

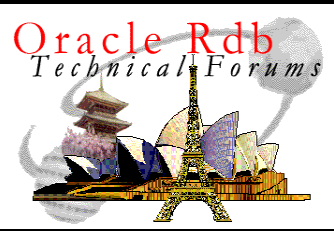
Oracle Rdb Status and Direction

Kevin Duffy

Oracle New England Development Center

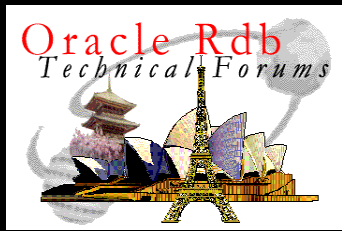
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Agenda

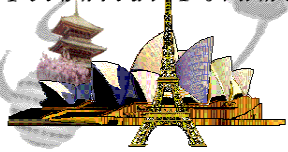
- Press Activity
- Strategy
- Current Development Activity
- Roadmap
- Quality



Business Week, The Economist, Wall Street Journal + Others

- *“... We know how to do this. Ask any customer from our Rdb database acquisition from Digital Equipment Corporation. Nearly nine years later, we are still providing world-class support to thousands of Rdb customers running mission-critical applications.”*

- Larry Ellison, CEO, Oracle Corporation



“Nine Years Later” White Paper

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 more 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

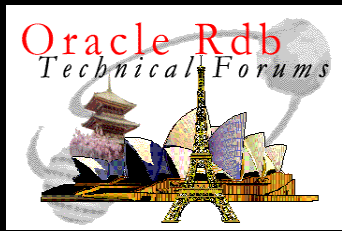
Councils in four regions—North America, Europe, Japan, and Australia/New Zealand—and then listened closely to what the councils had to say, building innovative features to meet customer demand. Nine years later, these same customers praise our successful management of Rdb’s acquisition and transition, 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. Rowat, 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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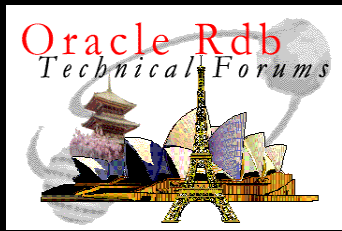
http://www.oracle.com/peoplesoft/Rdb_CaseStudyE.pdf

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Excerpt from “9 Years Later” White Paper

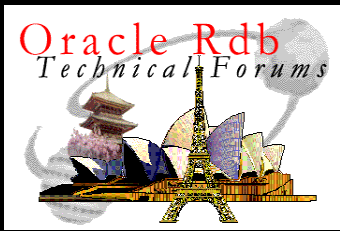
We know how to do this. When Oracle acquired Rdb from Digital Equipment Corporation in 1994, we promised to focus on quality and stability while enhancing features based on customer demand. Nine years and thousands of satisfied customers later, we're doing exactly that. In fact, we've developed more than 50 percent of the code base and sponsor annual customer forums worldwide.



First Town Hall Meeting: Thursday, July 17

“I have worked with Rdb for over 16 years. Oracle Corporation 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.”

- Ken McGinnis, Database Administrator, Intracorp Corporation.
- Read by Chuck Phillips, EVP, Oracle Corporation at the July, 2003 “Town Hall,” attended by over 750 PeopleSoft customers.

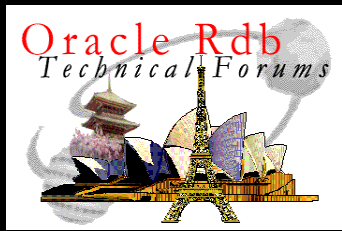


Second Town Hall Meeting: Wednesday, September 3

“At our second Town Hall meeting, participants interacted with Oracle Executive Vice Presidents Chuck Phillips and Mike Rocha as they elaborated on the planned enhancements to PeopleSoft customer support and discussed the mechanics for a smooth migration. The meeting also included comments from Bob Pacek, senior vice president and chief information officer of DIRECTV, as he provided insight into how his company benefited from Oracle's acquisition of the Rdb database from Digital Equipment Corporation.”

<http://www.oracle.com/peoplesoft/index.html?townhall.html>

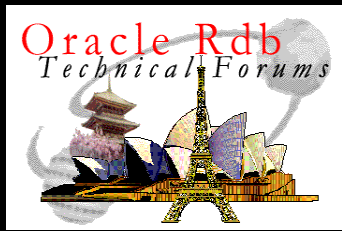
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Press Release, Monday, September 15

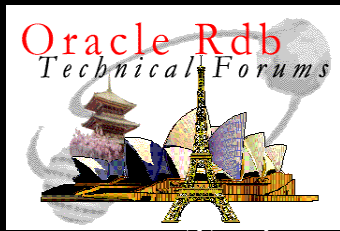
REDWOOD SHORES, Calif., Sept. 15 /PRNewswire-FirstCall/ -- (<http://www.oracle.com/tellmemore/?2337269>) Oracle Corp. (Nasdaq: ORCL - News), the world's largest enterprise software company, today reaffirmed its strong commitment to Rdb customers, who praise the company for its nine years of post-acquisition support, innovation and stewardship. Since its acquisition of Rdb from Digital Equipment Corporation in 1994, Oracle has continued to maintain a focus on quality and stability while enhancing the Rdb features customers have deployed in production environments worldwide. Oracle also adds value to its Rdb customers through support of other Oracle technologies, including Oracle® Database and Oracle Application Server.

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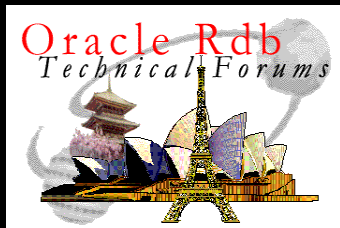
How Do We Do This?

- Knowing our customers and their needs
- Responding to those needs with great new features
 - Continuous LogMiner
 - Hot Standby
 - Row Cache
 - Bit Mapped Indexes
 - SQL*Net for Rdb, JDBC support
- Rdb Technical Forums and other events
- Email mailing list
- Cooperation with HP



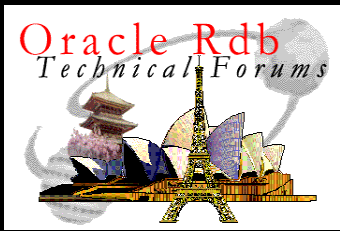
How Rdb Is Used

- Trading commodities, equities and futures: US, UK, Australia, Austria, Sweden, Spain, France, Greece, Italy, Switzerland, Hong Kong, Singapore, Korea and Germany
- Mobile phone systems: US, 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, Community and Family Affairs
- Education: Europe, United States, 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

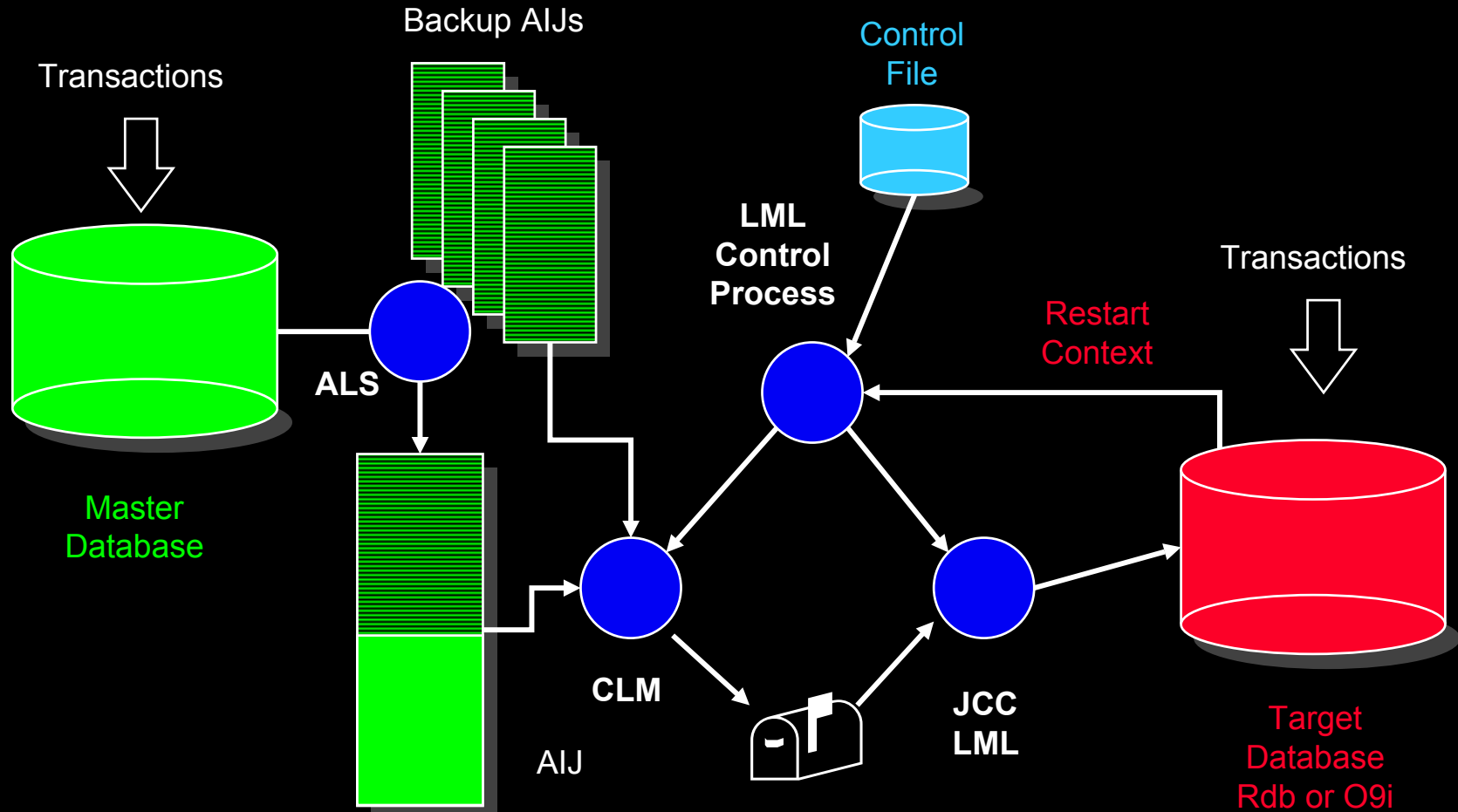


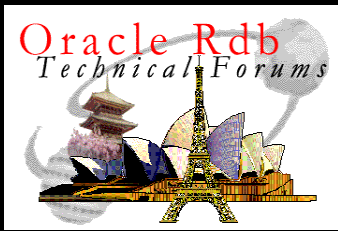
Product Development Strategy

1. High-end OLTP systems focus
 - High performance
 - Unique scalability on OpenVMS
 - Extensive tuning capabilities
 - High availability
 - Robust on-line management
2. Integration with Oracle software environment
 - Oracle Developer Suite
 - Oracle Application Server
 - Extend Java, JDBC support
 - Oracle Enterprise Manager
 - Oracle Database
- HP's OpenVMS will remain the only supported Operating System

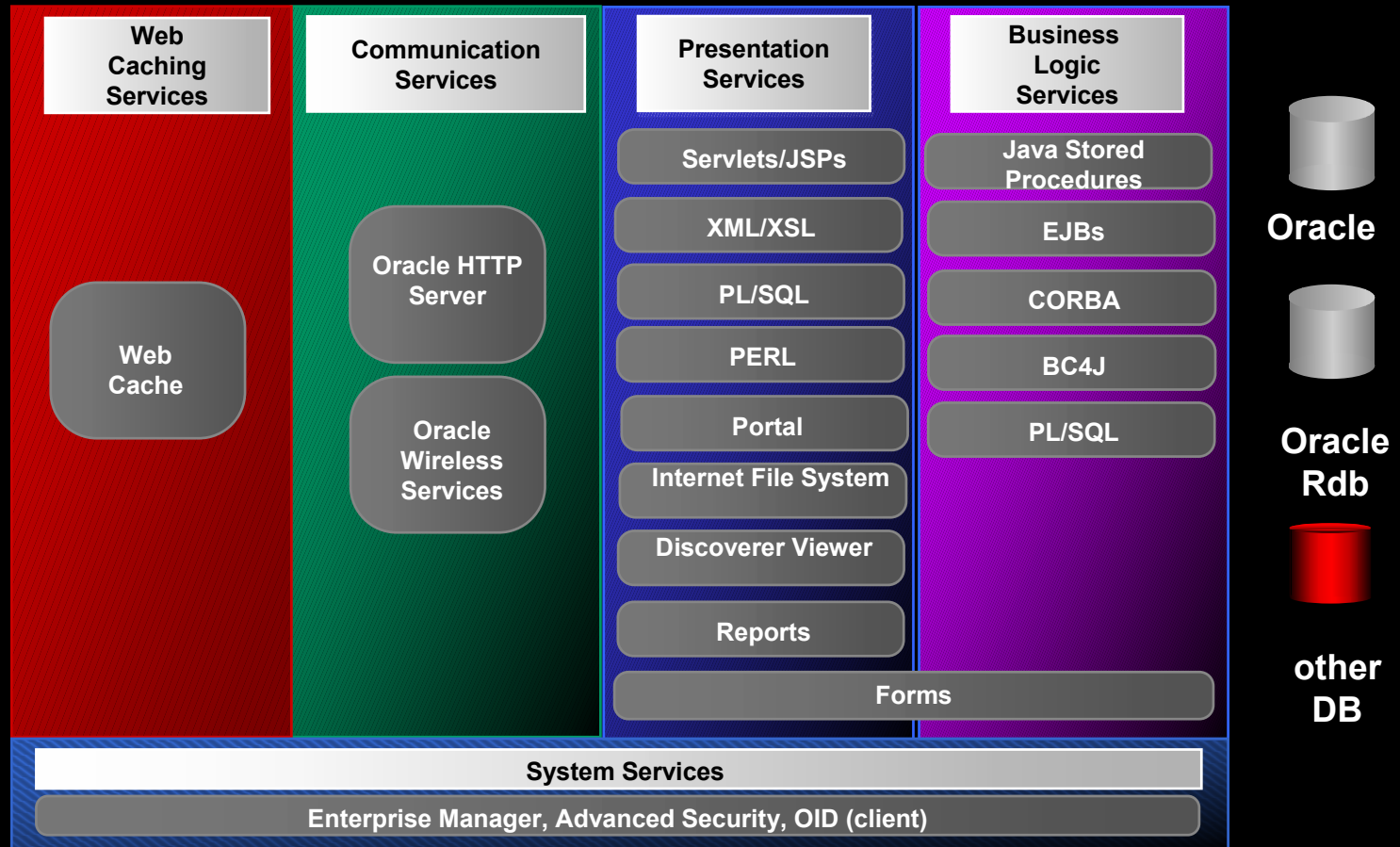


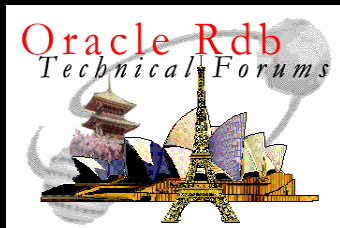
Continuous LogMiner / JCC LogMiner Loader





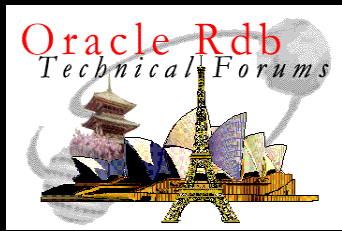
Oracle9i Application Server Release 2 and 10G Qualification





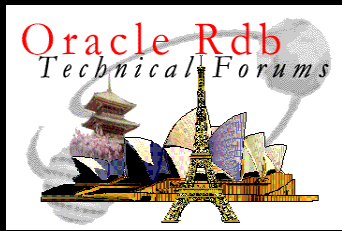
Rdb JDBC Support

- Standard Oracle JDBC drivers
 - Require OCI translation via SQL*Net for Rdb
- The Rdb JDBC Native Thin Driver
 - 100% pure JAVA driver that communicates directly to the Rdb JDBC Thin Server via JAVA Sockets over TCP/IP.
- The Rdb JDBC Native SQL Driver
 - Connects directly to Rdb SQL via a native API. This driver requires an Rdb client installation, and therefore is Rdb-specific and not suitable for applets. The Rdb Native driver, written in a combination of Java and C, converts JDBC invocations to calls to SQLMOD modules



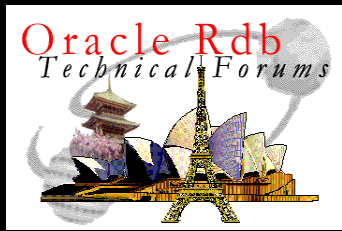
Rdb Extension for Oracle Enterprise Manager 9i

- Enterprise Manager is able to
 - Discover Rdb databases
 - Display Rdb Schema Objects
 - Detect events and react to them
 - Schedule jobs
- Production release available now.
- OEM 4.1 support planned for 2004.
- Benefit: Events and jobs from same console for both Oracle Rdb and Oracle Database.



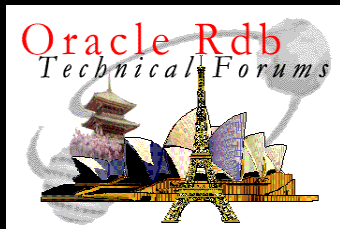
DECdtm XA Interface Project

- 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.



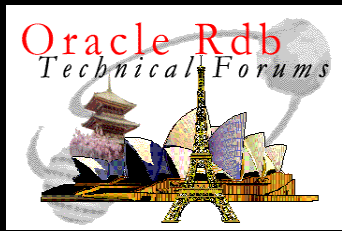
Oracle Media Manager 2.0 Support

- Oracle Media Management version 2.0 API support begins in Rdb version 7.1.2.1
 - Legato Networker for Rdb under development
- Parallel backup plan files supported
- Benefits:
 - Same tape library support for OpenVMS and Rdb backups
 - Tape library support for parallel backups



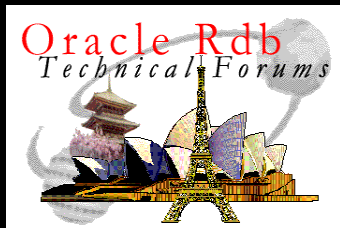
Rdb 7.1.2, We Have Shipped!

- Oracle Database Compatibility
 - Media Management API 2.0...Legato Netwoker for Rdb under development
 - Rdb Extension for Oracle Enterprise Manager 9i
 - New SQL Features
- Performance
 - Snapshots in Cache
 - 64 Bit Row Cache
 - Optimized Page Transfer
 - Log Recovery Server (LRS) enhancements for Hot Standby
 - Bit Map 'OR' and 'Like'
 - Index Estimation (provides improved index estimations for both the Dynamic and Static Optimizer)
 - Sampled Selectivity (allows cardinality estimation in the Static Optimizer)
- Availability and Web
 - Rdb Native JDBC Drivers V1
- OpenVMS
 - 7.3-2 / Opal certified



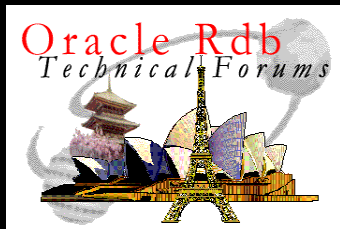
Rdb 7.1.2 + VMS V7.3-2 + GS1280 = Performance

- Resident Large Caches
 - >1,000 million database rows
 - >1 million index nodes
 - > 32 processor GS 1280 with 128 GB Memory
- 1.8 Million Transactions per Minute
- Details in “Native 64 Bit Virtual Addressing For Oracle Rdb Caches Capability and Performance” white paper.



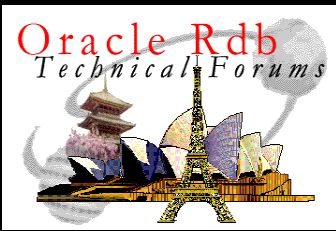
Hardware and OS Support

- Next Generation Alpha System
 - EV7 Certification completed with Rdb 7.0.7 and 7.1.1.0.x
 - Benefit: Significant performance improvement
- VMS 7.3-2 /Opal
 - Rdb Certification Testing completed
 - Benefit: Upgrade with confidence to take advantage of the latest VMS enhancements.



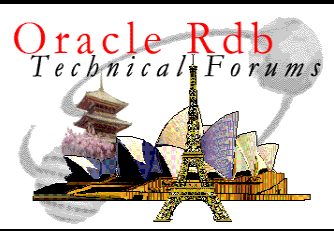
Rdb 7.1.3

- Oracle Database Compatibility
 - 10G/9iAS Release 2 compatibility
 - 9.2.0.4 OCI upgrade for SQL*Net for Rdb
 - Rdb XA Integration
- Performance
 - Optimizer
 - Index Estimation for partition indexes
 - Sampled Selectivity enhancements
 - Dynamic OR Index retrieval enhancements
- Availability and Web
 - Rdb Native JDBC Drivers V3

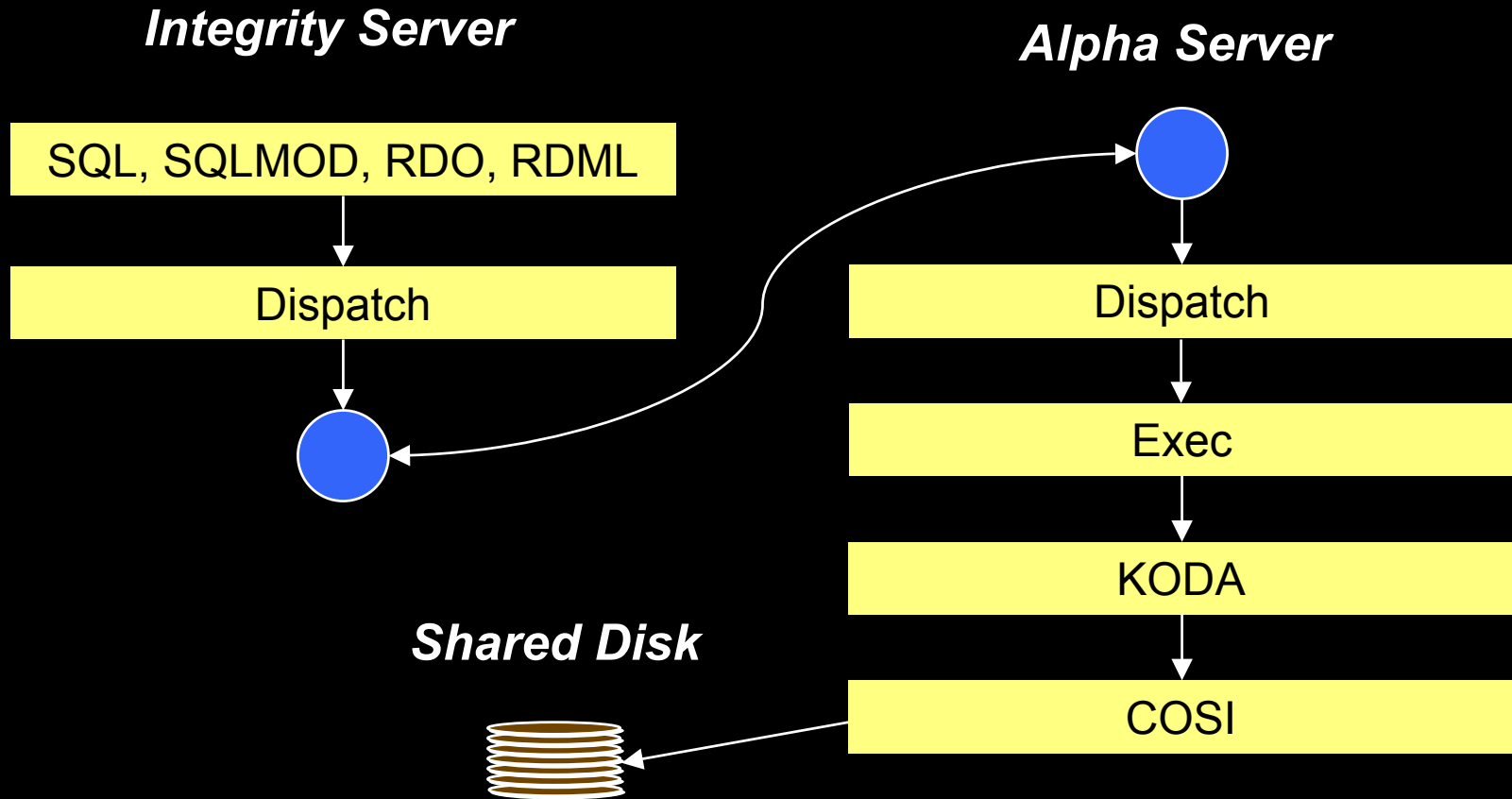


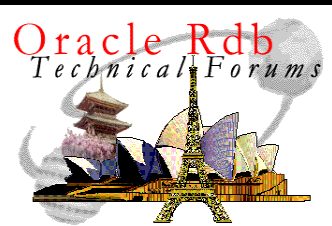
Oracle Rdb on OpenVMS I64 – Current Status

- Oracle Rdb Running Native on HP Integrity Servers
 - We can perform local attaches from multiple concurrent processes, retrieve records and detach successfully.
 - Create Database, Backup/Restore working.
 - Currently working on multiple attaches from a single process (streams), exception handling, interpreter (both for Oracle Rdb and CODYSL DBMS).
- Oracle CODASYL DBMS Running Native on HP Integrity Servers
 - We can perform local attaches from multiple concurrent processes and execute DML applications written in C, Bliss and Fortran using IPF native compilers and our DML pre-compiler and FDML preprocessor.
 - Subset of DBMS test suite running.
 - Create Database, Backup/Restore, Verify, Alter working.
- Advanced Developer's Kit
 - Will contain native SQL and RDML preprocessors for OpenVMS I64, CDD and Remote-only access to existing Alpha-resident Rdb databases. **Remote attach now working!**



The Application Development Kit

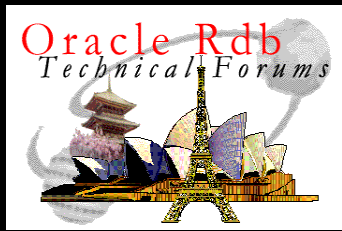




Version Numbers

- Now five digits: 7.1.2.3.1

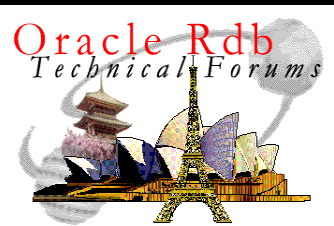
← Processor Type
← Bug fix / mandatory update
← Minor functional change
← Major functional change



Software Release Frequency

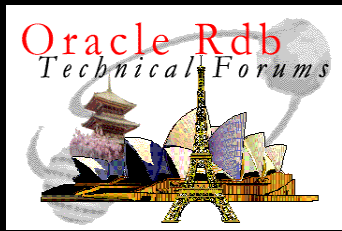
- Maintenance Releases every 4-5 months
- New Feature Releases every 18-24 months
- Examples:
 - Rdb 7.0.7, March '03
 - Rdb 7.0.7.1, November '03

 - Rdb 7.1.1.0.0 and 7.1.1.0.1, April '03
 - Rdb 7.1.2.0.0 and 7.1.2.0.1, October '03
 - Rdb 7.1.2.1.0 and 7.1.2.1.1, November '03
 - Rdb 7.1.2.2.0 and 7.1.2.2.1, December '03



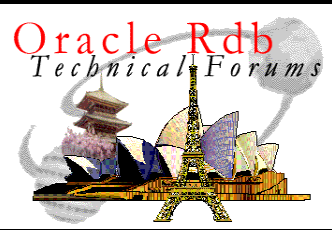
Oracle Rdb Roadmap

<i>Develop. Stream</i>	Q4CY03	Q1CY04	Q2CY04	Q3CY04	Q4CY04	Q1CY05	Q2CY05	Q3CY05
Rdb 7.0 VAX + Alpha	7.0.7.1 Maintenance + VMS 7.3-2 Certified		7.0.7.2 Maintenance Release		7.0.7.3 Maintenance Release		7.0.7.4 Maintenance Release	
Rdb 7.1 Alpha Only	7.1.2.2 Maintenance + VMS 7.3-2 Certified	7.1.2.3 Maintenance Release	7.1.3.0 Feature + Maintenance Release	7.1.3.1 Maintenance Release		7.1.3.2 Maintenance Release		7.1.3.3 Maintenance Release
Rdb 7.2 Itanium + Alpha			7.2.0.0 ADK, Itanium Only		7.2.0.0 Beta 1	7.2.0.0 Beta 2	7.2.0.0 Itanium + Alpha Production Release	



Group Quality Initiative

- Quality Project Leader
- Process improvements
- “Bug Fest” .. Focus on closing P2 bugs
- “Test Fest” .. Focus on fixing tests that fail in our regression test runs
- Robust testing for all 7.1.2 new features
- Enhancing tests for existing features (e.g.):
 - Sequences
 - Galaxy
 - Continuous Log Miner
 - Concurrent Index Builds
 - Sorted Ranked Btrees



Quality

- Developing a random query generator
 - does the query compile?
 - does the query generate the same results as previous version [7.1.0.4 vs. 7.1.0.3, or 7.1 vs. 7.0]
 - compare results with Oracle Database
- Benefits:
 - Detect poor strategies before we ship
 - Detect incorrect results before we ship

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

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