Managing the Oracle Instance

4

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Objectives

After completing this lesson, you should be able to do the following:

- Start and stop the Oracle database and components
- Use Enterprise Manager (EM)
- Access a database with SQL*Plus and *i*SQL*Plus
- Modify database initialization parameters
- Describe the stages of database startup
- Describe the database shutdown options
- View the alert log
- Access dynamic performance views

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Management Framework

The three components of the Oracle Database 10*g* management framework are:

- **Database instance**
- **Listener**
- **Management interface**
  - **Database Control**
  - **Management agent (when using Grid Control)**

Management agent -or- **Database Control**   **Listener**

Management interface
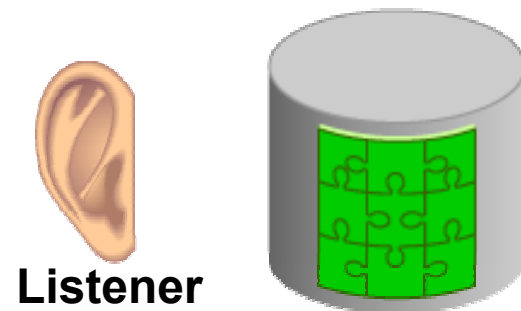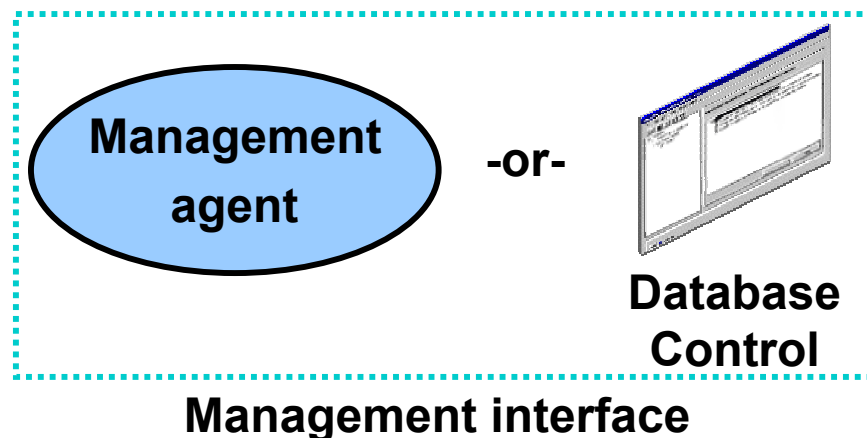
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Starting and Stopping Database Control

```
$ emctl start dbconsole
TZ set to US/Pacific
Oracle Enterprise Manager 10g Database Control Release 10.2.0.1.0
Copyright (c) 1996, 2005 Oracle Corporation.  All rights reserved.
http://edrsr9p1.us.oracle.com:1158/em/console/aboutApplication
Starting Oracle Enterprise Manager 10g Database Control
............. started.
------------------------------------------------------------------
Logs are generated in directory
/u01/app/oracle/product/10.2.0/db_1/edrsr9p1.us.oracle.com_orcl/sy
sman/log
```

```
$ emctl stop dbconsole
TZ set to US/Pacific
Oracle Enterprise Manager 10g Database Control Release 10.2.0.1.0
Copyright (c) 1996, 2005 Oracle Corporation.  All rights reserved.
http://edrsr9p1.us.oracle.com:1158/em/console/aboutApplication
Stopping Oracle Enterprise Manager 10g Database Control ...
 ...  Stopped.
```

Oracle Enterprise Manager

ORACLE® Enterprise Manager 10*g*
Database Control

Setup   Preferences   Help   Logout

Database

Logged in As DBA1

Database Instance: orcl.oracle.com

Home | Performance | Administration | Maintenance

Page Refreshed **Jun 24, 2005 10:59:25 AM**   (Refresh)   View Data | Automatically (60 sec) | ▼

Host

Maximum CPU

Runnable Processes
1.0
0.5
0.0
10:10am   10:20am   10:30am   10:40am   10:50am   11:00am
June 24, 2005

■ Load Average

Active Sessions

SQL Response Time

Average Active Sessions

Instance Name **orcl**
Version **10.2.0.0.0**
Host edrsr9p1.us.oracle.com
Listener LISTENER_edrsr9p1.us.oracl...

High Availability

Backup/Recovery

Schedule Backup
Perform Recovery
Manage Current Backups
Manage Restore Points

Backup/Recovery Settings

Backup Settings
Recovery Settings
Recovery Catalog Settings

Oracle Backup

Oracle Backup Device and Media
File System Backup and Restore

Maximum CPU 1

Database Administration

| **Storage**	**Database Configuration**	**Database Scheduler**
Control Files		Jobs
Tablespaces	Memory Parameters	Chains
Temporary Tablespace Groups	Undo Management	Schedules
Datafiles	All Initialization Parameters	Programs
Rollback Segments	Database Feature	Job Classes

n Availability

stance Recovery Time (sec)   12
Last Backup ✖ Jun 23, 2005 11:00:39 PM
e Flash Recovery Area (%)   73.32
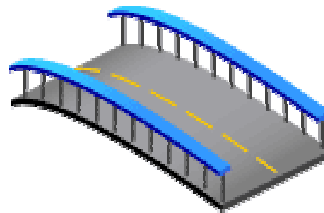
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Accessing Oracle Enterprise Manager

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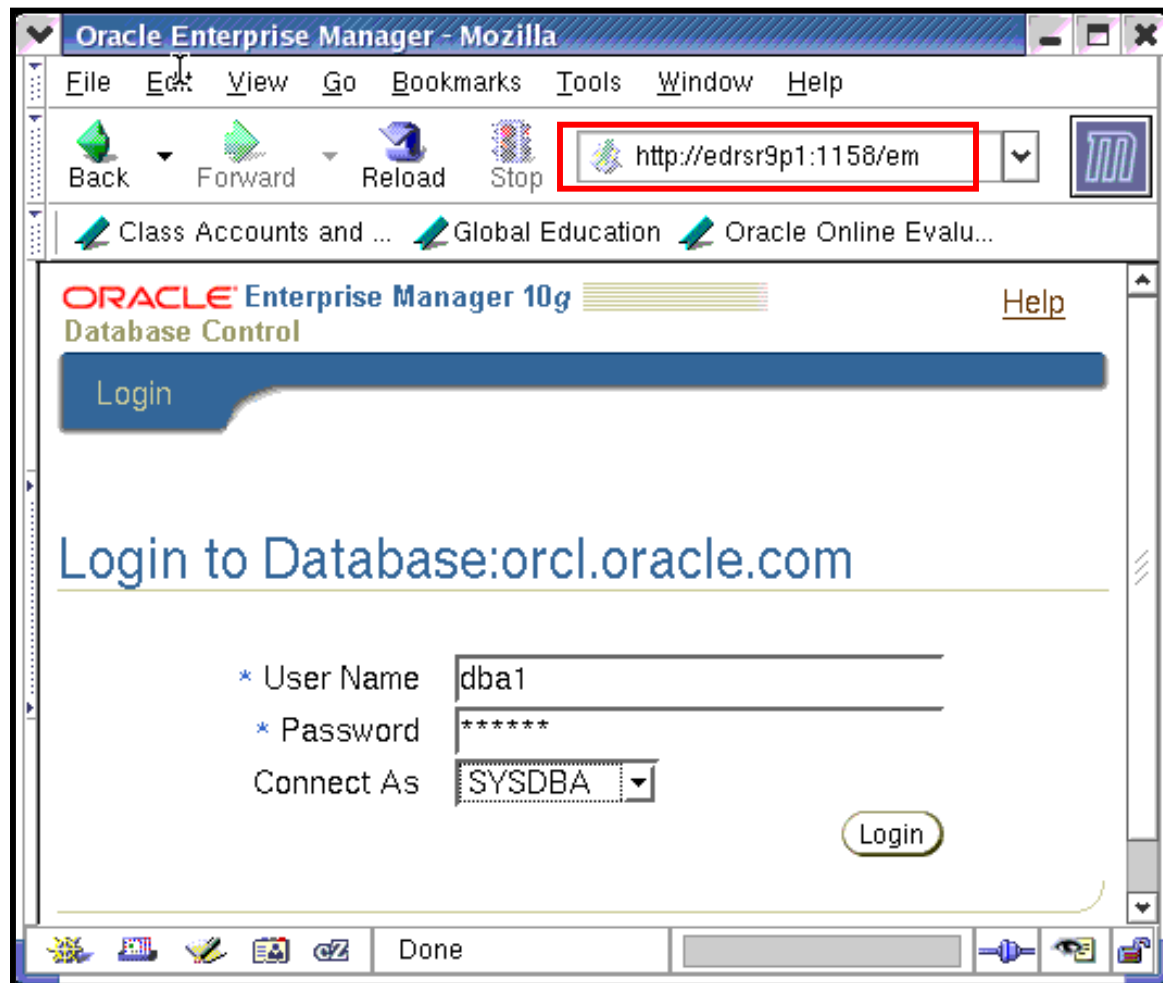
Database Home Page

ORACLE
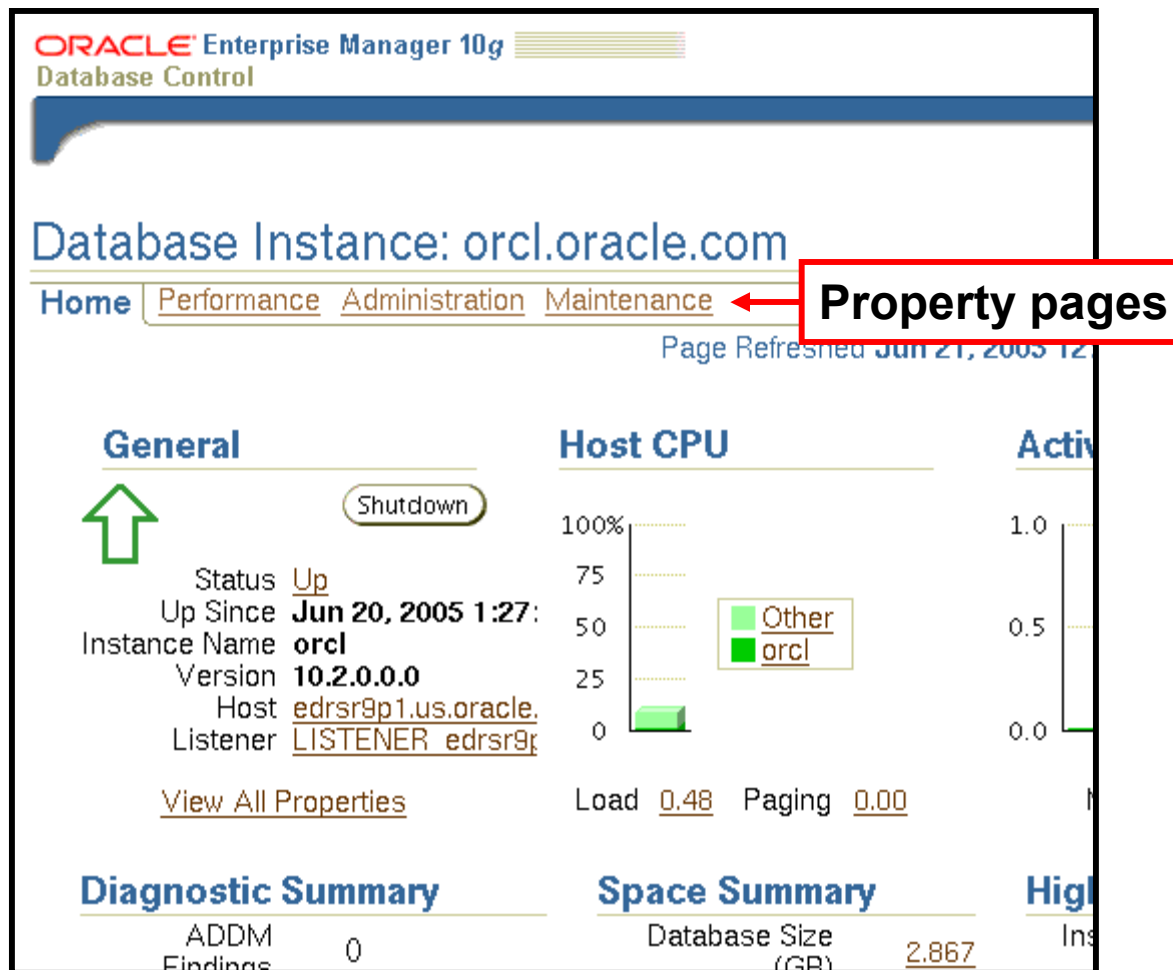
Using SQL*Plus and *i*SQL*Plus to Access Your Database

SQL*Plus and *i*SQL*Plus provide additional interfaces to your database to:

- Perform database management operations
- Execute SQL commands to query, insert, update, and delete data in your database

Using *i*SQL*Plus

iSQL*Plus Connection Role

1 Connect as: ⦿ Normal
○ SYSOPER
Requires WebDBA role and HTTP authentication
○ SYSDBA
Requires WebDBA role and HTTP authentication

Cancel   Continue

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*i*SQL*Plus

3 Workspace

Enter SQL, PL/SQL and SQL*Plus

```
select * from employees;
```

Execute   Load Script   Save Script   Cancel

Login   **2**

* Indicates required field
* Username hr
* Password **
Connect Identifier orcl
Login

EMPLOYEE_ID	FIRST_NAME	LAST_NAME	EMAIL	PHONE_NUMBER	HIRE_DATE	
100	Steven	King	SKING	515.123.4567	17-JUN-87	AD
101	Neena	Kochhar	NKOCHHAR	515.123.4568	21-SEP-89	AD

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Setting Up *i*SQL*Plus
for `SYSDBA` and `SYSOPER` Access

For a user to login to *i*SQL*Plus as `SYSDBA` or `SYSOPER` you must set up the user in the `OC4J` user manager by performing the following steps:

1. **Create a user**

2. **Grant the `webDba` role to the user**

```
$ cd $ORACLE_HOME/oc4j/j2ee/isqlplus/\
> application-deployments/isqlplus
$JAVA_HOME/bin/java \
> -Djava.security.properties=\
> $ORACLE_HOME/oc4j/j2ee/home/config/jazn.security.props \
> -jar $ORACLE_HOME/oc4j/j2ee/home/jazn.jar \
> -user "iSQL*Plus DBA/admin" -password welcome -shell
JAZN> adduser "iSQL*Plus DBA" username password
JAZN> grantrole webDba "iSQL*Plus DBA" username
```

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Using SQL*Plus

SQL*Plus is:

- **A command-line tool**
- **Used interactively or in batch mode**

```
$ sqlplus hr/hr

SQL*Plus: Release 10.2.0.1.0 - Production on Mon Jul 25 12:37:21 2005
Copyright (c) 1982, 2005, Oracle.  All rights reserved.

Connected to:
Oracle Database 10g Enterprise Edition Release 10.2.0.1.0 - Production
With the Partitioning, OLAP and Data Mining options

SQL> select last_name from employees;

LAST_NAME
-------------------------
Abel
Ande
Atkinson
```

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Calling SQL*Plus from a Shell Script

```
$  ./batch_sqlplus.sh

SQL*Plus: Release 10.2.0.1.0 - Production on Mon Jul 25 12:47:44 2005
Copyright (c) 1982, 2005, Oracle.  All rights reserved.

Connected to:
Oracle Database 10g Enterprise Edition Release 10.2.0.1.0 - Production
With the Partitioning, OLAP and Data Mining options

SQL>
  COUNT(*)
----------
       107
SQL>
107 rows updated.
SQL>
Commit complete.
SQL> Disconnected from Oracle Dat
10.2.0.1.0 - Production
With the Partitioning, OLAP and Data Mining options
 [oracle@EDRSR9P1 oracle]$
```

Output

```
# Name of this file: batch_sqlplus.sh
# Count employees and give raise.
sqlplus hr/hr <<EOF
select count(*) from employees;
update employees set salary =
salary*1.10;
commit;
quit
EOF
exit
```

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Calling a SQL Script from SQL*Plus

script.sql

```
select * from departments where location_id = 1400;
quit
```

Output

```
$ sqlplus hr/hr @script.sql

SQL*Plus: Release 10.2.0.1.0 - Production on Mon Jul 25 12:57:02 2005
Copyright (c) 1982, 2005, Oracle.  All rights reserved.

Connected to:
Oracle Database 10g Enterprise Edition Release 10.2.0.1.0 - Production
With the Partitioning, OLAP and Data Mining options

DEPARTMENT_ID DEPARTMENT_NAME                     MANAGER_ID LOCATION_ID
------------- ------------------------------ ---------- -----------
           60 IT                                         103        1400

Disconnected from Oracle Database 10g Enterprise Edition Release
10.2.0.1.0 - Production
With the Partitioning, OLAP and Data Mining options
$
```

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Initialization Parameter Files

`spfileorcl.ora`

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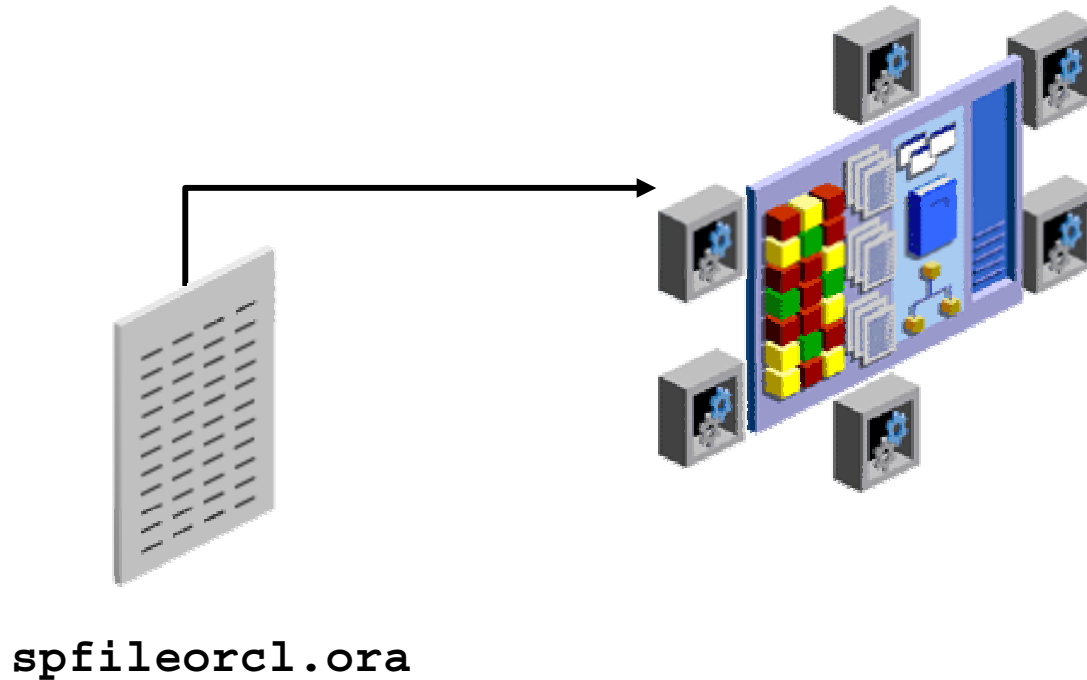
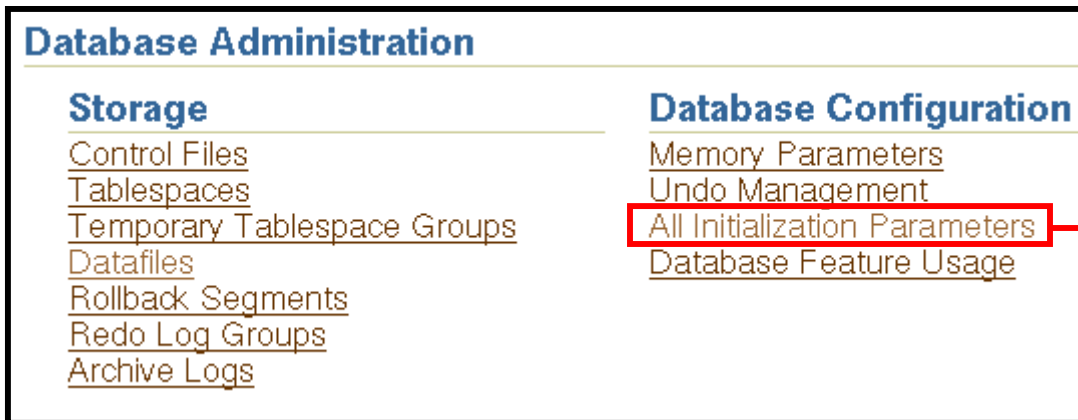# Simplified Initialization Parameters

Basic

```
CONTROL_FILES
DB_BLOCK_SIZE
PROCESSES
UNDO_MANAGEMENT
...
```

Advanced

```
DB_CACHE_SIZE
DB_FILE_MULTIBLOCK
_READ_COUNT
SHARED_POOL_SIZE
...
```

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Viewing and Modifying Initialization Parameters

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Database Startup and Shutdown

Startup/Shutdown:Specify Host and Target Database Credentials

Specify the following credentials i~~ ~~ database.

Host Credentials

Specify the OS user name and machine.

* Username   oracle
* Password   [   ]

Database Credentials

Specify the credentials for the target database.
To use OS authentication, leave the user name and password fields blank.

* Username   [   ]
* Password   [   ]
  Database   **orcl.oracle.com**
* Connect   [SYSDBA ▼]
  As
  ☐ Save as Prefe~~

ⓘ Note that you need to login
SYSOPER in order to change t~~

[Cancel] [OK]

Startup/Shutdown:Confirmation

Current Status **shutdown**
Operation **startup database in open mode**
Initialization Parameter **default**
Are you sure you want to perform this operation?

[Show SQL] [Advanced Options] [No] [Yes]

or

Startup/Shutdown:Confirmation

Current Status **open**
Operation **shutdown immediate**
Are you sure you want to perform this operation?

[Show SQL] [Advanced Options] [No] [Yes]

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Starting Up an Oracle Database Instance

Database Instance

⟨ Startup ⟩ ⟨ Perform Recovery ⟩

Status	**Down**
Host	**edrsr9p1.us.oracle.com**
Port	**1521**
SID	**orcl**
Oracle Home	**/u01/app/oracle/product/10.2.0/db_1**

Details **There has been a user-initiated shutdown.**
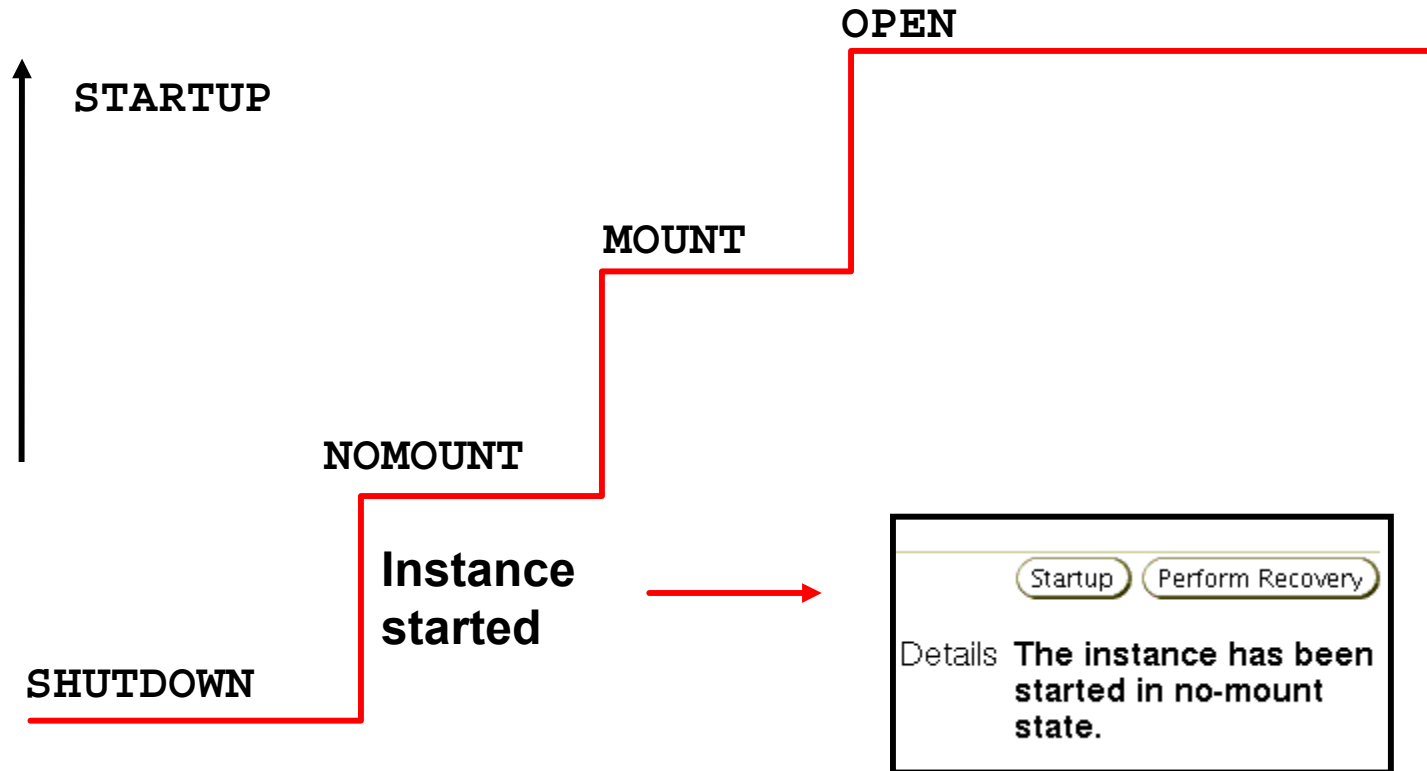
Startup/Shutdown:Confirmation

Current Status **shutdown**

Operation **startup database in open mode**

Initialization Parameter **default**

Are you sure you want to perform this operation?

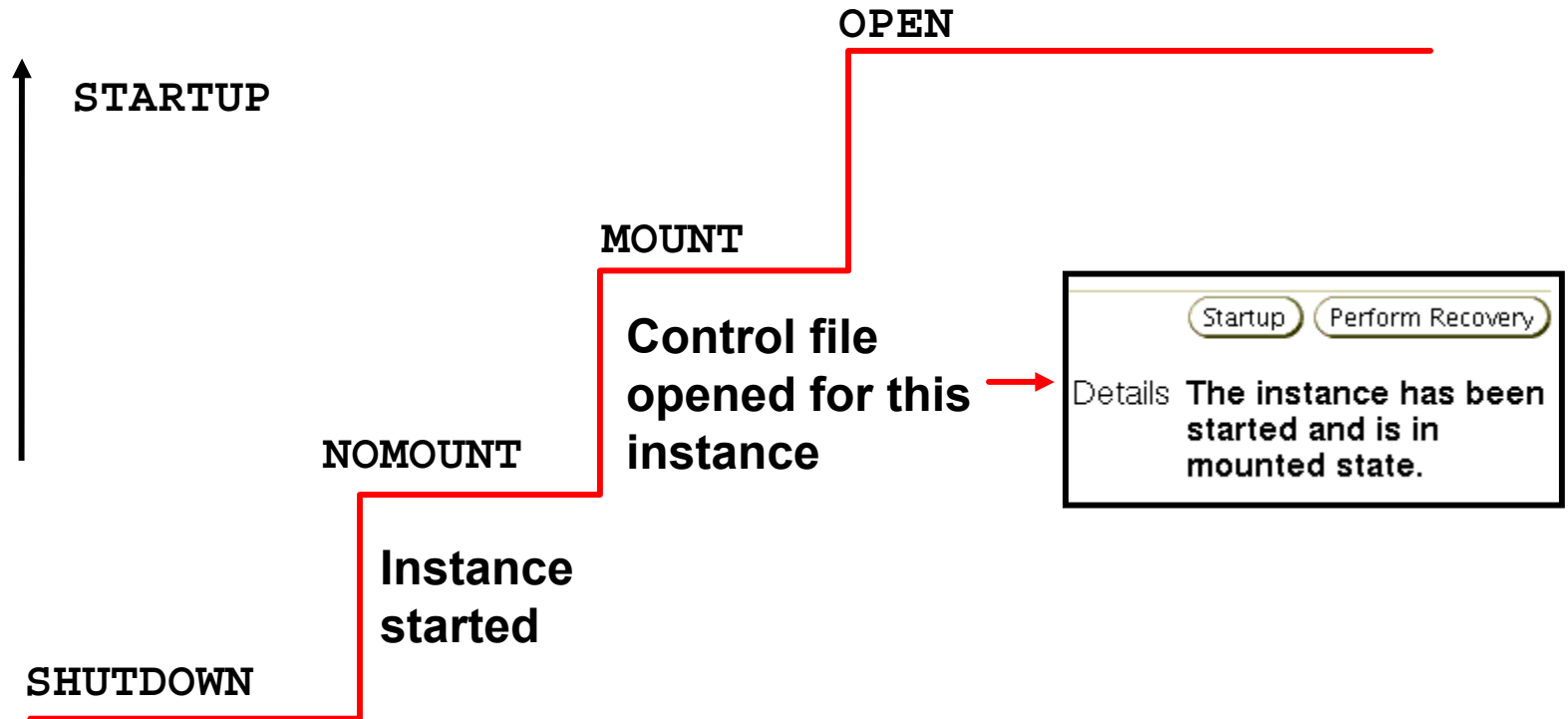⟨ Show SQL ⟩ ⟨ Advanced Options ⟩ ⟨ No ⟩ ⟨ Yes ⟩

Startup mode

- ○ Start the database
- ○ Mount the database
- ● Open the database

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Starting Up an Oracle Database Instance:
NOMOUNT

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Starting Up an Oracle Database Instance:
MOUNT

OPEN

STARTUP

MOUNT

**Control file
opened for this
instance** →

Startup Perform Recovery

Details The instance has been
started and is in
mounted state.

NOMOUNT

**Instance
started**

SHUTDOWN

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Starting Up an Oracle Database Instance:
OPEN

OPEN

STARTUP

Details **The instance is open.**

All files opened as described by the control file for this instance

MOUNT

Control file opened for this instance

NOMOUNT

Instance started
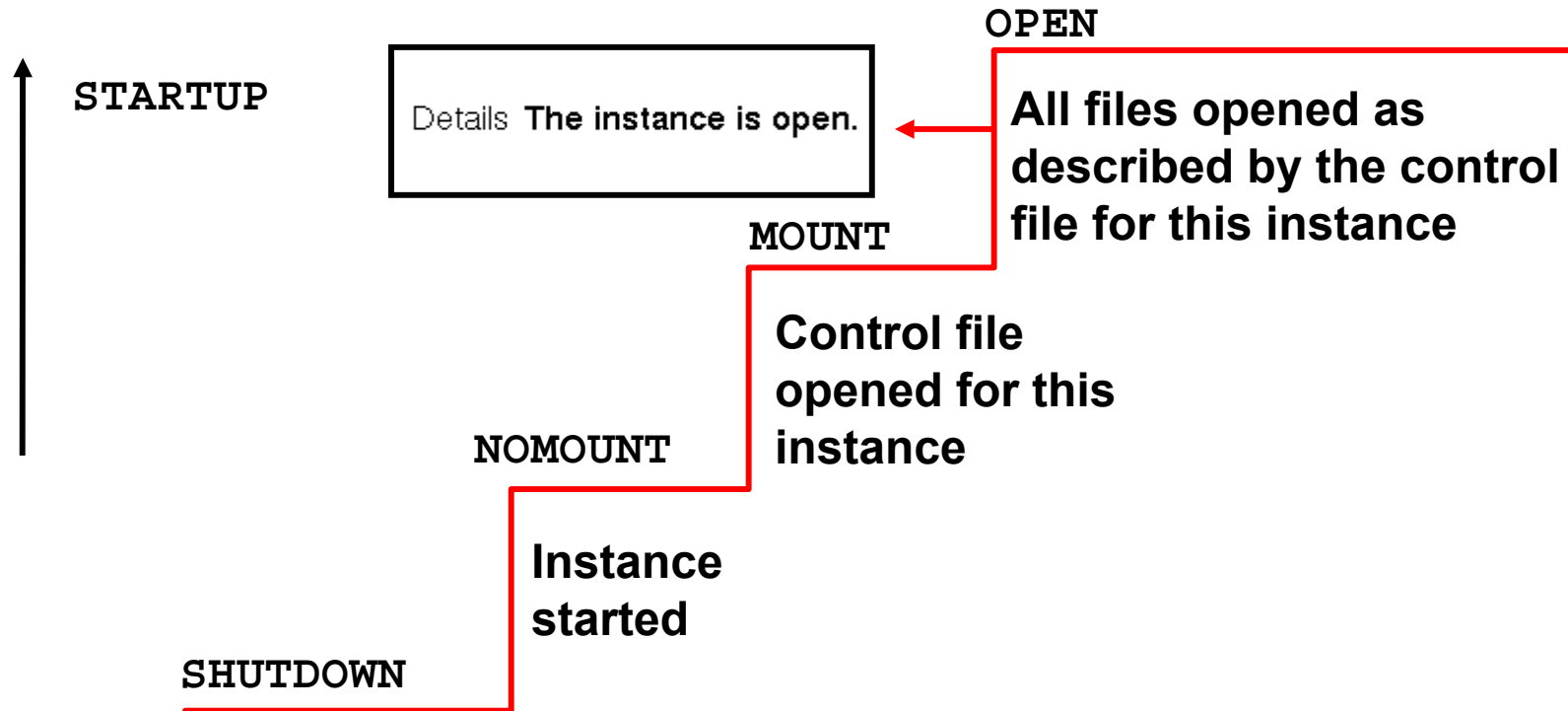
SHUTDOWN

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Shutting Down an Oracle Database Instance

General

Status **Up**
Up Since **Jun 21, 2005 1:25:04 PM PDT**
Instance Name **orcl**
Version **10.2.0.0.0**
Host **edrsr9p1.us.oracle.com**
Listener **LISTENER_edrsr9p1.us.oracle...**

Shutdown

Startup/Shutdown:Confirmation

Current Status **open**
Operation **shutdown immediate**
Are you sure you want to perform this operation?

Show SQL   Advanced Options   No   Yes

Startup/Shutdown:Advanced Shutdown Op...

Specify the shutdown mode
○ Normal Browse Sessions
⚠ Wait for all currently connected users to disconnect from the database
○ Transactional
Disconnect all connected users after transactions have completed
● Immediate
Rollback active transactions and disconnect all connected users
○ Abort
Instantaneous shutdown by aborting the database instance

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Shutdown Modes

Shutdown Mode	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 mode:

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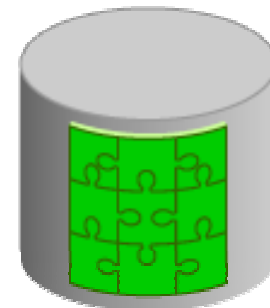- N = NORMAL

`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`
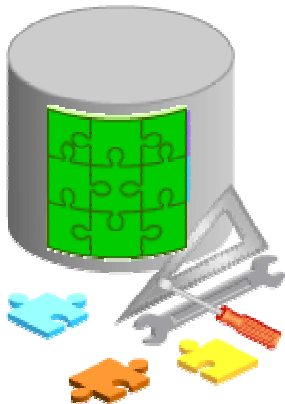
On the way up:

- **No instance recovery**

Consistent database (clean database)

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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`

On the way up:

- **Online redo log files used to reapply changes**

- **Undo segments used to roll back uncommitted changes**

- **Resources released**

Inconsistent database (dirty database)

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Using SQL*Plus to Start Up and Shut Down

```
[oracle@EDRSR9P1 oracle]$ sqlplus dba1/oracle as sysdba

SQL> shutdown immediate
Database closed.
Database dismounted.
ORACLE instance shut down.
SQL> startup
ORACLE instance started.

Total System Global Area  285212672 bytes
Fixed Size                  1218472 bytes
Variable Size             250177624 bytes
Database Buffers           33554432 bytes
Redo Buffers                 262144 bytes
Database mounted.
Database opened.
SQL>
```

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Viewing the Alert Log

Database Home page > Related Links region > Alert Log Content

Database Instance: orcl.oracle.com > Most Recent Alert Log Entries

Search Criteria

Begin Date [　　　　] 📅 Time [⌄] : [⌄] ⦿ AM ○ PM
(example: Jun 21, 2005)

End Date [　　　　] 📅 Time [⌄] : [⌄] ⦿ AM ○ PM
(example: Jun 21, 2005)

(Go)

Most Recent Alert Log Entries

Page Refreshed Jun 21, 2005 6:57:23 PM

This shows the last 100,000 bytes of the alert log. The log is constantly growing, so select the browser's Refresh button to see the most recent log entries.

Number of Lines Displayed **1,920**

Sun Jun 12 23:00:11 2005
ARC1: Evaluating archive thread 1 sequence 21203
Sun Jun 12 23:00:11 2005
ARC1: Beginning to archive thread 1 sequence 21203 (7033265-7046024) (orcl)
ARCH: Connecting to console port...

Viewing the Alert History

Related Links

Advisor Central	Alert History	Alert Log Content
All Metrics	Blackouts	iSQL*Plus
Jobs	Manage Metrics	Metric Baselines
Metric Collection Errors	Monitoring Configuration	Monitor in Memory Access Mode
Recovery Catalogs	SQL History	User-Defined Metrics

Alert History

Page Refreshed **Jun 21, 2005 7:03:24 PM**
View Data Last 24 hours
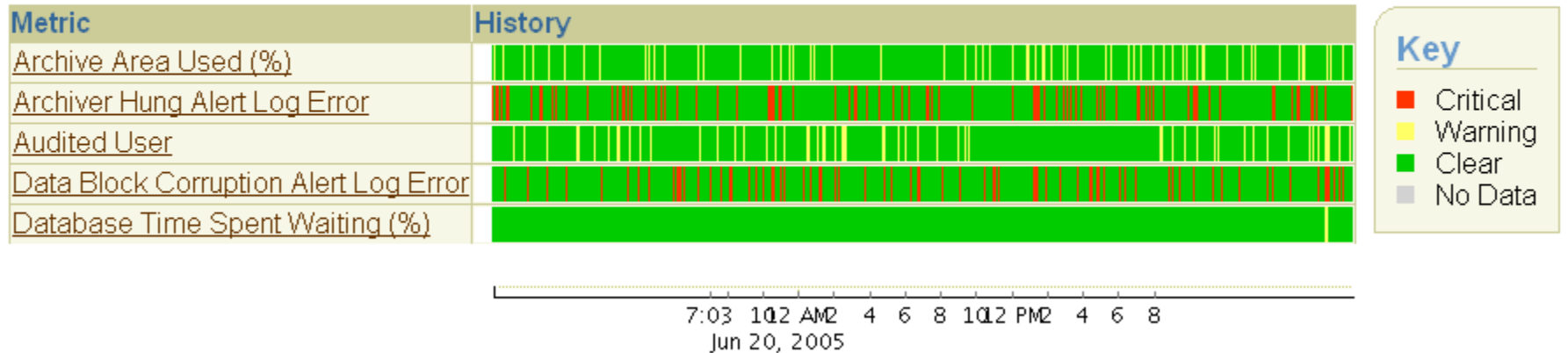
Metric	History
Archive Area Used (%)	
Archiver Hung Alert Log Error	
Audited User	
Data Block Corruption Alert Log Error	
Database Time Spent Waiting (%)	

Key
- ■ Critical
- ■ Warning
- ■ Clear
- ■ No Data

7:03 10 12 AM 2 4 6 8 10 12 PM 2 4 6 8
Jun 20, 2005

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Dynamic Performance Views

Dynamic performance views provide access to information about changing states and conditions in the database.

Oracle instance

Session data
Wait events
Memory allocations
Running SQL
UNDO usage
Open cursors
Redo log usage
And so on
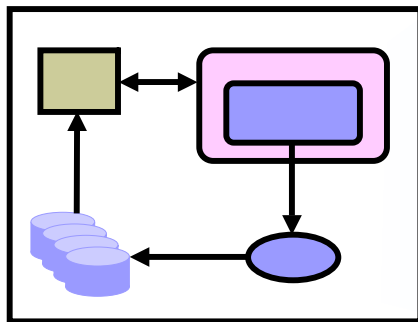
ORACLE
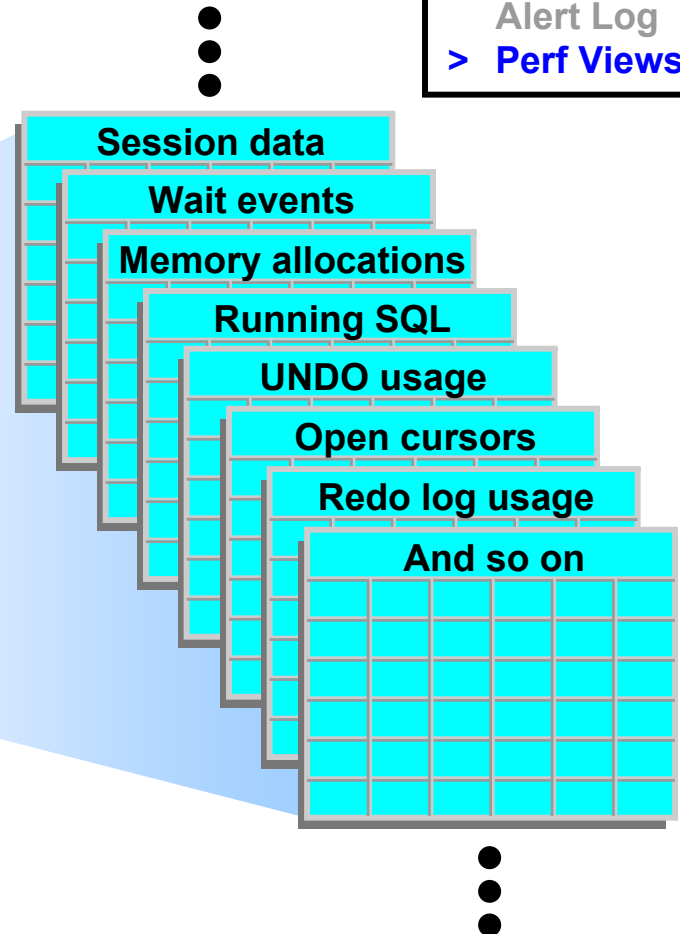
Dynamic Performance Views: Usage Examples

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

b
```
SQL> SELECT * FROM v$session WHERE machine =
'EDRSR9P1' and logon_time > SYSDATE - 1;
```

c
```
SQL> 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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Summary

In this lesson, you should have learned how to:

- Start and stop the Oracle database and components

- Use Enterprise Manager and describe its high-level functionality

- Access a database with SQL*Plus and *i*SQL*Plus

- Modify database initialization parameters

- Describe the stages of database startup

- Describe the database shutdown options

- View the alert log

- Access dynamic performance views

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Practice Overview:
Managing the Oracle Instance

This practice covers the following topics:

- Navigating in Enterprise Manager

- Viewing and modifying initialization parameters

- Stopping and starting the database instance

- Viewing the alert log

- Connecting to the database by using SQL*Plus and *i*SQL*Plus

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