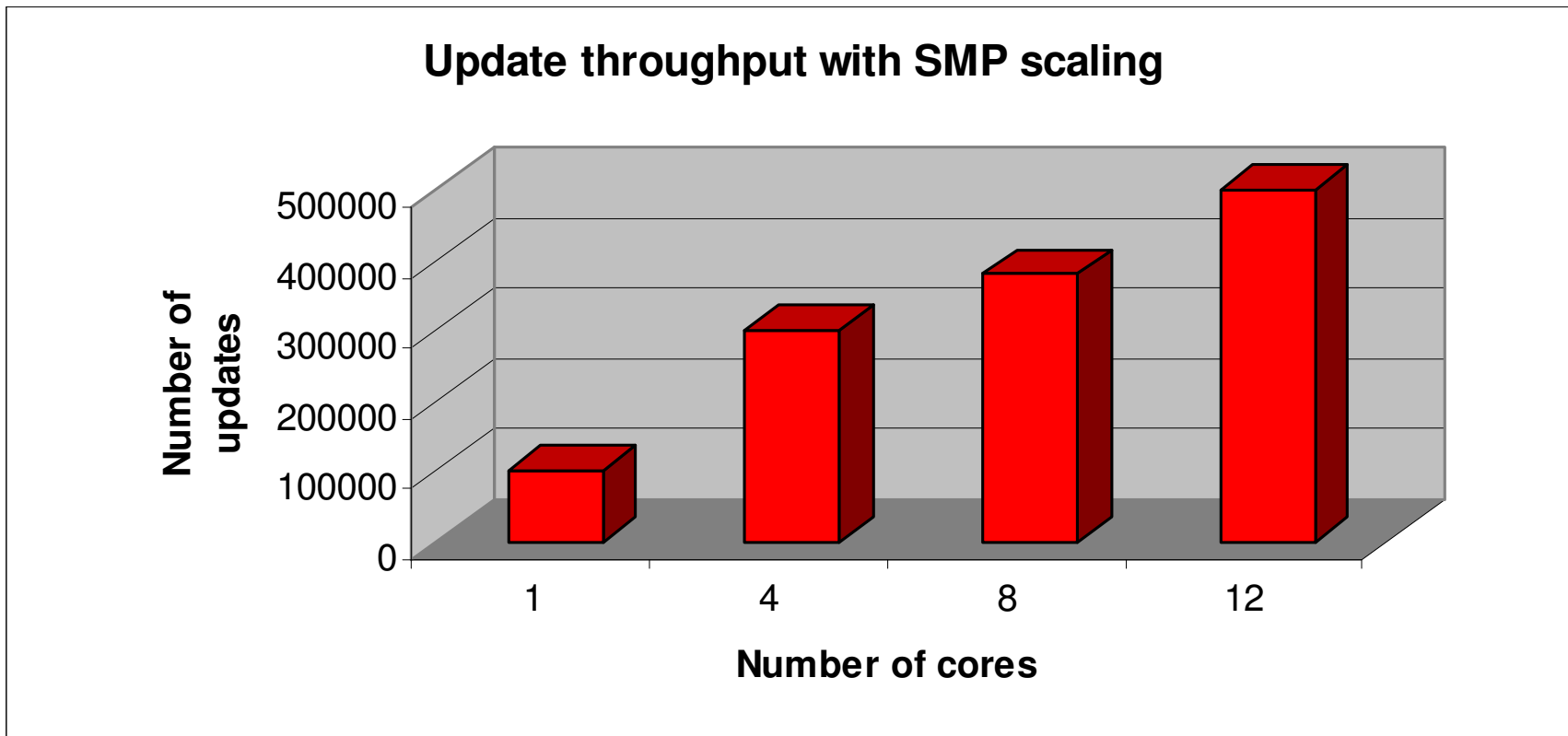
## Average select response time



# SMP scaling



# Update SMP scaling



## Contact data



### Contact

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