Setting up the Oracle 19c RAC Database from the OVA File

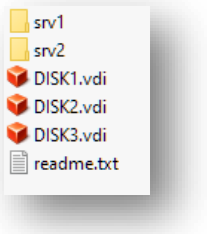
This tutorial demonstrates the procedure to set up the Oracle 19c RAC environment on a PC by importing the Oracle VirtualBox Import file (ova file) available in ahmedbaraka.com in this link.

The PC must have at least 12 GB free in its RAM and 100 GB free disk space.

For more information about this Oracle RAC environment, refer to the readme file in the download link.

1. Download the Oracle RAC database VM machines from this link. This is a 9.7-GB file of two ova files. They represent "Oracle Database 19c on Linux 7".

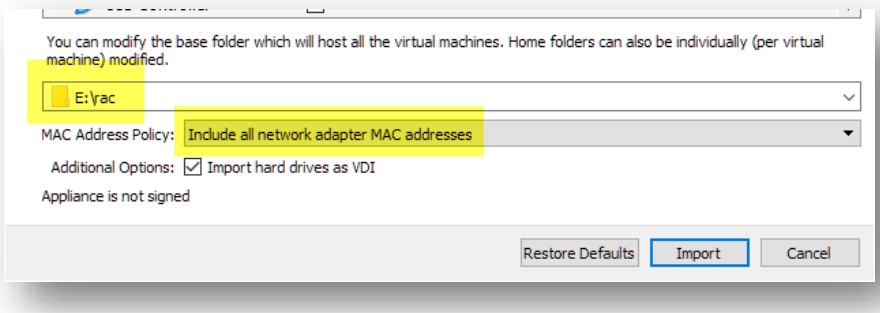
2. Extract downloaded files into a staging directory, for example D:\temp. You should have the following directories and files under a directory named "**Oracle RAC 19c**". You can delete the zip file after extracting it.



3. Create a parent directory where you will save the VM files. In this document, we assume it is **E:\rac**

4. Move the files `DISK1.vdi`, `DISK2.vdi` and `DISK3.vdi` to the parent directory **E:\rac**

5. In Oracle VirtualBox, import `srv1` machine into **E:\rac**: File > Import Appliance > select the file `srv1.ova` in the `srv1` directory > Enter the parent directory > change the **MAC Address Policy** setting to "**Include all network adapter MAC addresses**" >click on **Import** button. A subdirectory (has the name format `srv1`*x*) will automatically be created under the parent directory.



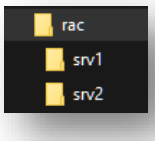
6. In Oracle VirtualBox, import `srv2` machine into **E:\rac**.

   File > Import Appliance > select the file `srv2.ova` in the `srv2` directory > Enter the parent directory > change the **MAC Address Policy** setting to "**Include all network adapter MAC addresses**" > click on **Import** button. A subdirectory (has the name format `srv2`*x*) will automatically be created under the parent directory.

7. In Oracle VirtualBox, if the virtual machine names are different from `srv1` and `srv2`, rename them to `srv1` and `srv2`.

   Click on the vm > open its settings (`[Ctl] + [S]`) > On the left hand side panel, click on **General** > change the Name field to the desired name > click on **OK** button

8. After importing the appliances, you should have a directory structure that looks like the following:



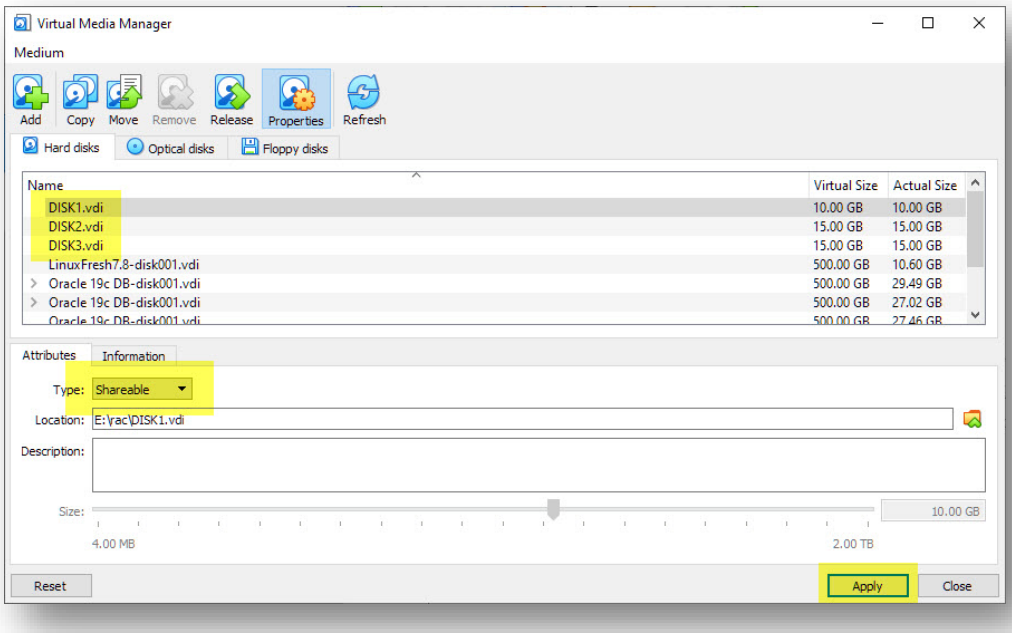
9. In VirtualBox, add the disk files Disk1.vdi, Disk2.vdi, Disk3.vdi to the Virtual Media Manager

   In VirtualBox, click on **File** > **Virtual Media Manager** (`[Ctl] + [D]`) > click on **Add** button > select **Disk1.vdi** file > click on **Open** button. Repeat the steps on the remaining disk files.

10. Make the attached disks **shareable**.

    select **Disk1.vdi** > change its type to **Shareable** > click on **Apply** button. Repeat the steps on the remaining disk files.

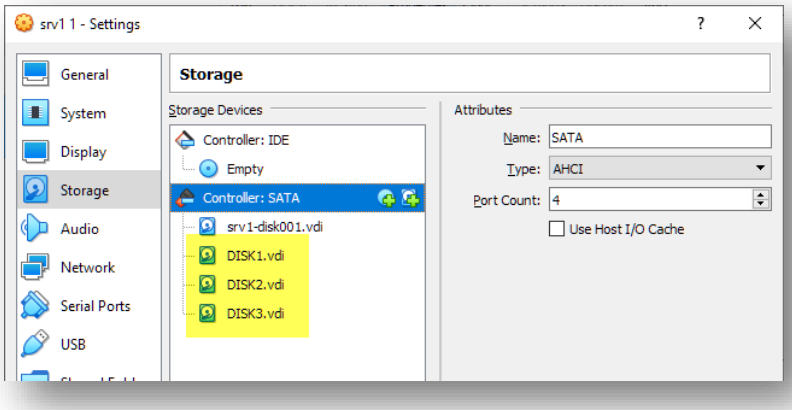
    Make sure to click on **Apply** button before going to the next disk in the list.



11. Click on **Close** button to close the Virtual Media Manager

12. Attach the disks to srv1.

    Go to the settings of srv1 > Storage > click on the **Sata Controller** > click on **Add Hardisk**. Click on Choose **Existing Disk** option > select **Disk1.vid from the list** > click on **Choose** button. Repeat the steps for all the remaining two disk files.



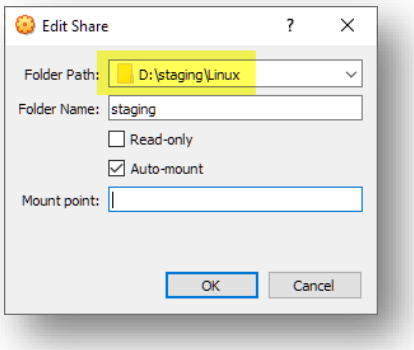
13. Attach the same disks to srv2

14. Open the settings of srv1. Change the Adapter name in the **Network Adapter 3** setting to match the network card in your environment. Do **not** re-initialize the MAC address.

15. Open the settings of srv2. Change the Adapter name in the **Network Adapter 3** setting to match the network card in your environment. Do **not** re-initialize the MAC address.

16. Open the settings of srv1, fix the value of the **Shared Folders** to any folder in your PC.

    In the left side panel, click on the **Shared Folders** > in the right side panel, double click on the shared folder > fix the value of the Folder Path to match the folder in your PC.



17. Fix the value of the **Shared Folders** in srv2

18. Start srv1

19. In the VirtualBox window of srv1, login as root and obtain its IP address.

    As in any Oracle RAC node, srv1 is assigned multiple IP addresses. Obtain the physical IP address assigned to Adapter 1 (host-only) or Adapter 3 (bridged).

20. Configure connections to srv1 in Putty. Connect to srv1 as oracle.

21. Wait for a few minutes (it was 6 minutes in my environment) to allow the grid services and the database to startup.

22. Verify the database in the RAC environment is up and running in srv1

```
srvctl status database -d rac
```

23. Start srv2

24. In the VirtualBox window of srv2, login as root and obtain its IP address.

25. Configure connections to srv2 in Putty. Connect to srv2 as oracle.

26. Wait for a few minutes to allow the grid services and the database to startup.

27. Verify the database in the RAC environment is up and running all the nodes

```
srvctl status database -d rac
```

The archivelog mode is disabled in the pre-configured RAC database. If you want to enable the archivelog mode, perform the following steps:

28. In srv1 session, login to SQL*Plus as sysdba and verify that the FRA is enabled.

```
sqlplus / as sysdba
show parameter DB_RECOVERY_FILE_DEST
```

29. Perform the steps below to enable the archivelog mode in rac database.

```
# stop the database
srvctl stop database -d rac -o immediate
srvctl start database -d rac -o mount

sqlplus / as sysdba

# verify that the instances are in MOUNT state
SELECT INSTANCE_NAME,STATUS FROM GV$INSTANCE;

# verify that the database is operating in NOARCHIVE mode
ARCHIVE LOG LIST;

# define the destination of the archive log files
ALTER SYSTEM SET LOG_ARCHIVE_DEST_1='LOCATION=USE_DB_RECOVERY_FILE_DEST'
SCOPE=SPFILE;

# Note: because OMF is enabled, setting the
#        LOG_ARCHIVE_FORMAT parameter has no effect.

# enable the archivelog mode
ALTER DATABASE ARCHIVELOG;

# restart the database
srvctl stop database -d rac
srvctl start database -d rac
```

```
sqlplus / as sysdba
alter pluggable database pdb1 open;
alter pluggable database pdb1 save state;

# verify that the archivelog is enabled
archive log list

# login as sysdba to each instance and switch the log file
ALTER SYSTEM SWITCH LOGFILE;
SELECT NAME FROM V$ARCHIVED_LOG;
```