

ORACLE 11G AUTOMATIC DIAGNOSTIC REPOSITORY – PART 1

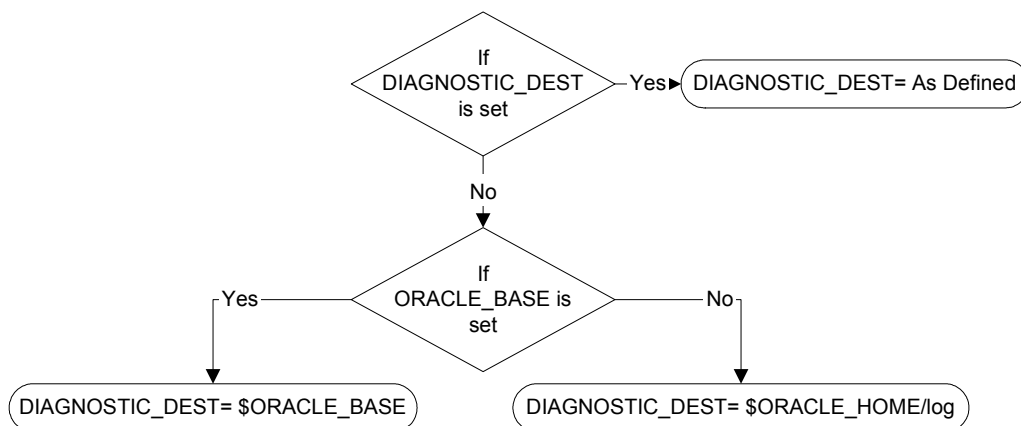
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INTRODUCTION

Oracle 11g has introduced new fault diagnostic framework to detect, maintain and handle diagnostic data. Automatic Diagnostic Repository (ADR) is the core of this framework and considered as Black box for the Database error handling. It is central, file-based repository created outside of the database so that it can be accessed even when database is not available. This file-based repository can be accessed with new command line utilities ADRCI and Enterprise Manager.

AUTOMATIC DIAGNOSTIC REPOSITORY (ADR)

ADR contains diagnostic data like alert log, trace files, incident dumps, health monitor reports, core dumps and more. Whenever there is a critical error in the database, it is automatically tracked in the ADR. Oracle 11g ignore and has deprecated the old [BACKGROUND|USER|CORE]_DUMP_DEST initialization parameters and is replaced by new initialization parameter named DIAGNOSTIC_DEST which identifies the location of ADR. By default DIAGNOSTIC_DEST will be set as follows



WHAT HAPPEN IF WE CHANGE THE DIAGNOSTIC DEST DYNAMICALLY

```
SQL> show parameter diag
```

NAME	TYPE	VALUE
diagnostic_dest	string	/home/oracle/app

```
SQL> !mkdir /home/oracle/app/indy
```

```
SQL> alter system set diagnostic_dest='/home/oracle/app/indy';
System altered.
```

```
SQL> show parameter diagnostic
```

NAME	TYPE	VALUE
diagnostic_dest	string	/home/oracle/app/indy

You will see that Oracle has created all Subdirectory automatically

```
SQL> !ls -ltr /home/oracle/app/indy
```

```
total 4
drwxr-xr-x 3 oracle oinstall 4096 Aug 14 13:38 diag
```

```
/home/oracle/app/indy/diag:
```

```
total 4
drwxr-xr-x 3 oracle oinstall 4096 Aug 14 13:38 rdbms
```

```
/home/oracle/app/indy/diag/rdbms:
```

```
total 4
drwxr-xr-x 3 oracle oinstall 4096 Aug 14 13:38 orcl
```

```
/home/oracle/app/indy/diag/rdbms/orcl:
```

```
total 4
-rw-r----- 1 oracle oinstall 0 Aug 14 13:38 i_1.mif
drwxr-xr-x 13 oracle oinstall 4096 Aug 14 13:38 orcl
```

```
/home/oracle/app/indy/diag/rdbms/orcl/orcl:
```

```
total 44
drwxr-xr-x 2 oracle oinstall 4096 Aug 14 13:38 alert
drwxr-xr-x 2 oracle oinstall 4096 Aug 14 13:38 lck
drwxr-xr-x 2 oracle oinstall 4096 Aug 14 13:38 metadata
drwxr-xr-x 2 oracle oinstall 4096 Aug 14 13:38 trace
drwxr-xr-x 2 oracle oinstall 4096 Aug 14 13:38 cdump
drwxr-xr-x 2 oracle oinstall 4096 Aug 14 13:38 hm
drwxr-xr-x 2 oracle oinstall 4096 Aug 14 13:38 incident
drwxr-xr-x 2 oracle oinstall 4096 Aug 14 13:38 incpkg
drwxr-xr-x 2 oracle oinstall 4096 Aug 14 13:38 ir
drwxr-xr-x 2 oracle oinstall 4096 Aug 14 13:38 stage
drwxr-xr-x 2 oracle oinstall 4096 Aug 14 13:38 sweep
and so on...
```

ADR HIERARCHY

DIAGNOSTIC_DEST is considered as ADR Base and it can have multiple ADR Homes based on Oracle Instances running on the Server.

Below figure shows the actual location and components of ADR.

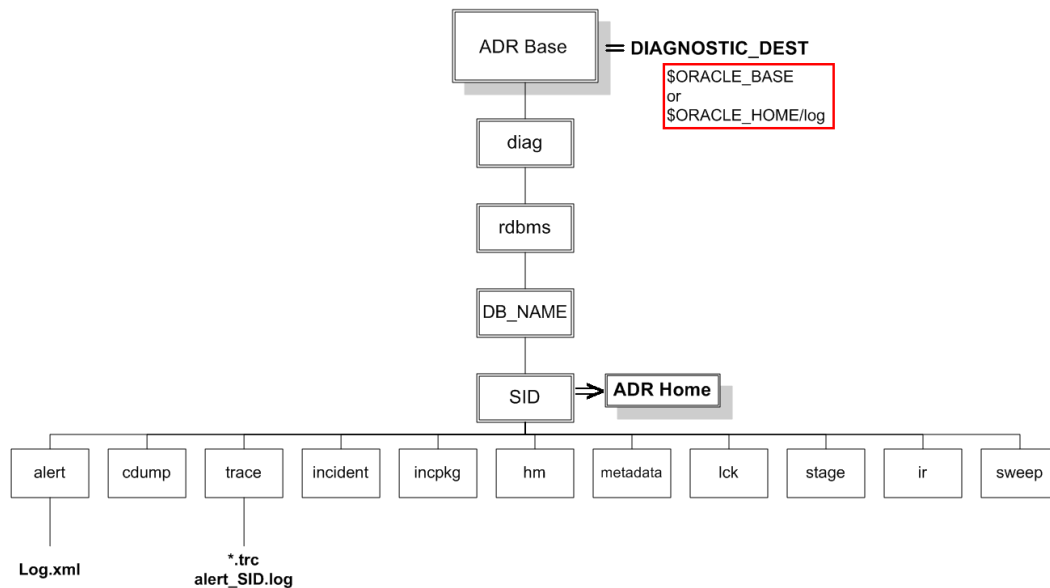


Fig 1.

HOW TO CHECK THE ADR LOCATION FROM THE DATABASE

The V\$DIAG_INFO view lists all important ADR locations:

```
SQL> select * from v$diag_info;
```

INST ID	NAME	VALUE
1	Diag Enabled	TRUE
1	ADR Base	/home/oracle/app
1	ADR Home	/home/oracle/app/diag/rdbms/orcl/orcl
1	Diag Trace	/home/oracle/app/diag/rdbms/orcl/orcl/trace →new [Background[User]_DUMP_DEST
1	Diag Alert	/home/oracle/app/diag/rdbms/orcl/orcl/alert →XML Version of Alert Log
1	Diag Incident	/home/oracle/app/diag/rdbms/orcl/orcl/incident
1	Diag Cdump	/home/oracle/app/diag/rdbms/orcl/orcl/cdump →new CORE_DUMP_DEST
1	Health Monitor	/home/oracle/app/diag/rdbms/orcl/orcl/hm
1	Default Trace File	/home/oracle/app/diag/rdbms/orcl/orcl/trace/orcl_ora_27427.trc
1	Active Problem Count	0
1	Active Incident Count	0

ADRCI

Oracle 11g has introduced a new command line utility ADRCI, to view diagnostic data collected in the ADR. It can perform all of the tasks performed by GUI enterprise manager in EM Support Workbench. We don't need any logon Id to use ADRCI to access ADR data. ADR data is not a secured data and can only be protected by OS permission on the ADR directories.

```
$ adrci
ADRCI: Release 11.1.0.6.0 - Beta on Thu Aug 16 14:21:04 2007
Copyright (c) 1982, 2007, Oracle. All rights reserved.

ADR base = "/home/oracle/app" → Base Directory

adrci> help

HELP [topic]
  Available Topics:
    CREATE REPORT
    ECHO
    EXIT
    HELP
    HOST
    IPS
    PURGE
    RUN
    SET BASE
    SET BROWSER
    SET CONTROL
    SET ECHO
    SET EDITOR
    SET HOMES | HOME | HOMEPATH
    SET TERMOUT
    SHOW ALERT
    SHOW BASE
    SHOW CONTROL
    SHOW HM_RUN
    SHOW HOMES | HOME | HOMEPATH
    SHOW INCDIR
    SHOW INCIDENT
    SHOW PROBLEM
    SHOW REPORT
    SHOW TRACEFILE
    SPOOL

There are other commands intended to be used directly by Oracle, type
"HELP EXTENDED" to see the list
```

```
adrci> HELP EXTENDED
```

```
HELP [topic]
```

```
Available Topics:
```

```
BEGIN BACKUP  
CD  
DDE  
DEFINE  
DESCRIBE  
END BACKUP  
LIST DEFINE  
MERGE ALERT  
MERGE FILE  
QUERY  
SET COLUMN  
SHOW CATALOG  
SHOW DUMP  
SHOW SECTION  
SHOW TRACE  
SHOW TRACEMAP  
SWEEP  
UNDEFINE  
VIEW
```

```
adrci> help show homes
```

```
Usage: SHOW HOMES | HOME | HOMEPATH  
      [-ALL | -base <base_str> | homepath_str1 ... ]
```

Purpose: Show the ADR homes in the current ADRCI session.

Options:

[-ALL]: If it is specified, the ADR homes under the current base setting will be displayed.
[-base <base_str>]: It is for showing all the homes under <base_str>, where <base_str> is a system-dependent directory path string.
<homepath_str1 ...>: The paths of the home, relative to the ADR base.

Examples:

```
show homes -all  
show homes -base /temp  
show homes rdbms  
show homes
```

I am going to use lots of ADRCI command in the coming pages that will give more practical knowledge as how it will be helpful. Check Oracle Utility manual for detailed description about each command

ADR RETENTION POLICY

As ADR is recording diagnostic data for incidents, which can be from small file to big core dumps, and so a time will come when we need to purge the old data from the ADR. Prior to Oracle 11g, we have to manually maintain the growth of Oracle Background/User/Core destination but Oracle 11g allows you to specify the retention policy to control the diagnostic data stored in the ADR. There are two policies available in Oracle 11g as follows:

1. The **incident metadata retention policy** – It controls how long the metadata is kept in ADR. Default setting is **one Year**
2. The **incident files and dumps retention policy** – It controls how long generated dump files are kept in ADR. Default setting is **one Month**.

You can change the default setting for the above policies using **the** Incident Package Configuration link on the EM Support Workbench page or using the ADRCI as shown below

Oracle Background process MMON is responsible for automatically purging the expired ADR data

```
adrci> show control
```

```
ADR Home = /home/oracle/app/diag/rdbms/orcl/orcl:
```

```
*****
```

ADRID	SHORTP_POLICY	LONGP_POLICY	LAST_MOD_TIME	LAST_AUTOPRG_TIME
1335663986	720->30days	8760->1yr	2007-08-13 10:39:52.325010 -04:00	

LAST_MANUPRG_TIME	ADRDIR_VERSION	ADRSCHM_VERSION	ADRSCHMV_SUMMARY	ADRALERT_VERSION
2007-08-13 10:39:52.325010 -04:00	1	2	0	1

```
1 rows fetched
```

```
adrci> set control (SHORTP_POLICY = 168)
```

```
adrci> set control (LONGP_POLICY = 720)
```

```
adrci> show control
```

```
ADR Home = /home/oracle/app/diag/rdbms/orcl/orcl:
```

```
*****
```

ADRID	SHORTP_POLICY	LONGP_POLICY	LAST_MOD_TIME	LAST_AUTOPRG_TIME
1335663986	168->7days	720->30days	2007-08-15 11:46:04.886562 -04:00	

LAST_MANUPRG_TIME	ADRDIR_VERSION	ADRSCHM_VERSION	ADRSCHMV_SUMMARY	ADRALERT_VERSION
2007-08-13 10:39:52.325010 -04:00	1	2	0	1

```
1 rows fetched
```

ADR COMPONENTS

ADR Key components discussed in this paper are

1. Alert Log
2. Trace files
3. Incidents
4. Incpkg
5. Health Monitor
6. Metadata

ALERT LOG

As shown in Fig 1, Oracle 11g now has two alert files :

1. **ADR Home/alert/log.xml** → XML Format alert log file
2. **ADR Home/trace/alert_SID.log** → Traditional alert Log file

Oracle 11g has introduced a new XML format for alert log to store chronological logs of all database messages and errors. This file is used by Oracle Enterprise Manager and ADRCI utility to provide text output to you.

Sample Alert log.xml

```
<msg time='2007-08-13T10:41:06.668-04:00' org_id='oracle' comp_id='rdbms'  
  client_id='' type='UNKNOWN' level='16'  
  module='' pid='18527'>  
  <txt>Stopping background process VKTM:  
  </txt>  
</msg>
```

HOW TO SEE THE CONTENT OF ALERT LOG

We can see Oracle 11g Alert Log file contents with the following methods

1. ADRCI – Automatic Diagnostic Repository Command Line Utility
2. Enterprise Manager
3. Text Editor like vi in Unix

USING ADRCI

```
$ adrci
ADRCI: Release 11.1.0.6.0 - Beta on Tue Aug 14 15:18:19 2007
Copyright (c) 1982, 2007, Oracle. All rights reserved.
ADR base = "/home/oracle/app/indy"

adrci> show home
ADR Homes:
diag/rdbms/orcl/orcl          → for orcl Instance
diag/rdbms/11gtest/11gtest    → for 11gtest Instance

adrci> set homopath diag/rdbms/orcl/orcl

adrci> show alert
This will open the Alert Log in "vi" editor, if Editor is set else use the following

adrci> set editor vi
adrci> show alert

adrci> show alert -tail          →Display last 10 entries of Alert Log.
adrci> show alert -tail 50       →Display last 50 entries of Alert Log.
adrci> show alert -tail -f       →Work like Unix "tail -f" command

adrci> show alert -p "message_text like '%ORA-1507'"
ADR Home = /home/oracle/app/diag/rdbms/orcl/orcl:
*****
Output the results to file: /tmp/alert_627_308637_orcl_1.ado

2007-08-14 11:01:00.885000 -04:00
ORA-1507 signalled during: ALTER DATABASE CLOSE NORMAL...

adrci> show alert -p "message_text like '%ORA%'" → will open Vi editor with all ORA error
                                                    listed in temp file as shown below
```



```

F-Secure SSH - [Defaults.ssh]
File Edit View Tools Help
[Icons]

2007-08-13 10:41:05.650000 -04:00
ORA-1109 signalled during: ALTER DATABASE CLOSE NORMAL...
2007-08-13 10:41:19.532000 -04:00
Errors in file /home/oracle/app/diag/rdbms/orcl/orcl/trace/orcl_ora_18622.trc:
ORA-00313: open failed for members of log group 1 of thread 1
ORA-00312: online log 1 thread 1: '/home/oracle/app/oradata/orcl/redo01.log'
ORA-27037: unable to obtain file status
Linux Error: 2: No such file or directory
Additional information: 3
2007-08-13 10:41:23.325000 -04:00
Errors in file /home/oracle/app/diag/rdbms/orcl/orcl/trace/orcl_ora_18622.trc:
ORA-00313: open failed for members of log group 2 of thread 1
ORA-00312: online log 2 thread 1: '/home/oracle/app/oradata/orcl/redo02.log'
ORA-27037: unable to obtain file status
Linux Error: 2: No such file or directory
Additional information: 3
2007-08-13 10:41:24.725000 -04:00
Errors in file /home/oracle/app/diag/rdbms/orcl/orcl/trace/orcl_ora_18622.trc:
ORA-00313: open failed for members of log group 3 of thread 1
ORA-00312: online log 3 thread 1: '/home/oracle/app/oradata/orcl/redo03.log'
ORA-27037: unable to obtain file status
Linux Error: 2: No such file or directory
Additional information: 3
2007-08-13 12:29:03.498000 -04:00
ORA-3297 signalled during: alter database datafile '/home/oracle/app/oradata/orcl/users01.dbf' resize 1M...
2007-08-14 10:46:52.154000 -04:00
ORA-1089: opidrv aborting process unknown ospid (21914_3083273920)
2007-08-14 10:51:06.308000 -04:00
ORA-00210: cannot open the specified control file
ORA-00202: control file: '/home/oracle/app/oradata/orcl/control03.ctl'
ORA-27037: unable to obtain file status
Linux Error: 2: No such file or directory
Additional information: 3
2007-08-14 10:51:09.300000 -04:00
ORA-205 signalled during: ALTER DATABASE MOUNT...
2007-08-14 10:51:52.202000 -04:00
ORA-00210: cannot open the specified control file
ORA-00202: control file: '/home/oracle/app/oradata/orcl/control03.ctl'
ORA-27037: unable to obtain file status
Linux Error: 2: No such file or directory
"/tmp/alert_13386_3086_orcl_4.ado" 832L, 55765C
Temp File open with all Required Error Message

```

USING ENTERPRISE MANAGER TO VIEW ALERT LOG CONTENT

1. Logon to EM Database console Home Page and click on **Alert Log Contents** as shown below

ORACLE Enterprise Manager 11g
Database Control

Setup Preferences Help Logout
Database

Logged in As SYS

Database Instance: orcl

Home Performance Availability Server Schema Data Movement Software and Support

Latest Data Collected From Target: **Aug 14, 2007 3:34:58 PM EDT** Refresh View Data Automatically (60 sec)

General

Status **Up**
Up Since **Aug 14, 2007 11:01:04 AM EDT**
Instance Name **orcl**
Version **11.1.0.6.0**
Host [prnhs-db02pn.profinet.com](#)
Listener [LISTENER_prnhs-db02pn.profinet.com](#)
[View All Properties](#)

Host CPU

100%
75%
50%
25%
0%

Other
orcl

Load [0.02](#) Paging [0.00](#)

Active Sessions

4.0
3.0
2.0
1.0
0.0

Wait
User I/O
CPU

Maximum CPU **4**

SQL Response Time

1.0
0.5
0.0

Reference collection is empty.
SQL Response Time (%) **Unavailable**

Diagnostic Summary

ADDM Findings **0**
Alert Log [No ORA- errors](#)
Active Incidents **0**
[Database Instance Health](#)

Space Summary

Database Size (GB) [1,459](#)
Problem Tablespaces **0**
Segment Advisor Recommendations **0**
Policy Violations **0**
Dump Area Used (%) [41](#)

High Availability

Instance Recovery Time (sec) [9](#)
Last Backup **n/a**
Usable Flash Recovery Area (%) [100](#)
Flashback Database Logging [Disabled](#)

Alerts

Related Alerts

Policy Violations

All **11** Critical Rules Violated **8** Critical Security Patches **0** Compliance Score (%) [93](#)

Job Activity

Jobs scheduled to start no more than 7 days ago

Scheduled Executions **0** Running Executions **0** Suspended Executions **0** Problem Executions **0**

Home Performance Availability Server Schema Data Movement Software and Support

Related Links

Access
Alert Log Contents
Blackouts
Metric and Policy Settings
[Monitor My Instance](#)

[Advisor Central](#)
[All Metrics](#)
[EM SQL History](#)
[Metric Collection Errors](#)
[Policy Groups](#)

[Alert History](#)
[Baseline Metric Thresholds](#)
[Jobs](#)
[Monitoring Configuration](#)
[Scheduler Control](#)

Local intranet 100%

- Now we select any option from the List box like Last 50 lines or so. Click Go to see the contents

ORACLE Enterprise Manager 11g Database Control

Database Instance: orcl > Logged in As SYS

View Alert Log Contents Page Refreshed Aug 14, 2007 3:41:10 PM EDT Refresh Custom Log Location

Log File Contents

View Entries Last 50 Go Search

Timestamp	Entries	Type	Level	Incident ID Group	Message ID	Message Text
(No data retrieved)	Last 50					
	Last 100					
	Last 500					
	Last 1000					
	Last 2000					

Database | Setup | Preferences | Help | Logout

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[About Oracle Enterprise Manager](#)

- EM is accessing the alert log from the Database server

ORACLE Enterprise Manager 11g Database Control

Database Instance: orcl > Logged in As SYS

Processing: Reading Alert Log

The system is processing the request to access the alert log. To cancel the process select the "Cancel" button. Cancel

Retrieving alert log entries.

TIP This operation will continue even if this browser window is closed.

Database | Setup | Preferences | Help | Logout Cancel

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[About Oracle Enterprise Manager](#)

4. You can now see the content of Alert Log as shown below.

ORACLE Enterprise Manager 11g Database Control Setup Preferences Help Logout 						
Database Instance: orcl > Logged in As SYS						
View Alert Log Contents						
Log Location /home/oracle/app/diag/rdbms/orcl/orcl/alert Modified Aug 14, 2007 3:27:59 PM EDT Size (MB) 8.97						
Log File Contents View Entries Last 50 Go Search						
Previous 1-25 of 50 Next 25						
Timestamp	Type	Level	Incident ID	Group	Message ID	Message Text
Aug 14, 2007 3:27:59 PM EDT	UNKNOWN	16				ALTER SYSTEM SET diagnostic_dest='/home/oracle/app' SCOPE=BOTH;
Aug 14, 2007 11:06:08 AM EDT	NOTIFICATION	16		process start	ksbrdp:3527:3697353022	CJQ0 started with pid=29, OS id=22042
Aug 14, 2007 11:06:08 AM EDT	NOTIFICATION	16		process start	ksbslp_real:2133:2371767696	Starting background process CJQ0
Aug 14, 2007 11:01:16 AM EDT	NOTIFICATION	16		admin_ddl	opiexe:2995:2802784106	Completed: ALTER DATABASE OPEN
Aug 14, 2007 11:01:14 AM EDT	UNKNOWN	16				database for recovery-related files, and does not reflect the amount of
Aug 14, 2007 11:01:14 AM EDT	UNKNOWN	16				space available in the underlying filesystem or ASM diskgroup.
Aug 14, 2007 11:01:14 AM EDT	UNKNOWN	16				db_recovery_file_dest_size of 2048 MB is 0.00% used. This is a
Aug 14, 2007 11:01:14 AM EDT	UNKNOWN	16				user-specified limit on the amount of space that will be used by this

USING TEXT EDITOR LIKE VI

We can continue to use the approach used in the earlier release as Oracle 11g still has traditional Alert log created in the following destination

DIAGNOSTIC_DEST/diag/rdbms/DB_NAME/SID/trace/alert_\${ORACLE_SID}.log

e.g

/home/oracle/diag/rdbms/orcl/orcl/trace/alert_orcl.log

TRACE FILES

Prior to Oracle 11g, all Background process trace files are created in BACKGROUND_DUMP_DEST while Users trace files are generated in USER_DUMP_DEST. In 11g, all Background and foreground process trace files are created in ADR_HOME/trace directory. This directory also holds the traditional Alert log file.

INCIDENT

Oracle 11g Fault Diagnostic framework has added two new terms to handle the critical errors occurred in the database. These are

1. Problems

Problem is a critical error in the database that is tracked in the ADR and few common critical errors are

- ORA-00600 – Internal Errors
- ORA-07445 – Operating System Exception
- ORA-4020 – Deadlock on Library object
- ORA-1578 – Data block Corruption
- ORA-353 – Log Corruption
- ORA-4030 – Out of Process Memory
- ORA-8103 – Object no Longer exists

Each problem is assigned a unique number called **Problem Id** and text string called **problem key**. This problem Key is made of

- Oracle Error Number like ORA600
- Error Parameter Value like Arguments with ORA-600 error

You can look for the Problem ID and associated Problem Key using ADCRI utility.

e.g

```
adrci> show problem
```

```
ADR Home = /home/oracle/app/diag/rdbms/test11g/test11g:
```

```
*****
```

```
0 rows fetched
```

```
ADR Home = /home/oracle/app/diag/rdbms/orcl/orcl:
```

```
*****
```

PROBLEM_ID	PROBLEM_KEY	LAST_INCIDENT	LASTINC_TIME
1	ORA 1578	14775	2007-08-15 09:08:54.202548 -04:00

```
1 rows fetched
```

2. Incidents

An incident is a single occurrence of a problem. It is created as soon as a problem is detected in the Database. There can be several incidents assigned to the same problem. Each incident is assigned a unique number called Incident ID in each ADR Home. Incidents are time stamped and tracked in the ADR.

In the Previous ADCRI example, you can see that a Unique Incident ID is assigned to the problem. Here is a more detailed example to check the Incident information in ADR using ADRCI utility

```
adrci> show incident
```

```
ADR Home = /home/oracle/app/diag/rdbms/test11g/test11g:
```

```
*****
```

```
0 rows fetched
```

```
ADR Home = /home/oracle/app/diag/rdbms/orcl/orcl:
```

```
*****
```

INCIDENT_ID	PROBLEM_KEY	CREATE_TIME
14773	ORA 1578	2007-08-15 09:08:51.749759 -04:00
14772	ORA 1578	2007-08-15 09:08:41.329081 -04:00
14771	ORA 1578	2007-08-15 09:08:39.554096 -04:00
14770	ORA 1578	2007-08-15 09:08:38.027391 -04:00
14769	ORA 1578	2007-08-15 09:05:38.961166 -04:00

```
5 rows fetched
```

```
adrci> show incdir
```

```
ADR Home = /home/oracle/app/diag/rdbms/orcl/orcl:
```

```
*****
```

```
diag/rdbms/orcl/orcl/incident/incdir_14771/orcl_ora_13914_i14771.trc
diag/rdbms/orcl/orcl/incident/incdir_14770/orcl_ora_13914_i14770.trc
diag/rdbms/orcl/orcl/incident/incdir_14769/orcl_ora_13914_i14769.trc
diag/rdbms/orcl/orcl/incident/incdir_14772/orcl_ora_13914_i14772.trc
diag/rdbms/orcl/orcl/incident/incdir_14773/orcl_ora_13914_i14773.trc
```

Whenever there is a critical error in the database, it is tracked in the ADR. If the same critical error is flooded in the database, then ADR will use Incident Flood Control process so as to control the new incident overloading diagnostic data like Core dumps and trace files in ADR. Flood controlled incident is the incident that is

- Recorded in alert.log
- Recorded in ADR
- Does not generate incident Dump in ADR

An incident will be considered as Flood Control incident :

1. If the same incident occurred more than 5 times in an hour. Normal recording for this incident start again after One hour.

Now if you compare the output for Problem and Incident as shown below, you can see that "show Problem" shows the Incident ID as 14775 while in "show incident", this Incident id is not visible in Incident example. This is due to the reason that same incident for ORA-1578 occurred more than 5 times in an hour. Oracle continue to record this in Alert Log as well as in ADR [as shown by show problem] but it will no longer generate the dump for incident diagnosis.

```
adrci> show problem
```

PROBLEM_ID	PROBLEM_KEY	LAST_INCIDENT	LASTINC_TIME
1	ORA 1578	14775	2007-08-15 09:08:54.202548 -04:00

```
adrci> show incident
```

INCIDENT_ID	PROBLEM_KEY	CREATE_TIME
14773	ORA 1578	2007-08-15 09:08:51.749759 -04:00
14772	ORA 1578	2007-08-15 09:08:41.329081 -04:00
14771	ORA 1578	2007-08-15 09:08:39.554096 -04:00
14770	ORA 1578	2007-08-15 09:08:38.027391 -04:00
14769	ORA 1578	2007-08-15 09:05:38.961166 -04:00

5 rows fetched

Sample from alert.log showing all Incident including 14776

```
2007-08-15 09:09:01.921000 -04:00
Sweep Incident[14775]: completed
2007-08-15 09:37:52.873000 -04:00
Errors in file /home/oracle/app/diag/rdbms/orcl/orcl/trace/orcl_ora_13914.trc (incident=14776):
ORA-01578: ORACLE data block corrupted (file # 4, block # 27)
ORA-01110: data file 4: '/home/oracle/app/oradata/orcl/users01.dbf'
Hex dump of (file 4, block 1) in trace file /home/oracle/app/diag/rdbms/orcl/orcl/trace/orcl_ora_13914.trc
Corrupt block relative dba: 0x00000001 (file 4, block 1)
Completely zero block found during validating datafile for block range
Reread of blocknum=1, file=/home/oracle/app/oradata/orcl/users01.dbf. found same corrupt data
Reread of blocknum=1, file=/home/oracle/app/oradata/orcl/users01.dbf. found same corrupt data
Reread of blocknum=1, file=/home/oracle/app/oradata/orcl/users01.dbf. found same corrupt data
Reread of blocknum=1, file=/home/oracle/app/oradata/orcl/users01.dbf. found same corrupt data
Reread of blocknum=1, file=/home/oracle/app/oradata/orcl/users01.dbf. found same corrupt data
Errors in file /home/oracle/app/diag/rdbms/orcl/orcl/trace/orcl_ora_13914.trc:
ORA-19563: datafile header validation failed for file /home/oracle/app/oradata/orcl/users01.dbf
ORA-01251: Unknown File Header Version read for file number 4
ORA-01578: ORACLE data block corrupted (file # 4, block # 27)
ORA-01110: data file 4: '/home/oracle/app/oradata/orcl/users01.dbf'
Sweep Incident[14776]: completed
```

- If the same incident occurred more than 25 times a day, then further incidents for this problem key is flood controlled. Normal recording for such incident restart again next day. Alert log continue to report the incident.

If the same Problem key occurred more than 50 times in one hour or 250 times in a day, then subsequent incidents are no longer recorded in the ADR [as earlier done for Flood controlled incidents] and alert log will show that no further incidents will be recorded. See below EM slide for reference, where an incident occurred 52 times but ADR has record for only 50 incidents marked as Active incident

Go to EM Database Console Home page and Click on Active Incidents

ORACLE Enterprise Manager 11g Database Control
 Setup Preferences Help Logout Database
 Logged in As SYS

Database Instance: orcl

Home Performance Availability Server Schema Data Movement Software and Support

Latest Data Collected From Target **Aug 15, 2007 10:49:58 AM EDT** Refresh View Data Automatically (60 sec)

General
 Status Up
 Up Since **Aug 14, 2007 8:14:48 PM EDT**
 Instance Name **orcl**
 Version **11.1.0.6.0**
 Host **prnhs-db02pn.profnet.com**
 Listener **LISTENER_prnhs-db02pn.profn...**
[View All Properties](#)

Host CPU
 Load **0.02** Paging **0.00**

Active Sessions
 Maximum CPU **4**

SQL Response Time
 Reference collection is empty.
 SQL Response Time Unavailable (%)
[Reset Reference Collection](#)

Diagnostic Summary
 ADDM Findings **0**
 Alert Log **Aug 15, 2007 10:10:54 AM**
Active Incidents 50
[Database Instance Health](#)

Space Summary
 Database Size (GB) **1.459**
 Problem Tablespaces **0**
 Segment Advisor Recommendations **0**
 Policy Violations **0**
 Dump Area Used (%) **42**

High Availability
 Instance Recovery Time (sec) **10**
 Last Backup **n/a**
 Usable Flash Recovery Area (%) **99.31**
 Flashback Database Logging **Disabled**

This page will show that there are 52 incident for same problem like "ORA-1578" in this case but only 50 are marked as Active Incident which are recorded in ADR.

ORACLE Enterprise Manager 11g Database Control

Database Instance: orcl > Support Workbench

Page Refreshed August 15, 2007 10:56:16 AM EDT

Problems (1) Checker Findings (25) Packages (0)

New Problems in Last 24 Hours 1
New Incidents in Last 24 Hours 52

All Active Problems 1
All Active Incidents 50

All Problems 1
All Incidents 52

View Last 24 Hours

Only 50 Incident for same Problem are recorded in ADR as mentioned in the Paper

Select All Select None Show All Details Hide All Details

Select	Details	ID	Description	Number Of Incidents	Last Incident	Last Comment	Active	Packaged	SR#
<input type="checkbox"/>	Hide	1	ORA 1578	52	August 15, 2007 10:10:55 AM EDT		Yes	No	

Incidents (52)

15868	ORA-1578 [4] [27]						August 15, 2007 10:10:55 AM EDT
15867	ORA-1578 [4] [27]						August 15, 2007 10:10:54 AM EDT
15866	ORA-1578 [4] [27]						August 15, 2007 9:53:14 AM EDT
15865	ORA-1578 [4] [27]						August 15, 2007 9:53:14 AM EDT
15864	ORA-1578 [4] [27]						August 15, 2007 9:53:13 AM EDT

There are more incidents ...

> Performance and Critical Error

Problems (1) Checker Findings (25) Packages (0)

Related Links

Advisor Central Alert Log Contents Alert Log Errors
Create User-Reported Problem Incident Packaging Configuration

HOW TO VIEW CRITICAL ERRORS OR INCIDENT USING EMGo to EM Database Console Home Page and select any of **Critical Error Message**

ORACLE Enterprise Manager 11g Database Control Setup Preferences Help Logout Database


Logged in As SYS

Database Instance: orcl

Home Performance Availability Server Schema Data Movement Software and Support

Latest Data Collected From Target **Aug 15, 2007 10:34:58 AM EDT** [Refresh](#) View Data [Automatically \(60 sec\)](#)

General

 [Shutdown](#) [Black Out](#)

Status [Up](#)

Up Since **Aug 14, 2007 8:14:48 PM EDT**

Instance Name **orcl**

Version **11.1.0.6.0**

Host [prnhs-db02pn.profnet.com](#)

Listener [LISTENER_prnhs-db02pn.profn...](#)

[View All Properties](#)

Host CPU

1.0
0.5
0.0

Loading...

Load [0.00](#) Paging [0.00](#)

Active Sessions

1.0
0.5
0.0

Loading... [Chart Titled: Active Sessions](#) Loading...

Maximum CPU **4**

SQL Response Time

1.0
0.5
0.0

Loading...

SQL Response Time **Unavailable** (%)

[Edit Reference Collection](#)

Diagnostic Summary

ADDM Findings **0**

Alert Log [Aug 15, 2007 10:10:54 AM](#)

Active Incidents [0](#)

[Database Instance Health](#)

Space Summary

Database Size (GB) [1.459](#)

Problem Tablespaces [0](#)

Segment Advisor Recommendations [0](#)

Policy Violations [0](#)

Dump Area Used (%) [42](#)

High Availability

Instance Recovery Time (sec) [10](#)

Last Backup [n/a](#)

Usable Flash Recovery Area (%) [99.31](#)

Flashback Database Logging [Disabled](#)

Click on View Problem Details to see the details of this Critical error or incident

ORACLE Enterprise Manager 11g Database Control
Database Instance: orcl > All Metrics > Oracle Data Block Corruption >
Incident - Oracle Data Block Corruption

Last Updated **Aug 15, 2007 10:15:18 AM EDT**
View Data Incident Time Window: 24 Hours

Problem Summary

Problem Information	Incident Information
Problem Key ORA 1578	Timestamp August 15, 2007 10:10:54 AM EDT
SR# n/a	Impact n/a
Bug# n/a	Recommended Actions
First Incident August 15, 2007 9:05:38 AM EDT	View Problem Details View All Problems
Last Incident August 15, 2007 10:10:55 AM EDT	
Number of Incidents (Within 24 Hours) 52	

Performance and Critical Error

Active Sessions

ORA 1578

Alert Details

Metric **Oracle Data Block Corruption**

Time/Line Number **Wed Aug 15 10:10:54 2007/16266**

Severity **Critical**

Timestamp **Aug 15, 2007 10:15:18 AM**

Administrator **<SYSTEM>**

Message **An Oracle data block corruption detected in /home/oracle/app/diag/rdbms/orcl/orcl/alert/log.xml at time/line number: Wed Aug 15 10:10:54 2007/16266.**

ORACLE Enterprise Manager 11g
Database Control

Database Instance: orcl > Support Workbench > **Problem Details: ORA 1578**

Page Refreshed **August 15, 2007 10:48:05 AM EDT** [Refresh](#)

Summary

SR# -- [Edit](#)
Bug# -- [Edit](#)
Active **Yes**
Packaged **No**
Number of Incidents **52**
First Incident [August 15, 2007 9:05:38 AM EDT](#)

Last Incident

Timestamp [August 15, 2007 10:10:55 AM EDT](#)
Incident Source **System Generated**
Impact
Checkers Run **0**
Checker Findings **0**

Investigate and Resolve

[Go to Metalink](#) [Quick Package](#)

Self Service [Oracle Support](#)

Assess Damage

[Run Checkers](#)
[Database Instance Health](#)

Diagnose

[Alert Log](#)
[Related Problems Across Topology](#)
[Diagnostic Dumps for Last Incident](#)
[Go to Metalink and Research](#)

Link to go more in detail study of the Incident

Incidents [Activity Log](#)

Status [Open Incidents](#) [Data Dumped](#) [Yes](#) [Go](#)

[View](#) [Close](#)

[Select All](#) | [Select None](#) | [Show All Details](#) | [Hide All Details](#)

Select	Details	ID	Description	Data Dumped	Active	Status	Timestamp
<input type="checkbox"/>	Show	14773	ORA 1578 [4] [27] [] [] [] [] [] []	Yes	Yes	Ready	August 15, 2007 9:08:51 AM EDT
<input type="checkbox"/>	Show	14772	ORA 1578 [4] [27] [] [] [] [] [] []	Yes	Yes	Ready	August 15, 2007 9:08:41 AM EDT
<input type="checkbox"/>	Show	14771	ORA 1578 [4] [27] [] [] [] [] [] []	Yes	Yes	Ready	August 15, 2007 9:08:39 AM EDT
<input type="checkbox"/>	Show	14770	ORA 1578 [4] [27] [] [] [] [] [] []	Yes	Yes	Ready	August 15, 2007 9:08:38 AM EDT
<input type="checkbox"/>	Show	14769	ORA 1578 [4] [27] [] [] [] [] [] []	Yes	Yes	Ready	August 15, 2007 9:05:38 AM EDT

Showing the same 5 error as reported in ADRCI

Related Links

[Advisor Central](#) [Create User-Reported Problem](#) [Alert Log Contents](#) [Incident Packaging Configuration](#) [Alert Log Errors](#)

Database | [Setup](#) | [Preferences](#) | [Help](#) | [Logout](#)

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About Oracle Enterprise Manager

STEPS PERFORMED BY THE DATABASE TO HANDLE THE CRITICAL ERRORS

Whenever a problem occurs, the database performs the following steps

1. Add an entry in the alert.log
2. Deliver the incident alert to EM Home Page
3. Gather Diagnostic data like trace files etc. about the incident
4. Tag an Incident Id to the collected Diagnostic Data
5. Stores all the Gathered data in \$ADR_HOME/incident/Incident_Id subdirectory. Here Incident_Id is the unique ID assigned to the Incident

Below Output is from Alert Log file that supports the above points

```

2007-08-15 09:05:38.925000 -04:00 → An Entry to Alert Log is Started
Hex dump of (file 4, block 27) in trace file /home/oracle/app/diag/rdbms/orcl/orcl/trace/orcl_ora_13914.trc
Corrupt block relative dba: 0x0100001b (file 4, block 27)
Completely zero block found during buffer read
Reread of rdba: 0x0100001b (file 4, block 27) found same corrupted data
Errors in file /home/oracle/app/diag/rdbms/orcl/orcl/trace/orcl_ora_13914.trc (incident=14769):
ORA-01578: ORACLE data block corrupted (file # 4, block # 27)
ORA-01110: data file 4: '/home/oracle/app/oradata/orcl/users01.dbf'
Incident details in: /home/oracle/app/diag/rdbms/orcl/orcl/incident/incdir_14769/orcl_ora_13914_i14769.trc
Corrupt Block Found
      TSN = 4, TSNAME = USERS
      RFN = 4, BLK = 27, RDBA = 16777243
      OBJN = 69515, OBJD = 69515, OBJECT = EMP, SUBOBJECT =
      SEGMENT OWNER = SCOTT, SEGMENT TYPE = Table Segment
Checker run found 2 new persistent data failures
2007-08-15 09:05:40.530000 -04:00
Hex dump of (file 4, block 1) in trace file /home/oracle/app/diag/rdbms/orcl/orcl/incident/incdir_14769/orcl_ora_13914_i14769.trc
Corrupt block relative dba: 0x00000001 (file 4, block 1)
Completely zero block found during validating datafile for block range
Reread of blocknum=1, file=/home/oracle/app/oradata/orcl/users01.dbf. found same corrupt data
Reread of blocknum=1, file=/home/oracle/app/oradata/orcl/users01.dbf. found same corrupt data
Reread of blocknum=1, file=/home/oracle/app/oradata/orcl/users01.dbf. found same corrupt data
Reread of blocknum=1, file=/home/oracle/app/oradata/orcl/users01.dbf. found same corrupt data
Reread of blocknum=1, file=/home/oracle/app/oradata/orcl/users01.dbf. found same corrupt data
Errors in file /home/oracle/app/diag/rdbms/orcl/orcl/incident/incdir_14769/orcl_ora_13914_i14769.trc:
ORA-19563: datafile header validation failed for file /home/oracle/app/oradata/orcl/users01.dbf
ORA-01251: Unknown File Header Version read for file number 4
ORA-01578: ORACLE data block corrupted (file # 4, block # 27)
ORA-01110: data file 4: '/home/oracle/app/oradata/orcl/users01.dbf'
Trace dumping is performing id=[cdmp_20070815090540]
2007-08-15 09:05:42.942000 -04:00
Sweep Incident[14769]: completed
  
```