Practice

Applying RU Patches on Oracle Databases

Practice Target

In this practice, you will apply a Release Update (RU) patch on the database 19.3 running in `srv1`.

In high level, you will perform the following:

- Update OPatch utility to the most recent version
- Explore the most recent RU and RUR patches in Oracle Support website
- Apply a database RU on the database in `srv1`
- Apply OJVM RU on the Database in `srv1`

Assumption

The practice assumes that `srv1` is restored from the **CDB** snapshot and up and running.

Updating OPatch Utility

In this section of the practice, you will update the OPatch utility to its most recent version.

1. Open Putty and login to `srv1` as `oracle`

2. Run the following command to retrieve the current OPatch version

```
$ORACLE_HOME/OPatch/opatch version
```

3. Perform the following steps to obtain the latest version of OPatch for Oracle 19c database, Linux x86-64 or download it from this link:

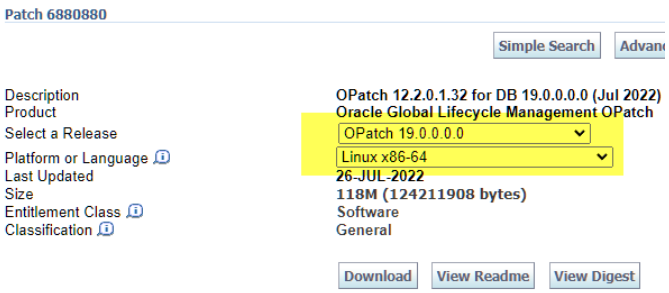
   2.1. Open the following link:

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

   2.2. From the Release drop list, select the option "**OPatch 19.0.0.0.0**".

   2.3. From the Platform drop list, select the option "**Linux x86-64**" (not Linux x86).

   2.4. The form should look like the following:



   2.5. Click on **Download** button.

4. Copy the downloaded file to the sharing folder.

5. Remove the existing OPatch directory from Oracle database home.

```
rm -fr $ORACLE_HOME/OPatch
```

6. Extract the downloaded file into Oracle database home.

```
unzip /media/sf_staging/p6880880_190000_Linux-x86-64.zip -d $ORACLE_HOME
```

7. Verify that the permissions assigned to OPatch directory as accessible to `oracle/oinstall`

```
ls -ald $ORACLE_HOME/OPatch
```

8. Validate the OPatch can retrieve the stack components and their versions.

If the command fails, stop at this step. You cannot proceed with applying the PSU and you need to receive Oracle support to look into the issue.

```
$ORACLE_HOME/OPatch/opatch lsinventory
```

9. Verify that the OPatch version is updated.

```
$ORACLE_HOME/OPatch/opatch version
```

Exploring the Most Recent RU and RUR Patches in Oracle Support Website

In this section of the practice, you will explore the RU and RUR patches for Oracle database in Oracle Support website. The target is to gain experience on obtaining the recent RU or RUR patches.

10. In Oracle support site, login as an account which has the privilege to download Oracle database patches and search for the Document ID **888.1**

11. In the top of the document, you will see a list of the documents sections with bookmarks that allow you to jump straight to the section by just clicking on its link.

12. Click on the link "**Database 19**" to explore list of the RU and RUR currently available for download.

13. Identify from the list, the currently available RU and RUR patches. For each one, identify the patch release date, target component, and patch type.

14. Click on the most recent RU patch number link. The browser opens a new tab and displays a list of links to download the RU for different platforms.

The 888.1 document helps on obtaining the most recent RUs and RURs. But what if we need older patches. Perform the following steps to obtain an older RU or RUR.

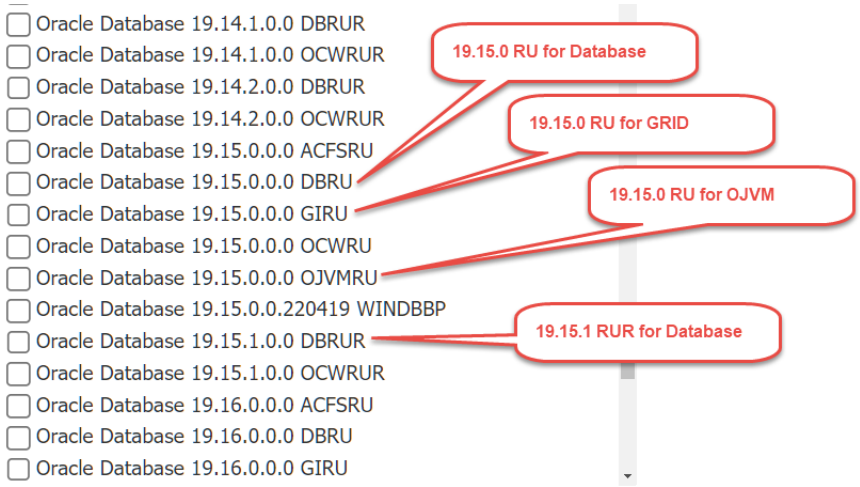
Note: For RU or RUR patches that are older than one year, they might be protected by a password for downloading them.

15. In Oracle Support website, click on "**Patches and Updates**" tab.

16. Click on "**Product or Family (Advanced)**".

17. In the **Product** field, type and select "**Oracle Database - Enterprise Edition**"

18. In the **Release** field, drag the list down to Oracle Database with the required RU or RUR version.

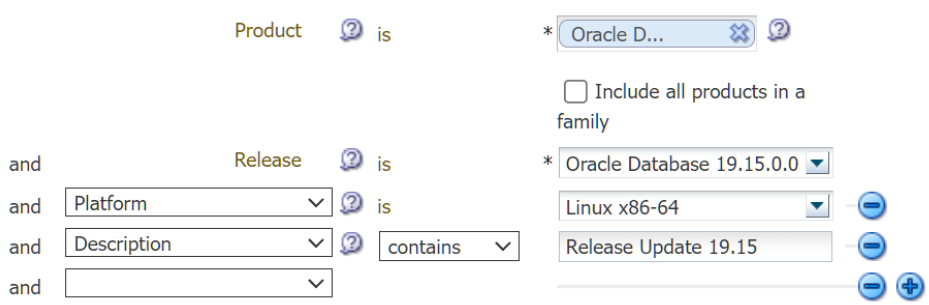


19. For Platform field, select "**Linux x86-64**"

20. In the empty drop list, select "**Description**".

21. Make sure the drop list beside is "**contains**"

22. Assuming we are looking for RU 19.15, type in the next field "**Release Update 19.15**".



23. Click on **Search** button.

24. The search results should return a short list of the patches and one of them must be the patch that we are after.

Applying Database RU on the Database in srv1

In this section of the practice, you will apply 19.16 RU patch on the `oradb` database running in `srv1`.

Note: The OJVM RU will be applied in the next practice section.

25. Using the technique learnt in the previous lecture, download Oracle Database Release Update 19.16.0.0.220719 for Oracle Database or link. Its size is nearly 1.5G.

26. Using the technique learnt in the previous lecture, download Oracle Database Release Update 19.16.0.0.220719 for OJVM component or link. Its size is nearly 123M.

Note: Even if Java is not being used in an Oracle database, it is recommended to apply the OJVM patches. To check if VM is installed in a database, run the following query:

```
SELECT VERSION, STATUS FROM DBA_REGISTRY WHERE COMP_ID='JAVAVM';
```

27. Copy or move the downloaded files to the staging directory.

28. In the Putty session, create a staging directory to save the patch files in it.

```
mkdir ~/staging
```

29. Decompress the database RU file into the staging directory.

```
unzip /media/sf_staging/p34133642_190000_Linux-x86-64.zip -d ~/staging
```

30. Copy the README.html file to the staging folder and open it in your favorite browser.

You will implement the steps mentioned in the README file in the remaining steps.

```
cp ~/staging/34133642/README.html /media/sf_staging
```

31. Add the OPatch path to the `PATH` variable.

```
export PATH=$PATH:$ORACLE_HOME/OPatch
```

32. Change the current directory to the RU staging directory and determine whether any currently installed interim patches conflict with the patch.

```
cd ~/staging/34133642
opatch prereq CheckConflictAgainstOHWithDetail -ph ./
```

33. Shutdown the database and stop the listener.

In a production system, we would stop the applications before shutting down the database.

```
sqlplus / as sysdba
shutdown immediate
exit

lsnrctl stop
```

Note: In a production system, at this stage, we would take backup of `$ORACLE_HOME` and stop any third-party scheduled jobs associated with Oracle database. To achieve this task, you might run a command like the following:

```
tar -cvf oracle_home.tar $ORACLE_HOME
```

34. Apply the patch.

This step updates the binaries but not the database objects. It may take nearly 10 minutes.

```
opatch apply
```

35. Start the database services so that we can run the `datapatch` on the database containers.

We do not allow the application sessions to connect to the database yet. We started the database to run the patch SQL files in the database.

```
sqlplus / as sysdba
startup
alter pluggable database all open ;
quit
```

36. Run the `datapatch` utility.

It takes nearly 10 minutes to finish.

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

37. Verify the RU patch is fully installed.

```
opatch lsinventory | grep "Database Release Update"
```

38. If everything goes fine, delete the RU staging files.

```
cd
rm -rf ~/staging
mkdir ~/staging
rm /media/sf_staging/README.html
```

Applying OJVM RU on the Database in srv1

In this section of the practice, you will apply 19.16 OJVM RU patch on the database running in `srv1`.

39. Decompress the file RU for the OJVM patch file in the staging directory.

```
unzip /media/sf_staging/p34086870_190000_Linux-x86-64.zip -d ~/staging
```

40. Copy the README.html file to the staging folder and open it in your favorite browser.

You will implement the steps mentioned in the README file in the remaining steps.

```
cp ~/staging/34086870/README.html /media/sf_staging
```

41. Change the current directory to the RU staging directory and determine whether any currently installed interim patches conflict with the patch.

```
cd ~/staging/34086870
opatch prereq CheckConflictAgainstOHWithDetail -ph ./
```

42. Shutdown the database and stop the listener.

```
sqlplus / as sysdba
shutdown immediate
quit

# the listener is already shutdown
```

43. Apply the patch.

This step updates the binaries but not the database.

```
opatch apply
```

44. Start the database services.

```
sqlplus / as sysdba
startup
alter pluggable database all open ;
quit
```

45. Run the `datapatch` utility.

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

46. Submit the following query to retrieve list of the patches applied on the database.

```
sqlplus / as sysdba

set linesize 180
col DESCRIPTION for a20
col STATUS for a10

SELECT INSTALL_ID, PATCH_ID, PATCH_TYPE, STATUS, SOURCE_BUILD_DESCRIPTION
DESCRIPTION
FROM DBA_REGISTRY_SQLPATCH
ORDER BY INSTALL_ID DESC ;
```

47. Query the `V$VERSION` view.

Observe the version is updated to 19.16.

```
SELECT * FROM V$VERSION ;
```

48. Exit from SQL*Plus

```
exit
```

49. Start the Listener

In real life scenario, at this stage, you enable the schedule jobs that you disabled when you started the patching process and then allow the applications to connect to the database. Furthermore, if possible, you would take full backup of the database.

```
lsnrctl start
```

50. Delete the RU staging directory.

```
cd
rm -rf ~/staging
rm /media/sf_staging/README.html
```

51. (optional) Shutdown the `srv1`.

52. In Oracle VirtualBox, **create a new CDB snapshot** for `srv1` then delete the existing CDB snapshot.

Note: Do not delete the patch files from the sharing folder. You will use them to apply them on a database with ASM later in the course.

Summary

In high level, applying the patches on Oracle databases, involve the following steps:

- Decompressing the patch files into staging directories.
- Applying the patches to update the software binaries.
- Running the datapatch to update the database objects.
- The procedure is implemented on the database and the OJVM component.

Note: This practice is implemented on a non-RAC and non-ASM database. The procedure could be different for RAC and ASM-based databases. In a later practice, you will apply RU patches on an ASM-based database.