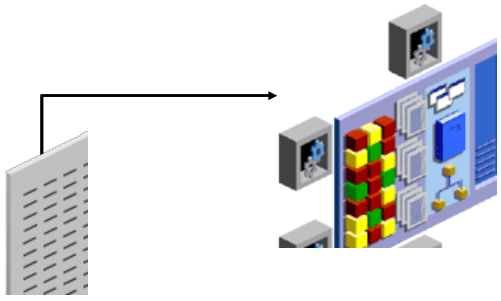
Managing the Database Instance

Objectives

After completing this lesson, you should be able to:

- Start and stop the Oracle database instance and components
- Modify database initialization parameters
- Describe the stages of database startup
- Describe database shutdown options
- View the alert log
- Access dynamic performance views

Initialization Parameter Files



spfileorcl.ora

or

initorcl.ora

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Initialization Parameters: Examples

Parameter	Specifies
CONTROL_FILES	One or more control file names
DB_FILES	Maximum number of database files
PROCESSES	Maximum number of OS user processes that can simultaneously connect
DB_BLOCK_SIZE	Standard database block size used by all tablespaces
DB_CACHE_SIZE	Size of the standard block buffer cache

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Using SQL*Plus to View Parameters

```
SQL> SELECT name, value FROM V$PARAMETER;
NAME                 VALUE
------------         ----------
lock_name_space
processes             300
sessions              472
timed_statistics      TRUE
timed_os_statistics   0
…

SQL> SHOW PARAMETER SHARED_POOL_SIZE
NAME                                 TYPE        VALUE
------------------------------------ ----------- ---------------------
securefile_log_shared_pool_size      big integer 0
shared_pool_size                     big integer 0

SQL> show parameter para
NAME                                 TYPE        VALUE
------------------------------------ ----------- ---------------------
cell_offload_parameters              string
fast_start_parallel_rollback         string      LOW
parallel_adaptive_multi_user         boolean     TRUE
parallel_automatic_tuning            boolean     FALSE
…
```

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Changing Initialization Parameter Values

- Static parameters:
  - Can be changed only in the parameter file
  - Require restarting the instance before taking effect
- Dynamic parameters:
  - Can be changed while database is online
  - Can be altered at:
    - Session level
    - System level
  - Are valid for duration of session or based on `SCOPE` setting
  - Are changed by using `ALTER SESSION` and `ALTER SYSTEM` commands

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Changing Parameter Values: Examples

```
SQL> ALTER SESSION
  2  SET NLS_DATE_FORMAT ='mon dd yyyy';

Session altered.

SQL> SELECT SYSDATE FROM dual;

SYSDATE
-----------
oct 17 2012
```

```
SQL> ALTER SYSTEM  SET
  2  SEC_MAX_FAILED_LOGIN_ATTEMPTS=2
  3  COMMENT='Reduce for tighter security.'
  4  SCOPE=SPFILE;

System altered.
```

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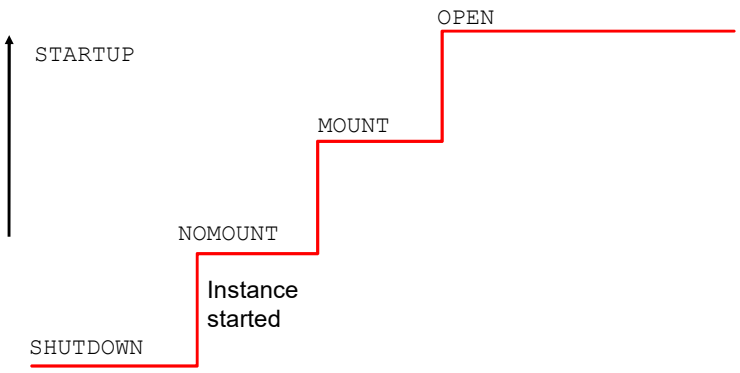
Starting Up an Oracle Database Instance: NOMOUNT



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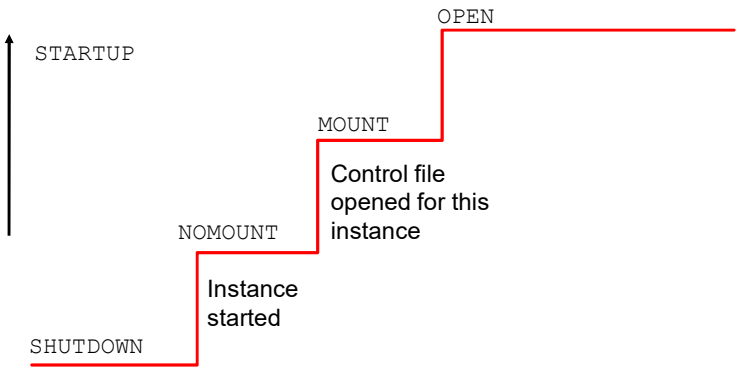
Starting Up an Oracle Database Instance: MOUNT



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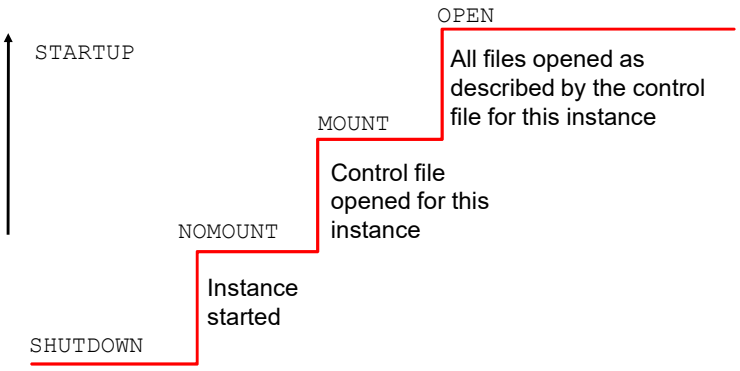
Starting Up an Oracle Database Instance: OPEN



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Startup Options: Examples

- Using the SQL*Plus utility:

```
SQL> startup                                    1
```

```
SQL> startup nomount                            2
```

```
SQL> alter database mount;                      3
```

```
SQL> alter database open;                       4
```

- Using the Server Control utility with Oracle Restart

```
$ srvctl start database -d orcl -o mount
```

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Shutdown Modes

Shutdown Modes	A	I	T	N
Allows new connections	No	No	No	No
Waits until current sessions end	No	No	No	Yes
Waits until current transactions end	No	No	Yes	Yes
Forces a checkpoint and closes files	No	Yes	Yes	Yes

Shutdown modes:

- A = ABORT
- I = IMMEDIATE
- T = TRANSACTIONAL
- N = NORMAL

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Shutdown Options

On the way down:

- Uncommitted changes rolled back, for `IMMEDIATE`
- Database buffer cache written to data files
- Resources released

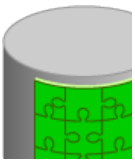
During:

`SHUTDOWN NORMAL`
or
`SHUTDOWN TRANSACTIONAL`
or
`SHUTDOWN IMMEDIATE`

Consistent database

On the way up:

- No instance recovery



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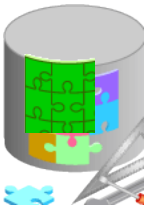
Shutdown Options

On the way down:

- Modified buffers not written to data files
- Uncommitted changes not rolled back



During:

`SHUTDOWN ABORT`
or
Instance failure
or
`STARTUP FORCE`

Inconsistent database

On the way up:

- Online redo log files used to reapply changes
- Undo segments used to roll back uncommitted changes
- Resources released

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Shutdown Options: Examples

- Using SQL*Plus:

```
SQL> shutdown                                    1
```

```
SQL> shutdown transactional                      2
```

```
SQL> shutdown immediate                          3
```

```
SQL> shutdown abort                              4
```

- Using the SRVCTL utility with Oracle Restart

```
$ srvctl stop database -d orcl -o abort
```

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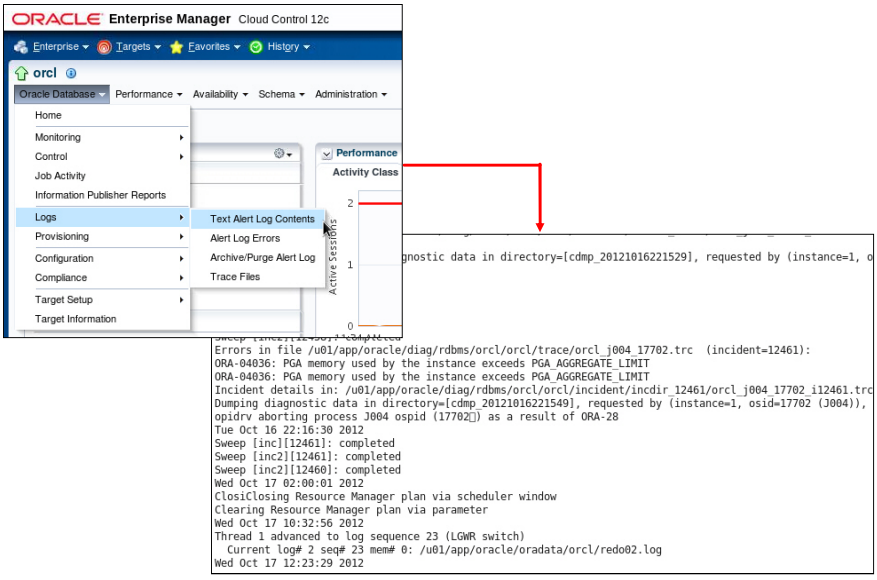
Viewing the Alert Log



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Using Trace Files

- Each server and background process can write to an associated trace file.
- Error information is written to the corresponding trace file.
- Automatic diagnostic repository (ADR)
  - Is a systemwide central tracing and logging repository
  - Stores database diagnostic data such as:
    - Traces
    - Alert log
    - Health monitor reports

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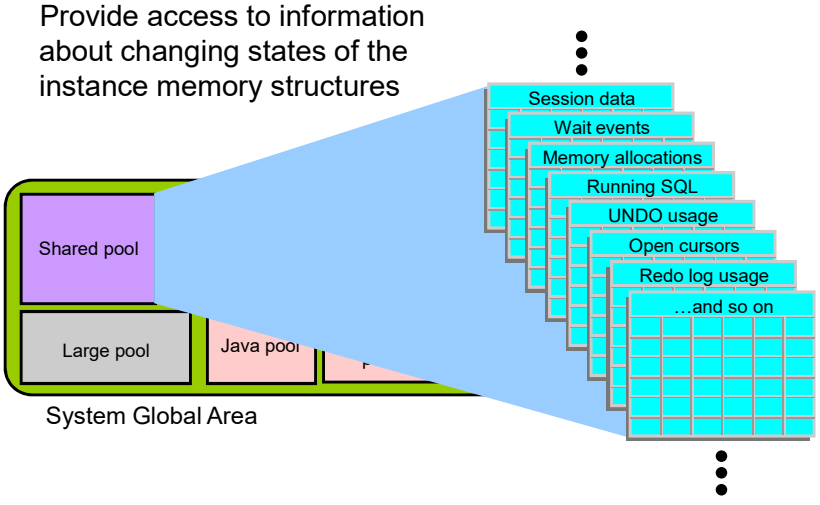
Using Dynamic Performance Views

Provide access to information about changing states of the instance memory structures



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Dynamic Performance Views: Usage Examples

1
```
SELECT sql_text, executions FROM v$sql
WHERE cpu_time > 200000;
```

2
```
SELECT * FROM v$session
WHERE machine = 'EDXX9P1'
AND logon_time > SYSDATE - 1;
```

3
```
SELECT sid, ctime FROM v$lock
WHERE block > 0;
```

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Dynamic Performance Views: Considerations

- These views are owned by the `SYS` user.
- Different views are available at different times:
  - The instance has been started.
  - The database is mounted.
  - The database is open.
- You can query `V$FIXED_TABLE` to see all the view names.
- These views are often referred to as “v-dollar views.”
- Read consistency is not guaranteed on these views because the data is dynamic.

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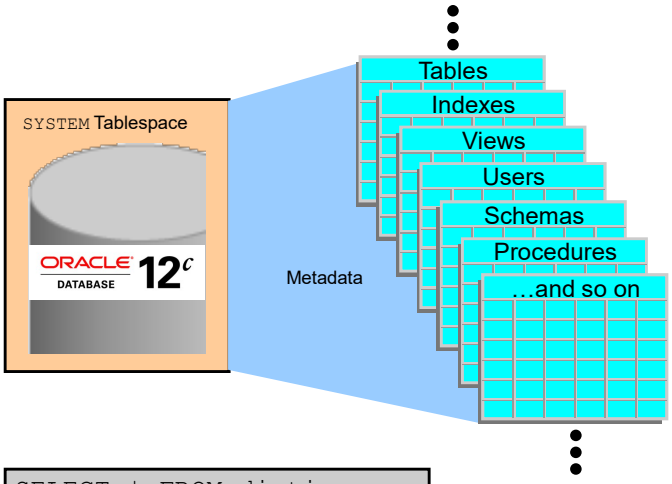
Data Dictionary: Overview




```
SELECT * FROM dictionary;
```

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Data Dictionary Views

	Who Can Query	Contents	Subset of	Notes
DBA_	DBA	Everything	N/A	May have additional columns meant for DBA use only
ALL_	Everyone	Everything that the user has privileges to see	DBA_ views	Includes user's own objects and other objects that the user has been granted privileges to see
USER_	Everyone	Everything that the user owns	ALL_ views	Is usually the same as ALL_ except for the missing OWNER column. (Some views have abbreviated names as PUBLIC synonyms.)

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Data Dictionary: Usage Examples

1
```
SELECT table_name, tablespace_name
FROM user_tables;
```

2
```
SELECT sequence_name, min_value, max_value,
increment_by
FROM all_sequences
WHERE sequence_owner IN ('MDSYS','XDB');
```

3
```
SELECT USERNAME, ACCOUNT_STATUS
FROM dba_users
WHERE ACCOUNT_STATUS = 'OPEN';
```

4
```
DESCRIBE dba_indexes
```

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Summary

In this lesson, you should have learned how to:

- Start and stop the Oracle database instance and components
- Modify database initialization parameters
- Describe the stages of database startup
- Describe database shutdown options
- View the alert log
- Access dynamic performance views

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