Real Life Stories on Extreme Performance with In-Memory Database Technology

Presented at Oracle Open World
Environment from a Data Perspective
Data Environment

- Capture and consolidate
- Near real-time replication
- Large data volume
- High rate of change
Environment from an Application Perspective
Application Environment

- One-Stop-Shop for Order Status, Health and Issue Resolution
- Current order information
- Response times within seconds

Sales
Customer Care
Distress Order Management

Basic Queries
Advance Queries
Global Order Visibility
User Interface

Supply Chain Data Hub

Order
Pending Production
Build
Shipped
Delivered

Supply Chain Management System
TimesTen
Solution
Architecture
TimesTen Architecture

- Basic Queries
- Advance Queries
- Order Visibility User Interface
- PL/SQL
- Oracle TimesTen In-Memory Database
- Supply Chain Data Hub
- Supply Chain Management System

- Sales
- Customer Care
- Distress Order Mgmt
- Order
- Pending Production
- Build
- Shipped
- Delivered
TimesTen Architecture Detail

MS Sharepoint User Interface

Basic Queries

Advance Queries

Failover

PL/SQL

Source Database Oracle 11g

Extract .net

Load ttBulkCp

Merge ttIsql

Replication

TimesTen In Memory Database

Dell Power Edge M610
Oracle Enterprise Linux
96GB Ram
2 Intel(R) Xeon(R) CPU L5520 @ 2.27GHz 4 core

Global Operations & Technology - I/T
Performance Statistics
Improved Query Performance

- **Minutes**
  - Query #1: 8 min
  - Query #2: 4.6 min
  - Query #3: 7.5 min
  - Query #4: 7 min

- **Seconds**
  - Query #1: 5.05 sec
  - Query #2: 1.4 sec
  - Query #3: 5.05 sec
  - Query #4: 1.15 sec

- Physical DB vs. TimesTen
Lessons Learned

• Adding more data doesn’t affect performance
• Use sql query to monitor memory usage
  • `select temp_allocated_size, temp_in_use_size, temp_in_use_high_water from monitor;`
• Check high water marks: `temp_in_use_high_water`

Scaling

![Scaling Graph]

- Millions of rows:
  - Qry 1: 1.8, 2.37, 2.97, 3.24, 3.46, 4.46
  - Qry 2: 1.8, 2.37, 2.97, 3.24, 3.46, 4.46
  - Qry 3: 1.8, 2.37, 2.97, 3.24, 3.46, 4.46
  - Trend: 1.8, 2.37, 2.97, 3.24, 3.46, 4.46

- Seconds:
  - Qry 1: 0, 0, 0, 0, 0, 0
  - Qry 2: 0, 0, 0, 0, 0, 0
  - Qry 3: 0, 0, 0, 0, 0, 0
  - Trend: 0, 0, 0, 0, 0, 0
Summary

Why TimesTen?

✔ **Transparency**
  - Users get increased performance without change in user interface

✔ **PL/SQL**
  - Maintain an identical API between our physical and in-memory database
  - Developers do not have to learn a new language

✔ **Response Time**
  - Significant increase in performance
Thank You