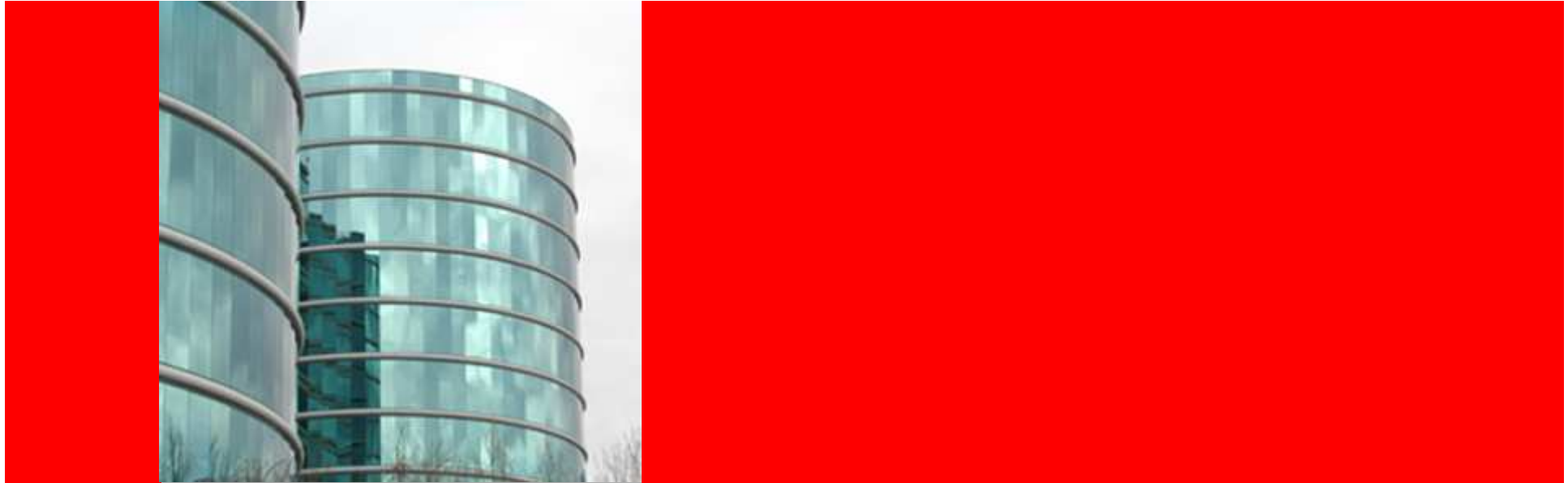# ORACLE®

Oracle Rdb Releases
7.2, 7.2.1, 7.2.2, 7.2.3, 7.2.4, 7.2.5

Norman Lastovica
Oracle OpenVMS Development Team

19 April 2010

Agenda

- Rdb V7.2

- Itanium migration

- V7.2 releases features

Rdb 7.2 Product Family on Alpha & Integrity

Oracle Rdb

Oracle CODASYL DBMS

Oracle CDD/Repository

Oracle SQL/Services

OCI Services for Oracle Rdb

Oracle Trace for Rdb

Replication Option for Rdb

Oracle Rdb ODBC Driver

Oracle Rdb JDBC Drivers

Oracle Rdb OEM Agent

Rdb V7.2 Product Family on Alpha & Integrity

- Full range of certified HP AlphaServer and HP Integrity server configurations
  - Desk-top to enterprise
  - Standalone or clustered environments

Rdb 7.2 & OpenVMS

- Databases & application clustered with existing Alpha systems running Rdb 7.2

- OpenVMS on HP Integrity version 8.2-1 or later
  - V8.3-1H1 or later very strongly recommended

- OpenVMS on Alpha version 8.2 or later
  - V8.3 or later very strongly recommended

Database Convert and Migrate to Rdb V7.2
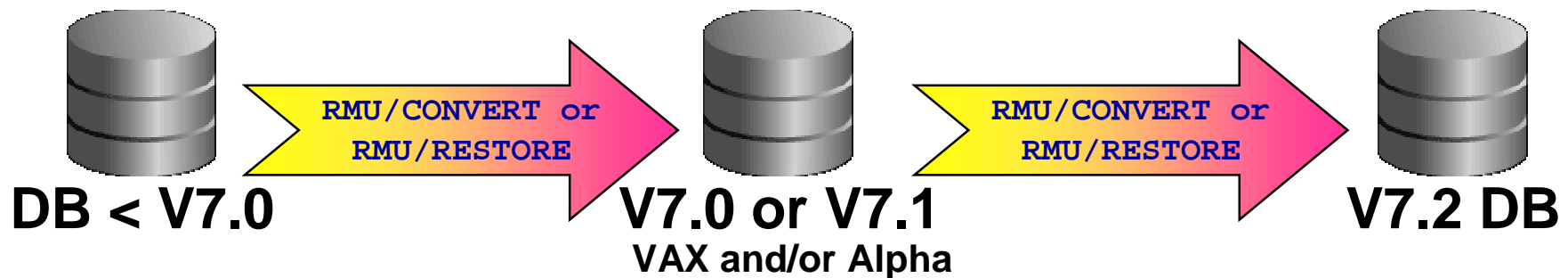
Database Convert Paths
V7.0 or V7.1 Directly to V7.2

V7.0 or
V7.1 DB

RMU/CONVERT or
RMU/RESTORE

V7.2 DB

➢**Database convert or restore**

- •**V7.1 or V7.0 directly to V7.2**
- •**RMU/CONVERT takes seconds to run**

➢**No application recompile/relink when on same platform**

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Database Convert Paths
Prior to V7.0 – First to V7.x then to V7.2

DB < V7.0 → RMU/CONVERT or RMU/RESTORE → **V7.0 or V7.1**
VAX and/or Alpha → RMU/CONVERT or RMU/RESTORE → **V7.2 DB**

➢ **Database convert or restore**
  • Prior to V7.0 - first to V7.0 or V7.1 & then to V7.2
  • RMU/CONVERT takes seconds to run
➢ **No application recompile/relink when on same platform**

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Alternate Database Convert Paths

Existing Platform or DB → **EXPORT/IMPORT** → **V7.2 DB**

➢ **Database export and then import**
- Takes longer than unload/load in parallel
- Requires disk space to hold export file
- Pretty much "any version / any platform " to V7.2

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Alternate Database Convert Paths

Existing Platform or DB → **RMU/BACKUP RMU/RESTORE** → **V7.2 DB**

➢ **V7.0 or 7.1 Any platform to V7.2**

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Alternate Database Convert Paths

Existing Platform or DB

Per-table Unload / Load

V7.2 DB

1. **RMU /EXTRACT then SQL CREATE DATABASE … or SQL EXPORT NODATA then SQL IMPORT to create database**

2. **Drop constraints, indexes, triggers, etc**

3. **Unload all tables in parallel from old database**

4. **Load all tables in parallel to new database**

5. **Create indexes / constraints / triggers / etc**

➢ **Database unload / load**

- **Likely faster than export/import (but more complexity)**
- **May require disk space to hold unload files**
- **Pretty much "any version / any platform" to V7.2**

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Alternate Database Convert Paths

Existing Platform or DB → **JCC's LogMinerLoader** → **V7.2 DB**
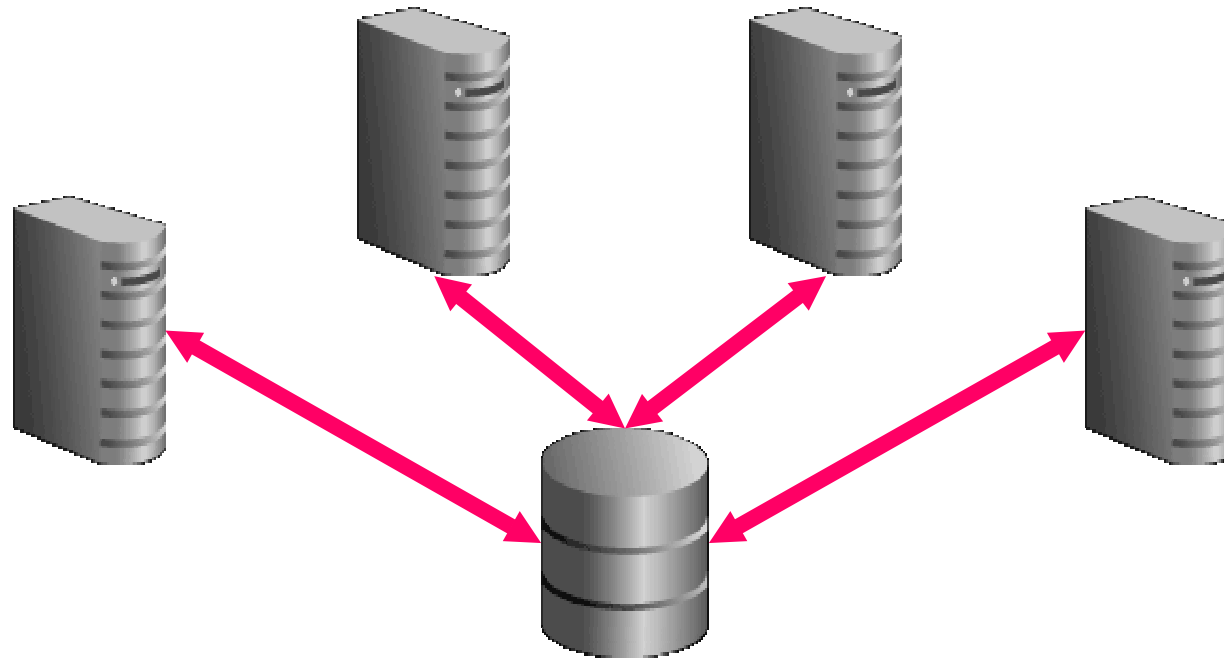
➢ **LogMinerLoader**
- **Alternative method to drastically reduce downtime**
- **Combination of several techniques**
- **Real-time data moving from old to new database**
- **Extremely short outage at production switch-over**
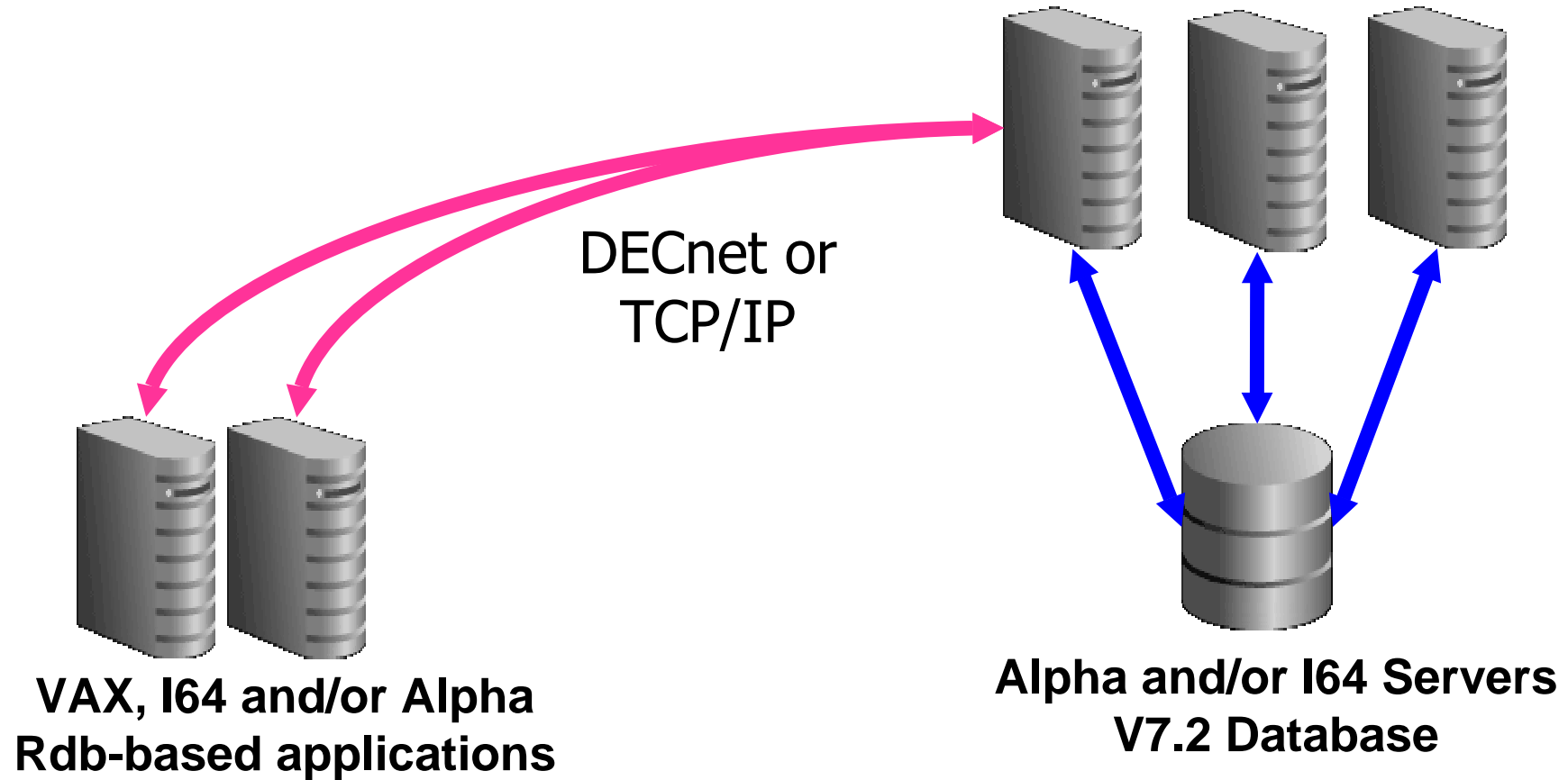
Clustering
Rdb 7.2

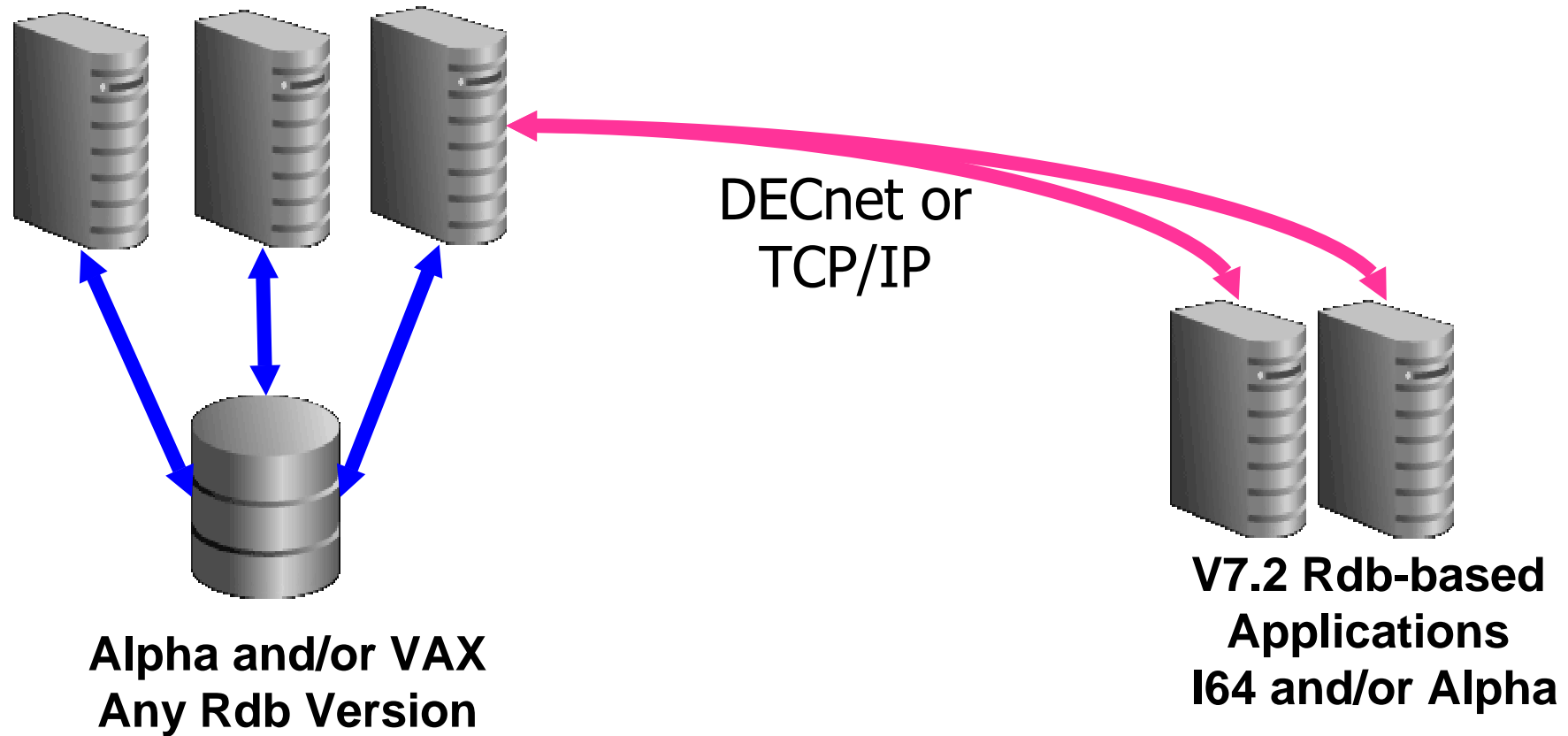**Clustered Alpha and/or I64 Servers up to 96 nodes**

Rdb V7.2 Database

➢**Active-active direct access from I64 and Alpha**

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Remote Network Access to Rdb 7.2 Database

DECnet or
TCP/IP

VAX, I64 and/or Alpha
Rdb-based applications

Alpha and/or I64 Servers
V7.2 Database

➢Built-in network server between versions/platforms
➢Multiple versions of Rdb installed & running on a system

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Remote Network Access to Older Rdb Database

DECnet or
TCP/IP

**Alpha and/or VAX
Any Rdb Version**

**V7.2 Rdb-based
Applications
I64 and/or Alpha**

➢**Built-in network server between versions/platforms**
➢**Multiple versions of Rdb installed & running on a system**

Porting Applications

Porting Applications

- Expect "Compile & Go"

- Review build procedures
  - Command line switches
  - Alpha/VAX choices
  - Only one module has database connect default

- Review code for Alpha or VAX specific assembly

Porting Applications

- Upgrade your compilers today
  - Use /WARNINGS
  - Use /CHECK during development/debug

- Start out using latest…
  - VMS (ie V8.3-1H1 & all available patches)
  - Rdb (ie V7.2.4)
  - Compilers

Performance is Excellent

Performance

- Rdb 7.2 dramatic performance gains on Alpha & I64

- I64 performance vs. Alpha
  - In some cases significantly better

- Multi-core & multi-thread advantages

- Higher clock rates & larger caches

- Performance per $ is significantly improved

What Our Customers Are Saying

J.H.
Ohio

"…I just blasted 15,000+ accounts through billing in 3 minutes.

That's 5,000 accounts per minute!!

At peak we were doing 1200 on the Alpha!!"

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V7.2 Features Overview

Released January 2006

7.2 Features
Increased Limits - IO Related Sizes

	Pre 7.2	7.2
IO Maximum	127 Blocks	256 Blocks
Buffer Size Maximum	63 Blocks	128 Blocks
Page Size Maximum	32 Blocks	63 Blocks
Global Buffers Maximum	524,288	1,048,576
Sort Work IO	127 Blocks	1024 Blocks

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7.2 Features

- Index node pre-fetch optimizations

- Transaction rollback optimizations

- Caching of database AIP entry information

- VMS file caching disabled for backup operations

- Constant boolean selections recognized

7.2 Features

- Queries against RDB$DATABASE optimized

- Index column group now enabled by default

- Refined index estimation enabled by default

- In prior releases, if user deleted rows, other users would not reuse space

  - Free space location for uniform areas now tracked in shared memory

7.2 Features
RMU

- RMU/SHOW STATISTICS
  - 64-bit counters
  - Additional statistics screens
  - Sequential scan added to record statistics screen

- Absolute & Delta time accepted for RMU qualifiers

- Encrypted database & after-image journal backups for protection of confidential data

7.2 Features
SQL

- LIMIT TO …SKIP syntax

- SHOW STATISTICS command

7.2 Features
Increase Memory Related Quotas

- Executable images typically 2x to 4x larger

- Larger internal buffers

- Larger IO

V7.2.1 Features Overview

Released January 2007

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7.2.1 Features

- Vastly improved compression for RMU /BACKUP

- Compression support for RMU /UNLOAD & /LOAD

- Improved IO behavior for RMU /BACKUP, /COPY & /MOVE

- RMU /SHOW AIP

- RMU /SET AIP

7.2.1 Features

- Most run-time durations captured more precisely
  - Improved precision with IO, lock & transaction durations

- Record length on AIP updated at ALTER TABLE action that changes on-disk length
  - May require subsequent RMU action to update SPAM fullness values

- RENAME INDEX & RENAME STORAGE MAP
  - changes name of index or storage map in all system tables

V7.2.2 Features Overview

Released January 2008

7.2.2 Features

- Intel Itanium Processor 9100 "Montvale" support

- Reduced executable image sizes, reduced CPU usage, improved performance

- SET FLAGS keyword to control optimization level

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7.2.2 Features

- /ABMS_ONLY qualifier to dump ABM pages

- RMU /BACKUP performance enhancements

- RMU /SET SERVER /NOOUTPUT

- RMU /RESTORE allow change of page size for uniform format storage areas

V7.2.3 Features Overview

Released July 2008

7.2.3 New Features

- Run-time native compiler on I64 enabled by default

- SQL precompiler & module language compiler /ARCHITECTURE command line qualifier

- PERFT4_RDB example program

- Temporary table improvements

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7.2.3 New Features

- FETCH FIRST & OFFSET clauses for select expression

- SIGN built-in function

- Enhanced simple CASE expression

- Changes in generated query outline ID

- ALTER INDEX ... MAINTENANCE IS ENABLED DEFERRED syntax active

7.2.3 New Features

- RMU load no longer quietly truncates string data during insert

- RMU unload SQL*Loader control files

V7.2.4 Features Overview

Released October 2009

7.2.4 New Features

- Date/time arithmetic enhancements

- DEFAULT PROFILE feature

- RMU /DUMP /BACKUP /OPTIONS=ROOT /HEADER_ONLY
  - Displays only header information

- GET ENVIRONMENT supports SQLCODE and SQLSTATE capture

7.2.4 New Features

- Timestamp added to some messages for RMU LOAD & UNLOAD

- RMU /SHOW VERSION displays system architecture & version

- New SET SQLDA statement

- IDENT option for SQL module language PRAGMA and precompiler DECLARE MODULE

7.2.4 New Features

- Support for row cache timed sweeps

- RMU command /TSN= format parsing upgrades

- RDB_STATS_DATABASE example program

V7.2.5 Features Overview

Target Release Q3CY2010

Preliminary

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7.2.5 New Features

- Monitor maps global sections in P2 space
  - Code also moved to P2 space on I64
  - Reduce cases where monitor runs out of P0 address space

- Server process name format changes
  - `RDM_RB_00321`
  - `RDM_RCS_0123`

- Temporary files "random" names more unique cluster-wide

7.2.5 New Features

- New optimizations for LIKE, STARTING WITH and CONTAINING predicates

- SET FLAGS keyword to control optimizer query rewrite

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7.2.5 New Features

- TCP/IP Buffer Size Increase for Hot Standby Components

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7.2.5 New Features

- VMS V8.4 support
  - Tukwila certification when hardware generally available
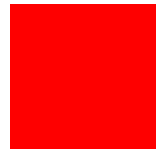
- HP Integrity Virtual Machine (HPVM) certification

Ann McQuaid
general manager, HP OpenVMS

"We are delighted that Oracle has strengthened its commitment to OpenVMS on HP Integrity servers. We are extremely pleased about our continued long-term relationship, delivering some of the industry's most robust, available and secure solutions to support the dynamic and critical needs of customers."

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Summary

- Itanium migration is easy

- Performance is excellent

- Rdb V7.2 features benefit users, applications & DBAs

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