Oracle Database on OpenVMS and Oracle Rdb Product Family Update

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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.

Ordre du Jour

- Working with VSI and HPE

- Customer Events

- Oracle Database on VMS Update
  - Support Dates
  - 10g, 11g
  - Plan de Route

- Oracle Rdb Update
  - Support Dates
  - Recent Releases
  - What's Under Development
  - Plan de Route

Working with VSI and HPE

- Oracle remains in close contact with VSI
  - In resolution of customer issues
  - Oracle OpenVMS dependencies
  - Development Projects (e.g. x86 Cross Tools)
  - Quarterly meeting with VSI on the x86 port
    - Frequent other communications day-to-day

- As needed communication with HPE

Oracle on OpenVMS and Oracle Rdb Marketing Focus

- **Customer Events:**
  - **2021:**
    - Connect Deutschland, April
    - VMSgenerations, France, November
  - **2020:**
    - VMSgenerations, France, November
    - Swedish OpenVMS SIG, November

  - **2019:**
    - North American Update Sessions: Jan, Feb, Oct
      - New York, Washington, Chicago, Toronto, Redwood Shores, Seattle, Dallas, Scottsdale, Irvine
    - EMEA Update Sessions: May & December
      - Connect Deutschland, UK OpenVMS SIG, Swedish OpenVMS SIG, Netherlands, Belgium, France, Austria
    - Asian Customer Visits, November
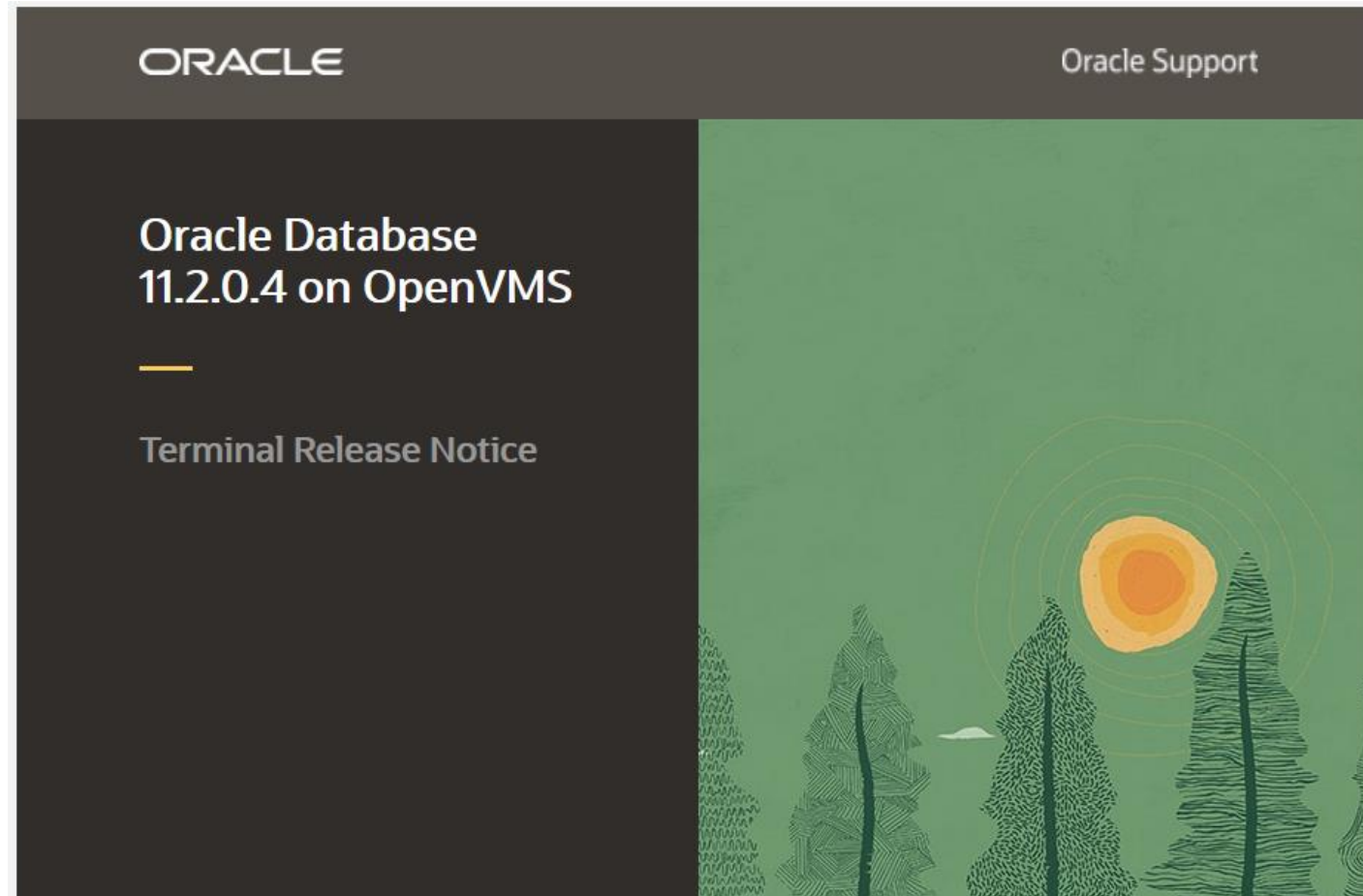   - Japan, China

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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

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Oracle Database 10gR2 Support Dates

Integrity Platforms	
Platform	Additional Extended Support: S1 Fixes Only
HP OpenVMS on Integrity	August 2013 – July 2017
HP OpenVMS on Alpha	August 2013 – July 2015
HP-UX	August 2013 – Dec 2015
Linux Integrity	August 2013 – Dec 2015
Windows Integrity	August 2013 – Dec 2015

11.2.0.4 is the Terminal Release On OpenVMS

11.2.0.4 OpenVMS Terminal Release: MOS DOC ID 742060.1

- NEW **Dec 31, 2021 for the OpenVMS platform**

up until the end of Market Driven Support (Dec 31, 2021). Oracle makes no commitment that any 11.2.0.4 DBCS instances will continue to run after the end of MDS support. Market Driven Support is not available for OCI-C DBCS and OCI-C ExaCS.

- NEW 11.2.0.4 is the terminal release on OpenVMS. During calendar year 2021, customer will receive Severity 1 Fixes and Security Updates for no additional fees beyond standard Premier Support costs. Coverage does not extend to new certifications, third-party products, or any Java/JDK functionality including Java components embedded in the database. Coverage also excludes any updates related to cryptography and network encryption. This offering does not include standard Security Patch Updates (SPUs).

Oracle 11.2.0.4 OpenVMS Support

- 11.2.0.4 Extended Support ended December 31, 2020
  - OpenVMS was covered under and ES fee waiver until this then
  - See Software Technical Support Policies (http://www.oracle.com/us/support/library/057419.pdf)
    - section on 'Exceptions for customers with a current support contract running'

- Patch Support continues for Calendar Year 2021
  - P1 and Security fixes only
  - No extra fees beyond Premier Support costs

- Indefinite Sustaining Support After 2021
  - Access to all prior patches + problem resolution and work arounds

Oracle 11.2.0.4 Market Driven Support

- 2 year program (2021-2022)
- P1 and Security patches
  - See https://www.oracle.com/a/ocom/docs/ds-mds-database-11g-r2.pdf
- MDS fees apply
- OpenVMS not currently part of MDS
  - If interested please contact us

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Oracle 11g OpenVMS Patch Set Updates (PSUs)

- 11.2.0.4.211019DBPSU – October 2021

- 11.2.0.4.210720DBPSU – July 2021

- 11.2.0.4.210420DBPSU – April 2021

- 11.2.0.4.210119DBPSU – January 2021

- 11.2.0.4.201020DBPSU – October 2020

- 11.2.0.4.200714DBPSU – July 2020

- 11.2.0.4.200414DBPSU – April 2020

- 11.2.0.4.200114DBPSU – January 2020

11.2.0.4.211019DBPSU on MOS

☆ ⚙ Patch 33128584: DATABASE PATCH SET UPDATE 11.2.0.4.211019

Last Updated   20-Oct-2021 23:57 (25 days ago)

Product   Oracle Database - Enterprise Edition (More...)

Release   Oracle 11.2.0.4.0
Platform HP OpenVMS Itanium

Size   204.8 MB
Download Access   Software
Classification   General
Patch Tag
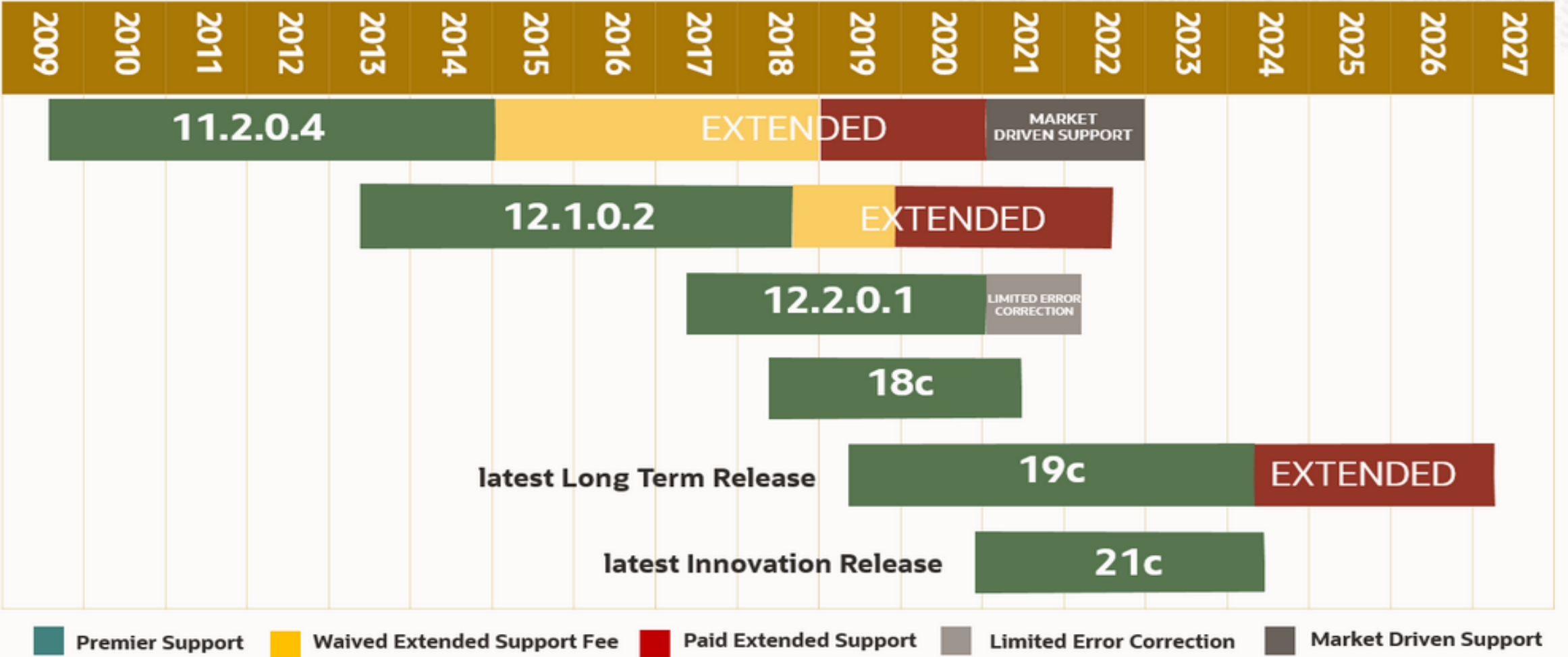
Bugs Resolved by This Patch

10136473	CELLSRV FAILS DUE TO ORA-7445 [KAF4F0RST9IR2SRP1]
11733603	ORA-54 WITH SELECT STATEMENT USING NOWAIT CLAUSE WITH NO CONCURRENT ACTIVE TX
11786053	SR11.2.0.3ASM - TRC - KFMDXGRPREGLMON
11883252	REDO TRANSPORT STREAMING NOT SUPPORTED WITH ALL MIXED VERSION CONFIGURATIONS
12364061	QUERY FAILS INTERMITTEND WITH ORA-30054
12611721	ARCHIVELOG DELETION POLICY BACKED UP N TIMES TO 'SBT_TAPE' IGNORED
12747740	NODE JOIN RECONFIGURATION (PCMREPLAY) DOES NOT SCALE WITH MORE LMS'S
12816846	INTERNAL ERROR WHILE UPDATING COLUMN OF UPDATABLE JOIN VIEW ON EV AND TABLE/VIEW
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

Open Readme to View all Bugs

11g and 10g Certifications on VSI OpenVMS Versions

- Itanium (i6)
  - 8.4-2L3
  - 8.4-2L1

- Itanium (i4 and i2)
  - 8.4-2L3
  - 8.4-2L1
  - 8.4-2
  - 8.4-1H1

Currently Published Oracle Database Support Dates (DOC ID 742060.1)

Client / Server / Interoperability Support Matrix For Different Oracle Versions [ID 207303.1]

Client Version	Server Version									
	21c	19c	18c	12.2.0	12.1.0	11.2.0	11.1.0	10.2.0	10.1.0	9.2.0
21c	Yes	Yes	Yes	Yes	Yes	No	No	No	No	No
19c	Yes	Yes	Yes	Yes	Yes	Yes[#9]	No	No	No[#3]	No[#3]
18c	Yes	Yes	Yes	Yes	Yes	Yes[#9]	No	No	No[#3]	No[#3]
12.2.0	Yes	Yes	Yes	Yes	Yes	Yes[#9]	No	No	No[#3]	No[#3]
12.1.0	Yes	Yes	Yes	Yes	Yes	Yes	Was	Was[#7]	No[#3]	No[#3]
11.2.0	No	Yes[#9]	Yes[#9]	Yes[#9]	Yes	Yes	Was	Was[#7]	No	Was[#5]
11.1.0	No	No	No	No	Was	Was	Was	Was[#7]	Was[#6]	Was[#5]
10.2.0	No	No[#10]	No[#10]	No[#10]	Was[#7]	Was[#7]	Was[#7]	Was	Was	Was[#5]
10.1.0[#4]	No	No	No	No	No	Was[#6]	Was[#6]	Was	Was	Was
9.2.0	No	No	No	No	No[#8]	Was[#5]	Was[#5]	Was[#5]	Was	Was

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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).

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

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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

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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 Database Releases

Release	GA Date	Premier Support Ends	Extended Support Ends	Sustaining Support Ends
7.0	Oct 1996	Aug 2007	Aug 2009	Indefinite
7.1	Jul 2001	Dec 2007	Dec 2010	Indefinite
7.2	Jan 2006	Jul 2015	Jul 2017	Indefinite
7.3	Mar 2011	Sep 2020	Sep 2023	Indefinite
7.4	Aug 2020	Sep 2023	Not Available	Indefinite

See: http://www.oracle.com/us/support/library/lifetime-support-technology-069183.pdf

Rdb Product Family Lifetime Support Dates

Oracle CODASYL Database Releases

Release	GA Date	Premier Support Ends	Extended Support Ends	Sustaining Support Ends
7.0	Oct 1996	Aug 2007	Aug 2009	Indefinite
7.1	Jul 2001	Dec 2007	Dec 2010	Indefinite
7.2	Jan 2006	Jul 2015	Jul 2017	Indefinite
7.3	Mar 2011	Sep 2020	Sep 2023	Indefinite
7.4	Nov 2021	Sep 2023	Not Availble	Indefinite

See: http://www.oracle.com/us/support/library/lifetime-support-technology-069183.pdf

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Rdb and CODASYL DBMS 7.3 Extended Support

14. Oracle Rdb and Oracle CODASYL Database 7.3.3: The Extended Support fee will be waived for the period September 2020 - August 2021. During this period, you will receive Extended Support as described in the Oracle Technical Support Levels section below.

See: Oracle Software Technical Support Policies at http://www.oracle.com/us/support/library/057419.pdf

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Oracle Rdb Certifications

RDB	SQL/Services	CODASYL DBMS
JDBC	ODBC	CDD/R
Trace	Replication Option	> Oracle Rdb Extension for SQL Developer

Oracle Rdb

Version	Architecture	Release		OpenVMS Version		Processor Minimum	Status
		Number	**Date**	**Minimum**	**Maximum**		
7.4	Itanium	7.4.1.1	21-Apr-2021	8.4	8.4-x	All	Shipping
		7.4.1.0	10-Aug-2020	8.4	8.4-x	All	Superseded
	Alpha	7.4.1.1	21-Apr-2021	8.4	8.4-x	EV56	Shipping
		7.4.1.0	10-Aug-2020	8.4	8.4-x	EV56	Superseded

Source: https://www.oracle.com/database/technologies/related/rdb-pmatrix.html#rdb

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Oracle Rdb Certifications (continued)

7.3	Itanium	7.3.3.2.0	25-Nov-2019	8.4	8.4-x	All	Shipping
		7.3.3.1.0	21-Mar-2019	8.4	8.4-x	All	Superseded
		7.3.3.0.0	29-May-2018	8.4	8.4-x	All	Superseded
		7.3.2.1.0	16-Mar-2017	8.4	8.4-x	All	Superseded
		7.3.2.0.0	15-Mar-2016	8.4	8.4-x	All	Superseded
		7.3.1.3.0	10-Sep-2015	8.3	8.4-x	All	Superseded
		7.3.1.2.0	8-Oct-2014	8.3	8.4-x	All	Superseded
		7.3.1.1.0	24-Feb-2014	8.3	8.4-x	All	Superseded
		7.3.1.0.0	23-Sep-2013	8.3	8.4-x	All	Superseded
		7.3.0.0.0	10-Mar-2011	8.3	8.4-x	All	Superseded
	Alpha	7.3.3.2.0	25-Nov-2019	8.4	8.4-x	EV56	Shipping
		7.3.3.1.0	21-Mar-2019	8.4	8.4-x	EV56	Superseded
		7.3.3.0.0	29-May-2018	8.4	8.4-x	EV56	Superseded
		7.3.2.1.0	16-Mar-2017	8.4	8.4-x	EV56	Superseded
		7.3.2.0.0	15-Mar-2016	8.4	8.4-x	EV56	Superseded
		7.3.1.3.1	5-Oct-2015	8.3	8.4-x	EV56	Superseded
		7.3.1.2.1	8-Oct-2014	8.3	8.4-x	EV56	Superseded
		7.3.1.1.1	24-Feb-2014	8.3	8.4-x	EV56	Superseded
		7.3.1.0.1	23-Sep-2013	8.3	8.4-x	EV56	Superseded
		7.3.0.0.1	10-Mar-2011	8.3	8.4-x	EV56	Superseded

Source: https://www.oracle.com/database/technologies/related/rdb-pmatrix.html#rdb

Rdb Product Family Releases Over the Past 2 Years

- **CODASYL DBMS 7.4.1.0, November 2021**
- **CODASYL DBMS 7.3.3.0, August 2021**
- **Rdb 7.4.1.1, April 2021**
- **Rdb 7.3.3.2 Update 1, December 2020**
- **Oracle SQL/Services and OCI Services for Oracle Rdb 7.4.0.0 Update 2, December, 2020**
- **Oracle SQL/Services and OCI Services for Oracle Rdb 7.3.3.4 Update 2, December, 2020**

- **Rdb 7.4.1.0, August, 2020**
- **Oracle SQL/Services and OCI Services for Oracle Rdb 7.4.0.0 Update 1, August, 2020**
- **Oracle SQL/Services and OCI Services for Oracle Rdb 7.3.3.4 Update 1, August, 2020**
- **Oracle Rdb Connectivity Manager 7.3.4.1, June, 2020**
- **Oracle Rdb Developer Tools for Visual Studio, 7.4, May, 2020**
- **Rdb 7.3.3.2 , November, 2019**

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CODASYL DBMS 7.4.1.0, November 2021

- Available on My Oracle Support with the following patch set numbers:
  - I64: 33539679
  - Alpha: 33539668

- New Features
  - POLYCENTER Software Installation (PCSI) registration support.
  - New DBO/RECOVER /PROGRESS_REPORT qualifier and Ctrl/T display
  - Oracle CODASYL DBMS timer queue limit increased
  - Changed Behavior for the NOEDIT_FILENAME qualifier in DBO/BACKUP /AFTER_JOURNAL command
  - Correction to an unexpected change to After Image Journal BACKUP behavior when using the DBO /MODIFY /AIJ_OPTIONS keyword BACKUP=NONAME
  - If necessary, DBO/MODIFY /JOURNAL_OPTIONS=ROTATE may create an emergency AIJ
  - DBO/MOVE_AREA adds /LIVE, /NOLIVE and /NOSNAPSHOTS qualifiers

CODASYL DBMS 7.4.1.0, November 2021

- Bugs Fixed
  - DBO/BACKUP /AFTER /NOEDIT_FILENAME Still Applying Edit String
  - Unexpected "Improperly handled condition" Reported by DBO /RESTRUCTURE Command

CODASYL DBMS 7.4.1.0 Available for Download

Patch 33539679: ORACLE CODASYL DBMS 7.4.1.0 FOR OPENVMS ITANIUM

Last Updated   16-Nov-2021 16:30 (1+ hour ago)

Product   Oracle CODASYL DBMS

Release   Oracle CODASYL DBMS 7.4.1.0.0

Platform   HP OpenVMS Itanium

Size   67.8 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

CODASYL DBMS 7.3.3.0, August 2021

- Available on My Oracle Support with the following patch set numbers:
  - I64:   33181857
  - Alpha: 33181853
- New Features:
  - DBO/SHOW LOGICAL_NAME now supports /DESCRIPTION qualifier
  - DBO-F-DBROOTFILE, -DBO-F-DBDATAFILE messages output with %DBO-F-BADAIJFILE
  - DBO/RECOVER DBO-F-BACKUPNOAIJ, DBO-F-TSNNOSYNC, DBO-F-CANTSYNCTSNS Error Messages
  - AIJ Backup Data Compression Information is now in the ABS Process Logs
  - DBO/SET/AFTER_JOURNAL/SWITCH_JOURNAL Now Can Create An Emergency AIJ

CODASYL DBMS 7.3.3.0, August 2021

- Bugs Fixed:
  - Excessive Alignment Faults
  - Unexpected MONITOR BUGCHECK Dump
  - Long Running Delete Does Not Advance After-Image Journal Checkpoint
  - Unexpected Bugchecks After Incremental Restore
  - Possible Lost Database Updates when Using DBO Backup Incremental
  - Long Running Query Blocks Other Queries
  - Fix Memory Leak with DBQ$INTERPRET

Rdb 7.4.1.1, April 2021

- Available on My Oracle Support with the following patch set numbers:
  - I64:   32789595
  - Alpha: 32789577

- New Features
  - Optional Builtin Function RDB$$IS_ROW_FRAGMENTED
  - WITH READ ONLY clause for CREATE and ALTER VIEW
  - Enhanced conversion of date/time string literals
  - Support for OVERRIDING clause in INSERT and REPLACE statements
  - RMU RECOVER /PROGESS_REPORT Qualifier and Ctrl-T Display
  - Additional options for the RMU SET DATABASE command
  - SUMMARY_ONLY qualifier to RMU Dump Audit

Rdb 7.4.1.1

- New Features (continued)
  - New RMU VERIFY /MINIMIZE_CONFLICTS feature
  - New OPTION=GENERATED added to RMU Extract command
  - Changed behavior for the NOEDIT_FILENAME qualifier in RMU Backup After_Journal command

Rdb 7.4.1.1 – Bugs Fixed

- Software Errors Fixed That Apply to All Interfaces
  - Journal Backed Up While RMU/UNLOAD/AFTER/CONTINUOUS Extracting Journal
    - Rare event but could result in the extraction process not extracting all of the contents of the journal
  - Bugchecks at SEQ$GET_SEQUENCE + 000001C0 After Incremental Restore
    - Only occurred when additional journals were added to the database after a full backup was performed and before an incremental backup was executed
  - The SET FLAGS option NOCOUNT_SCAN erroneously disabled the Min and Max key lookup optimizations carried out by the Optimizer.
    - Oracle Support may request that you use the system flag "NOCOUNT_SCAN" to disable COUNT SCAN optimizations as a workaround for a problem you may be experiencing.

- SQL Errors Fixed
  - Unexpected NULL returned from MOD and SQRT functions
  - Unexpected RDMS-E-UNQCONFEVAL when using ALTER CONSTRAINT statement
    - Happened after attempts to change a FOREIGN KEY constraint to NOT DEFERRABLE

Rdb 7.4.1.1 – Bugs Fixed (continued)

- ## SQL Errors Fixed
  - Unexpected bugcheck when using more than one COUNT(*) in query
    - This occurred within the multi-aggregate feature introduced in Oracle Rdb V7.3.2.1. The optimizer is trying to match MAX(expr), MIN(expr), COUNT(expr), and COUNT(*) to perform optimized lookups.
  - Incorrect handling of the DEFAULT clause for AUTOMATIC UPDATE AS columns
    - Incorrect value was returned for the DEFAULT keyword during the INSERT or REPLACE statements.

- ## RMU Errors Fixed
  - *Unexpected SYSTEM-F-ACCVIO when using RM*U Dump Audit for DACCESS
  - RMU SET AUDIT and RMU SHOW AUDIT now work on remote databases
  - RMU/BACKUP/AFTER/SPACE_CHECK now supports disk bound volume sets
    - In prior versions, the qualifier only checked the free space available on the first volume of a bound volume disk set.

Rdb 7.4.1.1 New Features (partial list):

- RDB$$IS_ROW_FRAGMENTED
  - Oracle Rdb now supports an optional builtin function that can determine if a row is fragmented

SQL> declare function RDB$$IS_ROW_FRAGMENTED

cont> (in :dbk char(8) character set unspecified)

cont> returns integer;

SQL>

SQL> select dbkey, RDB$$IS_ROW_FRAGMENTED (dbkey) from work_status;

```
            DBKEY

            99:10:12          0

            99:10:13          0

            99:10:14          0
```

3 rows selected

Rdb 7.4.1.1 New Features: (partial list continued)

- WITH READ ONLY clause for CREATE and ALTER VIEW

  - With this release the database administrator can force a view to be READ ONLY by applying the WITH READ ONLY clause, even if the factors that normally make a view read-only are not true.

- OVERRIDING clause in INSERT and REPLACE statements

  - Affect the handling of inserts to any generated columns during INSERT or REPLACE statements

  - The OVERRIDING SYSTEM VALUE clause instructs Rdb that the generated columns will be updated with user supplied values. No generated values will be created.

  - Would be used if a table was being reloaded after maintenance and the database administrator wanted to retain the saved generated values.

Rdb 7.4.1.1 New Features: (partial list continued)

- RMU RECOVER /PROGESS_REPORT Qualifier and Ctrl-T Display
  - The /PROGRESS_REPORT=n qualifier, where n is the time interval in seconds, displays the performance and progress of the database RMU RECOVER operation at timed intervals to SYS$OUTPUT
  - The same display can also be output whenever Ctrl-T is typed during the RMU RECOVER operation.

- New RMU VERIFY /MINIMIZE_CONFLICTS feature
  - The /MINIMIZE_CONFLICTS qualifier attempts to reduce database page lock conflicts at timed intervals during the verify operation.

Oracle Rdb 7.4.1.1 Available for Download

Close

⭐ **Patch 32789595: ORACLE RDB RELEASE 7.4.1.1.0 (IMV)**

Last Updated 21-Apr-2021 14:49 (Wednesday)

Product	Oracle Rdb Server on OpenVMS	Size	91.0 MB
Release	Oracle Rdb Server 7.4.1.1.0	Download Access	Software
Platform	HP OpenVMS Itanium	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

Release	Oracle Rdb Server 7.4.1.1.0
Platform	HP OpenVMS Itanium
Language	American English

Read Me   Download   Add to Plan ▼

Analyze with OPatch...

All-time Downloads **9**   View Trends

Discuss this patch in the community

Rdb 7.3.3.2 Update 1, December 2020

- Available on My Oracle Support with the following patch set numbers:
  - I64:   32266579
  - Alpha: 32266569
- Bugs Fixed:
  - Unexpected RMU/UNLOAD/AFTER BUGCHECK at AIJEXT$QSORT_RELEASE_REC
    - It was possible for the RMU/UNLOAD/AFTER command to bugcheck when processing rows for a table with long record sizes (greater than 32767 bytes)
  - Clarification of RMU Unload After_Image Header
    - Some LogMiner header fields now correctly described as unsigned 16 bit integers
  - Unexpected Error %SQL-F-FLDNOTCRS For Declaring a LIST Cursor
  - Unexpected NULL Returned from MOD and SQRT Functions
  - Unexpected BUGCHECK When Query Contains Multiple COUNT(*) Aggregate Functions

Rdb Documentation Update

- Documentation available at https://www.oracle.com/database/technologies/related/rdb-doc.html

- Rollup release notes to RDB_NEWFEATURES document
  - Included on each kit (.pdf, .txt, .ps)
  - SYS$HELP:RDB_NEWFEATURES_74xx.PDF

- Rollup new features into documentation
  - Revised SQL Reference Manual, September 2021
  - Revised RMU Reference Manual, September 2021
  - Oracle SQL/Services Server Configuration Guide, Release 7.4.0.0, August 2021
  - Guide to Using the Oracle SQL/Services Client API, Release 7.4.0.0, August 2021

- Generated new HELP for RMU and SQL

What's Under Development

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Next Rdb Versions

- Rdb and DBMS X86 Port

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Oracle CODASYL DBMS x86 Port

- 7.4 Environment Established

- In development and test

- Have been building successfully with the XTools for several months

- Has been the focus of our X86 port over the last several months

- Significant amount of code path now running on x86
  - Create databases is successful
  - Have successfully started the DBMS Monitor and executed a DBO SHOW command

Oracle Rdb x86 Port

- 7.4 Environment Established

- 7.4 x86 changes needed for Test System completed

- Running 9.1a on multiple systems

- Cross Compilations Completed
  - COSI
  - KODA * stubbed out where necessary

- Have worked on SORT in preparation for the port

- Next Cross Compilations
  - RMU, SQLMOD, SQLPRE with goal of getting the Monitor running

- Waiting for C++ as that is required for 100% of the middle layer
  - Early delivery expected from VSI by the end of the year

Other Oracle Rdb Product Family x86 Porting Underway

- CDD
  - Building cleanly with XTools
  - CDD needs Rdb to run

- Oracle Trace
  - Running code through the XTools

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/