

Oracle® Database

Release Notes

10g Release 2 (10.2) for Linux x86-64

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This document contains important information that was not included in the platform-specific or product-specific documentation for this release. This document supplements *Oracle Database Readme* and may be updated after it is released.

To check for updates to this document and to view other Oracle documentation, refer to the Documentation section on the Oracle Technology Network (OTN) Web site:

<http://www.oracle.com/technology/documentation/>

For additional information about this release, refer to the readme files located in the `$ORACLE_HOME/relnotes` directory.

This document contains the following topics:

- [Certification Information](#)
- [Unsupported Products](#)
- [Preinstallation Requirements](#)
- [Documentation Corrections and Additions](#)
- [Installation, Configuration, and Upgrade Issues](#)
- [Other Known Issues](#)
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1 Certification Information

The latest certification information for Oracle Database 10g release 2 (10.2) is available on *OracleMetaLink* at:

<http://metalink.oracle.com>

2 Unsupported Products

The following products are not supported with Oracle Database 10g release 2 (10.2):

- Grid Control Support

Oracle Database 10g release 2 (10.2) can be managed as a target by Grid Control 10.1.0.4. However, Oracle Database 10g release 2 is not supported by Grid Control 10.1.0.4 as a repository.

- Oracle Procedural Gateway for APPC
- Oracle Procedural Gateway for WebSphere MQ
- Oracle Clustered File System version 2
- Oracle ODBC driver
- Pro*COBOL

3 Preinstallation Requirements

You must review the following sections before installing Oracle Database 10g release 2:

- [Install libaio Before Installing or Upgrading](#)
- [Install oracleasm-support to use ASMLib](#)
- [Red Hat Enterprise Linux 4.0](#)
- [Oracle Lite](#)
- [Configuring Kernel Parameters](#)

3.1 Install libaio Before Installing or Upgrading

Before upgrading to or installing Oracle Database 10g release 2, install the `libaio` package.

3.2 Install oracleasm-support to use ASMLib

Install `oracleasm-support` package version 2.0.0.1 or higher to use ASMLib on Red Hat Enterprise Linux 4.0 Advanced Server or SUSE Linux Enterprise Server 9. At the time of this publication, the ASMLib user space tools and kernel module packages are not yet available for SUSE Linux Enterprise Server 10.

3.3 Red Hat Enterprise Linux 4.0

Before installing Oracle Database 10g release 2 on Red Hat Enterprise Linux 4.0 Update 1, install the following package:

```
binutils-2.15.92.0.2-13.0.0.0.2.x86_64
```

This package can be downloaded from the following link:

http://oss.oracle.com/projects/compat-oracle/dist/files/RedHat/binutils-2.15.92.0.2-13.0.0.0.2.x86_64.rpm

This issue is tracked with Oracle bug 4619031.

3.4 Oracle Lite

Before installing Oracle Lite, ensure that the following package is installed:

```
libxml2-2.5.10-7.i386.rpm
```

3.5 Configuring Kernel Parameters

After updating the values of kernel parameters in the `/etc/sysctl.conf` file, ensure that you either reboot the computer or run the `sysctl -p` command to make the changes of the `/etc/sysctl.conf` file available in the active kernel memory.

On SUSE Linux Enterprise Server 9.0, ensure that you set the following kernel parameter:

```
disable_cap_mlock = 1
```

On SUSE Linux Enterprise Server 10, ensure that you set the `hugetlb_shm_group` kernel parameter to the gid of the group used as the `dba` group. For example, on a system using a group named `dba` with the following entry in the `/etc/group` file:

```
dba:::104:oracle
```

On SUSE Linux Enterprise Server 10, ensure that you set the `hugetlb_shm_group` kernel parameter to the GID of the group used as the `dba` group. For example, on a system using a group named `dba` with the `dba:::104:oracle` entry in the `/etc/group` file, the `hugetlb_shm_group` kernel parameter should be set to the following value:

```
hugetlb_shm_group = 104
```

4 Documentation Corrections and Additions

This section lists the following corrections to the installation guides for Linux x86-64.

- In the "Software Requirements" section of quick installation guides and Chapter 2 of installation guides, the following should be the list of packages for Red Hat Enterprise Linux 3.0:

```
make-3.79.1-17
compat-db 4.0.14-5.1
control-center-2.2.0.1-13
gcc-3.2.3-47
gcc-c++-3.2.3-47
gdb-6.1post-1.20040607.52
glibc-2.3.2-95.30
glibc-common-2.3.2-95.30
glibc-devel-2.3.2-95.30
glibc-devel-2.3.2-95.20 (32 bit)
compat-db-4.0.14-5
compat-gcc-7.3-2.96.128 (32 bit)
compat-gcc-c++-7.3-2.96.128 (32 bit)
compat-libstdc++-7.3-2.96.128 (32 bit)
compat-libstdc++-devel-7.3-2.96.128 (32 bit)
gnome-libs-1.4.1.2.90-34.2 (32 bit)
libstdc++-3.2.3-47
libstdc++-devel-3.2.3-47
openmotif-2.2.3-3.RHEL3
sysstat-5.0.5-5.rhel3
setarch-1.3-1
libaio-0.3.96-3
libaio-devel-0.3.96-3
```

- The following should be the list of packages for Red Hat Enterprise Linux 4.0:

```
binutils-2.15.92.0.2-10.EL4
compat-db-4.1.25-9
control-center-2.8.0-12
gcc-3.2.3-47
gcc-c++-3.2.3-47
glibc-2.3.4-2
glibc-common-2.3.4-2
gnome-libs-1.4.1.2.90-44.1
libstdc++-3.4.3-9.EL4
libstdc++-devel-3.4.3-9.EL4
libaio-0.3.96-3
make-3.80-5
pdksh-5.2.14-30
sysstat-5.0.5-1
```

- In *Oracle Database Oracle Clusterware and Oracle Real Application Clusters Installation Guide*, Chapter 2, "Preinstallation," in the section "Oracle Clusterware Home Directory," it incorrectly lists the path `/u01/app/oracle/product/crs` as a possible Oracle Clusterware home (or CRS home) path. This is incorrect. A default Oracle base path is `/u01/app/oracle`, and the Oracle Clusterware home must never be a subdirectory of the Oracle base directory.

A possible CRS home directory is in a path outside of the Oracle base directory. For example, if the Oracle base directory is `u01/app/oracle`, then the CRS home can be an option similar to one of the following:

```
u01/crs/
/u01/crs/oracle/product/10/crs
/crs/home
```

This issue is tracked with Oracle bug 5843155.

5 Installation, Configuration, and Upgrade Issues

Review the following sections for information about issues that affect Oracle Database installation, configuration, and upgrade:

- [Upgrading Oracle Real Application Clusters Release 9.2](#)
- [Oracle Universal Installer Operating System Prerequisite Check on SUSE Linux Enterprise Server 10](#)
- [Installing Oracle Cluster Ready Services on SUSE Linux Enterprise Server 10](#)
- [Installing Enterprise Security Manager](#)
- [Upgrading Oracle Clusterware 10.1.x to Oracle Clusterware 10.2](#)
- [extjob Executable Required Directory Permissions](#)
- [Modifying a Virtual IP Address Node Application](#)
- [Raw Devices on Red Hat Enterprise Linux 4.0](#)
- [Database Migration](#)

5.1 Upgrading Oracle Real Application Clusters Release 9.2

If you are upgrading a 9.2 RAC environment to Oracle Database 10g release 2 on Red Hat Linux 3.0, then you must apply a patch to GLIBC before proceeding with the Oracle Clusterware installation. Follow the instructions documented in Oracle*MetaLink* note 284535.1.

This issue is tracked with Oracle bug 3006854.

5.2 Oracle Universal Installer Operating System Prerequisite Check on SUSE Linux Enterprise Server 10

If you are installing Oracle database 10g on SUSE Linux Enterprise Server 10, the current version of the Oracle Universal Installer does not recognize SLES10 as a supported operating system and does not perform the installation.

Workaround #1: Run the Oracle Universal Installer using the `ignoreSysPrereqs` flag which causes the installer to skip the operating system check and continue with the installation:

```
./runinstaller -ignoreSysPrereqs
```

As a side effect, the installer also skips other checks during the installation.

Workaround #2: The installation will pass the operating system prerequisite checks if you change each 10 to 9 in the `/etc/SuSE-release` file. Ensure that you replace the original values in the `/etc/SuSE-release` file after the Oracle installation is complete.

Original Value	Changed Value
SUSE Linux Enterprise Server 10 (x86_64)	SUSE Linux Enterprise Server 9 (x86_64)
VERSION = 10	VERSION = 9

This causes the installer to consider the system to be running SUSE Linux Enterprise Server 9 and the operating system check passes. The changes to the `/etc/SuSE-release` file should be reverted after the installation of all Oracle software is complete as some YaST tools require the original content.

5.3 Installing Oracle Cluster Ready Services on SUSE Linux Enterprise Server 10

Near the end of the installation of Oracle Cluster Ready Services, Oracle Universal Installer prompts for the `$CRS_HOME/root.sh` script to be run on all of the nodes in the cluster. When the `root.sh` script is run on the last node in the cluster, the script calls the VIPCA utility, which fails. Refer to the "[SRVCTL and VIPCA Utilities Set the LD_ASSUME_KERNEL Parameter](#)" section for more details.

Workaround: Before running the `root.sh` script on the last node in the cluster, alter the `$CRS_HOME/bin/vipca` script commenting out lines 119 through 123:

```
arch='uname -m'
#   if [ "$arch" = "i686" -o "$arch" = "ia64" -o "$arch" = "x86_64" ]
#   then
#       LD_ASSUME_KERNEL=2.4.19
```

```
#         export LD_ASSUME_KERNEL
#         fi
```

With the lines commented out, `root.sh` should be able to call `VIPCA` successfully. Ensure that you do not comment out line 118, which sets the `arch` variable as that is needed by the script.

5.4 Installing Enterprise Security Manager

To install Oracle Security Manager, install Oracle Client and then select the Administrator installation type.

5.5 Upgrading Oracle Clusterware 10.1.x to Oracle Clusterware 10.2

When upgrading from 10.1.x to 10.2, Oracle Clusterware will not start if the host name directory under the `/etc/oracle/scls_scr` directory includes the domain name. The following error message is displayed when you run the `rootupgrade.sh` script.

```
A file or directory in the path name does not exist.
/etc/init.cssd[509]: /etc/oracle/scls_scr/host_name/root/cssrun: 0403-005
Cannot create the specified file.
```

Workaround: Move the `/etc/oracle/scls_scr/hostname.domain_name` directory to `/etc/oracle/scls_scr/hostname` and rerun the `rootupgrade.sh` script.

This issue is tracked with Oracle bug 4472284.

5.6 extjob Executable Required Directory Permissions

To enable the `extjob` executable to locate required libraries, the `$ORACLE_HOME/lib` directory and all of its parent directories must have execute permissions for `group` and `other`.

5.7 Modifying a Virtual IP Address Node Application

Use the `srvctl modify nodeapps` command to modify the name, IP address, or netmask of an existing virtual IP address (VIP) resource. Use the `-A` argument to include the existing interfaces for the VIP:

```
srvctl modify nodeapps -n mynode1 -A 100.200.300.40/255.255.255.0/eth0
```

This issue is tracked with Oracle bug 4500688.

5.8 Raw Devices on Red Hat Enterprise Linux 4.0

When you restart a Red Hat Enterprise Linux 4.0 system, raw devices revert to their original owners and permissions by default. If you are using raw devices with this operating system for your Oracle files, for example, for ASM storage or Oracle Clusterware files, you need to override this default behavior. To do this, add an entry to the `/etc/rc.d/rc.local` file for each raw device containing the `chmod` and `chown` commands required to reset them to the required values.

As an example, here are sample entries in a `/etc/rc.d/rc.local` file that control the restart behavior of raw devices for two ASM disk files (`/dev/raw/raw6` and `/dev/raw/raw7`), two Oracle Cluster Registry files

(/dev/raw/raw1 and /dev/raw/raw2), and three Oracle Clusterware voting disks (/dev/raw/raw3, /dev/raw/raw4, and /dev/raw/raw5):

```
# ASM
chown oracle:dba /dev/raw/raw6
chown oracle:dba /dev/raw/raw7
chmod 660 /dev/raw/raw6
chmod 660 /dev/raw/raw7
# OCR
chown root:oinstall /dev/raw/raw1
chown root:oinstall /dev/raw/raw2
chmod 660 /dev/raw/raw1
chmod 660 /dev/raw/raw2
# Voting Disks
chown oracle:oinstall /dev/raw/raw3
chown oracle:oinstall /dev/raw/raw4
chown oracle:oinstall /dev/raw/raw5
chmod 644 /dev/raw/raw3
chmod 644 /dev/raw/raw4
chmod 644 /dev/raw/raw5
```

5.9 Database Migration

Review the following sections if you want to migrate Oracle Database 10g release 2 database from Linux x86 to Linux x86-64:

- [Migrating Single Instance Database from Linux x86 to Linux x86-64](#)
- [Migrating Oracle RAC Database from Linux x86 to Linux x86-64](#)

5.9.1 Migrating Single Instance Database from Linux x86 to Linux x86-64

To migrate Oracle 10g release 2 single instance database from Linux x86 to Linux x86-64, complete the following procedure:

1. To protect the existing database 10g release 2 against any failures during the migration, ensure that you take a complete backup of the database on Linux x86-64 system.
2. To create a control file that helps file after the migration, run the following SQL command from the SQL prompt on the Linux x86 system:

```
SQL> ALTER DATABASE BACKUP CONTROLFILE TO TRACE;
```

This command saves the control file information to a trace file in the UDUMP directory. The control file information is similar to the following where *ia32lnx_path* is the location of the Linux x86 Oracle home:

```
CREATE CONTROLFILE REUSE DATABASE "SAMPLE" NORESETLOGS
NOARCHIVELOG
MAXLOGFILES 32
MAXLOGMEMBERS 2
MAXDATAFILES 32
MAXINSTANCES 1
MAXLOGHISTORY 112
LOGFILE GROUP 1 '/ia32lnx_path/oradata/eegp22/redo01.log' 25M,
          GROUP 2 '/ia32lnx_path/oradata/eegp22/redo02.log' 25M
DATAFILE '/ia32lnx_path/oradata/eegp22/system01.dbf',
         '/ia32lnx_path/oradata/eegp22/sysaux01.dbf',
         '/ia32lnx_path/oradata/eegp22/users01.dbf',
         '/ia32lnx_path/oradata/eegp22/undotbs01.dbf'
```

```
CHARACTER SET WE8DEC;
```

3. Perform a clean Oracle database shutdown.

```
SQL> SHUTDOWN IMMEDIATE
```

4. Copy the database files to the Linux x86-64 system.
5. In a new Oracle home, install the Oracle 10g release 2 software for Linux x86-64.
6. Copy the Oracle initialization parameter file (*init.ora*) to the new Oracle home. Change any Oracle home path references to use the new Oracle home path on the Linux x86-64 system.
7. Start up the database using SQL commands similar to the following example where *lnx_x86-64_path* is the location of the Linux x86-64 Oracle home:

```
SQL> STARTUP NOMOUNT;
CREATE CONTROLFILE REUSE DATABASE "EEGP102" NORESETLOGS
MAXLOGFILES 32
MAXLOGMEMBERS 2
MAXDATAFILES 32
MAXINSTANCES 1
MAXLOGHISTORY 112
LOGFILE GROUP 1 '/lnx_x86-64_path/oradata/eegp22/redo01.log' size 25M,
             GROUP 2 '/lnx_x86-64_path/oradata/eegp22/redo02.log' size 25M
DATAFILE '/lnx_x86-64_path/oradata/eegp22/system01.dbf',
         '/lnx_x86-64_path/eegp22/sysaux01.dbf',
         '/lnx_x86-64_path/eegp22/users01.dbf',
         '/lnx_x86-64_path/eegp22/undotbs01.dbf'
CHARACTER SET WE8DEC
ALTER DATABASE OPEN ;
```

Note: In the preceding example, the path value changes as per the system.

8. To change the word size of the release, run the following commands:

```
SQL> STARTUP UPGRADE;
SQL> @$ORACLE_HOME/rdbms/admin/utlirp.sql
```

9. Run the *utlirp.sql* script to recompile all PL/SQL packages now instead of when the packages are accessed for the first time. This step is optional but recommended.

```
SQL> @$ORACLE_HOME/rdbms/admin/utlirp.sql
```

10. Perform a clean shutdown of the database.

```
SQL> SHUTDOWN IMMEDIATE
```

11. Take a complete backup of the database.

See Also:

- *Oracle Database Backup and Recovery Basics*
- *Oracle Database Backup and Recovery Advanced User's Guide*
- *Oracle Database Backup and Recovery Reference*
- *Oracle Database Backup and Recovery Quick Start Guide*

5.9.2 Migrating Oracle RAC Database from Linux x86 to Linux x86-64

To migrate Oracle RAC 10g release 2 from Linux x86 to Linux x86-64, complete the following procedure:

1. Complete steps 1 to 5 of the "[Migrating Single Instance Database from Linux x86 to Linux x86-64](#)" section.

2. Use the following command to ensure that `gsd` is running:

```
$ ps -elf | grep gsd
```

3. Use the `$ORACLE_HOME/bin/srvctl` utility to add the database name and the cluster node names in Linux x86-64. To create a database, use a command similar to the following command:

```
$ srvctl add database -d 10gdb -o ORACLE_HOME -m us.oracle.com \-s /dev/raw/raw2
```

To create an instance, use a command similar to the following command:

```
$ srvctl add instance -d 10gdb -i 10gdb1 -n pl-adc.amd15
```

4. Set the `ORACLE_SID` environment variable for one of the database instances in the environment.

For the Bash or Korn shell:

```
$ ORACLE_SID=10gdb1; export ORACLE_SID
```

For the C shell:

```
% setenv ORACLE_SID 10gdb1
```

5. Export the server parameter file (SPFILE) to a text initialization parameter file as follows:

```
SQL> CREATE PFILE = '$ORACLE_HOME/dbs/init10gdb1.ora' FROM SPFILE = '/dev/raw/raw2';
```

6. Edit the text initialization parameter file to update path names to point to the Linux x86-64 Oracle home directory along with any other required changes. Then re-create the SPFILE as follows:

```
SQL> CREATE SPFILE = '/dev/raw/raw2' FROM PFILE = '$ORACLE_HOME/dbs/init10gdb1.ora';
```

Note: If the cluster database does not start in `EXCLUSIVE MODE`, mark all the entries with cluster-database as comments in the SPFILE.

7. Directories listed in the `SPFILE` must exist before you start the database. Create these directories, ensuring that they have write permissions for the oracle user and dba groups.
8. Add a listener name for the database that listens on all cluster nodes to the `ORACLE_HOME/network/admin/tnsnames.ora` file. Also add an entry for each instance. The following is an example of the entries:

```
LISTENERS_10gdb.US.ORACLE.COM =
(ADDRESS_LIST =
(ADDRESS = (PROTOCOL = TCP) (HOST = server1-vip) (PORT = 1521)
(ADDRESS = (PROTOCOL = TCP) (HOST = server2-vip) (PORT = 1521)
LISTENERS_10gdb1.US.ORACLE.COM =
(ADDRESS = (PROTOCOL = TCP) (HOST = server1-vip) (PORT = 1521)
LISTENERS_10gdb2.US.ORACLE.COM =
(ADDRESS = (PROTOCOL = TCP) (HOST = server2-vip) (PORT = 1521)
```

9. Create the password file using the `orapwd` utility. Use a command similar to the following:

```
$ orapwd file=$ORACLE_HOME/dbs/orapwd10gdb1 entries=10 password=manager
```

10. Start the database without mounting it, using SQL commands similar to the following where `lnx_x86-64_path` is the location of the Linux x86-64 Oracle home:

```
SQL> STARTUP NOMOUNT;
CREATE CONTROLFILE REUSE DATABASE "SAMPLE" NORESETLOGS
MAXLOGFILES 32
MAXLOGMEMBERS 2
MAXDATAFILES 32
MAXINSTANCES 1
MAXLOGHISTORY 112
LOGFILE
GROUP 1 '/lnx_x86-64_path/oracle/dbs/t_log1.dbf' size 25M
GROUP 2 '/lnx_x86-64_path/oracle/dbs/t_log2.dbf' size 25M
DATAFILE
'/lnx_x86-64_path/oracle/dbs/t_db1.dbf'
CHARACTER SET WE8DEC
ALTER DATABASE OPEN
```

11. Shut down the database.

```
SQL> SHUTDOWN IMMEDIATE
```

12. Before changing the word size of your release, you must edit the initialization parameter file (`pfile`) by adding the following line:

```
_system_trig_enabled=false
```

13. Use the following command to start the database:

```
SQL> STARTUP PFILE = '$ORACLE_HOME/dbs/init-10gdb1.ora'
```

14. Check the amount of free space in the `SYSTEM` tablespace. Ensure there is enough room for `SYSTEM` tablespace to increase its size by 50%.

```
SQL> SELECT SUM (df.bytes) AS total,
SUM (fs.bytes) AS free,
(SUM (fs,bytes)/SUM(df.bytes) * 100) AS percent_free
FROM dba_data_files df,
```

```
DBA_FREE_SPACE fs
WHERE df.tablespace_name = 'SYSTEM'
AND
df.tablespace_name = fs.tablespace_name
GROUP BY df.tablespace_name
```

If you get a `percent_free` value less than 33%, then you must add a new raw device data file to `SYSTEM` tablespace, for example:

```
SQL> ALTER TABLESPACE SYSTEM ADD DATAFILE '/dev/raw/raw108' SIZE 200M;
```

15. Use the following commands to restart the database in upgrade mode:

```
SQL> SHUTDOWN IMMEDIATE;
SQL> STARTUP UPGRADE
```

16. To change the word size of your release, enter the following command:

```
SQL> @$ORACLE_HOME/rdbms/admin/utlirp.sql
```

17. Run the `utlirp.sql` script to recompile all PL/SQL packages now instead of when the packages are accessed for the first time. This step is optional but recommended.

```
SQL> @$ORACLE_HOME/rdbms/admin/utlirp.sql
```

Note: You need to shutdown the database and start it in upgrade mode.

18. Edit the text initialization parameter file to remove the following line:

```
_system_trig_enabled=false
```

19. To restart the database, use the following command:

```
./srvctl start database -d 10gdb -o pfile=$USR_ORA_PFILE
```

Ensure that the `USR_ORA_PFILE` variable is set to the location of `pfile`. Alternately, you can specify the complete path of `pfile` in the command.

20. To create instances on the other cluster nodes, complete the following steps:
- Copy the `$ORACLE_HOME/network/admin/tnsnames.ora` file to the same location on each node.
 - Create the dump directories listed in the initialization parameter file (`pfile`) in the Oracle home directory.
 - Copy the initialization parameter file (`pfile`) from the original node to the `$ORACLE_HOME/dbs` directory, changing its name to reflect the instance name on the current node.
 - Create a password file in the `$ORACLE_HOME/dbs` directory, ensuring its name includes the instance name for the node.
 - Start up the instance.

6 Other Known Issues

The following sections contain information about issues related to Oracle Database 10g and associated products:

- [Building Pro*C Applications if PostgreSQL is Installed](#)
- [Encoding Information Not Present in Translated Help Files](#)
- [Oracle Clusterware Files Issues](#)
- [Removing Metrics for Wait Classes Removes Them Permanently](#)
- [Support for 64-Bit JDBC](#)
- [Patch for Oracle Clusterware Configuration with Voting Disk on Network Attached Storage](#)
- [SRVCTL and VIPCA Utilities Set the LD_ASSUME_KERNEL Parameter](#)
- [Mapping of 127.0.0.2 to the Local Hostname](#)

6.1 Building Pro*C Applications if PostgreSQL is Installed

If the `postgresql-devel` package is installed on the system, then you must add the following directory to the beginning of the `sys_include` parameter in the `$ORACLE_HOME/precomp/admin/pcscfg.cfg` file before building Pro*C applications:

```
$ORACLE_HOME/precomp/public
```

If you do not make this change, then you may encounter errors similar to the following when linking the applications:

```
/tmp/ccbXd7v6.o(.text+0xc0): In function `drop_tables':  
: undefined reference to `sqlca'
```

This issue is tracked with Oracle bug 3933309.

6.2 Encoding Information Not Present in Translated Help Files

If the system uses a European language, you might see corrupted characters in Table of Contents of database tools, such as Database Configuration Assistant.

This issue is tracked with Oracle bug 3957096.

Workaround: If the system uses a European language, do not use the `.UTF-8` locale. For example, if the system uses German, set the `LANG` and `LC_ALL` environment variables to `de_DE` instead of `de_DE.UTF-8`.

6.3 Oracle Clusterware Files Issues

The following note applies if you are using Red Hat Enterprise Linux 4.0 or SUSE Linux Enterprise Server 10 and using raw devices to store the Oracle Cluster Registry (OCR) and the voting disk for Oracle Clusterware, or using raw devices for Automatic Storage Management (ASM) database files. For each raw device used for the purposes listed, you must add two entries in the `/etc/rc.d/rc.local` file on Red Hat Enterprise Linux 4.0 or the `/etc/init.d/after.local` file on SUSE Linux Enterprise Server 10 after running the `root.sh` script following the installation of Oracle Clusterware.

For each OCR file, the entries should look as follows, where `oinstall` is the Oracle install group and `/dev/raw/rawn` is an individual device file:

```
chown root:oinstall /dev/raw/rawn
chmod 640 /dev/raw/rawnmar
```

For each voting disk file, the entries should look as follows, where `oracle` is the Oracle user, `oinstall` is the Oracle install group, and `/dev/raw/rawn` is an individual device file:

```
chown oracle:oinstall /dev/raw/rawn
chmod 644 /dev/raw/rawnmar
```

For each ASM file, the entries should look as follows, where `oracle` is the Oracle user, `oinstall` is the Oracle install group, and `/dev/raw/rawn` is an individual device file:

```
chown oracle:oinstall /dev/raw/rawn
chmod 660 /dev/raw/rawnmar
```

6.4 Cluster Verification Utility

This section lists the issues with Cluster Verification Utility on Red Hat Enterprise Linux 4.0 and SUSE Linux Enterprise Server 9 and 10:

- Cluster Verification Utility (CVU) does not support shared checks for raw disks used for Oracle Cluster File System version 2 on Red Hat Enterprise Linux 4.0 and SUSE Linux Enterprise Server 9 and 10.
- Cluster Verification Utility (CVU) does not detect SMP-Kernel rpms for the hosts and displays the "Kernel check failed" message. In verbose mode, the status for kernel is displayed as "missing".

This issue is tracked with Oracle bug 4685951.

- The preinstallation stage verification checks for Oracle Clusterware and Oracle Real Applications Clusters and reports missing packages. Ignore the following missing packages and continue with the installation:

```
compat-gcc-7.3-2.96.128
compat-gcc-c++-7.3-2.96.128
compat-libstdc++-7.3-2.96.128
compat-libstdc++-devel-7.3-2.96.128
```

6.5 Removing Metrics for Wait Classes Removes Them Permanently

Do not remove the key values for the wait class metrics. Doing so removes them permanently and currently there is no easy way to recover them.

This issue is tracked with Oracle bug 4602952.

6.6 Support for 64-Bit JDBC

For Oracle Database 10g release 2 on Linux x86-64, 64-bit JDBC (using JDK 5) is supported.

6.7 Patch for Oracle Clusterware Configuration with Voting Disk on Network Attached Storage

To resolve Oracle Clusterware configuration issue when voting disk is on Network Attached Storage, you need to apply the patch tracked through Oracle bug 4697432.

6.8 SRVCTL and VIPCA Utilities Set the LD_ASSUME_KERNEL Parameter

The SRVCTL and VIPCA utilities shipped with Oracle Database 10g release 2 and Oracle Clusterware software set the environmental variable LD_ASSUME_KERNEL. On SUSE Linux Enterprise Server 10, because the older Linux threads API has been removed from GLIBC, setting this parameter causes the SRVCTL and VIPCA utilities to exit with the following error:

```
/opt/oracle/crs/jdk/jre/bin/java:
error while loading shared libraries:
libpthread.so.0: cannot open shared object file:
No such file or directory
```

Workaround: Comment out the lines that set the LD_ASSUME_KERNEL variable from the VIPCA and SRVCTL utilities. For the VIPCA utility alter the \$CRS_HOME/bin/vipca script commenting out lines 119 through 123 as follows:

```
        arch='uname -m'
#       if [ "$arch" = "i686" -o "$arch" = "ia64" -o "$arch" = "x86_64" ]
#       then
#           LD_ASSUME_KERNEL=2.4.19
#           export LD_ASSUME_KERNEL
#       fi
```

With the lines commented out, root.sh should be able to call VIPCA successfully. Ensure that you do not to comment out line 118 which sets the arch variable as that is needed by the script.

For the SRVCTL utility alter the \$CRS_HOME/bin/srvctl and the \$ORACLE_HOME/bin/srvctl scripts commenting out lines 173 and 174 as follows:

```
#Remove this workaround when the bug 3937317 is fixed
#LD_ASSUME_KERNEL=2.4.19
#export LD_ASSUME_KERNEL
```

6.9 Mapping of 127.0.0.2 to the Local Hostname

By default, the hostname of a machine is mapped to the IP address 127.0.0.2 through an entry in the /etc/hosts similar to the following on SUSE Linux Enterprise Server 10:

```
127.0.0.2      test test.example.com
```

YaST does this to provide compatibility with earlier versions of the applications that had problems running on desktops with dynamically assigned hostnames from DHCP. This mapping may cause certain Oracle networking libraries to encounter errors when they attempt to resolve the hostname of the machine. To avoid these problems, the entry should be removed from the /etc/hosts file.

Note that several network related YaST utilities may add this entry back to the file.

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