

How to Apply
Oracle Patch Set Update (PSU)
To Various Oracle Databases

(PSU 180417)

June 11th, 2018

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A. PATCHING DATABASES on SOLARIS(SPARC)

BASE VERSION		FINAL VERSION
11.2.0.4	⇒	11.2.0.4.180417
12.1.0.2	⇒	12.1.0.2.180417
12.2.0.1	⇒	12.2.0.1.180417

A.1. PATCHING NON-RAC 11.2.0.4 BASE RELEASE [SOLARIS-SPARC]

Required Files

FILE	VERSION	FILE NAME
Opatch	11.2.0.3.19	p6880880_112000_SOLARIS64.zip
Combo OJVM PSU 11.2.0.4.180417 and Database PSU 11.2.0.4.180417 (April 17, 2018)	11.2.0.4.180417	p27726500_112040_SOLARIS64.zip

WARNING: Be sure that you are on the correct environment before start working!

STEP1: Copy the Required Files to the Server

The required files are already downloaded to the dba_common directory. However, if you cannot access the dba_common or if they are deleted, you may have to download those required files from the "My Oracle Support" page.

Create a path under /tmp and copy the files to this location

```
% mkdir -p /tmp/oracle_patches
% cp /dba_common/Patch_April18/1_Solaris_64/p27726500_112040_SOLARIS64.zip /tmp/oracle_patches
% cp /dba_common/Patch_April18/1_Solaris_64/p6880880_112000_SOLARIS64.zip /tmp/oracle_patches
% chmod -R 777 /tmp/oracle_patches
```

STEP2: Update the OPatch Software

The tool that is used to patch the Oracle databases is called OPatch. OPatch, itself has to be at a certain version to be able to execute the PSUs. So, we need to update the OPatch software as below:

Execute the following commands with the user that owns the current \$ORACLE_HOME that is being patched. The values of environment variable *ORACLE_SID* is not important in this step.

```
// First remove the old OPatch software
% cd $ORACLE_HOME
% rm -rf OPatch

// Then unzip the new OPatch software
% unzip /tmp/oracle_patches/p6880880_112000_SOLARIS64.zip -d $ORACLE_HOME
```

STEP3: Unzip the main PSU patch file and check for possible conflicts

```
// First, go to the path and unzip
% cd /tmp/oracle_patches
% unzip p27726500_112040_SOLARIS64.zip

// Then check for possible conflicts. The check should return > OPatch succeeded.
% cd /tmp/oracle_patches/27726500/27338049
% opatch prereq CheckConflictAgainstOHWithDetail -ph ./
OPatch succeeded.
% cd /tmp/oracle_patches/27726500/27475598
% opatch prereq CheckConflictAgainstOHWithDetail -ph ./
OPatch succeeded.
```

If there is a conflict due to a one-off patch, those conflicting patches must be rolled back before continuing.

STEP4: Stop listener, instance(s), sqlplus

To be able to run the opatch, no process must be using the binaries under the ORACLE_HOME currently being patched. That means all database instances, listeners, sqlplus prompts must be shutdown prior to the patching.

WARNING: You must stop all databases that belong to the \$ORACLE_HOME that you are about to patch!

For ex. if STOR45 and DVOR45 are the two instances that use the same ORACLE_HOME, and that ORACLE_HOME is the one being patched, both instances must be shutdown.

If the listener is also instantiated from the ORACLE_HOME that is being patched, it should also be stopped. If the databases are configured to register another listener that belongs to another ORACLE_HOME, it is not necessary to stop that foreign listener.

```
// Copy the name of the listener being used and stop it.
% lsnrctl stop <listener_name>
```

```
// Shutdown all databases of that ORACLE_HOME.
SQL> shu immediate;
```

STEP5: Apply the Database PSU – Silent Way

This following scripts must be run (once) with the user that owns the ORACLE_HOME. The values of environment variable *ORACLE_SID* is not important for now.

```
// First, create a response file
% cd /tmp/oracle_patches/27726500/27338049
% $ORACLE_HOME/OPatch/ocm/bin/emocmrsp -no_banner -output ./ocm_opatch.rsp
```

Provide your email address to be informed of security issues, install and initiate Oracle Configuration Manager. Easier for you if you use your My Oracle Support Email address/User Name.

Visit <http://www.oracle.com/support/policies.html> for details.

Email address/User Name: **<Press Enter>**

You have not provided an email address for notification of security issues.

Do you wish to remain uninformed of security issues ([Y]es, [N]o) [N]: **Y <Press Y and Enter>**

The OCM configuration response file (./ocm_opatch.rsp) was successfully created.

```
// APPLY the patch with the following command and monitor the nohup.out file
% nohup opatch apply -silent -ocmrf ./ocm_opatch.rsp &
```

```
// If there are no errors in nohup.out CONTINUE...
```

WARNING: There might be possible warnings similar to the one below during the patch: In this case the patch will end with a message saying: **"opatch completed with warnings"**

```
+ make -f /bjdd01/app/oracle/product/11.2.0.4/db_1/sqlplus/lib/ins_sqlplus.mk dlopenlib _FULL_
_LIBNAME=/bjdd01/app/oracle/product/11.2.0.4/db_1/sqlplus/lib/libsqlplus.so _LIBNAME=libsqlplus
_LIBDIR=/bjdd01/app/oracle/product/
11.2.0.4/db_1/sqlplus/lib/ _LIBNAME_LIBS=$(libsqlplusLIBS) _LIBNAME_EXTRALIBS=$(libsqlplusEXTRALIBS)
```

```
ld: warning: symbol '_init' not found, but .init section exists - possible link-edit without using the
compiler driver
```

```
ld: warning: symbol '_fini' not found, but .fini section exists - possible link-edit without using the
compiler driver
```

Doc ID 2193336.1: According to the Oracle MOS report, this warning can be ignored safely.

```
+ [ '' != '' ]
+ make -f
$ORACLE_HOMEsqlplus/lib/ins_sqlplus.mk dlopenlib
_FULL _LIBNAME=$ORACLE_HOMEsqlplus/lib/libsqlplus.so _LIBNAME=libsqlplus
_LIBDIR=$ORACLE_HOMElib/ _LIBNAME_LIBS='$(libsqlplusLIBS)'
_LIBNAME_EXTRALIBS='$(libsqlplusEXTRALIBS)'
ld: warning: symbol '_init' not found, but .init section exists - possible
link-edit without using the compiler driver
ld: warning: symbol '_fini' not found, but .fini section exists - possible
link-edit without using the compiler driver
```

Solution :

As confirmed by development these warnings can be safely ignored .

STEP6: Apply the Database PSU Post Installation – Catbundle

Now, in this step the ORACLE_SID environment variable is important. The catbundle process should be applied for each and every database instance (SID) that belongs to the ORACLE_HOME that is being patched.

```
// After the patch is applied, apply catbundle for all databases
```

```
% cd $ORACLE_HOME/rdbms/admin
```

```
% sqlplus / as sysdba
```

```
SQL> startup;
```

```
SQL> @catbundle.sql psu apply
```

```
SQL> shu immediate;
```

```
// Repeat the above step for every database by setting the ORACLE_SIDs to the
```

```
// relevant database IDs.
```

STEP7: Apply the Java PSU – Silent Way

This following scripts must be run (once) with the user that owns the ORACLE_HOME. The values of environment variable *ORACLE_SID* is not important for now.

```
// Shutdown all the databases that belong to the ORACLE_HOME that we are patching.
// They should already be shut-down from the previous steps anyway...
SQL> shu immediate;
% cd /tmp/oracle_patches/27726500/27475598
% $ORACLE_HOME/OPatch/ocm/bin/emocmrsp -no_banner -output ./ocm_opatch.rsp

Provide your email address to be informed of security issues, install and
initiate Oracle Configuration Manager. Easier for you if you use your My
Oracle Support Email address/User Name.
Visit http://www.oracle.com/support/policies.html for details.
Email address/User Name: <Press Enter>

You have not provided an email address for notification of security issues.
Do you wish to remain uninformed of security issues ([Y]es, [N]o) [N]: Y <Press Y and Enter>
The OCM configuration response file (./ocm_opatch.rsp) was successfully created.

% nohup opatch apply -silent -ocmrf ./ocm_opatch.rsp &
```

STEP8: Apply the Java PSU Post Installation – postinstall.sql

Now, in this step the ORACLE_SID environment variable is important. The postinstallation.sql should be applied for each and every database instance (SID) that belongs to the ORACLE_HOME that is being patched.

```
% cd $ORACLE_HOME/sqlpatch/27475598
% sqlplus / as sysdba
SQL> startup upgrade
SQL> @postinstall.sql
SQL> shutdown
SQL> startup

// Repeat the above step for every database by setting the ORACLE_SIDs to the
// relevant database IDs.
```

STEP9: Start the Listener

```
// In Step4 you should already have copied the listener name, now start it.
% lsnrctl start <listener_name>
```

STEP10: The Bug Fixing – MOS Doc ID: **2201729.1**

There is a reported bug that, the permission of the library file "\$ORACLE_HOME/lib/libsqplus.so" changes from 644 to 640, after applying the DBPSU patch.

Therefore, we should check this file and manually change the mod to 644 if it is set to 640.

```
// First check whether the file mod is 640 or not
% cd $ORACLE_HOME/lib
% ls -ltrh libsqlplus.so

-rw-r----- 1 dvbkrdb bkrdba 1.2M Jul 6 10:16 libsqlplus.so

// If it is mod 640 as above, make it 644 with the below command
% chmod 644 libsqlplus.so
```

STEP11: Check the PSU Result

```
// First check whether the binaries are OK
% opatch lsinventory
```

```
OPatch version : 11.2.0.3.19
OUI version : 11.2.0.4.0
Log file location : /u01/psu/psu/patches/11.2.0.4.0/psu_11204180417/logs/psu_1120418041720180706_103810.log

Lsinventory Output file location : /u01/psu/psu/patches/11.2.0.4.0/psu_11204180417/logs/psu_1120418041720180706_103810.log

-----
Local Machine Information::
Hostname: S-00814-D5C
ARU platform id: 23
ARU platform description:: Solaris Operating System (SPARC 64-bit)

Installed Top-level Products (2):

Oracle Database 11g 11.2.0.4.0
Oracle Database 11g Examples 11.2.0.4.0
There are 2 products installed in this Oracle Home.

Interim patches (2) :

Patch 27475598 : applied on Fri Jul 06 10:38:10 EDT 2018
Unique Patch ID: 22013145
Patch description: "OJVM PATCH SET UPDATE 11.2.0.4.180417"
Created on 8 Mar 2018, 07:03:05 hrs PST8PDT
Bugs fixed:
18933818, 19176885, 17201047, 25649873, 25067795, 14774730, 27461842
19153980, 21911849, 23727132, 18166577, 27000663, 24448240, 17056813
21811517, 19909862, 25494379, 22675136, 24534298, 19895326, 22253904
17804361, 19231857, 26023002, 17528315, 19058059, 19554117, 19007266
17285560, 22670385, 18458318, 19187988, 23265914, 19699946, 19006757
19374518, 19223010, 25076732, 22118835, 26637592, 19852360, 20408829
21047766, 21566944

Patch 27338049 : applied on Fri Jul 06 10:16:14 EDT 2018
Unique Patch ID: 21973521
Patch description: "Database Patch Set Update : 11.2.0.4.180417 (27338049)"
Created on 26 Feb 2018, 08:50:36 hrs UTC
Sub-patch 26925576: "Database Patch Set Update : 11.2.0.4.180116 (26925576)"
```

Check th Java version

```
// You can also check the current Java version of the databases, it gives an error
// if there is an inconsistency between the database and the binaries.
SQL> SELECT dbms_java.get_ojvm_property(PROPSTRING=>'java.version') FROM dual;
```

A.2. PATCHING NON-RAC 12.1.0.2 BASE RELEASE [SOLARIS-SPARC]

Required Files

FILE	VERSION	FILE NAME
Opatch	12.2.0.1.14	p6880880_121010_SOLARIS64.zip
Combo OJVM PSU + DB PSU (Non-BP)	12.1.0.2.180417	p27726471_121020_SOLARIS64.zip

WARNING: Be sure that you are on the correct environment before start working!

STEP1: Copy the Required Files to the Server

The required files are already downloaded to the dba_common directory. However, if you cannot access the dba_common or if they are deleted, you may have to download those required files from the "My Oracle Support" page.

Create a path under /tmp and copy the files to this location

```
% mkdir -p /tmp/oracle_patches
% cp /dba_common/Patch_April18/1_Solaris_64/p27726471_121020_SOLARIS64.zip /tmp/oracle_patches
% cp /dba_common/Patch_April18/1_Solaris_64/p6880880_121010_SOLARIS64.zip /tmp/oracle_patches
% chmod -R 777 /tmp/oracle_patches
```

STEP2: Update the OPatch Software

The tool that is used to patch the Oracle databases is called OPatch. OPatch, itself has to be at a certain version to be able to execute the PSUs. So, we need to update the OPatch software as below:

Execute the following commands with the user that owns the current \$ORACLE_HOME that is being patched. The values of environment variable ORACLE_SID is not important in this step.

```
// First remove the old OPatch software
% cd $ORACLE_HOME
% rm -rf OPatch

// Then unzip the new OPatch software
% unzip /tmp/oracle_patches/p6880880_121010_SOLARIS64.zip -d $ORACLE_HOME
```

STEP3: Unzip the main PSU patch file and check for possible conflicts

```
// First, go to the path and unzip
% cd /tmp/oracle_patches
% unzip p27726471_121020_SOLARIS64.zip

// Then check for possible conflicts. The check should return > OPatch succeeded.
% cd /tmp/oracle_patches/27726471/27338041
% opatch prereq CheckConflictAgainstOHWithDetail -ph ./
OPatch succeeded.
% cd /tmp/oracle_patches/27726471/27475603
% opatch prereq CheckConflictAgainstOHWithDetail -ph ./
OPatch succeeded.
```

If there is a conflict due to a one-off patch, those conflicting patches must be rolled backed before continuing.

STEP4: Stop listener, instance(s), sqlplus

To be able to run the opatch, no process must be using the binaries under the ORACLE_HOME currently being patched. That means all database instances, listeners, sqlplus prompts must be shutdown prior to the patching.

WARNING: You must stop all databases that belong to the \$ORACLE_HOME that you are about to patch!

For ex. if STOR45 and DVOR45 are the two instances that use the same ORACLE_HOME, and that ORACLE_HOME is the one being patched, both instances must be shutdown.

If the listener is also instantiated from the ORACLE_HOME that is being patched, it should also be stopped. If the databases are configured to register another listener that belongs to another ORACLE_HOME, it is not necessary to stop that foreign listener.

```
// Copy the name of the listener being used and stop it.  
% lsnrctl stop <listener_name>
```

```
// Shutdown all databases of that ORACLE_HOME.  
SQL> shu immediate;
```

STEPS: Apply the Database PSU – Silent Way

This following scripts must be run (once) with the user that owns the ORACLE_HOME. The values of environment variable *ORACLE_SID* is not important for now.

```
// APPLY the patch with the following command and monitor the nohup.out file  
% cd /tmp/oracle_patches/27726471/27338041  
% nohup opatch apply -silent &  
  
// If there are no errors in nohup.out CONTINUE...
```

WARNING: There might be possible warnings similar to the one below during the patch:

```
The following warnings have occurred during OPatch execution:  
1) OUI-67215:  
OPatch found the word "error" in the stderr of the make command.  
Please look at this stderr. You can re-run this make command.  
Stderr output:  
chmod: changing permissions of `/u02/app/oracle/product/12.1/db_1/bin/extjob0': Operation not  
permitted  
make: [iextjob] Error 1 (ignored)
```

Doc ID 2265726.1: According to the Oracle MOS report, this warning can be ignored safely.

SYMPTOMS

Applying Proactive Bundle / PSU Patch fails with Error

For Example :Applied 24968615 (DATABASE PROACTIVE BUNDLE PATCH 12.1.0.2.170117) through opatch utility

The patch applied successfully but log file shows warning as below:

```
[Apr 4, 2017 3:14:05 PM] [WARNING] OUI-67215:  
OPatch found the word "error" in the stderr of the make command.  
Please look at this stderr. You can re-run this make command.  
Stderr output:  
chmod: changing permissions of '$ORACLE_HOME/bin/extjob0': Operation not permitted  
make: [iextjob] Error 1 (ignored)
```

CHANGES

CAUSE

This is due to the defect for which an internal bug is raised.

SOLUTION

The Issue / Warning "chmod: changing permissions of '\$ORACLE_HOME/bin/extjob0': Operation not permitted" can be ignored safely.

STEP6: Apply the Java PSU – Silent Way

This following scripts must be run (once) with the user that owns the ORACLE_HOME. The values of environment variable *ORACLE_SID* is not important for now.

```
// Shutdown all the databases that belong to the ORACLE_HOME that we are patching.  
// They should already be shut-down from the previous steps anyway...  
SQL> shu immediate;  
% cd /tmp/oracle_patches/27726471/27475603  
% nohup opatch apply -silent &
```

STEP7: Apply the PSU Post Installation – datapatch

Now, in this step the *ORACLE_SID* environment variable is important. The **datapatch** should be applied for each and every database instance (SID) that belongs to the *ORACLE_HOME* that is being patched.

WARNING: According to the architecture of the database apply either the Non-CDC or the CDC/PDB script below. To check whether the database is CDB enabled you can use the SQL command: `SQL> select cdb from v$database;`

Standalone Databases (Non-CDC)	Multitenant Databases (CDB/PDB)
<pre>% sqlplus / as sysdba SQL> startup upgrade SQL> exit % cd \$ORACLE_HOME/OPatch % ./datapatch -verbose % sqlplus / as sysdba SQL> shutdown SQL> startup</pre>	<pre>% sqlplus / as sysdba SQL> startup upgrade SQL> alter pluggable database all open upgrade; SQL> exit % cd \$ORACLE_HOME/OPatch % ./datapatch -verbose % sqlplus / as sysdba SQL> shutdown SQL> startup SQL> alter pluggable database all open;</pre>

// Repeat the above step for every database by setting the ORACLE_SIDs to the relevant database IDs.

STEP8: Start the Listener

```
// In Step4 you should already have copied the listener name, now start it.
% lsnrctl start <listener_name>
```

STEP9: The Bug Fixing – MOS Doc ID: [2201729.1](#)

There is a reported bug that, the permission of the library file "\$ORACLE_HOME/lib/libsqlplus.so" changes from 644 to 640, after applying the DBPSU patch.

Therefore, we should check this file and manually change the mod to 644 if it is set to 640.

```
// First check whether the file mod is 640 or not
% cd $ORACLE_HOME/lib
% ls -ltrh libsqlplus.so

-rw-r-----  1 dvbkrdb  bkrdba      1.2M Jul  6 10:16 libsqlplus.so

// If it is mod 640 as above, make it 644 with the below command
% chmod 644 libsqlplus.so
```


A.3. PATCHING NON-RAC 12.2.0.1 BASE RELEASE [SOLARIS-SPARC]

Required Files

FILE	VERSION	FILE NAME
Opatch	12.2.0.1.14	p6880880_122010_SOLARIS64.zip
COMBO OF OJVM RU COMPONENT 12.2.0.1.180417 + DBRU 12.2.0.1.180417 (Patch)	12.2.0.1.180417	p27726453_122010_SOLARIS64.zip

WARNING: Be sure that you are on the correct environment before start working!

STEP1: Copy the Required Files to the Server

The required files are already downloaded to the dba_common directory. However, if you cannot access the dba_common or if they are deleted, you may have to download those required files from the "My Oracle Support" page.

Create a path under /tmp and copy the files to this location

```
% mkdir -p /tmp/oracle_patches
% cp /dba_common/Patch_April18/1_Solaris_64/p27726453_122010_SOLARIS64.zip /tmp/oracle_patches
% cp /dba_common/Patch_April18/1_Solaris_64/p6880880_122010_SOLARIS64.zip /tmp/oracle_patches
% chmod -R 777 /tmp/oracle_patches
```

STEP2: Update the OPatch Software

The tool that is used to patch the Oracle databases is called OPatch. OPatch, itself has to be at a certain version to be able to execute the PSUs. So, we need to update the OPatch software as below:

Execute the following commands with the user that owns the current \$ORACLE_HOME that is being patched. The values of environment variable *ORACLE_SID* is not important in this step.

```
// First remove the old OPatch software
% cd $ORACLE_HOME
% rm -rf OPatch

// Then unzip the new OPatch software
% unzip /tmp/oracle_patches/p6880880_122010_SOLARIS64.zip -d $ORACLE_HOME
```

STEP3: Unzip the main PSU patch file and check for possible conflicts

```
// First, go to the path and unzip
% cd /tmp/oracle_patches
% unzip p27726453_122010_SOLARIS64.zip

// Then check for possible conflicts. The check should return > OPatch succeeded.
% cd /tmp/oracle_patches/27726453/27674384
% opatch prereq CheckConflictAgainstOHWithDetail -ph ./
OPatch succeeded.
% cd /tmp/oracle_patches/27726453/27475613
% opatch prereq CheckConflictAgainstOHWithDetail -ph ./
OPatch succeeded.
```

If there is a conflict due to a one-off patch, those conflicting patches must be rolled back before continuing.

STEP4: Stop listener, instance(s), sqlplus

To be able to run the opatch, no process must be using the binaries under the ORACLE_HOME currently being patched. That means all database instances, listeners, sqlplus prompts must be shutdown prior to the patching.

WARNING: You must stop all databases that belong to the \$ORACLE_HOME that you are about to patch!

For ex. if STOR45 and DVOR45 are the two instances that use the same ORACLE_HOME, and that ORACLE_HOME is the one being patched, both instances must be shutdown.

If the listener is also instantiated from the ORACLE_HOME that is being patched, it should also be stopped. If the databases are configured to register another listener that belongs to another ORACLE_HOME, it is not necessary to stop that foreign listener.

```
// Copy the name of the listener being used and stop it.  
% lsnrctl stop <listener_name>
```

```
// Shutdown all databases of that ORACLE_HOME.  
SQL> shu immediate;
```

STEP5: Apply the Database PSU – Silent Way

This following scripts must be run (once) with the user that owns the ORACLE_HOME. The values of environment variable *ORACLE_SID* is not important for now.

```
// APPLY the patch with the following command and monitor the nohup.out file  
% cd /tmp/oracle_patches/27726453/27674384  
% nohup opatch apply -silent &  
  
// If there are no errors in nohup.out CONTINUE...
```

STEP6: Apply the Java PSU – Silent Way

This following scripts must be run (once) with the user that owns the ORACLE_HOME. The values of environment variable *ORACLE_SID* is not important for now.

```
// Shutdown all the databases that belong to the ORACLE_HOME that we are patching.  
// They should already be shut-down from the previous steps anyway..  
SQL> shu immediate;  
% cd /tmp/oracle_patches/27726453/27475613  
% nohup opatch apply -silent &
```

STEP7: Apply the PSU Post Installation – datapatch

Now, in this step the ORACLE_SID environment variable is important. The **datapatch** should be applied for each and every database instance (SID) that belongs to the ORACLE_HOME that is being patched.

WARNING: According to the architecture of the database apply either the Non-CDC or the CDC/PDB script below. To check whether the database is CDB enabled you can use the SQL command: **SQL> select cdb from v\$database;**

Standalone Databases (Non-CDC)	Multitenant Databases (CDB/PDB)
<pre>% sqlplus / as sysdba SQL> startup upgrade SQL> exit % cd \$ORACLE_HOME/OPatch % ./datapatch -verbose % sqlplus / as sysdba SQL> shutdown SQL> startup</pre>	<pre>% sqlplus / as sysdba SQL> startup upgrade SQL> alter pluggable database all open upgrade; SQL> exit % cd \$ORACLE_HOME/OPatch % ./datapatch -verbose % sqlplus / as sysdba SQL> shutdown SQL> startup SQL> alter pluggable database all open;</pre>

// Repeat the above step for every database by setting the ORACLE_SIDs to the relevant database IDs.

The output should look like similar to the one below:

```
S-00814-D5C:dvbiedb:/bied01/app/oracle/product/12.2.0/db_1/OPatch $ ./datapatch -verbose
SQL Patching tool version 12.2.0.1.0 Production on Thu Aug 9 12:26:27 2018
Copyright (c) 2012, 2018, Oracle. All rights reserved.

Log file for this invocation: /bied01/app/oracle/cfgtoollogs/sqlpatch/sqlpatch_10786_2018_08_09_12_26_27/sqlpatch_invocation.log

Connecting to database...OK
Bootstrapping registry and package to current versions...done
Determining current state...done

Current state of SQL patches:
Patch 27475613 (OJVM RELEASE UPDATE: 12.2.0.1.180417 (27475613)):
  Installed in the binary registry only
Bundle series DBRU:
  ID 180417 in the binary registry and not installed in the SQL registry

Adding patches to installation queue and performing prereq checks...
Installation queue:
  Nothing to roll back
  The following patches will be applied:
    27475613 (OJVM RELEASE UPDATE: 12.2.0.1.180417 (27475613))
    27674384 (DATABASE APR 2018 RELEASE UPDATE 12.2.0.1.180417)

Installing patches...
Patch installation complete. Total patches installed: 2

Validating logfiles...
Patch 27475613 apply: SUCCESS
  logfile: /bied01/app/oracle/cfgtoollogs/sqlpatch/27475613/22036175/27475613_apply_DVOR67_2018Aug09_12_27_18.log (no errors)
Patch 27674384 apply: SUCCESS
  logfile: /bied01/app/oracle/cfgtoollogs/sqlpatch/27674384/22101410/27674384_apply_DVOR67_2018Aug09_12_27_19.log (no errors)
SQL Patching tool complete on Thu Aug 9 12:31:00 2018
```

STEP8: Start the Listener

```
// In Step4 you should already have copied the listener name, now start it.  
% lsnrctl start <listener_name>
```

STEP9: Check the PSU Result

```
// First check whether the binaries are OK  
% opatch lsinventory
```

```
OPatch version      : 12.2.0.1.14  
OUI version         : 12.2.0.1.4  
Log file location   : /bied01/app/oracle/product/12.2.0/db_1/cfgtoollogs/patch/patch2018-08-09_13-08-47PM_1.10  
Lsinventory Output file location : /bied01/app/oracle/product/12.2.0/db_1/cfgtoollogs/patch/lsinv/lsinventory  
-----  
Local Machine Information:  
Hostname: S-00814-D5C  
ARU platform id: 23  
ARU platform description:: Solaris Operating System (SPARC 64-bit)  
  
Installed Top-level Products (1):  
  
Oracle Database 12c                               12.2.0.1.0  
There are 1 products installed in this Oracle Home.  
  
Interim patches (2) :  
  
Patch 27475613      : applied on Thu Aug 09 12:19:22 EDT 2018  
Unique Patch ID: 22036175  
Patch description: "OJVM RELEASE UPDATE: 12.2.0.1.180417 (27475613)"  
Created on 16 Mar 2018, 01:46:10 hrs PST8PDT  
Bugs fixed:  
25811105, 25890046, 26023042, 26570134, 27000702, 27461740  
  
Patch 27674384      : applied on Thu Aug 09 12:12:45 EDT 2018  
Unique Patch ID: 22101410  
Patch description: "Database Apr 2018 Release Update : 12.2.0.1.180417 (27674384)"  
Created on 9 Apr 2018, 23:51:17 hrs PST8PDT  
Bugs fixed:  
23026585, 24336249, 24929210, 24942749, 25036474, 25110233, 25410877  
25417050, 25427662, 25459958, 25547901, 25569149, 25600342, 25600421  
25606091, 25655390, 25662088, 24385983, 24923215, 25099758, 25429959  
25662101, 25728085, 25823754, 22594071, 23665623, 23749454, 24326846  
24334708, 24560906, 24573817, 24578797, 24609996, 24624166, 24668398
```


B. PATCHING DATABASES on LINUX(x86 64)

B.1. PATCHING RAC 12.1.0.2 BASE RELEASE [LINUX-x86 64]

Required Files

FILE	VERSION	FILE NAME
Opatch	12.2.0.1.14	p6880880_121010_Linux-x86-64.zip
Patch 27726478 - Combo of OJVM Component 12.1.0.2.180417 DB PSU + GI PSU 12.1.0.2.180417	12.1.0.2.180417	p27726478_121020_Linux-x86-64.zip

WARNING: Be sure that you are on the correct environment before start working!

STEP1: Backup Binaries

On all NODES, after shutting down the cluster, backup the binary files (grid home and oracle home) with the tar command as below:

- Stop all databases (not instances... databases) with the database owner

```
% srvctl stop database -d <database_name>
```

- Stop CRS on both nodes with the root user

```
% $GRID_HOME/crsctl stop crs
```

- Backup grid_home with TAR on both nodes

```
% tar -pzcvf <name-of-the-tar-file> <path-to-be-backed-up>
```

// Example:

```
tar -pzcvf /dba_common/backups/u02.tar.gz /u02
```

Note: parameter -p is especially important to preserve the ownership of the files

- Backup oracle_home with TAR on both nodes

```
% tar -pzcvf <name-of-the-tar-file> <path-to-be-backed-up>
```

// Example:

```
tar -pzcvf /dba_common/backups/u02.tar.gz /u02
```

Note: parameter -p is especially important to preserve the ownership of the files

STEP2: Update the OPatch Software

The tool that is used to patch the Oracle databases is called OPatch. OPatch, itself has to be at a certain version to be able to execute the PSUs. We must use the OPatch utility version 12.1.0.1.7 or later to apply this patch So, we need to update the OPatch software as below:

The new opatch utility should be updated in all the Oracle RAC database homes and the GI home that are being patched.

Execute the following commands with the user that owns the \$ORACLE_HOME and GRID HOME that is being patched in all nodes. The values of environment variable *ORACLE_SID* is not important in this step.

```
// ON NODE1

// Grid Home - With the root user
% cd $ORACLE_HOME (grid home)
% rm -rf OPatch

// Then unzip the new OPatch software to the grid home - With the grid user
% unzip /tmp/oracle_patches/p6880880_121010_Linux-x86-64.zip -d $ORACLE_HOME
% chown -R grid:oinstall $ORACLE_HOME/OPatch

// Oracle Home - With the oracle user
unzip /tmp/oracle_patches/p6880880_121010_Linux-x86-64.zip -d $ORACLE_HOME

// ON NODE2, NODE3, etc.
Repeat the same process
```

STEP3: Unzip the main PSU patch file and check for possible conflicts

!! Unzip the patch as grid home owner.

```
START THE CLUSTERWARE

// First, go to the path and unzip
% cd /tmp/oracle_patches
% unzip p27726478_121020_Linux-x86-64.zip

// Then check for possible conflicts. Run as ROOT USER
% $GRID_HOME/OPatch/patchauto apply /tmp/oracle_patches/27726478/27468957 -analyze
```

OPatchauto session is initiated at Fri Aug 24 12:51:58 2018

System initialization log file is /u01/app/12.1.0.2/grid/cfgtoollogs/patchautodb/systemconfig2018-08-24_12-52-04PM.log.

Session log file is /u01/app/12.1.0.2/grid/cfgtoollogs/patchauto/patchauto2018-08-24_12-52-40PM.log

The id for this session is 2X24

Executing OPatch prereq operations to verify patch applicability on home /u01/app/12.1.0.2/grid

Executing OPatch prereq operations to verify patch applicability on home /u02/app/oracle/product/12.1.0.2/db_1

Patch applicability verified successfully on home /u02/app/oracle/product/12.1.0.2/db_1

Patch applicability verified successfully on home /u01/app/12.1.0.2/grid

Verifying SQL patch applicability on home /u02/app/oracle/product/12.1.0.2/db_1
SQL patch applicability verified successfully on home /u02/app/oracle/product/12.1.0.2/db_1

OPatchAuto successful.

-----Summary-----

Analysis for applying patches has completed successfully:

Host:rac01
RAC Home:/u02/app/oracle/product/12.1.0.2/db_1
Version:12.1.0.2.0

==Following patches were SKIPPED:

Patch: /setupfiles2/27726478/27468957/26983807
Reason: This patch is not applicable to this specified target type - "rac_database"

Patch: /setupfiles2/27726478/27468957/27338013
Reason: This patch is not applicable to this specified target type - "rac_database"

==Following patches were SUCCESSFULLY analyzed to be applied:

Patch: /setupfiles2/27726478/27468957/27338020
Log: /u02/app/oracle/product/12.1.0.2/db_1/cfgtoollogs/patchauto/core/patch/patch2018-08-24_12-53-07PM_1.log

Patch: /setupfiles2/27726478/27468957/27338041
Log: /u02/app/oracle/product/12.1.0.2/db_1/cfgtoollogs/patchauto/core/patch/patch2018-08-24_12-53-07PM_1.log

Host:rac01
CRS Home:/u01/app/12.1.0.2/grid
Version:12.1.0.2.0

==Following patches were SUCCESSFULLY analyzed to be applied:

Patch: /setupfiles2/27726478/27468957/26983807
Log: /u01/app/12.1.0.2/grid/cfgtoollogs/patchauto/core/patch/patch2018-08-24_12-53-09PM_1.log

Patch: /setupfiles2/27726478/27468957/27338013
Log: /u01/app/12.1.0.2/grid/cfgtoollogs/patchauto/core/patch/patch2018-08-24_12-53-09PM_1.log

Patch: /setupfiles2/27726478/27468957/27338020
Log: /u01/app/12.1.0.2/grid/cfgtoollogs/patchauto/core/patch/patch2018-08-24_12-53-09PM_1.log

Patch: /setupfiles2/27726478/27468957/27338041
Log: /u01/app/12.1.0.2/grid/cfgtoollogs/patchauto/core/patch/patch2018-08-24_12-53-09PM_1.log

OPatchauto session completed at Fri Aug 24 12:55:08 2018
Time taken to complete the session 3 minutes, 10 seconds

If there is a conflict due to a one-off patch, those conflicting patches must be rolled back before continuing.

STEP4: Apply Grid Patch

WARNING: Patch software directory **must NOT** be owned by root user, but the grid owner.

Shutdown all databases on all nodes:

```
// Databases (ALL DATABASES)
% srvctl stop database -d <DATABASES>

// Cluster Services must be RUNNING..
```

Apply the **GRID Patch** on **ALL NODES** with the ROOT user while the CRS is running!

```
// With the ROOT user
% opatchauto apply <UNZIPPED_PATCH_LOCATION>/27468957 -oh <GI_HOME> -nonrolling
```

OPatchauto session is initiated at Fri Aug 24 13:29:49 2018

System initialization log file is /u01/app/12.1.0.2/grid/cfgtoollogs/opatchautodb/systemconfig2018-08-24_01-29-5

Session log file is /u01/app/12.1.0.2/grid/cfgtoollogs/opatchauto/opatchauto2018-08-24_01-30-18PM.log

The id for this session is PP77

Executing OPatch prereq operations to verify patch applicability on home /u01/app/12.1.0.2/grid

Patch applicability verified successfully on home /u01/app/12.1.0.2/grid

Bringing down CRS service on home /u01/app/12.1.0.2/grid

Prepatch operation log file location: /u01/app/12.1.0.2/grid/cfgtoollogs/crsconfig/crspatch_rac01_2018-08-24_01-31-01PM.log

CRS service brought down successfully on home /u01/app/12.1.0.2/grid

Start applying binary patch on home /u01/app/12.1.0.2/grid

Binary patch applied successfully on home /u01/app/12.1.0.2/grid

Starting CRS service on home /u01/app/12.1.0.2/grid

Postpatch operation log file location: /u01/app/12.1.0.2/grid/cfgtoollogs/crsconfig/crspatch_rac01_2018-08-24_01-44-36PM.log

CRS service started successfully on home /u01/app/12.1.0.2/grid

OPatchAuto successful.

-----Summary-----

Patching is completed successfully. Please find the summary as follows:

Host:rac01

CRS Home:/u01/app/12.1.0.2/grid

Version:12.1.0.2.0

Summary:

==Following patches were SUCCESSFULLY applied:

Patch: /setupfiles2/27726478/27468957/26983807

Log: /u01/app/12.1.0.2/grid/cfgtoollogs/opatchauto/core/opatch/opatch2018-08-24_13-32-32PM_1.log

Patch: /setupfiles2/27726478/27468957/27338013

Log: /u01/app/12.1.0.2/grid/cfgtoollogs/opatchauto/core/opatch/opatch2018-08-24_13-32-32PM_1.log

Patch: /setupfiles2/27726478/27468957/27338020

Log: /u01/app/12.1.0.2/grid/cfgtoollogs/opatchauto/core/opatch/opatch2018-08-24_13-32-32PM_1.log

```
Patch: /setupfiles2/27726478/27468957/27338041
Log: /u01/app/12.1.0.2/grid/cfgtoollogs/patchauto/core/patch/patch2018-08-24_13-32-32PM_1.log
```

OPatchauto session completed at Fri Aug 24 13:52:23 2018
Time taken to complete the session 22 minutes, 34 seconds

STEPS: Apply Database Patch

```
// With the ROOT user
% <ORACLE_HOME>/OPatch/patchauto apply <UNZIPPED_PATCH_LOCATION>/27468957 -oh
<ORACLE_HOME1>, <ORACLE_HOME2>,etc...
```

-----Summary-----

Patching is completed successfully. Please find the summary as follows:

```
Host:rac01
RAC Home:/u02/app/oracle/product/12.1.0.2/db_1
Version:12.1.0.2.0
Summary:
```

==Following patches were SKIPPED:

```
Patch: /setupfiles2/27726478/27468957/26983807
Reason: This patch is not applicable to this specified target type - "rac_database"
```

```
Patch: /setupfiles2/27726478/27468957/27338013
Reason: This patch is not applicable to this specified target type - "rac_database"
```

==Following patches were SUCCESSFULLY applied:

```
Patch: /setupfiles2/27726478/27468957/27338020
Log: /u02/app/oracle/product/12.1.0.2/db_1/cfgtoollogs/patchauto/core/patch/patch2018-08-24_21-35-05PM_1.log
```

```
Patch: /setupfiles2/27726478/27468957/27338041
Log: /u02/app/oracle/product/12.1.0.2/db_1/cfgtoollogs/patchauto/core/patch/patch2018-08-24_21-35-05PM_1.log
```

Patching session reported following warning(s):

[WARNING] The database instance 'TESTRAC1' from '/u02/app/oracle/product/12.1.0.2/db_1', in host'rac01' is not running. SQL changes, if any, will not be applied.
To apply, the SQL changes, bring up the database instance and run the command manually from any one node (run as oracle).
Refer to the readme to get the correct steps for applying the sql changes.

OPatchauto session completed at Fri Aug 24 21:53:14 2018
Time taken to complete the session 19 minutes, 51 seconds

STEP6: Apply OJVM Patch

Shut down all the services (database, ASM, listeners, nodeapps, and CRS daemons) running from the Oracle home on all the nodes you want to patch.

```
// Check for Conflict on ALL NODES -> oracle owner
% cd <PATCH_TOP_DIR>/27475603
% opatch prereq CheckConflictAgainstOHWithDetail -ph ./

Oracle Interim Patch Installer version 12.2.0.1.14
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PREREQ session

Oracle Home      : /u02/app/oracle/product/12.1.0.2/db_1
Central Inventory : /u01/app/orainventory
   from           : /u02/app/oracle/product/12.1.0.2/db_1/orainst.loc
OPatch version   : 12.2.0.1.14
OUI version      : 12.1.0.2.0
Log file location : /u02/app/oracle/product/12.1.0.2/db_1/cfgtoollogs/patch/patch2018-08-24_22-52-00PM_1.log

Invoking prereq "checkconflictagainsthwithdetail"

Prereq "checkConflictAgainstOHWithDetail" passed.

OPatch succeeded.

opatch apply

Oracle Interim Patch Installer version 12.2.0.1.14
Copyright (c) 2018, Oracle Corporation. All rights reserved.

Oracle Home      : /rc1d01/app/oracle/product/12.1.0/dbhome_1
Central Inventory : /rc1d01/app/orainventory
   from           : /rc1d01/app/oracle/product/12.1.0/dbhome_1/orainst.loc
OPatch version   : 12.2.0.1.14
OUI version      : 12.1.0.2.0
Log file location : /rc1d01/app/oracle/product/12.1.0/dbhome_1/cfgtoollogs/patch/patch2018-08-28_12-54-01PM_1.log

Verifying environment and performing prerequisite checks...
OPatch continues with these patches: 27475603

Do you want to proceed? [y|n]
y
User Responded with: Y
All checks passed.

Please shutdown Oracle instances running out of this ORACLE_HOME on the local system.
(Oracle Home = '/rc1d01/app/oracle/product/12.1.0/dbhome_1')

Is the local system ready for patching? [y|n]
y
User Responded with: Y
Backing up files...
Applying interim patch '27475603' to OH '/rc1d01/app/oracle/product/12.1.0/dbhome_1'
ApplySession: Optional component(s) [ oracle.sqlj, 12.1.0.2.0 ] not present in the Oracle Home or a higher version is found.

Patching component oracle.javavm.server, 12.1.0.2.0...
```

```
Patching component oracle.javavm.server.core, 12.1.0.2.0...
Patching component oracle.rdbms.dbscripts, 12.1.0.2.0...
Patching component oracle.rdbms, 12.1.0.2.0...
Patching component oracle.javavm.client, 12.1.0.2.0...
Patching component oracle.dbjava.jdbc, 12.1.0.2.0...
Patching component oracle.dbjava.ic, 12.1.0.2.0...
Patch 27475603 successfully applied.
Sub-set patch [22674709] has become inactive due to the application of a super-set patch [27475603].
Please refer to Doc ID 2161861.1 for any possible further required actions.
Log file location: /rc1d01/app/oracle/product/12.1.0/dbhome_1/cfgtoollogs/opatch/opatch2018-08-28_12-54-01PM_1.log
OPatch succeeded.
```

STEP7: Apply Datapatch

After the Oracle DB PSU and Java binary paths are applied, we need to apply the datapatch for each and every database on **only one node** of the RAC. This update should be done when the database is in upgrade mode, so we need to alter the cluster parameter before going on...

If the datapatch operation cannot be completed successfully and log of the datapatch contains some weird characters then you should apply the workaround explained in MOS: **Doc ID 2285159.1**

```
// On Node1 (any node is OK. It is sufficient to run it only on ONE node)
% sqlplus / as sysdba
SQL> alter system set cluster_database=false scope=spfile;
SQL> shutdown immediate;
SQL> startup upgrade;
SQL> alter pluggable database all open upgrade;
SQL> exit;

% cd $ORACLE_HOME/OPatch
% ./datapatch -verbose

→ When completes...

% sqlplus / as sysdba
SQL> alter system set cluster_database=true scope=spfile;
SQL> shutdown immediate;
SQL> exit
% srvctl start database -d <database name>
```

STEP8: Checks

We can check with the following scripts to see whether the patch set update has been successfully applied and the post-installation scripts have been run correctly.

// Check Script #1

```
SQL> set serverout on
SQL> exec dbms_qopatch.get_sqlpatch_status;
```

```
Patch Id : 27475603
  Action : APPLY
  Action Time : 28-AUG-2018 13:20:09
  Description : Database PSU 12.1.0.2.180417, Oracle JavaVM Component
(APR2018)
  Logfile
:/rc1d01/app/oracle/cfgtoollogs/sqlpatch/27475603/21992445/27475603_apply_BQQPS63_CD
BROOT_2018Aug28_13_17_37.log
  Status : SUCCESS
```

```
Patch Id : 27338041
  Action : APPLY
  Action Time : 28-AUG-2018 13:20:09
  Description : DATABASE PATCH SET UPDATE 12.1.0.2.180417
  Logfile
:/rc1d01/app/oracle/cfgtoollogs/sqlpatch/27338041/22036385/27338041_apply_BQQPS63_CD
BROOT_2018Aug28_13_18_35.log
  Status : SUCCESS
```

PL/SQL procedure successfully completed.

// Check Script #2

```
SQL> select PATCH_ID, PATCH_UID, VERSION, STATUS, DESCRIPTION
       from DBA_REGISTRY_SQLPATCH
       order by BUNDLE_SERIES;
```

PATCH_ID	PATCH_UID	VERSION	STATUS	DESCRIPTION
27338041	22036385	12.1.0.2	SUCCESS	DATABASE PATCH SET UPDATE
12.1.0.2.180417				
27475603	21992445	12.1.0.2	SUCCESS	Database PSU
12.1.0.2.180417				, Oracle JavaVM Component (APR2018)

C. PATCHING DATABASES on WINDOWS (x86 64)

C.1. PATCHING 11.2.0.4 BASE RELEASE [WINDOWS-x86 64]

Required Files

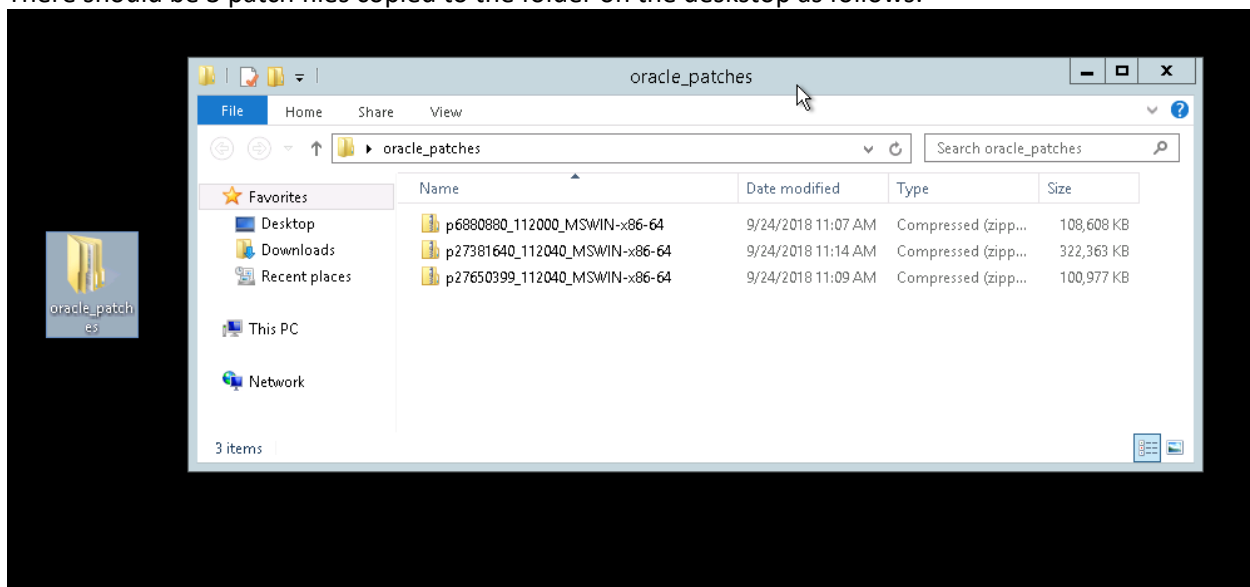
FILE	VERSION	FILE NAME
Opatch	11.2.0.0.0	p6880880_112000_MSWIN-x86-64.zip
Windows Bundle Patch (BP)	11.2.0.4.180417	p27381640_112040_MSWIN-x86-64.zip
Oracle JavaVM (OJVM) Component Database PSU 11.2.0.4.180417	11.2.0.4.180417	p27650399_112040_MSWIN-x86-64.zip

WARNING: Be sure that you are on the correct environment before starting working!

STEP1: Copy the Required Files to the Server

Copy the required files to the server using an FTP tool...

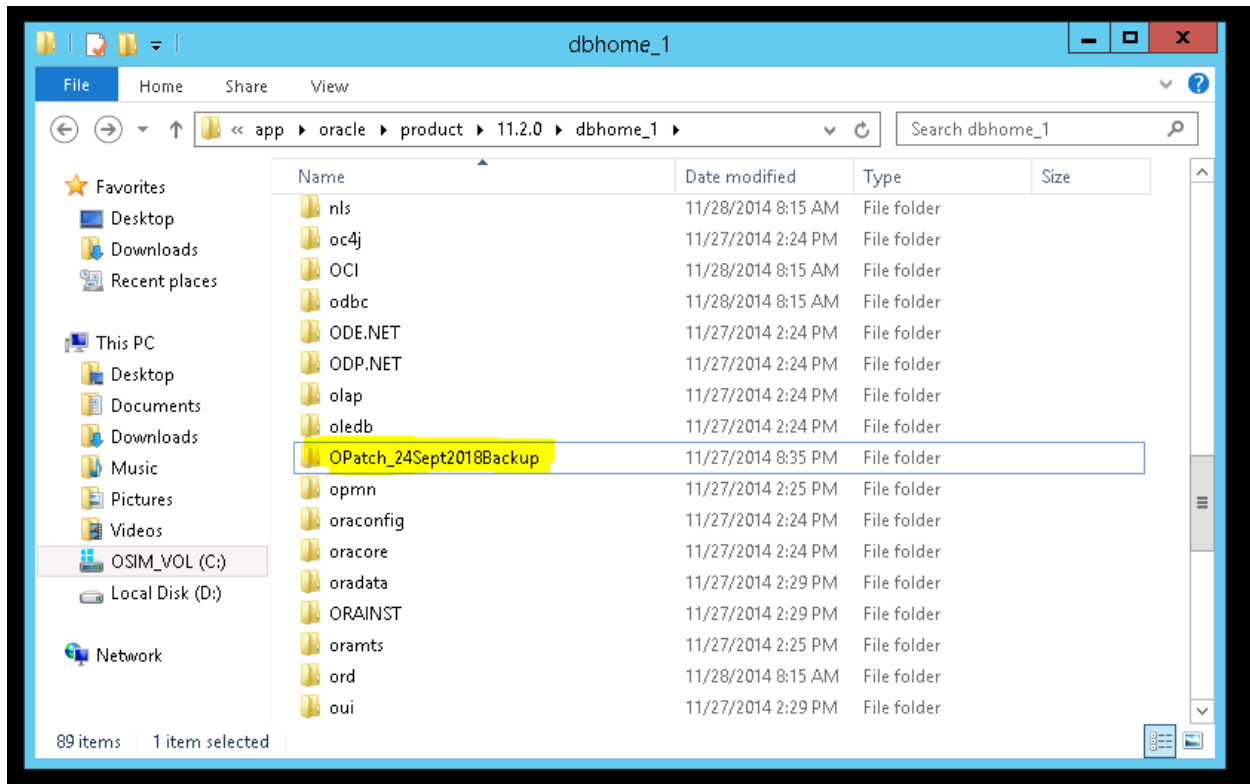
There should be 3 patch files copied to the folder on the desktop as follows:



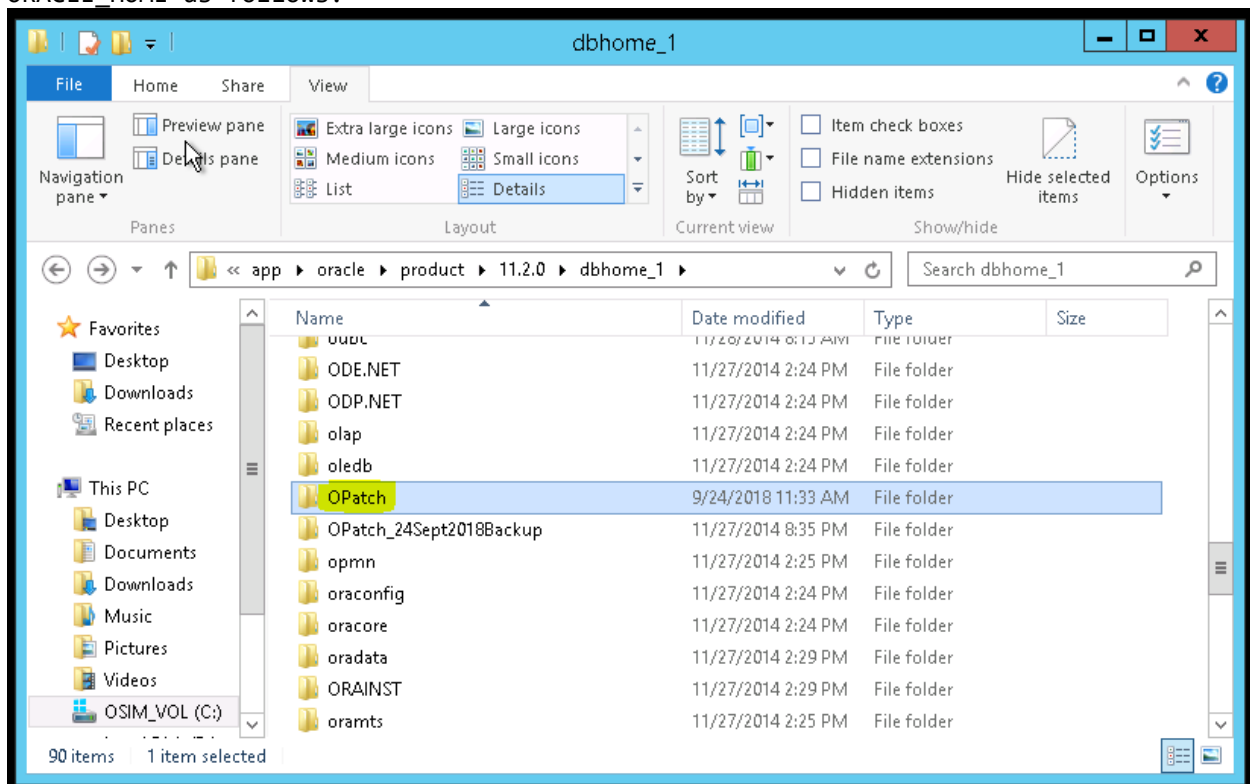
STEP2: Update the OPatch Software

The tool that is used to patch the Oracle databases is called OPatch. OPatch, itself has to be at a certain version to be able to execute the PSUs. So, we need to update the OPatch software as below:

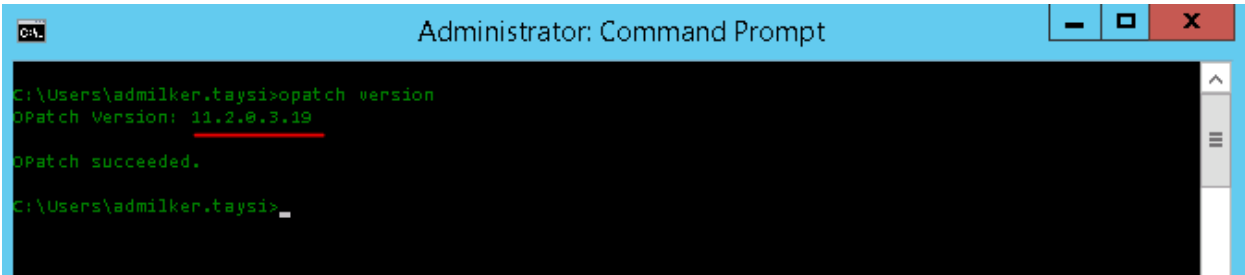
Go to the ORACLE_HOME path using the windows browser and rename the current OPatch file to something else appending the current day to the folder name for instance:



Then, extract the contents of the zipped file `p6880880_112000_MSWIN-x86-64.zip` to the ORACLE_HOME as follows:



You now can check from the console that the new version of OPatch is: **11.2.0.3.19**



```
Administrator: Command Prompt
C:\Users\admilker.taysi>opatch version
OPatch Version: 11.2.0.3.19
OPatch succeeded.
C:\Users\admilker.taysi>
```

We can delete the file **p6880880_112000_MSWIN-x86-64.zip** after the OPatch replacement, we no longer need that file.

STEP3: Unzip the PSU patch files and check for possible conflicts

Unzip the PSU files to the folder on the desktop as follows:

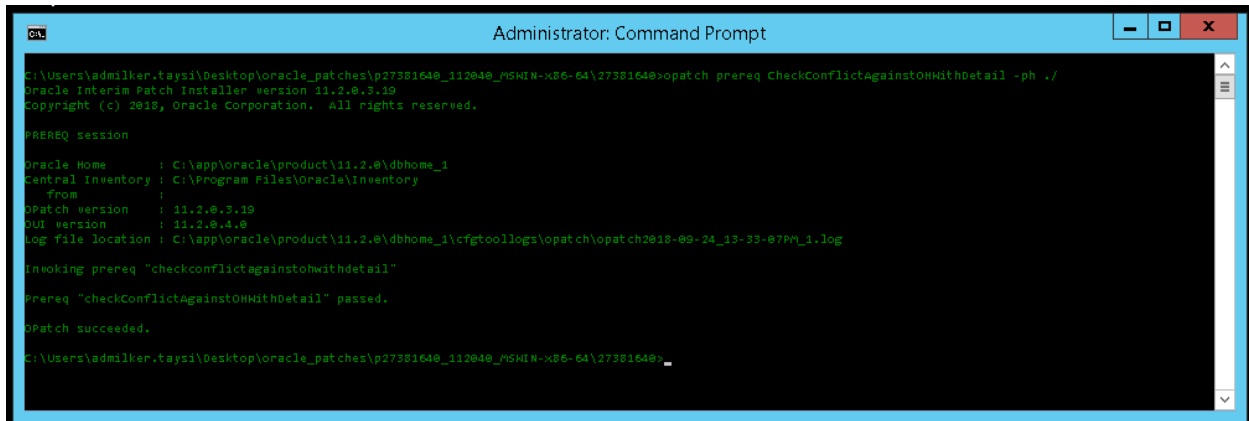
Name	Date modified	Type	Size
p27381640_112040_MSWIN-x86-64	9/24/2018 1:23 PM	File folder	
p27650399_112040_MSWIN-x86-64	9/24/2018 1:24 PM	File folder	
p27381640_112040_MSWIN-x86-64	9/24/2018 11:14 AM	Compressed (zipp...	322,363 KB
p27650399_112040_MSWIN-x86-64	9/24/2018 11:09 AM	Compressed (zipp...	100,977 KB

Open the command line tool and go the the patch directory 27381640. Execute the following command as below:

```
opatch prereq CheckConflictAgainstOHWithDetail -ph ./
OPatch succeeded.
```

Example:

```
C:\Users\admilker.taysi\Desktop\oracle_patches\p27381640_112040_MSWIN-x86-64\27381640>opatch prereq CheckConflictAgainstOHWithDetail -ph ./
```



```
Administrator: Command Prompt
C:\Users\admilker.taysi\Desktop\oracle_patches\p27381640_112040_MSWIN-x86-64\27381640>opatch prereq CheckConflictAgainstOHWithDetail -ph ./
Oracle Interim Patch Installer version 11.2.0.3.19
Copyright (c) 2010, Oracle Corporation. All rights reserved.

PREREQ session

Oracle Home      : C:\app\oracle\product\11.2.0\dbhome_1
Central Inventory: C:\Program Files\Oracle\inventory
   from          :
Patch version    : 11.2.0.3.19
SUI version      : 11.2.0.4.0
Log file location: C:\app\oracle\product\11.2.0\dbhome_1\cfgtoollogs\opatch\opatch2018-09-24_13-33-07PM_1.log

Invoking prereq "checkconflictagainsthwithdetail"
Prereq "checkConflictAgainstOHWithDetail" passed.

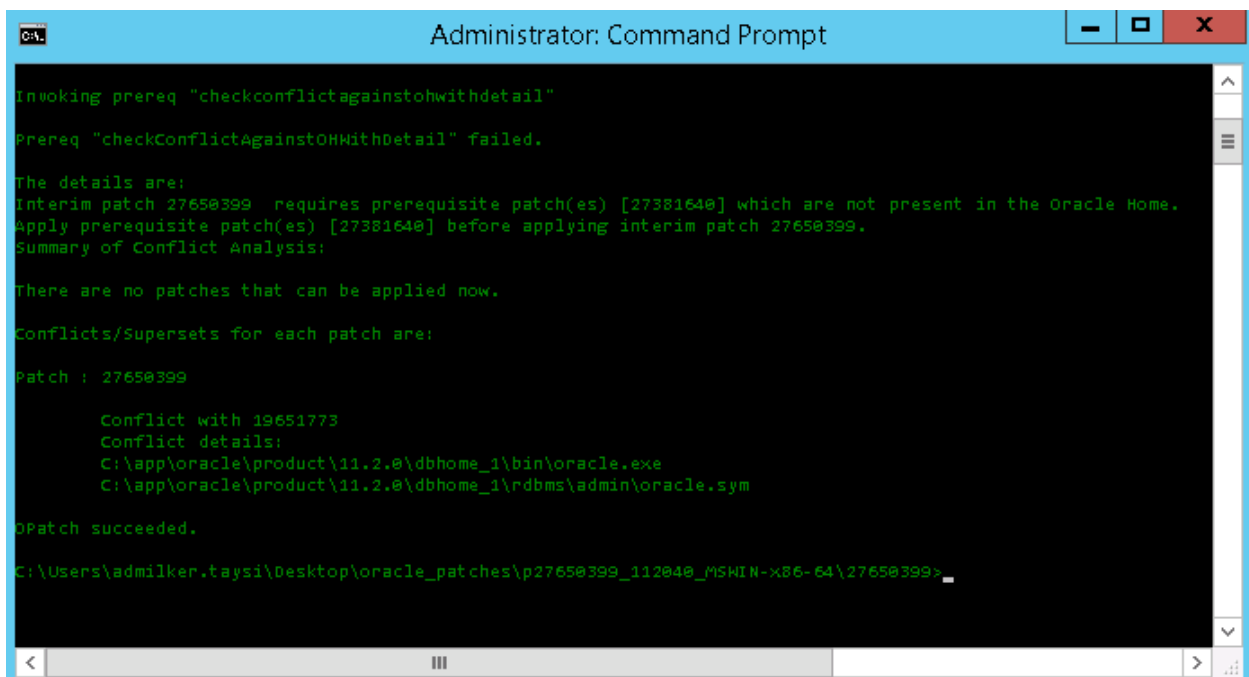
OPatch succeeded.
C:\Users\admilker.taysi\Desktop\oracle_patches\p27381640_112040_MSWIN-x86-64\27381640>
```

Now, check possible conflicts for the OJVM component: First go to the path 27650399 and execute the same command as follows:

```
opatch prereq CheckConflictAgainstOHWithDetail -ph ./
OPatch succeeded.
```

Example:

```
C:\Users\admilker.taysi\Desktop\oracle_patches\p27650399_112040_MSWIN-x86-64\27650399>opatch prereq CheckConflictAgainstOHWithDetail -ph ./
```



```
Administrator: Command Prompt

Invoking prereq "checkconflictagainsthwithdetail"
Prereq "checkConflictAgainstOHWithDetail" failed.

The details are:
Interim patch 27650399 requires prerequisite patch(es) [27381640] which are not present in the Oracle Home.
Apply prerequisite patch(es) [27381640] before applying interim patch 27650399.
Summary of Conflict Analysis:

There are no patches that can be applied now.

Conflicts/Supersets for each patch are:

Patch : 27650399

    Conflict with 19651773
    Conflict details:
    C:\app\oracle\product\11.2.0\dbhome_1\bin\oracle.exe
    C:\app\oracle\product\11.2.0\dbhome_1\rdbms\admin\oracle.sym

OPatch succeeded.
C:\Users\admilker.taysi\Desktop\oracle_patches\p27650399_112040_MSWIN-x86-64\27650399>
```

The opatch prerequisites check says that, first, the db bundle patch 27381640 must be applied before the OJVM 27650399 can be applied. It is quite normal and that's what we are actually planning to do. So, there is no problem.

STEP4: Stop listener, instance(s), sqlplus

To be able to run the opatch, no process must be using the binaries under the ORACLE_HOME currently being patched. That means all database instances, listeners, sqlplus prompts must be shutdown prior to the patching.

WARNING: You must stop all databases that belong to the \$ORACLE_HOME that you are about to patch!

For ex. if STOR45 and DVOR45 are the two instances that use the same ORACLE_HOME, and that ORACLE_HOME is the one being patched, both instances must be shutdown.

If the listener is also instantiated from the ORACLE_HOME that is being patched, it should also be stopped. If the databases are configured to register another listener that belongs to another ORACLE_HOME, it is not necessary to stop that foreign listener.

```
// Shutdown all databases of that ORACLE_HOME.  
SQL> shu immediate;
```

STEP5: Apply the Database PSU

This following scripts must be run (once) with the user that owns the ORACLE_HOME. The values of environment variable *ORACLE_SID* is not important for now.

At this point also refer to the official document (*Oracle® Database Patch (27381640) - version 11.2.0.4.180417*) that comes when you unzip the patch file, to the following sections:

- 3.1.1 Environment Checks
- 3.2.1 Patch installation instructions for a Non-RAC environment

Before continuing, shutdown all databases

```
% cd <dbpatchdir>  
% opatch apply
```

STEP6: Apply the Database PSU Post Installation – Catbundle

Now, in this step the ORACLE_SID environment variable is important. The catbundle process should be applied for each and every database instance (SID) that belongs to the ORACLE_HOME that is being patched.

```
// After the patch is applied, apply catbundle for all databases
```

```
cd %ORACLE_HOME%\rdbms\admin
sqlplus /nolog
SQL> CONNECT / AS SYSDBA
SQL> STARTUP
SQL> @catbundle.sql PSU apply
SQL> QUIT
```

```
// Repeat the above step for every database by setting the ORACLE_SIDs to the
// relevant database IDs.
```

STEP7: Apply the Java PSU

This following scripts must be run (once) with the user that owns the ORACLE_HOME. The values of environment variable *ORACLE_SID* is not important for now.

```
// Shutdown all the databases that belong to the ORACLE_HOME that we are patching.
// They should already be shut-down from the previous steps anyway...
SQL> shu immediate;
% cd <javapatchdir>
% opatch apply
```

STEP8: Apply the Java PSU Post Installation

Now, in this step the ORACLE_SID environment variable is important. The postinstall.sql should be applied for each and every database instance (SID) that belongs to the ORACLE_HOME that is being patched.

```
cd %ORACLE_HOME%\sqlpatch\27650399
sqlplus /nolog
SQL> CONNECT / AS SYSDBA
SQL> SHUTDOWN
SQL> STARTUP UPGRADE
SQL> @postinstall.sql
SQL> SHUTDOWN
SQL> STARTUP
```

```
// Repeat the above step for every database by setting the ORACLE_SIDs to the
// relevant database IDs.
```

STEP9: Oracle .NET Assembly Optional Setup Instructions --- STEP 3.6 in official documentation

You can add these assemblies to the GAC by following these steps:

1. Open a command prompt. (Open using "Run As Administrator").
2. Navigate to the directory that contains the assembly you wish to GAC. For example, the ODP.NET, Unmanaged Driver for .NET 4 is located in the %ORACLE_HOME%\ODP.NET\bin\4 directory.

3. Execute the following to GAC the assembly:

```
oraprovcfg.exe /action:gac /providerpath:<assemblyDLL>
```

This is an example of GACing unmanaged ODP.NET:

```
oraprovcfg.exe /action:gac /providerpath:Oracle.DataAccess.dll
```

To remove an Oracle .NET assembly from the GAC, follow steps 1 and 2. For the next step, execute the following:

```
OraProvCfg /action:ungac /providerpath:<assembly DLL>
```

D. APPENDIX

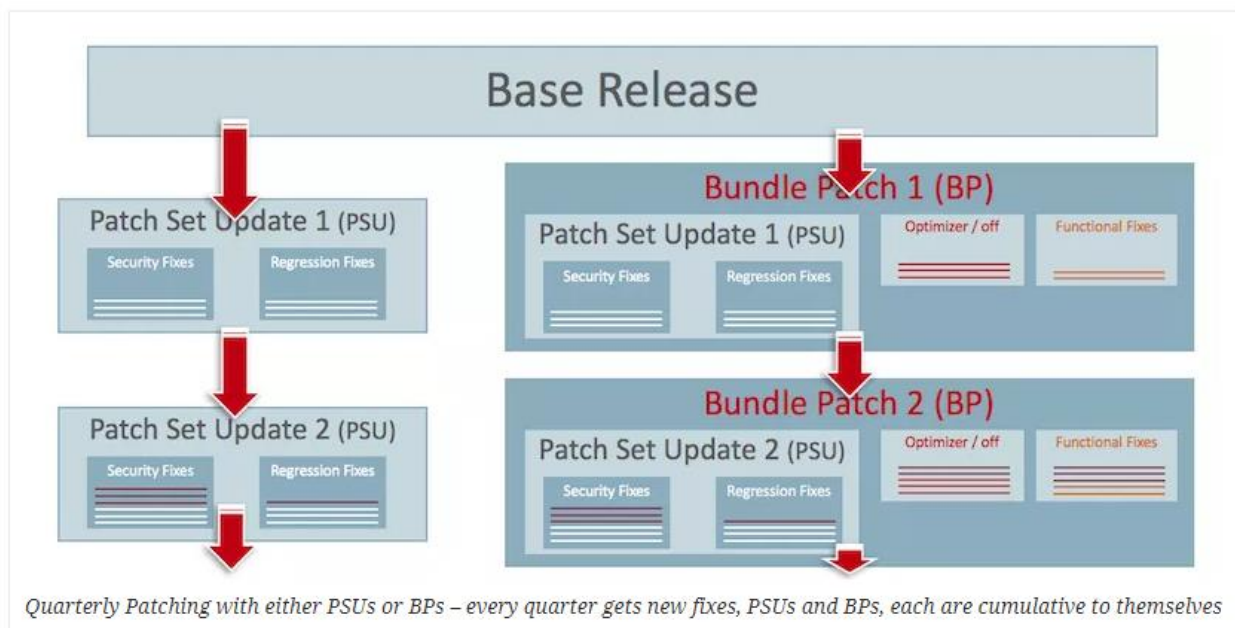
D.1.CONCEPTS

Difference between PSU and BP in 12.1 versions:

A Patch Set Update (PSU) contains usually security fixes and regression fixes, i.e. bug fixes. Whereas a Proactive Bundle Patch (BP) is a superset of a PSU containing the PSU but **optimizer fixes** and **functional fixes** which may be sometimes feature extensions as well.



And you choose either one train usually. But you could also change from PSUs to BPs or vice versa. Your flow would actually look like this:



As PSUs and BPs, each are **cumulative** you'll get the fixes from all previous PSUs or BPs for the same release included as well. The PSU a quarter later has new security fixes and new regression fixes added, the Bundle Patch in addition gets new optimizer and functional fixes and of course the same new security and regression fixes the PSU has gotten.