Practice

Applying RU Patches on Oracle Databases with Oracle Restart Configuration

Practice Target

In this practice, you will apply a Release Update (RU) patch on the Oracle database with ASM.

In high level, you will perform the following:

- Upgrade OPatch utility in database and Grid homes
- Apply RU on the database and Grid Homes

Assumption

The practice assumes that the Oracle database with ASM is available in Oracle VirtualBox. In Oracle VirtualBox, you named the machine as **srv1-asm**.

Note: When Oracle Grid Infrastructure is installed with a standalone Oracle database, this configuration is called **Oracle Restart**.

About Applying Patches on Oracle Restart Configuration

With Oracle Restart Configuration, Oracle database needs to communicate with Oracle grid infrastructure. This is similar to RAC configuration. That is why there are similarities between the applying patching on Oracle Restart configuration and Oracle RAC.

The easiest tool to apply patches on Oracle Restart is to use opatchauto utility. This utility automates applying the patch on both the Grid Infrastructure home and the database home. This obviously simplifies the procedure to apply patches on an Oracle Restart configuration.

The most important requirement for this utility is to have the GI home and the database home of the same version.

Also, the user who should invoke this utility is the root user (it is not `oracle`, nor `grid`).

The utility does not require to shutdown the database or the grid resources. It automatically shuts down the services and start them up on the right time.

Upgrading OPatch Utility in Database and Grid Homes

In this section of the practice, you will upgrade the OPatch utility to its most recent version in Oracle database and grid homes.

1. In Oracle VirtualBox, take a snapshot for the vm.

2. Open Putty and login to `srv1` as `root`

3. As `oracle`, retrieve the current OPatch version

```
su - oracle
$ORACLE_HOME/OPatch/opatch version
```

4. Copy the OPatch upgrade patch to the sharing folder.

You downloaded the file in an earlier practice. If you lost it, you can download it from this link.
The file name is `p6880880_190000_Linux-x86-64.zip`

5. Upgrade OPatch in Oracle database home.

```
rm -fr $ORACLE_HOME/OPatch/*
unzip /media/sf_staging/p6880880_190000_Linux-x86-64.zip -d $ORACLE_HOME
$ORACLE_HOME/OPatch/opatch version
# the following command should succeed:
$ORACLE_HOME/OPatch/opatch lsinventory
```

6. Change the current user to `grid`

```
exit
su – grid
```

7. Upgrade OPatch in grid home.

```
rm -fr $ORACLE_HOME/OPatch/*
unzip /media/sf_staging/p6880880_190000_Linux-x86-64.zip -d $ORACLE_HOME
$ORACLE_HOME/OPatch/opatch version
# the following command should succeed:
$ORACLE_HOME/OPatch/opatch lsinventory
```

8. Exit from grid shell so that the current user becomes `root`

```
exit
```

Applying RU on the Database and Grid Homes

In this section of the practice, you will apply RU 16 patch on both the grid and database homes.

9. Download the GI Release Update 19.16.0.0.220719 from Oracle support or link. Its size is nearly 2.7G. The file name is `p34130714_190000_Linux-x86-64.zip`

10. Copy or move the downloaded file to the staging directory.

11. In the Putty session, create a staging directory to extract the patch files into it.

```
mkdir /media/sf_staging/patch
```

12. Decompress the RU file into the patching staging directory.

```
unzip /media/sf_staging/p34130714_190000_Linux-x86-64.zip -d
/media/sf_staging/patch >/dev/null
```

13. Open the `README.html` file in the patch directory in your favorite browser.

Consider the section "**Patch Numbers Installed as Part of this Bundle Patch**". Observe the following:

- The RU is composed of 5 patches. One for the database only, one for both the database and the grid, and three for grid home only.
- The database RU is the same RU that we applied earlier in the course on the non-ASM database. This means, after we apply this RU on the database home, there is no need to apply the same RU again on the database home.

```
/media/sf_staging/patch/34130714/README.html
```

14. Check the sub-directories under the staging patch location.

You must see 5 directories matching the sub-patches included in this patch.

```
ls -al /media/sf_staging/patch/34130714/
```

Because we have a few patches to apply on the system, lets check if we have free space to apply all those patches.

15. As grid, create the file `patch_list_gihome.txt` as follows.

```
su – grid

cat << EOF > /tmp/patch_list_gihome.txt
/media/sf_staging/patch/34130714/34133642
/media/sf_staging/patch/34130714/34160635
/media/sf_staging/patch/34130714/34139601
/media/sf_staging/patch/34130714/34318175
/media/sf_staging/patch/34130714/33575402
EOF
```

16. Run the OPatch command to check if enough free space is available to apply the patches on the grid home.

If the command passed the check, this means we have enough free space to apply the patches on the grid home.

```
/u01/app/19.0.0/grid/OPatch/opatch prereq CheckSystemSpace -phBaseFile
/tmp/patch_list_gihome.txt
```

17. Verify that the database is up and running.

`opatchauto` script automatically shuts down any up and running services running from Oracle homes.

```
ps -ef | grep pmong
```

18. In the `README.HTML` file, refer to the section "**6 Patch Installation**". Observe that for the instructions to apply the patches on an Oracle Restart configuration, it asks to refer to MOS note 2246888.1. In that note, you need to refer to section "**Case 4: Patching Oracle Restart Home**".

19. Exit from the current user shell so that the current user becomes the `root`

```
exit
```

20. Add the OPatch path in the GI grid to the `PATH` variable.

```
export PATH=$PATH:/u01/app/19.0.0/grid/OPatch
```

21. Check for patch conflicts.

This command checks for any conflicts between the patch and any one-off applied patches. The apply command should succeed.

```
cd /media/sf_staging/patch/34130714
opatchauto apply -analyze
```

22. Apply the RU patches using the `opatchauto` command.

```
opatchauto apply
```

If Opatch fails, it stops with error and saves details about the error in a log file. If this happens to you, consider performing the following:

a. Look into the log file reported by the Opatch.

b. Fix the root cause of the reported issue.

c. Resume the Opatch using the following command:

```
opatchauto apply resume
```

23. Verify the RU patch is fully installed.

```
su - oracle
```

```
$ORACLE_HOME/OPatch/opatch lsinventory | grep "Database Release Update"
exit

su - grid
# those are the patch numbers applied by the RU
$ORACLE_HOME/OPatch/opatch lsinventory | grep 34160635
$ORACLE_HOME/OPatch/opatch lsinventory | grep 34139601
$ORACLE_HOME/OPatch/opatch lsinventory | grep 34318175
$ORACLE_HOME/OPatch/opatch lsinventory | grep 33575402
exit
```

24. Run the following query to retrieve the patches applied on the database.

```
su - oracle
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 ;

quit
```

Note: Observe that the RU does not apply the RU patch on the OJVM. If you want to apply a RU on OJVM, refer to the designated practice.

Cleanup

25. Delete the RU installation files from the sharing folder.

26. Shutdown the `srv1`.

27. In Oracle VirtualBox, delete the existing snapshot.

28. Delete the RU staging files:

```
rm -fr /media/sf_staging/patch
```

Note: Do **not** delete the vm. You will need it for a future practice.

Summary

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

- Decompressing the patch files into staging directories
- Preparing the environment for applying the patches
- Applying the patches to update GI and Oracle database homes using `opatchauto` utility

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