

Patching like a hero

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Agenda

- Why patch Quarterly?
- Backup
- Tips and tricks
- Patch Analyzer Tool
- Patching OH
- Data Dictionary patches
- How to check applied patches

About Me

- Principal DBA at eProseed Lux
- Oracle Certified Master (OCM)
- Oracle ACE Member
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- Board Member at GUOB

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Why patch is so important?

- Avoid issues
- Security breaches
- Solve detected bugs
- Resolve some performance
- Enable some upgrades

Why patch is so important?

Patches & Updates >

Patch Search



[Give Feedback...](#)

Patch Advanced Search Results

Filters: Product is Oracle Database - Enterprise Edition; Release is Oracle Database 18.3.0.0.0 DBRU;

[Edit Search](#)

Table ▾ View ▾  Detach  Share Link

Patch Name	Description	Release	Platform (Language)	Recomm	Classification	Product		Updated	Size		Download Access
29251992	COMBO OF OJVM RU COMPONENT 18.6.0.0.190416 + GI RU 18.6.0.0.190416 (Patch)	18.0.0.0.0	Linux x86-64 (American English)		General	Oracle Database - Enterprise Edition (More...)		2+ months ago	2.2 GB		Software
29231062	GI RELEASE UPDATE REVISION 18.5.1.0.0 (System Patch)	18.0.0.0.0	Linux x86-64 (American English)		General	Oracle Database - Enterprise Edition (More...)		2+ months ago	2.1 GB		Software
29230841	GI RELEASE UPDATE REVISION 18.4.2.0.0 (System Patch)	18.0.0.0.0	Linux x86-64 (American English)		General	Oracle Database - Enterprise Edition (More...)		2+ months ago	2.0 GB		Software
29251992	COMBO OF OJVM RU COMPONENT 18.6.0.0.190416 + GI RU 18.6.0.0.190416 (Patch)	18.0.0.0.0	IBM AIX on POWER Systems (64-bit) (American English)		General	Oracle Database - Enterprise Edition (More...)		2+ months ago	2.0 GB		Software
29301682	GI RELEASE UPDATE 18.6.0.0.0 (System Patch)	18.0.0.0.0	IBM AIX on POWER Systems (64-bit) (American English)		General	Oracle Database - Enterprise Edition (More...)		1+ month ago	1.9 GB		Software

Why patch is so important?

Close



Patch 29251992: COMBO OF OJVM RU COMPONENT 18.6.0.0.190416 + GI RU 18.6.0.0.190416

Last Updated 16-Apr-2019 10:33 (2+ months ago)

Size 2.2 GB

Product Oracle Database - Enterprise Edition
([More...](#))

Download Access Software

Classification General

Patch Tag

Release Oracle Database 18.0.0.0.0

Platform Linux x86-64

Bugs Resolved by This Patch

12816839	OCR CACHE INCONSISTENCY DURING DELETE
13554903	CDB:FLASHBACK QUERY IN PDB FAILS DUE TO MISSING UNDO TBS
14221306	ALTER INDEX MODIFY PARTITION SHRINK SPACE REQUIRES EXCLUSIVE LOCK
18701017	AIX-12102-CHM:MEMORY LEAK(0.23 MB/HR) IN OSYSMOND.BIN
20436508	INCORRECT ROWS RETURNED AFTER ONLINE REDEFINITION WITH ROW ARCHIVAL CLAUSE
21095391	SPACE BACKGROUND LATCH CONTENTION AFTER DML
21223848	XF12.2XT_DP_XM - TRC - ORA-7445 [KOKES2B]
21547051	ORA-00600 [QMXFINDXOBPARENT] REGISTERING SDMX 2.1 SCHEMAS
21744603	A QUERY USING LIKE PREDICATE CAUSE ORA-1560
21766220	XF12.2XT_PART - TRC - KQREQD

[Open Readme to View all Bugs](#)

[View Related Knowledge to this Patch](#)



Why patch is so important?

Patch Details

Patch 29231062: GI RELEASE UPDATE REVISION 18.5.1.0.0

Last Updated 16-Apr-2019 14:25 (2+ months ago)

Size 2.1 GB

Product Oracle Database - Enterprise Edition
[\(More...\)](#)

Download Access Software

Classification General

Patch Tag

Release Oracle Database 18.0.0.0.0

Platform Linux x86-64

System Patch Contents

The following patches are included. Disabled items are included in the system patch and cannot be downloaded independently. Some patches may not detailed applicability analysis.

29263354	OCW RELEASE UPDATE REVISION 18.5.1.0.0
28864607	ACFS RELEASE UPDATE 18.5.0.0.0
29230887	DATABASE RELEASE UPDATE REVISION 18.5.1.0.0
28864607	ACFS RELEASE UPDATE 18.5.0.0.0
28864607	ACFS RELEASE UPDATE 18.5.0.0.0
29230887	DATABASE RELEASE UPDATE REVISION 18.5.1.0.0
29230887	DATABASE RELEASE UPDATE REVISION 18.5.1.0.0
29263354	OCW RELEASE UPDATE REVISION 18.5.1.0.0
29263354	OCW RELEASE UPDATE REVISION 18.5.1.0.0
28547619	TOMCAT RELEASE UPDATE 18.0.0.0.0

[Show All 42](#)

Bugs Resolved by This Patch

12816839	OCR CACHE INCONSISTENCY DURING DELETE
13554903	CDB:FLASHBACK QUERY IN PDB FAILS DUE TO MISSING UNDO TBS
14221306	ALTER INDEX MODIFY PARTITION SHRINK SPACE REQUIRES EXCLUSIVE LOCK
18701017	AIX-12102-CHM:MEMORY LEAK(0.23 MB/HR) IN OSYSMOND.BIN
20436508	INCORRECT ROWS RETURNED AFTER ONLINE REDEFINITION WITH ROW ARCHIVAL CLAUSE
21095391	SPACE BACKGROUND LATCH CONTENTION AFTER DML
21547051	ORA-00600 [QMXFINDXOBPARENT] REGISTERING SDMX 2.1 SCHEMAS
21744603	A QUERY USING LIKE PREDICATE CAUSE ORA-1560
21766220	XF12.2XT_PART - TRC - KQREQD
21806121	CC2 ENHANCEMENT: DMLS NOT WORKING WHEN ROWIDS NEEDED

[Open Readme to View all Bugs](#)

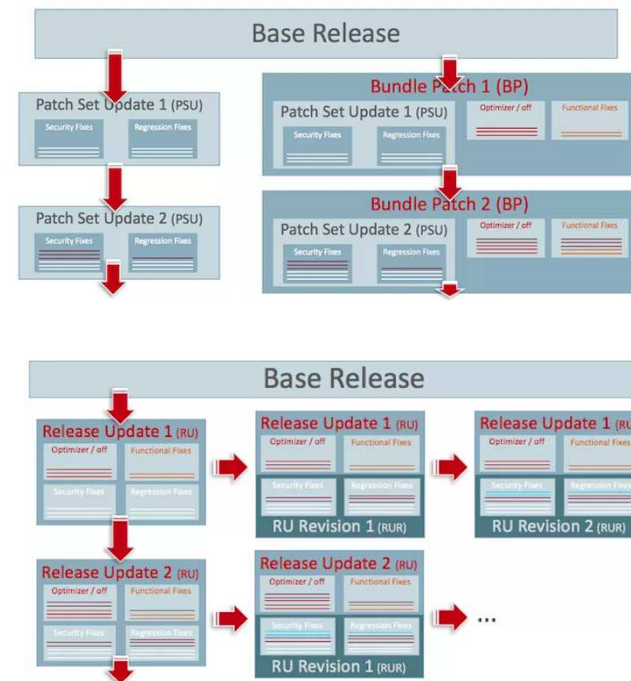
Why patch is so important?

- BP – Proactive Bundle Patches
- PSU – Patch Set Updates

> 12cR2

- RU – Release Update
- RUR – Release Update Revision

• <https://mikedietchde.com/2017/10/24/differences-psu-bp-ru-rur/>



Backup

As root (to avoid issues on files nmb, nmo and oradism)

```
cd /u01/app/oracle/product/18.3.0/  
tar -cf /tmp/backupOH300619.tar .
```

<https://mufalani.wordpress.com/2019/06/13/backing-up-and-restoring-your-oracle-home/>

Note id 1493677.1

Restore

As root

```
cd /u01/app/oracle/product/18.3.0/  
mv db_1 db_1_damaged_bad
```

```
cd /u01/app/oracle/product/18.3.0/  
tar -xf /tmp/backupOH300619.tar .
```

<https://mufalani.wordpress.com/2019/06/13/backing-up-and-restoring-your-oracle-home/>

Note id 1493677.1

Restore

As oracle

```
cd /u01/app/oracle/product/18.3.0/db_1/bin  
relink all
```

```
cat /u01/app/oracle/product/18.3.0/db_1/install/relink_2019-06-30_19-17-  
53PM.log | grep -i "Code 1|Fatal|Error"
```

<https://mufalani.wordpress.com/2019/06/13/backing-up-and-restoring-your-oracle-home/>

Note id 1493677.1

Tips and Tricks

Check Inventory

Check opatch required version

Backup OH

Clone OH

Relink OH

Check the OS version of the patch

Read the entire readme file of the patch

Don't use NFS to store patch files

Check free memory because of the unzip step

Check PATH

Tips and Tricks

Out of space applying the patch

```
$ORACLE_HOME/.patch_storage/NAApply/<TIMESTAMP>”  
restore.sh and make.txt
```

Can You Delete \$ORACLE_HOME/.patch_storage Directory? (Doc id 403218.1)

```
$ORACLE_HOME/.patch_storage  
opatch util cleanup (Doc id 550522.1)
```

Tips and Tricks

```
[oracle@ora18c3 ~]$ cd $ORACLE_HOME/OPatch
[oracle@ora18c3 OPatch]$
[oracle@ora18c3 OPatch]$ ./opatch util cleanup
Oracle Interim Patch Installer version 12.2.0.1.14
Copyright (c) 2019, Oracle Corporation. All rights reserved.

Oracle Home      : /u01/app/oracle/product/18.0.0/db_1
Central Inventory : /u01/app/oraInventory
   from           : /u01/app/oracle/product/18.0.0/db_1/oraInst.loc
OPatch version   : 12.2.0.1.14
OUI version      : 12.2.0.4.0
Log file location : /u01/app/oracle/product/18.0.0/db_1/cfgtoollogs/opatch/opatch2019-07-02_17-47-31PM_1.log

Invoking utility "cleanup"
OPatch will clean up 'restore.sh,make.txt' files and 'scratch,backup' directories.
You will be still able to rollback patches after this cleanup.
Do you want to proceed? [y|n]
y
User Responded with: Y

Backup area for restore has been cleaned up. For a complete list of files/directories
deleted, Please refer log file.

OPatch succeeded.
[oracle@ora18c3 OPatch]$
```

Tips and Tricks

- Rolling fashion way (Rolling installable)
- Standby first

(Doc id 1265700.1)

Tips and Tricks

```
toracle@srvoral-1]$ opatch apply
Oracle Interim Patch Installer version 11.2.0.3.21
Copyright (c) 2019, Oracle Corporation. All rights reserved.

Oracle Home      : /u01/app/oracle/product/11.2.0.4/db_1
Central Inventory : /u01/app/oraInventory
   from           : /u01/app/oracle/product/11.2.0.4/db_1/oraInst.loc
OPatch version   : 11.2.0.3.21
OUI version      : 11.2.0.4.0
Log file location : /u01/app/oracle/product/11.2.0.4/db_1/cfgtoollogs/patch/opatch/opatch2017-05-17-16-45PM_1.log

Verifying environment and performing prerequisite checks...
OPatch continues with these patches: 17805316

Do you want to proceed? [y/n]
Could not recognize input. Please re-enter.
y
User Responded with: Y
All checks passed.
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:

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

Please shutdown Oracle instances running out of this ORACLE_HOME on the local system.
(Oracle Home = '/u01/app/oracle/product/11.2.0.4/db_1')

Is the local system ready for patching? [y/n]
y
User Responded with: Y
Backing up files...
Applying interim patch '17805316' to OH '/u01/app/oracle/product/11.2.0.4/db_1'

Patching component oracle.rdbms, 11.2.0.4.0...
Make failed to invoke "/usr/bin/make -f ins_rdbms.mk ioracle ORACLE_HOME=/u01/app/oracle/product/11.2.0.4/db_1".../u01/app/oracle/product/11.2.0.4/db_1/lib//libhasgen11.so: undefined reference to `ztpk_Verify'
/u01/app/oracle/product/11.2.0.4/db_1/lib//libhasgen11.so: undefined reference to `ztpk_DestroyKey'
/u01/app/oracle/product/11.2.0.4/db_1/lib//libhasgen11.so: undefined reference to `ztpk_Sign'
collect2: ld returned 1 exit status
make: *** [/u01/app/oracle/product/11.2.0.4/db_1/rdbms/lib/oracle] Error 1

The following make actions have failed :
Re-link fails on target "ioracle".

Do you want to proceed? [y/n]
n
User Responded with: N
```


Tips and Tricks

```
Restoring "/u01/app/oracle/product/11.2.0.4/db_1" to the state prior to running NApply...
Checking if OPatch needs to invoke 'make' to restore some binaries...
Make failed to invoke "/usr/bin/make -f ins_rdbms.mk ioracle ORACLE_HOME=/u01/app/oracle/product/11.2.0.4/db_1...."/u01/app/oracle/product/11.2.0.4/db_1/lib/libhasgen11.so: undefined reference to `ztpk_Verify'
/u01/app/oracle/product/11.2.0.4/db_1/lib/libhasgen11.so: undefined reference to `ztpk_DestroyKey'
/u01/app/oracle/product/11.2.0.4/db_1/lib/libhasgen11.so: undefined reference to `ztpk_Sign'
collect2: ld returned 1 exit status
make: *** [/u01/app/oracle/product/11.2.0.4/db_1/rdbms/lib/oracle] Error 1

-----
Failed to run make commands. Please contact Oracle Support.
OPatch failed to restore OH '/u01/app/oracle/product/11.2.0.4/db_1'. Consult OPatch document to restore the home manually before proceeding.

NApply was not able to restore the home. Please invoke the following scripts:
- restore.[sh,bat]
- make.txt (Unix only)
to restore the ORACLE_HOME. They are located under
"/u01/app/oracle/product/11.2.0.4/db_1/.patch_storage/NApply/2017-05-17_16-16-45PM"

UtilSession failed: Re-link fails on target "ioracle".

Log file location: /u01/app/oracle/product/11.2.0.4/db_1/cfgtoollogs/patch/patch2017-05-17_16-16-45PM_1.log

OPatch failed with error code 73
```

Tips and Tricks

- To solve this:

Used the lib affected, restoring it to `$ORACLE_HOME/lib`

Then, I issued a relink

`$ORACLE_HOME/bin/relink all`

Tips and Tricks

- Some Note Ids to read carefully

Doc id 2285040.1 Release Update Introduction and FAQ

Doc id 2118136.2 Assistant: Download Reference for Oracle Database/GI Update, Revision, PSU, SPU(CPU), Bundle Patches, Patchsets and Base Releases

Doc id 756671.1 Master Note for Database Proactive Patch Program

Doc id 2369376.1 Database 18 Proactive Patch Information

Doc id 2420120.1 18c : Datapatch New Features And Changes from 12.1

Doc id 1265700.1 Oracle Patch Assurance - Data Guard Standby-First Patch Apply



Patch Conflict Analyzer

Release Oracle Database 18.0.0.0.0

Platform Linux x86-64

Language American English

[Read Me](#) [Download](#) [Add to Plan](#)

[Analyze with OPatch...](#)

All-time Downloads **431** [View Trends](#)

Patch Conflict Analyzer

Analyze for Conflicts

To analyze for conflicts ([Learn How](#))

- Upload your Oracle Home Inventory file
- Select patches to analyze against your current installation
- The analysis will reveal any issues with installing the listed patches

* Platform

Oracle Home Inventory

No file attached. Note: Conflict checking can occur between selected patches, but these will not be compared to installed patches.

* Patch

Patch Name	Description	Product
29251992	COMBO OF OJVM RU COMPONENT 18.6.0.0.190416 + GI RU 18.6.0.0.19...	Oracle Database - Ent

Patching Oracle Home

Oracle® Database

Patch 29251992 - Combo of OJVM Component Release Update 18.6.0.0.190416 + Grid Infrastructure Apr 2019 Rel

This document is accurate at the time of release. For any changes and additional information regarding this patch, see these related documents that are

- Document [854428.1](#) *Patch Set Updates for Oracle Products*
- Document [2498666.1](#) *Oracle Database / Grid Infrastructure / OJVM Release Update and Release Update Revision 18.6.0.0 Apr 2019 Known Issues*

This patch is not Oracle RAC Rolling installable. However, the OJVM RU (Update) may be installed in a "Conditional Rolling Install" fashion for the following

- No OJVM usage
- OJVM used by non-critical jobs and programs
- OJVM used by critical functions isolated as services
- OJVM used extensively, not isolated, and downtime is tolerated
- OJVM used by critical functions and minimal downtime is required

See My Oracle Support Document [2217053.1](#) for more details.

This document includes the following sections:

- [About the Combo Patch](#)
- [Installing the Combo Patch](#)
- [Uninstalling the Combo Patch](#)
- [Documentation Accessibility](#)



Patching OPatch

As Oracle User

<https://updates.oracle.com/download/6880880.html>

```
mv $ORACLE_HOME/OPatch $ORACLE_HOME/OPatch.300619
```

```
tar -zxf /tmp/p6880880_180000_LINUX.zip -d $ORACLE_HOME/
```

Patching Oracle Home

2. Verify the structure of the contents of the Combo Patch. The top-level directory contains this README document and some sub-directories in the following layout:

```
29251992
|
|- README.txt
|
|- README.html
|
|- 29301682/
|   --README.html
|   -- <other files and directories>
|
|- 29249584/
|   --README.html
|   -- <other files and directories>
|
```

NOTE: To review the READMEs for the component patches, click on the component patch number, then click Read Me.

Patching Oracle Home

- \$ORACLE_HOME/OPatch/opatch prereq
CheckConflictAgainstOHWithDetail -phBaseDir
/tmp/29301682/29301631
- \$ORACLE_HOME/OPatch/opatch prereq
CheckConflictAgainstOHWithDetail -phBaseDir
/tmp/29301682/29302264

Patching Oracle Home

**** As oracle user

```
cd /tmp/27980213
```

```
export ORACLE_HOME=/u01/app/oracle/product/11.2.0.4/db_1
```

```
$ORACLE_HOME/OPatch/ocm/bin/emocmrsp
```

```
$ORACLE_HOME/OPatch/opatch prereq CheckConflictAgainstOHWithDetail -phBaseDir /tmp/27980213/27734978
```

```
$ORACLE_HOME/OPatch/opatch prereq CheckConflictAgainstOHWithDetail -phBaseDir  
/tmp/27980213/27441052/custom/server/27441052
```

```
$ORACLE_HOME/OPatch/opatch prereq CheckSystemSpace -phBaseDir /tmp/27980213/27734978
```

```
$ORACLE_HOME/OPatch/opatch prereq CheckSystemSpace -phBaseDir /tmp/27980213/27441052/custom/server/27441052
```



Patching Oracle Home

**** As root user

```
cd /tmp/27980213
```

```
export ORACLE_HOME=/u01/app/oracle/product/11.2.0.4/db_1
```

```
export PATH=$ORACLE_HOME/bin:$ORACLE_HOME/OPatch/:${PATH}
```

```
opatch auto /tmp/27980213 -oh /u01/app/oracle/product/11.2.0.4/db_1 -ocmrf /tmp/27980213/ocm.rsp
```

Patching Oracle Home

**** As oracle user

```
/u01/app/oracle/product/11.2.0.4/db_1/OPatch/opatch lspatches
```

Patching Oracle Home

- Solving conflicts
- `$ORACLE_HOME/OPatch/opatch rollback -id 8702869`
- Sometimes you need to request a merge to Oracle support. Can be done by Conflict Analyze Tool online.

Patching Grid Infra before to install

```
cd /u01/app/grid/product/12201
unzip /tmp/linuxx64_12201_grid_home.zip

mkdir /tmp/patches
cd /tmp/patches

unzip /tmp/p26133434_122010_Linux-x86-64-GI.zip -d /tmp/patches/

cd /u01/app/grid/product/12201

./gridSetup.sh -silent -applyOneOffs /tmp/patches/26133434/25586399/
./gridSetup.sh -silent -applyOneOffs /tmp/patches/26133434/26002778/
./gridSetup.sh -silent -applyOneOffs /tmp/patches/26133434/26123830/

./gridSetup.sh #to install the grid using OUI
```

Patching OEMCC

1) Backup oem home

*** As root ***

```
export ORACLE_HOME=/u01/oem/middleware
```

```
export omspatcher=/u01/oem/middleware/OMSPatcher/omspatcher
```

```
cd /u01/
```

```
tar cf - oem | gzip > /nfsbak/backup_system/OEMCC13c_bkp_19062019.tar.gz
```

Obs.: As it was on AIX, be sure that you have the permissions to create large files, you can ask your sysadmin (ulimit)

You can ignore the errors during backup of... \$OH/network/log/cgisock.22741192 is not a valid tar file type.

Patching OEMCC

2) Update the optach and omspacher

*** As oracle ***

```
export ORACLE_HOME=/u01/oem/middleware
export omspacher=/u01/oem/middleware/OMSPatcher/omspacher
cd /u01/oracle/patch/OMS
unzip p6880880_139000_Generic.zip
$ORACLE_HOME/bin/emctl stop oms
```

-- You can find java under agent home

```
/u01/oem/agent/agent_13.2.0.0.0/jdk/bin/java -jar /u01/oracle/patch/OMS/6880880/opatch_generic.jar -silent
oracle_home=/u01/oem/middleware
```

Obs.: If the installation fails with below error, '-d64' parameter should be invoked in java command. Checking if this platform requires a 64-bit JVM. Actual 32 Failed <<<<

Obs1: Not occurred with me...



Patching OEMCC

2) Update the optach and omspatcher

--- To update omspatcher

```
export ORACLE_HOME=/u01/oem/middleware
```

```
export omspatcher=/u01/oem/middleware/OMSPatcher/omspatcher
```

```
cd /u01/oracle/patch/OMS
```

```
mv $ORACLE_HOME/OMSPatcher $ORACLE_HOME/OMSPatcher.bkp190619
```

```
unzip -qa -d $ORACLE_HOME/ /u01/oracle/patch/OMS/p19999993_132000_Generic.zip
```

```
$ORACLE_HOME/OMSPatcher/omspatcher version
```

```
$ORACLE_HOME/bin/emctl start oms
```

Patching OEMCC

3) Generate the key and property

```
export ORACLE_HOME=/u01/oem/middleware  
export omspatcher=/u01/oem/middleware/OMSPatcher/omspatcher  
$ORACLE_HOME/OMSPatcher/wlskeys/createkeys.sh -oh $ORACLE_HOME -location /u01/oracle/patch/OMS/
```

username: weblogic

password: MYorclTST12c

```
vi /u01/oracle/patch/OMS/property.txt  
AdminServerURL=t3s://mysrvoem:7101  
AdminConfigFile=/u01/oracle/patch/OMS/config  
AdminKeyFile=/u01/oracle/patch/OMS/key
```

Patching OEMCC

3) Generate the key and property

```
export ORACLE_HOME=/u01/oem/middleware
export omspatcher=/u01/oem/middleware/OMSPatcher/omspatcher
$ORACLE_HOME/OMSPatcher/wlskeys/createkeys.sh -oh $ORACLE_HOME -location /u01/oracle/patch/OMS/
```

username: weblogic

password: MYorclTST12c

```
vi /u01/oracle/patch/OMS/property.txt
AdminServerURL=t3s://mysrvoem:7101
AdminConfigFile=/u01/oracle/patch/OMS/config
AdminKeyFile=/u01/oracle/patch/OMS/key
```

Patching OEMCC

4) Analyze to find conflicts

```
cd /u01/oracle/patch/OMS/
```

```
unzip -qa p29762588_132000_Generic.zip
```

```
cd /u01/oracle/patch/OMS/29762588/
```

```
$omspatcher apply /u01/oracle/patch/OMS/29762588/ -analyze -invPtrLoc /u01/oem/middleware/oraInst.loc  
OMSPatcher.OMS_DISABLE_HOST_CHECK=true -property_file /u01/oracle/patch/OMS/property.txt
```

Patching OEMCC

5) If everything is OK on analyze phase, stop the oms and the apply the patchset

```
export ORACLE_HOME=/u01/oem/middleware
```

```
export omspatcher=/u01/oem/middleware/OMSPatcher/omspatcher
```

```
$(ORACLE_HOME)/bin/emctl stop oms
```

```
$(omspatcher apply /u01/oracle/patch/OMS/29762588/ -invPtrLoc /u01/oem/middleware/oralnst.loc  
OMSPatcher.OMS_DISABLE_HOST_CHECK=true -property_file /u01/oracle/patch/OMS/property.txt
```

```
$(ORACLE_HOME)/bin/emctl start oms
```

Patching OEMCC

5) If everything is OK on analyze phase, stop the oms and the apply the patchset

```
export ORACLE_HOME=/u01/oem/middleware
```

```
export omspatcher=/u01/oem/middleware/OMSPatcher/omspatcher
```

```
$(ORACLE_HOME)/bin/emctl stop oms
```

```
$(omspatcher apply /u01/oracle/patch/OMS/29762588/ -invPtrLoc /u01/oem/middleware/oraInst.loc  
OMSPatcher.OMS_DISABLE_HOST_CHECK=true -property_file /u01/oracle/patch/OMS/property.txt
```

```
$(ORACLE_HOME)/bin/emctl start oms
```

```
$(ORACLE_HOME)/OPatch/patch/patch lspatches
```

Data Dictionary Patches (SQL)

- Datapatch is online
- Datapatch is smart (automatically rollback)

Data Dictionary Patches (SQL)

```
[oracle@ora18c3 ~]$ cd $ORACLE_HOME/OPatch/
[oracle@ora18c3 OPatch]$
[oracle@ora18c3 OPatch]$
[oracle@ora18c3 OPatch]$ ./datapatch -verbose
SQL Patching tool version 18.0.0.0 Production on Tue Jul 2 17:24:33 2019
Copyright (c) 2012, 2018, Oracle. All rights reserved.

Log file for this invocation: /u01/app/oracle/cfgtoollogs/sqlpatch/sqlpatch_10602_2019_07_02_17_24_33/sqlpatch_invocation.log

Connecting to database...OK
Gathering database info...done

Note: Datapatch will only apply or rollback SQL fixes for PDBs
      that are in an open state, no patches will be applied to closed PDBs.
      Please refer to Note: Datapatch: Database 12c Post Patch SQL Automation
      (Doc ID 1585822.1)

Bootstrapping registry and package to current versions...done
Determining current state...done

Current state of interim SQL patches:
Interim patch 27923415 (OJVM RELEASE UPDATE: 18.3.0.0.180717 (27923415)):
  Binary registry: Installed
  PDB CDB$ROOT: Applied successfully on 20-MAR-19 02:37:46.580413 PM
  PDB PDB$SEED: Applied successfully on 20-MAR-19 02:44:53.052973 PM
  PDB PDB1: Applied successfully on 20-MAR-19 02:44:53.052973 PM
  PDB PDB2: Applied successfully on 20-MAR-19 02:44:53.052973 PM

Current state of release update SQL patches:
Binary registry:
  18.3.0.0.0 Release_Update 1806280943: Installed
  PDB CDB$ROOT:
    Applied 18.3.0.0.0 Release_Update 1806280943 successfully on 20-MAR-19 02:37:46.563610 PM
  PDB PDB$SEED:
    Applied 18.3.0.0.0 Release_Update 1806280943 successfully on 20-MAR-19 02:44:53.038614 PM
  PDB PDB1:
    Applied 18.3.0.0.0 Release_Update 1806280943 successfully on 20-MAR-19 02:44:53.038614 PM
  PDB PDB2:
    Applied 18.3.0.0.0 Release_Update 1806280943 successfully on 20-MAR-19 02:44:53.038614 PM

Adding patches to installation queue and performing prereq checks...done
Installation queue:
  For the following PDBs: CDB$ROOT PDB$SEED PDB1 PDB2
  No interim patches need to be rolled back
  No release update patches need to be installed
  No interim patches need to be applied

SQL Patching tool complete on Tue Jul 2 17:25:54 2019
[oracle@ora18c3 OPatch]$
```


Checking Patches

- Expanded
\$ORACLE_HOME/OPatch/opatch lsinventory
- Sumarized
\$ORACLE_HOME/OPatch/opatch lspatches

Checking Patches

```
mufalani — vi 11g.txt — 152x39
-- 11g version
set lin 1000
col action form a12
col version form a40
col comments form a70
col action_date form a20

select comments, action, to_char(action_time,'DD/MM/RR HH24:MI:SS') action_date, version
from registry$history
order by action_date;
```

COMMENTS	ACTION	ACTION_DATE	VERSION
Patch applied from 18.1.0.0.0 to 18.3.0.0.0	RU_APPLY	20/03/19 14:36:26	18.0.0.0.0
OJVM RU post-install	APPLY	20/03/19 14:37:42	18.3.0.0.1807170JVMRU
RAN jvmpsu.sql	jvmpsu.sql	20/03/19 14:37:42	18.3.0.0.1807170JVMRU
RDBMS_18.3.0.0.0DBRU_LINUX.X64_180627			

Checking Patches

```
mufalani — vi 12.txt — 164x42
-- For 12c and 18c
set lin 1000
col action form a12
col version form a40
col description form a85
col action_date form a20

select description, action, to_char(action_time,'DD/MM/RR HH24:MI:SS') action_date, ' ' version
from dba_registry_sqlpatch;
```

DESCRIPTION	ACTION	ACTION_DATE	VERSION
Database Release Update : 18.3.0.0.180717 (28090523)	APPLY	20/03/19 14:37:46	
OJVM RELEASE UPDATE: 18.3.0.0.180717 (27923415)	APPLY	20/03/19 14:37:46	

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