

Oracle Instance Architecture

WEEK 03

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Week 3 – Oracle Instance Architecture

Last week we setup a new Oracle database server in our playground VM. It's time to have a more detailed look into the guts of this server.

Prepare VM

Start our playground Oracle VM and logon using “root” user. Open a terminal and run:

```
[root@orasrv ~]# week2.sh
```

The VM will automatically reboot in a state where the Oracle software and the database is already installed.

Start the Oracle Instance

Logon with “oracle” user and start a terminal window. First, start the listener:

```
[oracle@orasrv ~]$ lsnrctl start
```

Then, go on and start the oracle instance:

```
[oracle@orasrv ~]$ sqlplus / as sysdba

SQL*Plus: Release 12.2.0.1.0 Production on Tue Mar 5 07:31:11 2019

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Connected to an idle instance.

SQL> startup
ORACLE instance started.

Total System Global Area 838860800 bytes
Fixed Size 8626240 bytes
Variable Size 629149632 bytes
Database Buffers 197132288 bytes
Redo Buffers 3952640 bytes
Database mounted.
Database opened.
```

How was it possible to connect to the instance without providing any credentials?

Connecting to the Database

Use Sqlplus or SQL Developer. You can also use EM Express to get a lot of useful info like: DB physical structures, workload etc. There is a bookmark in Firefox pointing to the EM Express running inside the Oracle playground VM.

The Oracle Database

Outside view: Identify the database files location on the OS level and compute the total size using the corresponding Linux commands.

From the inside: Query the database dictionary to get the total size of all data files.

The Oracle Instance

Identify the oracle processes part of the Oracle instance. Use the proper Linux command.

Every started-up instance must have a “pmon” process running. What Linux command(s) can you use to find out if the instance is up or not?

Look into the database dictionary to find out all background and foreground processes.

Identify the size of the SGA memory.

Shutdown the Oracle Instance

Practical session:

- Login to your Oracle VM using the “oracle” user
- Check if there is any oracle instance running
- Assuming that no instance is running, start up the Oracle instance
- Using “sqlplus”, connect using the FB user (password “fb”)
- Insert a new record into the “ACCOUNTS” table (look at the table structure and figure out how to write the INSERT statement). Leave this sqlplus window/terminal opened.
- Open a new terminal, connect as SYS using sqlplus and execute “shutdown transactional”
- Explain what happens

Configuring the Oracle Instance

What are initialization parameters?

Where are they stored?

Static vs. dynamic parameters

How to change these parameters?

Practical session:

- Check the value of the “processes” parameter.
- Increase its value with 100.
- Force the Oracle instance to consider the new value of this parameter.

The Database Control-file

What is a control-file?

Why the possibility to multiplex it?

Practical session:

- Identify the control files.
- Check their size.