

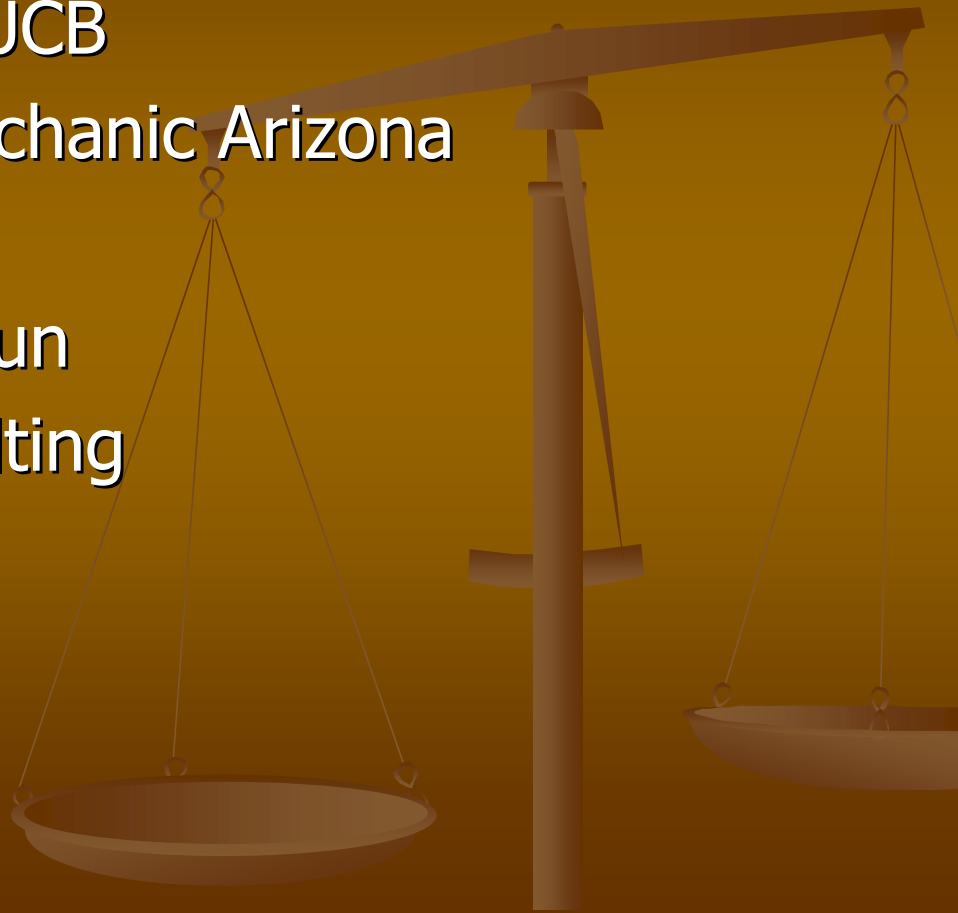


Oracle 11g

A Few New Features

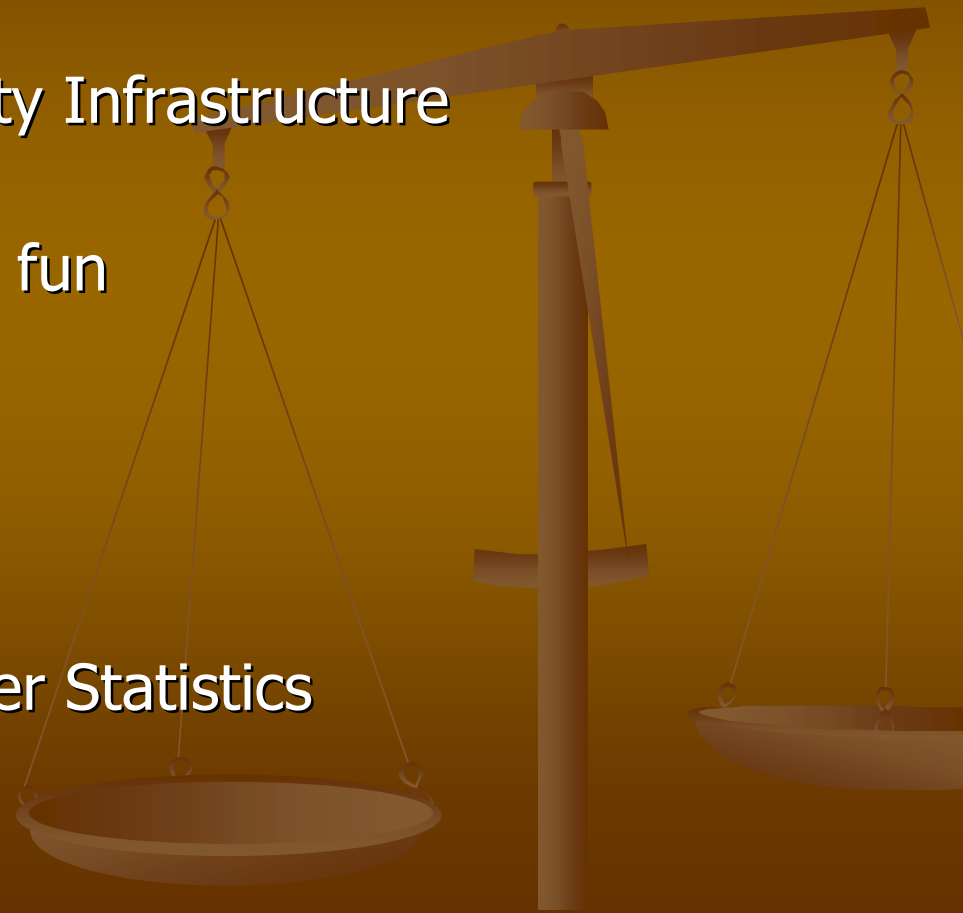
Mary

- UC Berkeley & UCB
- Volkswagen mechanic Arizona
- Europe days
- Staying in the sun
- Burleson Consulting
 - Remote dba
 - Health checks
 - Training

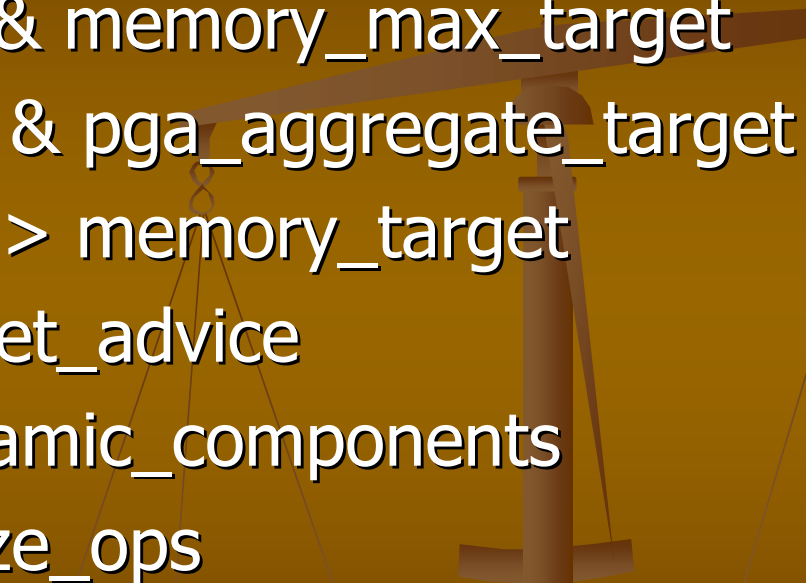


Overview

- Memory
- Fault Diagnosability Infrastructure
- ADRCI
- Standby database fun
- DDL wait
- New sysasm role
- Shrinking TEMP
- Flashback
- Extended Optimizer Statistics



Automatic Memory Management

- Memory_target & memory_max_target
 - Sum sga_target & pga_aggregate_target
 - Linux /dev/shm > memory_target
 - V\$memory_target_advice
 - V\$memory_dynamic_components
 - V\$memory_resize_ops
- 

v\$memory_target_advice

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

MEMORY_SIZE	MEMORY_SIZE_FACTOR	ESTD_DB_TIME	ESTD_DB_TIME_FACTOR
8192	1	1597624	1
2048	.25	1641079	1.0272
4096	.5	1613920	1.0102
6144	.75	1607370	1.0061
10240	1.25	1597464	.9999
12288	1.5	1597464	.9999
14336	1.75	1597464	.9999
16384	2	1597464	.9999

V\$memory_dynamic_component

```
select component, current_size, min_size, max_size from  
v$memory_dynamic_components;
```

COMPONENT	CURRENT_SIZE	MIN_SIZE	MAX_SIZE
-----	-----	-----	-----
shared pool	2550136832	2214592512	3825205248
large pool	67108864	67108864	67108864
java pool	67108864	67108864	67108864
streams pool	0	0	0
SGA Target	6442450944	6442450944	6442450944
DEFAULT buffer cache	3690987520	2415919104	4026531840
KEEP buffer cache	0	0	0
RECYCLE buffer cache	0	0	0
DEFAULT 2K buffer cache	0	0	0
DEFAULT 4K buffer cache	0	0	0
DEFAULT 8K buffer cache	0	0	0
DEFAULT 16K buffer cache	0	0	0
DEFAULT 32K buffer cache	0	0	0
Shared IO Pool	0	0	0
PGA Target	2147483648	2147483648	2147483648
ASM Buffer Cache	0	0	0



A Fun Problem

- connect / as sysdba;
- @?/rdbms/admin/catqm.sql XMLDB
SYSAUX TEMP
- strangely aborts after some time and
the last commands show "Connection
lost"
- ORA-4031 out of memory

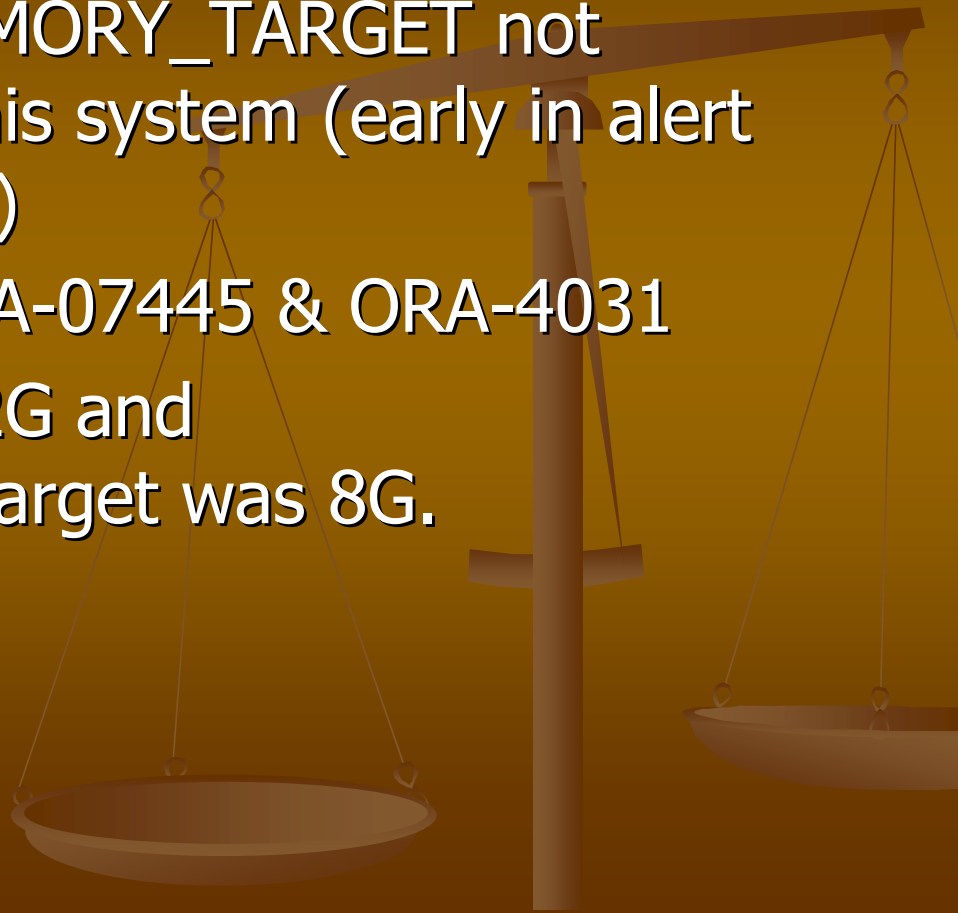
Memory Parm



memory_max_target	big integer	0
memory_target	big integer	0
shared_memory_address	integer	0
sga_max_size	big integer	208M
sga_target	big integer	0
buffer_pool_keep	string	
buffer_pool_recycle	string	
global_context_pool_size	string	
java_pool_size	big integer	24M
large_pool_size	big integer	0
olap_page_pool_size	big integer	0
shared_pool_reserved_size	big integer	6710886
shared_pool_size	big integer	128M
streams_pool_size	big integer	0
buffer_pool_keep	string	
buffer_pool_recycle	string	
db_block_buffers	integer	0
log_buffer	integer	5036032
db_cache_size	big integer	48M
db_keep_cache_size	big integer	0
db_recycle_cache_size	big integer	0

What went wrong?

- ORA-00845 MEMORY_TARGET not supported on this system (early in alert log during build)
- Subsequent ORA-07445 & ORA-4031
- /dev/shm was 2G and memory_max_target was 8G.



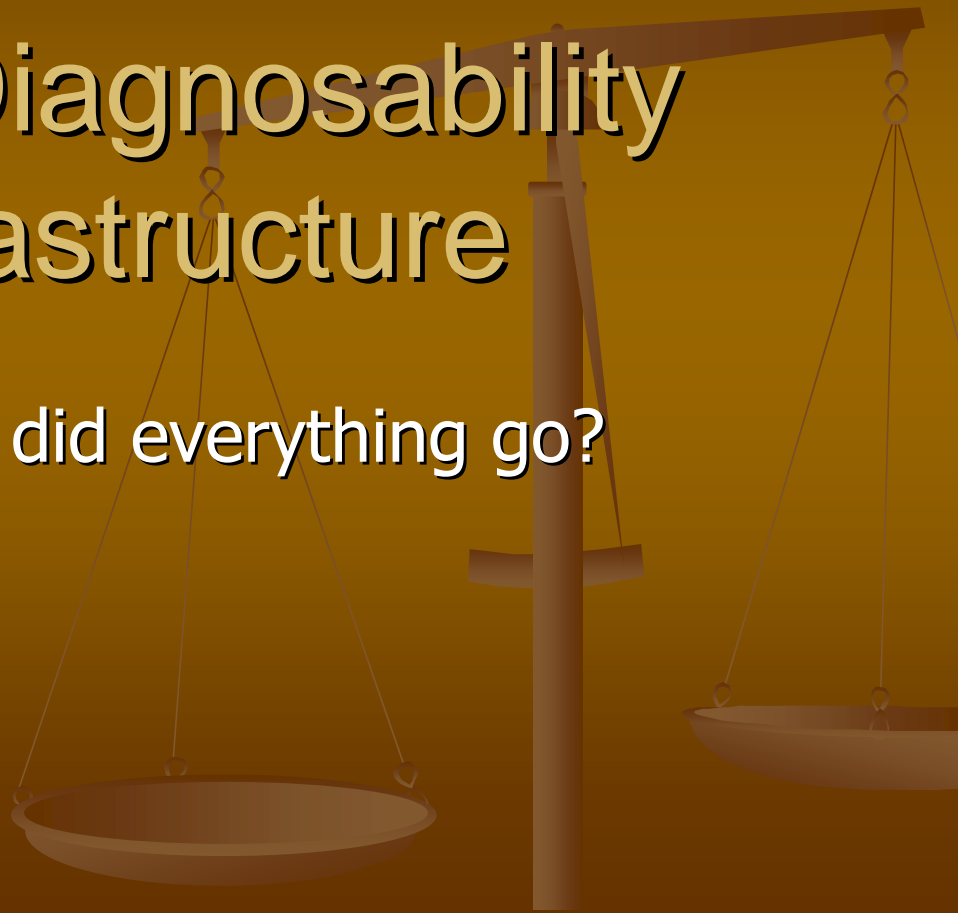
The Solution

- Add space to /dev/shm
- Alter system set `memory_target=2G`
`scope=spfile;`
- Bounce



Fault Diagnosability Infrastructure

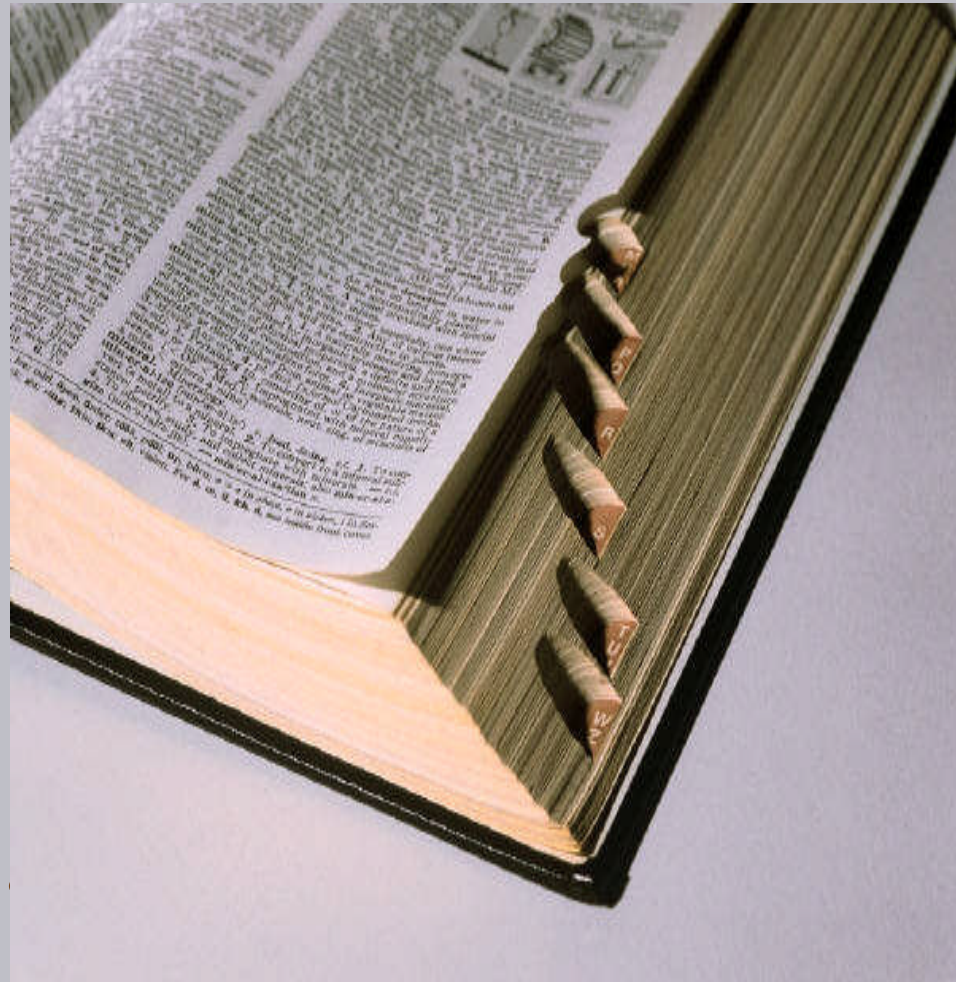
Or where did everything go?



Fault Diagnosability Infrastructure

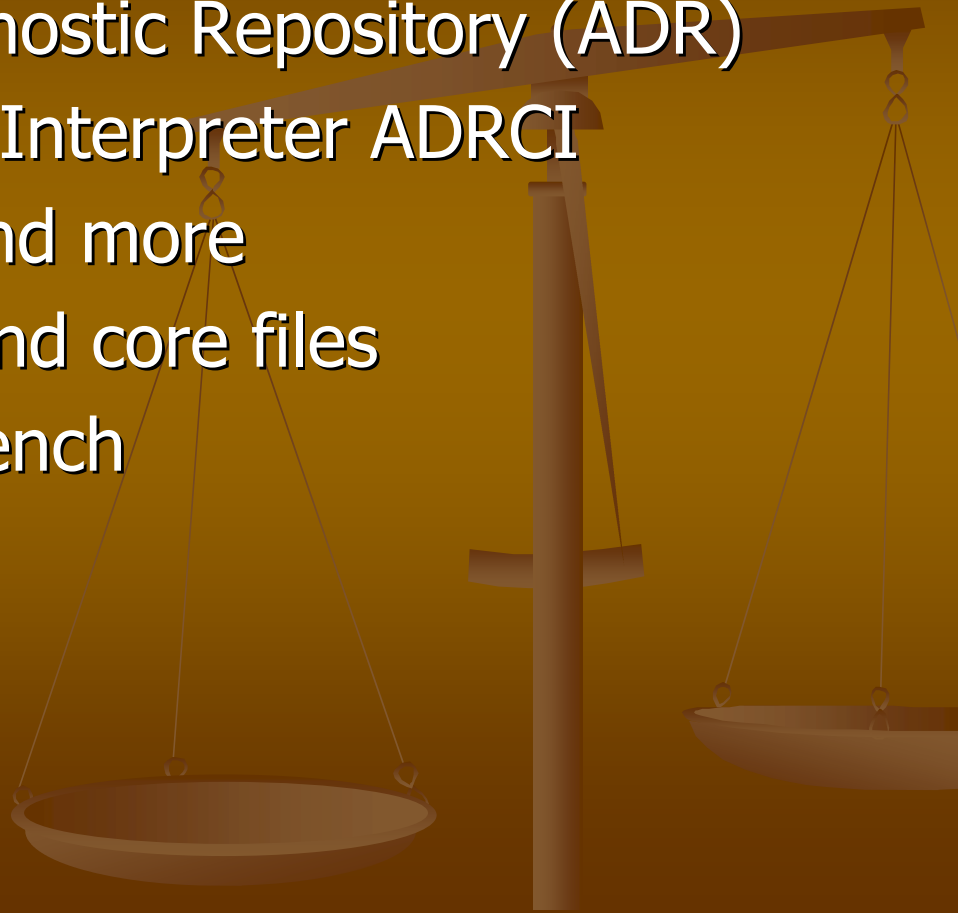
No results found for
Diagnosability :

Did you mean
Diagnosable (in
dictionary) or
Dragon's Blood
(in reference)?



Fault Diagnosability Infrastructure

- Automatic Diagnostic Repository (ADR)
- ADR Command Interpreter ADRCI
- XML Alert log and more
- Trace, Dump, and core files
- Support Workbench



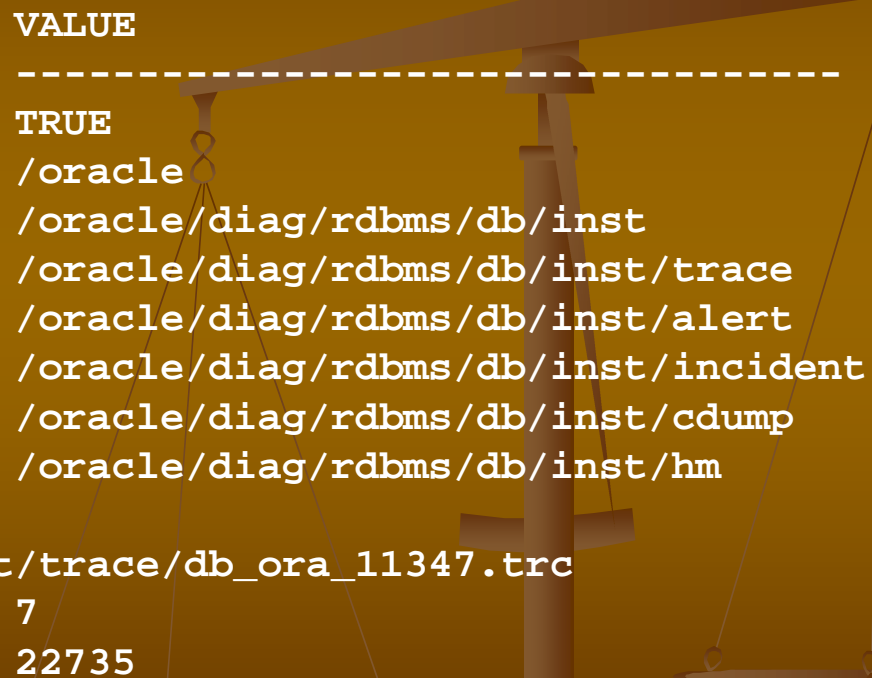
Where did my alert log go?

- New parameter: diagnostic_dest
- Set to ORACLE_BASE or ORACLE_HOME
- Deprecated: background_dump_dest, core_dump_dest, and user_dump_dest
- `$ echo $ORACLE_HOME`
/oracle/ora11db
- /oracle/diag/rdbms/db/inst/trace

```
[oracle@db inst]$ ls
alert  cdump  hm  incident  incpkg  ir  lck  metadata  stage
sweep  trace
```

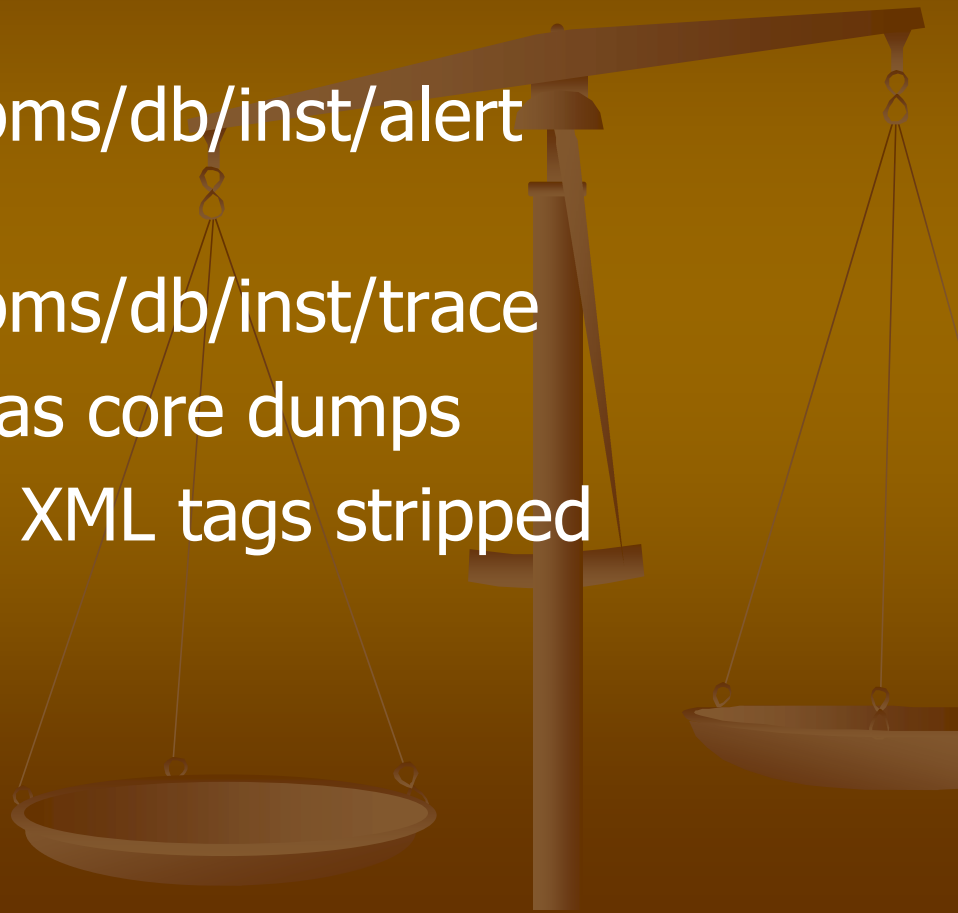
```
SQL> select name, value from v$diag_info;
```

NAME	VALUE
-----	-----
Diag Enabled	TRUE
ADR Base	/oracle
ADR Home	/oracle/diag/rdbms/db/inst
Diag Trace	/oracle/diag/rdbms/db/inst/trace
Diag Alert	/oracle/diag/rdbms/db/inst/alert
Diag Incident	/oracle/diag/rdbms/db/inst/incident
Diag Cdump	/oracle/diag/rdbms/db/inst/cdump
Health Monitor	/oracle/diag/rdbms/db/inst/hm
Default Trace File	/oracle/diag/rdbms/db/inst/trace/db_ora_11347.trc
Active Problem Count	7
Active Incident Count	22735



Viewing the Alert Log

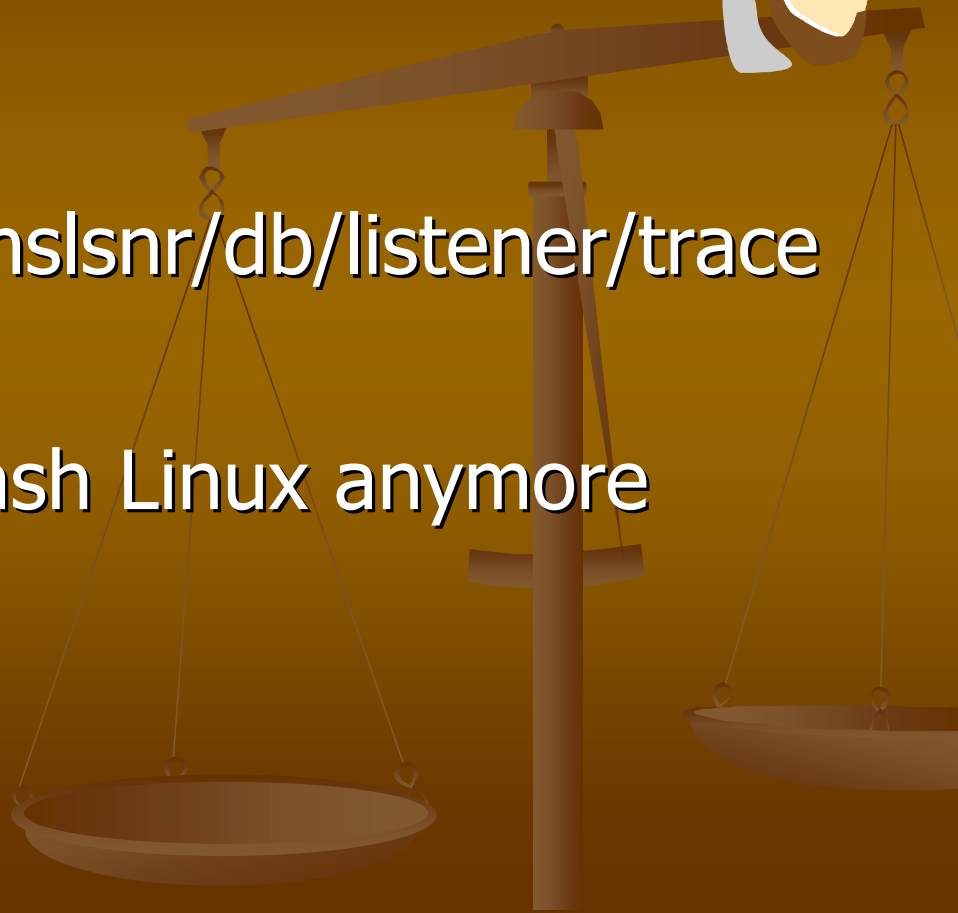
- XML Version:
/oracle/diag/rdbms/db/inst/alert
- Text Copy:
/oracle/diag/rdbms/db/inst/trace
not cdump - it has core dumps
- OEM: View with XML tags stripped
- Use ADRCI



Where is the listener log?



- `/oracle/diag/tnslsnr/db/listener/trace`
- 3G doesn't crash Linux anymore



ADRCI

```
[oracle@db ~]$ adrci
```

```
ADRCI: Release 11.1.0.6.0 - Beta on Do Feb 12 18:05:04 2009
```

```
Copyright (c) 1982. 2007. Oracle. All rights reserved.
```

```
ADR base = "/oracle"
```

```
adrci> show homes
```

```
ADR Homes:
```

```
diag/tnslsnr/db/listener
```

```
diag/rdbms/db/inst
```

```
diag/clients/user_unknown/host_4189465421_11
```

```
diag/clients/user_oracle/host_165465188_11
```

```
adrci> set homopath diag/rdbms/db/inst
```

```
adrci> show homes
```

```
ADR Homes:
```

```
diag/rdbms/db/inst
```

```
adrci> show alert -tail
```



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

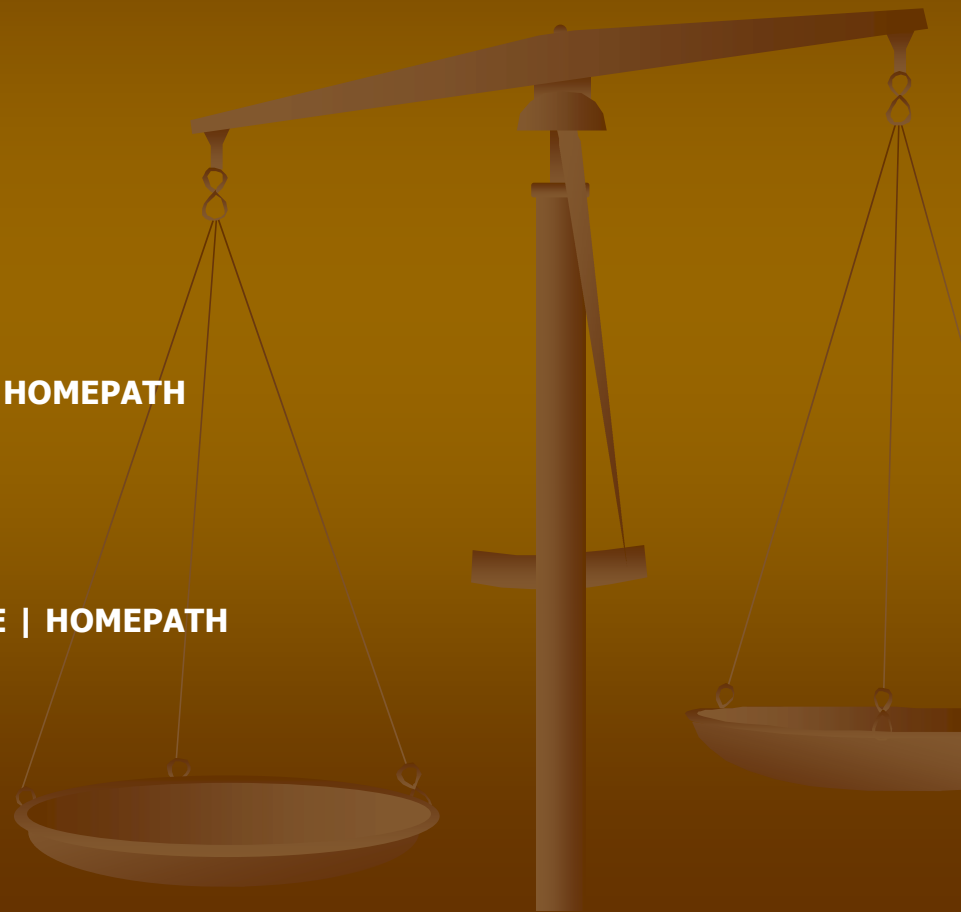
SHOW INCIDENT

SHOW PROBLEM

SHOW REPORT

SHOW TRACEFILE

SPOOL



```
adrci> show tracefile %dbrm% -rt
12-FEB-09 02:00:00 diag/rdbms/db/inst/trace/db_dbrm_4124.trc
```

```
adrci> show tracefile -i 76420
diag/rdbms/db/inst/incident/incdir_76420/db_p003_4160_i76420.trc
```

```
adrci> help show incident
```

```
adrci> show incident -mode detail -p "incident_id=76420"
```

```
ADR Home = /oracle/diag/rdbms/db/inst:
```

```
*****
```

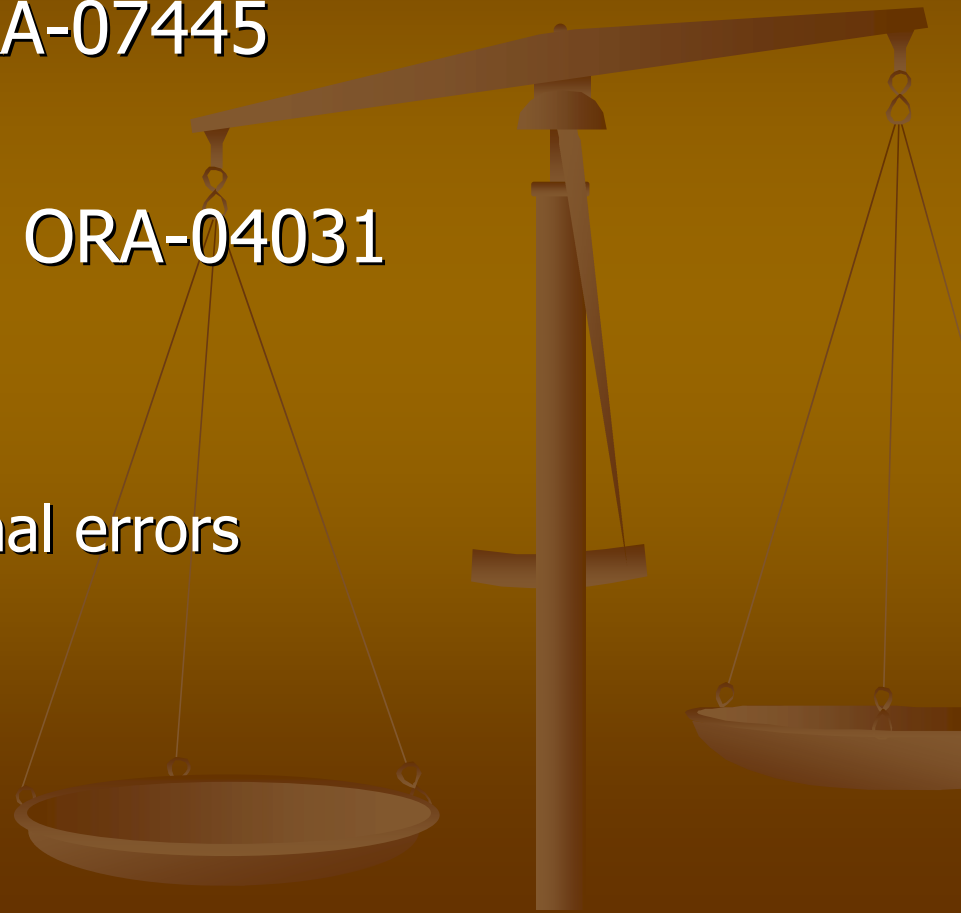
```
INCIDENT INFO RECORD 1
```

```
*****
```

INCIDENT_ID	76420
STATUS	ready
CREATE_TIME	2008-12-04 11:32:47.519864 +01:00
PROBLEM_ID	15
CLOSE_TIME	<NULL>
FLOOD_CONTROLLED	none
ERROR_FACILITY	ORA
ERROR_NUMBER	600
ERROR_ARG1	kcbnew_3

Thee Incident

- ORA-00600, ORA-07445
- ORA-01578
- ORA-04030 and ORA-04031
- ORA-00700
 - Soft assert
 - Non-fatal internal errors

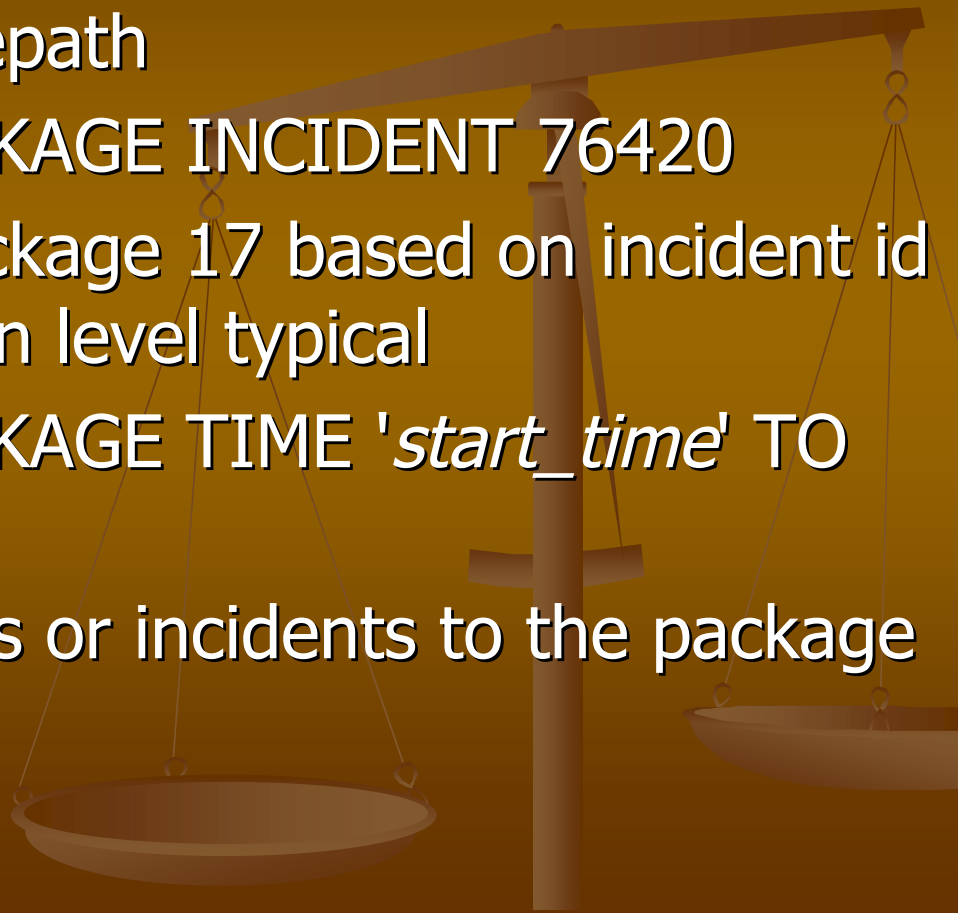


Create a Logical Package

- Check ADR homopath
- IPS CREATE PACKAGE INCIDENT 76420

Result: created package 17 based on incident id 76420. correlation level typical

- IPS CREATE PACKAGE TIME '*start_time*' TO '*end_time*'
- Ability to add files or incidents to the package



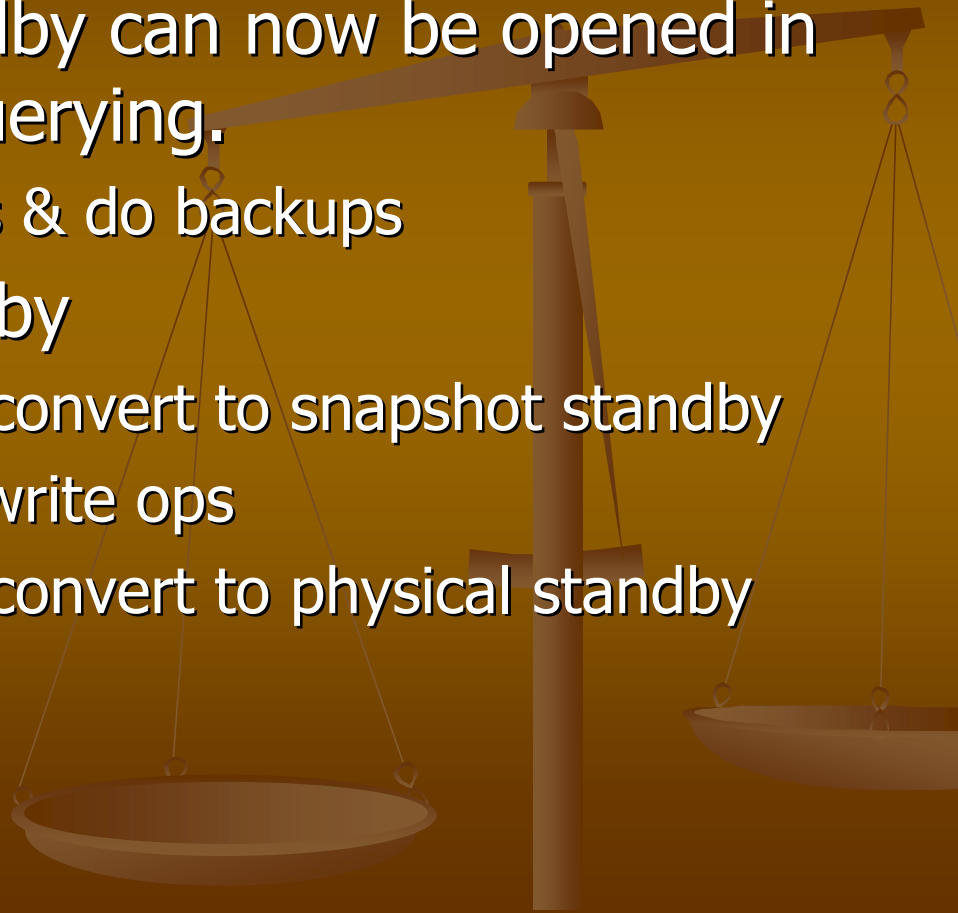
Create a Physical Package

- IPS FINALIZE PACKAGE 17 ??
- IPS GENERATE PACKAGE *package_number* IN *path*
- IPS GENERATE PACKAGE 17 IN /tmp
- IPS SHOW FILES PACKAGE 17
- IPS SHOW INCIDENTS PACKAGE 17
- Upload to MetaLink
- IPS DELETE PACKAGE 17



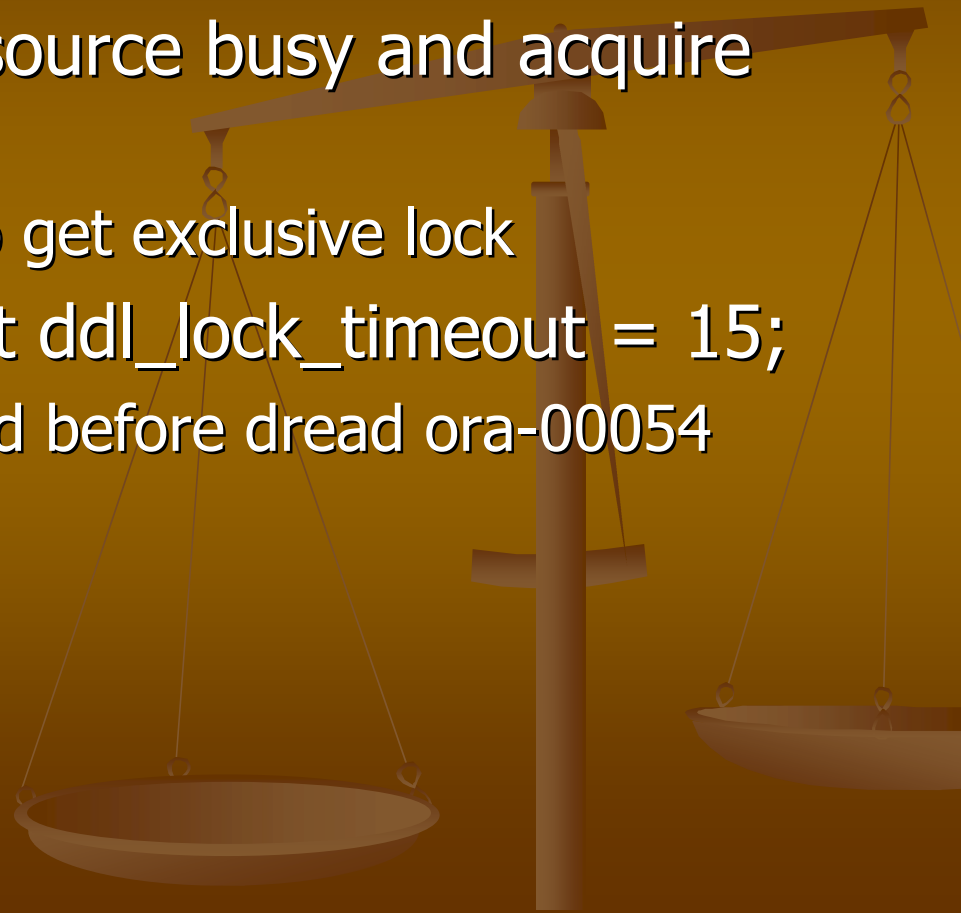
Standby databases

- A physical standby can now be opened in read-only for querying.
 - Can run reports & do backups
- Snapshot Standby
 - Alter database convert to snapshot standby
 - Open for read-write ops
 - Alter database convert to physical standby



DDL Wait Option

- ORA-00054: resource busy and acquire with nowait
 - Tricky timing to get exclusive lock
- Alter session set ddl_lock_timeout = 15;
 - Waits 15 second before dread ora-00054



New SYSASM role

- Sometimes you find yourself wearing the wrong hat
- Same authentication requirements as sysdba
- Sqlplus / as sysasm



SYSASM Errors

- Starting ORACLE instance (normal)
**WARNING: Deprecated privilege
SYSDBA for command 'STARTUP'**
- \$ sqlplus / as sysasm
Connected to an idle instance.
SQL> startup
ORA-01031: insufficient privileges

Shrinking TEMP

- **ORA-3297 signalled during: ALTER DATABASE TEMPFILE '/oracle/oradata/db/temp01.dbf' RESIZE 1024M**
- `alter tablespace temp1 shrink space;`
- `select * from dba_temp_free_space;`
- `alter tablespace temp1 shrink space keep 100m;`

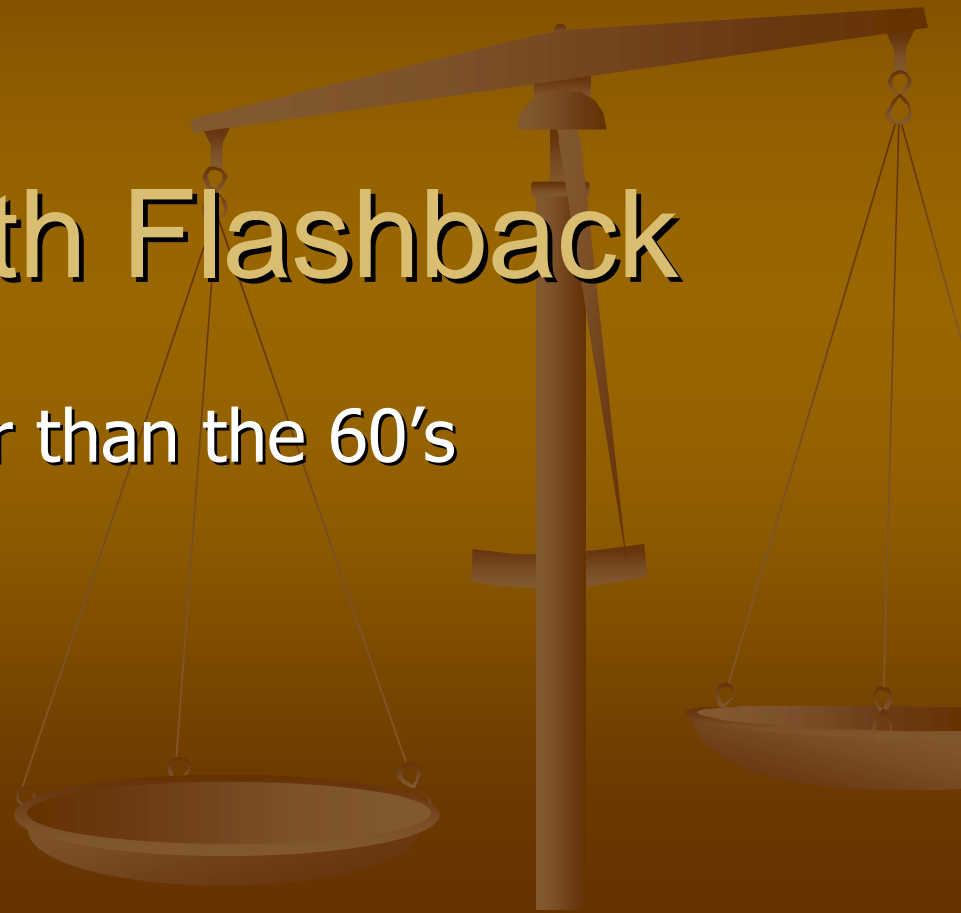
Check TEMP

```
SQL> select * from dba_temp_free_space;
```

TABLESPACE_NAME	TABLESPACE_SIZE	ALLOCATED_SPACE	FREE_SPACE
TEMP	2,2270E+10	2,2270E+10	2,2265E+10

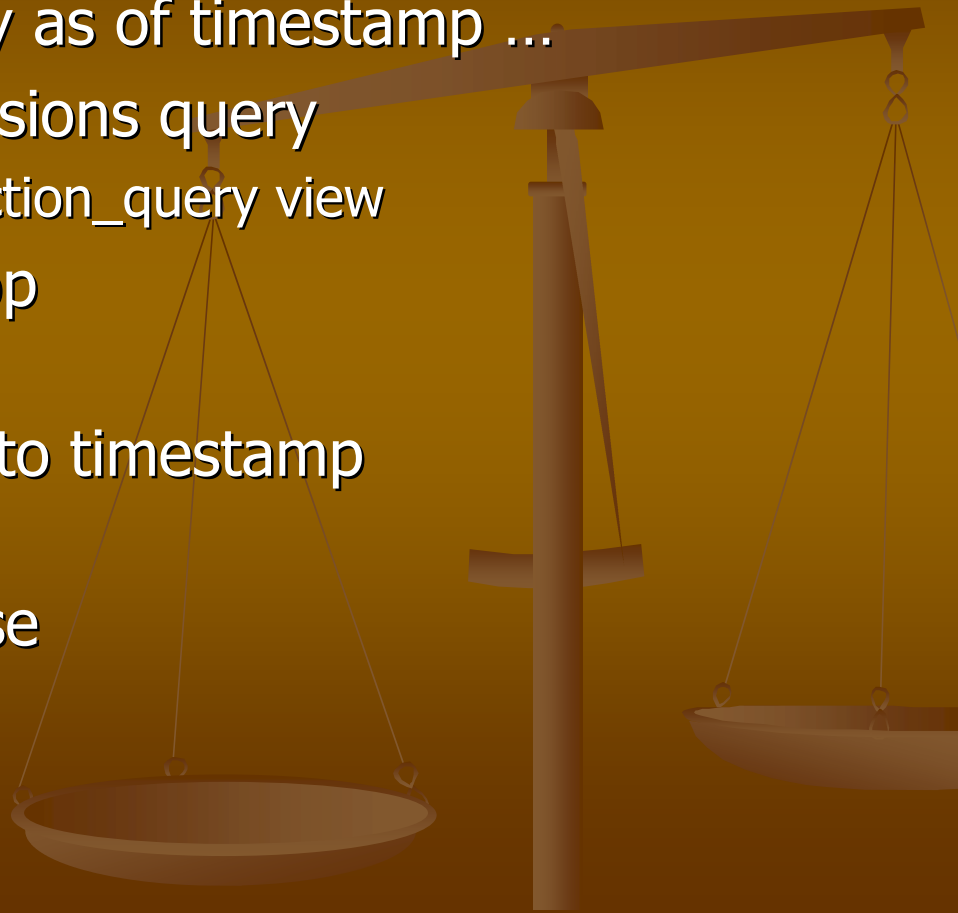
Fun with Flashback

Safer than the 60's



Flashback History

- 9.2 select x from y as of timestamp ...
- 10g Flashback versions query
 - Flashback_transaction_query view
- 10g Flashback drop
 - recyclebin
- Flashback table x to timestamp
 - Undo
- Flashback database
 - .fbi logs



New Flashback in 11g

- Transaction Backout
 - Dbms_flashback or OEM
 - Uses logminer
 - Requires supplemental logging
- Flashback Data Archive
 - New process FBDA (flashback data archiver)
 - Create flashback archive x_arc tablespace x quota 10G retention 9 years;

Extended Optimizer Statistics

Better Query Performance



Extended Optimizer Statistics

- exec
dbms_stats.gather_table_stats(null,'cars',
method_opt => 'for all columns size 1');

TABLE	COLUMN	DISTINCT	DENSITY	BUCKETS	HISTOGRAM
-----	-----	-----	-----	-----	-----
CARS	CAR_ID	23	.043478261	1	NONE
CARS	MAKE	2	.5	1	NONE
CARS	MODEL	4	.25	1	NONE
CARS	COLOR	9	.111111111	1	NONE

Extended Optimizer Statistics

- exec
dbms_stats.gather_table_stats(null,'cars',
method_opt => 'for all columns size
skewonly');

TABLE	COLUMN	DISTINCT	DENSITY	BUCKETS	HISTOGRAM
-----	-----	-----	-----	-----	-----
CARS	CAR_ID	23	.043478261	1	NONE
CARS	MAKE	2	.02173913	2	FREQUENCY
CARS	MODEL	4	.02173913	4	FREQUENCY
CARS	COLOR	9	.02173913	9	FREQUENCY

Extended Optimizer Statistics

- Select dbms_stats.create_extended_stats(null, 'cars', '(make, model)') from dual;

DBMS_STATS.CREATE_EXTENDED_STATS

SYS_STU8QPK2S\$PEWHARK2CP3#1F#G

TABLE	COLUMN_NAME	DISTINCT	DENSITY	BUCKETS	HISTOGRAM
CARS	CAR_ID	23	.043478261	1	NONE
CARS	MAKE	2	.02173913	2	FREQUENCY
CARS	MODEL	4	.02173913	4	FREQUENCY
CARS	COLOR	9	.02173913	9	FREQUENCY
CARS	SYS_STU8QPK2	4	.02173913	4	FREQUENCY

Extended Optimizer Statistics

- `exec`
`dbms_stats.gather_table_stats(null,'cars',`
`method_opt => 'for all columns size`
`skewonly for columns (upper(color))');`

TABLE	COLUMN_NAME	DISTINCT	DENSITY	BUCKETS	HISTOGRAM
-----	-----	-----	-----	-----	-----
CARS	CAR_ID	23	.043478261	1	NONE
CARS	MAKE	2	.02173913	2	FREQUENCY
CARS	MODEL	4	.02173913	4	FREQUENCY
CARS	COLOR	9	.02173913	9	FREQUENCY
CARS	SYS_STU8QPK2	4	.02173913	4	FREQUENCY
CARS	SYS_STUW\$NUF	9	.02173913	9	FREQUENCY

New DBA_TABLE Column

- DBA_TABLES

READ_ONLY

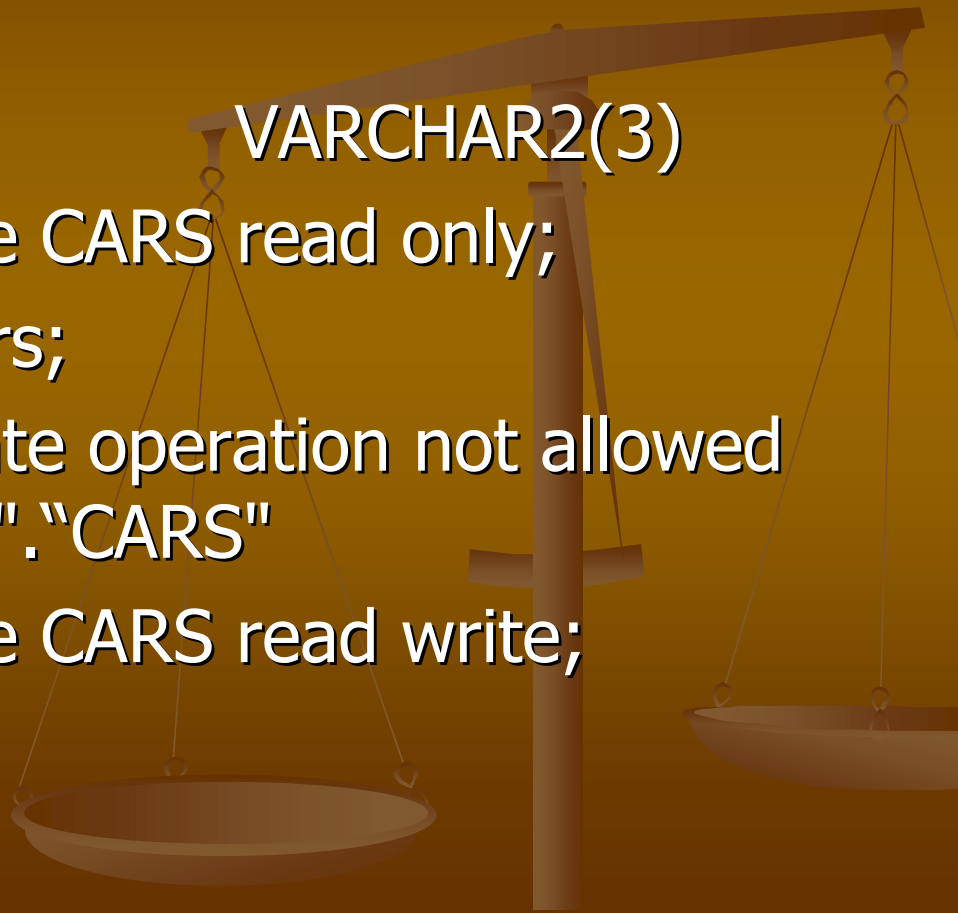
VARCHAR2(3)

- SQL> alter table CARS read only;

- SQL> delete cars;

ORA-12081: update operation not allowed
on table "MARY"."CARS"

- SQL> alter table CARS read write;



New DBA_INDEXES columns

- DBA_INDEXES

VISIBILITY

VARCHAR2(9)

DOMIDX_MANAGEMENT VARCHAR2(14)

- alter index IDX1 invisible;
- Use a hint or alter session set
optimizer_use_invisible_indexes = true;
- When rebuilt, the index becomes visible

Discussion

Thank you for listening!

