ORACLE

Reliable In-Memory Data Grid with Coherence

Mike Lehmann
Director of Product Management, Java Platform Group

What Oracle Announced

- **Oracle Acquires Tangosol**
  - Transaction closed in April 2007
- **About Tangosol**
  - Leading provider of reliable in-memory data grid technology
  - Headquarters in Somerville, MA
  - 100+ customers globally over 1,500 deployments
- **Accelerates Oracle's Product Strategy**
  - Foundation technology for next generation middleware
    - Reliable in-memory data grid
    - Extreme transaction processing enabler
  - Tangosol is a leading provider of reliable in-memory data grid infrastructure
  - Complements Oracle's middleware, database and applications

Why Tangosol?

- **Leading Best-of-Breed In-Memory Grid Vendor**
  - Technology highly differentiated with over 5 years of R&D
  - Real time analysis & extreme transaction processing capabilities
  - Brings Java & J2EE to new class of mission-critical applications
  - Further differentiates Oracle's Grid Computing value proposition
  - Successfully deployed at over 1,500 implementations
- **Proven Technology**
  - Adopted widely in tier 1, Global 1000 customer base
  - Mission critical references in financial services, travel, retail insurance, online gaming, government
  - Integrated with Oracle, BEA, IBM, JBoss, open source and .NET
- **Experienced World Class Organization**
  - Highly skilled & experienced product development team
  - Deep domain knowledge in key high end industry verticals
  - Excellent support & adoption by global system integrators

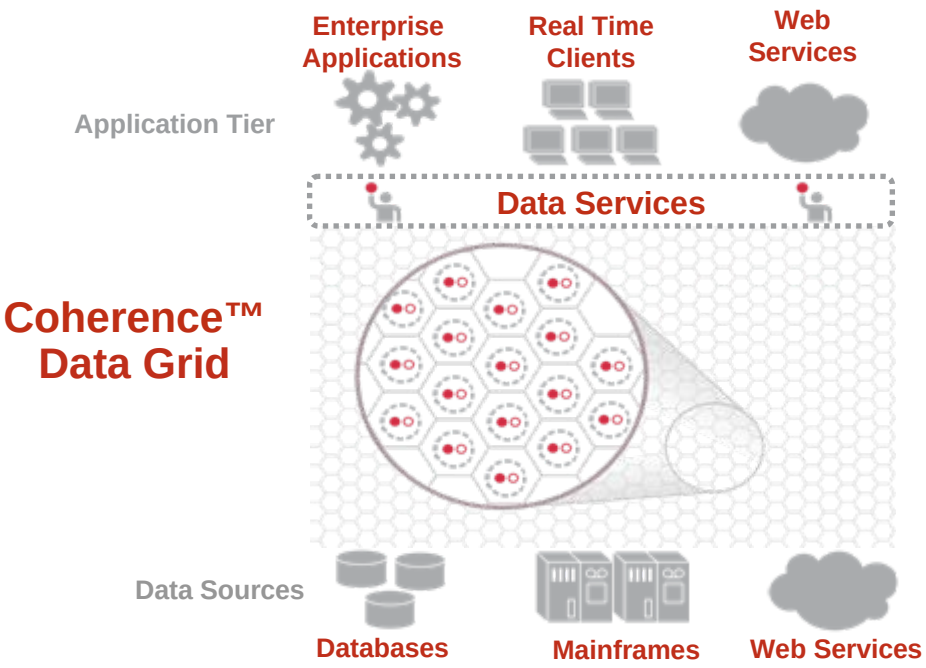
Strategic Importance to Oracle

- **Extreme Transactions Rapidly Emerging Market**
  - SOA, Web 2.0 and EDA pushing infrastructures to growth limits
  - Traditional approaches unable to cope with processing growth
  - Highly costly for traditional architectures to scale to demands
- **Complements Oracle's Existing Strengths**
  - Oracle already leader in middleware grid technology
  - Extends Oracle Fusion Middleware for reliable in-memory data grid
  - Already integrated with Oracle Application Server and complements key product lines – SOA, EDA, Web Center, TimesTen
- **Why Now?**
  - Organizations reaching limits of growth with current approaches
  - Customers re-thinking architecture in light of SOA, Web 2.0, EDA
  - Differentiates Oracle's Application Server vs. Competitors

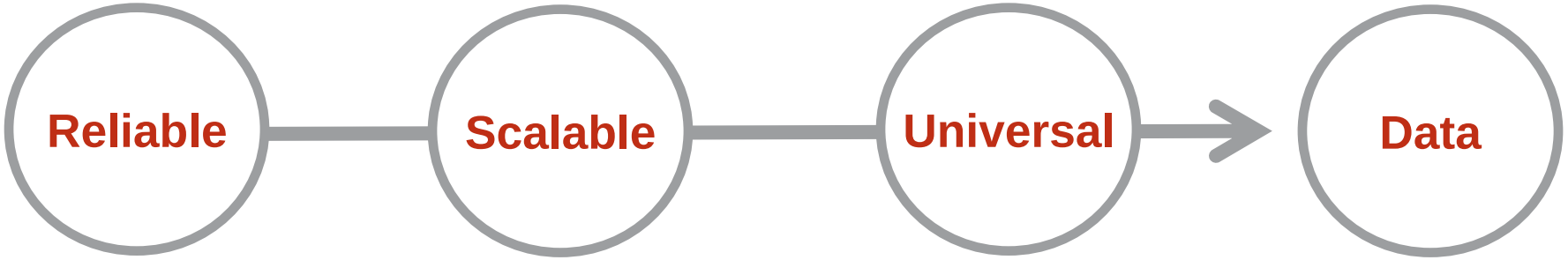
Solution Overview

Introduction to Coherence Data Grid

- Provides a reliable data tier with a single, consistent view of data
- Enables dynamic data capacity including fault tolerance and load balancing
- Ensures that data capacity scales with processing capacity



Requirements of Enterprise Data Grid



- Built for continuous operation
- Data Fault Tolerance
- Self-Diagnosis and Healing
- “Once and Only Once” Processing

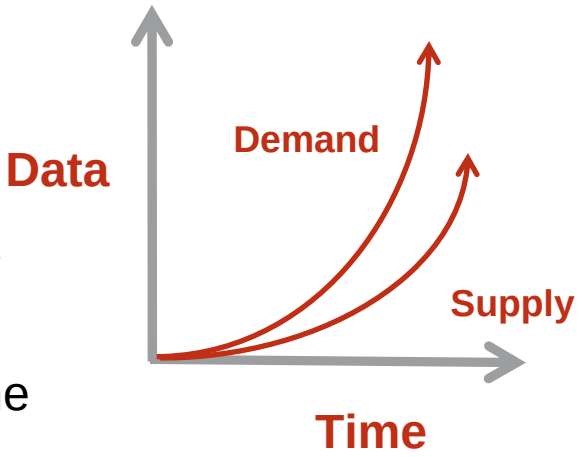
- Dynamically Expandable
- No data loss at any volume
- No interruption of service
- Leverage Commodity Hardware
- Cost Effective

- Single view of data
- Single management view
- Simple programming model
- Any Application
- Any Data Source

- Data Caching
- Analytics
- Transaction Processing
- Event Processing

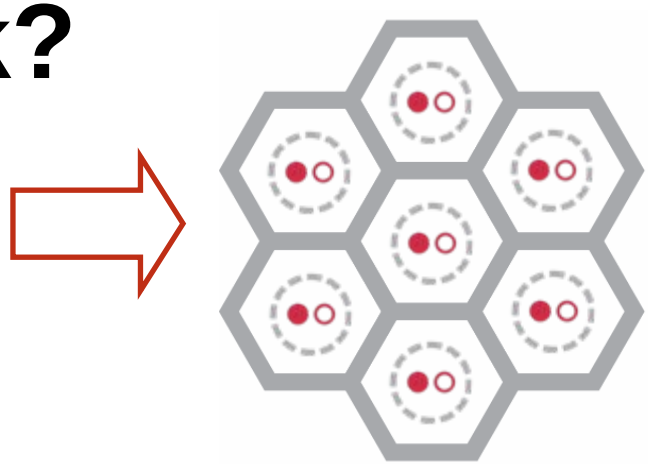
IT Initiatives Driving Data Demand

- **Virtualization**
  - Increased demand on Data Sources
  - Application re-provisioning must occur transparently without interruption of data access
  - Must handle multiple load increases at the same time
- **SOA**
  - Increasing common access to resources
  - Sharing access means continuous availability and absolute reliability
- **EDA**
  - Without data, defeats purpose of events driving transactions
  - Pervasiveness driving data need across all systems affected



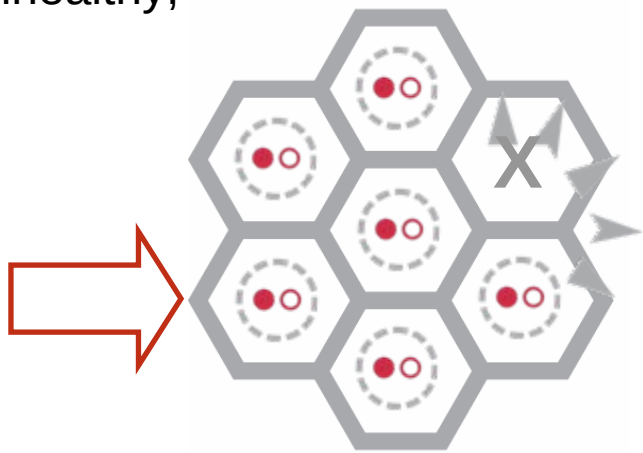
How Does Coherence™ Data Grid Work?

- Cluster of nodes holding % of primary data locally
- Back-up of primary data is distributed across all other nodes
- Logical view of all data from any node



- All nodes verify health of each other
- In the event a node is unhealthy, other nodes diagnose state

- Unhealthy node isolated from cluster
- Remaining nodes redistribute primary and back-up responsibilities to healthy nodes



Data Grid Uses

Caching

Applications request data from the Data Grid rather than backend data sources

Analytics

Applications ask the Data Grid questions from simple queries to advanced scenario modeling

Transactions

Data Grid acts as a transactional System of Record, hosting data and business logic

Events

Automated processing based on event

Customers and Examples

Customers

100 Direct Customers and 1,500+ production installations

Insurance Company

Problem

- Managing user-entered policy information on public web site.
- Persisting profiles to database required upwards of one second – multiplied by thousands of concurrent users

Challenge

Needed to offload rapidly expanding middleware processing from core backend database processing

Solution

Caching to manage all data operations in-memory

Benefits

- 90% reduction of database load = increase in capacity
- Application survived an extended database outage with no impact

Financial Institution

Problem

Query-intensive Portfolio Management application required 30+ seconds to generate pages via database queries

Challenge

Portfolio managers require rapid access to accurate information

Solution

Execute all queries against data directly in memory across Data Grid.

Benefits

- No changes to database schema: operational cost savings
- All access to database during off-peak hours: lowered operational impact

Hospitality Chain

Problem

Throughput challenges for rule-based price-optimizing reservation engine due to volume of transactions exceeding database server capacity

Challenge

Enable thousands of customer service representatives to maximize per-stay hotel revenue

Solution:

Use Data Grid for system of record for all transactions

Benefits

- Dramatically increased system scalability
- Increased capacity of existing infrastructure

Gaming Company

Problem

Matching engine supporting several thousand matches per second, with intense "hot spots" on specific instruments

Challenge

Revenue tied directly to customer activity. Need for high-throughput, low-latency solution for financial transactions

Solution: Use event-driven architecture, treating bids as incoming events, modifying the state of bidding markets, and dispatching matched bids

Benefits

- Moving event processing into application tier increased capacity to handle peak loads
- Enabled application developers to modify logic without impacting the database; operational cost savings & increased flexibility

Product Integration

Oracle Fusion Middleware

Natural Integration Points

Session Sharing and Data Caching

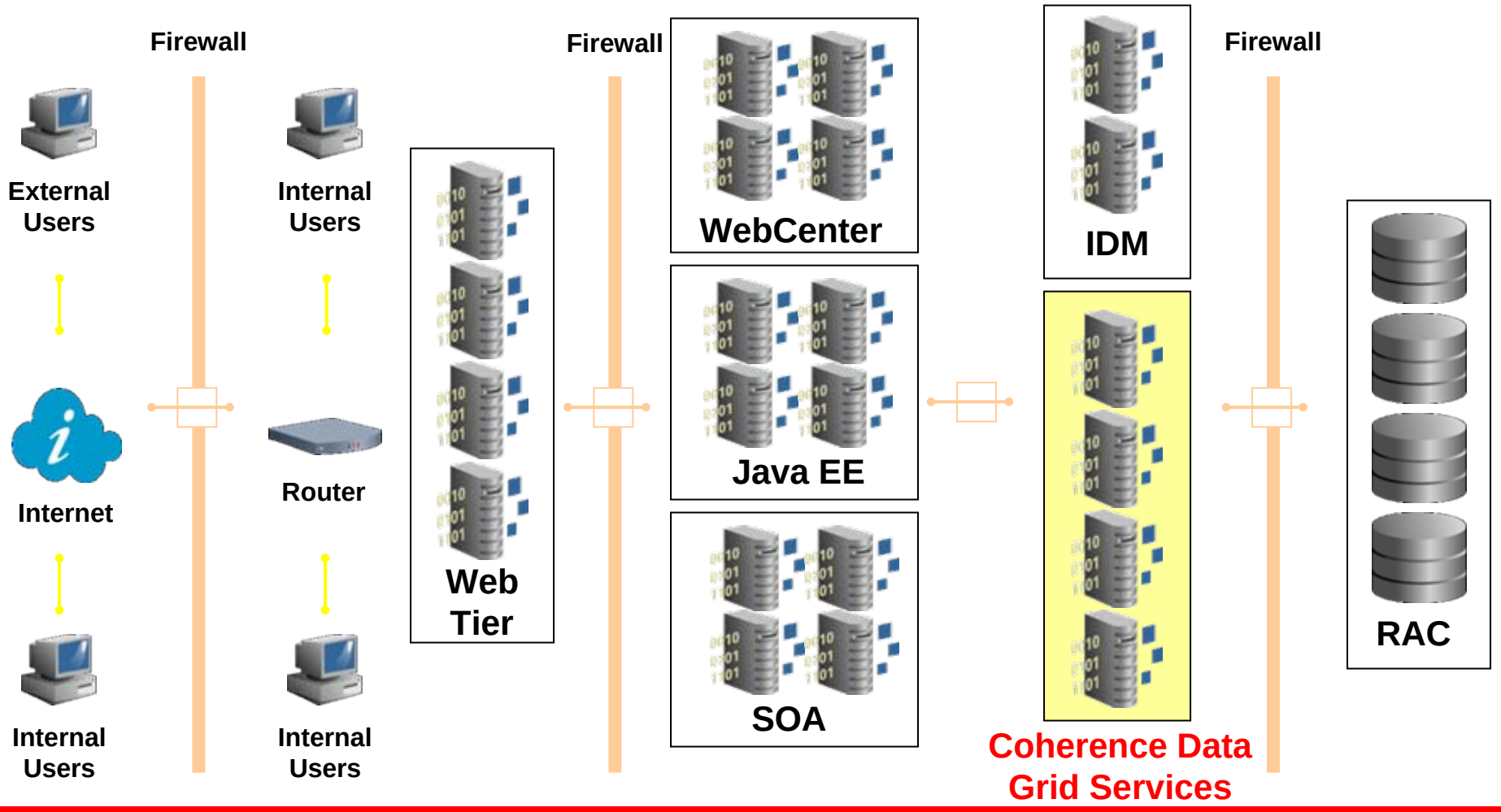
Clustered BAM Infrastructure

Data Caching, Extended State Replication, Shared In-Memory Infrastructure

Shared Service for Java, .NET, PHP, Ruby …

Accelerated Stateful Business Processes

Shared Infrastructure Service for Oracle Fusion Middleware

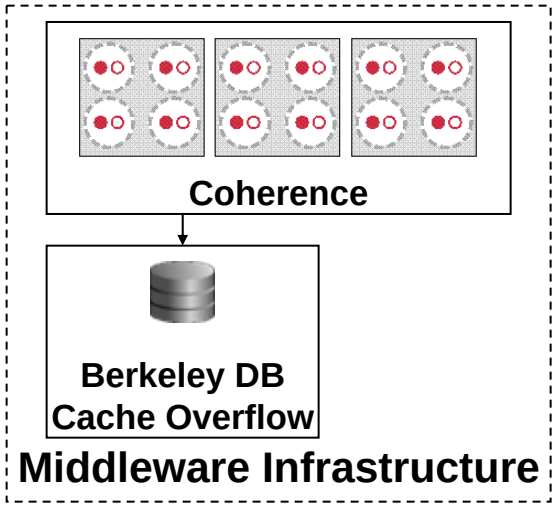


Oracle DBMS, TimesTen, Berkeley

Natural Integration Points

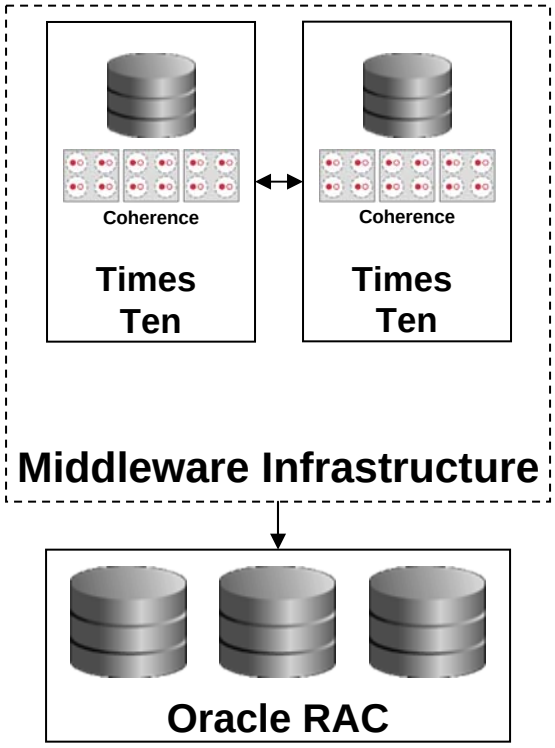
Oracle Berkeley DB (Java Edition)

Cache Overflow Integration with Coherence



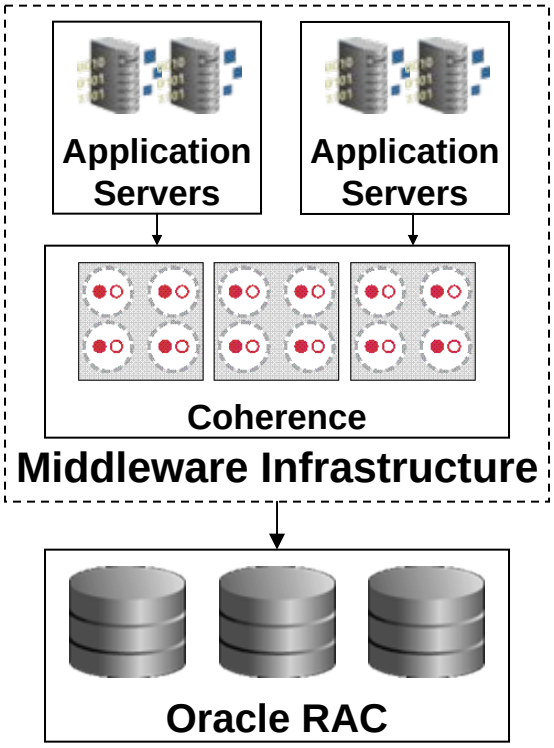
Oracle TimesTen

Clustered Caching with Coherence



Oracle RAC

Persistence QoS with Coherence



Integration Strategy

- **Transition Period (March-May 2007)**
  - Integrations Remain as Prior to Agreement
  - Products sold as Tangosol Coherence by Tangosol
- **Immediate after Business Merger (June 2007)**
  - Branding and Licensing
  - Available on Oracle Price List – June 1
  - Certified with Oracle Application Server State Replication
  - Certified and Integrated with Oracle TopLink
- **Long Term Integration (CY 2007/2008)**
  - Strategic Integration across Fusion Middleware
  - Strategic Integration with Database Technologies

Field Training Strategy

- **Technical Field Training – Sales Consultants/Consultants**
  - FY2008Q1: Six in-classroom trainings 3 days each (EMEA/US)
  - FY2008Q2: Three in-classroom trainings, 3 days each
  - FY2008Q3/Q4: Quarterly updates; curriculum to be scheduled on demand
- **Consulting Training**
  - FY2008Q1: Inviting consulting to SC training in EMEA/US
  - FY2008Q2: Inviting consulting to SC training APAC
  - FY2008Q2-4: SC Training converted to 4 day consulting class and scheduled on demand
- **Sales Training**
  - From Product Management, Field Sales have complementary plan
  - FY2008Q1: Three planned sales broadcasts including Thomas Kurian broadcast
  - FY2008Q1: Two sessions at 2008 sales kickoff in US/APAC/EMEA
  - FY2008Q1-4: Quarterly broadcast updates

Training Plan: Curriculum

- FY2008Q1
  - Converting current four day training class and translating it into Oracle University
  - Scheduling on demand in conjunction with technical field training
  - Target 3 day course
- FY2008Q2
  - Adding in additional consulting training material to course
  - Extend to 4 day course

Contacts and More Information

- **Product Management**
  - Peter Utzschneider – peteru@tangosol.com
- **Coherence->FMW Integration (during transition to Oracle)**
  - Mike Lehmann – mike.lehmann@oracle.com
- **SWAT Team**
  - Mike Ottosson – mikael.ottosson@oracle.com
- **Marketing**
  - Ashish Mohindroo – ashish.mohindroo@oracle.com
  - Ralf Dossmann – ralf.dossmann@oracle.com
- **More Information**
  - http://ias.us.oracle.com -> AS Components -> Coherence
  - www.oracle.com/tangosol

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