Oracle® Database

Release Notes

10*g* Release 1 (10.1.0.2.0) for Windows

Part No. B10132-01

March 2004

These *Release Notes* contain important last minute information not included in the Oracle Database documentation library. They may also contain information regarding components that are no longer installed with the database.

This document contains these topics:

1 Documentation Accessibility

Our goal is to make Oracle products, services, and supporting documentation accessible, with good usability, to the disabled community. To that end, our documentation includes features that make information available to users of assistive technology. This documentation is available in HTML format, and contains markup to facilitate access by the disabled community. Standards will continue to evolve over time, and Oracle is actively engaged with other market-leading technology vendors to address technical obstacles so that our documentation can be accessible to all of our customers. For additional information, visit the Oracle Accessibility Program Web site at

`http://www.oracle.com/accessibility/`

Accessibility of Code Examples in Documentation JAWS, a Windows screen reader, may not always correctly read the code examples in this document. The conventions

for writing code require that closing braces should appear on an otherwise empty line; however, JAWS may not always read a line of text that consists solely of a bracket or brace.

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2 Accessibility Software Recommendations

Our goal is to make Oracle products, services, and supporting documentation accessible to the disabled community. Oracle Database 10*g* release 1 (10.1.0.2.0) supports accessibility features. To make best use of these accessibility features, Oracle recommends the following software configuration:

- Windows 2000 with Service Pack 2 or higher
- Sun Java Access Bridge 1.0.3 (included with the Oracle Database 10*g* release 1 (10.1.0.2.0) media)
- JAWS screen reader 3.70.87
- Microsoft Internet Explorer 5.5 or above

Additional accessibility information for Oracle products can be found at

`http://www.oracle.com/accessibility`

For the latest configuration information, and for information on addressing accessibility and assistive technology issues, see the Oracle Accessibility FAQ at

`http://www.oracle.com/accessibility/faq.html`

3 Documentation

Documentation for Oracle Database 10*g* release 1 (10.1.0.2.0) is available at

`http://otn.oracle.com/documentation/index.html`

4 Location of README Files

Additional component README files are accessible after installation. They are located in:

- *ORACLE_BASE**ORACLE_HOME*\doc
- *ORACLE_BASE**ORACLE_HOME*\relnotes
- Product subdirectories in directory *ORACLE_BASE**ORACLE_HOME*

5 Microsoft Active Directory Support

Microsoft Active Directory is supported with Oracle Database 10*g* release 1 (10.1).

See Also: "Using Oracle Database with Microsoft Active Directory" in PDF format at http://otn.oracle.com/products/oraclenet/pdf/ADsupport_10g.pdf and in HTML format at http://otn.oracle.com/products/oraclenet/htdocs/ADsupport_10g.htm

6 New Features

This section describes new features of Oracle Database for Windows that are not documented elsewhere.

6.1 New Oracle C++ Call Interface Libraries Available for Windows

New Oracle C++ Call Interface (OCCI) libraries are available for Microsoft CRT debugging and for developing applications with Microsoft Visual C++ 7.0 .NET 2002 and Microsoft Visual C++ 7.1 .NET 2003.

6.1.1 Support for Debug Version of Microsoft Visual C++ 6.0

Applications that are linked with `MSVCRTD.DLL` (debug version of Microsoft C-Runtime) in order to debug memory issues should link with `oraocci10d.lib` and `oraocci10d.dll`. These files are for use with Microsoft Visual C++ 6.0. The installed location is `ORACLE_BASE\ORACLE_HOME\oci\lib\msvc\vc6`.

6.1.2 Support for Microsoft Visual C++ 7.0 .NET 2002

Applications developed in Microsoft Visual C++ 7.0 .NET 2002 should use `oraocci10.lib` and `oraocci10.dll`. The currently shipped OCCI DLL is built with Microsoft Visual C++ 6.0 and cannot be used from a Microsoft Visual C++ 7.0 .NET 2002 compiled application. This OCCI library links with the non-debug version of Microsoft CRT (`MSVCR70.DLL`). The installed location is `ORACLE_BASE\ORACLE_HOME\oci\lib\msvc\vc7`

6.1.3 Support for Debug Version of Microsoft Visual C++ 7.0 .NET 2002

Applications that are linked with `MSVCR70D.DLL` (debug version of Microsoft C-Runtime) in Microsoft Visual C++ 7.0 .NET 2002 in order to debug memory issues should link with `oraocci10d.lib` and `oraocci10d.dll`. The installed location is `ORACLE_BASE\ORACLE_HOME\oci\lib\msvc\vc7`.

6.1.4 Support for Microsoft Visual C++ 7.1 .NET 2003

Applications developed in Microsoft Visual C++ 7.1 .NET 2003 should use `oraocci10.lib` and `oraocci10.dll`. The currently shipped OCCI DLL is built with Microsoft Visual C++ 6.0 and cannot be used from a Microsoft Visual C++ 7.1 .NET 2003 compiled application. This OCCI DLL links with the non-debug version of Microsoft CRT (`MSVCR71.DLL`). The installed location is `ORACLE_BASE\ORACLE_HOME\oci\lib\msvc\vc71`.

6.1.5 Support for Debug Version of Microsoft Visual C++ 7.1 .NET 2003

Applications that are linked with `MSVCR71D.DLL` (debug version of Microsoft C-Runtime) in Microsoft Visual C++ 7.1 .NET 2003 in order to debug memory issues should link with `oraocci10d.lib` and `oraocci10d.dll`. The installed location is `ORACLE_BASE\ORACLE_HOME\oci\lib\msvc\vc71`.

Note: The current Oracle C++ Call Interface library for Microsoft Visual C++ 6.0 is available as in previous releases.

- `oraocci10.lib` is available in *`ORACLE_BASE`*`\`*`ORACLE_HOME`*`\oci\lib\msvc`.
- `oraocci10.dll` is available in *`ORACLE_BASE`*`\`*`ORACLE_HOME`*`\bin`.
- Copies of these two files are also installed in *`ORACLE_BASE`*`\`*`ORACLE_HOME`*`\oci\lib\msvc\vc6`.

Note: Ensure that the LIB and PATH environment variables are set appropriately for the Visual C++ compiler version being used. For example, if you are using Visual C++ 7.0, then add directory `ORACLE_BASE\ORACLE_HOME\oci\lib\msvc\vc7` to the LIB and PATH variables. Environment variables can be set from the Windows Control Panel or using the SET command.

7 Components and Features Not Supported for Windows

This section contains these topics:

- RADIUS Adapter
- Central Configuration of RAC Disabled on Windows

7.1 RADIUS Adapter

Oracle Advanced Security supports RADIUS-compliant servers and authentication devices. As in prior releases, RSA ACE/Server and tokens can authenticate Oracle users only through the RADIUS adapter.

In this release, the CHAP (challenge-response) mode has been disabled for Windows, so the challenge-response default interface does not function.

Note: Check your platform specific documentation for availability on other platforms.

7.2 Central Configuration of RAC Disabled on Windows

The option for configuring central management is not available during RAC installation on Windows. Also not supported on Windows is the use of standalone Enterprise Manager Configuration Assistant or Database Configuration Assistant to configure central management for RAC.

If you want central management for the installed RAC database, then you will have to discover the RAC database target manually from Grid Control after the installation.

8 Components Requiring Separate Installations

Some components are no longer installed with the Oracle Database software. A list of installation changes is provided in *Oracle Database Installation Guide for Windows*.

> **See Also:** "Additional Software Installations" in *Oracle Database Installation Guide for Windows*

In addition to that list, Oracle Database 10*g* release 1 (10.1) includes Oracle Internet Directory client tools, but not Oracle Internet Directory server components. The latter ship with Oracle 10*g* Application Server. If the Oracle Internet Directory client tools are needed for Oracle Database components, then they must be run from an Oracle 10*g* Application Server installation.

The Oracle Internet Directory client tools are the LDAP command-line tools, the Oracle Internet Directory SDK, and Oracle Directory Manager. The Oracle Internet Directory server components include the directory server, the directory replication server, the directory integration server, and various tools for starting and stopping them.

9 Desupported Components

The following components are desupported in this release:

- INTYPE File Assistant (IFA)
- Pro*COBOL 1.8.77
- Oracle Names
- Oracle Trace

10 Open Bugs and Known Issues

This section describes bugs and known issues for Oracle Database for Windows:

10.1 Installation on Windows 2000 with Service Pack 4

Oracle Universal Installer may appear and then disappear on Windows 2000 with Service pack 4. This is because of an underlying JRE bug. There are three workarounds, depending on what you are installing.

For an Enterprise Manager Grid Control installation, run

```
install\setup.exe -J-Dsun.java2d.noddraw=true
```

For an Oracle Database installation, run

```
install\setup.exe -J-Dsun.java2d.noddraw=true
```

For a Cluster Ready Services installation, run

```
install\setup.exe -J-Dsun.java2d.noddraw=true
-Doracle.installer.formCluster=true
```

10.2 User Threads

Oracle Database Platform Guide for Windows discusses "User Threads", a new feature of Oracle Database for Windows. This new feature is available in the 64-bit version of Oracle Database, which Oracle plans to release at a later date. It is not available in the current 32-bit release of Oracle Database for Windows.

10.3 Readme Text Files

Some Readme text files contain Unix line breaks. If you simply double-click these files, they will open in Notepad by default, and Notepad does not recognize Unix line breaks. Use `write.exe` or `edit.com` instead.

10.4 ORADIM

The Enterprise Database Control service (`OracleDBConsole`*`SID`*) is dependent on the Oracle Database service (`OracleService`*`SID`*). You need to stop the dependent Enterprise Database Control service (if installed) before running `ORADIM` to delete the database instance or stop the database instance service.

Note: Database Configuration Assistant is the recommended tool to administer a database instance.

10.5 Error When Deinstalling Cloned Database

If you install Oracle Database 10*g* on a Windows computer, copy the Oracle home to a second computer, clone the database on the second computer, and then try to deinstall the cloned Oracle home using Oracle Universal Installer, you get the following errors:

```
isqlplussrv:
Failed to stop the service, Error:997, Overlapped I/O operation is in
progress

isqlplussvc:
CNTService::Uninstall, Failed call to OpenService, Error:1060, The specified
service does not exist as an installed service.
```

The problem is that the *i*SQL*Plus service was never installed, so an attempt to stop a non-existent service gives these errors. Before attempting to deinstall the cloned Oracle home, you need to issue the following command:

```
%CLONED_ORACLE_HOME%\bin\isqlplusctl start
```

10.6 SRVCTL Arguments with Comma-Separated Lists

Any `SRVCTL` arguments that accept comma-separated lists must be enclosed in quotes. So for example:

```
srvctl status instance -d mydb -i inst1,inst2
```

will return the error

```
PRKO-2002 : Invalid command line option: inst2
```

Instead, the instance list should be quoted to protect the commas:

```
srvctl status instance -d mydb -i "inst1,inst2"
```

10.7 Oracle Net Configuration Assistant and Active Directory

If you use Oracle Net Configuration Assistant to complete directory access configuration with Active Directory, and the Active Directory server already has an Oracle Context, then select the following non-default radio button:

- Select the directory server you want to use, and configure the directory server for Oracle usage. (Create or upgrade Oracle Schema and Oracle Context as necessary.)

Oracle Net Configuration Assistant will report that the Oracle Context does not exist. Ignore this and choose to create the Oracle Context anyway. Directory access configuration will complete without trying to re-create the existing Oracle Context.

10.8 Oracle Net Manager and Active Directory

If you use Oracle Net Manager with Active Directory for creating and managing net service names from this release, then partial net service names are created. Oracle recommends that you not use Oracle Net Manager with Active Directory.

If you are already using Active Directory from a previous Oracle release, then you can continue to use Oracle Net Manager from that release to create net service names in Active Directory for Oracle Database 10*g* databases.

10.9 Stop Database Control Service Before Deinstalling

If you want to deinstall Oracle software or delete Database Control configuration, then Oracle recommends that you first stop the Database Control service (named `OracleDBControl`*`SID`*). This assures complete deconfiguration of Database Control. For Real Application Clusters databases, the Database Control service should be stopped on each node in the cluster.

Not doing so will not fail the deinstallation, but you might encounter Enterprise Manager configuration directories that are not cleaned up after deinstallation. This is because some processes are holding handlers to Enterprise Manager configuration files if processes are not shut down completely.

If you encounter errors when deconfiguring Enterprise Manager, then you can manually delete the following Enterprise Manager configuration directories:

- *`ORACLE_HOME`*`\`*`HOSTNAME_SID`*
- *`ORACLE_HOME`*`\oc4j\j2ee\OC4J_DBConsole_`*`HOSTNAME_SID`*

The same problem may occur when running Enterprise Manager Configuration Assistant in standalone mode to remove Enterprise Manager configuration without removing the database (`emca.bat -x`). The same solution should be applied if this problem is encountered.

10.10 Switching Between Database Control and Grid Control

If you want to switch between Database Control and Grid control, then Oracle recommends that you remove the previous configuration before switching to a different mode. For example, if you initially have Database Control configured, then in order to switch to Grid control using Enterprise Manager Configuration Assistant in standalone mode (`emca.bat -m`), you must first run `emca.bat -x` to remove Database Control configuration and then run `emca.bat -m` to switch to Grid control configuration.

10.11 Multiple Network Interface Cards

If you have public and private network interface cards (NICs) on a single Windows computer and they are not in the correct order, then you might experience problems with any configuration (Oracle Enterprise Manager, for example) that uses `gethostname`.

If the private NIC is seen first by Windows, then a `gethostname` call will return the hostname of the private interconnect. Whichever tool is calling `gethostname` will have configuration or connectivity problems stemming from this non-public network information.

On a Windows 2000 computer, you can determine the current order of your NICs, and change it if necessary, as follows:

1. Choose **Start > Settings > Network and Dial-up Connections**.
2. Choose **Advanced > Advanced Settings**.
3. The **Connections:** field lists your public and private Local Area Connections. To change the order in which Windows accesses them, select one of them and click on the **Arrow** buttons to move it up or down.
4. When the public and private NICs are in the order you want, click **OK**.

5. The change in priority takes effect immediately. Restarting your computer is not necessary.

10.12 Cluster Ready Services and Network Connection Names

Cluster Ready Services installation requires that you specify the attribute (private network for cluster communications or public network for clients) for each network adapter on the system. If the connection names are not in English, then Oracle Universal Installer might not recognize them.

The workaround for this problem is changing the connection names to ASCII names before Cluster Ready Services installation. On a Windows 2000 computer, perform the following steps:

1. Choose **Start > Settings > Network and Dial-up Connections**.
2. Right-click each Local Area Connection and select **Rename**.
3. Change each name to an ASCII string.
4. Close Network and Dial-up Connections.

> **Note:** Changing network connection names might affect other software running on the same computer.

10.13 PGA Memory Usage Details in Oracle Enterprise Manager

The PGA Memory Usage Details page (under **Administration > Instance:Memory Parameters > PGA**) will show garbled characters when the product is run in a multi-byte (Asian) language environment. The only workaround currently available is to run the product in a single-byte Western European language when you need to view this page.

10.14 Quick Tour Not Available in Oracle Change Management Pack

Quick Tour is not available in Oracle Change Management Pack. If you try to run it, then an error results.

10.15 Error When Viewing Period SQL Execution Plan in Korean

Viewing the execution plan of a Period SQL in Korean causes an internal server error. This problem is unique to Korean; it does not reproduce in Japanese or Chinese. The only workaround currently available is to run the product in a non-Korean language when you need to view this page.

10.16 NTS Authentication Failure with .NET Remote Objects

If NTS authentication is used with an Oracle client as a .NET remote object impersonating a user credential, then NTS authentication will fail with the error `ora-12638 Credential Retrieval Failed`. This happens due to the failure of the Windows API `AcquireCredentialsHandle()` in the NTS adapter inside the .NET remote object. Refer to Oracle*Metalink* for more details.

10.17 Errors During Cluster Ready Services Deinstallation

When deinstalling Cluster Ready Services, you might see multiple windows appear with the message "oldnodes.exe - unable to locate dll the dynamic link library oran10.dll could not be found in the specified path". Ignore these errors and continue.

10.18 Shortcut Not Removed After Cluster Ready Services Deinstallation on Deleted Node

If you deinstall Cluster Ready Services from a different node (remote node) than the node from which the install was performed (local node), then its shortcut on the Start menu might not be removed. You can manually delete the shortcut by right-clicking on it and selecting **Delete**.

10.19 Oracle Wallet Manager Missing from the Start Menu

After installing Oracle Database 10*g* Companion Products, Oracle Wallet Manager is not available from the Start menu. Use commands similar to the following to start Oracle Wallet Manager:

```
x:\> cd ORACLE_BASE\ORACLE_HOME\bin
x:\ORACLE_BASE\ORACLE_HOME\bin> launch.exe ORACLE_HOME\bin owm.cl
```

10.20 Upgrading a Database

If you choose the custom install path and have previous versions of Oracle databases installed, then Oracle Universal Installer displays the option to upgrade the previous databases. If you choose to upgrade an existing database, then Oracle Universal Installer displays another dialog asking if you want to create a starter database.

Database Upgrade Assistant upgrades the older version of the database to 10*g* release 1 (10.1) at the end of installation. Oracle Universal Installer does not create a new database.

11 Documentation Corrections and Additions

This section contains these topics:

11.1 Globalization Support

The instructions documented in the "Using Oracle9*i* Database Language and Territory Definition Files with Oracle Database 10*g*" section of the 10*g* release 1

(10.1) Database README, related to the ORA_NLS10 environment variable are not correct. This is because the *ORACLE_BASE**ORACLE_HOME*\nls\data\old directory contains the definitions files which have changed in Oracle Database 10*g* release 1 (10.1) only, and not the complete set of the database locale definition files. To switch back to the Oracle 9*i* definitions, you need to first copy the content of *ORACLE_BASE**ORACLE_HOME*\nls\data into a new directory (*ORACLE_BASE**ORACLE_HOME*\nls\data\9i for example); next, populate this directory with the content from *ORACLE_BASE**ORACLE_HOME*\nls\data\old. Now you can set your ORA_NLS10 variable to point to this new directory.

Please refer to the *Oracle Database Globalization Support Guide* and the README for more information regarding the changes in the Language and Territory definition files between Oracle9*i* database and Oracle Database 10*g*.

11.2 Grid Features

Oracle Database New Features for Oracle Database 10*g* release 1 (10.1) lists two Grid features that are not available in the first release of Oracle Database 10*g*, Resonance and Transparent Session Migration. These features will be available in an upcoming release.

11.3 Full-Text Searching with Oracle Text

For full-text searching with Oracle Text, you must create XML tables manually.

If you will need to use Oracle Text indexes for text-based ora:contains searches over a collection of XML elements, then do *not* use XML schema annotation storeVarrayAsTable="true". This annotation causes element collections to be persisted as rows in an Index Organized Table (IOT). Oracle Text does not support IOTs.

To be able to use Oracle Text to search the contents of element collections, set parameter genTables="false" during schema registration. Then create the necessary tables manually, without using the clause ORGANIZATION INDEX OVERFLOW. The tables will then be heap-organized instead of index-organized (IOT), as shown in Example 1.

Example 1 Manually Creating a Heap-Organized Table that Conforms to an XML Schema

```
CREATE TABLE PurchaseOrder of XMLTYPE
  XMLSCHEMA http://localhost:8080/home/SCOTT/poSource/xsd/purchaseOrder.xsd
  ELEMENT "PurchaseOrder"
  VARRAY "XMLDATA"."ACTIONS"."ACTION"
    STORE AS TABLE ACTION_TABLE ((PRIMARY KEY
      (NESTED_TABLE_ID, ARRAY_INDEX)))
  VARRAY "XMLDATA"."LINEITEMS"."LINEITEM"
    STORE AS TABLE LINEITEM_TABLE ((PRIMARY KEY
      (NESTED_TABLE_ID, ARRAY_INDEX)));
```

11.4 View Descriptions

Oracle Database Performance Tuning Guide, Chapter 10, "Instance Tuning Using Performance Views", has two incorrect view descriptions. The view names and correct descriptions are as follows:

- V$EVENT_HISTOGRAM

The V$EVENT_HISTOGRAM view displays a histogram of the number of waits, the maximum wait, and total wait time on an event basis.

- V$SYSTEM_WAIT_CLASS

  The V$SYSTEM_WAIT_CLASS view provides the instance wide time totals for the number of waits and the time spent in each class of wait events. [This description removes the reference to object number.]

11.5 Configuring Management Service Processes

In *Oracle High Availability Architecture and Best Practices*, Chapter 8, "Using Enterprise Manager for Monitoring and Detection", the section "Configure At Least Two Service Processes and Load Balance Them" should read as follows:

For the middle tier, the baseline recommendation is to have a minimum of two Management Service processes, using a hardware server load balancer to mask the location of an individual Management Service process and a failure of any individual component. This provides immediate coverage for a single failure in the most critical components in the Enterprise Manager architecture with little interruption of service for all systems monitored using Enterprise Manager. Management Service processes connect to the repository instances using Oracle Net.

11.6 Monolingual Linguistic Sorting

In *Oracle Database Globalization Support Guide*, Chapter 5, "Linguistic Sorting and String Searching", the section called "Monolingual Linguistic Sorts" should end with the following note:

Monolingual linguistic sorting is not available for non-Unicode multibyte database character sets. If a monolingual linguistic sort is specified when the database character set is non-Unicode multibyte, then the default sort order is the binary sort order of the database character set. One exception is UNICODE_BINARY. This sort is available for all character sets.

11.7 Windows Terminal Services and Remote Desktop Connection Support

Oracle supports both installation and runtime for Windows Terminal Services (also known as Remote Desktop Connection in Windows XP). Disregard limitations on such support that appear in:

- *Oracle Database Installation Guide for Windows*
- *Oracle Database Client Installation Guide for Windows*
- *Oracle Database Companion CD Installation Guide for Windows*
- *Oracle Real Application Clusters Installation and Configuration Guide*

12 Real Application Clusters (RAC)

This section contains corrections and supplemental information for Oracle Database 10*g* Real Application Clusters (RAC) documentation for Windows-based platforms.

This section contains these topics:

12.1 Adding and Deleting Nodes and Instances

This section describes changes to the node addition and deletion procedures in *Oracle Real Application Clusters Administrator's Guide*, part number B10765-01.

12.1.1 Updating Path Environment Variables on New Nodes

When you add a new node, you must update the `Path` environment variable on each new node on Windows-based systems. The procedure is described in Step 21 in Chapter 10, "Installing Oracle Database 10*g* with Real Application Clusters", in *Oracle Real Application Clusters Installation and Configuration Guide*, part number B10766-02.

12.1.2 Adding Nodes

This section describes additional corrections for node addition, as described in Chapter 5, "Adding and Deleting Nodes and Instances" in *Oracle Real Application Clusters Administrator's Guide*.

- Throughout the chapter, references to `<Oracle Home>\OUI\bin` or `<CRS Home>\OUI\bin` should be `<Oracle Home>\oui\bin` and `<CRS Home>\oui\bin` respectively. Note the case change to lower-case for `oui`.
- The syntax for the `crssetup.exe` command on page 5-5, Step 8, should be:

  ```
  crssetup.exe add -nn <nodeI>,<node number> -pn <pnodeI>,<node number>
  ```

- In "Step 2: Adding Nodes at the Oracle Clusterware Layer (UNIX and Windows)", point 9 on page 5-6, the format for the `racgons` command should be:

  ```
  racgons add_config <new_node_name>:4948
  ```

- In "Step 4: Adding Nodes at the Oracle RAC Database Layer", point 8 on page 5-9, you are told that you must run the Virtual Internet Protocol Assistant (VIPCA). Also note that you must run the VIPCA as `root`.
- In "Step 4: Adding Nodes at the Oracle RAC Database Layer", point 9 on page 5-10, you are told that you must run the `oifcfg` command. The correct syntax for this command requires that you specify either the `-n nodename` option or the `-global` option to complete the command. The correct syntax for the `oifcfg` command is as follows:

  ```
  oifcfg iflist
  oifcfg setif {-node <nodename> | -global}
  {<if_name>/<subnet>:<if_type>}...
  oifcfg getif [-node <nodename> | -global] [ -if <if_name>[/<subnet>]
  [-type <if_type>] ]
  ```

```
oifcfg delif [-node <nodename> | -global] [<if_name>[/<subnet>]]
oifcfg [-help]
```

A standard Cluster Ready Services (CRS) installation issues the `oifcfg` command as in the following example:

```
oifcfg setif -global  eth0/146.56.76.0:public
eth1/192.0.0.0:cluster_interconnect'
```

This sets both networks to `global`. Therefore, you do not need to run the `oifcfg` command manually after you add a node.

- When you add a new node, you must also add a listener to the new node by running Net Configuration Assistant (NetCA).

12.1.3 Deleting Nodes

The corrections in this section are for the node deletion procedures for Windows-based systems as described in Chapter 5, "Adding and Deleting Nodes and Instances" in *Oracle Real Application Clusters Administrator's Guide*. These corrections assume that you have a three-node cluster and that you are deleting the third node from a node *other than* the node you want to delete.

The correct sequence of procedures that you must run to delete nodes on Windows-based systems is as follows:

1. Use Database Configuration Assistant (DBCA) to delete the instance.
2. Use Net Configuration Assistant (NetCA) to delete the listener.
3. Run the following command to stop the node applications:

   ```
   srvctl stop nodeapps -n <nodename of the node to be deleted>
   ```

4. Run the following command to remove the node applications:

   ```
   srvctl remove nodeapps -n <nodename of the node to be deleted>
   ```

5. Stop `isqlplus` if it is running.
6. Run the following command:

   ```
   setup.exe -updateNodeList ORACLE_HOME=<Oracle_home> ORACLE_HOME_
   NAME=<Oracle_home_name> CLUSTER_NODES=<remaining nodes>
   ```

   where `<remaining nodes>` is a list of the nodes that are to remain part of the cluster

7. From the *deleted* RAC node, run the following command:

   ```
   setup.exe -updateNodeList -local -noClusterEnabled
   ORACLE_HOME=<Oracle_home> ORACLE_HOME_NAME=<Oracle_home_name>
   CLUSTER_NODES="".
   ```

   If you delete more than one node, then you must execute this command on every deleted node to remove the Oracle home if you have a non-shared Oracle home (non-cluster file system) installation.

   Note that you do not need a value for `""` after the `CLUSTER_NODES=` entry in this command. If you delete more than one node, then you must run this command on every deleted node to remove the Oracle home if you have a non-shared Oracle home (non-cluster file system) installation.

8. From the *deleted* RAC node, run the following command to start the Oracle Universal Installer (OUI):

   ```
   Oracle_home\oui\bin\setup.exe
   ```

   Select **Deinstall Products** and select the Oracle home that you want to deinstall.

   If you delete more than one node, then you must execute this command on every deleted node to remove the Oracle home if you have a non-shared Oracle home (non-cluster file system) installation.

9. To delete the CRS node, run the following command from a remaining node:

   ```
   crssetup del -nn <node_name of the deleted node>,<node number>
   ```

10. Run the following command:

    ```
    setup.exe -updateNodeList ORACLE_HOME=<CRS home>
    ORACLE_HOME_NAME=<CRS home name> CLUSTER_NODES="remaining nodes"
    ```

    where `"remaining nodes"` is a list of the nodes that are to remain in the cluster.

11. On the *deleted* CRS node, run the following command:

    ```
    setup.exe -updateNodeList -local -noClusterEnabled ORACLE_HOME=<CRS home>
    ORACLE_HOME_NAME=<CRS home name> CLUSTER_NODES=""
    ```

12. On the *deleted* CRS node, start Oracle Universal Installer by running the following command: Select `Deinstall Products` and select the CRS home that you want to deinstall.

    ```
    Oracle_home\oui\bin\setup.exe
    ```

    Select **Deinstall Products** and then select the CRS home that you want to deinstall.

12.1.4 ASM Instance Cleanup Procedures for Node Deletion

The delete node procedure requires the following additional steps on Windows-based systems to remove the ASM instances:

1. If this is the Oracle home from which the per-node listener named `LISTENER_nodename` runs, then use NetCA to remove this listener and its CRS resources. If necessary, re-create this listener in another home.

2. If this is the Oracle home from which the ASM instance runs, then remove the ASM configuration by executing the following command for all nodes on which this Oracle home exists:

   ```
   srvctl stop asm -n node
   ```

   Then run the following command for all nodes on which this Oracle home exists:

   ```
   srvctl remove asm -n node
   ```

3. If you are using a cluster file system for your ASM Oracle home, then run the following commands on the local node:

   ```
   rd -s -q %ORACLE_BASE%\admin\+ASM
   delete %ORACLE_HOME%\database\*ASM*
   ```

4. If you are not using a cluster file system for your ASM Oracle home, then run the `delete` command mentioned in the previous step on each node on which the Oracle home exists.
5. Run the following command on each node that has an ASM instance:

```
oradim -delete -asmsid +ASMnode_number
```

12.2 Real Application Clusters Services Deployment Example

The following two sections that describe shadow events and high availability callouts with Oracle Notification Services (ONS) events are supplements for Appendix A, "Services Deployment Example", in *Oracle Real Application Clusters Deployment and Performance Guide*, part number B10768-01.

12.2.1 Events for Shadow Preconnect Services in Real Application Clusters

When using Transparent Application Failover (TAF) PRECONNECT, Real Application Clusters (RAC) high availability maintains a preconnect service to support TAF Preconnect and applications that are configured to manage work on secondary RAC instances. Secondary instances are RAC instances that are not supporting the primary service.

In this type of configuration, Oracle maintains the shadow service on all instances that do not support the primary service. You can use events to stop and start secondary work. The events are posted to callouts and to the Oracle Notification Service (ONS).

To use events, configure the payload with the following format:

```
SRV_PRECONNECT VERSION=1.0 service=[db_unique_name.db_domain]
database=[database name] instance=[instance name] host=[host name]
status=preconn_up reason=timestamp=27-Jan-2004 16:53:58
reported=Tue Jan 27 16:53:59 PST 2004
SRV_PRECONNECT VERSION=1.0 service=[db_unique_name.db_domain]
database=RACEY  instance=[instance name] host=[host name]
status=preconn_down reason=timestamp=27-Jan-2004 16:58:01
reported=Tue Jan 27 16:58:02 PST 2004
```

Up Event Example:

```
@ SRV_PRECONNECT VERSION=1.0 service=MYSERV.us.oracle.com
database=RACEY instance=RACEY1 host=sun880-1 status=preconn_up
reason=timestamp=27-Jan-2004 16:53:58
reported=Tue Jan 27 16:53:59 PST 2004
```

Down Event Example:

```
@ SRV_PRECONNECT VERSION=1.0 service=MYSERV.us.oracle.com
database=RACEY instance=RACEY1 host=sun880-1 status=preconn_down
reason=timestamp=27-Jan-2004 16:58:01
reported=Tue Jan 27 16:58:02 PST 2004
```

12.2.2 High Availability Callouts and Oracle Notification Events

The notification interface is available as a server-side callout and as an Oracle Notification Services (ONS) event. The server-side callout is a script with the same payload as the ONS event that is run immediately on the server when the condition occurs. Use this method to start and stop server-side applications, to

relocate low-priority services when high priority services arrive, and to post tickets for fault tracking. The following table describes the event payload.

Table 1

Parameter	Description
Event type	The event type for the component such as service, service_member, database, instance, or node
Service name	The service name; matches the configured service in SERVICE$
Database name	The database supporting the service; matches the initialization parameter value for db_unique_name, which in turn defaults to the value of the initialization parameter DB_NAME
Instance	The name of the instance that supports the service; matches the instance name
Node name	The name of the node that supports the service or the node that has failed; matches the CSS node name
Status	The new status; values are UP, DOWN, and NOT_RESTARTING
Cardinality	Cardinality for the service on UP events
Time stamp	The local time zone to use when ordering notification events
Incarnation	Cluster incarnation for node down

When a session connects, mid-tiers can record the following values that match the HA event payload.

```
sys_context('userenv', 'instance_name');
sys_context('userenv', 'server_host');
sys_context('userenv', 'service_name');
sys_context('userenv', 'db_unique_name');
```

12.3 Installing Real Application Clusters

After installing Cluster Ready Services on a system that also contains an Oracle9*i* Real Application Clusters, reboot all of the newly installed Oracle Database 10*g* release 1 (10.1) cluster member nodes. You can reboot one node at a time so that availability of the Oracle9*i* databases is not disrupted.

12.4 Upgrading Real Application Clusters

Database Upgrade Assistant does not support a direct upgrade of Oracle Parallel Server version 8.1.7 databases to Oracle Database 10*g* with RAC.

First upgrade the Oracle Parallel Server database to Oracle Real Application Clusters Oracle9*i* release 2 (9.2), and then upgrade it to Oracle Database 10*g* with RAC.

12.5 Deleting an Instance When Archiving is Enabled

The following error displays when archiving is enabled for a RAC database and you try to delete an instance using Database Configuration Assistant:

```
00350, 00000, "log %s of instance %s (thread %s) needs to be archived"
//*Cause: The command cannot be done because the log has not been archived,
//          and media recovery has been enabled.
//*Action: Archive the log or disable media recovery. If the command supports
//          an UNARCHIVED option then it can be used. However this may result
//          in making backups unuseable, and forcing the drop of some offline
//          files.
```

Workaround: Click Ignore and continue with the instance deletion. After the instance is deleted, perform the following steps:

1. Find out thread number and redo group numbers for the instance you just deleted by looking in the *ORACLE_BASE**ORACLE_BASE*\admin\DB_NAME\bdump\alert_*SID*.log file.
2. From the node where you ran Database Configuration Assistant, connect to the database:

   ```
   c:\> sqlplus /nolog
   sqlplus> connect " / AS SYSDBA"
   ```

3. Archive the current redo logs for the disabled thread.

   ```
   SQL> alter system archive log thread threadNum current;
   ```

4. Drop the redo group log files for all groups associated with the thread number.

   ```
   SQL> alter database drop logfile group groupNum;
   ```

5. If you are not using Oracle Managed Files or raw devices, then delete the redo log files.

12.6 Multiple Instances of a RAC Database on a Particular Node

When two or more instances of a RAC database are installed on a particular node, the port numbers for Enterprise Manager Database Control (HTTP, RMI, and JMS ports) and Enterprise Manager Agent (HTTP port) are not unique.

Perform the following steps to assign unique ports:

1. Back up all files before making modifications.
2. Stop the OracleDBConsole*SID* service.
3. Follow the steps in "Changing the Oracle Management Service Port" in the Database Control README.
4. Follow the steps in "Changing the agent port for an agent monitoring cluster targets" in the Database Control README. to update the emd.properties file.

Note: The `emd.properties` file can exist in three different locations:

- Database Control installation: *ORACLE_BASE**ORACLE_HOME**HOST_SID*\sysman\config\emd.properties
- RAC Central Agent installation: *ORACLE_BASE**ORACLE_HOME**HOST*\sysman\config\emd.properties
- Regular Central Agent installation: *ORACLE_BASE**ORACLE_HOME*\sysman\config\emd.properties

5. Change the `rmi-server port` value in *ORACLE_BASE**ORACLE_HOME*\oc4j\j2ee\OC4J_DBConsole_*HOST_SID*\config\rmi.xml file.
6. Change the `jms-server port` value in the*ORACLE_BASE**ORACLE_HOME*\oc4j\j2ee\OC4J_DBConsole_*HOST_SID*\config\jms.xml file.
7. Start the `OracleDBConsole`*SID* service.

12.7 Adding a Node on a Shared Oracle Home

If you are using Oracle Universal Installer to add a node on a Shared Oracle Home, then an error similar to the following may appear but can be ignored:

```
Alert: The following file(s) have been modified on the disk:
y:\oracle\ra\inventory\ContentsXML\comps.xml y:\oracle\rac\inventory
\ContentsXML\libs.xml
Proceeding with the installation may corrupt some important data. You should
stop this session and restart OUI. Do you want to stop this session now?
```

Ignore this error; click NO and continue.