

----- Show the Database Smart Flash Cache parameters

SQL> show parameter flash\_cache

NAME	TYPE	VALUE
-----	-----	-----
--		
db_flash_cache_file	string	
db_flash_cache_size	big integer	0

----- Create a table to play with

SQL> create table bar (c1 number(8), c2 char(1800)) tablespace example;

Table created.

SQL> insert into bar select level,level from dual connect by level <= 5000;

5000 rows created.

SQL> commit;

Commit complete.

----- Get the DATA\_OBJECT\_ID from our table

SQL> select data\_object\_id from dba\_objects where object\_name = 'BAR';

DATA_OBJECT_ID
-----
15953

SQL> def objd

```
DEFINE OBJD          =          15953 (NUMBER)
```

```
----- How big is our table?
```

```
SQL> exec dbms_stats.gather_table_stats(null,'bar')
```

```
PL/SQL procedure successfully completed.
```

```
SQL> select blocks from dba_segments where segment_name='BAR';
```

```
BLOCKS
```

```
-----
```

```
1280
```

```
----- Make sure there are no blocks from table BAR in the buffer cache
```

```
SQL> @flood_cache
```

```
SQL> select sum(amount_sold) from sh.sales;
```

```
SUM(AMOUNT_SOLD)
```

```
-----
```

```
98205831.2
```

```
SQL> update sh.customers set cust_credit_limit = cust_credit_limit;
```

```
55500 rows updated.
```

```
SQL> select sum(amount_sold) from sh.sales;
```

```
SUM(AMOUNT_SOLD)
```

```
-----
```

98205831.2

```
SQL> update sh.customers set cust_credit_limit = cust_credit_limit;
```

55500 rows updated.

```
SQL> commit;
```

Commit complete.

----- Succeeded?

```
SQL> select status, count(*) from v$bh
      2  where objd = &objd group by status order by status;
```

no rows selected

----- How many physical reads are performed when we query table bar?

```
SQL> @sysdba
```

```
SQL> connect / as sysdba
```

Connected.

```
SQL> select count(*) from bar;
```

COUNT(\*)

-----

5000

```
SQL> select name, value from v$mystat s, v$statname n
```

```
      2  where s.statistic# = n.statistic# and (name = 'physical reads')
```

```
3 or name = 'physical read flash cache hits');
```

NAME	VALUE
-----	-----
physical reads	1282
physical read flash cache hits	0

----- Now setup the Database Smart Flash Cache

----- But before we do this, get the number of buffer cache buffers

```
SQL> show parameter db_cache_size
```

NAME	TYPE	VALUE
-----	-----	-----
--		
db_cache_size	big integer	16M

```
SQL> select buffers from v$buffer_pool where buffers != 0;
```

BUFFERS

-----
1984

----- Also count the number of buffer headers

```
SQL> select count(*) from v$bh;
```

COUNT(*)
-----
1984

----- Create an ASM flash diskgroup

```
SQL> connect sys/oracle@+asm as sysasm
```

Connected.

```
SQL> create diskgroup flash_dg external redundancy
```

```
2 disk
```

```
3 'ORCL:JBOD01',
```

```
4 'ORCL:JBOD02',
```

```
5 'ORCL:JBOD03',
```

```
6 'ORCL:JBOD04';
```

Diskgroup created.

----- And now set the Database Smart Flash Cache up

```
SQL> @sysdba
```

```
SQL> connect / as sysdba
```

Connected.

```
SQL> alter system set db_flash_cache_size=64M scope=spfile;
```

System altered.

```
SQL> alter system set db_flash_cache_file='+FLASH_DG/sfc.dbf' scope=spfile;
```

System altered.

----- Activate it

```
SQL> startup force quiet
```

ORACLE instance started.

Database mounted.

Database opened.

----- See the flash cache inside ASM

SQL> !asmcmd ls -l +flash\_dg/dogs/flashfile

Type	Redund	Striped	Time	Sys	Name
FLASHFILE	UNPROT	COARSE	DEC 08 15:00:00	Y	bufpool#-1077381044.256.769361573

----- take a look at the smart flash statistics

SQL> select name,value from v\$sysstat where name like 'flash cache%' order by name;

NAME	VALUE
flash cache eviction: aged out	0
flash cache eviction: buffer pinned	0
flash cache eviction: invalidated	0
flash cache insert skip: DBWR overloaded	0
flash cache insert skip: corrupt	0
flash cache insert skip: exists	3740
flash cache insert skip: modification	4
flash cache insert skip: not current	0
flash cache insert skip: not useful	141
flash cache inserts	1991

----- See the number of buffers again

SQL> select buffers from v\$buffer\_pool where buffers != 0;

BUFFERS

-----  
1896

----- Really?

```
SQL> select count(*) from v$bh;
```

```
      COUNT(*)
-----
      3887
```

----- Huh?

```
SQL> select bp_l2_size from x$kcwbpd where bp_size != 0;
```

```
BP_L2_SIZE
-----
      8192
```

----- Make sure we flash cache table bar as long as possible

```
SQL> alter table bar storage(flash_cache keep);
```

Table altered.

----- Try to load the table into the flash cache

```
SQL> exec dbms_stats.gather_table_stats(null,'bar')
```

PL/SQL procedure successfully completed.

```
SQL> exec dbms_stats.gather_schema_stats('hr')
```

PL/SQL procedure successfully completed.

```
SQL> exec dbms_stats.gather_table_stats(null,'bar')
```

```
PL/SQL procedure successfully completed.
```

```
SQL> exec dbms_stats.gather_schema_stats('hr')
```

```
PL/SQL procedure successfully completed.
```

```
SQL> exec dbms_stats.gather_table_stats(null,'bar')
```

```
PL/SQL procedure successfully completed.
```

```
SQL> exec dbms_stats.gather_schema_stats('hr')
```

```
PL/SQL procedure successfully completed.
```

```
SQL> exec dbms_stats.gather_table_stats(null,'bar')
```

```
PL/SQL procedure successfully completed.
```

```
----- Succeeded?
```

```
SQL> select status, count(*) from v$bh  
2 where objd = &objd group by status order by status;
```

```
STATUS          COUNT(*)  
-----  
flashcur        1252
```



----- See that a block can be in both caches

SQL> select count(\*) from

2 (select 2 from v\$bh where objd=&objd group by block# having count(\*) = 2);

COUNT(\*)

-----  
468

----- take a look at the smart flash statistics again

SQL> select name,value from v\$sysstat where name like 'flash cache%' order by name;

NAME	VALUE
flash cache eviction: aged out	0
flash cache eviction: buffer pinned	0
flash cache eviction: invalidated	5
flash cache insert skip: DBWR overloaded	0
flash cache insert skip: corrupt	0
flash cache insert skip: exists	11749
flash cache insert skip: modification	4
flash cache insert skip: not current	0
flash cache insert skip: not useful	143
flash cache inserts	4318

----- How many buffers are on each L2 LRU?

```
SQL> select sum(cnum_l2r) L2REPL, sum(cnum_l2k) L2keep,
sum(cnum_l2r+cnum_l2k) L2Total
      2  from x$kcwds where cnum_set != 0;
```

L2REPL	L2KEEP	L2TOTAL
6940	1252	8192

----- Make sure there are no blocks from table BAR in the buffer cache

```
SQL> @flood_cache
```

```
SQL> select sum(amount_sold) from sh.sales;
```

```
SUM(AMOUNT_SOLD)
```

```
-----
          98205831.2
```

```
SQL> update sh.customers set cust_credit_limit = cust_credit_limit;
```

55500 rows updated.

```
SQL> select sum(amount_sold) from sh.sales;
```

```
SUM(AMOUNT_SOLD)
```

```
-----
          98205831.2
```

```
SQL> update sh.customers set cust_credit_limit = cust_credit_limit;
```

55500 rows updated.

```
SQL> commit;
```

```
Commit complete.
```

```
----- Succeeded?
```

```
SQL> select status, count(*) from v$bh where objd = &objd  
2 group by status order by status;
```

```
STATUS          COUNT(*)  
-----  
flashcur        1272
```

```
----- How many physical reads are performed when we query table bar?
```

```
SQL> @sysdba
```

```
SQL> connect / as sysdba
```

```
Connected.
```

```
SQL> select count(*) from bar;
```

```
COUNT(*)  
-----  
5000
```

```
SQL> select name, value from v$mystat s, v$statname n  
2 where s.statistic# = n.statistic# and (name = 'physical reads'  
3 or name = 'physical read flash cache hits');
```

```
NAME
```

```
VALUE
```

```
-----  
physical reads 1288  
physical read flash cache hits 1286
```

----- Count the number of buffer headers again

```
SQL> select count(*) from v$bh;
```

```
COUNT(*)
```

```
-----  
8471
```

----- See the available wait events

```
SQL> select name from v$event_name where name like '%flash cache%';
```

```
NAME
```

```
-----  
write complete waits: flash cache  
db flash cache single block physical read  
db flash cache multiblock physical read  
db flash cache write  
db flash cache invalidate wait  
db flash cache dynamic disabling wait
```