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Oracle Rdb Status and Direction

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Agenda

- Strategy
- Recent Sales
- Roadmap
- Features

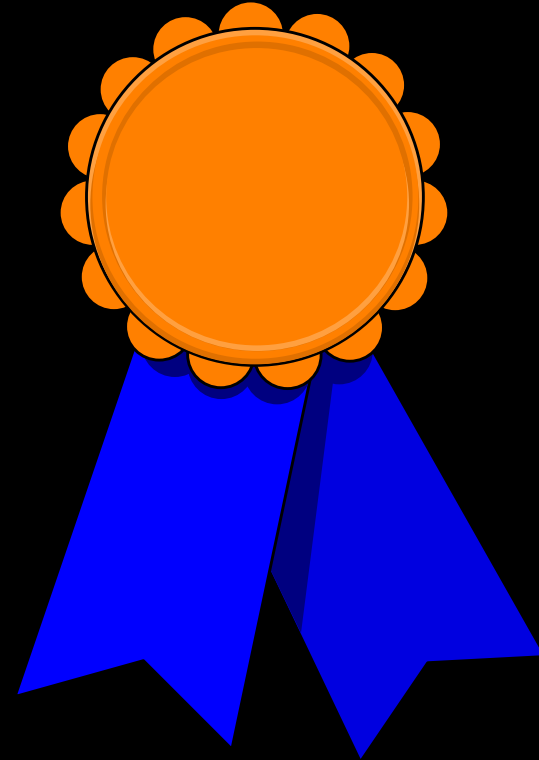
Examples of Today's Rdb Customers

- Trading commodities, equities and futures: US, UK, Australia, Austria, Sweden, Spain, France, Greece, Italy, Switzerland, Hong Kong, Korea and Germany
- Mobile phone systems: US, Italy, Japan, Korea, Hong Kong, UK, South Africa, Peru, Germany, Austria, Czech Republic, Denmark, France, Greece, Portugal, Mauritius and Switzerland
- Semiconductor manufacturing: Worldwide
- Lottery Systems: Europe, Canada, Australia, South America and the US
- Engineering process: NASA Space Shuttle, International Space Station
- Automobile manufacturing: Volvo, Nissan, Toyota and Fiat
- Short Messaging Service: Worldwide
- Passport control: New Zealand
- Government: Ireland, Department of Social and Family Affairs
- Education: Australia – largest secondary education system in Southern Hemisphere
- Reservation systems: Thrifty and Dollar car rental
- Satellite Television: United States, Canada
- Automatic Toll Systems: United States

Product Development Strategy

- Integrated with Oracle environment
 - Oracle 9i Application Server
 - Oracle Enterprise Manager
 - Java / JDBC development tools
- High-end OLTP systems focus
 - High performance
 - Unique scalability on OpenVMS
 - Extensive tuning capabilities
 - High availability
 - Robust on-line management
- Optimised for OpenVMS

Recent Victories



- New Sales driven by applications
 - OM Group
 - EDX London
 - EssNet (Lottery Systems)
 - CMG (Short Messaging Services)
 - Shared Medical Systems
- New projects with existing customers
 - Deutsche Börse
 - SIAER
 - Sharp
 - NTT
 - ... more soon
- New projects integrating Rdb with other Oracle Technologies
 - Minnesota State Colleges & Universities

Nine years later...

Nine Years Later: Thousands of Satisfied Oracle Rdb Customers



**No forced migrations—Oracle delivers
post-acquisition support, innovation, stewardship**

When Oracle acquired Rdb from Digital Equipment Corporation in 1994, we promised to focus on quality and stability while enhancing features based on customer demand. With the acquisition, we purchased patented technology, skilled engineers, and access to an important customer base. Nine years later, we're keeping our promise to thousands of customers worldwide through technical innovation and unwavering support for their mission critical Rdb systems.

Committed to the Future of Rdb

Rdb is nearly 20 years old, yet in just nine years Oracle has developed more than 50 percent of the code base. Our significant enhancements, dedication, support, and resources continue to make Rdb the best choice for high throughput database applications on OpenVMS systems—everything from cellular phone billing systems and lotteries to major financial exchanges—and satisfied customers like Intracorp prove it.

"I've worked with Rdb for more than 16 years. Oracle has maintained the outstanding level of customer support for Rdb that existed before its acquisition, and has continued to develop new features and performance enhancements," says Ken McGinnis, database administrator for Intracorp, a Philadelphia-based medical management company with more than 20,000 customers.

When Digital sold the Rdb set of database products, the move concerned many Rdb customers. They wanted assurance that their mission-critical resource would be dependable into the next millennium. Thanks to Oracle, Rdb customers have unequivocally received that assurance. After acquiring Rdb, we formed independent Rdb-Customer Advisory

Councils in four regions—North America, Europe, Japan, and Australia/New Zealand—and then listened closely to what the councils had to say, building innovative features to meet customer demand. Nine years later, these same customers praise our successful management of Rdb's acquisition and transition, demonstrating our clear grasp of the different customers and markets for Oracle and Rdb.

While the original contract with Rdb called for three years of development and seven years of support, we've gone well beyond that agreement, with nine years—and counting—of Rdb development and support. With the acquisition, some 90 percent of Digital Rdb employees chose to stay on with Oracle. In fact, Oracle's head of technology development, Executive Vice President Charles A. Rozwaj, is a former Digital Rdb executive who joined during the acquisition. Most of the development team, which remains in Nashua, New Hampshire, continues to fulfill commitments made to the Rdb customers, including the development of innovative, high-quality features as prioritized by customers and the councils, broadening the Rdb application set; and integrating Rdb with Oracle's long-term strategies.

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...

How do we do this?

- Knowing our customers and their needs
 - Rdb Technical Forums and other events
 - Email mailing list
 - Monitoring JCC Listservers
(see http://www.jcc.com/jccs_oracle_list_servers.htm)
- Cooperation with HP
 - Close communication among developers
 - Sales and marketing efforts
- And...

Great New Features

- Oracle Database Compatibility
 - Oracle 9iAS support
 - Oracle Thin JDBC Client
 - SQL*Net for Rdb improvements
 - Sequences
 - Oracle Style User/Role Security
- Performance
 - Rdb Native JDBC Driver
 - Bit Map Index optimisations
 - VLM for Global Buffers
 - OpenVMS Galaxy support
- Availability
 - Hot Standby
 - LogMiner for Rdb and Continuous LogMiner
 - Parallel Index creation
 - Table, Index partition management
 - Parallel RMU /BACKUP to disk

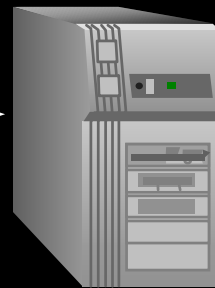
Integration: Web Development w/Oracle Rdb

Integrate Infrastructure to Develop & Deploy Web Sites

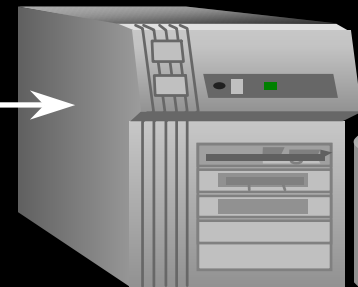
Access from Any
Client, Anytime,
Anywhere

Run All Your
Web Sites &
Applications

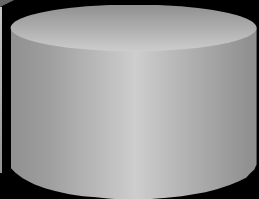
Manage All
Your Data



Oracle9iAS

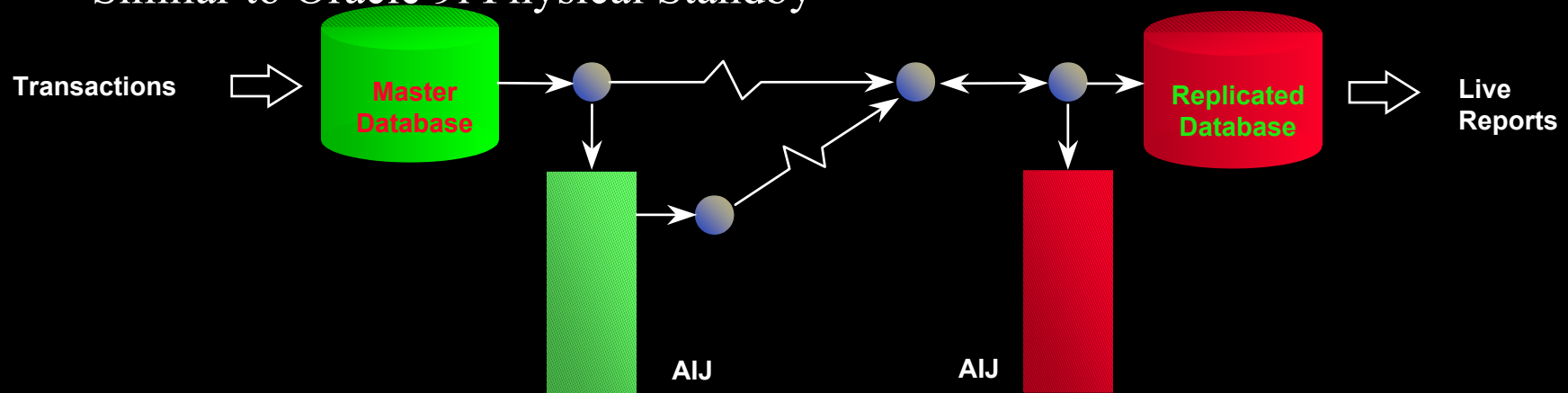


Oracle9i
Oracle Rdb



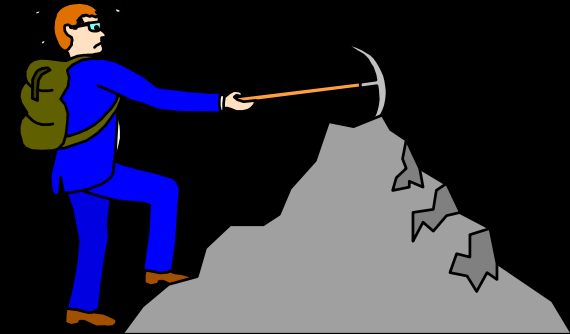
Availability, Disaster Recovery: Hot Standby

- An exact, transactionally consistent copy of the primary database
- Geographically separate systems
- Application transparent
- Negligible performance impact
- Stand-by database available for read-only access all the time!
- No longer extra-cost license!
- Similar to Oracle 9i Physical Standby



Availability: LogMiner™ for Rdb

- Enables Rdb rolling upgrades, on-line restructuring
- Used to load Oracle9i Data Warehouses using SQL*Loader
- Blazingly fast for extraction
 - 1,000,000 records extracted in ~~30~~ 6 seconds.
 - No performance impact on production system
 - Filter by Table, Date/Time, etc.
- Application transparent
- Continuous LogMiner for real time journal extraction
 - Works with JCC's LogMiner Loader for continuous replication
 - Similar to Oracle9i logical standby
- Details this afternoon at 16:00



Software Release Approach

- Maintenance Releases every 3-4 months
- New Feature Releases every 18-24 months
- Examples – recent history:
 - Rdb 7.0.6.4 June '02
 - Rdb 7.0.6.5 September '02
 - Rdb 7.0.7 April '03
 - Rdb 7.1.0.3 July '02
 - Rdb 7.1.0.4, 7.1.0.5, December, '02
 - Rdb 7.1.1.0.0 and 7.1.1.0.1, May, '03

A Word About Version Numbers

Rdb versions now have five digits. All are full kits.

1. Major release – not likely to change for a long time
2. Feature release – significant new features. May require database conversion. Multiple version support at this level
3. Minor feature release – features unlikely to destabilize applications, hardware or operating system support. No database conversion required.
4. ECO – all bug fixes since last minor release
5. Processor family support. (Identical source code) Today:
0 = any Alpha processor
1 = compiled for EV56 or later processors

Oracle Rdb Roadmap

	Q1CY03	Q2CY03	Q3CY03	Q4CY03	Q1CY04	Q2CY04	Q3CY04
Rdb 7.0	<ul style="list-style-type: none"> •7.0.7.0 Bug Fix + EV7 Enabled (Apr)	<ul style="list-style-type: none"> •7.0.7.1 Bug Fix (Jun)	<ul style="list-style-type: none"> •7.0.7.2 Bug Fix (Sep)	<ul style="list-style-type: none"> •7.0.7.3 Bug Fix (Dec)	<ul style="list-style-type: none"> •7.0.7.4 Bug Fix (Apr)	<ul style="list-style-type: none"> •7.0.7.5 Bug Fix (Aug)	
Rdb 7.1	<ul style="list-style-type: none"> •7.1.1.0 EV7 Qualified + Bug Fix (May)	<ul style="list-style-type: none"> •7.1.2.0 Feature + EV7 Qualified + Bug Fix (Aug1)	<ul style="list-style-type: none"> •7.1.2.1 Bug Fix (Oct)	<ul style="list-style-type: none"> •7.1.3.0 Feature + Bug Fix (Dec)	<ul style="list-style-type: none"> •7.1.3.1 Bug Fix (Apr)	<ul style="list-style-type: none"> •7.1.3.2 Bug Fix (Sep)	

A Few Words on Quality

- Much of Rdb's success in market and value to customers is because of our reputation for reliability.
 - Few bugs
 - Experienced support staff
 - Quick fixes
- Recently appointed Quality Czar will mean redoubled quality focus by entire Rdb team

Testing Today

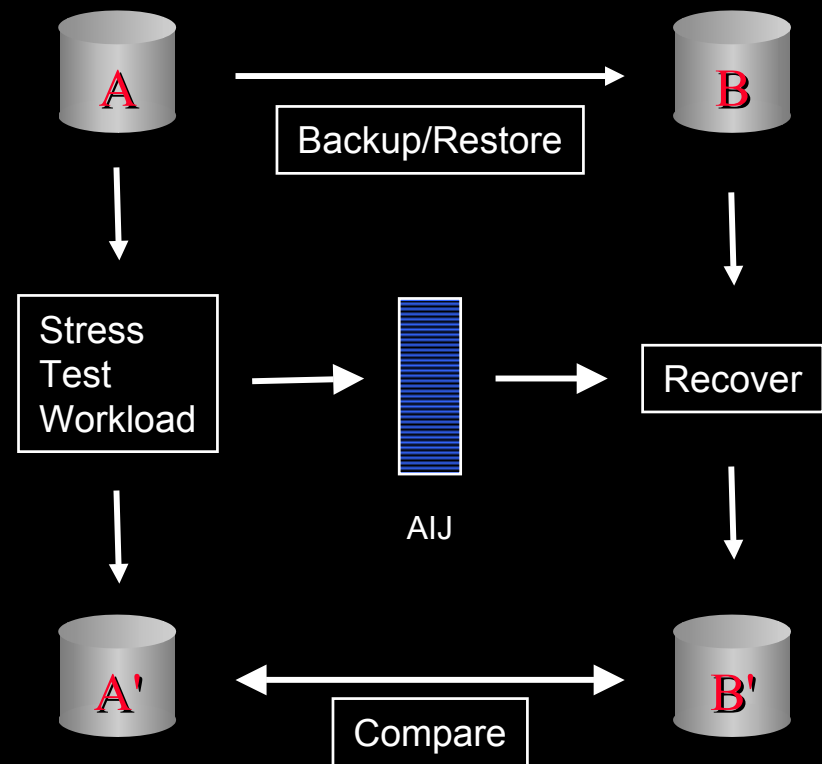
- Regression tests
 - Live code is tested daily
 - Kits are tested even more thoroughly
 - Tests are being reevaluated for relevance
 - Test coverage is being verified
- Random tests
 - Executed continuously on a range of hardware platforms

The Rdb Random Test System is...

- A demanding multi-user stress test
 - Focus is on
 - Asynchronous I/O completion
 - Rollback and recovery from process and monitor failure
 - RMU /RECOVER processing
 - Locking - contention & deadlocks
 - Parameter driven
 - Batch based
- Not...
 - A performance benchmark test
 - A code coverage or general regression test
 - A very good test of SQL, Dispatch or EXEC features
 - Perfect

Random Test Method

1. Create & backup database
2. Run multi-user stress test
3. Verify database
4. Restore from backup & recover from AIJ
5. Verify database
6. Unload all records from both databases
7. Compare



Next Generation HP Alpha Systems

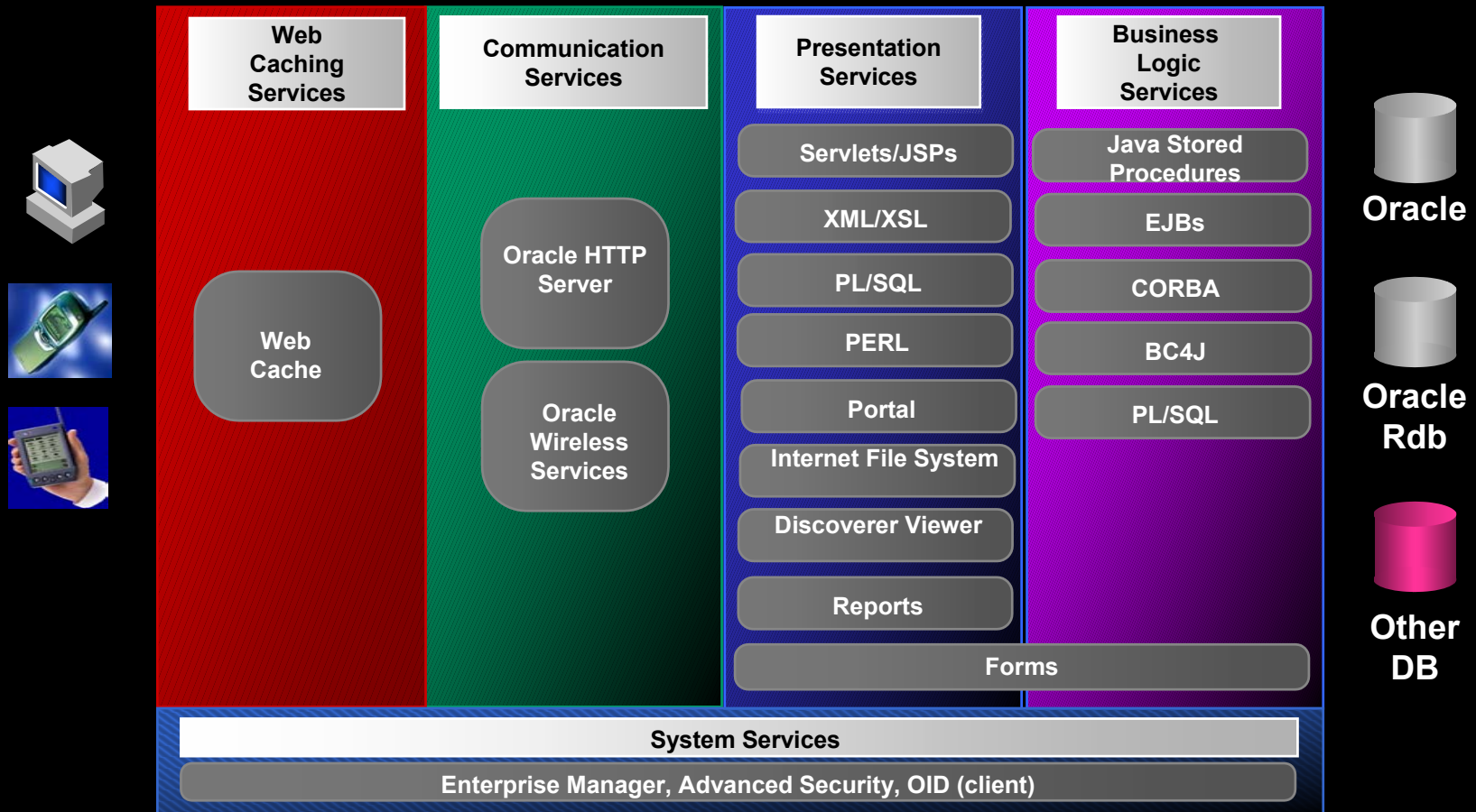
- Next Generation Alpha System
 - EV7 Architecture
 - CPU interconnect on-chip
 - Switch fabric to connect CPUs to IO bus
 - Scalable
- Significant performance improvement
- Rdb certification is finished!

Features Under Development

OpenVMS 7.3-2 Support

- OpenVMS 7.3-2 work
 - Rdb Certification
 - Base level (pre-field test) testing in progress
- Benefit: Upgrade with confidence to take advantage of the latest OpenVMS enhancements.

Oracle9i Application Server Release 2 Qualification



DECdtm XA Interface Project

- HP's DECdtm/XA Gateway means
 - DECdtm-compliant components participate with XA-compliant components
 - DECdtm becomes XA-compliant RM
- Rdb supports DECdtm 2PC so it can now participate in XA transactions
- Benefit: True distributed transactions that update multiple Rdb and Oracle databases.

Tape Library Support

- Oracle Media Management version 2.0 API support begins in Rdb version 7.1.2.0
 - Used by leading librarians
- ABS tested and supported¹
- Working closely with Legato on NetWorker support
- Other support likely
- Parallel backup plan files supported
- Benefits:
 - Same tape library support for OpenVMS and Rdb backups
 - Tape library support for parallel backups

¹ Testing by HP will be completed before ship date

Oracle Database Compatibility

- Extended LOB support : including new Oracle RDBMS native types: LONG and LONG RAW
- Oracle 9i OCI updates
- PL/SQL Support
- Benefits:
 - Easier portability of code between database systems
 - Better support for web services, web applications

Enterprise Manager Support

- Enterprise Manager will be able to
 - Discover Rdb databases
 - Detect events and react to them
 - Schedule jobs
 - Display metadata for Rdb databases
- Production release of the Oracle Rdb Cartridge for Enterprise Manager 9i has now occurred
- Benefit: Events and jobs from same console for both Oracle Rdb and Oracle Database.

Query Optimizer Improvements

- Improved estimation
 - See presentation, white paper at Rdb web site:
http://www.oracle.com/rdb/pdf/tech_forums_2002/rdbtf_2002_est_btrees_p.pdf
- Improved use of bit map indexes
 - Use multiple indexes to solve queries
 - Useful for =, >, <, and, or & like predicates
- Benefits:
 - Low cardinality indexes now useful
 - Same queries result in fewer IOs

Quality

- Develop a random query generator
 1. Does the query compile?
 2. Does the query generate the same results as previous version [7.1.n vs. 7.0.n ...]
 3. Has the cost changed significantly
 4. Does the query generate the same results as Oracle Database
- Benefits:
 - Detect poor strategies before we ship
 - Detect incorrect results before we ship

Recovery Performance Enhancements

- Redo & Undo
 - Additional prefetching of Database, AIJ and RUJ
 - Additional asynch I/O
 - Benefit: Faster recovery from process or node failures
- RMU /RECOVER
 - Performance improvements with optimized AIJ
 - Benefit: Faster recovery from database failures

Row Cache Improvements

- Snapshots in Cache
- 64 bit row cache: Address existing cache-size limitations
 - ~33 million row cache size limit removed
 - Eliminate current 32-bit addressing limitations of cache data structures
 - Move from P0/S0 to P2 address space
- Benefits:
 - Vastly larger caches
 - Improved performance
 - More existing applications get write benefits from Row Cache
 - Uses OpenVMS shared memory performance features

Row Cache Record Latching

- Hash table “latch” mechanism limitation
 - Exclusive access to search hash chain for record in cache
- Permit concurrent search of a hash chain
- Remove contention
- Exclusive access only to remove entry from cache
- Benefit: Improved scaling for high transaction rate systems

Summary

- After almost 9 years at Oracle, Rdb development continues because the Rdb business is healthy and valuable.
- Cooperation between the Oracle and HP development teams means better performance and manageability for you.
- Development strategy maximizes the value of your Rdb investment.
 - Oracle development tools and middleware
 - Oracle management tools and API's
 - Oracle Database for reporting and data warehouses

Q U E S T I O N S & A N S W E R S

For more information...

- www.oracle.com/rdb
- Bill.Gettys@Oracle.com

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