Oracle Database on OpenVMS and Oracle Rdb Product Family Update

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Oracle Database on OpenVMS and Oracle Rdb Engineering
May, 2018
Safe Harbor Statement

The following is intended to outline our general product direction. It is intended for information purposes only, and may not be incorporated into any contract. It is not a commitment to deliver any material, code, or functionality, and should not be relied upon in making purchasing decisions. The development, release, and timing of any features or functionality described for Oracle’s products remains at the sole discretion of Oracle.
Agenda

• Working with VSI and HPE

• Customer Focus

• Oracle Database on VMS Update
  – Support Dates
  – 11g, 10g
  – What’s Under Development
  – Roadmap

• Oracle Rdb and CODASYL DBMS Update
  – Support Dates
  – Recent Releases
  – What’s Under Development
  – Roadmap
Working with VSI and HPE

• Oracle remains in close contact with both VSI and HPE
  – In resolution of customer issues
  – Oracle OpenVMS dependencies
  – Development Projects (e.g. Java 1.8)
  – Customer Events
  – Monthly conference calls with HPE
  – As needed communication with VSI (often weekly)

• Participation in EMEA HPUG events, e.g. Paris, December, 2017

• Participation in the Connect Conferences – e.g. Leipzig, May, 2018

• Monthly meetings with HPE Japan

• Efforts to strengthen working relationships between Oracle/VSI in progress
Oracle on OpenVMS and Oracle Rdb Marketing Focus

• Focus on meeting our customers’ needs

• **Rdb Web page**, Rdb Web Journal, My Oracle Support, OTN

• Rdb management personal customer visits /meetings

• Events
  • HPE and VSI Events
  • OpenVMS SIG Groups

• **Customer Events (2018)**
  – Connect Deutschland, May 14-16, 2018
  – Swedish OpenVMS SIG, May 21, 2018
  – UK OpenVMS SIG, May 23, 2018
  – French OpenVMS SIG, (TBD)

• **Boot Camp & Oracle Technical Forums (2019)**
  – Boot Camp, April 7-10, 2019
  – Forums to follow Boot Camp
    • Nashua, NH, April 11-12, 2019
    • Redwood Shores, (TBD)
    • EMEA, (TBD)
    • Asia, TBD)
Oracle's Lifetime Support Policy

- **Oracle Premier Support** provides customers with maintenance and support of Oracle software on Itanium servers for five years from the general availability date of the software release.

- **Oracle Extended Support** provides customers with an extra three years of support for specific Oracle releases for an additional fee. Customers benefit from the same quality of service received with Oracle Premier Support, with the security of knowing they can migrate their software to a new platform when the time is right.

- **Oracle Sustaining Support** customers will receive technical support for as long as they operate their Itanium-based systems—including access to online support tools, knowledge bases, pre-existing fixes and assistance from technical support experts.

- **Oracle Lifetime Support**
# Oracle Database 10gR2 Support Dates

<table>
<thead>
<tr>
<th>Integrity Platforms</th>
<th>Additional Extended Support: S1 Fixes Only</th>
</tr>
</thead>
<tbody>
<tr>
<td>Platform</td>
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<tr>
<td>HP OpenVMS on Integrity</td>
<td>August 2013 – July 2017</td>
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<tr>
<td>HP OpenVMS on Alpha</td>
<td>August 2013 – July 2015</td>
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<tr>
<td>HP-UX</td>
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<td>Linux Integrity</td>
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<tr>
<td>Windows Integrity</td>
<td>August 2013 – Dec 2015</td>
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</table>
Oracle 11g OpenVMS Patch Set Updates (PSUs)

- 11.2.0.4.180417DBPSU – April, 2018
- 11.2.0.4.180116DBPSU – January, 2018
- 11.2.0.4.171017DBPSU – October, 2017
- 11.2.0.4.170718DBPSU – July, 2017
- 11.2.0.4.170418DBPSU – April, 2017
- 11.2.0.4.161018DBPSU – October, 2016
- 11.2.0.4.160719DBPSU – July, 2016
Oracle 11g OpenVMS Patch Set Updates (PSUs) – cont.

• 11.2.0.4.10 - April, 2016
• 11.2.0.4.9 - January, 2016
• 11.2.0.4.8 - October, 2015
• 11.2.0.4.7 - July, 2015
Patch Details

Patch 27338049: DATABASE PATCH SET UPDATE 11.2.0.4.180417

Last Updated Apr 17, 2018 1:38 AM (17 days ago)

Product Oracle Database - Enterprise Edition
Release Oracle 11.2.0.4.0
Platform HP OpenVMS Itanium

Size 113.4 MB
Download Access Software
Classification Security
Patch Tag All Database

Recommendations / Certifications

Recommended for Oracle Database 11.2.0.4.0

Bugs Resolved by This Patch

10136473 CELLSRV FAILS DUE TO ORA-7445 [KAF4F0RST9R2SRP1]
11733603 ORA-54 WITH SELECT STATEMENT USING NOWAIT CLAUSE WITH NO CONCURRENT ACTIVE TX
11883252 REDO TRANSPORT STREAMING NOT SUPPORTED WITH ALL MIXED VERSION CONFIGURATIONS
12364061 QUERY FAILS INTERRMENDENT WITH ORA-30054
12611721 ARCHIVELOG DELETION POLICY BACKED UP N TIMES TO 'SBT_TAPE' IGNORED
12747740 NODE JOIN RECONFIGURATION (PMREPLAY) DOES NOT SCALE WITH MORE LMS'S
12816846 INTERNAL ERROR WHILE UPDATING COLUMN OF UPDATABLE JOIN VIEW ON EV AND TABLE/VIEWS
12905058 REBOOT 2 CELL NODES, CHECKFILE FOUND CORRUPTION BLOCK IN 3 UNDO DATAFILES
12982566 ORA-06550: DBMS_DRS PACKAGE DOES NOT EXIST ON NEW STANDBY DB AFTER SWITCHOVER
13364795 COLUMNAR SMART SCAN CAN FAIL TO RECOVER FROM A CORRUPT BLOCK
11g and 10g Certifications on VSI OpenVMS Versions

• Itanium (i6)
  – 8.4-2L1

• Itanium (i4 and i2)
  – 8.4-2L1
  – 8.4-2
  – 8.4-1H1

• Alpha (Oracle Rdb Only)
  – 8.4-2L1
  – 8.4-2L2 (optimized for EV56 and higher)
  • Certification completed
# Itanium OpenVMS Certification Matrix (Doc ID 377470.1)

Support Matrix for hp ITANIUM OpenVMS versions and Oracle Server releases
~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~

Last Update: 10-May-2018
Updated by: Dave Hayter

<table>
<thead>
<tr>
<th>ITANIUM/OpenVMS</th>
<th>(Refer to Note:377480.1 for recommended OpenVMS ECO levels)</th>
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<tr>
<td>8.2-1</td>
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<tr>
<td>10.2.0.5.0</td>
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</table>

**see Note A, **see Note B, **see Note C, **see Note D, **see Note E, **see Note H, **see Note J.
Itanium OpenVMS Certification Matrix (Doc ID 377470.1)

(For hp ALPHA OpenVMS Certification matrix - see Note:62150.1)

Please refer to the following document for information on release schedules:

Document 742060.1 Release Schedule of Current Database Releases

Please note that at this time, we do not support the Oracle RDBMS and related products running on OpenVMS as a guest operating system (e.g Virtual Machines)

A. OpenVMS 8.4 Oracle certification includes HP Integrity i2 (Tukwila) hardware.

B. OpenVMS 8.4-1H1 and 8.4-2 Oracle certification includes HP Integrity i4 (Poulsom) and i2 (Tukwila) hardware.

C. OpenVMS 8.4-2L1 Oracle certification includes HP Integrity i6 (Kittson), i4 (Poulsom) and i2 (Tukwila) hardware.

D. Oracle Server/Client Release 11.2.0.4 (11gR2) for Itanium OpenVMS was released on 23rd July 2015.

This release requires a minimum of OpenVMS 8.4

The install kits are currently available for download on Oracle Technology Network:


Please note that Oracle Clusterware/RAC 11gR2 will be released at a later date.

E. Patch set 10.2.0.5 was announced 31st October 2012 and is now available from the MyOracleSupport (MOS) patches dow
### Alpha OpenVMS Certification Matrix (Doc ID 62150.1)

<table>
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<th>ALPHA/OpenVMS</th>
<th>(Refer to Note:170199.1 for recommended OpenVMS ECO levels)</th>
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<td>10.1.0.3.0</td>
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</table>
Oracle 11g on OpenVMS – Current Development

• RAC
  – Code merge phase completed
  – Run-time phase underway
  • Issue:
    – Multicast Domain Name server which come from the Apple/Bonjour
    – Routing socket CRTL support needed from within the TCP/IP package
    – Multicasting capability needed through the tcpip$interface APIs
  • Berkley BSD or Netlink API
What Oracle 11g Client Kit Provide to OpenVMS

• Client/Server Interoperability Support to future database releases
• Standard Supported client tools (next slides)
• Upgraded Security Functionality
• Gives you the ability to continue to run your application on VMS while connecting to the database server platform of your choice (either to a VMS server or to other platforms supported by Oracle).
## Client / Server / Interoperability Support Matrix For Different Oracle Versions [ID 207303.1]

<table>
<thead>
<tr>
<th>Client Version</th>
<th>12.2.0 #10</th>
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<th>11.2.0</th>
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<td>Was #5</td>
<td>Was #5</td>
<td>Was</td>
<td>Was</td>
<td>Was</td>
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</tbody>
</table>

### Key:
- **Yes**: Supported
- **LS**: Supported but fixes only possible for customers with Extended Support.
- **LES or MDS**: Supported but fixes only possible for customer with a valid Limited Extended Support or Market-Driven Support contract respectively.
- **Was**: Was a supported combination but one of the releases is no longer covered by any of Premier Support, Primary Error Correct support, Extended Support, nor Extended Maintenance Support. Fixes are no longer possible.
- **No**: Has never been Supported
11g Client Kit Contents

- Oracle SQLJ
- Oracle Database Utilities
- Oracle Java Client
- SQL*Plus
- Oracle JDBC/THIN Interfaces
- Oracle Internet Directory Client
- Oracle Call Interface (OCI)

- Oracle Programmer
- Oracle XML Development Kit
- Oracle Advanced Security
- Enterprise Manager Minimal Integration
- OLAP Analytic Workspace Manager and Worksheet
- Oracle Net
11g Client Kit Contents (cont.)

- Oracle Connection Manager
- Oracle Net Listener
- Oracle Multimedia Client Option
- Oracle ODBC Driver
- Oracle Clusterware High Availability API
- Oracle SQL Developer
- Oracle Scheduler Agent
- Oracle Services For Microsoft Transaction Server

- Oracle Administration Assistant for Windows
- Oracle Counters for Windows Performance Monitor
- Oracle Objects for OLE
- Oracle Provider for OLE DB
- Oracle Data Provider for .NET
- Oracle Providers for ASP.NET
Oracle Rdb Product Family Update
What Products Make up The Rdb Product Family?

- Oracle Rdb Server
- Oracle CODASYL DBMS
- Oracle Trace
- Oracle CDD/Repository
- Oracle JDBC for Rdb
- Oracle Rdb Developer Tools for Visual Studio
- Oracle Rdb Connectivity Manager
- Oracle Rdb Extension for SQL Developer
- Oracle Rdb Extension for Oracle Enterprise Manager
- Oracle ODBC Driver for Rdb
- Oracle SQL/Services & OCI Services for Oracle Rdb
- Oracle Replication Option
# Rdb Product Family Lifetime Support Dates

**Oracle Rdb and Oracle CODASYL Database Releases**

<table>
<thead>
<tr>
<th>Release</th>
<th>GA Date</th>
<th>Premier Support Ends</th>
<th>Extended Support Ends</th>
<th>Sustaining Support Ends</th>
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<td>7.3</td>
<td>Mar 2011</td>
<td>Sep 2020</td>
<td>Sep 2023</td>
<td>Indefinite</td>
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</table>

## Oracle Rdb Certifications

### Oracle Rdb V7.3

<table>
<thead>
<tr>
<th>Release</th>
<th>Release Date</th>
<th>Version</th>
<th>Alpha</th>
<th>Itanium</th>
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<td>7.3.1.2</td>
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<td>V7.3-120</td>
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<td>8.4-x</td>
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<td>Feb 2014</td>
<td>V7.3-110</td>
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<td>8.4-x</td>
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<td>8.3</td>
<td>8.4-x</td>
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</table>

**Rdb V7.3 is in premier support.**

1. The ALPHA version is optimized for EV56 or later processors and shown as V7.3-nn1. Older, pre-EV56 processors are not supported.
2. Minimum OpenVMS for i6 systems is 8.4-2L1

Source: Comprehensive Rdb Versions and Compatibility Matrix (MOS Doc ID 66729.1)
## Oracle Rdb Certifications (cont.)

### Oracle Rdb V7.2

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<thead>
<tr>
<th>Release</th>
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<th>Version</th>
<th>Alpha</th>
<th>Itanium</th>
<th>Update</th>
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<td>7.2.5.8</td>
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Source: Comprehensive Rdb Versions and Compatibility Matrix (MOS Doc ID 66729.1)
## Oracle CODASYL DBMS V7.3 Certifications

<table>
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<th>Release</th>
<th>Release Date</th>
<th>Version</th>
<th>Alpha</th>
<th>Itanium</th>
<th>Update</th>
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<td>8.3</td>
<td>8.4-2L2</td>
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</table>

**DBMS V7.3 is in premier support.**

1. The ALPHA version is optimized for EV56 or later processors. Older, pre-EV56 processors are not supported.
2. Minimum OpenVMS for i6 systems is 8.4-2L1

Source: Comprehensive Rdb Versions and Compatibility Matrix (MOS Doc ID 66767.1)
Rdb Product Family Releases Over the Past 2 Years

- Rdb 7.3.3.0, May, 2018
- Oracle Rdb Developer Tools for Visual Studio, 7.3.6.0, March 2018
- Oracle JDBC for Rdb 7.3.5.1, March, 2018
- Rdb 7.3.2.1, Update 3, November, 2017
- Rdb 7.3.2.1, Update 2, September, 2017
- Oracle JDBC for Rdb 7.3.5, August, 2017
- Rdb Connectivity Management, 7.3.2.0, August, 2017
- Rdb 7.3.2.1, Update 1, June, 2017
- Rdb 7.2.5.8, May, 2017
- Oracle Rdb ODBC 3.3.2.5, April, 2017
- Rdb 7.3.2.1, March, 2017
- SQL/Services 7.3.2.3, March, 2017
- Rdb 7.3.2, Update 4, March, 2017
- Rdb 7.3.2, Update 3, November, 2016
- Rdb 7.3.2, Update 2, September, 2016
- Rdb 7.3.2, Update 1, May, 2016
- SQL/Services 7.3.2.2, April, 2016
- Rdb 7.3.2, March, 2016
Rdb 7.2.5.8, May, 2017

• Download from My Oracle Support
  – Patch 26167807 for Itanium
  – Patch 26167817 for Alpha

• Problems fixed in this release include::
  – Unexpected Alignment Faults When Converting Floating Values to Text
  – Unexpected SQL Bugchecks When the Logical RDM$BIND_KODA_DEBUG is Defined
  – Unexpected Bugcheck After an Exception is Reported Inserting LIST OF BYTE VARYING Column
  – Unexpected Bugcheck Generated When NOT LIKE Used With a Literal
Rdb 7.3 Releases

• V7.3.1 - September 2013

• V7.3.1.1 - February 2014
  – Update 1, OCT, 2014

• V7.3.1.2 - October 2014
  – Update 1, October, 2014
  – Update 2, January, 2015
  – Update 3, February, 2015

• V7.3.1.3 – September, 2015
  – Update 1 – October, 2015
  • This includes the same patches as Update 3 for V7.3.1.2
Rdb 7.3 Releases (Continued)

• V7.3.2 – March, 2016
  – Update 1, May, 2016
  – Update 2, September, 2016
  – Update 3, November, 2016
  – Update 4, March, 2017

• V7.3.2.1, March, 2017
  – Update 1, June, 2017
  – Update 2, September, 2017
  – Update 3, November, 2017

• V7.3.3.0 – May, 2018
Sample of Problems Fixed in 7.3.x + Capabilities

• i6 and i4 (Kittson, Poulson)
• Wrong Results
• Alignment Faults
• Bugchecks
• Log Miner
• Performance (Optimizer)
• RMU Show Statistics
• Sorted Ranked Index
  – e.g. Unexpected Bugcheck When Updating a SORTED
• Hot Standby
Oracle Rdb 7.3.2.1 Available for Download

Patch Details

Patch 25682708: ORACLE RDB RELEASE 7.3.2.1.0 FOR OPENVMS ITANIUM

Last Updated  Mar 16, 2017 8:13 AM (7+ hours ago)

Product  Oracle Rdb Server on OpenVMS
Release  RDB 7.3
Platform  HP OpenVMS Itanium

Size  86.6 MB
Download Access  Software
Classification  General
Patch Tag

Bugs Resolved by This Patch

List of bugs fixed is not available. Consult the Readme.

View Related Knowledge to this Patch
Rdb 7.3.3 New Features and Enhancements

- Relaxed Type Checking for DEFAULT Clause
- New Statistics Screen Shows Top Processes Accessing a Table Logical Area
- Relaxed Naming Rules for RMU Extract Option=MATCH Option
- RMU/RESTORE Now Always Displays the %RMU–I–AIJRECFUL Message
- New SQL Built-in Functions
- New String Functions
- New Aggregate Functions
- RMU–F–DBROOTFILE, –RMU–F–DBDATABFILE messages output with %RMU–F–BADAIJFILE
Rdb 7.3.3.0 New Features and Enhancements (cont.)

• RMU Extract Now Outputs ALTER DATABASE For Storage Area Access Mode
• RMU/RECOVER RMU–F–BACKUPNOAIJ, RMU–F–TSNOSYNC, RMU–F–CANTSYNCTSNS Error Messages
• Delimited_Text Keywords Can Now Be Negated For RMU Load And Unload
• RMU Load Now Supports User Defined Conversion Routines
• New CARDINALITY Option for SHOW TABLE Command
• New CONSTRAINT Naming for Domain Constraints
• New AS Result–type Clause for CREATE SEQUENCE Statement
Rdb 7.3.3.0 New Features and Enhancements (cont.)

• New GENERATED Column Support
• Enhancements to INCLUDE Statement
• New Support for DEFAULT Index NODE SIZE Calculation
• New LANGUAGE Support From RMU Extract Command
• Enhancements for CREATE and ALTER MODULE Statements
• New RMU Dump Symbols Command
• New Options to SET SQLDA Statement
• More New Options to SET SQLDA Statement
Rdb 7.3.3 Bugs Fixed - All Interfaces

• Unexpected RDB−E−BAD_DPB_CONTENT Error During ATTACH to a Database
• Possible Wrong Results From Partitioned Indices
• Unexpected Results From Partitioned Index Query
• Possible Lost Database Updates When Using RMU Backup Incremental
• Deterministic Function Not Treated As Deterministic
• Unexpected Bugcheck Generated When RDMS$RUJ References Bad File Specification
• Wrong Result From Aggregate Functions Using DISTINCT and FILTER Clauses
• LSEDIT Support Not Installed When Only DECSET License Was Found
• Sub−optimal Performance Observed for COUNT Aggregate
Rdb 7.3.3 Bugs Fixed - SQL

- Unexpected Favoring of the First Storage Area When Using FILL RANDOMLY Clause
- VARIANCE Now Returns Zero for Single Row Groups for ORACLE Dialects
- SQL IMPORT DATABASE Does Not Restore THRESHOLDS for LIST Storage Map
- Unexpected ACCVIO When Using INSERT ... RETURNING Statement
- Unexpected RDB−F−REQ_WRONG_DB Error Reported by SHOW TRANSACTION
- Unexpected RDB−E−SEQNONEXT When Assigning DEFAULT to an IDENTITY
Rdb 7.3.3 Bugs Fixed – SQL (cont.)

• Unexpected Bugcheck When Executing Query With MIN, MAX or COUNT Function
• SQL Precompiler Not Setting Exit Status When INCLUDE File Missing
• RMU Dump Audit Always Assumed Type=ALL Even When Audit Classes Were Specified
• Unexpected Failure When WITH Clause Used With UNION Operator
• Incorrectly Generated Routine Prototypes for Internal Calls in C++
• Unexpected Value Inserted for Incorrect GUID Literal Value
• Unexpected RDB–E–OBsolete_BOOLEAN_METADA and RDMS–E–MODNEXTS Errors
• Correction to Error Reporting of Database Not Yet Open
Rdb 7.3.3 Bugs Fixed – RMU

- Handling RMU–F–AIJSEQAFT Error When Starting Continuous LogMiner
- Unexpected RDMS–E–BAD_CODE Reported When Using RMU Load to a LOCAL Temporary Table
- RMU/BACKUP/AFTER_IMAGE/FORMAT=NEW_TAPE AIJ Sequencing Problem
- Unexpected Bugcheck From RMU Verify Constraints
- Unexpected Area Corruption After RMU Move_Area of a UNIFORM Format Area
Rdb 7.3.3 Bugs Fixed – Other Areas

• LogMiner:
  – LogMiner Extracts Incorrect TSN Values From After Image Journal
• RMU Show Statistics
  – RMU SHOW STATISTICS Screen Did Not Display No Cluster Support Warning
• Rdb SGA API
  – RMUST_CT_LAPMS_STATS Class Returned Incorrect RMUST_T_LOGICAL_AREA_ID Value
  – RMUST_CT_LAPMS_STATS Class Returned Statistics for Unused Logical Areas
Rdb 7.3.2.1 New Features and Enhancements

- Optimizer Min Max and Count Optimizations
- Truncate Table Enhancement
- New MEDIAN aggregate function added to SQL
- RMU/RECLAIM
- Error Messages Returned from a Remote Database Engine Can Be Logged
- RMU/SHOW AFTER_JOURNAL [NO]CHECKPOINT Qualifier
- New RMU/BACKUP/AFTER_JOURNAL [NO]SPACE_CHECK Qualifier
- New Options to SET SQLDA Statement
- New RMU Set Statistics Command
Rdb 7.3.2.1 Bugs Fixed

• Unexpected Error when Using Multischema Domain Reference
• Unexpected USERNAME Written to After Image Journal for Notational Record
• RMU Unload After_Journal Now Detects Attempt to Unload Vertically Partitioned Table
• DBR Fails to Write START_TAD Record For Logminer
• HANG ON 7.3.2 When Using Translate and UTF8
• Unexpected Query Failure of INVALID_BLR when Using GROUP BY
• New Information Table RDB$SESSION_PRIVILEGES Now Available
• Unexpected COSI-F-VASFULL Error when TRUNCATE Used on Table with LIST Columns
Rdb 7.3.2.1 Bugs Fixed (cont.)

- Wrong Results from Statistical Functions MAX
- Wrong result in COUNT (expr) Function Using Multi-Segment Index
- Unexpected Bugcheck when Updating a SORTED RANKED Index
- Remote Connections No Longer Does Retry Using Old Protocol
Rdb 7.3.2.1 Update 1, June, 2017

- Fixed a problem where the distribution of List of Byte Varying (Blob) data across partitioned storage areas was incorrectly favoring the first storage area.
  - The FILL RANDOMLY clause of the LIST storage map would not distribute LIST OF BYTE VARYING columns uniformly.

- Fixed a problem where multiple bugchecks where occurring from SELECT using MIN and MAX functions.

- See MOS Patch 26273409 for Itanium
- See MOS Patch 26273393 for Alpha
Rdb 7.3.2.1 Update 2, September, 2017

- Unexpected RDB-E-BAD_DPBP_CONTENT Error During Database ATTACH
  - Third party application was passing an illegal value in the database parameter block
  - Error was now being caught by Rdb V7.3 and later versions

- Possible Wrong Results From Partitioned Indices
  - From a query when using constant complex value expressions for the selection criteria that matched index columns used for partitioning.

- See MOS Patch 26820763 for Itanium
- See MOS Patch 26820751 for Alpha
Rdb 7.3.2.1 Update 3, November, 2017

• RMU Backup Incremental would incorrectly skip updated pages when both Row Cache and Incremental Backup Scan Optimization were enabled
  – Incremental Backup Scan Optimization is the default setting for new databases
  – Allows RMU Backup Incremental to skip SPAM pages not changed since last FULL backup
  – In rare cases the RCS (Row Cache Server) might checkpoint rows to the database and mark them with a TSN that is older than that recorded for the FULL database backup.
  – This indicated to RMU Backup Incremental that these rows need not be backed up

• See MOS Patch 27076089 for Itanium
• See MOS Patch 27076080 for Alpha
Rdb 7.3.2 Update 4, March, 2017

• Fixed a problem where the distribution of List of Byte Varying (Blob) data across partitioned storage areas was incorrectly favoring the first storage area.
  - The FILL RANDOMLY clause of the LIST storage map would not distribute LIST OF BYTE VARYING columns uniformly.

• See MOS Patch 25800744 for Itanium
• See MOS Patch 25800717 for Alpha
Rdb 7.3.3.0, Documentation Update

• Rollup release notes to RDB_NEWFEATURES document
  – Included on each kit (.pdf, .txt, .ps)
  – SYS$HELP:RDB_NEWFEATURES_73xx.PDF

• Rollup new features into documentation
  – Revised SQL Reference Manual  ** Released September, 2016!
  – Revised RMU Reference Manual  ** Released September, 2016!

• Generated new HELP for RMU and SQL

• New RMU/SHOW LOGICAL support
  – Documents logical names
Connectivity: Most Recent Releases

- Oracle SQL/Services
- OCI Services for Oracle Rdb
- Oracle ODBC Driver for Rdb
- Oracle JDBC for Rdb
- Oracle Rdb Connectivity Management (ORCM)
- Oracle Rdb Developer Tools (ORDT)
Oracle SQL/Services 7.3.2.3, March, 2017

• New and Changed Features for Oracle SQL/Services Client API
  – Sample Application Enhanced to Supply Alternate TCPIP Port
  – The kit is available on MyOracleSupport as patchset numbers 25690909 (HP-UX 64-bit), 25690917 (Linux 32-bit), 25690927 (Linux 64-bit), 25690929 (Microsoft Windows 32-bit) and 25690939 (Microsoft Windows 64-bit).

• New and Changed Features for OCI Services for Oracle Rdb
  – Add SESSION_PRIVS to OCI Services Tables
  – Computed Select Item Names

• Software Errors Fixed in OCI Services for Oracle Rdb
  – Incorrect Values Sometimes Stored in Date Columns
  – Update Across a Dblink ORA-01861: Literal Does Not Match Format String
  – ORA-03115 Returned After an UPDATE...RETURNING Statement
  – Wrong Values Inserted When Using Bind Variables and Scaled Integers
  – Alter Session Set NLS_TIMESTAMP_FORMAT Not Working if Called From Init File
Oracle ODBC Driver for Rdb 3.3.2.5, April, 2017

• Memory allocation failures and invalid results returned if API call includes the "REMARKS" column

• Incorrect value returned for SQLGetInfo(SQL_FORWARD_ONLY_CURSOR_ATTRIBUTES2)

• SQLGetDiagField (SQL_DIAG_CURSOR_ROW_COUNT) now returns SQL_SUCCESS with a value of -1 instead of SQLError

• SQLGetDiagField no longer returns -100 on record 0

• SQLGetDiagField now returns a 64 bit result as needed for SQL_DIAG_CURSOR_ROW_COUNT and SQL_DIAG_ROW_COUNT
Oracle ODBC Driver for Rdb – Prior Releases

• 3.3.2.4, October, 2014
• 3.3.2.3, April, 2012
• 3.3.2.2, November, 2011
• 3.3.2.1, April, 2011

• Supported Windows
  – Windows 32bit
    • Windows 7, XP, Vista, Server 2008, Server 2003, 2000,
  – Windows 64bit
    • Windows 7 XP, XP X64, Vista X64, Server 2008 X64, Server 2003 X64
Oracle JDBC for Rdb 7.3.5.1, March, 2018

- Download from My Oracle Support
  - Patch 27638830 for Itanium
  - Patch 27638813 for Alpha

- Features
  - A Pool Balancing option `PoolOrder` that tells the pool server to select the first pooled server in the pool that has not yet reached its maximum client limit instead of using the default round-robin search.
  - Additional Connection options

- Bug Fixes:
  - Incorrect Date/time Values when Timezones Mismatch
  - New Feature Omission - TimeZone Connection Attributes
  - Incorrect Parameter Initialization in RDBJDBC_EXECCLI.COM
Oracle JDBC for Rdb 7.3.5.1, March, 2018 (Cont.)

• Bug Fixes:
  – Spurious Error Message with Stop Client
  – ORCM Async External Tool Command Failure
  – Incorrect Seconds when Date Prior to JAVA Epoch
  – Multithread Problem with DatabaseMetaData
  – NLSLANG problems
  – RDBJDBC_STARTSRV.COM problem
  – More Incorrect Seconds when Date Prior to JAVA Epoch
  – SQL92 Dialect Semantics
  – Unreferenced CALL Parameters
  – ACCVIO when using CREATE or DROP DATABASE
  – IF EXISTS Trimmed off DROP Statements
  – NOSUCHCUR error when using ORDP
  – Concurrent Threads in single Connection
Oracle JDBC for Rdb 7.3.5, August, 2017

• Download from My Oracle Support
  – Patch 26630544 for Itanium
  – Patch 26630533 for Alpha

• Features
  – JAVA 8.0 support on Integrity Systems
  – Versioned JDBC driver jars
  – Change in SQL/Services JDBC Dispatcher naming
  – Changes to SHIFT_JIS JAVA encoding

• Bug Fixes:
  – Small Memory leak with GetTables()
  – DEFAULTSSL definition not inherited
  – Incorrect value for Client and Executor Free Shared Memory
ORCM 7.3.2, August, 2017

- Download from My Oracle Support
  - Patch 26667279 for Windows
  - Patch 26667304 for Generic Kit

- Features
  - New RMU Menu category
  - RMU Statistics
  - Find Schema Differences
  - External Tool Enhancements

- Bug Fixes:
  - Small Memory leak with GetTables()
  - DEFAULTSSL definition not inherited
  - Incorrect value for Client and Executor Free Shared Memory
Oracle Rdb Developer Tools

• 7.3.6, March, 2018
  – Available for download from My Oracle Support
    • Patch 27647428
  – Features:
    • Visual Studio 2017 Integration
  – Bugs Fixed
    • Entity Framework6 internal SQL queries returning string truncation error
Oracle Rdb Developer Tools (cont.)

- 7.3.5, July, 2016
  - Available for download from My Oracle Support
    - Patch 24334756
  - Features:
    - Visual Studio 2015 Integration
Oracle Rdb Developer Tools (cont.)

- 7.3.4, June, 2015
  - Available for download from My Oracle Support
    - Patch 21313157
  - Features:
    - Visual Studio 2013 Integration
    - Entity Framework 6 Supported
    - Entity Framework fluent API Supported
Other Oracle Rdb Family Products: Latest Versions

• Oracle CDD/Repository
• Oracle Rdb Extension for SQL Developer
Oracle CDD/Repository 7.2.0.6.0, July, 2015

• Available on My Oracle Support
  – Patch 21488004 for Itanium
  – Patch 21488027 for Alpha.

• Problems Fixed:
  – Problem when changing a relation with constraints when on OpenVMS 8.4-1H1 Systems.
Oracle Rdb Extension for SQL Developer Release 7.3.3.0, May, 2018

• Features
  – Allows you to run with SQL Developer 17.4.0.355 and 4.1.3
• Download from My Oracle Support
  – Will be made available on MOS shortly
• Requirements:
  – Oracle JDBC for Rdb release 7.3.4.0.4
Oracle Rdb Extension for SQL Developer Release 7.3.2.0, December, 2015

• Download from My Oracle Support
  – Patch 22294391

• Features
  – Allows you to run with SQL Developer 4.1.2

• Requirements:
  – Oracle JDBC for Rdb release 7.3.4.0.4
Oracle Rdb: What’s Under Development
Database Vault

• Changes the way Rdb handles OpenVMS privileges

• `ALTER DATABASE ... DATABASE VAULT IS ENABLED;`

• Requires SECURITY privilege to enable

• No longer inherit overrides from current system user

• *WARNING* Ensure there is a SECURITY user defined in the database because once DATABASE VAULT is enabled you can not use a OpenVMS privilege to change it externally
Oracle SQL/Services and OCI Services 7.3.3.0

• Support for Oracle 11g Libraries and Oracle 11g Oracle Net Protocol

• OCI Authentication Today
  – Currently users are defined in the USER$ table
  – We store an encoded password (different encoding to that used by OpenVMS and LDAP servers)
  – This password is used to authenticate with the Oracle server
  – RDB$NATCONN_CUPP Utility used to add, modify, remove, and show users enabled for OCI access and to sync with updated VMS passwords

• OCI Authentication with LDAP
  – Specify the password "GLOBAL", indicates (as it does for Oracle users) that authentication will be done using LDAP
  – Users with the password "GLOBAL" in the USER$ table will be authenticated using the LDAP directory defined in LDAPACME$INIT, the same LDAP directory used by Rdb for external authentication
Oracle SQL/Services and OCI Services 7.3.2.4

• SQL Services Authentication using LDAP Username/Password

• OCI time zone compatibility fix
  • Issue occurred because Rdb does NOT support Oracle time and timestamp data types with time zone

• Added ‘DECLARE TRANSACTION’
  • Databases with "SECURITY IS INTERNAL" could not be prepared for OCI Services without it.

• Allowed Oracle conversion functions to be run without OCI Services.
  • Functions are: TO_CHAR, TO_DATE, TO_NUMBER, TO=rowid, ROWID_TO_CHAR, TO_TIMESTAMP, DATE_ROUND, DATE_TRUNC
Oracle SQL/Services and OCI Services 7.3.2.4 (Cont.)

• MLOG$ and V$LICENSE tables
  – Added these tables as part of PREPARE in response to a customer bug where MS SQL/Server 2016 using SSMA utility didn't connect because these 2 tables were missing

• MLOG$ Information about activity related to materialized views

• V$LICENSE Information about current limits of license settings, number of sessions, maximum number of users, cpu and cpu core counts

* NOTE: Neither Rdb nor OCI Services inserts rows into either of these tables
Oracle CDD/Repository 7.3.0

- Customer Driven Enhancements
  - Adding Rdb SQL Features not Previously Supported:
    - Can now integrate into CDD a database that has been prepared for OCI Services
    - Coalesce
      - returns the first non-NULL value from a series of value expressions; otherwise, returns NULL
    - Other capabilities to be added based on demand
Oracle Trace 7.3.0

• Updating the BLR translator to the 7.3.3 BLR level
  – Will allow Trace to understand new features such as the Trim and Rtrim functions

• Bug Fix: Error condition that wasn’t handled correctly when an RUJ file could not be accessed or was improperly specified.
  – Result was an ACCVIO and Bugcheck
Oracle Replication Option (ROR) 7.3.0

• Bringing ROR up-to-date with new Rdb 7.2 and 7.3 features
  – Currently some tables can’t be replicated due to lack of support for features such as Identity Columns
Oracle ODBC Driver for Rdb 3.3.2.6

• Built on Visual Studio 2010
• New Help File
• Workaround for OpenText BIQuery (Memory Access Violation when SQLSetStmtAttr(SQL_ATTR_MAX_LENGTH) is set to 4294967295
• Functionality to redirect ODBC driver logs to a specific location
GDPR

**ASSESS**
- Processes, Profiles, Data Sensitivity, Risks

**PREVENT**
- Encryption, Pseudonymisation, Anonymisation, Fine Grained Access Control, Privileged Access Control, Separation of Duties

**DETECT**
- Auditing, Activity Monitoring, Alerting, Reporting
GDPR: Oracle Maximum Data Security Architecture
Oracle GDPR White Papers

• See:
Oracle CODASYL DBMS 7.3.2.0 – Bug Fixes

• Fix DBO/VERIFY IA64 alignment faults.
• Bugcheck at DIOFETCH$FETCH_SNAP_SEG
• DBMDBRBUG Bugcheck at RUJUTL$BIJBL_GET_FORWARD + 1E0
• DBO/SHOW STATISTICS Playback Zeroed Final Transaction Duration
• Field help missing for some DBO/SHOW Statistics fields
• Possible Misleading Messages From DBO/RECOVER/JUST_CORRUPT
• DBO/BACKUP/MULTITHREAD Did Not Output the VMS RMS STV Status for Errors Opening Storage Areas
• Lack of LRS reply status on HOT STANDBY shutdown
• Master ALS Restart Does Not Resume Updating Standby Database
• RMU/RECOVER Bugcheck Dump Caused by OpenVMS SYSTEM-W-NONLOCAL
• MONITOR BUGCHECKS WHEN RUNNING DBO/CLOSE/STAT=EXPORT
Oracle Message Queue Update

• OMQ 5 on OpenVMS 8.4-2 (IA) Certified (August, 2016)
• See http://docs.oracle.com/cd/E17973_01/platforms/mqplatforms/mqplats/mqplats.html#wp1087062
Training Partner List

• Europe, Asia, Middle East and Africa
  – VX Company
    Baarn, The Netherlands
    http://www.vxcompany.com/rdbtrainingcourses

• Americas
  – JCC Consulting, Inc.
    Granville, Ohio, United States
    http://www.jcc.com/

• Oracle CODASYL DBMS Worldwide
  – Software Concepts International
    Nashua, New Hampshire, United States
    http://www.sciinc.com/