Oracle® Rdb

Oracle SQL/Services Release 7.3.0.2 Release Notes

August 2009

This document contains release note information specific to Oracle SQL/Services, release 7.3.0.2 for OpenVMS Alpha and HP OpenVMS Industry Standard 64 for Integrity Servers operating systems. Also included in this document are release notes pertaining to OCI Services for Oracle Rdb release 7.3.0.2.

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Oracle SQL/Services Release 7.3.0.2 Release Notes

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Oracle SQL/Services Release 7.3.0.2 Release Notes

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Preface

Oracle SQL/Services software is a client/server component of Oracle Rdb. Oracle SQL/Services lets you develop client application programs on a variety of desktop and mainframe systems so that you can access Oracle Rdb databases.

Oracle ODBC Driver for Rdb is available in a separate kit on a separate CD-ROM. The Oracle ODBC Driver for Rdb allows ODBC applications on these clients read and write access to Oracle Rdb databases using TCP/IP, DECnet, and Oracle Net.

This manual describes new and changed features; problems fixed in this release; and current problems, restrictions, and other notes.

Intended Audience

These release notes are intended for all users of Oracle SQL/Services and OCI Services for Oracle Rdb (formerly known as SQL*Net for Rdb) and should be read to supplement information contained in the *Oracle SQL/Services Installation Guide*, the *Oracle SQL/Services Server Configuration Guide*, and the *Guide to Using the Oracle SQL/Services Client API*.

To get the most out of this manual, you should be familiar with Oracle SQL/Services, data processing procedures, and basic database management concepts and terminology.

Operating System Information

Information about the versions of the operating system and related software that are compatible with this version of Oracle SQL/Services and OCI Services for Oracle Rdb is included in the *Oracle SQL/Services Installation Guide*.

Structure

This manual contains five chapters

Chapter 1	Describes the new and changed features of Oracle SQL/Services.
Chapter 2	Describes known software errors fixed in release 7.3.0.2 of Oracle SQL/Services and prior releases.
Chapter 3	Describes problems, restrictions, and workarounds known to exist in Oracle SQL/Services release 7.3.0.2.
Chapter 4	Describes release notes that pertain to OCI Services for Oracle Rdb release 7.3.0.2 and prior releases.
Chapter 5	Describes new features and problems fixed in previous releases.

Related Manuals

For more information on Oracle SQL/Services and OCI Services for Oracle Rdb, see the following manuals in this documentation set, especially the following:

- *Oracle SQL/Services Installation Guide*

- *Oracle SQL/Services Server Configuration Guide*

- *Guide to Using the Oracle SQL/Services Client API*

The *Oracle SQL/Services Release Notes* are provided as part of the software kit. Adobe Portable Document Format (.pdf) files for the release notes are available in SYS$HELP

The remaining manuals and Oracle Rdb documentation are available on the OTN web site.

Conventions

In this manual, Oracle Rdb refers to Oracle Rdb for OpenVMS software.

HP OpenVMS Industry Standard 64 for Integrity Servers is often referred to as OpenVMS I64.

OpenVMS means both the OpenVMS Alpha and the OpenVMS I64 operating systems.

The SQL interface to Oracle Rdb is referred to as SQL. This interface is the Oracle Rdb implementation of the SQL standard adopted in 1999, in general referred to as the ANSI/ISO SQL standard or SQL:1999. See the *Oracle Rdb Release Notes* for additional information about this SQL standard.

Oracle ODBC Driver for Rdb software is referred to as the ODBC driver.

In examples, an implied carriage return occurs at the end of each line, unless otherwise noted. You must press the Return key at the end of a line of input.

Often in examples the prompts are not shown. Generally, they are shown where it is important to depict an interactive sequence exactly; otherwise, they are omitted in order to focus full attention on the statements or commands themselves.

The following conventions are also used in this manual:

[ ]	In text, brackets enclose optional information from which you can choose to use or not.
$	The dollar sign represents the DIGITAL Command Language prompt in OpenVMS.
>	The right angle bracket represents the MS-DOS command prompt. This symbol indicates that the MS-DOS command language interpreter is ready for input.
boldface text	Boldface type in text indicates a term defined in the text.

1

Oracle SQL/Services: New and Changed Features

This chapter describes the new features and technical changes to Oracle SQL/Services in release 7.3.0.2. It also describes installation requirements in addition to those documented in the *Oracle SQL/Services Installation Guide*, obsolete routines, structures, and features, and provides a summary of additions and changes to the documentation. Refer to the *Oracle SQL/Services Installation Guide* for installation information.

1.1 Documentation

Documentation for Oracle SQL/Services and OCI Services for Oracle Rdb is available in Adobe Acrobat (PDF) formats on MetaLink and OTN. Adobe Acrobat files ending with extension .PDF can be read with an Adobe Reader. Readers for many platforms are available without fee from the Adobe web site.

1.2 Summary of Oracle SQL/Services New and Changed Features for Release 7.3.0.2

The following sections describe new and changed features for Oracle SQL/Services release 7.3.0.2. See Chapter 4, "OCI Services for Oracle Rdb: Release Notes", for descriptions of new and changed features for OCI Services for Oracle Rdb.

1.2.1 Configurable SYSUAF Last Noninteractive Login Update Frequency

Bug 8533381

Beginning with release 7.3.0.1, Oracle SQL/Services updates the last non-interactive login information in the system authorization file whenever a user makes a connection. With

release 7.3.0.2, the frequency that the information is updated is now configurable and will no longer default to updating the information for every connection.

To configure how frequently the last non-interactive login is updated in the SYSUAF, define the system logical SQLSRV$UPDATE_LOGIN_FREQUENCY. After the logical is defined, executors must be restarted in order for the logical to take effect. The default update frequency is DAILY.

The supported values for this logical are listed in the following table.

Setting	Description
ALWAYS	Update the non-interactive login information in the SYSUAF for every connect.
DAILY	Update the SYSUAF, if the last recorded non-interactive login was more than a day ago.
WEEKLY	Update the SYSUAF, if the last recorded non-interactive login was more than a week ago.
MONTHLY	Update the SYSUAF, if the last recorded non-interactive login was more than a month ago.
YEARLY	Update the SYSUAF, if the last recorded non-interactive login was more than a year ago.
NEVER	Never update the SYSUAF non-interactive login information.

For example, the following will cause Oracle SQL/Services to update the SYSUAF if a user's non-interactive login information has not been updated in the past month.

```
$ DEFINE/SYSTEM SQLSRV$UPDATE_LOGIN_FREQUENCY MONTHLY
```

1.2.2 Shared Memory Usage Information Added to Bugcheck Output

Bug 7113375

Shared memory usage information has now been added at the beginning of bugcheck files, using the same format as the SQLSRV_MANAGE SHOW SERVER command. This will enable users to diagnose when shared memory is low and possibly a cause of the problem reported in the bugcheck file.

This feature was added in Oracle SQL/Services release 7.3.0.2.

1.2.3 Link Time Information Added to Bugcheck Output

Bug 3769341

Oracle SQL/Services release 7.3.0.2 bugcheck dumps have now been enhanced to dump the link date for all images listed in the loaded image section. The following is a sample extract from a bugcheck file.

```
***********************************************************************
******************SECTION HEADER: LOADED IMAGE INFO*******************
***********************************************************************

Active Image list:
        Total active images = 23
        image name              start     end       link date
        ------------------------------------------------------------------
        DCL                     7AE6A000  7AF3C9FF  14-OCT-2008 10:39:02.13
        SQLSRV_DISP73           00010000  001649FF   5-NOV-2008 17:33:59.19
        DECC$SHR_EV56           7BE54000  7BEF9FFF  14-OCT-2008 10:31:25.44
        DPML$SHR                7BAE2000  7BB27FFF  14-OCT-2008 10:30:50.06
        CMA$TIS_SHR             7B8FC000  7B90DFFF  14-OCT-2008 10:30:32.98
        SORTSHR                 7B7D6000  7B877FFF  14-OCT-2008 10:32:02.16
        LIBRTL                  7B5BA000  7B60BFFF  14-OCT-2008 10:30:17.98
        LIBOTS                  7B60C000  7B613FFF  14-OCT-2008 10:30:14.17
        SECURESHRP              7B33C000  7B3BDFFF  14-OCT-2008 10:30:47.59
        SYS$BASE_IMAGE          81824670  81839E60  17-NOV-1858 00:00:00.00
        SYS$PUBLIC_VECTORS      81804ED8  818077C8  17-NOV-1858 00:00:00.00
        SQLSRV_PRVSHR73         00198000  0023A340   5-NOV-2008 17:33:37.85
        SQLSRV_SQLNETSHR73      002B8000  015277FF  17-SEP-2008 11:40:05.26
        TRACE                   7BEFA000  7BF6BFFF  14-OCT-2008 10:32:52.23
        PTHREAD$RTL             7BB28000  7BB51FFF  14-OCT-2008 10:32:02.51
        TCPIP$IPC_SHR           01906000  019A75FF   4-SEP-2008 02:26:54.85
        TCPIP$ACCESS_SHR        019A8000  01A489FF   4-SEP-2008 02:26:54.32
        SQLSRV_MESSAGES         01A6C000  01A73FFF  17-SEP-2008 11:35:26.66
        SHRIMGMSG               01A74000  01A7A9FF  14-OCT-2008 10:38:50.18
        SORTMSG                 01A7C000  01A8C1FF  14-OCT-2008 10:32:04.12
        DECC$MSG                01A8E000  01A91FFF  14-OCT-2008 10:37:52.45
        DBGTBKMSG               01A92000  01A9F9FF  14-OCT-2008 10:38:49.09
        TCPIP$MSG               01AA0000  01AB63FF   4-SEP-2008 02:26:52.02
```

1.2.4 Image Name, User and Link Directory Information Added to Bugcheck Output

Bug 3769341

Oracle SQL/Services release 7.3.0.2 now includes the name of the image which is bugchecking, the user who linked the image and the link directory in the header of bugcheck

dump files. This information will make it easier to identify the image that is bugchecking, whether or not the image is a special image and which special image it is.

2

Oracle SQL/Services: Software Errors Fixed

This chapter describes problems with Oracle SQL/Services software that are fixed in this release.

2.1 Oracle SQL/Services Errors Fixed in Release 7.3.0.2

The following known problems found in the Oracle SQL/Services OpenVMS server have been fixed for this release.

2.1.1 Dispatcher Failed on Alpha When a Listener Failed to Start

Bugs 7380055 & 7380344

If a dispatcher was defined using multiple listeners and any one of those listeners failed to start, the dispatcher failed to start on Alpha. The dispatcher would log an error and continue to start on Itanium, if at least one valid ADDRESS line was found. This behaviour made it impossible to have one LISTENER.ORA and one Oracle SQL/Services configuration file for an entire cluster.

The following are the errors found in the dispatcher log file, when this failure occurred:

```
---EVENT BEG: EVENT_LOG ----------------------- Thu Aug 28 04:19:10.880 2008---
%SQLSRV-I-EVENT_LOG, event logged at line 714 in file COM_TNS.C;1
%SQLSRV-E-TNSFAILURE, Oracle Net TNS nslisten() service has failed
%SQLSRV-E-TNSEXTENDED, Oracle Net TNS error codes: primary (12545) secondary
(12560)
---EVENT END: EVENT_LOG ----------------------- Thu Aug 28 04:19:10.900 2008---

---EVENT BEG: EVENT_LOG ----------------------- Thu Aug 28 04:19:10.970 2008---
%SQLSRV-I-EVENT_LOG, event logged at line 10740 in file CMD.C;1
%SQLSRV-E-TNSFAILURE, Oracle Net TNS oci_listener_2() service has failed
---EVENT END: EVENT_LOG ----------------------- Thu Aug 28 04:19:10.970 2008---
```

```
---EVENT BEG: EVENT_LOG ----------------------- Thu Aug 28 04:19:10.970 2008---
%SQLSRV-I-EVENT_LOG, event logged at line 10792 in file CMD.C;1
%SQLSRV-E-NOLISCREATED, No listeners could be created
---EVENT END: EVENT_LOG ----------------------- Thu Aug 28 04:19:10.970 2008---
```

For example, if the OCI dispatcher were defined as

```
SQLSRV> create dispatcher OCI_DISP
SQLSRV_     autostart on
SQLSRV_     network_port sqlnet listener "oci_listener_1" protocol oci
SQLSRV_     network_port sqlnet listener "oci_listener_2" protocol oci
SQLSRV_ ;
```

and the listeners were defined in LISTENER.ORA as

```
 OCI_LISTENER_1 =
   (ADDRESS_LIST =
         (ADDRESS =
           (COMMUNITY = TCP_COM.world)
           (PROTOCOL = TCP)
           (Host = NODE_A)
           (Port = 1527)
         )
   )
 OCI_LISTENER_2 =
   (ADDRESS_LIST =
         (ADDRESS =
           (COMMUNITY = TCP_COM.world)
           (PROTOCOL = TCP)
           (Host = NODE_B)
           (Port = 1527)
         )
   )
```

An attempt to start up OCI_DISP on NODE_A would fail due to the errors when OCI_LISTENER_2 failed to start up.

This problem has been corrected in OCI Services for Oracle Rdb release 7.3.0.2. If at least one of the listeners specified for the dispatcher starts up successfully, the OCI dispatcher startup is successful.

2.1.2 Server Bugcheck Occurred After Server Client Aborted With Ctrl C

Bug 8265245

If a request was aborted by a control C command, a subsequent request from the same client would sometimes result in a bugcheck and shutdown of the SQL/Services server.

The following is an example of this problem, where a user had over 300 services to be displayed.

```
$ SQLSRV_MANAGE73
SQLSRV> connect server;
SQLSRV> show services;
^C
$ SQLSRV_MANAGE73
SQLSRV> connect server;
SQLSRV> show services;
%SQLSRV-E-READERR, Error on read
%SYSTEM-F-LINKDISCON, network partner disconnected logical link
%SQLSRV-E-READERR, Error on read
```

At this point, the SQL/Services server has shutdown.

This problem has been corrected in Oracle SQL/Services release 7.3.0.2.

3

Oracle SQL/Services: Known Problems

This chapter describes problems and restrictions relating to Oracle SQL/Services release 7.3.0.2.

3.1 Oracle SQL/Services Release 7.3.0.2 Server Known Problems and Restrictions

The following sections describe Oracle SQL/Services release 7.3.0.2 server restrictions and known problems.

3.1.1 Support for OpenVMS VAX and Standard Kits

Oracle SQL/Services release 7.3.0.2 and OCI Services for Oracle Rdb release 7.3.0.2 are not supported on OpenVMS VAX.

Also, standard kit installation is not supported with this release. Only multiversion kits are available.

3.1.2 Concealed Attributes are Required for Rooted Directory Logicals

When Oracle SQL/Services starts a new monitor, dispatcher or executor process, it uses the SET DEFAULT DCL command to set the initial default disk and directory for the process. In addition, when a new client connects to a universal service with database authorization set to connect user, Oracle SQL/Services calls the SYS$SETDDIR OpenVMS system service to set the default disk and directory for the executor process. To set default to a disk and directory combination that includes a rooted directory logical name, the OpenVMS operating system requires that the rooted directory logical name be defined with the CONCEALED attribute.

Consider a rooted directory logical name ALL_USERS used to reference user directories in the following example:

```
Root top-level user directory:     $1$DKA100:[USERS]
Specific user directory:           $1$DKA100:[USERS.FRED]
```

In this example, the ALL_USERS rooted directory logical name must be defined as follows (the /EXECUTIVE switch may also be used for greater security):

```
$ DEFINE/SYSTEM ALL_USERS $1$DKA100:[USERS.]/TRANSLATION_ATTRIBUTE=CONCEALED
```

The default disk and directory for user FRED can then be specified as follows:

```
ALL_USERS:[FRED]
```

If a rooted directory logical name is not defined with the CONCEALED attribute, then the SET DEFAULT DCL command executed during monitor or dispatcher process creation fails as follows if the monitor is started from an account that specifies the rooted directory logical name. Likewise, the SET DEFAULT DCL command executed during executor process creation will also fail in the same way if the service owner user name account specifies the rooted directory logical name.

```
$ DEFINE SYS$LOGIN ALL_USERS:[FRED]
$ SET DEFAULT SYS$LOGIN
%DCL-W-DIRECT, invalid directory syntax - check brackets and other delimiters
```

In addition, if a rooted directory logical name specified for a client account is not defined with the CONCEALED attribute, then an executor process will bugcheck and exit with the following error message in the executor log if the user connects to a universal service with database authorization set to connect user:

```
----------EVENT BEGIN:  EVENT_LOG at Wed Sep 24 1997
14:05:33.914-----------%SQLSRV-I-EVENT_LOG, event logged at line 1636 in file
DBS_PROT_VMS.C;1
Error setting VMS process user name
%RMS-F-DIR, error in directory name
----------EVENT END  :  EVENT_LOG at Wed Sep 24 1997 14:05:33.930-----------
```

See the *Guide to OpenVMS File Applications* in the OpenVMS documentation set for more information on how to define and use rooted directory logical names.

3.1.3 Do Not Kill Oracle SQL/Services Processes

Under certain circumstances, the entire Oracle SQL/Services server shuts down if an Oracle SQL/Services dispatcher or executor is abnormally terminated. You should never use the

DCL STOP/ID command on OpenVMS systems to stop an Oracle SQL/Services dispatcher or executor process. The Oracle SQL/Services system management command SHUTDOWN DISPATCHER or SHUTDOWN SERVICE should be used to stop dispatchers and executors. If an executor does not terminate after issuing the SHUTDOWN SERVICE command, or if you do not want to shut down the entire service, the Oracle SQL/Services system management command, KILL EXECUTOR, should be used instead.

Note that the RMU CLOSE command can have the same effect as the STOP/ID or kill command by terminating Oracle SQL/Services executors attached to the database being closed. Before using the RMU CLOSE command, ensure that no Oracle SQL/Services executors currently have the database open. Any executors you find that do have the database open should be terminated with either the Oracle SQL/Services system management command SHUTDOWN SERVICE or the KILL EXECUTOR command.

3.1.4 Do Not Shut Down or Restart the SQLSRV_MANAGE System Management Service

If you shut down or restart the SQLSRV_MANAGE system management service using either the SQLSRV_MANAGE utility or the Oracle SQL/Services Manager GUI, then subsequent attempts to connect to the server are rejected and you render the server unmanageable. If you do accidentally shut down or restart the SQLSRV_MANAGE service, then you must find and kill the Oracle SQL/Services monitor process, then restart the server.

3.1.5 Management Utilities Allow Multiple Dispatchers With the Same Port IDs

Oracle SQL/Services allows you to define multiple dispatchers, each listening on different network ports. Currently, SQLSRV_MANAGE does not ensure that multiple dispatchers do not use the same port numbers or names. If multiple dispatchers are defined to use the same ports, the second dispatcher to be started fails.

3.1.6 Database Service Attached to Remote Database Does Not Know If Database is Closed

It is possible for Oracle SQL/Services database services to be preattached to a remote database. For example, the payroll service defined below attaches to the database "payroll" on node "REMOTE".

```
create service payroll autostart on
        reuse session
        sql version 7.2
        attach 'filename REMOTE::payroll'
        owner 'payrollaccnt'
```

```
                    database authorization service owner
                    min_executors 5
                    max_executors 5;
```

If the payroll database on node REMOTE is closed, the Oracle SQL/Services payroll service
has no way of knowing that the database has been closed. The payroll service continues to
run, even though it is no longer attached to the database. The service is useless and must be
shut down and restarted after the database is reopened. Any clients attached to the service
while it is in this state get a SQLCODE of –1 with the following errors when they attempt to
access the database:

```
    %RDB-F-IO_ERROR, input or output error
    -SYSTEM-F-LINKABORT, network partner aborted logical link
```

All Oracle SQL/Services services that are preattached to a remote database should be shut
down before the database is closed. If this is not possible, there is a workaround for
database services defined to attach to Oracle Rdb V6.1 or higher databases. Rather than
defining session reusable database services, you can define a transaction reusable database
service with CLIENTS_PER_EXECUTOR set to 1.

```
    create service payroll autostart on
            reuse transaction
            sql version 7.2
            attach 'filename REMOTE::payroll'
            owner 'payrollaccnt'
            database authorization service owner
            min_executors 5
            max_executors 5
            clients_per_executor 1;
```

The service definition previously shown gives you essentially the same behavior as the
previous session reusable database service. However, Oracle SQL/Services executes a "get
diagnostics ? = transaction_active" statement to detect the end of a transaction for
transaction reusable services. Because this requires a call to the Oracle Rdb engine, it fails
and Oracle SQL/Services bugchecks and shuts down the executor. If this brings the
executor count below the MIN_EXECUTORS value defined for the service, the Oracle
SQL/Services monitor attempts to create a new executor process. If the monitor fails to start
a new executor process after two attempts, it shuts down the service. Note that this
workaround generates executor bugcheck dumps that need to be cleaned up.

3.1.7 Process Startup Fails Due to Errors in Systemwide OpenVMS Login Procedure

All processes in the Oracle SQL/Services server environment on OpenVMS are created
running the SYS$SYSTEM:loginout image with a process-specific command procedure as

SYS$INPUT. Because the loginout image is used to create the process, the systemwide login procedure will be executed by the loginout image during process creation. If this procedure fails for some reason, then the Oracle SQL/Services process will fail to start. By default, any DCL command or image that completes with a failure status with a severity level of error or fatal can cause the procedure to fail unless it is handled using the DCL ON or SET NOON commands.

All Oracle SQL/Services processes start by executing the following DCL commands during process creation:

```
$ DELETE/SYMBOL/ALL
$ VRFY_SAVE = F$VERIFY(1)
$ DELETE <disk>:[directory]SQS_<node>_<component>.COM;
$ DEFINE SQS$DBSERVER TRUE
$ DEFINE SYS$LOGIN "<disk>:[directory]"
$ SET DEFAULT SYS$LOGIN
$ DEFINE SYS$SCRATCH "<disk>:[directory]"
```

If an Oracle SQL/Services process fails before executing these commands, please review the systemwide login procedure to determine the reason for the failure.

3.1.8 Implicit Attach Using the SQL$DATABASE Logical Name Not Supported

Oracle SQL/Services does not support the use of the SQL$DATABASE logical name on OpenVMS to implicitly attach to a database. For example, if you define the SQL$DATABASE logical name, a client application must still issue an explicit SQL ATTACH statement. For example, use ATTACH 'FILENAME SQL$DATABASE', to attach to the database. If a client application connected to a universal service issues a DML statement before attaching to a database, then the executor will return a status code of -1, with an associated "%SQL-F-NODEFDB, There is no default database" error message.

3.1.9 Problems That Exist for NO_SERVICE and SVCNOTRUN Error Returns

Clients may see the NO_SERVICE error returned when the service exists, but has not been started.

Clients may see the SVCNOTRUN (service not running) error when, in fact, the service does not even exist.

3.1.10 Some Error Messages Are Missing Object Names

Some error messages from SQLSRV_MANAGE are intended to display the object name that is the source of the error. However, the name is lost and no name is displayed.

3.2 Oracle SQL/Services Release 7.3.0.2 Client Known Problems and Restrictions

The following information describes Oracle SQL/Services release 7.3.0.2 client known problems and restrictions.

3.2.1 Call SQLSRV_CLOSE_CURSOR() Before Using COMMIT or ROLLBACK

Within SQL, executing a COMMIT or ROLLBACK statement implies that all open cursors are closed unless you are using the Oracle Rdb Hold Cursors feature; this assumption is not true for Oracle SQL/Services. Because Oracle SQL/Services does not parse the SQL statements it passes, it does not know when a commit or rollback operation is executed. Instead, Oracle SQL/Services requires that the SQLSRV_CLOSE_CURSOR( ) call be issued to release the cursor-related data structures prior to a commit or rollback operation.

To reuse the same cursor name, you must close that cursor before executing a COMMIT or ROLLBACK statement.

3.2.2 Oracle SQL/Services OpenVMS Client is Now Compiled With HP C

The Oracle SQL/Services client shared image for OpenVMS is now compiled using HP C. The options file provided by Oracle SQL/Services for linking client applications has changed. It used to include SYS$LIBRARY:VAXCRTL$API/SHARE. It now includes SYS$LIBRARY:SQLSRV$API/SHARE.

If you want to relink a client application that was compiled with VAX C, you must create an options file that specifies SYS$LIBRARY:VAXCRTL/SHARE and link against this new options file as well as SYS$LIBRARY:SQLSRV$API.OPT.

3.2.3 Use a Jacket Header File When Calling the Oracle SQL/Services API From C++

The Oracle SQL/Services header files, sqlsrv.h, sqlsrvca.h, and sqlsrvda.h, do not provide built-in support for use with the C++ programming language. However, by providing a jacket header file, you may call the Oracle SQL/Services API from C++ as you would from C. To include the Oracle SQL/Services header files in a C++ application, create the following header file, called sqlsrv.hxx, and #include it in your application program:

```
//
```

```
// Define VMS if compiling on OpenVMS to pick up the $ versions of
// the service names.
//
#ifdef __VMS
#ifndef VMS
#define VMS
#endif
#endif

//
// Include the headers files using C, not C++. No need to include
// sqlsrvca.h or sqlsrvda.h unless the application directly accesses
// the SQLCA and SQLDA structures.
//
extern "C"
{

#include <sqlsrv.h>
// #include <sqlsrvca.h>
// #include <sqlsrvda.h>

}
```

3.2.4 Problem Using Statement With No Parameter Markers in Batched Execution

If an application executes a prepared statement using the SQLSRV_EXE_BATCH flag, but the statement does not contain any parameter markers, the statement is incorrectly executed as if the SQLSRV_EXE_W_DATA flag had been specified. That is, the Oracle SQL/Services client API immediately sends an execute request message to the server to execute the statement. At this point, subsequent calls to any API routine, including sqlsrv_execute_in_out and sqlsrv_execute, all fail with SQLSRV_INTERR (-2011) or SQLSRV_MULTI_ACT (-2016) errors. Once the client API has entered this error state, only the sqlsrv_abort routine functions correctly. Therefore, client applications must not execute SQL statements that do not contain parameter markers using batched execution.

3.2.5 Incorrect Error Message is Returned if a Client Cancels Batched Execution

If an application calls sqlsrv_execute_in_out or sqlsrv_execute with the execute flag set to SQLSRV_EXE_WO_DATA before calling SQLSRV_EXECUTE_IN_OUT or SQLSRV_EXECUTE with the execute flag set to SQLSRV_EXE_BATCH, the client API incorrectly sends an execute request message to the server with no statement ID. Upon receipt of this

message, the server returns an SQLSRV_INVSTMID (-2008) error back to the client with the following error message:

```
%SQLSRV-F-INVSTMID, Invalid statement id: 0
```

In this situation, the SQLSRV_INVSTMID error may be ignored.

3.2.6 Disconnect Does Not Abort Running Transaction for Transaction Reusable Services

On long-running queries, users may expect that by rebooting the PC the query will be terminated. This is not the case for transaction reusable services. The query will continue until it is ready to send a response to the client. For session reusable services, the query will terminate.

3.2.7 Repeat Count on SQLSRV_FETCH_MANY Must be Less Than or Equal to 65535

Because the REPEAT_COUNT parameter to SQLSRV_FETCH_MANY is a 16-bit integer, the maximum number of rows a client can specify on SQLSRV_FETCH_MANY is 65535. If a larger number is specified, no error is detected. Rather, the repeat count wraps around and a smaller repeat count is used. For example, if a repeat count of 65536 is specified, the value in the 16-bit repeat count parameter is 0.

3.2.8 SQSAPIW.INI and SQSAPI32.INI Example is Misleading

The .INI files provided for the Windows platforms specify two commented out sections entitled [RDBSRV]. The first section specifies the transport to be used to communicate with node RDBSRV:

```
;[RDBSRV]
;Transport=DECnet
;Transport=TCP/IP
```

The second section specifies the ports to use to communicate with node RDBSRV:

```
;[RDBSRV]
;TCPIPPortNumber=1040
;DECnetObject=SQLSRV
```

This gives the impression that it is valid to specify two separate sections for each server node name specified in the .INI file. However, it is only valid to have one section per server node name. All server node specific attributes must be specified together in the same section as follows:

```
;[RDBSRV]
;Transport=DECnet
;Transport=TCP/IP
;TCPIPPortNumber=1040
;DECnetObject=SQLSRV
```

Results are unpredictable if two sections are found for a target server node.

3.2.9 Avoid Using Cursor Names Starting With "SQLSRV_"

In designing your applications, avoid using cursor names starting with the prefix
"SQLSRV_"; this prefix is reserved and used by the Oracle SQL/Services product.

3.2.10 Oracle SQL/Services Compatibility Issue With the Order of Include Files

With V4.1 and higher versions of Oracle SQL/Services, direct access to SQLDA and
SQLCA structures is supported but is not recommended by Oracle Corporation. If direct
access is used, the order of the Oracle SQL/Services include files must be as follows:

```
#include <sqlsrvca.h>
#include <sqlsrvda.h>
#include <sqlsrv.h>
```

Compile errors will result if the include files are not in this order.

3.2.11 Allocating Space for SQLSRV_VARCHAR and SQLSRV_VARBYTE Data Types

Be sure to specify the correct length for the SQLSRV_VARCHAR and SQLSRV_
VARBYTE data types in your API applications. Oracle SQL/Services does not issue an error
message when the size of the data fields for SQLSRV_VARCHAR and SQLSRV_
VARBYTE data types exceeds the size of the SQLLEN field in the SQLDA data structure.
See the *Guide to Using the Oracle SQL/Services Client API* for information on allocating
space for the SQLSRV_VARBYTE data type and all other data types.

3.3 Oracle SQL/Services Documentation Errors or Omissions

The following information describes Oracle SQL/Services documentation errors or
omissions.

- The *Guide to Using the Oracle SQL/Services Client API* does not describe changes to
  size and format of integer and floating-point data types

Beginning with Oracle SQL/Services V5.1, the size and format of some integer and floating-point data types is changed as follows:

– Trailing zeros occur in fixed-point numeric data types with SCALE FACTOR.

Trailing zeros are now included after the decimal point up to the number of digits specified by the SCALE FACTOR. In versions of Oracle SQL/Services previous to V5.1, at most one trailing zero was included where the value was a whole number.

The following examples illustrate the changes using a field defined as INTEGER(3):

```
V5.1 and      Versions previous
higher        to V5.1
--------      ----------------
  1.000          1.0
 23.400         23.4
567.890        567.89
```

– Trailing zeros occur in floating-point data types. Trailing zeros are now included in the fraction, and leading zeros are included in the exponent, up to the maximum precision available, for fields assigned the REAL and DOUBLE PRECISION data types.

```
                                    Versions previous
Data Type          V5.1 and higher  to V5.1
----------------   ---------------------  ----------------
REAL               1.2340000E+01          1.234E+1
DOUBLE PRECISION   5.678900000000000E+001 5.6789E+1
```

– Size of TINYINT and REAL data types is changed.

The maximum size of the TINYINT and REAL data types is changed to correctly reflect the precision of the respective data types.

The following table shows the maximum lengths of the data types now and in previous versions:

```
              V5.1 and    Versions previous
Data type     higher      to V5.1
----------    --------    ----------------
TINYINT          4            6
REAL            15           24
```

■ The *Guide to Using the Oracle SQL/Services Client API*

The Guide does not describe that the SQLSRV_ASSOCIATE( ) service returns SQL error code -1028 when connecting to a database service if the user has not been granted the right to attach to the database.

When a user connects to a database service, the SQLSRV_ASSOCIATE( ) service completes with the SQL error code -1028, SQL_NO_PRIV, if the user has been granted access to the Oracle SQL/Services service, but has not been granted the right to attach to the database. A record of the failure is written to the executor process's log file. Note that the SQLSRV_ASSOCIATE( ) service completes with the Oracle SQL/Services error code -2034, SQLSRV_GETACCINF, if the user has not been granted access to the Oracle SQL/Services service.

4

OCI Services for Oracle Rdb: Release Notes

This chapter highlights release notes that pertain to OCI Services for Oracle Rdb (formerly known as SQL*Net for Rdb) for release 7.3.0.2. It contains information about installation, new and changed features, known problems, software fixes, and documentation changes.

4.1 Software Requirements

OCI Services for Oracle Rdb release 7.3.0.2 requires OpenVMS Alpha Version 8.2 or higher, or OpenVMS I64 Version 8.2-1 or higher software.

4.2 Installing OCI Services for Oracle Rdb

The installation for OCI Services for Oracle Rdb is part of the installation for Oracle SQL/Services release 7.3.0.2. Refer to the following documentation for information on installing OCI Services for Oracle Rdb.

■   SYS$HELP:SQLSRV073_INSTALL_GUIDE.PDF

This document is the *Oracle SQL/Services Installation Guide*. The information required to install OCI Services for Oracle Rdb is in this guide and supersedes the *Guide to SQL*Net for Rdb7*.

4.2.1 Problem Reporting

If an error occurs while you are using OCI Services for Oracle Rdb and you believe that the error is caused by a problem with this Oracle product, contact your Oracle support representative for assistance.

When you experience a reproducible problem, it is important to provide as much detailed information as possible. Use the ALTER SESSION LOG FULL, HEADER [,TIMESTAMP] statement or define SQLNET_DEBUG_FLAGS "HTF" to collect detailed information about

the current OCI Services for Oracle Rdb session. By providing the logged information with your problem report, you supply important data that can help solve the problem. See the *Oracle SQL/Services Server Configuration Guide* for more information about using the ALTER SESSION LOG statement and defining the SQLNET_DEBUG_FLAGS logical.

4.3 New and Changed Features for OCI Services for Oracle Rdb Release 7.3.0.2

The following sections describe new or changed features for OCI Services for Oracle Rdb release 7.3.0.2.

4.3.1 OCI Services Server Configuration Test Tool

Bug 775583

A new tool has been added to OCI Services for Oracle Rdb release 7.3.0.2 to test that the OCI Services server configuration has been correctly set up. This tool can be used to validate the set up, once the system has been configured.

One would not typically create an entry for a service in TNSNAMES.ORA on the server where Oracle SQL/Services and OCI Services for Oracle Rdb is installed. However, an entry is required on the server in order to test the server environment setup. Create a sample entry on the server and, once validated as correct, that entry can be copied to any client systems that will be accessing the service.

The server configuration test tool is automatically installed as part of the OCI Services for Oracle Rdb installation. The tool is installed in SYS$COMMON:[SYSTEST.SQLSRV73] and a new system-wide logical "SQLSRV$IVP_DIR" is defined during SQL/Services startup to point to that directory.

To test that the OCI Services server configuration has been correctly set up for a given service, execute command procedure SQLSRV$IVP_DIR:RDB$NATCONN_CHECK_ SETUP.COM on your server node, specifying the following parameters. The procedure will prompt for parameters, if they are not specified.

```
P1 = service name (as specified in TNSNAMES.ORA)
P2 = username (to connect to service)
P3 = password (to connect to service)
P4 = oci_dispatcher name
```

For example:

```
$ SET DEFAULT SYS$COMMON:[SYSTEST.SQLSRV73]
$ @RDB$NATCONN_CHECK_SETUP "OCI_SERVICE" "SMITH" "SECRET" "OCI_DISP"
```

The server configuration test tool checks the following on the server node:

1. Confirms that OCI Services was properly installed. More specifically, it checks that SYS$MANAGER:SQLSRV_SQLNET73.DAT exists.

2. Confirms that TNSNAMES.ORA was created in the directory specified by SYS$MANAGER:SQLSRV_SQLNET73.DAT, with [.NETWORK.ADMIN] appended.

3. Confirms that LISTENER.ORA was created in in the directory specified by SYS$MANAGER:SQLSRV_SQLNET73.DAT, with [.NETWORK.ADMIN] appended.

4. Confirms that the service is defined in TNSNAMES.ORA.

5. Confirms that the HOST specified for the service is the current node.

6. Confirms that a PORT and SID have been defined for the service.

7. Confirms that the service is defined in the Oracle SQL/Services configuration file.

8. Confirms that the service is currently running.

9. Confirms that a database has been associated with the service in TNSNAMES.ORA (for a universal service) or the configuration file (for a database service), but not both locations.

10. Confirms that the database has been created.

11. Confirms that the dispatcher is defined in the Oracle SQL/Services configuration file.

12. Confirms that the dispatcher is configured using the OCI protocol.

13. Confirms that the dispatcher is currently running.

14. Confirms that at least one listener associated with the dispatcher is defined in LISTENER.ORA for the current node, using the port specified for the service.

15. Confirms that the database has been prepared for use with OCI Services for Oracle Rdb and upgraded for the current release.

16. Confirms that a connection can be made for the service, if Oracle client is available on the server node.

4.3.2 Statistics Now Returned for Selects Using a DBLINK

Bug 6966070

In releases prior to 7.3.0.2, statistics were not being returned when an Oracle server requested them through a dblink connection. This often resulted in decreased performance and non-optimal choice of strategy for the query by the Oracle optimizer. Many statistics and counts that are easily available in the Oracle Rdb database are now returned in release

7.3.0.2. This includes information on tables, columns, and indexes. In the test cases, this information allowed the Oracle optimizer to choose better strategies for slow queries and they were significantly faster. Work in this area will be ongoing, as more relevant statistics are identified and available in Oracle Rdb.

4.3.3 Optimized Memory Use in OCI Executor When Using a DBLINK

Bug 7301874

Memory that was allocated by the Oracle Net routines via a callback into the OCI executor was not being released until the end of the session. It appeared to be a memory leak for a long-running session. In release 7.3.0.2, this memory is now being allocated in a memory group that is released at the end of each OCI call, so it is not accumulating through a long-running session.

4.3.4 Unique Bind Variable Names

When a query was "fixed up" by the OCI executor because of datatype conversion errors, literals were sometimes replaced by bind variables which could all have the same name. In release 7.3.0.2, the OCI "fixup" code was changed to generate bind variables with unique names.

4.3.5 Dictionary Enhancements

Bugs 7559798 and 8464682

In release 7.3.0.2, several enhancements were made to the Oracle metadata created by the dictionary prepare and upgrade program. The ALL_USERS view now selects data from the USER$ table, since all users must be entered into the USER$ table. Columns in views that were selecting a NULL value required a datatype for those columns. The NULL values were changed to CAST to the appropriate datatype. Some of the views containing columns that were TRIMmed were modified to be more efficient.

The domains RDB1LONG, RDB2LONG, and RDB4LONG will no longer be created as part of a database prepare. Those domains will not be deleted from databases prepared via an older release, but they will not be created in release 7.3.0.2 and future releases.

4.4 OCI Services for Oracle Rdb Problems Fixed for Release 7.3.0.2

This section highlights software errors relating to OCI Services for Oracle Rdb release 7.3.0.2 that have been fixed.

4.4.1 Security Change

A security change was made in OCI Services for Oracle Rdb release 7.3.0.2 to make connect user authorization more secure.

4.4.2 Unable to Use Floating Point Parameters With Comma as Decimal Separator

Bug 7379066

Using OCI calls to insert a floating point variable into an Rdb database would result in the following error when the NLS_LANG was set to a language, such as GERMAN_ GERMANY.WE8MSWIN1252, where a comma is defined as the decimal separator.

```
ORA-01438: value larger than specified precision allowed for this column
```

The problem with bind variables containing a comma as the decimal separator has been corrected in OCI Services for Oracle Rdb release 7.3.0.2.

Using a comma as the decimal separator within a SQL statement is not allowed. This is a restriction of Oracle Rdb. The workaround is to simply use a decimal point instead of a comma.

4.4.3 Wrong Data Returned by TO_CHAR Function

Bug 7645510

In some cases where the results of a TO_CHAR function were returned into a variable, the data was defined as RAW rather than as character data. This would cause it to be displayed as hex ascii rather than as a character string. In order to accommodate different languages and character sets, the Oracle data dictionary program defines all character set data as CHARACTER SET UNSPECIFIED. This allows the use of different character sets, but it makes it difficult to distinguish between character set data and raw data. For now, data will be described as characters rather than raw; in a future release, the use of a universal character set such as UTF8 will be investigated in place of character set unspecified.

4.4.4 Invalid Transaction State After DESCRIBE of Non-existent Object Using Dblink

Bug 8862447

Using a dblink and doing a DESCRIBE of an object which does not exist would cause the transaction state to become invalid. The correct error message would appear, that the object does not exist, but any further accesses to the database would not succeed. In some cases, the error RDB-E-BAD_TXN_STATE would be returned, and in other cases, the service would hang until the transaction timed out.

This problem has been fixed in OCI Services release 7.3.0.2.

4.5 Known Problems and Restrictions

This section highlights problems and restrictions relating to OCI Services for Oracle Rdb and includes workarounds where appropriate.

4.5.1 Support for OpenVMS VAX and Standard Kits

Oracle SQL/Services release 7.3.0.2 and OCI Services for Oracle Rdb release 7.3.0.2 are not supported on OpenVMS VAX.

Standard kit installation is not supported with this version. Only multiversion kits are available.

4.5.2 Restrictions and Limitations

The restrictions and limitations in Table 4–1 apply to this release of OCI Services for Oracle Rdb:

Table 4–1   OCI Services for Oracle Rdb Restrictions and Limitations

Category	Description
Character sets	The Oracle US7ASCII and DEC_MCS character sets are supported by default. See the *Oracle SQL/Services Server Configuration Guide* for information about using other character sets.
Dates	Oracle dates can pre-date the OpenVMS 17-NOV-1858 date. Such dates are not supported by Oracle Rdb or OCI Services for Oracle Rdb.
Transaction reusable services	Oracle SQL/Services transaction reusable services are not supported. Only session reusable services are supported.
Database access by service owner	Oracle SQL/Services services with database access by service owners are not supported. Only services with database access by connect user are supported.
Grant use on OCI services	Grant use on OCI Services for Oracle Rdb is not supported. All users have access to OCI Services for Oracle Rdb. However, the database is still protected because access to the database must be through connect (client) username.
Multischema databases	OCI Services for Oracle Rdb does not support multischema Oracle Rdb databases. However, OCI Services for Oracle Rdb adds an emulation layer that provides a multischema environment that is similar to what you get with Oracle.

Table 4–1   (Cont.) OCI Services for Oracle Rdb Restrictions and Limitations

Category	Description
Error mapping is not exact	The Oracle error codes do not always map well to Oracle Rdb message vectors. As a result, OCI Services for Oracle Rdb might issue error code 32800. Error code 32800 is a generic server error code that does not convey any information about the error. The text accompanying the message provides more information about handling this error.
SQL dialect	OCI Services for Oracle Rdb sets the Oracle Level1 or Oracle Level2 dialect and requires the dialect to perform its tasks. Changing the dialect may result in unexpected OCI Services for Oracle Rdb failures.
Multisession server is not supported	The Oracle server can support multiple sessions from multiple client applications in one server process. OCI Services for Oracle Rdb cannot because of the locking differences between the two database products.
Cursors	The maximum number of open cursors is currently 998.
ROWID support	ROWID support exists only if there are less than 2.1 billion pages in a logical area. Logical areas greater than 2.1 billion pages are not likely to occur unless you implement VLDB with a single-file database.
Piecewise inserts	Piecewise inserts (specific to Oracle SQL) are not supported in this release.
Oracle Rdb does not differentiate between RAW (binary) and VARCHAR (text) data	If you use the VARCHAR data type in place of the RAW data type, your application works with one exception. OCI Services for Oracle Rdb does not convert the binary data to text data if you select the data using the VARCHAR2 data type. You must explicitly convert the data using the HEXTORAW or RAWTOHEX SQL function. Explicitly converting the data works with both Oracle Rdb and Oracle RDBMS.
Determining a NOT NULL constraint through a describe call	If the statement SELECT col1 FROM tab1 were parsed and described in OCI, the Oracle server returns a message that col1 either does or does not have a NOT NULL constraint. OCI Services for Oracle Rdb does not return this information in the describe call. You can, however, obtain this information from the metadata tables. This restriction causes applications like SQL*Plus to always describe a column as not having a NOT NULL constraint when it in fact may have a NOT NULL constraint.

4.5.3 OCI Error When Attempting to Fetch a Binary ROWID

The OCI FETCH routine returns the ORA-03106 error when you attempt to fetch a binary ROWID (data type DTYRID).

To work around this problem, fetch a ROWID in text.

4.5.4 SYSDATE Function is Available From a Dblink Connection

The SYSDATE function is available from a dblink connection. When used in this way, SYSDATE is evaluated by the Oracle Rdb Server, which is not standard Oracle semantics. Please be aware of this difference and certain that you want to use SYSDATE in this way.

5

Previous Releases: New Features and Fixed Problems

This chapter describes the new features and technical changes to previous releases of Oracle SQL/Services and OCI Services for Oracle Rdb. It also describes problems that were fixed in these products.

5.1 New and Changed General Features in Previous Releases of Oracle SQL/Services

This section highlights new and changed general features that were added in previous releases.

5.1.1 Updated Configuration Guide

The Oracle SQL/Services Server Configuration Guide has been updated for Oracle SQL/Services release 7.3.0.1. This manual is available on the OTN web site.

5.1.2 Updated SQLSRV_MANAGE Help

Help for the SQLSRV_MANAGE utility has been updated for Oracle SQL/Services release 7.3.0.1, including the documentation of new features since the last update.

5.1.3 Enhanced Dispatcher and Executor Process Logging

Bugs 6008742 and 3114572

Oracle SQL/Services release 7.3.0.1 has been enhanced to enable users to more easily track application connections and the executors that processed those connections. The name and process ID (PID) of the executor handling a given connect will be entered in the dispatcher

log file when the connect is logged. The PID of the executor will be logged in the executor log file, so users will be able to associate a given connect to a specific executor and its log file. In addition, whenever a connect occurs, an entry will be made in the log file for the executor handling that connect, specifying the connect name. With this information, a user will be able to determine the specific section of the executor log that contains the logging information for a given connect, since an executor can process multiple connects. Given the information in the executor log file, a user will also be able to link a connect to the information in the dispatcher log, including the node name, user name, and application for the client.

5.1.4 Support for Configurable Server Dump Path Argument in SQLSRV_MANAGE

Bugs 5745868 and 5745899

The ability to create, alter and extract a user-specified server dump path has been added to Oracle SQL/Services release 7.3.0.1. The ALTER SERVER and CREATE SERVER commands have been enhanced to add a new DUMP PATH argument. The Oracle SQL/Services Server Configuration Guide had been updated to include this new argument for both commands. It has also been updated to remove the erroneous ALTER and CREATE SERVER LOG PATH argument.

5.1.5 Enhanced Tracking of SQL/Services User Activity in SYSUAF

Bug 5001258

Oracle SQL/Services release 7.3.0.1 has been enhanced to update the last non-interactive login information in the system authorization file (SYSUAF), when a user makes a connection. For accounting and management reasons, it is useful to see when a user account was last used. Often users have created VMS user accounts used only by SQL/Services clients. System managers had no way to determine if those user accounts were actually being used by looking at the account information in the SYSUAF. By tracking the last non-interactive login, system managers will now be able to determine when those user accounts were last utilized.

5.1.6 Oracle 10gR2 SQLNET Transport Support

Oracle SQL/Services release 7.3 emulates the Oracle 10gR2 SQLNET transport for SQLNET dispatchers.

5.1.7 Performance Improvement on OpenVMS I64 Platform

On the OpenVMS I64 platform, Oracle SQL/Services release 7.3 uses native Oracle RDBMS 10gR2 SQLNET transport functionality. In 7.2 releases, a translated SQLSRV_ SQLNETSHR image was used. Performance has been significantly enhanced using the native image.

5.1.8 Support for New SQLSRV_EXT_CONFIG70TO73.COM Command Procedure

Bug 5745427

A new command procedure, SQLSRV_EXT_CONFIG70TO73.COM, has been added for Oracle SQL/Services release 7.3. This command procedure is used to upgrade release 7.0 configuration files to release 7.3.

5.1.9 Insufficient Shared Memory Conditions Now Logged

In SQL/Services release 7.3, insufficient memory errors are now written into the executor, dispatcher and monitor log files, in addition to the bugcheck dump file. In some cases, the error is recoverable and does not cause a bugcheck. For instance, a dispatcher may not be able to create a new executor because of insufficient shared memory. This is not a fatal error, because other executors may terminate, freeing up memory for subsequent executors to be created. The insufficient memory problem may have been a temporary condition. In those cases, it is helpful to log the problem, so users are aware that they have reached the shared memory threshold and may need to increase the value.

5.1.10 Connect State Logging Enhanced

Bug 6354902

SQL/Services release 7.3 has been enhanced to log a text value for the connect state, in addition to the numerical value, whenever the connect state is being logged. The following is an example of the enhanced logging.

```
---EVENT BEG: EVENT_LOG ---------------------- Mon Dec 17 12:31:21.590 2007---
%SQLSRV-I-EVENT_LOG, event logged at line 2915 in file CMD.C;6
%SQLSRV-I-CONNECTNAME, Connect : CONNECT_0000001
%SQLSRV-I-CONNECTSTATE, Connect state: 3 (RUNNING)
%SQLSRV-I-SERVICENAME, Service : TST_I73
---EVENT END: EVENT_LOG ---------------------- Mon Dec 17 12:31:21.600 2007---
```

5.1.11 VMS Mixed Case Passwords Supported

Enhancement request: 5916102

In prior releases of Oracle SQL/Services and OCI Services for Oracle Rdb, using mixed case passwords would fail even when the OpenVMS /FLAGS=PwdMix flag was specified for the user in the system authorization file (UAF).

Support for this OpenVMS version 7.3-2 feature has been included in Oracle SQL/Services and OCI Services for Oracle Rdb release 7.2.0.2.

Support for this feature has also been included in Oracle Rdb release 7.2.1.2. Oracle SQL/Services and OCI Services for Oracle Rdb requires that this or a subsequent release of Oracle Rdb be installed in order to take advantage of this feature. The feature is implemented in a version independent image for Oracle Rdb. Therefore, the feature can be used in Oracle SQL/Services and OCI Services for Oracle Rdb executing against a prior Oracle Rdb 7.0 or 7.1 release, as long as the required Oracle Rdb release has been installed on the system.

Refer to OpenVMS version 7.3-2 documentation for more information on the HP OpenVMS Authorize Utility PwdMix flag for user accounts.

5.1.12 Support for New SQLSRV_EXT_CONFIG70TO72.COM Command Procedure

Bug 5745427

A new command procedure, SQLSRV_EXT_CONFIG70TO72.COM, has been added for Oracle SQL/Services release 7.2.0.2. This command procedure is used to upgrade release 7.0 configuration files to release 7.2.

5.1.13 Enhanced Logging in SQL/Services Log Files

Enhancement request: 5388589

SQL/Services log files did not identify the SQL/Services version, current time stamp, hardware type or operating system version. This identifying information is often useful to track problems.

With SQL/Services release 7.2.0.1 and later, the following header will now appear in SQL/Services executor, dispatcher and monitor log files to record that information.

```
$! -------------------------------------------------------------------------
$!
$! Oracle SQL/Services V7.2-01 executor log file
$! Wed Jul 19 11:41:27 2006
$!
$! -------------------------------------------------------------------------
$!
$! This is a AlphaServer 4X00 5/533 4MB running VMS V7.3-2
$!
```

5.1.14 Enhanced Error Reporting Creating & Opening Process Command Procedures

Enhancement request: 5388540

When an error occurred creating or opening a command procedure used to create monitor, dispatcher and executor processes, SQL/Services logged the error returned by the CC creat builtin function. This error was not the specific VMS error and was not always useful in diagnosing problems.

With SQL/Services release 7.2.0.1 and later, the OpenVMS error will also be logged. The following is a sample extract from a log file, containing such an error condition.

```
---EVENT BEG: EVENT_LOG ----------------------- Mon Jul 17 16:58:45.010 2006---
%SQLSRV-I-EVENT_LOG, event logged at line 1122 in file DBS_PROCESS_VMS.C;5
%SQLSRV-E-SM_FOPEN_ERR, Error opening DISK2:[JONES]SQS_NODE_SVC040000171.COM;
%SQLSRV-E-ERROR_TEXT, Error text: permission denied
%RMS-E-PRV, insufficient privilege or file protection violation
---EVENT END: EVENT_LOG -----------------------
```

5.1.15 Oracle SQL/Services Available on OpenVMS I64

Oracle SQL/Services release 7.2 is available on the HP OpenVMS Industry Standard 64 for Integrity Servers operating system.

5.1.16 Enhancements to SQLSRV$DEINSTALL_DELETE Procedure

Beginning with release 7.1.6, the SQLSRV$DEINSTALL_DELETE.COM procedure no longer removes the SQLNET4RDB identifier. If the command procedure is executed on a cluster, it now displays information about all SQL/Services monitors that are currently executing on the cluster prior to asking if the user would like to continue, as shown in the following example:

```
$ @SYS$MANAGER:SQLSRV$DEINSTALL_DELETE

Oracle SQL/Services versions currently installed on your system

1 Version 7.1 (Multiversion)
0 Quit

Enter Choice to deinstall (0...1) : 1
```

```
You are about to deinstall Oracle SQL/Services 7.1

This procedure will delete SYS$MANAGER:SQLSRV$SHUTDOWN71.COM.
If the Oracle SQL/Services 7.1 monitor is running on any
other node on your cluster besides the node SYS1,
you will have to manually stop the monitor on each of these other
nodes after this procedure has finished.

The following monitor(s) are currently executing on your cluster.

OpenVMS V7.3-2 on node SYS2 4-JUN-2004 14:34:23.61 Uptime 10 01:23:29
Pid Process Name State Pri I/O CPU Page flts Pages
20400126 sqlsrv_mon_0071 HIB 6 2020 0 00:00:00.79 399 523

OpenVMS V7.3-2 on node SYS3 4-JUN-2004 14:34:23.63 Uptime 19 20:39:17
Pid Process Name State Pri I/O CPU Page flts Pages
2080025D sqlsrv_mon_0071 HIB 6 599 0 00:00:25.98 1321 3030

Enter Y(ES) to continue to deinstall Oracle SQL/Services 7.1 :
```

5.1.17 Configuration File Version Check

Beginning with release 7.1.5.6, if you try to use a configuration file created by Oracle SQL/Services prior to release 7.1.5.4, you will get a bugcheck dump and an error message will be written to the monitor log file.

5.1.18 New and Changed SQLSRV_MANAGE Features

The documentation for new capabilities and logical names has been added to the Oracle SQL/Services Configuration Guide.

5.1.19 New and Changed Client Features

The following describes new and changed client features:

- Deprecated clients no longer ship with Oracle Rdb clients

  All deprecated Oracle SQL/Services clients no longer ship on the Oracle SQL/Services software kit.

- Windows 2000, Windows XP and Windows Vista

  Windows 2000, Windows XP and Windows Vista are now supported operating systems for Oracle SQL/Services.

- HP-UX Client Available

  Enhancement Request 5053507

  Beginning with release 7.2.0.2, Oracle SQL/Services supports the HP-UX API client . For prerequisite and installation information for the HP-UX client, read the HPUX_ client_readme.txt file included with the HP-UX kit, found in sqshpuxcli.tar. The HP-UX client kit is available on the CD for the Oracle SQL/Services client kits, as well as on MetaLink and OTN.

- Linux Client Available

  Beginning with release 7.1.6, Oracle SQL/Services supports the Linux API client. For prerequisite and installation information for the Linux client, read the Linux_client_ readme.txt file included with the Linux kit, found in sqslinuxcli.tar. The Linux client kit is available on the CD for the Oracle SQL/Services client kits, as well as on MetaLink and OTN.

5.2 Oracle SQL/Services Errors Fixed in Prior Releases

The following known problems found in the Oracle SQL/Services OpenVMS server in previous releases have been fixed.

5.2.1 SQLSRV_MANAGE CONNECT SERVER Got SYSTEM-F-RANGEERR Error

Bug 6188111

If you specified keyword USING rather than USER before the username, the SQLSRV_ MANAGE CONNECT SERVER command got the following errors.

```
SQLSRV> CONNECT SERVER USING "name" USING "password";

%SYSTEM-F-RANGEERR, range error, PC=0000000000078568, PS=0000001B

 Improperly handled condition, image exit forced by last chance handler.
...
```

This problem has been corrected in Oracle SQL/Services release 7.3.0.1.

5.2.2 Problem Processing SQL Initialization File

Bug 5590529

For universal non-OCI services, the SQL initialization file would fail on commands which required that the database already be attached, due to the fact that it was being executed prior to attaching to the database.

This problem has been corrected in release 7.3. The database attach will now be done prior to executing the SQL initialization file.

5.2.3 Security Problem Fixed

By emulating the Oracle 10gR2 listener, Oracle SQL/Services release 7.3 and later now have tighter security via the listener. Problems that caused denial-of-service problems in prior releases have now been resolved with this new listener.

5.2.4 Problem With Error Message Truncation

Bug 6374049

In some cases, error messages were being written to a buffer which was not large enough to accommodate the entire error message text and the error message was truncated. The incomplete message text was then written to the SQL/Services log files.

This problem has been corrected in release 7.3.

5.2.5 CMA Errors Now Display Secondary Error Message

On Itanium systems, exceptions are processed through pthreads, which envelops the SQL/Services error with a CMA error. In some cases, the SQL/Services error was displayed as an object number, rather than a text error message, such as the following.

```
%SQLSRV-W-EXCEPTION_RAISE, Exception raised: %CMA-F-EXCEPTION, exception raised;
address of exception object 00050C00
```

Since this type of error message is not useful in diagnosing a problem SQL/Services release 7.3 has been modified to make all object type messages into useful text messages. The above example will now be displayed as follows.

```
%SQLSRV-W-EXCEPTION_RAISE, Exception raised: %CMA-F-EXCCOPLOS, exception raised;
some information lost, -SQLSRV-F-INSUFFICIENT_ME, UTL_INSUFFICIENT_MEMORY
```

5.2.6 SQL/Services Configuration File Upgrade Between 71 and 72 Releases

Bug 5765415

In Oracle SQL/Services 7.2 releases prior to 7.2.0.2, a user was required to create a new configuration file (SQLSRV_CONFIG_FILE72.DAT) for the first release 7.2 installation.

Beginning with Oracle SQL/Services release 7.2.0.2, SQLSRV_CONFIG_FILE71.DAT can now be copied to SQLSRV_CONFIG_FILE72.DAT and SQL/Services will execute successfully with this new configuration file, without any other modifications to the configuration file.

This problem has been corrected in release 7.2.0.2.

5.2.7 SQLSRV_CREATEnn.SQS Missing SQL Version

Bugs 5978019, 5741971

In release 7.2.0.1, when the Oracle SQL/Services installation generated the SQLSRV_ CREATEnn.SQS file for the creation of the RMU_SERVICE and OCI_SAMPLE services, the SQL VERSION was missing. This caused the creation of those services to fail, during the creation of a new configuration file.

This problem has been corrected in Oracle SQL/Services release 7.2.0.2.

5.2.8 Improved Logging on Dispatcher Listener Startup Failure

Bug 557878

In releases prior to 7.2.0.2, when Oracle SQL/Services was unsuccessful in starting up an OCI dispatcher due to problems finding the LISTENER.ORA file or the dispatcher service definition in that file, the information logged to the dispatcher log file was not helpful in diagnosing the problem.

```
------------EVENT BEGIN:  EVENT_LOG at Mon Sep 29 1997 10:25:15.942------------
%SQLSRV-I-EVENT_LOG, event logged at line 990 in file COM_TNS.C;1
%SQLSRV-E-TNSFAILURE, Oracle SQL*Net TNS nlpagas() service has failed
%SQLSRV-E-ERROR_TEXT, Error text: oci_listener
------------EVENT END  :  EVENT_LOG at Mon Sep 29 1997 10:25:15.984------------
```

In release 7.2.0.2, Oracle SQL/Services logs more helpful information, such as the following.

```
---EVENT BEG: EVENT_LOG ----------------------- Fri Apr 27 10:29:59.440 2007---
%SQLSRV-I-EVENT_LOG, event logged at line 1452 in file COM_TNS.C;2
%SQLSRV-E-TNSFAILURE, Oracle Net TNS nlpagas() service has failed
%SQLSRV-E-ERROR_TEXT, Error text: oci_listener
%SQLSRV-E-TNSEXTENDED, Oracle Net TNS error codes: primary (408) secondary (0)
%SQLSRV-E-ERROR_TEXT, Error text: LISTENER.ORA does not exist in the expected
location
```

```
%SQLSRV-E-ERROR_TEXT, Error text: or there is no valid entry for the above named
service
---EVENT END: EVENT_LOG ---------------------- Fri Apr 27 10:29:59.470 2007---
```

5.2.9 SQLSRV_MANAGE EXTRACT Command Truncates Port Names

Bug 5867554

In releases prior to 7.2.0.2, the SQLSRV_MANAGE EXTRACT command would truncate port names that were more than 13 characters in length. For example, in the following "oci_listener_test" was truncated to "oci_listener_".

```
SQLSRV> show dispatcher oci_disp_test;
     Dispatcher OCI_DISP_TEST ...
     Network Ports:                                    (State)   (Protocol)
       SQL*Net listener oci_listener_test              Unknown   OCI clients
SQLSRV> extract dispatcher oci_disp_test;
     Create Dispatcher OCI_DISP_TEST ...
     network_port sqlnet listener oci_listener_ protocol OCI
```
This problem has been corrected in Oracle SQL/Services release 7.2.0.2.

5.2.10 Security Problems Fixed

Security problems have been fixed in Oracle SQL/Services release 7.2.0.2.

5.2.11 Shared Memory Leak Using Universal Services Fixed

In Oracle SQL/Services releases prior to 7.2.0.2, there was a minor shared memory leak every time a client connected using a universal service. After a significant number of connections, this would eventually lead to insufficient shared memory exceptions, requiring a restart of the SQL/Services server.

This problem has been corrected in Oracle SQL/Services release 7.2.0.2.

5.2.12 Problem Using Persona Feature With JDBC Dispatchers

TAR: 15930012.6

The JDBC Dispatcher did not inherit IMPERSONATE privilege and this sometimes caused use of the persona feature to fail. SQL/Services will now start the JDBC dispatcher with IMPERSONATE privilege.

This problem has been corrected in release 7.2.0.1.

5.2.13 Poor Performance From OCI Queries

Bugs: 3259208, 4770496, 5144164

Oracle SQL/Services release 7.1.5.8 introduced a problem that could cause queries from an OCI source to sometimes take an extraordinarily long time to complete. Examination of the SQL/Services processes would show that they were idle even though the client had not received a response from SQL/Services.

This problem was introduced by changes in the underlying Oracle NET libraries employed by SQL/Services. There were instances where a network message would arrive but notification of that arrival was not being delivered to the SQL/Services dispatcher. When that occurred, SQL/Services would only see that a new network message had arrived when it did periodic polling.

There is no workaround for this issue.

This problem has been corrected in release 7.2.0.1. Notification of network message arrival is now done immediately.

5.2.14 Misleading Dispatcher Logging Entries Removed

Bug: 5148550

When an Oracle Net connection was successfully disconnected, the following information was entered into the dispatcher log. This would occur for any executor using the SQLNET protocol, such as an OCI Services connection. Since the logging was done for every connection, it tended to make dispatcher log files large.

Dispatcher log entry:

```
---EVENT BEG: EVENT_LOG ----------------------- Fri Mar 31 09:40:31.5602006---
%SQLSRV-I-EVENT_LOG, event logged at line 2496 in file COM_TNS.C;1
%SQLSRV-E-TNSFAILURE, Oracle Net TNS nsrecv() service has failed
%SQLSRV-E-TNSEXTENDED, Oracle Net TNS error codes: primary (12537) secondary
(12560)

---EVENT END: EVENT_LOG ----------------------- Fri Mar 31 09:40:31.5602006---
```

This message (12537) is actually an informational message from Oracle TNS. There is no need to log the message. It appears to be reporting a problem, rather than a success condition, causing confusion. It has now been removed from dispatcher logging in Oracle SQL/Services release 7.2.0.1.

5.2.15 SQLSRV$MOD*.EXE Files Removed From the SQL/Services Kit

Bug: 5222605

SQLSRV$MOD images are part of the Oracle Rdb SQL component. Due to a past problem, some corrected SQLSRV$MOD images were shipped on the SQL/Services kit to be installed if needed to supercede older images. The SQL/Services startup and shutdown procedures installed and deinstalled these images.

Because the need for these images no longer exists, they have been removed from the SQL/Services kit and procedures in Oracle SQL/Services release 7.2.0.1.

5.2.16 Failure to Start 2PC Using OCI Universal Services

In releases 7.1.6, 7.1.6.1, and 7.2, attempting to access an OCI universal service using two-phase commit failed to start a two-phase commit transaction and therefore reverted to a one-phase commit transaction.

This problem has been corrected in release 7.2.0.1.

5.2.17 Occasional Access Violations During OCI Bugcheck Dumps

Occasionally, an access violation would occur during the process of writing an OCI bugcheck dump file.

This problem has been corrected in release 7.2.0.1.

5.2.18 SQL/Services Installation Procedure Fixes SQL Version Specified

During SQL/Services installation, the user is asked to specify the SQL version for the generic service. If the user specified more than 2 digits in that version number, the SQL/Services installation would fail.

This problem has been corrected in release 7.2.0.1. The installation procedure now truncates the version to 2 digits, as required.

5.2.19 Monitor and Dispatcher Processes in CPU Loop

In releases prior to 7.2.0.1, the SQL/Services monitor and dispatcher processes may sometimes get into a deadlock condition where both processes are in a CPU loop. If SQL/Services is configured with services that have a bad SQL init file with the minimum executor parameter set to greater than 0, starting up the SQL/Services server can, in rare occasions, cause the SQL/Services monitor and dispatcher processes to be in a CPU loop waiting for a mutex.

5.2.20 PROCESS_INIT Defined as Keyword LOGIN Could Fail

Bug: 4664833

Starting an executor with PROCESS_INIT defined as keyword LOGIN would sometimes fail with garbage in the login command file name.

This problem was corrected in release 7.1.6.1.

5.2.21 Monitor Aborts When Connection Cancelled

If you attempted to use the monitor port for an OCI connection and then cancelled the process, the monitor would abort.

This problem was fixed in release 7.2.

5.2.22 Shared Memory Not Released With Continuous Start and Shutdown of Server

Free shared memory would decrease to zero if services were started and stopped continuously. This problem was fixed in release 7.1.6.

5.2.23 Erroneous RDB$_NO_PRIV Errors Using OCI Services

In releases prior to 7.1.5.9.1, users would sometimes get erroneous RDB$_NO_PRIV messages connecting to an OCI service. This problem was fixed in Oracle SQL/Services and SQL*Net for Rdb releases 7.1.5.9 and 7.1.5.9.1, and Oracle Rdb release 7.0.7.2.

5.2.24 Monitor Crashes With "bind mon: unexpected monitor state"

Under rare timing conditions it was possible for the SQL/Services monitor to crash with a bugcheck stack trace similar to the following:

```
%DBS-F-BUGCHECK: in DBS01:[SQLSRV_BUILD.NOV_05_2003.DBS_SRC]CMD.C;1 at line
11003 bind mon: unexpected monitor state
```

This problem would occur when multiple SQLSRV_MANAGE clients were sending "system management" requests to the SQL/Services monitor. If one of those clients sent a request that required many buffers of data for the monitor to respond, and that client was slow in reading the messages sent by the monitor, causing all available buffers for that client to be consumed, the monitor would process messages from other clients until the slow client

had read its buffers. If the monitor had stalled on a slow client process, and a new client connection "CONNECT SERVER command" arrived while the monitor was stalled on the slow process, a bugcheck dump would occur and the monitor process would fail.

The bugcheck would occur because the routine that handled new connection requests assumed that there could not be a current client connection active when processing a new connection request. When this routine saw that condition it would force a bugcheck and monitor termination. However, this condition is possible and acceptable and thus there is no reason to bugcheck.

This bugcheck exception was removed in release 7.1.5.9.

The incidence of this problem can be reduced if only one SQLSRV_MANAGE process is run at one time.

5.2.25 OCI Universal Services Not Correctly Impersonating the Connect User

In Oracle SQL/Services release 7.1.5.8, OCI universal services with database authorization defined as CONNECT USER were not correctly impersonating the connect user. Therefore, Rdb external functions would be executed under the service owner, rather than the connect user account.

This problem was corrected in release 7.1.5.9.

5.2.26 Upgrade of Oracle SQLNET Libraries

Releases of Oracle SQL/Services prior to 7.1.5.8 included Oracle SQLNET release 2.1.5 libraries. Oracle SQL/Services release 7.1.5.8 has been upgraded to include Oracle Net release 9.2.0.4 libraries on OpenVMS Alpha. Any restrictions or problems experienced using Oracle SQL/Services that were due to Oracle SQLNET release 2.1.5 library problems, which have subsequently been fixed in Oracle Net release 9.2.0.4, have now been solved.

As a result of this upgrade, the restriction of a maximum of 30 concurrent connections for an OCI service has now been lifted for Oracle SQL/Services release 7.1.5.8 on OpenVMS Alpha.

5.2.27 Memory Leak of Monitor Process

The memory leaks of the monitor process with the following SQLSRV_MANAGE commands were fixed in release 7.1.5.8:

CONNECT SERVER

DISCONNECT SERVER

SHOW commands

EXTRACT commands

DROP commands

ALTER commands

5.2.28 Executing External Routines From Universal OCI Services

With Oracle SQL/Services releases prior to release 7.1.5.8, universal OCI services would sometimes require that the connect user have SYSPRV or GRPPRV in order to successfully execute an external routine.

This problem has been fixed in Oracle SQL/Services release 7.1.5.8.

5.2.29 Severity of Error Changed

Beginning with release 7.1.5.6, severity of the error SQLSRV-E-FLOBEXECUNAVAIL has been changed from -E- to -I- to reflect its correct status as an informational message.

5.2.30 Installation Procedure Overwrote Configuration File

In versions of SQL/Services prior to release 7.1.5.4, the installation procedure overwrote the configuration file during installation.

This problem has been fixed if you are upgrading from multiversion to multiversion, which is the only version that has been supported since SQL/Services release 7.1.5.

If you are upgrading from a release 7.1.* standard version to release 7.1.5.4 or later, the installation still overwrites the configuration file. To work around this problem: follow these steps prior to running the installation procedure:

■ Rename the configuraton file or move it to another location.

■ Run the SYS$MANAGER:SQLSRV$DEINSTALL_DELETE.COM command file (the routine that overwrites the configuration file).

■ If you are upgrading from release 7.1 or later, move the configuration file back to its original location or rename back to its original name and append '71' to the end of the filename.

■ Run VMSINSTAL to finish the upgrade to 7.1.5.6.

   Oracle Corporation recommends that you copy the configuration file (SYS$MANAGER:SQLSRV_CONFIG_FILE*nn*.DAT) to have as a backup before installing a new release of Oracle SQL/Services.

5.2.31 Database Service With Default_connect_username Could Bugcheck

In versions prior to 7.1.5.4, if you created a preattached database service and included a default_connect_username, the dispatch could bugcheck with an access violation when you attempted to connect.

5.2.32 Logicals Now Defined for ORA_NLS, ORA_NLS32, and ORA_NLS33

In versions of SQL/Services prior to release 7.1.5.2, users who wanted to define a language other than AMERICAN had to define the logical names ORA_NLS, ORA_NLS32, and ORA_NLS33 to point to message files and other NLS files.

SQLSRV_MON71.EXE now contains definitions for all the ORA_NLS*nn* logical names and users no longer need to define them.

5.3 New and Changed Features for Previous OCI Services for Oracle Rdb Releases

This section highlights new and changed features for previous OCI Services for Oracle Rdb releases.

5.3.1 Enhanced OCI Executor Logging

In OCI Services for Oracle Rdb release 7.3.0.1, there have been several additions to OCI executor logging, including new logging flags. For details, see Section 7.3.4 in the Oracle SQL/Services Server Configuration Guide.

5.3.2 Enhanced Index Statistics for OCI Describe Index

OCI Services for Oracle Rdb release 7.3.0.1 has been enhanced to provide more accurate index statistics in response to the OCI call to describe indexes. Also, more column and index statistics will be returned on Itanium.

5.3.3 Oracle Metadata Updated

Bugs 6836602 and 6860836

Further changes were made to the Oracle metadata created by the dictionary prepare and upgrade program, RDB$NATCONN_DICnn, in OCI Servicesfor Oracle Rdb release 7.3.0.1. Columns in some existing tables were changed, and some new tables and views were created to reflect the Oracle 10gR2 metadata.

5.3.4 Oracle 10gR2 Library Support

OCI Services for Oracle Rdb release 7.3 now emulates the Oracle RDBMS release 10gR2 libraries and identifies itself as an Oracle RDBMS release 10gR2 database to the client. This allows applications to use new features in Oracle RDBMS release 10gR2. OCI Services for Oracle Rdb supports OCI client releases as supported by Oracle RDBMS release 10gR2.

5.3.5 Performance Improvement on OpenVMS I64 Platform

On the OpenVMS I64 platform, OCI Services for Oracle Rdb release 7.3 now uses native Oracle RDBMS 10gR2 libraries. In 7.2 releases, OCI Services used a translated SQLSRV_ SQLNETSHR image. Performance has been significantly enhanced using the native image.

5.3.6 Oracle Metadata Updated

In release 7.3, the Oracle metadata created by the dictionary prepare and upgrade program, RDB$NATCONN_DICnn, has been updated to reflect changes to the tables and views in Oracle 10gR2. Some columns have been altered to a different datatype or a different varying character length. Some columns have been deleted and some new columns have been added. A few new tables or views have been added that were required by Oracle Explorer and/or Oracle Discoverer.

5.3.7 VMS Mixed Case Passwords Supported

Enhancement Request 5916102

In prior releases of Oracle SQL/Services and OCI Services for Oracle Rdb, using mixed case passwords would fail even when the OpenVMS /FLAGS=PwdMix flag was specified for the user in the system authorization file (UAF).

Support for this OpenVMS version 7.3-2 feature has now been included in Oracle SQL/Services and OCI Services for Oracle Rdb release 7.2.0.2.

Support for this feature has also been included in Oracle Rdb release 7.2.1.2. Oracle SQL/Services and OCI Services for Oracle Rdb requires that this or a subsequent release of Oracle Rdb be installed in order to take advantage of this feature. The feature is implemented in a version independent image for Oracle Rdb. Therefore, the feature can be used in Oracle SQL/Services and OCI Services for Oracle Rdb executing against a prior Oracle Rdb 7.0 or 7.1 release, as long as the required Oracle Rdb release has been installed on the system.

Refer to OpenVMS version 7.3-2 documentation for more information on the Authorize Utility PwdMix flag for user accounts.

5.3.8 New NLS Parameters

The following NLS parameters were added in release 7.2.0.1: NLS_COMP, NLS_
LENGTH_SEMANTICS, and NLS_NCHAR_CONV_EXCP. They will be initialized to
default values in V$NLS_PARAMETERS at connection time. The values are as follows:
NLS_COMP is set to BINARY, NLS_LENGTH_SEMANTICS to BYTE, and NLS_
NCHAR_CONV_EXCP to FALSE.

5.3.9 Greater Precision in Timestamp for Logging

Beginning with release 7.2.0.1, if you define the logical SQLNET_DEBUG_FLAGS to be
HT, the resulting timestamp will show two decimal places of microseconds. The timestamp
will be of the following format: YYYY-MM-DD HH:MM:SS.mm.

5.3.10 Data Dictionary Support for Oracle 10g Applications

In release 7.2.0.1, the RDB_NATCONNnn.COM database prepare and upgrade functions
were enhanced to add several new tables and views, to comply with Oracle 10g.

5.3.11 Table and View Changes to Comply with Oracle 10g

If a user does a "select * from v$version" statement, or an OCI Version call, the first row
returned has been changed to contain the Oracle compatible version information, to comply
with Oracle 10g. New default information was included in the views ALL_TABLES and
ALL_TAB_COLUMNS. A new view ALL_REFS is created with no rows, and a new table
SYSTEM_PRIVILEGE_MAP is created containing several privilege definitions that map to
functionality allowed by Oracle Rdb. This table is not used by OCI Services for Oracle Rdb
or by Oracle Rdb, and the entries do not imply any privileges granted or available.

5.3.12 Changes for Oracle JDBC Release 10.2 Thin Driver

Bug: 5064467

A Java application that uses the Oracle JDBC release 10.2 thin driver to access an Rdb
database through the OCI interface would get a "/ by zero" Java exception during the
following method call.

```
.prepareStatement( )
```

OCI Services for Oracle Rdb release 7.2.0.1 has been enhanced to support the modified OCI
calls used by the Oracle JDBC release 10.2 thin driver.

5.3.13 New Datatype: New Formats for Oracle Rowids

Some newer versions of Oracle clients use a new format for sending and receiving rowids and dbkeys. This new format, DTYRDD in Oracle datatype descriptions, is implemented as needed, depending on the version of the client. This feature was made available in releases 7.1.6.1 and 7.2.0.1.

5.3.14 Security Enhancements

Because of security inconsistencies and problems preparing databases with defined default collating sequences, there have been many changes to the Prepare and Upgrade functions in release 7.1.6.1 and 7.2.0.1. There are many new domains named ORA_VCn, and many tables and views are redefined to use these domains. Also, privilege checking will be done by the stored procedures ORA_CREATE_USER and ORA_DROP_USER, so the security requirements are the same whether you use RDB_NATCONNnn.COM or invoke the stored procedures directly. You can add or drop your own username in the database without any privileges, but you must have BYPASS, SECURITY, or SYSPRV privilege to add or drop another user.

5.3.15 Improved Logging

Many changes were made to OCI Services for Oracle Rdb logging in release 7.1.6.1, mostly to make the logging information more concise and the log files smaller. When the SQLNET_DEBUG_FLAGS logical is defined as HT, the timestamp for each item logged is at the beginning of the log information and no longer on a separate line. Logging of SQLDAs and GTADAs is also more concise.

5.3.16 OCI Services for Oracle Rdb Available on OpenVMS I64

OCI Services for Oracle Rdb release 7.2 is available for the HP OpenVMS Industry Standard 64 for Integrity Servers operating system.

5.3.17 More Efficient Dictionary Queries

This release of OCI Services for Oracle Rdb has changed the way many of the dictionary queries are done, both to Oracle Rdb tables and to the NATCONN tables. This may be especially apparent in faster connect/attach times.

5.3.18 Hidden Objects in OCI Services for Oracle Rdb

The OCI Services for Oracle Rdb data dictionary program, RDB$NATCONN_DICnn.EXE, makes use of a feature, first available in Oracle Rdb release 7.1.3, that defines all the

NATCONN objects created by the program as hidden objects. They will not appear in the output of a SHOW TABLES command; if you want to see them you must enter the command SHOW SYSTEM TABLES (or SHOW SYSTEM MODULES, etc.).

If you are running a version of Oracle Rdb before release 7.1.3, the behavior will be the same as it is currently; that is, tables, modules, etc., will appear as user objects in the database, rather than as system objects. If you run the upgrade option rather than the prepare option, you will get a mixture of hidden and not hidden objects, depending on what version you are upgrading from. In that case, you must enter a SHOW TABLES and a SHOW SYSTEM TABLES command to see all the NATCONN tables. Oracle recommends that you drop all NATCONN objects from your database, and use the prepare option. You can save usernames and passwords from your USER$ table in a new table, then prepare the database, and insert the usernames and passwords back into the new USER$ table.

5.3.19 New Tables in Oracle Data Dictionary

The following three tables and views are created by the OCI Services for Oracle Rdb data dictionary program: DBA_USERS, DBA_DB_LINKS, and DBA_SYS_PRIVS. These tables and views did not get created in versions of OCI Services for Oracle Rdb prior to release 7.1.6.

5.3.20 New Error Message for Unregistered Usernames

In release 7.1.5.3 and later, a new error message, ORA-1017, is returned at logon time if the username is not registered in the database. This message replaces the old message, ORA-1010. A message is put in the log file that says the username is not registered and that RDB_NATCOMM.COM should be run to add the username to the database. This message can be ignored if the application successfully connects.

5.3.21 Thin JDBC Access to Oracle Rdb Databases

Starting with SQL*Net for Rdb release 7.1.5, access to Oracle Rdb databases is supported through thin JDBC.

5.3.22 Support for Hot Standby

Beginning with release 7.1.5, SQL*Net for Rdb supports Hot Standby databases.

5.3.23 Compatibility With Oracle Forms

If you use Developer/2000 prior to release 2.0 or prior to Oracle Forms release 5.0, you must set the following properties in your Oracle Forms module for compatibility with OCI Services for Oracle Rdb:

- Set the Module property "Savepoint Mode" to FALSE

- Set the Data Block property "Locking Mode" to DELAYED

You can modify the properties using the Property Palette or use the Property Class RDB_PROPERTY_CLASS of the file RDB_PROP.FMB provided in the Oracle SQL/Services examples directory on your server.

Beginning with Developer/2000 release 2.0 or Oracle Forms Release 5.0, these properties will be handled automatically during run time by Developer/2000.

5.4 Software Errors Fixed in Previous OCI Services for Oracle Rdb Releases

This section highlights software errors fixed in previous OCI Services for Oracle Rdb releases.

5.4.1 RDB$NATCONNnn.COM Did Not Check if Database Had Been Upgraded

Bug 6335504

If a database had been prepared by a prior release of RDB_NATCONN.COM, and an attempt was made to add a user using RDB_NATCONN.COM from a subsequent release, the user was not added and no error was displayed. The problem occurred because the database had not been upgraded with the correct data dictionary level expected by RDB_NATCONN.COM.

This problem has been corrected in OCI Services for Oracle Rdb release 7.3.0.1. The following error will now be displayed when this condition occurs.

```
% REASON, - version mismatch; database not prepared for this release
```

5.4.2 OCI Bugchecks With Oracle 10GR2 Clients Doing ClientID Propagation

Bug 6864692

With OCI Services release 7.3, applications that do ClientID propagation would sometimes get an OCI bugcheck with an access violation reported at the following location.

```
Saved PC = 00081DB0 : RDB$NATCONN73\gtocli
   Module GTOVER + 00000060; line 395581
```

A full executor log contained the following information prior to the bugcheck.

```
GTWDRE Type: 135 argc; 19, gtwpis: 7ad05970, crs: 0
gtwdre.gtwdre: Function.....: ClientID Propagation
gtover.gtocli: entry
%OCI-F-BUGCHECK: bugcheck dump will be written to ...
```

This problem has been corrected in OCI Services for Oracle Rdb release 7.3.0.1.

5.4.3 Check for Error on Grant All in Metadata Program

Bug 6743840

In prior releases, no check was made for errors on the "GRANT ALL ... to SQLNET4RDB" statement in the dictionary prepare and upgrade program, RDB$NATCONN_DICnn. In cases where the statement failed, users would not be notified of the failure and would not know until a service tried to access the database and got a privilege error.

This problem has been corrected in OCI Services for Oracle Rdb release 7.3.0.1.

5.4.4 ORA-3106 Error Using PL/SQL Package Through a Dblink

Bug 5941427

Some information required by the client in the completion message for the execution of a procedure was missing. This information has been added to the message.

This problem has been corrected in OCI Services for Oracle Rdb release 7.3.0.1.

5.4.5 SQL_SYNTAX_ERR or SQL_CORNAMREQ Errors

Bug 6502017

In certain cases, SQL select statements that needed to have correlation names added because of syntax differences between Rdb SQL and Oracle SQL were not being correctly fixed up and the correlation names were not added correctly. An instance of this error was seen in a query from SQL Developer.

This problem has been fixed for release 7.3.

5.4.6 Error Accessing PRODUCT_USER_PROFILE

Bug 6641823

In very rare cases, adding a user to the USER$ table could cause the following error to be displayed in the executor log:

```
Error accessing PRODUCT_USER_PROFILE
Warning:  Product user profile information not loaded!
You may need to run PUPBLD.SQL as SYSTEM
```

This would cause a dblink connection to fail, but a non-dblink connection would continue successfully.

This problem has been fixed for release 7.3.

5.4.7 Error in ORASTATE Returning State

A case was found where ORASTATE could not determine the correct state to return. This was caused by the fact that the error number was outside the range that ORASTATE expected.

This problem has been corrected for release 7.3.

5.4.8 Max Cursors Exceeded

Bug 5971390

In the beta releases of 7.3, Forms applications could see this error:

```
ORA-01000: MAXIMUM OPEN CURSORS EXCEEDED
```

This could happen even if the Forms application was not being used.

This problem has been fixed for release 7.3.

5.4.9 Data Not Retrieved in Reports 10gR2

Bug 5970246

When using Reports 10gR2, a report appeared to run successfully, but no data was returned from OCI Services. This was caused by a change in the way null indicators and column error codes are returned from the database.

This problem has been fixed for releases 7.2.0.2 and 7.3.

5.4.10 Improved OCI Services Executor Logging Disk I/O Performance

Bug 5996179, 1744912

With prior releases of OCI Services, when executor logging was enabled, queries were running significantly slower, due to excessive disk I/O.

In OCI Services release 7.2.0.2, the flushing of executor log buffers has been enhanced, resulting in major disk I/O performance improvements.

5.4.11 FORMS Fail With Rowid Truncation Error

Bug 5726783

The datatype for rowids was inappropriately reported as an internal datatype, which caused it to be retrieved and displayed in the wrong format:

```
SQL> select rowid from odual;
ROWID
--------------------
?AAAAAAAAADQRAIBvAAAA
```

With the correction, the rowid will be retrieved in the correct format:

```
SQL> select rowid from odual;
ROWID
------------------
80000ECF.005E.0000
```

This problem has been corrected in Oracle SQL/Services release 7.2.0.2.

5.4.12 SELECT INTO Getting Invalid ORA-1403 Errors

Bug 6134494

Starting with releases 7.1.6.2 and 7.2.0.1.1, SQL statements of the form

```
SELECT column_list INTO variable_list ...
```

were executed rather than opening a cursor and fetching the single row. If the select statement was prepared and then executed, the first execution would retrieve the correct data. A second execution would not retrieve any data, but would return the 'no data found' message.

This problem has been corrected in Oracle SQL/Services release 7.2.0.2.

5.4.13 Triggers Added to USER$

Bug 5574125

In release 7.2.0.2, the security checking for the USER$ table is now done by triggers on the table itself. The triggers provide the same security level previously implemented in RDB$NATCONN_CUPP. That is, a user without SYSPRIV, BYPASS, or SECURITY system privileges can only add, update, or delete himself; users with one or more of those privileges can add, update, or delete other users as well as themselves.

5.4.14 Rows in ORA_COMM_TRANS Not Deleted

Bug 5916220

The ORA_COMM_TRANS table is used when the client is a dblink or when an application requires 2-phase commit and the XA Gateway is not available. Rows in that table were not getting deleted when the transaction ended, but were remaining in the table eventually causing disk space failures. This problem has been corrected for Release 7.2.0.2.

Oracle recommends that the XA Gateway be installed and used whenever 2-phase commit is desired.

5.4.15 Create User RDB_SCHEMA Fails

Bug 5968777

When upgrading a database from any version to release 7.2.0.1, users would see the following error:

```
Unable to execute CREATE USER RDB_SCHEMA IDENTIFIED EXTERNALLY.
```

The upgrade would complete successfully, and report the successful completion, but the error caused some users to be apprehensive about the actual success.

Beginning with release 7.2.0.2, the RDB_SCHEMA "user" name is added by OCI Services, and the upgrade no longer tries to execute a CREATE USER for that user name, so the error no longer happens.

5.4.16 Form With Scroll Region Fails

Bug 5948378

When using Forms5, users were seeing errors ORA-3121 and FRM-40735 when using a form with a scroll region. This was caused by OCI Services not recognizing when a new bind variable was being sent.

This problem has been fixed for release 7.2.0.2.

5.4.17 Error Message NOLOGNAM at Start Transaction

Bug 5231659

With the latest releases of OCI Services, if DECDtm is not installed, users see the error message, "%SYSTEM-F-NOLOGNAM, no logical name match". This happens because OCI Services is now built as a distributed transaction application, and a DECDtm distributed transaction is started by default.

In release 7.2.0.2, the OCI Services log now has an explanation for this error and a recommendation for how to fix it. Documentation will specify that the logical SYS$DECDTM_NODE_NAME must be defined; the value of the logical is ignored.

5.4.18 Problem Describing Column With Name Longer Than 30 Characters

Bug: 5632639

Describing a table in SQL*Plus with a column whose name was longer than 30 characters would display an ORA-03113 error and the following error was logged in the OCI executor log file.

```
Assertion failed: "find_mblock(current_mgroup,mblock) == current_mgroup
```

This problem has been corrected in OCI Services for Oracle Rdb release 7.2.0.1. The following error is now correctly displayed in SQL*Plus.

```
ORA-00972: identifier is too long
```

5.4.19 Modified Transaction Control to Better Fit XA Model

With the addition of support for XA 2pc transactions in release 7.1.6, OCI Services for Oracle Rdb and SQL/Services sometimes have a need to mix 2pc and non-2pc transactions. In some cases, these transactions could potentially collide, leading to problems. Transaction control has now been modified to avoid such problems.

One example is when a severe error occurs causing SQL/Services to shut down an OCI executor. In some cases, a database recovery could still be in progress when the SQL/Services shut down occurs. SQL/Services would attempt to rollback and disconnect from the database, causing a bugcheck dump because the database was still locked by the recovery process.

OCI Services for Oracle Rdb and SQL/Services have been modified in release 7.2.0.1 to correct these problems.

5.4.20 ADD_USER Failed When Database Default Character Set Was ISOLATINGREEK

Bug: 5333023

The ADD_USER function, invoked via SYS$LIBRARY:RDB_NATCONNnn.COM, failed when a database had a default character set of ISOLATINGREEK or any character set other than the default DEC_MCS.

The error displayed was:

```
Reason, - no privilege to perform operation on database <db_name>
```

But, the actual problem was:

```
SQL-E-INCCSASS, Incompatible character set assignment between ...
```

This problem has been corrected in release 7.2.0.1 .

5.4.21 SELECT INTO Commands Are Stripped of INTO When Passed to Rdb

Bug: 5253380

The INTO clause of a SELECT ... INTO SQL statement was being removed by OCI Services for Oracle Rdb before passing the statement to Rdb. This caused the statement to be processed by opening a cursor, fetching the row, and closing the cursor, rather than just executing the SELECT INTO statement. This caused execution of the statement to be unacceptably slow.

This problem has been corrected in release 7.2.0.1.

5.4.22 ADD_USER Command Does Not Work for Non-Privileged Users

Bug: 5264258

In OCI Services for Oracle Rdb release 7.2, it was documented that users without privileges can add or update their own user name and password information in the USER$ table of a database prepared for OCI Services for Oracle Rdb. The RDB_NATCONNnn.COM utility appeared to have completed with no error, but the user name or password was not added or updated.

This problem has been fixed in release 7.2.0.1. Non-privileged users can now add, remove, and update their own user name and password information using the utility in SYS$LIBRARY:RDB_NATCONNnn. Because these fixes have a new version of the

dictionary stored procedures, you must perform an UPGRADE operation on the OCI Services for Oracle Rdb database.

For customers who are calling these stored procedures directly from a SQL script or an application with embedded SQL, the last argument (,:ret_val) is no longer required and should be removed. Beginning with release 7.2.0.1, the call status is returned via the SQLCA.SQLCODE and SQLSTATE variables. All programs should test the return value for errors. A (-1042) SQLCA.SQLCODE and an "O1031" SQLSTATE string indicate that a non-privileged user is trying to make changes for another user. The following example is an excerpt from a .SC application:

```
char SQLSTATE(6);

/* Call the stored procedure ORA_CREATE_USER to add/change user/pwd.*/
EXEC SQL CALL ORA_CREATE_USER(:name, :pass);

/* Check the return status from the ora_user_password call. */
if ((SQLCA.SQLCODE == -1042) && (strcmp(SQLSTATE, "O1031") == 0))
    status = CUPP$_E_NOPRIV;  /* failure to change different user w/o privs.
*/
```

5.4.23 Queries With TO_NUMBER() Function Calls Are Slow

Bug: 5027052

Some complex queries that contain calls to Oracle functions TO_NUMBER, TO_CHAR, TO_DATE, DATE_ROUND, or DATE_TRUNC perform much slower on an Oracle Rdb database prepared for OCI Services for Oracle Rdb than on a native Oracle database or a similar query without the function call. This is more apparent on a query that generates hundreds of thousands of the function calls.

This problem has been fixed in release 7.2.0.1 by new optimizing logic. Queries that used to take 90 seconds to complete now take 15 seconds. If you are running on OpenVMS I64, the improvement is even more dramatic. This improvement is especially true for queries that resulted in a large number of calls to the functions from an OCI client such as SQL*Plus.

5.4.24 Random Error Message When SQLNET_DEBUG_FLAGS is HT

When SQLNET_DEBUG_FLAGS was set to HT, random error messages would print in the log during the connect, although the connect completed successfully. The error messages were of the form:

```
ERROR: ORA-26426: Message 26426 not found; product=NATCONN; facility=ORA.
```

This problem has been fixed in release 7.2.0.1.

5.4.25 Query Hangs With a Variable Comparison Using Oracle 10G SQL*Plus

When you used Oracle 10G SQL*Plus, queries using a variable rather than a literal in a comparison would hang. The following is an example of the type of query that would fail:

```
declare x char(3); begin x := 'abc';
select count(*) from table1@rdb1 where column1 = x;
```

This problem has been fixed in release 7.2.0.1.

5.4.26 Failure Upgrading Database After Upgrading to Release 7.1.6 Update03

If a database had been upgraded to release 7.1.6 Update03, attempting to upgrade it to release 7.1.6.1 would fail with the following error:

```
%RDB-E-NO-DUP, index field value already exists; duplicates not allowed for
    ORA_OBJECTS_NAME.
```

You would have to issue a DROP command on the database and then prepare it in order to upgrade to release 7.1.6.1. This problem has been fixed in release 7.2.0.1.

5.4.27 Reference to Obsolete Procedure in Error Message in Log

In releases prior to 7.2.0.1, when a user who was not in the USER$ table in a database tried to connect to the database, an incorrect error message was generated. The reference to the obsolete procedure ORA_SET_PASSWORD has now been replaced by the current procedure ORA_CREATE_USER.

5.4.28 Returning ROWID in an Insert Statement Caused Error ORA-00900

If users included RETURNING ROWID or RETURNING DBKEY in an INSERT statement, the statement would fail with the error:

```
ORA-00900: invalid SQL statement
```

and the executor log would show the error:

```
%SQL-F-SYNTAX-ERR, Syntax error
```

This happened because OCI Services for Oracle Rdb added the clause RETURNING DBKEY INTO :ORA_DBKEY to every INSERT statement. The resulting statements would have two RETURNING DBKEY clauses, and would cause SQL syntax errors. Starting with release 7.2.0.1, OCI Services for Oracle Rdb scans the statement for a RETURNING DBKEY or RETURNING ROWID before it adds the clause to the statement. There still

may be some cases, especially if the RETURNING clause includes several elements, where OCI Services for Oracle Rdb will not recognize that a RETURNING DBKEY clause is already in the statement and will try to add it, causing an error. The executor log will show the generated SQL statement, so the user can correct it. It is recommended that the word DBKEY or ROWID be the first in the list of elements to be returned in a RETURNING clause of an INSERT statement. This will help OCI Services for Oracle Rdb recognize that it is already there.

5.4.29 Declare Transaction in SQL Init File Being Overridden

In releases of OCI Services for Oracle Rdb prior to 7.2.0.1, if a DECLARE TRANSACTION statement was executed in the SQL initialization file of a service, it would be overridden by a DECLARE TRANSACTION statement executed later by OCI Services for Oracle Rdb. Toward the end of the connection setup, OCI Services for Oracle Rdb would execute a DECLARE TRANSACTION statement to set the default transaction characteristics to be close to Oracle default transaction characteristics. This would supersede any DECLARE TRANSACTION statement in the SQL initialization file. Starting with release 7.2.0.1, OCI Services for Oracle Rdb recognizes that a DECLARE TRANSACTION statement has been executed and will not execute another one.

5.4.30 Problem With Master/Detail Records

Bug: 5531638

This problem could appear in several different ways. There were a few different errors or, sometimes, the detail records were displayed but were the wrong detail records for the master. Sometimes Forms would display the error:

```
Unable to perform query
```

and sometimes the following error would be seen in the executor log:

```
SQL-F-ILLDATLEN, An invalid SQLLEN(0) was found for a date
```

This problem has been fixed in release 7.2.0.1.

5.4.31 Prefetch in a Pro*C Program Using WHERE CURRENT OF CURSOR

Bug: 5547621

In a prior release, a problem with prefetch (bug 4651271) was fixed to work with Oracle 9.2.0.4. There was a bug in Oracle 9.2.0.4 with prefetching (bug 3512385). When the Oracle bug was fixed, in release 9.2.0.5, the OCI Services fix no longer worked. For this release, there is a fix that will work with Oracle 9.2.0.5 and later. If you are running Oracle 9.2.0.4 as

a client, you must define the new logical SQLNET_9204_PREFETCH, which will cause OCI Services to use the earlier fix.

This problem has been fixed in release 7.2.0.1.

5.4.32 SQL Statement With WHERE CURRENT OF CURSOR Clause Failure

Bug: 4651371

Because of a change to the format of the dbkey/rowid datatype, a SQL statement that included the WHERE CURRENT OF CURSOR clause would fail in one of two ways:

- The update operation would appear to succeed.There would be no error message, but the update would not be applied. This is because the UPDATE ... WHERE ROWID = :rowid command would not find a match for the given rowid so no update would be done.

- The following SQL run-time error would be returned:

    ```
    SQL-02118 Invalid row for a WHERE CURRENT OF operation
    ```

    Cause: An attempt was made to reference a nonexistent row using the CURRENT OF clause in an UPDATE or DELETE statement. This happens when no FETCH has executed or when FETCH returns a "no data found" error that the program fails to trap.

This problem was corrected in release 7.1.6.1.

5.4.33 Problem Preparing a Database With Default Collating Sequence

Bug: 4889032

If a database was created with a default collating sequence, and you used the SYS$LIBRARY:RDB_NATCONNnn.COM PREPARE command to prepare it for use with OCI Services for Oracle Rdb, the process would fail with the following errors:

```
Rdb error: %RDB-E-NO_META_UPDATE, metadata update failed
-RDB-E-CONVERT_ERROR, invalid or unsupported data conversion
-RDMS-F-UNLIKECOLL, fields of unlike collating sequence may not be compared
```

This problem was corrected in release 7.1.6.1.

5.4.34 OCI Services Executor Process Could Go Into a CPU Bound Loop

Bug: 4889032

Periodically, OCI Services for Oracle Rdb executor processes would go into a CPU bound loop, after you upgraded from SQL/Services release 7.1.5.9.1 to 7.1.6.

This problem was corrected in release 7.1.6.1.

5.4.35 SQLDA Logged Excessively

Starting with OCI Services for Oracle Rdb release 7.1.6, the SQLDA was logged multiple times unintentionally.

This problem was corrected in release 7.1.6.1. The SQLDA will only be logged once.

5.4.36 Using a Single Quote in NLS_NUMERIC_CHARACTERS Causes an Error

Bug: 4180259

When you are connected to an Oracle Rdb database from SQL*Plus using OCI Services for Oracle Rdb, the following command results in a "SQL-F-UNTSTR, Unterminated string found" error.

```
ALTER SESSION SET NLS_NUMERIC_CHARACTERS = ",'";
```

This problem also occurs when you use any numeric character string literals that contain any single quote characters.

This problem was corrected in release 7.1.6.1. All valid nls_numeric_characters strings that work with SQL*Plus also work when you use OCI Services for Oracle Rdb.

5.4.37 RDB_NATCONNnn Does Not Exit as Expected

Bug: 4465288

In OCI Services for Oracle Rdb release 7.1.6, the command procedure RDB_ NATCONNnn.COM did not exit at the completion of the operation, if you supplied all of the parameters.

This problem was corrected in release 7.1.6.1.

5.4.38 The MODIFY_USER Command Does Not Work

In release 7.1.6, if you modified a user password using the MODIFY_USER command in the RDB_NATCONNnn.COM command file, the process failed with an "Old password is incorrect ..." or "%DCL-W-MAXPARM, too many parameters..." error.

This problem was corrected in release 7.1.6.1.

5.4.39 RDB_NATCONNnn Always Updates OpenVMS Password

Bugs: 4864338, 4870313

In release 7.1.6, you could not add a user to an Oracle Rdb database prepared for OCI Services for Oracle Rdb without modifying the OpenVMS password of the user. The documented format, using the ADD_USER feature with a blank password, did not work.

This problem was corrected in release 7.1.6.1. If you do not specify a password, the ADD_ USER feature now adds a new user into the database with a random password, and the OpenVMS password is not updated.

5.4.40 RDB_NATCONNnn Upgrade Fails With %COSI-E-RNF Error

Bugs: 5054528, 5016115

Upgrading an Oracle Rdb release 7.1 database (that had been prepared with SQL/Services release 7.1.5.9) to release 7.1.6 using the release 7.1.6 RDB_NATCONNnn command procedure would sometimes fail with a "Rdb error: %COSI-E-RNF, record not found" error. This failure could prevent the Oracle Rdb database from being converted to release 7.1.6. As a result, it was not usable on a system that was upgraded from SQL/Services release 7.1.5.9 to release 7.1.6. In addition, if you tried to perform the ADD_USER command, you would get an "%RDB-E_READONLY_TRANS, attempt to update during a read-only transaction" error.

This problem was corrected in release 7.1.6.1.

5.4.41 Cursor Name Cxxx Has Already Been Declared

Bug: 5009963

When a number of cursors were allocated and some of them were freed, you could get the error "Cursor Name Cxxx already declared" when you opened a new cursor. There were also errors when you tried to free some of the cursors that had been allocated.

This problem was corrected in release 7.1.6.1.

5.4.42 RDB_NATCONNnn Fails With COSI-E-RNF

Bug: 4759991

When you upgraded a database that had been prepared but had no users added to it, the upgrade would fail with a COSI-E-RNF error.

This problem was corrected in release 7.1.6.1.

5.4.43 Trimming Cursors Caused SYSTEM-ACCVIO

Bug: 4584207

If you used many cursors and tried to free some of the allocated cursors, you could get an access violation.

This problem was corrected in release 7.1.6.1.

5.4.44 ORA-02052 Error Updating Rdb Table With Trigger in Distributed Transaction

Bug: 4765574

If you used a distributed transaction, updates on Oracle Rdb tables that had triggers defined could fail with a transaction error. This error was caused because the trigger was not evaluated before the transaction was committed. With 2-pc support, constraints are now evaluated before issuing the commit.

This problem was corrected in release 7.1.6.1.

5.4.45 Inserting Blobs Larger Than 100,000 Bytes Fails

Bug: 4768399

The default maximum size for segmented strings is 100,000 bytes. If you are creating blobs larger than 100,000 bytes, you must define the logical SQLNET_MAXLONGRAW to be the size of the largest blob you are creating. The error reporting for this problem was enhanced to include the fix for the problem.

This problem was corrected in release 7.1.6.1.

5.4.46 Bugcheck at Attach

Bug: 5048788

Some newer versions of Oracle clients send a function of type 135 (Client ID Propagation), which OCI Services for Oracle Rdb did not handle correctly. This could cause a bugcheck and an access violation at attach.

This problem was corrected in release 7.1.6.1.

5.4.47 RDB_NATCONNnn Does Not Work for DB Owner Without SYSPRV

Bug: 4864564, 4870232

If you had SELECT access to an RDB database prepared for OCI Services for Oracle Rdb, but did not have SYSPRV privilege, you could not perform an ADD_USER function to add yourself to the database. The same problem occurred with the REMOVE_USER function.

This problem was corrected in release 7.1.6.1. You will still need BYPASS, SYSPRV, or SECURITY privilege to perform these operations for users other than yourself.

5.4.48 SQL-F-FIELD_EXISTS Error When Preparing After Dropping

Bug: 5111196

This problem only happened when using update 3 of release 7.1.6. Many new domains were created when preparing a database for OCI Services for Oracle Rdb but were not dropped when doing a drop.

This problem was corrected in release 7.1.6.1.

5.4.49 ORA-01456 Connecting to OCI Services if Table DUAL Modified to Real Table

Bug:5074191

Because a row is inserted into table DUAL at connect time within a read only transaction, if table DUAL has been recreated as a real table rather than a temporary table, the insert fails with the error ORA-01456. With release 7.3.0.2, a row will be inserted into DUAL only if there are no rows in DUAL already, so if DUAL is a real table and there are no rows in it, this error will still occur. But if DUAL is a real table with at least one row in it, the connection will succeed.

This problem was corrected in release 7.1.6.1.

5.4.50 OCI Service Hangs

Bug: 4898806

Users doing a SELECT ... FOR UPDATE OF operation could see a service hang using up to 100% of CPU. This was caused by a memory overrun that caused corruption in the chain of memory blocks, and there would be an endless loop trying to free memory.

This was fixed in release 7.1.6.1.

5.4.51 Invalid ROWID Messages

There were two cases where the ORA-01410 invalid ROWID error message occurred. The error occurred if you were updating data from a row selected in a form; when you clicked on the update button, the error message appeared. The error was also seen if you were running a procedure using Procedure Builder. In both cases, the declare cursor statement contained the clause "for update of" and the update statement contained the clause "where current of <cursor>". This problem has been fixed in release 7.1.6.

5.4.52 Unable to Connect to Multiple Databases Using a Universal Service

Various errors were displayed if you tried to connect to multiple databases in a universal service. Sometimes the Rdb error RDB-F-REQ_WRONG_DB was returned from the connect statement; sometimes it appeared that SQL*Plus had connected, but references to the second database failed. This problem has been fixed in release 7.1.6.

5.4.53 Error ORA-03106 Returned Instead of Expected ORA-01722 Error

When a character value was entered into a NUMBER field, error ORA-03106 was displayed instead of the correct error, ORA-01722. This has been corrected in release 7.1.6.

5.4.54 Additional Error Messages in Oracle Forms

Additional error messages made Oracle Rdb errors too long to fit in standard error windows in Oracle Forms. This problem has been fixed for the ORA-0001 (index field value already exists) and ORA-02290 (check constraint violated) errors in release 7.1.6.

5.4.55 TIMESTAMP Data Type Caused Error

Use of the TIMESTAMP data type resulted in an unimplemented or unreasonable conversion requested error. This has been corrected in release 7.1.6.

5.4.56 Error Using DESCRIBE Command

The DESCRIBE command failed when it was used on a table that was associated with a database link. This has been corrected in release 7.1.6.

5.4.57 Error Storing Null Value

Storing a null value in a column with the LIST OF BYTE VARYING data type caused a protocol violation. This has been corrected in release 7.1.6.

5.4.58 DOUBLE PRECISION Column Converted Incorrectly

A DOUBLE PRECISION column in an Rdb table was converted to NUMBER(53) instead of FLOAT(53) when it was accessed through OCI Services for Oracle Rdb. This has been corrected in release 7.1.6.

5.4.59 JDBC Errors

The following JDBC errors have been fixed in release 7.1.6:

- Protocol violation - An error occurred when a null value stored in a column with the LIST OF BYTE VARYING datatype was retrieved via the ResultSet.getBinaryStream method.

- Invalid datatype in OCI call - An error occurred when an attempt was made to store a value into a timestamp column via the PreparedStatement.setTimestamp method or when an attempt was made to store a null into a timestamp column via the PreparedStatement.setNull method.

5.4.60 Incorrect Oracle Errors Returned to OCI Clients

In releases prior to 7.1.5.9.1, if users connecting to an OCI universal service got an error during logon, instead of an Oracle error code Oracle SQL*Net for Rdb returned an Rdb error code to the OCI client.

This led to the Oracle client displaying the Oracle error text corresponding to the Rdb error code, which bore no relation to the actual error condition. The errors most often displayed were the following.

```
ORA-01028: internal two task error
ORA-00001: unique constraint violated
```

This problem has been fixed in Oracle SQL/Services / SQL*Net for Rdb release 7.1.5.9.1. The OCI client now displays the correct Oracle error.

5.4.61 Rdb Errors Unintentionally Suppressed

In releases prior to 7.1.5.9.1, if users connecting to an OCI database service got an error during logon, a "Database not setup..." message was added to the error stack, causing the error reported by Rdb to be pushed off the error stack and not be displayed. The following is an example of the resulting errors reported to the user.

```
ERROR: ORA-01031: insufficient privileges
Database not setup correctly for Oracle SQL*Net for Rdb.
```

```
For details, look in Oracle SQL/Services executor log file: ...
```

This problem has been fixed in Oracle SQL/Services / SQL*Net for Rdb release 7.1.5.9.1. The OCI client will now display the Rdb error.

5.4.62 Displayed Release Type Corrected

With releases prior to 7.1.5.8, Oracle SQL*Net for Rdb always displayed "Development" as the release type for Oracle Rdb OCI Server, regardless of the type of kit installed. This could be seen in the SQL*Plus welcome banner or by invoking the "SELECT * FROM V$VERSION" command.

This problem has been fixed in Oracle SQL*Net for Rdb . "Production" will now be displayed for production releases.

5.4.63 Detection of Repeated Intrusion Attempts

Code was added to SQL*Net for Rdb to detect repeated intrusion attempts in release 7.1.5.8. This code is activated by a user whose username and/or password are not in the USER$ table of the Rdb database. Such a user may be locked out of the system, even if he has a valid OpenVMS account, if he exceeds the parameters set at the site for intrusion detection and denial.

5.4.64 ADD_USER Failure

In releases prior to 7.1.5.8, if an ADD_USER function was performed after a DROP_USER function was performed to delete a user, the ADD_USER function would fail.

5.4.65 Prestarted Transactions Left Open After a Commit Is Issued

Performing a two-phase commit transaction with an RDBMS database and an Rdb database always leaves a pre-started transaction open on the Rdb database after a commit is issued. This potentially stalls an online RMU/BACKUP command unless the qualifier is specified. This has been fixed by a change to the ORA_TRANS module which will be executed by running the script RDB_NATCONN_UPGRADE[71].SQL. The module ORA_TRANS will be replaced with a fixed version.

This problem was corrected in release 7.1.5.8.

5.4.66 Using Dblink to Service Where NLS_LANG is Defined as Other Than Default

A change was made in release 7.1.5.8 to fix the problem of using a dblink to a service where NLS_LANG is defined as other than the default.

Example:

```
% sqlplus scott/tiger

SQL*Plus: Release 8.1.7.0.0 - Production on Thu Apr 10 15:32:11 2003
@ (c) Copyright 2000 Oracle Corporation.  All rights reserved.

Connected to:
Oracle8i Enterprise Edition Release 8.1.7.2.0 - Production
With the Partitioning option
JServer Release 8.1.7.2.0 - Production
SQL> select * from v$version@rdb71;
select * from v$version@rdb71
*
ERROR at line 1:
ORA-02068: following severe error from RDB71
ORA-03113: end-of-file on communication channel
Excerpt from the log file:
Client data for fetch item 4
Client data: column_name <NAME>
Client data: type 1, length 17, nul/ind 0, precision 0, scale 0 Client text
<SPECIAL FUNCTIONS> Rows fetched(1) are: 2
Function: CLOSE
gta: gtaclse: release3(1)
Function: OK2RPC
statement......(1): begin call v$nls_set_func(); end


Prescribe.
gta: gtaclse: release3(1)
%SYSTEM-F-ACCVIO, access violation, reason mask=00, virtual address=000000000
0000464, PC=00000000003EF0C0, PS=0000001B

  Improperly handled condition, image exit forced.
    Signal arguments:  Number = 0000000000000005
                       Name   = 000000000000000C
                                0000000000000000
                                0000000000000464
                                00000000003EF0C0
                                000000000000001B
```

5.4.67 Schemas Defined for Users in the USER$ Table

As of release 7.1.5.8, all users in the USER$ table, as well as all users who are creators of tables, have schemas defined for them.

5.4.68 Using a Bind Variable Twice in a SQL Statement

There was a problem when using a bind variable twice in a SQL statement; that problem has been fixed in release 7.1.5.8.

Following is an example of a query that would cause the error:

```
SQL> select sh.employee_id, sh.salary_amount
  2  from salary_history sh
  3  where sh.employee_id = :p_employee_id
  4  and sh.salary_amount = (select max (sh2.salary_amount) from salary_history
sh2 where sh2.employee_id = :p_employee_id); select sh.employee_id, sh.salary_
amount
*
ERROR at line 1:
ORA-03115: unsupported network datatype or representation
```

5.4.69 Testing for a Read-only Database

A change was made in the login code in release 7.1.5.8 to test for a read-only database in a different way that does not cause possible privilege errors. These errors would be seen in a log file, although they didn't cause the connection to fail. This privilege error at check_read_ only will no longer happen.

5.4.70 FILLM Quota Problem

When using a language other than the default (American), fillm quota would be used up by disconnecting and connecting to a service.

This problem was corrected in release 7.1.5.8.

5.4.71 RDB_NATCONNnn Problem Fixed

There was a problem when the command file RDB_NATCONNnn.COM was used in an environment where a sql initialization file (sqlini) was defined and contained an attach statement. Sqlini is now defined to be nl: in the command file, as of release 7.1.5.8.

Example:

```
SQLUSER71> define sql$database mf_personnel
```

```
SQLUSER71> define sqlini "dkd100:[sqluser71]sql.ini"
(NOTE: sqlini file contains attach 'filename sql$database';)
SQLUSER71> @sys$library:rdb_natconn
  Operation (prepare/upgrade/drop/adduser): adduser
  Database: sql$database
  Username: sqluser70
@    Password:
@    Password Verification:
  Username:
  This alias has already been declared.
  %SQL-F-DEFDBDEC, A database has already been declared with the default

alias
  %RDB-E-EXTFUN_FAIL, external routine failed to compile or execute successfully
@    -RDMS-E-RTN_ERROR, routine "ORA_ENCRYPT_PASSWORD" generated an
error
during
       execution
  -SYSTEM-F-ACCVIO, access violation, reason mask=00, virtual
address=000000000000
  0010, PC=00000000019B3DB8, PS=0000001B
```

5.4.72 Problem with Universal Service Fixed

When using a universal service, the username would be set to the service owner rather than the connecting user.

This was fixed for release 7.1.5.8.

5.4.73 Memory Leak Related to Dblink Fixed

There was a memory leak when doing many inserts using a dblink. This was fixed for release 7.1.5.8.

5.4.74 Connection Problem Fixed

If an error occurred when a user connected to an executor, the next user who tried to connect would get the following error:

```
Assertion failed: "find_mblock(current_mgroup,mblock) == current_mgroup"
in file NATCONN$SRC_V071573:[CODE]GTME.C;1 at line 468.
```

This problem was fixed in release 7.1.5.8.

5.4.75 Read Only Transactions Started During Connection

There was a problem in which SQL*Net for Rdb would start a READ ONLY transaction during connection. this caused problems for databases running with snapshots deferred. This problem has been fixed so that SQL*Net for Rdb now starts a transaction in an appropriate mode, as determined by Rdb.

This problem was fixed in release 7.1.5.8.

5.4.76 SQL*Plus Invocation Failed With Some NLS_LANG Definitions

Some versions of SQL*Plus, when invoked with NLS_LANG defined to be something other than the default (AMERICAN_AMERICA), would cause later connection attempts by other client tools to fail. For example, the following error would be returned to a JAVA program:

```
 Exception thrown java.sql.SQLException: ORA-00900: invalid SQL statement ,8
E85wwÈ_F E  zE85
```

The log might also show a result similar to the following:

```
>>>>> NEW SESSION USER: scott PROGRAM: JDBC AT tue oct 07 17:14:37
<<<<<
>>>>> GTA compiled at Apr 25 2003 10:52:43
gtaschema:: schema: <NULL>, object: ORA_OBJECTS, action: REF_TABLE
statement......: 0"D?
```

This problem was fixed in release 7.1.5.8.

5.4.77 Insufficient Memory or Quota Problem

In V7.1.5.6. of SQL*Net for Rdb, there was a problem during cleanup, when a user disconnected, that prevented resources from being properly released. This problem could manifest itself as insufficient memory, or insufficient BYTLM or FILLM quotas.

This problem was corrected in release 7.1.5.7.

5.4.78 Problem Storing and Retrieving Long Raw Data

Using the thin JDBC driver with SQL*Net for Rdb prior to release 7.1.5.7 , there was a problem in both storing and retrieving long raw (image) data. These problems have been fixed in release 7.1.5.7,with the following restrictions:

■   Image data must be defined as BinaryStream data, and should be stored using setBinaryStream and retrieved using getBinaryStream.

- For the thin JDBC driver, use of the 'blob' datatype is not yet supported. The logical SQLNET_BLOB must not be defined or must be defined as "N".

- The default maximum size of LONG RAW data is 100,000 bytes. If your long raw data is longer or significantly shorter than that, you should define the new logical SQLNET_ MAXLONGRAW to the value of your longest long raw data. Long raw data must be stored in a single insert statement and retrieved in a single get statement. The SQLNET_ MAXLONGRAW value is used to allocate the buffer to hold the data, so it must be large enough to hold the entire value of the image data.

5.4.79 Problem Retrieving Non-English Long Raw Data

In releases prior to 7.1.5.7, when using a language other than English, data defined as LONG RAW was not being fetched correctly. Image data was being converted as if it were character data in the case where NLS_LANG was defined to be other than English.

5.4.80 Problem Retrieving Long Raw Data Shorter Than 255 Bytes

In releases prior to release 7.1.5.7, image or LONG RAW data that was shorter than 255 bytes was not being fetched and returned correctly. Following is an example of a JAVA return showing the error:

```
D:\TAR\1141042\testThin901\TESTCASE>java TestLongRawRead
java.sql.SQLException: Io exception: Protocol violation at
oracle.jdbc.dbaccess.DBError.throwSqlException(DBError.java:180) at
oracle.jdbc.dbaccess.DBError.throwSqlException(DBError.java:222) at
oracle.jdbc.dbaccess.DBError.throwSqlException(DBError.java:335) at
oracle.jdbc.dbaccess.DBDataSetImpl.getStreamItem(DBDataSetImpl.
java:1157)
```

5.4.81 Problem Starting Read/Write Transactions

With releases prior to 7.1.5.7, users were not able to start a read/write transaction when using a character set other than DEC_MCS. Following is the error the user would see:

```
SQL> insert into tab1 values (1);
insert into tab1 values (1)
*
ERROR at line 1:
ORA-01456: may not perform insert/delete/update operation inside a
READ ONLY transaction
```

The executor log file shows the error:

```
gtaschema:: schema: <NULL>, object: ORA_OBJECTS, action: REF_TABLE
Rdb operation..: EXECUTE IMMEDIATE - CHECK_READ_ONLY
Rdb error...(0): %SQL-F-INCCSCMP, Incompatible character set
comparision between NAME and <value expression
```

5.4.82 Change to OCI Services for Oracle Rdb Logging

In releases prior to 7.1.5.7, OCI Services for Oracle Rdb turned on logging during user connection and logon. Starting with Release 7.3.0.2, OCI Services for Oracle Rdb will no longer turn on logging, so executor log files will not contain the same information as in prior versions. The behavior will be the same as prior versions if users turn on logging.

If logging is turned on and a SET SESSION AUTHORIZATION statement is being logged, as it always is for universal services, only "SET SESSION AUTHORIZATION" will be logged, not the rest of the statement which contains the username and password.

5.4.83 Persona Nopriv Error Using SQL*Plus and Other OCI Clients

Non-privileged users could not connect from SQL*Plus even though they were granted database access. The connect would succeed when 'persona support is disabled' but fail when 'persona support is enabled'.

The following example shows the problem:

```
UAF> show joe_nobody
Username: JOE_NOBODY                      Owner:
Account:                                  UIC:    [424,7] ([JOE_NOBODY])
CLI:      DCL                             Tables: DCLTABLES
Default:  DISK$DKD600:[JOE_NOBODY]
LGICMD:
Flags:
Primary days:   Mon Tue Wed Thu Fri
Secondary days:                 Sat Sun
No access restrictions
@ Expiration:          (none)    Pwdminimum:  6   Login Fails:    0
@ Pwdlifetime:         (none)    Pwdchange:  23-APR-2002 07:39
@ Last Login: 21-MAY-2002 11:39 (interactive),         (none)
(non-interactive)
Maxjobs:       0  Fillm:      100  Bytlm:      64000
Maxacctjobs:   0  Shrfillm:     0  Pbytlm:         0
Maxdetach:     0  BIOlm:      150  JTquota:     4096
Prclm:         8  DIOlm:       60  WSdef:       2000
Prio:          4  ASTlm:      250  WSquo:       4000
Queprio:       4  TQElm:       10  WSextent:   16384
CPU:      (none)  Enqlm:     2000  Pgflquo:    50000
```

```
Authorized Privileges:
  NETMBX      TMPMBX
Default Privileges:
  NETMBX      TMPMBX
Identifier                       Value           Attributes
  JOE                            %X80010015
  READ_ONLY                      %X80010016

SQL> show prote on database rdb$dbhandle
Protection on Alias RDB$DBHANDLE
    (IDENTIFIER=SQLNET4RDB,ACCESS=SELECT+INSERT+UPDATE+DELETE+SHOW+CREATE+ALTER+
      DROP+DBCTRL+OPERATOR+DBADM+SECURITY+DISTRIBTRAN)
    (IDENTIFIER=JOE,ACCESS=SELECT+UPDATE)
    (IDENTIFIER=READ_ONLY,ACCESS=SELECT)
    (IDENTIFIER=[*,*],ACCESS=NONE)
```

Error from SQL*Plus when connecting as joe_nobody (after the service has started successfully):

```
ERROR: ORA-01031: insufficient privileges
```

```
Error in executor log file:
Rdb operation..: EXECUTE IMMEDIATE - LOGIN2
Rdb error...(0): %RDB-E-NO_PRIV, privilege denied by database facility
```

Possible workarounds include giving the user more privileges or rights, or disabling persona 'security checking is external (persona support is disabled)'.

This problem was corrected in Release 7.1.5.6.

5.4.84 Connections to SQL*Net for Rdb Would Hang

Connections to SQL*Net for Rdb from Oracle version 8.1.7 would sometimes hang. This problem was corrected in release 7.1.5.6.

5.4.85 DESCRIBE of an Object Reported Datatype UNKNOWN

A DESCRIBE of an object, especially a procedure or function, often reported datatype UNKNOWN. The correct datatype is reported in release 7.1.5.6 and later.

5.4.86 NLS_CHARACTERSET Ignored in ALTER SESSION Command

If an ALTER SESSION command included the symbol NLS_CHARACTERSET, the command reported success but did not change the character set. The value of

NLS_CHARACTERSET is determined at connection time and cannot be changed during the session. The command now returns the error ORA-12705 in release 7.1.5.6 and later.

5.4.87 Memory Leaks

Some memory leaks were fixed in release 7.1.5.6 through 7.1.5.9.1.

5.4.88 Fatal Error When Running Queries Longer Than 16K

If you ran queries that were longer than 16 K through SQL*Plus and SQL*Net for Rdb, the process was truncated, and a fatal error was generated:

```
ERROR at line 1:  ORA-09100: Message 9100 not found; No message file
for product=NATCONN, facility=GTW
%SQL-F-UNTERM_C_STR ,Missing null terminator for C string
```

This problem has been fixed for release 7.1.5.6.

5.4.89 Error Accessing Rdb Database Using Dblink

In previous releases, if you used Oracle 9.0.1 and accessed an Rdb database using a dblink, you could see the following error:

```
ORA-00600: internal error code, arguments: [qctstc2o1], [1], [0],
[31],[96],
[2], [2], []
```

The following two SQL statements are the types of statements that would see the error:

```
insert into ora_table (select *  from rdb_table@rdb.world);
create table ora_table as select  col1 from rdb_table@rdb.world;
```

This problem was fixed in release 7.1.5.5.

5.4.90 Running an Rdb Stored Procedure Using a Database Link

In versions prior to release 7.1.5.4, when you ran an Oracle Rdb stored procedure using a database link, it was possible to get the following error:

```
SQL> execute insert_col@rdb('abcde');
BEGIN insert_col@rdb('abcde'); END;
*
ERROR at line 1:
ORA-01401: inserted value too large for column
```

```
ORA-06512: at line 1
```

In the course of fixing this error, some changes were made to the parameter handling and conversion implementation. These changes can sometimes cause the following error to appear when the stored procedure is first run:

```
SQL> execute insert_col@rdb('abcde');
BEGIN insert_col@rdb('abcde'); END;
*
ERROR at line 1:
ORA-04068: existing state of packages has been discarded
ORA-04062: %s of %s has been changed
ORA-06512: at line 1
```

This error can be ignored; the procedure will run correctly when run again.

5.4.91 Protocol Mismatch Error

In versions prior to 7.1.5.4, you could see a protocol mismatch error when you did a select from a table that had an index, as shown in the following example:

```
SQL> select count(*) from test_optim@rdb;
select count(*) from test_optim@rdb
                           *
ERROR at line 1:
ORA-02072: distributed database network protocol mismatch
```

5.4.92 SQL*Plus Hangs Using SQL*Net for Rdb

If you had run the RDB_NATCONN_DBMSAPPL_PREPARE or the RDB_NATCONN_ DBMSOUTPUT_PREPARE script on your Rdb database, SQL*Plus Version 9.0.1.0.1 would hang trying to connect using SQL*Net for Rdb. This no longer occurs as of release 7.1.5.4.

5.4.93 Thick JDBC Driver Returned Error

In versions prior to 7.1.5.4, it was possible that the thick JDBC driver would return an error on the second of two select statements:

```
***** ACCESS BAD *****
java.sql.SQLException: ORA-01010: Ungultige (=invalid)
OCI-Operation
```

```
      at
oracle.jdbc.dbaccess.DBError.throwSqlException(DBError.java:168)
      at
oracle.jdbc.oci8.OCIDBAccess.check_error(OCIDBAccess.java:1597)
       at
oracle.jdbc.oci8.OCIDBAccess.parseExecuteDescribe(OCIDBAccess.java:798)
```

The SQL*Net for Rdb log would show the following:

```
Rows fetched(1) are: 1
AL7 close [opncrs=0 GTOD_ALL->allopt=2048 err=1403
Function: Cancel All
Oracle error: 1010 for function: Cancel All
Function: Cursor close all
```

5.4.94 Select of Column Returned Data in Wrong Format

In versions of SQL*Net for Rdb prior to release 7.1.5.4, if you were using Rdb V7.0xx, a select of a column using TO_CHAR and a column alias could display the data as hex instead of characters:

```
sql> select to_char(1) from dual;
    shows the value 1

sql> select to_char(1) col_alias from dual;
    shows the value 31
```

5.4.95 Two-phase Commits Using Both Rdb and Oracle Databases

When several users were doing two-phase commits using a dblink including both an Rdb database and an Oracle database, they could see locks on the ORA_COMM_TRANS table that caused users to be blocked.

This problem was fixed in release 7.1.5.4.

5.4.96 Dblink Failures Fixed

The following dblink problems in SQL*Net for Rdb releases 7.1.5 and 7.1.5.1 were fixed in release 7.1.5.3:

■   Taking an update lock on a table through dblink caused the connection to abort.

The SQL statement that failed was:

```
SELECT * FROM tab@dblink WHERE col='xxx' FOR UPDATE OF col2
```

The error returned was:

```
ERROR at line 1:
ORA-03113: end-of-file on communication channel
```

■   Creating a view through a dblink caused the connection to abort.

The SQL statement that failed was:

```
CREATE VIEW vu AS SELECT * FROM tab
```

The error returned was:

```
ERROR at line 1:
ORA-03113: end-of-file on communication channel
```

■   SQL functions such as USER and SYSDATE did not work correctly through a dblink.

The SQL statement that failed was:

```
SELECT * FROM tab@dblink WHERE col=USER
```

The error returned was:

```
ORA-00911: invalid character
%SQL-F-BAD-TOKEN, is not a valid SQL language element
```

5.4.97 Better Performance of SQL*Net for Rdb Startup

For releases prior to release 7.1.5.3, the startup time for a SQL*Net for Rdb session was very slow, especially for databases with many tables. For example, the following query was slow:

```
SELECT COUNT(*) from ORA_OBJECTS where NAME not in (SELECT TRIM (RDB$RELATION_
NAME from RDB$RELATIONS) and OTYPE = 1;
```

This query was intended to help keep the table, ORA_OBJECTS, synchronized with the tables that were actually in the database. The stored procedure, ORA_DELETE_ PHANTOMS, was called if the count in the query was greater than 0. Since the query was taking so much time, and almost always returning 0, it was decided to remove the query from the startup and remove the call to the stored procedure, ORA_DELETE_PHANTOMS. It is now recommended that the stored procedure, ORA_DELETE_PHANTOMS, be run periodically, especially if tables are being created or dropped from both SQL and SQL*Plus. The following example shows how to invoke the stored procedure:

```
SQLPLUS> begin ora_delete_phantoms(); end;
```

```
SQLPLUS> /
```

If the application did not require strict schema emulation, the workaround was to add the following line to the SQL initialization file for the service:

```
ALTER SESSION SET SCHEMA EMULATION RELAXED;
```

This would disable the schema emulation mechanism.

5.4.98 Change Maximum CHAR and VARCHAR Sizes

For Oracle8, the maximum length of CHAR and VARCHAR datatypes changed from what the maximum was for Oracle7. Maximum character length changed from 255 to 2000; maximum VARCHAR length changed from 2000 to 4000. This affects the datatype mappings for SQL*Net for Rdb, since CHAR and VARCHAR strings larger than the Oracle maximum are mapped to long or blob. This change was made in release 7.1.5.3.

5.4.99 Fixed Metadata Retrieval Using JDBC

Using JDBC, the metadata query, meta.getColumns, did not return data about any of the tables in the database except for GLOBAL_NAME.

The following example shows the JDBC code for the metadata query that was failing. Running this query for any table, other than GLOBAL_NAME, would produce no results. Following the code fragment is part of the result set for the ALL_TABLES table.

```
DatabaseMetaData meta = conn.getMetaData();
ResultSet c = null;
c = meta.getColumns(null, null, args[0], "%");
 while (c.next()) {

 System.out.println("\t" + c.getString(1) + ", " +
        c.getString(2) + ", " + c.getString(3) + ", " +
        c.getString(4) + ", " + c.getString(5) + ", " +
        c.getString(6));
        }
        c.close();
```

Result Set:

```
null, SYS, ALL_TABLES, OWNER, 12, VARCHAR2
null, SYS, ALL_TABLES, TABLE_NAME, 12, VARCHAR2
null, SYS, ALL_TABLES, TABLESPACE_NAME, 12, VARCHAR2
null, SYS, ALL_TABLES, CLUSTER_NAME, 12, VARCHAR2
null, SYS, ALL_TABLES, IOT_NAME, 12, VARCHAR2
```

. . .
This problem was corrected in release 7.1.5.3.

5.4.100 Access Violations Fixed

The following access violation bugs were fixed in release 7.1.5.3 of SQL*Net for Rdb:

- In previous releases when you attempted to connect from Oracle SQL*Net, you received an ORA-00022 error message (invalid session id; access denied). This error no longer occurs and you can now connect from Oracle SQL*Net.

- The access violation that occurred when the special recovery user logged on has been fixed.

5.4.101 Using Bind Variable Twice in a Query

If you used a bind variable twice in a query, you might have seen the error ORA-01006.

This problem was corrected in release 7.1.5.3.

5.4.102 ANSI_DATE and SYSDATE Functions Work Correctly

In releases prior to 7.1.5.3, the use of ANSI_DATE and SYSDATE functions failed unless you used them in conjunction with CAST or the TO_DATE, or TO_CHAR functions.

The following SQL statements now work:

- SELECT * FROM TEST_DATE WHERE ANSI_DATE = '01-jan-1999';

- SELECT * FROM TEST_DATE WHERE ANSI_DATE = SYSDATE;

- UPDATE TEST_DATE SET ANSI_DATE = SYSDATE;

- INSERT INTO TEST_DATE (ANSI_DATE) VALUES (SYSDATE);

- DELETE FROM TEST_DATE WHERE ANSI_DATE = SYSDATE;

- UPDATE TEST_DATE SET VMS_DATE = TO_DATE(SYSDATE);

- SELECT * FROM TEST_DATE WHERE ANSI_DATE = TO_DATE ('01-JAN-1999') - 1;

5.4.103 Wrong Error Returned When Inserting a Duplicate Value into a Unique Index

In releases prior to 7.1.5.3, an incorrect error message was being returned when you attempted to insert a duplicate value into a unique index. The incorrect error message returned was:

```
ORA-09100: Target system returned following message
```

The ORA-09100 error message was followed by the RDB_E_NO_DUP error message.

The following error message is now returned which is the correct Oracle error:

```
ORA-00001, unique constraint (<table_name>.<index_name>) violated
```

5.4.104 Embedded SQL Program Using SET TRANSACTION Works Correctly

In releases prior to 7.1.5.3, an embedded SQL program that performed a SET TRANSACTION statement returned an SQL_F_BAD_TXN_STATE error message.

5.4.105 ALL/USER_TAB_COLUMNS Return Correct Scale & Precision

Beginning with release 7.1.5.3, the ALL_TAB_COLUMNS and USER_TAB_COLUMNS views created from the RDB_NATCONN_PREPARE.SQL script return the correct scale and precision for smallints and integers with decimal points.