

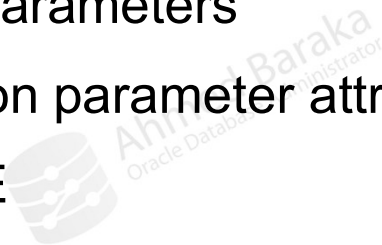
Database Initialization Parameters

By Ahmed Baraka

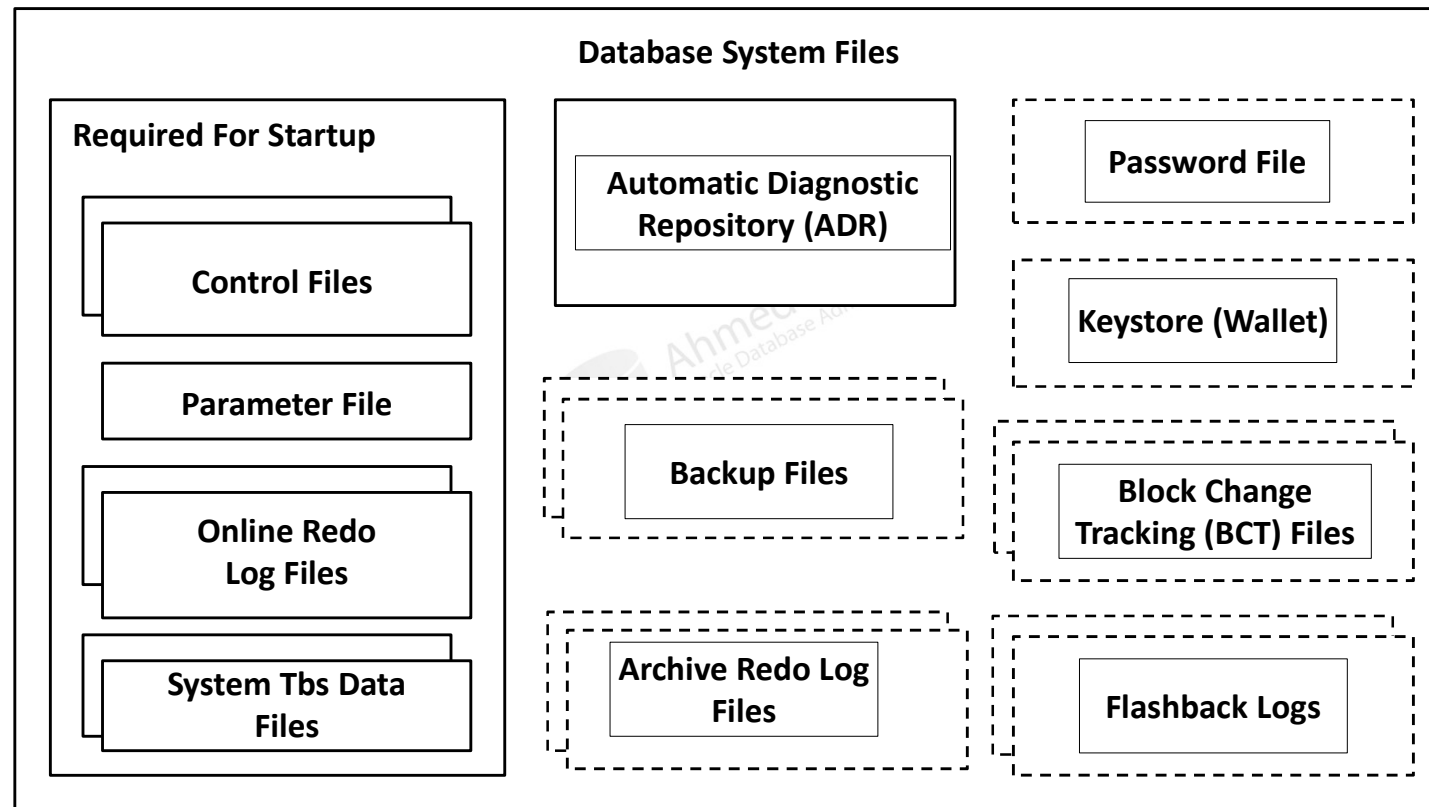
Objectives

In this lecture, you will learn how to perform the following:

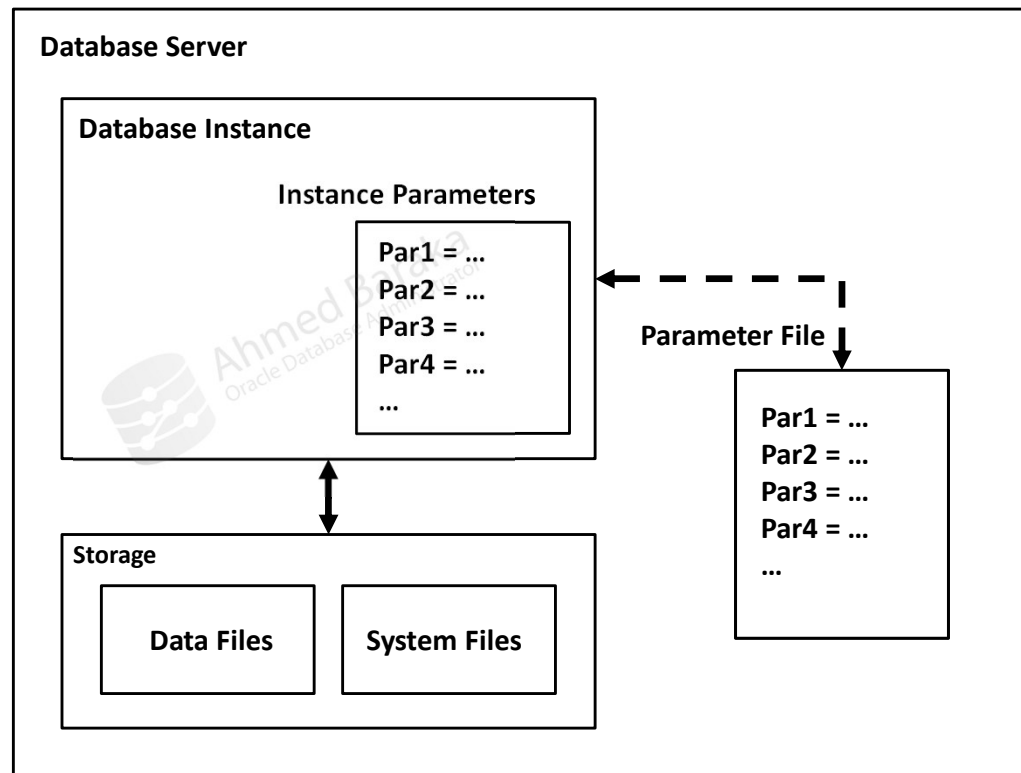
- Describe database parameter file
- Manage the initialization parameters
- Understand the initialization parameter attributes
- Create PFILE and SPFILE



Database System Files



Oracle Database Initialization Parameters



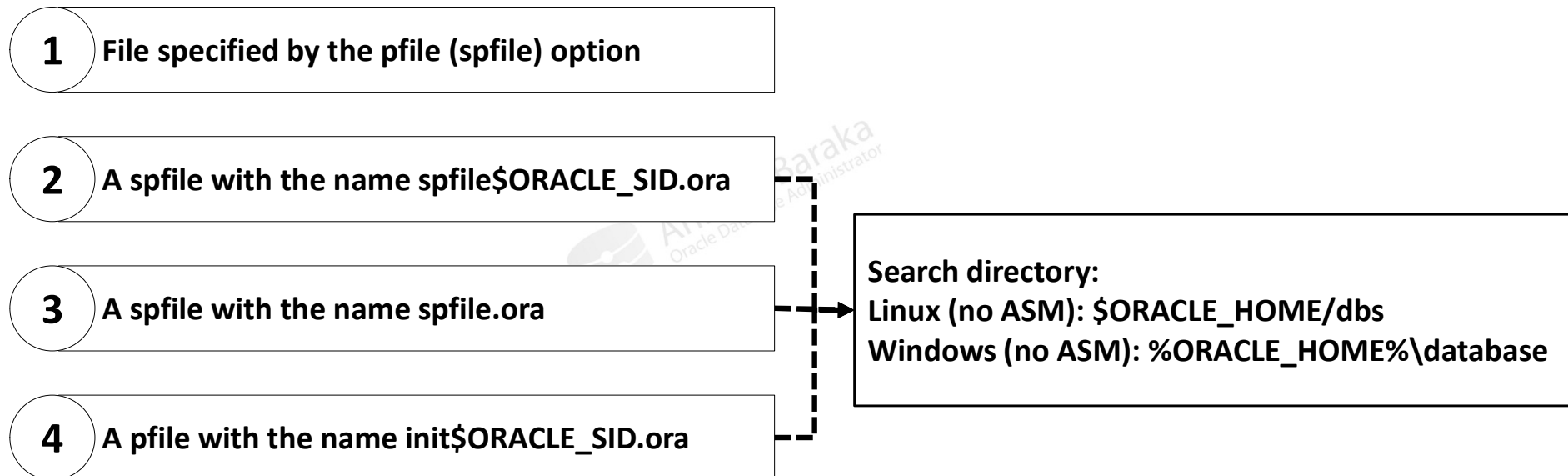
About Database Initialization Parameters

- They are used to control the behavior of the database operation
- They are saved in the initialization parameter file
- The database reads the parameter file when it starts up
- If a parameter value not found in the parameter file, its default value takes effect
- **Dynamic (modifiable) parameters:** can be changed in the memory and parameter file
- **Static parameters:** can be changed only in the parameter file

About Database Initialization Parameters

- Reference: **Oracle Database Reference** documentation
- Initialization parameter file types:
 - **Server parameter file (SPFILE)**: is a binary file. Its contents is altered by SQL statements: ALTER SYSTEM. Typically used when the database operates normally.
 - **Text initialization parameter file (PFILE)**: is a regular text file. Modified manually with an editor. It cannot be modified by the database. Typically used in special scenarios.
- When the database starts up, it reads either the SPFILE or PFILE.

Initialization Parameter File Search Flow



Initialization Parameter Examples

Parameter	Description
CONTROL_FILES	Full path of database instance control file(s)
PROCESSES	Maximum number of OS user processes that can simultaneously connect
DB_BLOCK_SIZE	Standard database block size used by all tablespaces
SGA_TARGET	Specifies the total size of all SGA components
MEMORY_TARGET	Specifies the Oracle systemwide usable memory

Displaying Parameter Values Effective in Current Session

```
SQL> show parameter sga_target
```

NAME	TYPE	VALUE
sga_target	big integer	2400M

```
SQL> show parameter sga
```

NAME	TYPE	VALUE
sga_max_size	big integer	2400M
sga_min_size	big integer	0
sga_target	big integer	2400M
unified_audit_sga_queue_size	integer	1048576

```
SQL> SELECT NAME , VALUE FROM V$PARAMETER WHERE NAME='sga_target';
```

NAME	VALUE
sga_target	2506096640

Displaying Parameter Values in the SPFILE

```
SQL> SELECT NAME , VALUE FROM V$SPPARAMETER WHERE NAME='sga_target';
```

NAME	VALUE
-----	-----
sga_target	2506096640



V\$PARAMETER Structure

```
SQL> desc V$PARAMETER
```

Name	Null?	Type
-----	-----	-----
NUM		NUMBER
NAME		VARCHAR2 (80)
TYPE		NUMBER
VALUE		VARCHAR2 (4000)
DISPLAY_VALUE		VARCHAR2 (4000)
DEFAULT_VALUE		VARCHAR2 (255)
ISDEFAULT		VARCHAR2 (9)
ISSES_MODIFIABLE		VARCHAR2 (5)
ISSYS_MODIFIABLE		VARCHAR2 (9)
ISPDB_MODIFIABLE		VARCHAR2 (5)
ISINSTANCE_MODIFIABLE		VARCHAR2 (5)
ISMODIFIED		VARCHAR2 (10)
ISADJUSTED		VARCHAR2 (5)
ISDEPRECATED		VARCHAR2 (5)
ISBASIC		VARCHAR2 (5)
...		

How to Know which SPFILE/PFILE is used?

```
SQL> show parameter SPFILE
```

NAME	TYPE	VALUE
-----	-----	-----
spfile	string	/u01/app/oracle/product/19.0.0/db_1/dbs/spfileoradb.ora



Initialization Parameter Types

Basic

```
CONTROL_FILES  
DB_BLOCK_SIZE  
PROCESSES  
UNDO_TABLESPACE  
DB_DOMAIN  
...
```

Advanced

```
DB_CACHE_SIZE  
DB_BLOCK_CHECKINGS  
DB_BLOCK_CHECKSUM  
HARED_POOL_SIZE  
AUDIT_TRAIL  
...
```

Setting Initialization Parameters at DB Creation

Database Configuration Assistant - Create 'orcl' database - Step 12 of 15

Select Database Creation Option

Select the database creation options.

☒ **Create database**

Specify the SQL scripts you want to run after the database is listed below.

Post DB creation scripts:

☐ **Save as a database template**

Template name:

Template location:

Description:

☐ **Generate database creation scripts**

Destination directory:

Following advanced configuration options can be used to configure database storage locations.

Setting Initialization Parameters at DB Creation

All initialization parameters

Update the initialization parameters only when it is required. Refer to the Oracle documentation to learn more about each initialization parameter and its valid set of values.

(Storage related parameter(s) value is shown in MB) ☐ Show advanced parameters

Name	Value	Include in spfile	Category
undo_tablespace	UNDOTBS1	<input checked="" type="checkbox"/>	Cluster Database
sga_target	1842	<input checked="" type="checkbox"/>	SGA Memory
db_block_size (bytes)	8192	<input checked="" type="checkbox"/>	Cache and I/O
nls_language	AMERICAN	<input checked="" type="checkbox"/>	NLS
control_files	("{ORACLE_BASE}\oradata\{D...	<input checked="" type="checkbox"/>	File Configuration
remote_login_passwordfile	EXCLUSIVE	<input checked="" type="checkbox"/>	Security and Auditing
processes	300	<input checked="" type="checkbox"/>	Processes and Sessions
pga_aggregate_target	615	<input checked="" type="checkbox"/>	Sort, Hash Joins, Bitmap Indexes
nls_territory	AMERICA	<input checked="" type="checkbox"/>	NLS
open_cursors	300	<input checked="" type="checkbox"/>	Cursors and Library Cache
compatible	19.0.0	<input checked="" type="checkbox"/>	Miscellaneous
db_name	orcl	<input checked="" type="checkbox"/>	Database Identification
cluster_database	FALSE	<input type="checkbox"/>	Cluster Database
log_archive_dest_1		<input type="checkbox"/>	Archive
log_archive_dest_2		<input type="checkbox"/>	Archive
shared_servers	1	<input type="checkbox"/>	Shared Server

Description:

undo_tablespace: Undo tablespaces are used solely for storing undo information. UNDO_TABLESPACE is only allowed in System Managed Undo (SMU) mode. The specified undo tablespace, , will be used by the instance. If the tablespace does not exist, or is not an undo tablespace, or is being used by another instance, the instance STARTUP will fail. Default: Each database contains zero or more undo tablespaces. In the SMU mode, each ORACLE instance is assigned one (and only one) undo tablespace.

Help Close

To display the Advanced Parameters

Click on the Value column to change the parameter value

A brief description on the selected parameter

Changing Initialization Parameter Values when SPFILE in Use

- **Static parameters:**

- Can be changed only in the parameter file
- Require restarting the instance before taking effect

```
ALTER SYSTEM SET <par name>=<value> SCOPE=SPFILE;
```

- **Dynamic (modifiable) parameters:**

- Can be changed while database is online
- Can be altered at system level and (some) session level

```
ALTER SYSTEM SET <par name>=<value> SCOPE=BOTH;  
ALTER SYSTEM SET <par name>=<value> SCOPE=MEMORY;
```

```
ALTER SESSION SET <par name>=<value>;
```


Changing Initialization Parameter Values Example

Property	Description
Parameter type	Big integer
Syntax	<code>SGA_TARGET = integer [K M G]</code>
Default value	0 (SGA autotuning is disabled for DEFERRED mode autotuning requests, but allowed for IMMEDIATE mode autotuning requests)
Modifiable	ALTER SYSTEM
Modifiable in a PDB	Yes
Range of values	64 MB to operating system-dependent
Basic	Yes

```
ALTER SYSTEM SET SGA_TARGET=2048M SCOPE=BOTH;  
ALTER SYSTEM SET SGA_TARGET=2147483648 SCOPE=BOTH;
```

Changing Initialization Parameter Values Example

Property	Description
Parameter type	Big integer
Syntax	<code>SGA_MAX_SIZE = integer [K M G]</code>
Default value	Initial size of SGA at startup, dependent on the sizes of different pools in the SGA, such as buffer cache, shared pool, large pool, and so on.
Modifiable	No
Modifiable in a PDB	No
Range of values	0 to operating system-dependent

```
ALTER SYSTEM SET SGA_TARGET=4096M SCOPE=SPFILE;
```

Changing Initialization Parameter Values Example

Property	Description
Parameter type	String
Syntax	NLS_DATE_FORMAT = " <i>format</i> "
Default value	Derived from NLS_TERRITORY
Modifiable	ALTER SESSION
Modifiable in a PDB	Yes
Range of values	Any valid date format mask but not exceeding a fixed length
Basic	No

```
ALTER SESSION SET NLS_DATE_FORMAT = 'Mon-dd-yyyy' ;
```

Creating PFILE from SPFILE and Vice Versa

- To create a pfile from spfile:

```
CREATE PFILE='/home/oracle/myprofile.ora' FROM SPFILE;
```

- To create spfile from a pfile:

```
CREATE SPFILE FROM PFILE='/home/oracle/myprofile.ora';
```



Parameter File Best Practice

- Let the database operate using the default SPFILE
- If you cannot startup a database instance because of an invalid parameter value in the SPFILE, create a temporarily PFILE from the SPFILE, startup the database with the PFILE, if you are happy about the changed parameter values, create SPFILE from the PFILE and restart the database instance.
- Include copy of the SPFILE in the backup routine

Summary

In this lecture, you should have learnt how to perform the following:

- Describe database parameter file
- Manage the initialization parameters
- Understand the initialization parameter attributes
- Create PFILE and SPFILE



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