**AWR报表内容生成SQL**

**一、文档摘要：**

**文档编写出发点：**

网络上大量关于分析AWR报表的文档，此类文档没有提供相关的资料，有些描述有岐义。导致很多新人只知其然不知所以然。

此文档目的帮助更加深入理解AWR报表，为oracle从业者与技术爱好做性能分析与性能监控提供参考资料。

**文档编写依据：**

文档基于oracle dbms\_swrf\_report\_internal,test\_dbms\_workload\_repository二个包源码分析得出。

这二个包的源码是通过wrap加密保存的，需要用解密工具才能获得源码。

**文档声明：**

1. 此文档内容纯属个人学习总结文档，不对文档内容完全准确负责。
2. 由于分析awr生成存储过程工作量极大，此文档很多代码没有经过优化与完善只初步对生成内容与awr报表对比正确。
3. 此文档的sql语句98%以上是根据源码解析而成，非oracle源码sql
4. 建议有兴趣的同学去学习一下oracle plsql编写技巧，能在plsql缩写技能与编程思想上有所提升。
5. Awr二个包的代码极其复杂，对学习者的plsql编写能力有要求。
6. 对应的二个包还包括ADDM，ASH的源码，有兴趣的同学可以深入了解

**学习困惑：**

在编写此文档的过程中，很多人对此行为持不屑与不解的态度，认为有awr报表工具分析这个代码完全没有意义。

感觉在IT行业混迹数年，一无事成。很多东西都不知道原理甚至使用都不清楚，分析此报表为了更深入理解oracle性能分析原理，期望有更多的IT人士能把知识共享出来。今后一段时间里我将致力于oracle一些原理的分析，希望我的学习经历能帮助别人缩短学习时间。

**后续：**

1. 将视情况会把每个awr报表对应说明，根据自己的理解做相应描述，以照顾新人。
2. 过一段时间会把数据字典的一些分析与个人理解共享出来。

**二、分析过程**

**1、原本计划3-5天分析出此文档，oracle公司的plsql编写能力叹为观止，时间进度近半个月，分析时间达80个小时以上。**

**2、Awr工作原理**

**1、调用awr脚本，awr脚本调用awrrpti**

awrrpti脚本调用

select output from table(dbms\_workload\_repository.

&fn\_name( :dbid,:inst\_num,:bid,:eid,:rpt\_options ));

1. **&fn\_name会根据用户输入选择调用AWR\_REPORT\_HTML或AWR\_REPORT\_TEXT**
2. **AWR\_REPORT\_HTML调用：**

DBMS\_SWRF\_REPORT\_INTERNAL.AWR\_REPORT\_MAIN(L\_DBID, L\_INST\_NUM, L\_BID, L\_EID, L\_OPTIONS, DBMS\_SWRF\_REPORT\_INTERNAL.TRUE\_I);

1. **AWR\_REPORT\_MAIN核心操作说明：**

----此存储过程会把报表需要的数据生成到

----prt\_stats,rpt\_params,prt\_time\_vals三个数据定义表中

REPORT\_INIT(L\_DBID, L\_INST\_NUM, L\_BID, L\_EID, RPT\_STATS, RPT\_PARAMS,

RPT\_TIME\_VALS);

----生成awr Main Report 之前的报表

REPORT\_SUMMARY(L\_DBID, L\_INST\_NUM,

L\_BID, L\_EID, L\_OPTIONS, TO\_HTML, FALSE\_I);

----生成剩下的报表

DISPLAY\_SUBTREES\_OF(MAIN\_REPT, TO\_HTML, L\_OPTIONS, L\_DBID,

L\_INST\_NUM, L\_BID, L\_EID);

1. **相关源代码会在附件中：**

《PACKAGE dbms\_workload\_repository.txt》

《PACKAGE BODY dbms\_workload\_repository.txt》

《PACKAGE dbms\_swrf\_report\_interna.txt》

《package body dbms\_swrf\_report\_internal.txt》

《awr大致分析过程.txt》 ---此文档为分析文档

《REPORT\_INIT.txt》 ---此文档为分析文档

**3、分析出来对应的SQL语句（语句排列顺序跟AWR报表显示顺序一致）**

---- DB Name DB Id Instance Inst num Release RAC Host

**SELECT** DB\_NAME,  
 &dbid,  
 INSTANCE\_NAME,  
 &inst\_num,  
 VERSION,  
 **PARALLEL**,  
 HOST\_NAME  
 **FROM** DBA\_HIST\_DATABASE\_INSTANCE DI, DBA\_HIST\_SNAPSHOT S  
 **WHERE** S.SNAP\_ID = &beg\_snap  
 **AND** S.DBID = &DBID  
 **AND** S.INSTANCE\_NUMBER = &INST\_NUM  
 **AND** DI.DBID = S.DBID  
 **AND** DI.INSTANCE\_NUMBER = S.INSTANCE\_NUMBER  
 **AND** DI.STARTUP\_TIME = S.STARTUP\_TIME;

---- Begin Snap: Snap Time

**SELECT** END\_INTERVAL\_TIME  
 **FROM** DBA\_HIST\_SNAPSHOT B  
 **WHERE** B.SNAP\_ID = &beg\_snap  
 **AND** B.DBID = &DBID  
 **AND** B.INSTANCE\_NUMBER = &INST\_NUM;

---- Begin Snap: Sessions

**SELECT** **VALUE**  
 **FROM** DBA\_HIST\_SYSSTAT  
 **WHERE** SNAP\_ID = &beg\_snap  
 **AND** DBID = &DBID  
 **AND** INSTANCE\_NUMBER = &INST\_NUM  
 **AND** STAT\_NAME = 'logons current';

---- Begin Snap: Cursors/Session

**select** a.**value** / b.**value**  
 **from** (**SELECT** **VALUE**  
 **FROM** DBA\_HIST\_SYSSTAT  
 **WHERE** SNAP\_ID = &beg\_snap  
 **AND** DBID = &DBID  
 **AND** INSTANCE\_NUMBER = &INST\_NUM  
 **AND** STAT\_NAME = 'opened cursors current') a,  
 (**SELECT** **VALUE**  
 **FROM** DBA\_HIST\_SYSSTAT  
 **WHERE** SNAP\_ID = &beg\_snap  
 **AND** DBID = &DBID  
 **AND** INSTANCE\_NUMBER = &INST\_NUM  
 **AND** STAT\_NAME = 'logons current') b;

---- end Snap: Snap Time

**SELECT** END\_INTERVAL\_TIME  
 **FROM** DBA\_HIST\_SNAPSHOT B  
 **WHERE** B.SNAP\_ID = &end\_snap  
 **AND** B.DBID = &DBID  
 **AND** B.INSTANCE\_NUMBER = &INST\_NUM;

---- end Snap: Sessions

**SELECT** **VALUE**  
 **FROM** DBA\_HIST\_SYSSTAT  
 **WHERE** SNAP\_ID = &end\_snap  
 **AND** DBID = &DBID  
 **AND** INSTANCE\_NUMBER = &INST\_NUM  
 **AND** STAT\_NAME = 'logons current';

---- end Snap: Cursors/Session

**select** a.**value** / b.**value**  
 **from** (**SELECT** **VALUE**  
 **FROM** DBA\_HIST\_SYSSTAT  
 **WHERE** SNAP\_ID = &end\_snap  
 **AND** DBID = &DBID  
 **AND** INSTANCE\_NUMBER = &INST\_NUM  
 **AND** STAT\_NAME = 'opened cursors current') a,  
 (**SELECT** **VALUE**  
 **FROM** DBA\_HIST\_SYSSTAT  
 **WHERE** SNAP\_ID = &end\_snap  
 **AND** DBID = &DBID  
 **AND** INSTANCE\_NUMBER = &INST\_NUM  
 **AND** STAT\_NAME = 'logons current') b;

---- Elapsed:

**SELECT** EXTRACT(**DAY** **FROM** E.END\_INTERVAL\_TIME - B.END\_INTERVAL\_TIME) \* 1440 +  
 EXTRACT(HOUR **FROM** E.END\_INTERVAL\_TIME - B.END\_INTERVAL\_TIME) \* 60 +  
 EXTRACT(MINUTE **FROM** E.END\_INTERVAL\_TIME - B.END\_INTERVAL\_TIME) +  
 EXTRACT(**SECOND** **FROM** E.END\_INTERVAL\_TIME - B.END\_INTERVAL\_TIME) / 60  
 **FROM** DBA\_HIST\_SNAPSHOT B, DBA\_HIST\_SNAPSHOT E  
 **WHERE** B.SNAP\_ID = &beg\_snap  
 **AND** E.SNAP\_ID = &end\_snap  
 **AND** B.DBID = &DBID  
 **AND** E.DBID = &DBID  
 **AND** B.INSTANCE\_NUMBER = &INST\_NUM  
 **AND** E.INSTANCE\_NUMBER = &INST\_NUM  
 **AND** B.STARTUP\_TIME = E.STARTUP\_TIME  
 **AND** B.END\_INTERVAL\_TIME < E.END\_INTERVAL\_TIME;

---- DB Time:

**SELECT** (**sum**(e.**value**) - **sum**(b.**value**)) / 1000000 / 60  
 **FROM** DBA\_HIST\_SYS\_TIME\_MODEL e, DBA\_HIST\_SYS\_TIME\_MODEL b  
 **WHERE** e.SNAP\_ID = &end\_snap  
 **AND** e.DBID = &DBID  
 **AND** e.INSTANCE\_NUMBER = &INST\_NUM  
 **AND** e.STAT\_NAME = 'DB time'  
 **and** b.SNAP\_ID = &beg\_snap  
 **AND** b.DBID = &DBID  
 **AND** b.INSTANCE\_NUMBER = &INST\_NUM  
 **AND** b.STAT\_NAME = 'DB time';

---- buffer cache: begin end

**SELECT** e.**value** / 1024 / 1024, b.**value** / 1024 / 1024  
 **FROM** DBA\_HIST\_PARAMETER e, DBA\_HIST\_PARAMETER b  
 **WHERE** e.SNAP\_ID = &end\_snap  
 **AND** e.DBID = &DBID  
 **AND** e.INSTANCE\_NUMBER = &INST\_NUM  
 **AND** e.PARAMETER\_NAME = '\_\_db\_cache\_size'  
 **and** b.SNAP\_ID = &beg\_snap  
 **AND** b.DBID = &DBID  
 **AND** b.INSTANCE\_NUMBER = &INST\_NUM  
 **AND** b.PARAMETER\_NAME = '\_\_db\_cache\_size';

---- shared pool size: begin end

**SELECT** e.**value** / 1024 / 1024 ||'M', b.**value** / 1024 / 1024 ||'M'  
 **FROM** DBA\_HIST\_PARAMETER e, DBA\_HIST\_PARAMETER b  
 **WHERE** e.SNAP\_ID = &end\_snap  
 **AND** e.DBID = &DBID  
 **AND** e.INSTANCE\_NUMBER = &INST\_NUM  
 **AND** e.PARAMETER\_NAME = '\_\_shared\_pool\_size'  
 **and** b.SNAP\_ID = &beg\_snap  
 **AND** b.DBID = &DBID  
 **AND** b.INSTANCE\_NUMBER = &INST\_NUM  
 **AND** b.PARAMETER\_NAME = '\_\_shared\_pool\_size';

---- std block size:

**SELECT** b.**value** / 1024 ||'k'  
 **FROM** DBA\_HIST\_PARAMETER b  
 **WHERE** b.SNAP\_ID = &beg\_snap  
 **AND** b.DBID = &DBID  
 **AND** b.INSTANCE\_NUMBER = &INST\_NUM  
 **AND** b.PARAMETER\_NAME = 'db\_block\_size';

---- log buffer:

**SELECT** b.**value** / 1024 ||'k'  
 **FROM** DBA\_HIST\_PARAMETER b  
 **WHERE** b.SNAP\_ID = &beg\_snap  
 **AND** b.DBID = &DBID  
 **AND** b.INSTANCE\_NUMBER = &INST\_NUM  
 **AND** b.PARAMETER\_NAME = 'log\_buffer';

----redo size per second :

**select** round((**SELECT** **sum**(e.**value**) - **sum**(b.**value**)  
 **FROM** DBA\_HIST\_SYSSTAT e, DBA\_HIST\_SYSSTAT b  
 **WHERE** e.SNAP\_ID = &end\_snap  
 **AND** e.DBID = &DBID  
 **AND** e.INSTANCE\_NUMBER = &INST\_NUM  
 **AND** e.STAT\_NAME = 'redo size'  
 **and** b.SNAP\_ID = &beg\_snap  
 **AND** b.DBID = &DBID  
 **AND** b.INSTANCE\_NUMBER = &INST\_NUM  
 **AND** b.STAT\_NAME = 'redo size') /  
 (**SELECT** EXTRACT(**DAY** **FROM**  
 E.END\_INTERVAL\_TIME - B.END\_INTERVAL\_TIME) \*  
 86400 + EXTRACT(HOUR **FROM** E.END\_INTERVAL\_TIME -  
 B.END\_INTERVAL\_TIME) \* 3600 +  
 EXTRACT(MINUTE **FROM**  
 E.END\_INTERVAL\_TIME - B.END\_INTERVAL\_TIME) \* 60 +  
 EXTRACT(**SECOND** **FROM**  
 E.END\_INTERVAL\_TIME - B.END\_INTERVAL\_TIME)  
 **FROM** DBA\_HIST\_SNAPSHOT B, DBA\_HIST\_SNAPSHOT E  
 **where** e.snap\_id = &end\_snap  
 **and** b.snap\_id = &beg\_snap  
 **AND** b.DBID = &DBID  
 **AND** b.INSTANCE\_NUMBER = &INST\_NUM  
 **AND** e.DBID = &DBID  
 **AND** e.INSTANCE\_NUMBER = &INST\_NUM),  
 2)  
 **from** dual;

----redo size per transaction

**select** round(((**SELECT** **sum**(**value**)  
 **FROM** DBA\_HIST\_SYSSTAT e  
 **WHERE** e.SNAP\_ID = &end\_snap  
 **AND** e.DBID = &DBID  
 **AND** e.INSTANCE\_NUMBER = &INST\_NUM  
 **AND** e.STAT\_NAME **in** ('redo size')) -  
 (**SELECT** **sum**(**value**)  
 **FROM** DBA\_HIST\_SYSSTAT b  
 **WHERE** b.SNAP\_ID = &beg\_snap  
 **AND** b.DBID = &DBID  
 **AND** b.INSTANCE\_NUMBER = &INST\_NUM  
 **AND** b.STAT\_NAME **in** ('redo size'))) /  
 ((**SELECT** **sum**(**value**)  
 **FROM** DBA\_HIST\_SYSSTAT e  
 **WHERE** e.SNAP\_ID = &end\_snap  
 **AND** e.DBID = &DBID  
 **AND** e.INSTANCE\_NUMBER = &INST\_NUM  
 **AND** e.STAT\_NAME **in** ('user rollbacks', 'user commits')) -  
 (**SELECT** **sum**(**value**)  
 **FROM** DBA\_HIST\_SYSSTAT b  
 **WHERE** b.SNAP\_ID = &beg\_snap  
 **AND** b.DBID = &DBID  
 **AND** b.INSTANCE\_NUMBER = &INST\_NUM  
 **AND** b.STAT\_NAME **in** ('user rollbacks', 'user commits'))),  
 2)  
 **from** dual;

*---- Logical reads: per second*

**select** round(((**SELECT** **sum**(**value**)  
 **FROM** DBA\_HIST\_SYSSTAT e  
 **WHERE** e.SNAP\_ID = &end\_snap  
 **AND** e.DBID = &L\_DBID  
 **AND** e.INSTANCE\_NUMBER = &L\_INST\_NUM  
 **AND** e.STAT\_NAME **in** ('session logical reads')) -  
 (**SELECT** **sum**(**value**)  
 **FROM** DBA\_HIST\_SYSSTAT b  
 **WHERE** b.SNAP\_ID = &beg\_snap  
 **AND** b.DBID = &L\_DBID  
 **AND** b.INSTANCE\_NUMBER = &L\_INST\_NUM  
 **AND** b.STAT\_NAME **in** ('session logical reads'))) /  
 (**SELECT** EXTRACT(**DAY** **FROM**  
 E.END\_INTERVAL\_TIME - B.END\_INTERVAL\_TIME) \*  
 86400 + EXTRACT(HOUR **FROM** E.END\_INTERVAL\_TIME -  
 B.END\_INTERVAL\_TIME) \* 3600 +  
 EXTRACT(MINUTE **FROM**  
 E.END\_INTERVAL\_TIME - B.END\_INTERVAL\_TIME) \* 60 +  
 EXTRACT(**SECOND** **FROM**  
 E.END\_INTERVAL\_TIME - B.END\_INTERVAL\_TIME)  
 **FROM** DBA\_HIST\_SNAPSHOT B, DBA\_HIST\_SNAPSHOT E  
 **where** e.snap\_id = &end\_snap  
 **and** b.snap\_id = &beg\_snap  
 **AND** b.DBID = &L\_DBID  
 **AND** b.INSTANCE\_NUMBER = &L\_INST\_NUM  
 **AND** e.DBID = &L\_DBID  
 **AND** e.INSTANCE\_NUMBER = &L\_INST\_NUM),  
 2)  
 **from** dual;

*---- Logical reads: per transaction*

**select** round(((**SELECT** **sum**(**value**)  
 **FROM** DBA\_HIST\_SYSSTAT e  
 **WHERE** e.SNAP\_ID = &end\_snap  
 **AND** e.DBID = &L\_DBID  
 **AND** e.INSTANCE\_NUMBER = &L\_INST\_NUM  
 **AND** e.STAT\_NAME **in** ('redo size')) -  
 (**SELECT** **sum**(**value**)  
 **FROM** DBA\_HIST\_SYSSTAT b  
 **WHERE** b.SNAP\_ID = &beg\_snap  
 **AND** b.DBID = &L\_DBID  
 **AND** b.INSTANCE\_NUMBER = &L\_INST\_NUM  
 **AND** b.STAT\_NAME **in** ('redo size'))) /  
 ((**SELECT** **sum**(**value**)  
 **FROM** DBA\_HIST\_SYSSTAT e  
 **WHERE** e.SNAP\_ID = &end\_snap  
 **AND** e.DBID = &L\_DBID  
 **AND** e.INSTANCE\_NUMBER = &L\_INST\_NUM  
 **AND** e.STAT\_NAME **in** ('user rollbacks', 'user commits')) -  
 (**SELECT** **sum**(**value**)  
 **FROM** DBA\_HIST\_SYSSTAT b  
 **WHERE** b.SNAP\_ID = &beg\_snap  
 **AND** b.DBID = &L\_DBID  
 **AND** b.INSTANCE\_NUMBER = &L\_INST\_NUM  
 **AND** b.STAT\_NAME **in** ('user rollbacks', 'user commits'))),  
 2)  
 **from** dual;

*---- Block changes: per second*  
**select** round(((**SELECT** **sum**(**value**)  
 **FROM** DBA\_HIST\_SYSSTAT e  
 **WHERE** e.SNAP\_ID = &end\_snap  
 **AND** e.DBID = &L\_DBID  
 **AND** e.INSTANCE\_NUMBER = &L\_INST\_NUM  
 **AND** e.STAT\_NAME **in** ('db block changes')) -  
 (**SELECT** **sum**(**value**)  
 **FROM** DBA\_HIST\_SYSSTAT b  
 **WHERE** b.SNAP\_ID = &beg\_snap  
 **AND** b.DBID = &L\_DBID  
 **AND** b.INSTANCE\_NUMBER = &L\_INST\_NUM  
 **AND** b.STAT\_NAME **in** ('db block changes'))) /  
 (**SELECT** EXTRACT(**DAY** **FROM**  
 E.END\_INTERVAL\_TIME - B.END\_INTERVAL\_TIME) \*  
 86400 + EXTRACT(HOUR **FROM** E.END\_INTERVAL\_TIME -  
 B.END\_INTERVAL\_TIME) \* 3600 +  
 EXTRACT(MINUTE **FROM**  
 E.END\_INTERVAL\_TIME - B.END\_INTERVAL\_TIME) \* 60 +  
 EXTRACT(**SECOND** **FROM**  
 E.END\_INTERVAL\_TIME - B.END\_INTERVAL\_TIME)  
 **FROM** DBA\_HIST\_SNAPSHOT B, DBA\_HIST\_SNAPSHOT E  
 **where** e.snap\_id = &end\_snap  
 **and** b.snap\_id = &beg\_snap  
 **AND** b.DBID = &L\_DBID  
 **AND** b.INSTANCE\_NUMBER = &L\_INST\_NUM  
 **AND** e.DBID = &L\_DBID  
 **AND** e.INSTANCE\_NUMBER = &L\_INST\_NUM),  
 2)  
 **from** dual;

*---- Block changes: per transaction*

**select** round(((**SELECT** **sum**(**value**)  
 **FROM** DBA\_HIST\_SYSSTAT e  
 **WHERE** e.SNAP\_ID = &end\_snap  
 **AND** e.DBID = &L\_DBID  
 **AND** e.INSTANCE\_NUMBER = &L\_INST\_NUM  
 **AND** e.STAT\_NAME **in** ('db block changes')) -  
 (**SELECT** **sum**(**value**)  
 **FROM** DBA\_HIST\_SYSSTAT b  
 **WHERE** b.SNAP\_ID = &beg\_snap  
 **AND** b.DBID = &L\_DBID  
 **AND** b.INSTANCE\_NUMBER = &L\_INST\_NUM  
 **AND** b.STAT\_NAME **in** ('db block changes'))) /  
 ((**SELECT** **sum**(**value**)  
 **FROM** DBA\_HIST\_SYSSTAT e  
 **WHERE** e.SNAP\_ID = &end\_snap  
 **AND** e.DBID = &L\_DBID  
 **AND** e.INSTANCE\_NUMBER = &L\_INST\_NUM  
 **AND** e.STAT\_NAME **in** ('user rollbacks', 'user commits')) -  
 (**SELECT** **sum**(**value**)  
 **FROM** DBA\_HIST\_SYSSTAT b  
 **WHERE** b.SNAP\_ID = &beg\_snap  
 **AND** b.DBID = &L\_DBID  
 **AND** b.INSTANCE\_NUMBER = &L\_INST\_NUM  
 **AND** b.STAT\_NAME **in** ('user rollbacks', 'user commits'))),  
 2)  
 **from** dual;

*---- Physical reads: per second*

**select** round(((**SELECT** **sum**(**value**)  
 **FROM** DBA\_HIST\_SYSSTAT e  
 **WHERE** e.SNAP\_ID = &end\_snap  
 **AND** e.DBID = &L\_DBID  
 **AND** e.INSTANCE\_NUMBER = &L\_INST\_NUM  
 **AND** e.STAT\_NAME **in** ('physical reads')) -  
 (**SELECT** **sum**(**value**)  
 **FROM** DBA\_HIST\_SYSSTAT b  
 **WHERE** b.SNAP\_ID = &beg\_snap  
 **AND** b.DBID = &L\_DBID  
 **AND** b.INSTANCE\_NUMBER = &L\_INST\_NUM  
 **AND** b.STAT\_NAME **in** ('physical reads'))) /  
 (**SELECT** EXTRACT(**DAY** **FROM**  
 E.END\_INTERVAL\_TIME - B.END\_INTERVAL\_TIME) \*  
 86400 + EXTRACT(HOUR **FROM** E.END\_INTERVAL\_TIME -  
 B.END\_INTERVAL\_TIME) \* 3600 +  
 EXTRACT(MINUTE **FROM**  
 E.END\_INTERVAL\_TIME - B.END\_INTERVAL\_TIME) \* 60 +  
 EXTRACT(**SECOND** **FROM**  
 E.END\_INTERVAL\_TIME - B.END\_INTERVAL\_TIME)  
 **FROM** DBA\_HIST\_SNAPSHOT B, DBA\_HIST\_SNAPSHOT E  
 **where** e.snap\_id = &end\_snap  
 **and** b.snap\_id = &beg\_snap  
 **AND** b.DBID = &L\_DBID  
 **AND** b.INSTANCE\_NUMBER = &L\_INST\_NUM  
 **AND** e.DBID = &L\_DBID  
 **AND** e.INSTANCE\_NUMBER = &L\_INST\_NUM),  
 2)  
 **from** dual;

*---- Physical reads: per transaction*

**select** round(((**SELECT** **sum**(**value**)  
 **FROM** DBA\_HIST\_SYSSTAT e  
 **WHERE** e.SNAP\_ID = &end\_snap  
 **AND** e.DBID = &L\_DBID  
 **AND** e.INSTANCE\_NUMBER = &L\_INST\_NUM  
 **AND** e.STAT\_NAME **in** ('physical reads')) -  
 (**SELECT** **sum**(**value**)  
 **FROM** DBA\_HIST\_SYSSTAT b  
 **WHERE** b.SNAP\_ID = &beg\_snap  
 **AND** b.DBID = &L\_DBID  
 **AND** b.INSTANCE\_NUMBER = &L\_INST\_NUM  
 **AND** b.STAT\_NAME **in** ('physical reads'))) /  
 ((**SELECT** **sum**(**value**)  
 **FROM** DBA\_HIST\_SYSSTAT e  
 **WHERE** e.SNAP\_ID = &end\_snap  
 **AND** e.DBID = &L\_DBID  
 **AND** e.INSTANCE\_NUMBER = &L\_INST\_NUM  
 **AND** e.STAT\_NAME **in** ('user rollbacks', 'user commits')) -  
 (**SELECT** **sum**(**value**)  
 **FROM** DBA\_HIST\_SYSSTAT b  
 **WHERE** b.SNAP\_ID = &beg\_snap  
 **AND** b.DBID = &L\_DBID  
 **AND** b.INSTANCE\_NUMBER = &L\_INST\_NUM  
 **AND** b.STAT\_NAME **in** ('user rollbacks', 'user commits'))),  
 2)  
 **from** dual;

*---- Physical* writes*: per second*

**select** round(((**SELECT** **sum**(**value**)  
 **FROM** DBA\_HIST\_SYSSTAT e  
 **WHERE** e.SNAP\_ID = &end\_snap  
 **AND** e.DBID = &L\_DBID  
 **AND** e.INSTANCE\_NUMBER = &L\_INST\_NUM  
 **AND** e.STAT\_NAME **in** ('physical writes')) -  
 (**SELECT** **sum**(**value**)  
 **FROM** DBA\_HIST\_SYSSTAT b  
 **WHERE** b.SNAP\_ID = &beg\_snap  
 **AND** b.DBID = &L\_DBID  
 **AND** b.INSTANCE\_NUMBER = &L\_INST\_NUM  
 **AND** b.STAT\_NAME **in** ('physical writes'))) /  
 (**SELECT** EXTRACT(**DAY** **FROM**  
 E.END\_INTERVAL\_TIME - B.END\_INTERVAL\_TIME) \*  
 86400 + EXTRACT(HOUR **FROM** E.END\_INTERVAL\_TIME -  
 B.END\_INTERVAL\_TIME) \* 3600 +  
 EXTRACT(MINUTE **FROM**  
 E.END\_INTERVAL\_TIME - B.END\_INTERVAL\_TIME) \* 60 +  
 EXTRACT(**SECOND** **FROM**  
 E.END\_INTERVAL\_TIME - B.END\_INTERVAL\_TIME)  
 **FROM** DBA\_HIST\_SNAPSHOT B, DBA\_HIST\_SNAPSHOT E  
 **where** e.snap\_id = &end\_snap  
 **and** b.snap\_id = &beg\_snap  
 **AND** b.DBID = &L\_DBID  
 **AND** b.INSTANCE\_NUMBER = &L\_INST\_NUM  
 **AND** e.DBID = &L\_DBID  
 **AND** e.INSTANCE\_NUMBER = &L\_INST\_NUM),  
 2)  
 **from** dual;

*---- Physical* writes*: per transaction*

**select** round(((**SELECT** **sum**(**value**)  
 **FROM** DBA\_HIST\_SYSSTAT e  
 **WHERE** e.SNAP\_ID = &end\_snap  
 **AND** e.DBID = &L\_DBID  
 **AND** e.INSTANCE\_NUMBER = &L\_INST\_NUM  
 **AND** e.STAT\_NAME **in** ('physical writes')) -  
 (**SELECT** **sum**(**value**)  
 **FROM** DBA\_HIST\_SYSSTAT b  
 **WHERE** b.SNAP\_ID = &beg\_snap  
 **AND** b.DBID = &L\_DBID  
 **AND** b.INSTANCE\_NUMBER = &L\_INST\_NUM  
 **AND** b.STAT\_NAME **in** ('physical writes'))) /  
 ((**SELECT** **sum**(**value**)  
 **FROM** DBA\_HIST\_SYSSTAT e  
 **WHERE** e.SNAP\_ID = &end\_snap  
 **AND** e.DBID = &L\_DBID  
 **AND** e.INSTANCE\_NUMBER = &L\_INST\_NUM  
 **AND** e.STAT\_NAME **in** ('user rollbacks', 'user commits')) -  
 (**SELECT** **sum**(**value**)  
 **FROM** DBA\_HIST\_SYSSTAT b  
 **WHERE** b.SNAP\_ID = &beg\_snap  
 **AND** b.DBID = &L\_DBID  
 **AND** b.INSTANCE\_NUMBER = &L\_INST\_NUM  
 **AND** b.STAT\_NAME **in** ('user rollbacks', 'user commits'))),  
 2)  
 **from** dual;

*---- User calls: per second*

**select** round(((**SELECT** **sum**(**value**)  
 **FROM** DBA\_HIST\_SYSSTAT e  
 **WHERE** e.SNAP\_ID = &end\_snap  
 **AND** e.DBID = &L\_DBID  
 **AND** e.INSTANCE\_NUMBER = &L\_INST\_NUM  
 **AND** e.STAT\_NAME **in** ('user calls')) -  
 (**SELECT** **sum**(**value**)  
 **FROM** DBA\_HIST\_SYSSTAT b  
 **WHERE** b.SNAP\_ID = &beg\_snap  
 **AND** b.DBID = &L\_DBID  
 **AND** b.INSTANCE\_NUMBER = &L\_INST\_NUM  
 **AND** b.STAT\_NAME **in** ('user calls'))) /  
 (**SELECT** EXTRACT(**DAY** **FROM**  
 E.END\_INTERVAL\_TIME - B.END\_INTERVAL\_TIME) \*  
 86400 + EXTRACT(HOUR **FROM** E.END\_INTERVAL\_TIME -  
 B.END\_INTERVAL\_TIME) \* 3600 +  
 EXTRACT(MINUTE **FROM**  
 E.END\_INTERVAL\_TIME - B.END\_INTERVAL\_TIME) \* 60 +  
 EXTRACT(**SECOND** **FROM**  
 E.END\_INTERVAL\_TIME - B.END\_INTERVAL\_TIME)  
 **FROM** DBA\_HIST\_SNAPSHOT B, DBA\_HIST\_SNAPSHOT E  
 **where** e.snap\_id = &end\_snap  
 **and** b.snap\_id = &beg\_snap  
 **AND** b.DBID = &L\_DBID  
 **AND** b.INSTANCE\_NUMBER = &L\_INST\_NUM  
 **AND** e.DBID = &L\_DBID  
 **AND** e.INSTANCE\_NUMBER = &L\_INST\_NUM),  
 2)  
 **from** dual;

*---- User calls: per transaction*

**select** round(((**SELECT** **sum**(**value**)  
 **FROM** DBA\_HIST\_SYSSTAT e  
 **WHERE** e.SNAP\_ID = &end\_snap  
 **AND** e.DBID = &L\_DBID  
 **AND** e.INSTANCE\_NUMBER = &L\_INST\_NUM  
 **AND** e.STAT\_NAME **in** ('user calls')) -  
 (**SELECT** **sum**(**value**)  
 **FROM** DBA\_HIST\_SYSSTAT b  
 **WHERE** b.SNAP\_ID = &beg\_snap  
 **AND** b.DBID = &L\_DBID  
 **AND** b.INSTANCE\_NUMBER = &L\_INST\_NUM  
 **AND** b.STAT\_NAME **in** ('user calls'))) /  
 ((**SELECT** **sum**(**value**)  
 **FROM** DBA\_HIST\_SYSSTAT e  
 **WHERE** e.SNAP\_ID = &end\_snap  
 **AND** e.DBID = &L\_DBID  
 **AND** e.INSTANCE\_NUMBER = &L\_INST\_NUM  
 **AND** e.STAT\_NAME **in** ('user rollbacks', 'user commits')) -  
 (**SELECT** **sum**(**value**)  
 **FROM** DBA\_HIST\_SYSSTAT b  
 **WHERE** b.SNAP\_ID = &beg\_snap  
 **AND** b.DBID = &L\_DBID  
 **AND** b.INSTANCE\_NUMBER = &L\_INST\_NUM  
 **AND** b.STAT\_NAME **in** ('user rollbacks', 'user commits'))),  
 2)  
 **from** dual;

*---- Parses: per second*

**select** round(((**SELECT** **sum**(**value**)  
 **FROM** DBA\_HIST\_SYSSTAT e  
 **WHERE** e.SNAP\_ID = &end\_snap  
 **AND** e.DBID = &L\_DBID  
 **AND** e.INSTANCE\_NUMBER = &L\_INST\_NUM  
 **AND** e.STAT\_NAME **in** ('parse count (total)')) -  
 (**SELECT** **sum**(**value**)  
 **FROM** DBA\_HIST\_SYSSTAT b  
 **WHERE** b.SNAP\_ID = &beg\_snap  
 **AND** b.DBID = &L\_DBID  
 **AND** b.INSTANCE\_NUMBER = &L\_INST\_NUM  
 **AND** b.STAT\_NAME **in** ('parse count (total)'))) /  
 (**SELECT** EXTRACT(**DAY** **FROM**  
 E.END\_INTERVAL\_TIME - B.END\_INTERVAL\_TIME) \*  
 86400 + EXTRACT(HOUR **FROM** E.END\_INTERVAL\_TIME -  
 B.END\_INTERVAL\_TIME) \* 3600 +  
 EXTRACT(MINUTE **FROM**  
 E.END\_INTERVAL\_TIME - B.END\_INTERVAL\_TIME) \* 60 +  
 EXTRACT(**SECOND** **FROM**  
 E.END\_INTERVAL\_TIME - B.END\_INTERVAL\_TIME)  
 **FROM** DBA\_HIST\_SNAPSHOT B, DBA\_HIST\_SNAPSHOT E  
 **where** e.snap\_id = &end\_snap  
 **and** b.snap\_id = &beg\_snap  
 **AND** b.DBID = &L\_DBID  
 **AND** b.INSTANCE\_NUMBER = &L\_INST\_NUM  
 **AND** e.DBID = &L\_DBID  
 **AND** e.INSTANCE\_NUMBER = &L\_INST\_NUM),  
 2)  
 **from** dual;

*---- Parses: per transaction*

**select** round(((**SELECT** **sum**(**value**)  
 **FROM** DBA\_HIST\_SYSSTAT e  
 **WHERE** e.SNAP\_ID = &end\_snap  
 **AND** e.DBID = &L\_DBID  
 **AND** e.INSTANCE\_NUMBER = &L\_INST\_NUM  
 **AND** e.STAT\_NAME **in** ('parse count (total)')) -  
 (**SELECT** **sum**(**value**)  
 **FROM** DBA\_HIST\_SYSSTAT b  
 **WHERE** b.SNAP\_ID = &beg\_snap  
 **AND** b.DBID = &L\_DBID  
 **AND** b.INSTANCE\_NUMBER = &L\_INST\_NUM  
 **AND** b.STAT\_NAME **in** ('parse count (total)'))) /  
 ((**SELECT** **sum**(**value**)  
 **FROM** DBA\_HIST\_SYSSTAT e  
 **WHERE** e.SNAP\_ID = &end\_snap  
 **AND** e.DBID = &L\_DBID  
 **AND** e.INSTANCE\_NUMBER = &L\_INST\_NUM  
 **AND** e.STAT\_NAME **in** ('user rollbacks', 'user commits')) -  
 (**SELECT** **sum**(**value**)  
 **FROM** DBA\_HIST\_SYSSTAT b  
 **WHERE** b.SNAP\_ID = &beg\_snap  
 **AND** b.DBID = &L\_DBID  
 **AND** b.INSTANCE\_NUMBER = &L\_INST\_NUM  
 **AND** b.STAT\_NAME **in** ('user rollbacks', 'user commits'))),  
 2)  
 **from** dual;

*---- Hard parses: per second*

**select** round(((**SELECT** **sum**(**value**)  
 **FROM** DBA\_HIST\_SYSSTAT e  
 **WHERE** e.SNAP\_ID = &end\_snap  
 **AND** e.DBID = &L\_DBID  
 **AND** e.INSTANCE\_NUMBER = &L\_INST\_NUM  
 **AND** e.STAT\_NAME **in** ('parse count (hard)')) -  
 (**SELECT** **sum**(**value**)  
 **FROM** DBA\_HIST\_SYSSTAT b  
 **WHERE** b.SNAP\_ID = &beg\_snap  
 **AND** b.DBID = &L\_DBID  
 **AND** b.INSTANCE\_NUMBER = &L\_INST\_NUM  
 **AND** b.STAT\_NAME **in** ('parse count (hard)'))) /  
 (**SELECT** EXTRACT(**DAY** **FROM**  
 E.END\_INTERVAL\_TIME - B.END\_INTERVAL\_TIME) \*  
 86400 + EXTRACT(HOUR **FROM** E.END\_INTERVAL\_TIME -  
 B.END\_INTERVAL\_TIME) \* 3600 +  
 EXTRACT(MINUTE **FROM**  
 E.END\_INTERVAL\_TIME - B.END\_INTERVAL\_TIME) \* 60 +  
 EXTRACT(**SECOND** **FROM**  
 E.END\_INTERVAL\_TIME - B.END\_INTERVAL\_TIME)  
 **FROM** DBA\_HIST\_SNAPSHOT B, DBA\_HIST\_SNAPSHOT E  
 **where** e.snap\_id = &end\_snap  
 **and** b.snap\_id = &beg\_snap  
 **AND** b.DBID = &L\_DBID  
 **AND** b.INSTANCE\_NUMBER = &L\_INST\_NUM  
 **AND** e.DBID = &L\_DBID  
 **AND** e.INSTANCE\_NUMBER = &L\_INST\_NUM),  
 2)  
 **from** dual;

*---- Hard Parses: per transaction*

**select** round(((**SELECT** **sum**(**value**)  
 **FROM** DBA\_HIST\_SYSSTAT e  
 **WHERE** e.SNAP\_ID = &end\_snap  
 **AND** e.DBID = &L\_DBID  
 **AND** e.INSTANCE\_NUMBER = &L\_INST\_NUM  
 **AND** e.STAT\_NAME **in** ('parse count (hard)')) -  
 (**SELECT** **sum**(**value**)  
 **FROM** DBA\_HIST\_SYSSTAT b  
 **WHERE** b.SNAP\_ID = &beg\_snap  
 **AND** b.DBID = &L\_DBID  
 **AND** b.INSTANCE\_NUMBER = &L\_INST\_NUM  
 **AND** b.STAT\_NAME **in** ('parse count (hard)'))) /  
 ((**SELECT** **sum**(**value**)  
 **FROM** DBA\_HIST\_SYSSTAT e  
 **WHERE** e.SNAP\_ID = &end\_snap  
 **AND** e.DBID = &L\_DBID  
 **AND** e.INSTANCE\_NUMBER = &L\_INST\_NUM  
 **AND** e.STAT\_NAME **in** ('user rollbacks', 'user commits')) -  
 (**SELECT** **sum**(**value**)  
 **FROM** DBA\_HIST\_SYSSTAT b  
 **WHERE** b.SNAP\_ID = &beg\_snap  
 **AND** b.DBID = &L\_DBID  
 **AND** b.INSTANCE\_NUMBER = &L\_INST\_NUM  
 **AND** b.STAT\_NAME **in** ('user rollbacks', 'user commits'))),  
 2)  
 **from** dual;

*---- Sorts: per second*

**select** round(((**SELECT** **sum**(**value**)  
 **FROM** DBA\_HIST\_SYSSTAT e  
 **WHERE** e.SNAP\_ID = &end\_snap  
 **AND** e.DBID = &L\_DBID  
 **AND** e.INSTANCE\_NUMBER = &L\_INST\_NUM  
 **AND** e.STAT\_NAME **in** ('sorts (disk)')) -  
 (**SELECT** **sum**(**value**)  
 **FROM** DBA\_HIST\_SYSSTAT b  
 **WHERE** b.SNAP\_ID = &beg\_snap  
 **AND** b.DBID = &L\_DBID  
 **AND** b.INSTANCE\_NUMBER = &L\_INST\_NUM  
 **AND** b.STAT\_NAME **in** ('sorts (disk)'))) /  
 (**SELECT** EXTRACT(**DAY** **FROM**  
 E.END\_INTERVAL\_TIME - B.END\_INTERVAL\_TIME) \*  
 86400 + EXTRACT(HOUR **FROM** E.END\_INTERVAL\_TIME -  
 B.END\_INTERVAL\_TIME) \* 3600 +  
 EXTRACT(MINUTE **FROM**  
 E.END\_INTERVAL\_TIME - B.END\_INTERVAL\_TIME) \* 60 +  
 EXTRACT(**SECOND** **FROM**  
 E.END\_INTERVAL\_TIME - B.END\_INTERVAL\_TIME)  
 **FROM** DBA\_HIST\_SNAPSHOT B, DBA\_HIST\_SNAPSHOT E  
 **where** e.snap\_id = &end\_snap  
 **and** b.snap\_id = &beg\_snap  
 **AND** b.DBID = &L\_DBID  
 **AND** b.INSTANCE\_NUMBER = &L\_INST\_NUM  
 **AND** e.DBID = &L\_DBID  
 **AND** e.INSTANCE\_NUMBER = &L\_INST\_NUM),  
 2)  
 **from** dual;

*---- Sorts: per transaction*

**select** round(((**SELECT** **sum**(**value**)  
 **FROM** DBA\_HIST\_SYSSTAT e  
 **WHERE** e.SNAP\_ID = &end\_snap  
 **AND** e.DBID = &L\_DBID  
 **AND** e.INSTANCE\_NUMBER = &L\_INST\_NUM  
 **AND** e.STAT\_NAME **in** ('sorts (disk)')) -  
 (**SELECT** **sum**(**value**)  
 **FROM** DBA\_HIST\_SYSSTAT b  
 **WHERE** b.SNAP\_ID = &beg\_snap  
 **AND** b.DBID = &L\_DBID  
 **AND** b.INSTANCE\_NUMBER = &L\_INST\_NUM  
 **AND** b.STAT\_NAME **in** ('sorts (disk)'))) /  
 ((**SELECT** **sum**(**value**)  
 **FROM** DBA\_HIST\_SYSSTAT e  
 **WHERE** e.SNAP\_ID = &end\_snap  
 **AND** e.DBID = &L\_DBID  
 **AND** e.INSTANCE\_NUMBER = &L\_INST\_NUM  
 **AND** e.STAT\_NAME **in** ('user rollbacks', 'user commits')) -  
 (**SELECT** **sum**(**value**)  
 **FROM** DBA\_HIST\_SYSSTAT b  
 **WHERE** b.SNAP\_ID = &beg\_snap  
 **AND** b.DBID = &L\_DBID  
 **AND** b.INSTANCE\_NUMBER = &L\_INST\_NUM  
 **AND** b.STAT\_NAME **in** ('user rollbacks', 'user commits'))),  
 2)  
 **from** dual;

*---- Logons: per second*

**select** round(((**SELECT** **sum**(**value**)  
 **FROM** DBA\_HIST\_SYSSTAT e  
 **WHERE** e.SNAP\_ID = &end\_snap  
 **AND** e.DBID = &L\_DBID  
 **AND** e.INSTANCE\_NUMBER = &L\_INST\_NUM  
 **AND** e.STAT\_NAME **in** ('logons cumulative')) -  
 (**SELECT** **sum**(**value**)  
 **FROM** DBA\_HIST\_SYSSTAT b  
 **WHERE** b.SNAP\_ID = &beg\_snap  
 **AND** b.DBID = &L\_DBID  
 **AND** b.INSTANCE\_NUMBER = &L\_INST\_NUM  
 **AND** b.STAT\_NAME **in** ('logons cumulative'))) /  
 (**SELECT** EXTRACT(**DAY** **FROM**  
 E.END\_INTERVAL\_TIME - B.END\_INTERVAL\_TIME) \*  
 86400 + EXTRACT(HOUR **FROM** E.END\_INTERVAL\_TIME -  
 B.END\_INTERVAL\_TIME) \* 3600 +  
 EXTRACT(MINUTE **FROM**  
 E.END\_INTERVAL\_TIME - B.END\_INTERVAL\_TIME) \* 60 +  
 EXTRACT(**SECOND** **FROM**  
 E.END\_INTERVAL\_TIME - B.END\_INTERVAL\_TIME)  
 **FROM** DBA\_HIST\_SNAPSHOT B, DBA\_HIST\_SNAPSHOT E  
 **where** e.snap\_id = &end\_snap  
 **and** b.snap\_id = &beg\_snap  
 **AND** b.DBID = &L\_DBID  
 **AND** b.INSTANCE\_NUMBER = &L\_INST\_NUM  
 **AND** e.DBID = &L\_DBID  
 **AND** e.INSTANCE\_NUMBER = &L\_INST\_NUM),  
 2)  
 **from** dual;

*---- Logons: per transaction*

**select** round(((**SELECT** **sum**(**value**)  
 **FROM** DBA\_HIST\_SYSSTAT e  
 **WHERE** e.SNAP\_ID = &end\_snap  
 **AND** e.DBID = &L\_DBID  
 **AND** e.INSTANCE\_NUMBER = &L\_INST\_NUM  
 **AND** e.STAT\_NAME **in** ('logons cumulative')) -  
 (**SELECT** **sum**(**value**)  
 **FROM** DBA\_HIST\_SYSSTAT b  
 **WHERE** b.SNAP\_ID = &beg\_snap  
 **AND** b.DBID = &L\_DBID  
 **AND** b.INSTANCE\_NUMBER = &L\_INST\_NUM  
 **AND** b.STAT\_NAME **in** ('logons cumulative'))) /  
 ((**SELECT** **sum**(**value**)  
 **FROM** DBA\_HIST\_SYSSTAT e  
 **WHERE** e.SNAP\_ID = &end\_snap  
 **AND** e.DBID = &L\_DBID  
 **AND** e.INSTANCE\_NUMBER = &L\_INST\_NUM  
 **AND** e.STAT\_NAME **in** ('user rollbacks', 'user commits')) -  
 (**SELECT** **sum**(**value**)  
 **FROM** DBA\_HIST\_SYSSTAT b  
 **WHERE** b.SNAP\_ID = &beg\_snap  
 **AND** b.DBID = &L\_DBID  
 **AND** b.INSTANCE\_NUMBER = &L\_INST\_NUM  
 **AND** b.STAT\_NAME **in** ('user rollbacks', 'user commits'))),  
 2)  
 **from** dual;

*---- Executes: per second*

**select** round(((**SELECT** **sum**(**value**)  
 **FROM** DBA\_HIST\_SYSSTAT e  
 **WHERE** e.SNAP\_ID = &end\_snap  
 **AND** e.DBID = &L\_DBID  
 **AND** e.INSTANCE\_NUMBER = &L\_INST\_NUM  
 **AND** e.STAT\_NAME **in** ('execute count')) -  
 (**SELECT** **sum**(**value**)  
 **FROM** DBA\_HIST\_SYSSTAT b  
 **WHERE** b.SNAP\_ID = &beg\_snap  
 **AND** b.DBID = &L\_DBID  
 **AND** b.INSTANCE\_NUMBER = &L\_INST\_NUM  
 **AND** b.STAT\_NAME **in** ('execute count'))) /  
 (**SELECT** EXTRACT(**DAY** **FROM**  
 E.END\_INTERVAL\_TIME - B.END\_INTERVAL\_TIME) \*  
 86400 + EXTRACT(HOUR **FROM** E.END\_INTERVAL\_TIME -  
 B.END\_INTERVAL\_TIME) \* 3600 +  
 EXTRACT(MINUTE **FROM**  
 E.END\_INTERVAL\_TIME - B.END\_INTERVAL\_TIME) \* 60 +  
 EXTRACT(**SECOND** **FROM**  
 E.END\_INTERVAL\_TIME - B.END\_INTERVAL\_TIME)  
 **FROM** DBA\_HIST\_SNAPSHOT B, DBA\_HIST\_SNAPSHOT E  
 **where** e.snap\_id = &end\_snap  
 **and** b.snap\_id = &beg\_snap  
 **AND** b.DBID = &L\_DBID  
 **AND** b.INSTANCE\_NUMBER = &L\_INST\_NUM  
 **AND** e.DBID = &L\_DBID  
 **AND** e.INSTANCE\_NUMBER = &L\_INST\_NUM),  
 2)  
 **from** dual;

*---- Executes: per transaction*

**select** round(((**SELECT** **sum**(**value**)  
 **FROM** DBA\_HIST\_SYSSTAT e  
 **WHERE** e.SNAP\_ID = &end\_snap  
 **AND** e.DBID = &L\_DBID  
 **AND** e.INSTANCE\_NUMBER = &L\_INST\_NUM  
 **AND** e.STAT\_NAME **in** ('execute count')) -  
 (**SELECT** **sum**(**value**)  
 **FROM** DBA\_HIST\_SYSSTAT b  
 **WHERE** b.SNAP\_ID = &beg\_snap  
 **AND** b.DBID = &L\_DBID  
 **AND** b.INSTANCE\_NUMBER = &L\_INST\_NUM  
 **AND** b.STAT\_NAME **in** ('execute count'))) /  
 ((**SELECT** **sum**(**value**)  
 **FROM** DBA\_HIST\_SYSSTAT e  
 **WHERE** e.SNAP\_ID = &end\_snap  
 **AND** e.DBID = &L\_DBID  
 **AND** e.INSTANCE\_NUMBER = &L\_INST\_NUM  
 **AND** e.STAT\_NAME **in** ('user rollbacks', 'user commits')) -  
 (**SELECT** **sum**(**value**)  
 **FROM** DBA\_HIST\_SYSSTAT b  
 **WHERE** b.SNAP\_ID = &beg\_snap  
 **AND** b.DBID = &L\_DBID  
 **AND** b.INSTANCE\_NUMBER = &L\_INST\_NUM  
 **AND** b.STAT\_NAME **in** ('user rollbacks', 'user commits'))),  
 2)  
 **from** dual;

*----Transactions: per second*

**select** round(((**SELECT** **sum**(**value**)  
 **FROM** DBA\_HIST\_SYSSTAT e  
 **WHERE** e.SNAP\_ID = &end\_snap  
 **AND** e.DBID = &L\_DBID  
 **AND** e.INSTANCE\_NUMBER = &L\_INST\_NUM  
 **AND** e.STAT\_NAME **in** ('user rollbacks', 'user commits')) -  
 (**SELECT** **sum**(**value**)  
 **FROM** DBA\_HIST\_SYSSTAT b  
 **WHERE** b.SNAP\_ID = &beg\_snap  
 **AND** b.DBID = &L\_DBID  
 **AND** b.INSTANCE\_NUMBER = &L\_INST\_NUM  
 **AND** b.STAT\_NAME **in** ('user rollbacks', 'user commits'))) /  
 (**SELECT** EXTRACT(**DAY** **FROM**  
 E.END\_INTERVAL\_TIME - B.END\_INTERVAL\_TIME) \*  
 86400 + EXTRACT(HOUR **FROM** E.END\_INTERVAL\_TIME -  
 B.END\_INTERVAL\_TIME) \* 3600 +  
 EXTRACT(MINUTE **FROM**  
 E.END\_INTERVAL\_TIME - B.END\_INTERVAL\_TIME) \* 60 +  
 EXTRACT(**SECOND** **FROM**  
 E.END\_INTERVAL\_TIME - B.END\_INTERVAL\_TIME)  
 **FROM** DBA\_HIST\_SNAPSHOT B, DBA\_HIST\_SNAPSHOT E  
 **where** e.snap\_id = &end\_snap  
 **and** b.snap\_id = &beg\_snap  
 **AND** b.DBID = &L\_DBID  
 **AND** b.INSTANCE\_NUMBER = &L\_INST\_NUM  
 **AND** e.DBID = &L\_DBID  
 **AND** e.INSTANCE\_NUMBER = &L\_INST\_NUM),  
 2)  
 **from** dual;

*----% Blocks changed per Read:*

**select** round(((**SELECT** **sum**(**value**)  
 **FROM** DBA\_HIST\_SYSSTAT e  
 **WHERE** e.SNAP\_ID = &end\_snap  
 **AND** e.DBID = &L\_DBID  
 **AND** e.INSTANCE\_NUMBER = &L\_INST\_NUM  
 **AND** e.STAT\_NAME **in** ('db block changes')) -  
 (**SELECT** **sum**(**value**)  
 **FROM** DBA\_HIST\_SYSSTAT b  
 **WHERE** b.SNAP\_ID = &beg\_snap  
 **AND** b.DBID = &L\_DBID  
 **AND** b.INSTANCE\_NUMBER = &L\_INST\_NUM  
 **AND** b.STAT\_NAME **in** ('db block changes'))) /  
 ((**SELECT** **sum**(**value**)  
 **FROM** DBA\_HIST\_SYSSTAT e  
 **WHERE** e.SNAP\_ID = &end\_snap  
 **AND** e.DBID = &L\_DBID  
 **AND** e.INSTANCE\_NUMBER = &L\_INST\_NUM  
 **AND** e.STAT\_NAME **in** ('session logical reads')) -  
 (**SELECT** **sum**(**value**)  
 **FROM** DBA\_HIST\_SYSSTAT b  
 **WHERE** b.SNAP\_ID = &beg\_snap  
 **AND** b.DBID = &L\_DBID  
 **AND** b.INSTANCE\_NUMBER = &L\_INST\_NUM  
 **AND** b.STAT\_NAME **in** ('session logical reads'))),  
 2)  
 **from** dual;

*----% Blocks changed per Read:*

**select** round(((**SELECT** **sum**(**value**)  
 **FROM** DBA\_HIST\_SYSSTAT e  
 **WHERE** e.SNAP\_ID = &end\_snap  
 **AND** e.DBID = &L\_DBID  
 **AND** e.INSTANCE\_NUMBER = &L\_INST\_NUM  
 **AND** e.STAT\_NAME **in** ('recursive calls')) -  
 (**SELECT** **sum**(**value**)  
 **FROM** DBA\_HIST\_SYSSTAT b  
 **WHERE** b.SNAP\_ID = &beg\_snap  
 **AND** b.DBID = &L\_DBID  
 **AND** b.INSTANCE\_NUMBER = &L\_INST\_NUM  
 **AND** b.STAT\_NAME **in** ('recursive calls'))) /  
 ((**SELECT** **sum**(**value**)  
 **FROM** DBA\_HIST\_SYSSTAT e  
 **WHERE** e.SNAP\_ID = &end\_snap  
 **AND** e.DBID = &L\_DBID  
 **AND** e.INSTANCE\_NUMBER = &L\_INST\_NUM  
 **AND** e.STAT\_NAME **in** ('recursive calls')) -  
 (**SELECT** **sum**(**value**)  
 **FROM** DBA\_HIST\_SYSSTAT b  
 **WHERE** b.SNAP\_ID = &beg\_snap  
 **AND** b.DBID = &L\_DBID  
 **AND** b.INSTANCE\_NUMBER = &L\_INST\_NUM  
 **AND** b.STAT\_NAME **in** ('recursive calls')) +  
 (**SELECT** **sum**(**value**)  
 **FROM** DBA\_HIST\_SYSSTAT e  
 **WHERE** e.SNAP\_ID = &end\_snap  
 **AND** e.DBID = &L\_DBID  
 **AND** e.INSTANCE\_NUMBER = &L\_INST\_NUM  
 **AND** e.STAT\_NAME **in** ('user calls')) -  
 (**SELECT** **sum**(**value**)  
 **FROM** DBA\_HIST\_SYSSTAT b  
 **WHERE** b.SNAP\_ID = &beg\_snap  
 **AND** b.DBID = &L\_DBID  
 **AND** b.INSTANCE\_NUMBER = &L\_INST\_NUM  
 **AND** b.STAT\_NAME **in** ('user calls'))),  
 2)  
 **from** dual;

*---- Rollback per transaction %:*

**select** round(((**SELECT** **sum**(**value**)  
 **FROM** DBA\_HIST\_SYSSTAT e  
 **WHERE** e.SNAP\_ID = &end\_snap  
 **AND** e.DBID = &L\_DBID  
 **AND** e.INSTANCE\_NUMBER = &L\_INST\_NUM  
 **AND** e.STAT\_NAME **in** ('user rollbacks')) -  
 (**SELECT** **sum**(**value**)  
 **FROM** DBA\_HIST\_SYSSTAT b  
 **WHERE** b.SNAP\_ID = &beg\_snap  
 **AND** b.DBID = &L\_DBID  
 **AND** b.INSTANCE\_NUMBER = &L\_INST\_NUM  
 **AND** b.STAT\_NAME **in** ('user rollbacks'))) /  
 ((**SELECT** **sum**(**value**)  
 **FROM** DBA\_HIST\_SYSSTAT e  
 **WHERE** e.SNAP\_ID = &end\_snap  
 **AND** e.DBID = &L\_DBID  
 **AND** e.INSTANCE\_NUMBER = &L\_INST\_NUM  
 **AND** e.STAT\_NAME **in** ('user rollbacks', 'user commits')) -  
 (**SELECT** **sum**(**value**)  
 **FROM** DBA\_HIST\_SYSSTAT b  
 **WHERE** b.SNAP\_ID = &beg\_snap  
 **AND** b.DBID = &L\_DBID  
 **AND** b.INSTANCE\_NUMBER = &L\_INST\_NUM  
 **AND** b.STAT\_NAME **in** ('user rollbacks', 'user commits'))),  
 2)  
 **from** dual;

*----Rows per Sort:*

**select** round(((**SELECT** **sum**(**value**)  
 **FROM** DBA\_HIST\_SYSSTAT e  
 **WHERE** e.SNAP\_ID = &end\_snap  
 **AND** e.DBID = &L\_DBID  
 **AND** e.INSTANCE\_NUMBER = &L\_INST\_NUM  
 **AND** e.STAT\_NAME **in** ('sorts (rows)')) -  
 (**SELECT** **sum**(**value**)  
 **FROM** DBA\_HIST\_SYSSTAT b  
 **WHERE** b.SNAP\_ID = &beg\_snap  
 **AND** b.DBID = &L\_DBID  
 **AND** b.INSTANCE\_NUMBER = &L\_INST\_NUM  
 **AND** b.STAT\_NAME **in** ('sorts (rows)'))) /  
 ((**SELECT** **sum**(**value**)  
 **FROM** DBA\_HIST\_SYSSTAT e  
 **WHERE** e.SNAP\_ID = &end\_snap  
 **AND** e.DBID = &L\_DBID  
 **AND** e.INSTANCE\_NUMBER = &L\_INST\_NUM  
 **AND** e.STAT\_NAME **in** ('sorts (memory)')) -  
 (**SELECT** **sum**(**value**)  
 **FROM** DBA\_HIST\_SYSSTAT b  
 **WHERE** b.SNAP\_ID = &beg\_snap  
 **AND** b.DBID = &L\_DBID  
 **AND** b.INSTANCE\_NUMBER = &L\_INST\_NUM  
 **AND** b.STAT\_NAME **in** ('sorts (memory)')) +  
 (**SELECT** **sum**(**value**)  
 **FROM** DBA\_HIST\_SYSSTAT e  
 **WHERE** e.SNAP\_ID = &end\_snap  
 **AND** e.DBID = &L\_DBID  
 **AND** e.INSTANCE\_NUMBER = &L\_INST\_NUM  
 **AND** e.STAT\_NAME **in** ('sorts (disk)')) -  
 (**SELECT** **sum**(**value**)  
 **FROM** DBA\_HIST\_SYSSTAT b  
 **WHERE** b.SNAP\_ID = &beg\_snap  
 **AND** b.DBID = &L\_DBID  
 **AND** b.INSTANCE\_NUMBER = &L\_INST\_NUM  
 **AND** b.STAT\_NAME **in** ('sorts (disk)'))),  
 2)  
 **from** dual;

*---- Buffer Nowait %:*

**select** round(100 \*  
 (1 - ((**SELECT** **SUM**(WAIT\_COUNT)  
 **FROM** DBA\_HIST\_WAITSTAT  
 **WHERE** SNAP\_ID = &end\_snap  
 **AND** DBID = &L\_DBID  
 **AND** INSTANCE\_NUMBER = &L\_INST\_NUM) -  
 (**SELECT** **SUM**(WAIT\_COUNT)  
 **FROM** DBA\_HIST\_WAITSTAT  
 **WHERE** SNAP\_ID = &beg\_snap  
 **AND** DBID = &L\_DBID  
 **AND** INSTANCE\_NUMBER = &L\_INST\_NUM)) /  
 ((**SELECT** **sum**(**value**)  
 **FROM** DBA\_HIST\_SYSSTAT e  
 **WHERE** e.SNAP\_ID = &end\_snap  
 **AND** e.DBID = &L\_DBID  
 **AND** e.INSTANCE\_NUMBER = &L\_INST\_NUM  
 **AND** e.STAT\_NAME **in** ('session logical reads')) -  
 (**SELECT** **sum**(**value**)  
 **FROM** DBA\_HIST\_SYSSTAT b  
 **WHERE** b.SNAP\_ID = &beg\_snap  
 **AND** b.DBID = &L\_DBID  
 **AND** b.INSTANCE\_NUMBER = &L\_INST\_NUM  
 **AND** b.STAT\_NAME **in** ('session logical reads')))),  
 2)  
 **from** dual;

*---- Redo NoWait %:*

**select** round(100 \*  
 (1 - ((**SELECT** **sum**(**value**)  
 **FROM** DBA\_HIST\_SYSSTAT e  
 **WHERE** e.SNAP\_ID = &end\_snap  
 **AND** e.DBID = &L\_DBID  
 **AND** e.INSTANCE\_NUMBER = &L\_INST\_NUM  
 **AND** e.STAT\_NAME **in** ('redo log space requests')) -  
 (**SELECT** **sum**(**value**)  
 **FROM** DBA\_HIST\_SYSSTAT b  
 **WHERE** b.SNAP\_ID = &beg\_snap  
 **AND** b.DBID = &L\_DBID  
 **AND** b.INSTANCE\_NUMBER = &L\_INST\_NUM  
 **AND** b.STAT\_NAME **in** ('redo log space requests'))) /  
 ((**SELECT** **sum**(**value**)  
 **FROM** DBA\_HIST\_SYSSTAT e  
 **WHERE** e.SNAP\_ID = &end\_snap  
 **AND** e.DBID = &L\_DBID  
 **AND** e.INSTANCE\_NUMBER = &L\_INST\_NUM  
 **AND** e.STAT\_NAME **in** ('redo entries')) -  
 (**SELECT** **sum**(**value**)  
 **FROM** DBA\_HIST\_SYSSTAT b  
 **WHERE** b.SNAP\_ID = &beg\_snap  
 **AND** b.DBID = &L\_DBID  
 **AND** b.INSTANCE\_NUMBER = &L\_INST\_NUM  
 **AND** b.STAT\_NAME **in** ('redo entries')))),  
 2)  
 **from** dual;

*---- Buffer Hit %:*

**select** round(100 \*  
 (1 -  
 ((**SELECT** **sum**(**value**)  
 **FROM** DBA\_HIST\_SYSSTAT e  
 **WHERE** e.SNAP\_ID = &end\_snap  
 **AND** e.DBID = &L\_DBID  
 **AND** e.INSTANCE\_NUMBER = &L\_INST\_NUM  
 **AND** e.STAT\_NAME **in** ('physical reads')) -  
 (**SELECT** **sum**(**value**)  
 **FROM** DBA\_HIST\_SYSSTAT b  
 **WHERE** b.SNAP\_ID = &beg\_snap  
 **AND** b.DBID = &L\_DBID  
 **AND** b.INSTANCE\_NUMBER = &L\_INST\_NUM  
 **AND** b.STAT\_NAME **in** ('physical reads')) -  
 ((**SELECT** **sum**(**value**)  
 **FROM** DBA\_HIST\_SYSSTAT e  
 **WHERE** e.SNAP\_ID = &end\_snap  
 **AND** e.DBID = &L\_DBID  
 **AND** e.INSTANCE\_NUMBER = &L\_INST\_NUM  
 **AND** e.STAT\_NAME **in** ('physical reads direct')) -  
 (**SELECT** **sum**(**value**)  
 **FROM** DBA\_HIST\_SYSSTAT b  
 **WHERE** b.SNAP\_ID = &beg\_snap  
 **AND** b.DBID = &L\_DBID  
 **AND** b.INSTANCE\_NUMBER = &L\_INST\_NUM  
 **AND** b.STAT\_NAME **in** ('physical reads direct'))) -  
 nvl(((**SELECT** **sum**(**value**)  
 **FROM** DBA\_HIST\_SYSSTAT e  
 **WHERE** e.SNAP\_ID = &end\_snap  
 **AND** e.DBID = &L\_DBID  
 **AND** e.INSTANCE\_NUMBER = &L\_INST\_NUM  
 **AND** e.STAT\_NAME **in** ('physical reads direct (lob)')) -  
 (**SELECT** **sum**(**value**)  
 **FROM** DBA\_HIST\_SYSSTAT b  
 **WHERE** b.SNAP\_ID = &beg\_snap  
 **AND** b.DBID = &L\_DBID  
 **AND** b.INSTANCE\_NUMBER = &L\_INST\_NUM  
 **AND** b.STAT\_NAME **in** ('physical reads direct (lob)'))),  
 0)) /  
 ((**SELECT** **sum**(**value**)  
 **FROM** DBA\_HIST\_SYSSTAT e  
 **WHERE** e.SNAP\_ID = &end\_snap  
 **AND** e.DBID = &L\_DBID  
 **AND** e.INSTANCE\_NUMBER = &L\_INST\_NUM  
 **AND** e.STAT\_NAME **in** ('session logical reads')) -  
 (**SELECT** **sum**(**value**)  
 **FROM** DBA\_HIST\_SYSSTAT b  
 **WHERE** b.SNAP\_ID = &beg\_snap  
 **AND** b.DBID = &L\_DBID  
 **AND** b.INSTANCE\_NUMBER = &L\_INST\_NUM  
 **AND** b.STAT\_NAME **in** ('session logical reads')))),  
 2)  
 **from** dual;

*---- In-memory Sort %:*

**select** round(100 \* ((**SELECT** **sum**(**value**)  
 **FROM** DBA\_HIST\_SYSSTAT e  
 **WHERE** e.SNAP\_ID = &end\_snap  
 **AND** e.DBID = &L\_DBID  
 **AND** e.INSTANCE\_NUMBER = &L\_INST\_NUM  
 **AND** e.STAT\_NAME **in** ('sorts (memory)')) -  
 (**SELECT** **sum**(**value**)  
 **FROM** DBA\_HIST\_SYSSTAT b  
 **WHERE** b.SNAP\_ID = &beg\_snap  
 **AND** b.DBID = &L\_DBID  
 **AND** b.INSTANCE\_NUMBER = &L\_INST\_NUM  
 **AND** b.STAT\_NAME **in** ('sorts (memory)'))) /  
 (((**SELECT** **sum**(**value**)  
 **FROM** DBA\_HIST\_SYSSTAT e  
 **WHERE** e.SNAP\_ID = &end\_snap  
 **AND** e.DBID = &L\_DBID  
 **AND** e.INSTANCE\_NUMBER = &L\_INST\_NUM  
 **AND** e.STAT\_NAME **in** ('sorts (memory)')) -  
 (**SELECT** **sum**(**value**)  
 **FROM** DBA\_HIST\_SYSSTAT b  
 **WHERE** b.SNAP\_ID = &beg\_snap  
 **AND** b.DBID = &L\_DBID  
 **AND** b.INSTANCE\_NUMBER = &L\_INST\_NUM  
 **AND** b.STAT\_NAME **in** ('sorts (memory)'))) +  
 ((**SELECT** **sum**(**value**)  
 **FROM** DBA\_HIST\_SYSSTAT e  
 **WHERE** e.SNAP\_ID = &end\_snap  
 **AND** e.DBID = &L\_DBID  
 **AND** e.INSTANCE\_NUMBER = &L\_INST\_NUM  
 **AND** e.STAT\_NAME **in** ('sorts (disk)')) -  
 (**SELECT** **sum**(**value**)  
 **FROM** DBA\_HIST\_SYSSTAT b  
 **WHERE** b.SNAP\_ID = &beg\_snap  
 **AND** b.DBID = &L\_DBID  
 **AND** b.INSTANCE\_NUMBER = &L\_INST\_NUM  
 **AND** b.STAT\_NAME **in** ('sorts (disk)')))),  
 2)  
 **from** dual;

*---- Library Hit %*

**SELECT** round(100 \* (**SUM**(e.PINHITS) - **sum**(b.pinhits)) /  
 (**SUM**(e.PINS) - **sum**(b.pins)),  
 2)  
 **FROM** DBA\_HIST\_LIBRARYCACHE b, DBA\_HIST\_LIBRARYCACHE e  
 **WHERE** e.SNAP\_ID = &end\_SNAP  
 **AND** e.DBID = &L\_DBID  
 **AND** e.INSTANCE\_NUMBER = &L\_INST\_NUM  
 **and** b.SNAP\_ID = &beg\_SNAP  
 **AND** b.DBID = &L\_DBID  
 **AND** b.INSTANCE\_NUMBER = &L\_INST\_NUM

*---- Soft Parse %:*

**select** round(100 \* (1 -  
 ((**SELECT** **sum**(**value**)  
 **FROM** DBA\_HIST\_SYSSTAT e  
 **WHERE** e.SNAP\_ID = &end\_snap  
 **AND** e.DBID = &L\_DBID  
 **AND** e.INSTANCE\_NUMBER = &L\_INST\_NUM  
 **AND** e.STAT\_NAME = 'parse count (hard)') -  
 (**SELECT** **sum**(**value**)  
 **FROM** DBA\_HIST\_SYSSTAT b  
 **WHERE** b.SNAP\_ID = &beg\_snap  
 **AND** b.DBID = &L\_DBID  
 **AND** b.INSTANCE\_NUMBER = &L\_INST\_NUM  
 **AND** b.STAT\_NAME = 'parse count (hard)')) /  
 ((**SELECT** **sum**(**value**)  
 **FROM** DBA\_HIST\_SYSSTAT e  
 **WHERE** e.SNAP\_ID = &end\_snap  
 **AND** e.DBID = &L\_DBID  
 **AND** e.INSTANCE\_NUMBER = &L\_INST\_NUM  
 **AND** e.STAT\_NAME = 'parse count (total)') -  
 (**SELECT** **sum**(**value**)  
 **FROM** DBA\_HIST\_SYSSTAT b  
 **WHERE** b.SNAP\_ID = &beg\_snap  
 **AND** b.DBID = &L\_DBID  
 **AND** b.INSTANCE\_NUMBER = &L\_INST\_NUM  
 **AND** b.STAT\_NAME = 'parse count (total)'))),  
 2)  
 **from** dual;

*----Execute to Parse %:*

**select** round(100 \* (1 - ((**SELECT** **sum**(**value**)  
 **FROM** DBA\_HIST\_SYSSTAT e  
 **WHERE** e.SNAP\_ID = &end\_snap  
 **AND** e.DBID = &L\_DBID  
 **AND** e.INSTANCE\_NUMBER = &L\_INST\_NUM  
 **AND** e.STAT\_NAME = 'parse count (total)') -  
 (**SELECT** **sum**(**value**)  
 **FROM** DBA\_HIST\_SYSSTAT b  
 **WHERE** b.SNAP\_ID = &beg\_snap  
 **AND** b.DBID = &L\_DBID  
 **AND** b.INSTANCE\_NUMBER = &L\_INST\_NUM  
 **AND** b.STAT\_NAME = 'parse count (total)')) /  
 ((**SELECT** **sum**(**value**)  
 **FROM** DBA\_HIST\_SYSSTAT e  
 **WHERE** e.SNAP\_ID = &end\_snap  
 **AND** e.DBID = &L\_DBID  
 **AND** e.INSTANCE\_NUMBER = &L\_INST\_NUM  
 **AND** e.STAT\_NAME = 'execute count') -  
 (**SELECT** **sum**(**value**)  
 **FROM** DBA\_HIST\_SYSSTAT b  
 **WHERE** b.SNAP\_ID = &beg\_snap  
 **AND** b.DBID = &L\_DBID  
 **AND** b.INSTANCE\_NUMBER = &L\_INST\_NUM  
 **AND** b.STAT\_NAME = 'execute count'))),  
 2)  
 **from** dual;

*----Latch Hit %:*

**SELECT** round(100 \* (1 - (**SUM**(e.MISSES) - **sum**(b.MISSES)) /  
 (**SUM**(e.GETS) - **sum**(b.GETS))),  
 2)  
 **FROM** DBA\_HIST\_LATCH b, DBA\_HIST\_LATCH e  
 **WHERE** e.SNAP\_ID = &end\_SNAP  
 **AND** e.DBID = &L\_DBID  
 **AND** e.INSTANCE\_NUMBER = &L\_INST\_NUM  
 **and** b.SNAP\_ID = &beg\_SNAP  
 **AND** b.DBID = &L\_DBID  
 **AND** b.INSTANCE\_NUMBER = &L\_INST\_NUM;

*----Parse CPU to Parse Elapsd %:*

**select** round(100 \* ((**SELECT** **sum**(**value**)  
 **FROM** DBA\_HIST\_SYSSTAT e  
 **WHERE** e.SNAP\_ID = &end\_snap  
 **AND** e.DBID = &L\_DBID  
 **AND** e.INSTANCE\_NUMBER = &L\_INST\_NUM  
 **AND** e.STAT\_NAME = 'parse time cpu') -  
 (**SELECT** **sum**(**value**)  
 **FROM** DBA\_HIST\_SYSSTAT b  
 **WHERE** b.SNAP\_ID = &beg\_snap  
 **AND** b.DBID = &L\_DBID  
 **AND** b.INSTANCE\_NUMBER = &L\_INST\_NUM  
 **AND** b.STAT\_NAME = 'parse time cpu')) /  
 ((**SELECT** **sum**(**value**)  
 **FROM** DBA\_HIST\_SYSSTAT e  
 **WHERE** e.SNAP\_ID = &end\_snap  
 **AND** e.DBID = &L\_DBID  
 **AND** e.INSTANCE\_NUMBER = &L\_INST\_NUM  
 **AND** e.STAT\_NAME = 'parse time elapsed') -  
 (**SELECT** **sum**(**value**)  
 **FROM** DBA\_HIST\_SYSSTAT b  
 **WHERE** b.SNAP\_ID = &beg\_snap  
 **AND** b.DBID = &L\_DBID  
 **AND** b.INSTANCE\_NUMBER = &L\_INST\_NUM  
 **AND** b.STAT\_NAME = 'parse time elapsed')),  
 2)  
 **from** dual;

*----% Non-Parse CPU:*

**select** round(100 \*  
 (1 - ((**SELECT** **sum**(**value**)  
 **FROM** DBA\_HIST\_SYSSTAT e  
 **WHERE** e.SNAP\_ID = &end\_snap  
 **AND** e.DBID = &L\_DBID  
 **AND** e.INSTANCE\_NUMBER = &L\_INST\_NUM  
 **AND** e.STAT\_NAME = 'parse time cpu') -  
 (**SELECT** **sum**(**value**)  
 **FROM** DBA\_HIST\_SYSSTAT b  
 **WHERE** b.SNAP\_ID = &beg\_snap  
 **AND** b.DBID = &L\_DBID  
 **AND** b.INSTANCE\_NUMBER = &L\_INST\_NUM  
 **AND** b.STAT\_NAME = 'parse time cpu')) /  
 (((**SELECT** **sum**(**value**)  
 **FROM** DBA\_HIST\_SYS\_TIME\_MODEL e  
 **WHERE** e.SNAP\_ID = &end\_snap  
 **AND** e.DBID = &L\_DBID  
 **AND** e.INSTANCE\_NUMBER = &L\_INST\_NUM  
 **AND** e.STAT\_NAME = 'DB CPU') -  
 (**SELECT** **sum**(**value**)  
 **FROM** DBA\_HIST\_SYS\_TIME\_MODEL b  
 **WHERE** b.SNAP\_ID = &beg\_snap  
 **AND** b.DBID = &L\_DBID  
 **AND** b.INSTANCE\_NUMBER = &L\_INST\_NUM  
 **AND** b.STAT\_NAME = 'DB CPU')) / 10000)),  
 2)  
 **from** dual;

*---- Memory Usage %:begin*

**select** round(100 \*  
 (1 - (**SELECT** bytes  
 **FROM** DBA\_HIST\_SGASTAT  
 **WHERE** SNAP\_ID = &beg\_snap  
 **AND** DBID = &L\_DBID  
 **AND** INSTANCE\_NUMBER = &L\_INST\_NUM  
 **AND** **NAME** = 'free memory'  
 **and** pool **IN** ('shared pool', 'all pools')) /  
 (**SELECT** **sum**(**value**)  
 **FROM** DBA\_HIST\_PARAMETER  
 **WHERE** SNAP\_ID = &beg\_snap  
 **AND** DBID = &L\_DBID  
 **AND** INSTANCE\_NUMBER = &L\_INST\_NUM  
 **AND** PARAMETER\_NAME = '\_\_shared\_pool\_size')),  
 2)  
 **from** dual;

*---- Memory Usage %:end*

**select** round(100 \*  
 (1 - (**SELECT** bytes  
 **FROM** DBA\_HIST\_SGASTAT  
 **WHERE** SNAP\_ID = &end\_snap  
 **AND** DBID = &L\_DBID  
 **AND** INSTANCE\_NUMBER = &L\_INST\_NUM  
 **AND** **NAME** = 'free memory'  
 **and** pool **IN** ('shared pool', 'all pools')) /  
 (**SELECT** **sum**(**value**)  
 **FROM** DBA\_HIST\_PARAMETER  
 **WHERE** SNAP\_ID = &end\_snap  
 **AND** DBID = &L\_DBID  
 **AND** INSTANCE\_NUMBER = &L\_INST\_NUM  
 **AND** PARAMETER\_NAME = '\_\_shared\_pool\_size')),  
 2)  
 **from** dual;

*---- % SQL with executions>1:begin*

**SELECT** DECODE(B.TOTAL\_SQL, 0, 0, 100 \* (1 - B.SINGLE\_USE\_SQL / B.TOTAL\_SQL))  
 **FROM** DBA\_HIST\_SQL\_SUMMARY B  
 **Where** SNAP\_ID = &begin\_snap  
 **AND** DBID = &L\_DBID  
 **AND** INSTANCE\_NUMBER = &L\_INST\_NUM;

*---- % SQL with executions>1:end*

**SELECT** DECODE(e.TOTAL\_SQL, 0, 0, 100 \* (1 - e.SINGLE\_USE\_SQL / e.TOTAL\_SQL))  
 **FROM** DBA\_HIST\_SQL\_SUMMARY e  
 **Where** SNAP\_ID = &end\_snap  
 **AND** DBID = &L\_DBID  
 **AND** INSTANCE\_NUMBER = &L\_INST\_NUM;

*---- % Memory for SQL w/exec>1:begin*

**SELECT** DECODE(B.TOTAL\_SQL\_MEM,  
 0,  
 0,  
 100 \* (1 - B.SINGLE\_USE\_SQL\_MEM / B.TOTAL\_SQL\_MEM))  
 **FROM** DBA\_HIST\_SQL\_SUMMARY B  
 **Where** SNAP\_ID = &begin\_snap  
 **AND** DBID = &L\_DBID  
 **AND** INSTANCE\_NUMBER = &L\_INST\_NUM;

*---- % Memory for SQL w/exec>1:end*

**SELECT** DECODE(e.TOTAL\_SQL\_MEM,  
 0,  
 0,  
 100 \* (1 - e.SINGLE\_USE\_SQL\_MEM / e.TOTAL\_SQL\_MEM))  
 **FROM** DBA\_HIST\_SQL\_SUMMARY e  
 **Where** SNAP\_ID = &end\_snap  
 **AND** DBID = &L\_DBID  
 **AND** INSTANCE\_NUMBER = &L\_INST\_NUM;

*---- Top 5 Timed Events:*

**SELECT** EVENT,  
 WAITS,  
 **TIME**,  
 DECODE(WAITS,  
 **NULL**,  
 TO\_NUMBER(**NULL**),  
 0,  
 TO\_NUMBER(**NULL**),  
 **TIME** / WAITS \* 1000) AVGWT,  
 PCTWTT,  
 WAIT\_CLASS  
 **FROM** (**SELECT** EVENT, WAITS, **TIME**, PCTWTT, WAIT\_CLASS  
 **FROM** (**SELECT** E.EVENT\_NAME EVENT,  
 E.TOTAL\_WAITS - NVL(B.TOTAL\_WAITS, 0) WAITS,  
 (E.TIME\_WAITED\_MICRO - NVL(B.TIME\_WAITED\_MICRO, 0)) /  
 1000000 **TIME**,  
 100 \*  
 (E.TIME\_WAITED\_MICRO - NVL(B.TIME\_WAITED\_MICRO, 0)) /  
 ((**SELECT** **sum**(**value**)  
 **FROM** DBA\_HIST\_SYS\_TIME\_MODEL e  
 **WHERE** e.SNAP\_ID = &end\_snap  
 **AND** e.DBID = &DBID  
 **AND** e.INSTANCE\_NUMBER = &INST\_NUM  
 **AND** e.STAT\_NAME = 'DB time') -  
 (**SELECT** **sum**(**value**)  
 **FROM** DBA\_HIST\_SYS\_TIME\_MODEL b  
 **WHERE** b.SNAP\_ID = &beg\_snap  
 **AND** b.DBID = &DBID  
 **AND** b.INSTANCE\_NUMBER = &INST\_NUM  
 **AND** b.STAT\_NAME = 'DB time')) PCTWTT,  
 E.WAIT\_CLASS WAIT\_CLASS  
 **FROM** DBA\_HIST\_SYSTEM\_EVENT B, DBA\_HIST\_SYSTEM\_EVENT E  
 **WHERE** B.SNAP\_ID(+) = &beg\_snap  
 **AND** E.SNAP\_ID = &end\_snap  
 **AND** B.DBID(+) = &DBID  
 **AND** E.DBID = &DBID  
 **AND** B.INSTANCE\_NUMBER(+) = &INST\_NUM  
 **AND** E.INSTANCE\_NUMBER = &INST\_NUM  
 **AND** B.EVENT\_ID(+) = E.EVENT\_ID  
 **AND** E.TOTAL\_WAITS > NVL(B.TOTAL\_WAITS, 0)  
 **AND** E.WAIT\_CLASS != 'Idle'  
 **UNION** **ALL**  
 **SELECT** 'CPU time' EVENT,  
 TO\_NUMBER(**NULL**) WAITS,  
 ((**SELECT** **sum**(**value**)  
 **FROM** DBA\_HIST\_SYS\_TIME\_MODEL e  
 **WHERE** e.SNAP\_ID = &end\_snap  
 **AND** e.DBID = &DBID  
 **AND** e.INSTANCE\_NUMBER = &INST\_NUM  
 **AND** e.STAT\_NAME = 'DB CPU') -  
 (**SELECT** **sum**(**value**)  
 **FROM** DBA\_HIST\_SYS\_TIME\_MODEL b  
 **WHERE** b.SNAP\_ID = &beg\_snap  
 **AND** b.DBID = &DBID  
 **AND** b.INSTANCE\_NUMBER = &INST\_NUM  
 **AND** b.STAT\_NAME = 'DB CPU')) / 1000000 **TIME**,  
 100 \* ((**SELECT** **sum**(**value**)  
 **FROM** DBA\_HIST\_SYS\_TIME\_MODEL e  
 **WHERE** e.SNAP\_ID = &end\_snap  
 **AND** e.DBID = &DBID  
 **AND** e.INSTANCE\_NUMBER = &INST\_NUM  
 **AND** e.STAT\_NAME = 'DB CPU') -  
 (**SELECT** **sum**(**value**)  
 **FROM** DBA\_HIST\_SYS\_TIME\_MODEL b  
 **WHERE** b.SNAP\_ID = &beg\_snap  
 **AND** b.DBID = &DBID  
 **AND** b.INSTANCE\_NUMBER = &INST\_NUM  
 **AND** b.STAT\_NAME = 'DB CPU')) /  
 ((**SELECT** **sum**(**value**)  
 **FROM** DBA\_HIST\_SYS\_TIME\_MODEL e  
 **WHERE** e.SNAP\_ID = &end\_snap  
 **AND** e.DBID = &L\_DBID  
 **AND** e.INSTANCE\_NUMBER = &INST\_NUM  
 **AND** e.STAT\_NAME = 'DB time') -  
 (**SELECT** **sum**(**value**)  
 **FROM** DBA\_HIST\_SYS\_TIME\_MODEL b  
 **WHERE** b.SNAP\_ID = &beg\_snap  
 **AND** b.DBID = &DBID  
 **AND** b.INSTANCE\_NUMBER = &INST\_NUM  
 **AND** b.STAT\_NAME = 'DB time')) PCTWTT,  
 **NULL** WAIT\_CLASS  
 **from** dual  
 **WHERE** ((**SELECT** **sum**(**value**)  
 **FROM** DBA\_HIST\_SYS\_TIME\_MODEL e  
 **WHERE** e.SNAP\_ID = &end\_snap  
 **AND** e.DBID = &DBID  
 **AND** e.INSTANCE\_NUMBER = &INST\_NUM  
 **AND** e.STAT\_NAME = 'DB CPU') -  
 (**SELECT** **sum**(**value**)  
 **FROM** DBA\_HIST\_SYS\_TIME\_MODEL b  
 **WHERE** b.SNAP\_ID = &beg\_snap  
 **AND** b.DBID = &DBID  
 **AND** b.INSTANCE\_NUMBER = &INST\_NUM  
 **AND** b.STAT\_NAME = 'DB CPU')) > 0)  
 **ORDER** **BY** **TIME** **DESC**, WAITS **DESC**)  
 **WHERE** **ROWNUM** <= 5;

*---- Global Cache blocks received:per second*

**select** round(((**SELECT** e.**VALUE** - b.**value**  
 **FROM** DBA\_HIST\_SYSSTAT b, DBA\_HIST\_SYSSTAT e  
 **WHERE** B.SNAP\_ID = &beg\_snap  
 **AND** E.SNAP\_ID = &end\_snap  
 **AND** B.DBID = &DBID  
 **AND** E.DBID = &DBID  
 **AND** B.INSTANCE\_NUMBER = &INST\_NUM  
 **AND** E.INSTANCE\_NUMBER = &INST\_NUM  
 **and** e.STAT\_NAME = 'gc cr blocks received'  
 **and** b.stat\_name = 'gc cr blocks received') +  
   
 (**SELECT** e.**VALUE** - b.**value**  
 **FROM** DBA\_HIST\_SYSSTAT b, DBA\_HIST\_SYSSTAT e  
 **WHERE** B.SNAP\_ID = &beg\_snap  
 **AND** E.SNAP\_ID = &end\_snap  
 **AND** B.DBID = &DBID  
 **AND** E.DBID = &DBID  
 **AND** B.INSTANCE\_NUMBER = &INST\_NUM  
 **AND** E.INSTANCE\_NUMBER = &INST\_NUM  
 **and** e.STAT\_NAME = 'gc current blocks received'  
 **and** b.STAT\_NAME = 'gc current blocks received')) /  
 (**SELECT** EXTRACT(**DAY** **FROM**  
 E.END\_INTERVAL\_TIME - B.END\_INTERVAL\_TIME) \*  
 86400 + EXTRACT(HOUR **FROM** E.END\_INTERVAL\_TIME -  
 B.END\_INTERVAL\_TIME) \* 3600 +  
 EXTRACT(MINUTE **FROM**  
 E.END\_INTERVAL\_TIME - B.END\_INTERVAL\_TIME) \* 60 +  
 EXTRACT(**SECOND** **FROM**  
 E.END\_INTERVAL\_TIME - B.END\_INTERVAL\_TIME)  
 **FROM** DBA\_HIST\_SNAPSHOT B, DBA\_HIST\_SNAPSHOT E  
 **WHERE** B.SNAP\_ID = &beg\_snap  
 **AND** E.SNAP\_ID = &end\_snap  
 **AND** B.DBID = &DBID  
 **AND** E.DBID = &DBID  
 **AND** B.INSTANCE\_NUMBER = &INST\_NUM  
 **AND** E.INSTANCE\_NUMBER = &INST\_NUM  
 **AND** B.STARTUP\_TIME = E.STARTUP\_TIME  
 **AND** B.END\_INTERVAL\_TIME < E.END\_INTERVAL\_TIME),  
 2)  
 **from** dual;

*---- Global Cache blocks received:per transaction*

**select** round(((**SELECT** e.**VALUE** - b.**value**  
 **FROM** DBA\_HIST\_SYSSTAT b, DBA\_HIST\_SYSSTAT e  
 **WHERE** B.SNAP\_ID = &beg\_snap  
 **AND** E.SNAP\_ID = &end\_snap  
 **AND** B.DBID = &DBID  
 **AND** E.DBID = &DBID  
 **AND** B.INSTANCE\_NUMBER = &INST\_NUM  
 **AND** E.INSTANCE\_NUMBER = &INST\_NUM  
 **and** e.STAT\_NAME = 'gc cr blocks received'  
 **and** b.stat\_name = 'gc cr blocks received') +  
 (**SELECT** e.**VALUE** - b.**value**  
 **FROM** DBA\_HIST\_SYSSTAT b, DBA\_HIST\_SYSSTAT e  
 **WHERE** B.SNAP\_ID = &beg\_snap  
 **AND** E.SNAP\_ID = &end\_snap  
 **AND** B.DBID = &DBID  
 **AND** E.DBID = &DBID  
 **AND** B.INSTANCE\_NUMBER = &INST\_NUM  
 **AND** E.INSTANCE\_NUMBER = &INST\_NUM  
 **and** e.STAT\_NAME = 'gc current blocks received'  
 **and** b.STAT\_NAME = 'gc current blocks received')) /  
 (**SELECT** **sum**(e.**value**) - **sum**(b.**value**)  
 **FROM** DBA\_HIST\_SYSSTAT B, DBA\_HIST\_SYSSTAT E  
 **WHERE** B.SNAP\_ID = &beg\_snap  
 **AND** E.SNAP\_ID = &end\_snap  
 **AND** B.DBID = &DBID  
 **AND** E.DBID = &DBID  
 **AND** B.INSTANCE\_NUMBER = &INST\_NUM  
 **AND** E.INSTANCE\_NUMBER = &INST\_NUM  
 **and** e.STAT\_NAME **in** ('user rollbacks', 'user commits')  
 **and** b.STAT\_NAME **in** ('user rollbacks', 'user commits')),  
 2)  
 **from** dual;

*---- Global Cache blocks served:per second*

**select** round(((**SELECT** e.**VALUE** - b.**value**  
 **FROM** DBA\_HIST\_SYSSTAT b, DBA\_HIST\_SYSSTAT e  
 **WHERE** B.SNAP\_ID = &beg\_snap  
 **AND** E.SNAP\_ID = &end\_snap  
 **AND** B.DBID = &DBID  
 **AND** E.DBID = &DBID  
 **AND** B.INSTANCE\_NUMBER = &INST\_NUM  
 **AND** E.INSTANCE\_NUMBER = &INST\_NUM  
 **and** e.STAT\_NAME = 'gc cr blocks served'  
 **and** b.stat\_name = 'gc cr blocks served') +  
   
 (**SELECT** e.**VALUE** - b.**value**  
 **FROM** DBA\_HIST\_SYSSTAT b, DBA\_HIST\_SYSSTAT e  
 **WHERE** B.SNAP\_ID = &beg\_snap  
 **AND** E.SNAP\_ID = &end\_snap  
 **AND** B.DBID = &DBID  
 **AND** E.DBID = &DBID  
 **AND** B.INSTANCE\_NUMBER = &INST\_NUM  
 **AND** E.INSTANCE\_NUMBER = &INST\_NUM  
 **and** e.STAT\_NAME = 'gc current blocks served'  
 **and** b.STAT\_NAME = 'gc current blocks served')) /  
 (**SELECT** EXTRACT(**DAY** **FROM**  
 E.END\_INTERVAL\_TIME - B.END\_INTERVAL\_TIME) \*  
 86400 + EXTRACT(HOUR **FROM** E.END\_INTERVAL\_TIME -  
 B.END\_INTERVAL\_TIME) \* 3600 +  
 EXTRACT(MINUTE **FROM**  
 E.END\_INTERVAL\_TIME - B.END\_INTERVAL\_TIME) \* 60 +  
 EXTRACT(**SECOND** **FROM**  
 E.END\_INTERVAL\_TIME - B.END\_INTERVAL\_TIME)  
 **FROM** DBA\_HIST\_SNAPSHOT B, DBA\_HIST\_SNAPSHOT E  
 **WHERE** B.SNAP\_ID = &beg\_snap  
 **AND** E.SNAP\_ID = &end\_snap  
 **AND** B.DBID = &DBID  
 **AND** E.DBID = &DBID  
 **AND** B.INSTANCE\_NUMBER = &INST\_NUM  
 **AND** E.INSTANCE\_NUMBER = &INST\_NUM  
 **AND** B.STARTUP\_TIME = E.STARTUP\_TIME  
 **AND** B.END\_INTERVAL\_TIME < E.END\_INTERVAL\_TIME),  
 2)  
 **from** dual;

*---- Global Cache blocks served:per transaction*

**select** round(((**SELECT** e.**VALUE** - b.**value**  
 **FROM** DBA\_HIST\_SYSSTAT b, DBA\_HIST\_SYSSTAT e  
 **WHERE** B.SNAP\_ID = &beg\_snap  
 **AND** E.SNAP\_ID = &end\_snap  
 **AND** B.DBID = &DBID  
 **AND** E.DBID = &DBID  
 **AND** B.INSTANCE\_NUMBER = &INST\_NUM  
 **AND** E.INSTANCE\_NUMBER = &INST\_NUM  
 **and** e.STAT\_NAME = 'gc cr blocks served'  
 **and** b.stat\_name = 'gc cr blocks served') +  
 (**SELECT** e.**VALUE** - b.**value**  
 **FROM** DBA\_HIST\_SYSSTAT b, DBA\_HIST\_SYSSTAT e  
 **WHERE** B.SNAP\_ID = &beg\_snap  
 **AND** E.SNAP\_ID = &end\_snap  
 **AND** B.DBID = &DBID  
 **AND** E.DBID = &DBID  
 **AND** B.INSTANCE\_NUMBER = &INST\_NUM  
 **AND** E.INSTANCE\_NUMBER = &INST\_NUM  
 **and** e.STAT\_NAME = 'gc current blocks served'  
 **and** b.STAT\_NAME = 'gc current blocks served')) /  
 (**SELECT** **sum**(e.**value**) - **sum**(b.**value**)  
 **FROM** DBA\_HIST\_SYSSTAT B, DBA\_HIST\_SYSSTAT E  
 **WHERE** B.SNAP\_ID = &beg\_snap  
 **AND** E.SNAP\_ID = &end\_snap  
 **AND** B.DBID = &DBID  
 **AND** E.DBID = &DBID  
 **AND** B.INSTANCE\_NUMBER = &INST\_NUM  
 **AND** E.INSTANCE\_NUMBER = &INST\_NUM  
 **and** e.STAT\_NAME **in** ('user rollbacks', 'user commits')  
 **and** b.STAT\_NAME **in** ('user rollbacks', 'user commits')),  
 2)  
 **from** dual;

*----GCS/GES messages received::per second*

**select** round(((**SELECT** e.**VALUE** - b.**value**  
 **FROM** DBA\_HIST\_SYSSTAT b, DBA\_HIST\_SYSSTAT e  
 **WHERE** B.SNAP\_ID = &beg\_snap  
 **AND** E.SNAP\_ID = &end\_snap  
 **AND** B.DBID = &DBID  
 **AND** E.DBID = &DBID  
 **AND** B.INSTANCE\_NUMBER = &INST\_NUM  
 **AND** E.INSTANCE\_NUMBER = &INST\_NUM  
 **and** e.STAT\_NAME = 'gcs msgs received'  
 **and** b.stat\_name = 'gcs msgs received') +  
 (**SELECT** e.**VALUE** - b.**value**  
 **FROM** DBA\_HIST\_SYSSTAT b, DBA\_HIST\_SYSSTAT e  
 **WHERE** B.SNAP\_ID = &beg\_snap  
 **AND** E.SNAP\_ID = &end\_snap  
 **AND** B.DBID = &DBID  
 **AND** E.DBID = &DBID  
 **AND** B.INSTANCE\_NUMBER = &INST\_NUM  
 **AND** E.INSTANCE\_NUMBER = &INST\_NUM  
 **and** e.STAT\_NAME = 'ges msgs received'  
 **and** b.STAT\_NAME = 'ges msgs received')) /  
 (**SELECT** EXTRACT(**DAY** **FROM**  
 E.END\_INTERVAL\_TIME - B.END\_INTERVAL\_TIME) \*  
 86400 + EXTRACT(HOUR **FROM** E.END\_INTERVAL\_TIME -  
 B.END\_INTERVAL\_TIME) \* 3600 +  
 EXTRACT(MINUTE **FROM**  
 E.END\_INTERVAL\_TIME - B.END\_INTERVAL\_TIME) \* 60 +  
 EXTRACT(**SECOND** **FROM**  
 E.END\_INTERVAL\_TIME - B.END\_INTERVAL\_TIME)  
 **FROM** DBA\_HIST\_SNAPSHOT B, DBA\_HIST\_SNAPSHOT E  
 **WHERE** B.SNAP\_ID = &beg\_snap  
 **AND** E.SNAP\_ID = &end\_snap  
 **AND** B.DBID = &DBID  
 **AND** E.DBID = &DBID  
 **AND** B.INSTANCE\_NUMBER = &INST\_NUM  
 **AND** E.INSTANCE\_NUMBER = &INST\_NUM  
 **AND** B.STARTUP\_TIME = E.STARTUP\_TIME  
 **AND** B.END\_INTERVAL\_TIME < E.END\_INTERVAL\_TIME),  
 2)  
 **from** dual;

*----GCS/GES messages received::per transaction*

**select** round(((**SELECT** e.**VALUE** - b.**value**  
 **FROM** DBA\_HIST\_SYSSTAT b, DBA\_HIST\_SYSSTAT e  
 **WHERE** B.SNAP\_ID = &beg\_snap  
 **AND** E.SNAP\_ID = &end\_snap  
 **AND** B.DBID = &DBID  
 **AND** E.DBID = &DBID  
 **AND** B.INSTANCE\_NUMBER = &INST\_NUM  
 **AND** E.INSTANCE\_NUMBER = &INST\_NUM  
 **and** e.STAT\_NAME = 'gcs msgs received'  
 **and** b.stat\_name = 'gcs msgs received') +  
 (**SELECT** e.**VALUE** - b.**value**  
 **FROM** DBA\_HIST\_SYSSTAT b, DBA\_HIST\_SYSSTAT e  
 **WHERE** B.SNAP\_ID = &beg\_snap  
 **AND** E.SNAP\_ID = &end\_snap  
 **AND** B.DBID = &DBID  
 **AND** E.DBID = &DBID  
 **AND** B.INSTANCE\_NUMBER = &INST\_NUM  
 **AND** E.INSTANCE\_NUMBER = &INST\_NUM  
 **and** e.STAT\_NAME = 'ges msgs received'  
 **and** b.STAT\_NAME = 'ges msgs received')) /  
 (**SELECT** **sum**(e.**value**) - **sum**(b.**value**)  
 **FROM** DBA\_HIST\_SYSSTAT B, DBA\_HIST\_SYSSTAT E  
 **WHERE** B.SNAP\_ID = &beg\_snap  
 **AND** E.SNAP\_ID = &end\_snap  
 **AND** B.DBID = &DBID  
 **AND** E.DBID = &DBID  
 **AND** B.INSTANCE\_NUMBER = &INST\_NUM  
 **AND** E.INSTANCE\_NUMBER = &INST\_NUM  
 **and** e.STAT\_NAME **in** ('user rollbacks', 'user commits')  
 **and** b.STAT\_NAME **in** ('user rollbacks', 'user commits')),  
 2)  
 **from** dual;

*----GCS/GES messages sent:per second*

**select** round(((**SELECT** e.**VALUE** - b.**value**  
 **FROM** DBA\_HIST\_SYSSTAT b, DBA\_HIST\_SYSSTAT e  
 **WHERE** B.SNAP\_ID = &beg\_snap  
 **AND** E.SNAP\_ID = &end\_snap  
 **AND** B.DBID = &DBID  
 **AND** E.DBID = &DBID  
 **AND** B.INSTANCE\_NUMBER = &INST\_NUM  
 **AND** E.INSTANCE\_NUMBER = &INST\_NUM  
 **and** e.STAT\_NAME = 'gcs messages sent'  
 **and** b.stat\_name = 'gcs messages sent') +  
 (**SELECT** e.**VALUE** - b.**value**  
 **FROM** DBA\_HIST\_SYSSTAT b, DBA\_HIST\_SYSSTAT e  
 **WHERE** B.SNAP\_ID = &beg\_snap  
 **AND** E.SNAP\_ID = &end\_snap  
 **AND** B.DBID = &DBID  
 **AND** E.DBID = &DBID  
 **AND** B.INSTANCE\_NUMBER = &INST\_NUM  
 **AND** E.INSTANCE\_NUMBER = &INST\_NUM  
 **and** e.STAT\_NAME = 'ges messages sent'  
 **and** b.stat\_name = 'ges messages sent ')) /  
 (**SELECT** EXTRACT(**DAY** **FROM**  
 E.END\_INTERVAL\_TIME - B.END\_INTERVAL\_TIME) \*  
 86400 + EXTRACT(HOUR **FROM** E.END\_INTERVAL\_TIME -  
 B.END\_INTERVAL\_TIME) \* 3600 +  
 EXTRACT(MINUTE **FROM**  
 E.END\_INTERVAL\_TIME - B.END\_INTERVAL\_TIME) \* 60 +  
 EXTRACT(**SECOND** **FROM**  
 E.END\_INTERVAL\_TIME - B.END\_INTERVAL\_TIME)  
 **FROM** DBA\_HIST\_SNAPSHOT B, DBA\_HIST\_SNAPSHOT E  
 **WHERE** B.SNAP\_ID = &beg\_snap  
 **AND** E.SNAP\_ID = &end\_snap  
 **AND** B.DBID = &DBID  
 **AND** E.DBID = &DBID  
 **AND** B.INSTANCE\_NUMBER = &INST\_NUM  
 **AND** E.INSTANCE\_NUMBER = &INST\_NUM  
 **AND** B.STARTUP\_TIME = E.STARTUP\_TIME  
 **AND** B.END\_INTERVAL\_TIME < E.END\_INTERVAL\_TIME),  
 2)  
 **from** dual;

*----GCS/GES messages sent:per transaction*

**select** round(((**SELECT** e.**VALUE** - b.**value**  
 **FROM** DBA\_HIST\_SYSSTAT b, DBA\_HIST\_SYSSTAT e  
 **WHERE** B.SNAP\_ID = &beg\_snap  
 **AND** E.SNAP\_ID = &end\_snap  
 **AND** B.DBID = &DBID  
 **AND** E.DBID = &DBID  
 **AND** B.INSTANCE\_NUMBER = &INST\_NUM  
 **AND** E.INSTANCE\_NUMBER = &INST\_NUM  
 **and** e.STAT\_NAME = 'gcs messages sent'  
 **and** b.stat\_name = 'gcs messages sent') +  
 (**SELECT** e.**VALUE** - b.**value**  
 **FROM** DBA\_HIST\_SYSSTAT b, DBA\_HIST\_SYSSTAT e  
 **WHERE** B.SNAP\_ID = &beg\_snap  
 **AND** E.SNAP\_ID = &end\_snap  
 **AND** B.DBID = &DBID  
 **AND** E.DBID = &DBID  
 **AND** B.INSTANCE\_NUMBER = &INST\_NUM  
 **AND** E.INSTANCE\_NUMBER = &INST\_NUM  
 **and** e.STAT\_NAME = 'ges messages sent'  
 **and** b.stat\_name = 'ges messages sent ')) /  
 (**SELECT** **sum**(e.**value**) - **sum**(b.**value**)  
 **FROM** DBA\_HIST\_SYSSTAT B, DBA\_HIST\_SYSSTAT E  
 **WHERE** B.SNAP\_ID = &beg\_snap  
 **AND** E.SNAP\_ID = &end\_snap  
 **AND** B.DBID = &DBID  
 **AND** E.DBID = &DBID  
 **AND** B.INSTANCE\_NUMBER = &INST\_NUM  
 **AND** E.INSTANCE\_NUMBER = &INST\_NUM  
 **and** e.STAT\_NAME **in** ('user rollbacks', 'user commits')  
 **and** b.STAT\_NAME **in** ('user rollbacks', 'user commits')),  
 2)  
 **from** dual;

*----DBWR Fusion writes:per second*

**select** round((**SELECT** e.**VALUE** - b.**value**  
 **FROM** DBA\_HIST\_SYSSTAT b, DBA\_HIST\_SYSSTAT e  
 **WHERE** B.SNAP\_ID = &beg\_snap  
 **AND** E.SNAP\_ID = &end\_snap  
 **AND** B.DBID = &DBID  
 **AND** E.DBID = &DBID  
 **AND** B.INSTANCE\_NUMBER = &INST\_NUM  
 **AND** E.INSTANCE\_NUMBER = &INST\_NUM  
 **and** e.STAT\_NAME = 'DBWR fusion writes'  
 **and** b.stat\_name = 'DBWR fusion writes') /  
 (**SELECT** EXTRACT(**DAY** **FROM**  
 E.END\_INTERVAL\_TIME - B.END\_INTERVAL\_TIME) \*  
 86400 + EXTRACT(HOUR **FROM** E.END\_INTERVAL\_TIME -  
 B.END\_INTERVAL\_TIME) \* 3600 +  
 EXTRACT(MINUTE **FROM**  
 E.END\_INTERVAL\_TIME - B.END\_INTERVAL\_TIME) \* 60 +  
 EXTRACT(**SECOND** **FROM**  
 E.END\_INTERVAL\_TIME - B.END\_INTERVAL\_TIME)  
 **FROM** DBA\_HIST\_SNAPSHOT B, DBA\_HIST\_SNAPSHOT E  
 **WHERE** B.SNAP\_ID = &beg\_snap  
 **AND** E.SNAP\_ID = &end\_snap  
 **AND** B.DBID = &DBID  
 **AND** E.DBID = &DBID  
 **AND** B.INSTANCE\_NUMBER = &INST\_NUM  
 **AND** E.INSTANCE\_NUMBER = &INST\_NUM  
 **AND** B.STARTUP\_TIME = E.STARTUP\_TIME  
 **AND** B.END\_INTERVAL\_TIME < E.END\_INTERVAL\_TIME),  
 2)  
 **from** dual;

*----DBWR Fusion writes:per transaction*

**select** round((**SELECT** e.**VALUE** - b.**value**  
 **FROM** DBA\_HIST\_SYSSTAT b, DBA\_HIST\_SYSSTAT e  
 **WHERE** B.SNAP\_ID = &beg\_snap  
 **AND** E.SNAP\_ID = &end\_snap  
 **AND** B.DBID = &DBID  
 **AND** E.DBID = &DBID  
 **AND** B.INSTANCE\_NUMBER = &INST\_NUM  
 **AND** E.INSTANCE\_NUMBER = &INST\_NUM  
 **and** e.STAT\_NAME = 'DBWR fusion writes'  
 **and** b.stat\_name = 'DBWR fusion writes') /  
 (**SELECT** **sum**(e.**value**) - **sum**(b.**value**)  
 **FROM** DBA\_HIST\_SYSSTAT B, DBA\_HIST\_SYSSTAT E  
 **WHERE** B.SNAP\_ID = &beg\_snap  
 **AND** E.SNAP\_ID = &end\_snap  
 **AND** B.DBID = &DBID  
 **AND** E.DBID = &DBID  
 **AND** B.INSTANCE\_NUMBER = &INST\_NUM  
 **AND** E.INSTANCE\_NUMBER = &INST\_NUM  
 **and** e.STAT\_NAME **in** ('user rollbacks', 'user commits')  
 **and** b.STAT\_NAME **in** ('user rollbacks', 'user commits')),  
 2)  
 **from** dual;

*---- Estd Interconnect traffic (KB)*

**select** round(((**SELECT** **VALUE**  
 **FROM** DBA\_HIST\_PARAMETER  
 **WHERE** SNAP\_ID = &beg\_snap  
 **AND** DBID = &DBID  
 **AND** INSTANCE\_NUMBER = &INST\_NUM  
 **AND** PARAMETER\_NAME = 'db\_block\_size') \*  
 (**SELECT** **sum**(e.**VALUE**) - **sum**(b.**value**)  
 **FROM** DBA\_HIST\_SYSSTAT b, DBA\_HIST\_SYSSTAT e  
 **WHERE** B.SNAP\_ID = &beg\_snap  
 **AND** E.SNAP\_ID = &end\_snap  
 **AND** B.DBID = &DBID  
 **AND** E.DBID = &DBID  
 **AND** B.INSTANCE\_NUMBER = &INST\_NUM  
 **AND** E.INSTANCE\_NUMBER = &INST\_NUM  
 **and** e.STAT\_NAME **in**  
 ('gc cr blocks received', 'gc current blocks received',  
 'gc current blocks received',  
 'gc current blocks served')  
 **and** b.stat\_name **in**  
 ('gc cr blocks received', 'gc current blocks received',  
 'gc current blocks received',  
 'gc current blocks served')) +  
 200 \*  
 (**SELECT** **sum**(e.**VALUE**) - **sum**(b.**value**)  
 **FROM** DBA\_HIST\_SYSSTAT b, DBA\_HIST\_SYSSTAT e  
 **WHERE** B.SNAP\_ID = &beg\_snap  
 **AND** E.SNAP\_ID = &end\_snap  
 **AND** B.DBID = &DBID  
 **AND** E.DBID = &DBID  
 **AND** B.INSTANCE\_NUMBER = &INST\_NUM  
 **AND** E.INSTANCE\_NUMBER = &INST\_NUM  
 **and** e.STAT\_NAME **in**  
 ('gcs msgs received', 'ges msgs received',  
 'gcs messages sent', 'ges messages sent')  
 **and** b.stat\_name **in**  
 ('gcs msgs received', 'ges msgs received',  
 'gcs messages sent', 'ges messages sent'))) / 1024 /  
 (**SELECT** EXTRACT(**DAY** **FROM**  
 E.END\_INTERVAL\_TIME - B.END\_INTERVAL\_TIME) \*  
 86400 + EXTRACT(HOUR **FROM** E.END\_INTERVAL\_TIME -  
 B.END\_INTERVAL\_TIME) \* 3600 +  
 EXTRACT(MINUTE **FROM**  
 E.END\_INTERVAL\_TIME - B.END\_INTERVAL\_TIME) \* 60 +  
 EXTRACT(**SECOND** **FROM**  
 E.END\_INTERVAL\_TIME - B.END\_INTERVAL\_TIME)  
 **FROM** DBA\_HIST\_SNAPSHOT B, DBA\_HIST\_SNAPSHOT E  
 **WHERE** B.SNAP\_ID = &beg\_snap  
 **AND** E.SNAP\_ID = &end\_snap  
 **AND** B.DBID = &DBID  
 **AND** E.DBID = &DBID  
 **AND** B.INSTANCE\_NUMBER = &INST\_NUM  
 **AND** E.INSTANCE\_NUMBER = &INST\_NUM  
 **AND** B.STARTUP\_TIME = E.STARTUP\_TIME  
 **AND** B.END\_INTERVAL\_TIME < E.END\_INTERVAL\_TIME),  
 2)  
 **from** dual;

*---- Buffer access - local cache %:*

**select** round(100 \*  
 (1 - ((**SELECT** **sum**(e.**VALUE**) - **sum**(b.**value**)  
 **FROM** DBA\_HIST\_SYSSTAT b, DBA\_HIST\_SYSSTAT e  
 **WHERE** B.SNAP\_ID = &beg\_snap  
 **AND** E.SNAP\_ID = &end\_snap  
 **AND** B.DBID = &DBID  
 **AND** E.DBID = &DBID  
 **AND** B.INSTANCE\_NUMBER = &INST\_NUM  
 **AND** E.INSTANCE\_NUMBER = &INST\_NUM  
 **and** e.STAT\_NAME **in**  
 ('physical reads', 'gc cr blocks received',  
 'gc current blocks received')  
 **and** b.STAT\_NAME **in**  
 ('physical reads', 'gc cr blocks received',  
 'gc current blocks received')) -  
 (**SELECT** **sum**(e.**VALUE**) - **sum**(b.**value**)  
 **FROM** DBA\_HIST\_SYSSTAT b, DBA\_HIST\_SYSSTAT e  
 **WHERE** B.SNAP\_ID = &beg\_snap  
 **AND** E.SNAP\_ID = &end\_snap  
 **AND** B.DBID = &DBID  
 **AND** E.DBID = &DBID  
 **AND** B.INSTANCE\_NUMBER = &INST\_NUM  
 **AND** E.INSTANCE\_NUMBER = &INST\_NUM  
 **and** e.STAT\_NAME **in** ('physical reads direct',  
 'physical reads direct (lob)')  
 **and** b.stat\_name **in** ('physical reads direct',  
 'physical reads direct (lob)'))) /  
 (**SELECT** **sum**(e.**VALUE**) - **sum**(b.**value**)  
 **FROM** DBA\_HIST\_SYSSTAT b, DBA\_HIST\_SYSSTAT e  
 **WHERE** B.SNAP\_ID = &beg\_snap  
 **AND** E.SNAP\_ID = &end\_snap  
 **AND** B.DBID = &DBID  
 **AND** E.DBID = &DBID  
 **AND** B.INSTANCE\_NUMBER = &INST\_NUM  
 **AND** E.INSTANCE\_NUMBER = &INST\_NUM  
 **and** e.STAT\_NAME = 'session logical reads'  
 **and** b.stat\_name = 'session logical reads')),  
 2)  
 **from** dual;

*---- Buffer access - remote cache %:*

**select** round(100 \* ((**SELECT** **sum**(e.**VALUE**) - **sum**(b.**value**)  
 **FROM** DBA\_HIST\_SYSSTAT b, DBA\_HIST\_SYSSTAT e  
 **WHERE** B.SNAP\_ID = &beg\_snap  
 **AND** E.SNAP\_ID = &end\_snap  
 **AND** B.DBID = &DBID  
 **AND** E.DBID = &DBID  
 **AND** B.INSTANCE\_NUMBER = &INST\_NUM  
 **AND** E.INSTANCE\_NUMBER = &INST\_NUM  
 **and** e.STAT\_NAME **in** ('gc cr blocks received',  
 'gc current blocks received')  
 **and** b.stat\_name **in** ('gc cr blocks received',  
 'gc current blocks received')) /  
 (**SELECT** **sum**(e.**VALUE**) - **sum**(b.**value**)  
 **FROM** DBA\_HIST\_SYSSTAT b, DBA\_HIST\_SYSSTAT e  
 **WHERE** B.SNAP\_ID = &beg\_snap  
 **AND** E.SNAP\_ID = &end\_snap  
 **AND** B.DBID = &DBID  
 **AND** E.DBID = &DBID  
 **AND** B.INSTANCE\_NUMBER = &INST\_NUM  
 **AND** E.INSTANCE\_NUMBER = &INST\_NUM  
 **and** e.STAT\_NAME = 'session logical reads'  
 **and** b.stat\_name = 'session logical reads')),  
 2)  
 **from** dual;

*----Buffer access - disk %:*

**select** round(100 \* (((**SELECT** **sum**(e.**VALUE**) - **sum**(b.**value**)  
 **FROM** DBA\_HIST\_SYSSTAT b, DBA\_HIST\_SYSSTAT e  
 **WHERE** B.SNAP\_ID = &beg\_snap  
 **AND** E.SNAP\_ID = &end\_snap  
 **AND** B.DBID = &DBID  
 **AND** E.DBID = &DBID  
 **AND** B.INSTANCE\_NUMBER = &INST\_NUM  
 **AND** E.INSTANCE\_NUMBER = &INST\_NUM  
 **and** e.STAT\_NAME = 'physical reads'  
 **and** b.STAT\_NAME = 'physical reads') -  
 (**SELECT** **sum**(e.**VALUE**) - **sum**(b.**value**)  
 **FROM** DBA\_HIST\_SYSSTAT b, DBA\_HIST\_SYSSTAT e  
 **WHERE** B.SNAP\_ID = &beg\_snap  
 **AND** E.SNAP\_ID = &end\_snap  
 **AND** B.DBID = &DBID  
 **AND** E.DBID = &DBID  
 **AND** B.INSTANCE\_NUMBER = &INST\_NUM  
 **AND** E.INSTANCE\_NUMBER = &INST\_NUM  
 **and** e.STAT\_NAME **in** ('physical reads direct',  
 'physical reads direct (lob)')  
 **and** b.stat\_name **in** ('physical reads direct',  
 'physical reads direct (lob)'))) /  
 (**SELECT** **sum**(e.**VALUE**) - **sum**(b.**value**)  
 **FROM** DBA\_HIST\_SYSSTAT b, DBA\_HIST\_SYSSTAT e  
 **WHERE** B.SNAP\_ID = &beg\_snap  
 **AND** E.SNAP\_ID = &end\_snap  
 **AND** B.DBID = &DBID  
 **AND** E.DBID = &DBID  
 **AND** B.INSTANCE\_NUMBER = &INST\_NUM  
 **AND** E.INSTANCE\_NUMBER = &INST\_NUM  
 **and** e.STAT\_NAME = 'session logical reads'  
 **and** b.stat\_name = 'session logical reads')),  
 2)  
 **from** dual;

*---- Avg global enqueue get time (ms):*

**select** decode(v\_2, 0, '', v\_1 / v\_2)  
 **from** (**select** 10 \* (**SELECT** **sum**(e.**VALUE**) - **sum**(b.**value**)  
 **FROM** DBA\_HIST\_SYSSTAT b, DBA\_HIST\_SYSSTAT e  
 **WHERE** B.SNAP\_ID = &beg\_snap  
 **AND** E.SNAP\_ID = &end\_snap  
 **AND** B.DBID = &DBID  
 **AND** E.DBID = &DBID  
 **AND** B.INSTANCE\_NUMBER = &INST\_NUM  
 **AND** E.INSTANCE\_NUMBER = &INST\_NUM  
 **and** e.STAT\_NAME = 'global enqueue get time'  
 **and** e.STAT\_NAME = 'global enqueue get time') v\_1,  
 (**SELECT** **sum**(e.**VALUE**) - **sum**(b.**value**)  
 **FROM** DBA\_HIST\_SYSSTAT b, DBA\_HIST\_SYSSTAT e  
 **WHERE** B.SNAP\_ID = &beg\_snap  
 **AND** E.SNAP\_ID = &end\_snap  
 **AND** B.DBID = &DBID  
 **AND** E.DBID = &DBID  
 **AND** B.INSTANCE\_NUMBER = &INST\_NUM  
 **AND** E.INSTANCE\_NUMBER = &INST\_NUM  
 **and** e.STAT\_NAME **in** ('global enqueue gets async',  
 'global enqueue gets sync')  
 **and** b.stat\_name **in** ('global enqueue gets async',  
 'global enqueue gets sync')) v\_2  
 **from** dual);

*---- Avg global cache cr block receive time (ms):*

**select** decode(v\_2, 0, '', v\_1 / v\_2)  
 **from** (**select** 10 \* (**SELECT** **sum**(e.**VALUE**) - **sum**(b.**value**)  
 **FROM** DBA\_HIST\_SYSSTAT b, DBA\_HIST\_SYSSTAT e  
 **WHERE** B.SNAP\_ID = &beg\_snap  
 **AND** E.SNAP\_ID = &end\_snap  
 **AND** B.DBID = &DBID  
 **AND** E.DBID = &DBID  
 **AND** B.INSTANCE\_NUMBER = &INST\_NUM  
 **AND** E.INSTANCE\_NUMBER = &INST\_NUM  
 **and** e.STAT\_NAME = 'gc cr block receive time'  
 **and** e.STAT\_NAME = 'gc cr block receive time') v\_1,  
 (**SELECT** **sum**(e.**VALUE**) - **sum**(b.**value**)  
 **FROM** DBA\_HIST\_SYSSTAT b, DBA\_HIST\_SYSSTAT e  
 **WHERE** B.SNAP\_ID = &beg\_snap  
 **AND** E.SNAP\_ID = &end\_snap  
 **AND** B.DBID = &DBID  
 **AND** E.DBID = &DBID  
 **AND** B.INSTANCE\_NUMBER = &INST\_NUM  
 **AND** E.INSTANCE\_NUMBER = &INST\_NUM  
 **and** e.STAT\_NAME = 'gc cr blocks received'  
 **and** b.stat\_name = 'gc cr blocks received') v\_2  
 **from** dual);

*---- Avg global cache current block receive time (ms):*

**select** decode(v\_2, 0, '', v\_1 / v\_2)  
 **from** (**select** 10 \*  
 (**SELECT** **sum**(e.**VALUE**) - **sum**(b.**value**)  
 **FROM** DBA\_HIST\_SYSSTAT b, DBA\_HIST\_SYSSTAT e  
 **WHERE** B.SNAP\_ID = &beg\_snap  
 **AND** E.SNAP\_ID = &end\_snap  
 **AND** B.DBID = &DBID  
 **AND** E.DBID = &DBID  
 **AND** B.INSTANCE\_NUMBER = &INST\_NUM  
 **AND** E.INSTANCE\_NUMBER = &INST\_NUM  
 **and** e.STAT\_NAME = 'gc current block receive time'  
 **and** e.STAT\_NAME = 'gc current block receive time') v\_1,  
 (**SELECT** **sum**(e.**VALUE**) - **sum**(b.**value**)  
 **FROM** DBA\_HIST\_SYSSTAT b, DBA\_HIST\_SYSSTAT e  
 **WHERE** B.SNAP\_ID = &beg\_snap  
 **AND** E.SNAP\_ID = &end\_snap  
 **AND** B.DBID = &DBID  
 **AND** E.DBID = &DBID  
 **AND** B.INSTANCE\_NUMBER = &INST\_NUM  
 **AND** E.INSTANCE\_NUMBER = &INST\_NUM  
 **and** e.STAT\_NAME = 'gc current blocks received'  
 **and** b.stat\_name = 'gc current blocks received') v\_2  
 **from** dual);

*---- Avg global cache cr block build time (ms):*

**select** decode(v\_2, 0, '', v\_1 / v\_2)  
 **from** (**select** 10 \* (**SELECT** **sum**(e.**VALUE**) - **sum**(b.**value**)  
 **FROM** DBA\_HIST\_SYSSTAT b, DBA\_HIST\_SYSSTAT e  
 **WHERE** B.SNAP\_ID = &beg\_snap  
 **AND** E.SNAP\_ID = &end\_snap  
 **AND** B.DBID = &DBID  
 **AND** E.DBID = &DBID  
 **AND** B.INSTANCE\_NUMBER = &INST\_NUM  
 **AND** E.INSTANCE\_NUMBER = &INST\_NUM  
 **and** e.STAT\_NAME = 'gc cr block build time'  
 **and** e.STAT\_NAME = 'gc cr block build time') v\_1,  
 (**SELECT** **sum**(e.**VALUE**) - **sum**(b.**value**)  
 **FROM** DBA\_HIST\_SYSSTAT b, DBA\_HIST\_SYSSTAT e  
 **WHERE** B.SNAP\_ID = &beg\_snap  
 **AND** E.SNAP\_ID = &end\_snap  
 **AND** B.DBID = &DBID  
 **AND** E.DBID = &DBID  
 **AND** B.INSTANCE\_NUMBER = &INST\_NUM  
 **AND** E.INSTANCE\_NUMBER = &INST\_NUM  
 **and** e.STAT\_NAME = 'gc cr blocks served'  
 **and** b.stat\_name = 'gc cr blocks served') v\_2  
 **from** dual);

*---- Avg global cache cr block send time (ms):*

**select** decode(v\_2, 0, '', v\_1 / v\_2)  
 **from** (**select** 10 \* (**SELECT** **sum**(e.**VALUE**) - **sum**(b.**value**)  
 **FROM** DBA\_HIST\_SYSSTAT b, DBA\_HIST\_SYSSTAT e  
 **WHERE** B.SNAP\_ID = &beg\_snap  
 **AND** E.SNAP\_ID = &end\_snap  
 **AND** B.DBID = &DBID  
 **AND** E.DBID = &DBID  
 **AND** B.INSTANCE\_NUMBER = &INST\_NUM  
 **AND** E.INSTANCE\_NUMBER = &INST\_NUM  
 **and** e.STAT\_NAME = 'gc cr block send time'  
 **and** e.STAT\_NAME = 'gc cr block send time') v\_1,  
 (**SELECT** **sum**(e.**VALUE**) - **sum**(b.**value**)  
 **FROM** DBA\_HIST\_SYSSTAT b, DBA\_HIST\_SYSSTAT e  
 **WHERE** B.SNAP\_ID = &beg\_snap  
 **AND** E.SNAP\_ID = &end\_snap  
 **AND** B.DBID = &DBID  
 **AND** E.DBID = &DBID  
 **AND** B.INSTANCE\_NUMBER = &INST\_NUM  
 **AND** E.INSTANCE\_NUMBER = &INST\_NUM  
 **and** e.STAT\_NAME = 'gc cr blocks served'  
 **and** b.stat\_name = 'gc cr blocks served') v\_2  
 **from** dual);

*---- Global cache log flushes for cr blocks served %:*

**select** decode(v\_2, 0, '', v\_1 / v\_2)  
 **from** (**select** 10 \* (**SELECT** **sum**(e.**VALUE**) - **sum**(b.**value**)  
 **FROM** DBA\_HIST\_SYSSTAT b, DBA\_HIST\_SYSSTAT e  
 **WHERE** B.SNAP\_ID = &beg\_snap  
 **AND** E.SNAP\_ID = &end\_snap  
 **AND** B.DBID = &DBID  
 **AND** E.DBID = &DBID  
 **AND** B.INSTANCE\_NUMBER = &INST\_NUM  
 **AND** E.INSTANCE\_NUMBER = &INST\_NUM  
 **and** e.STAT\_NAME = 'cr\_flushes'  
 **and** e.STAT\_NAME = 'cr\_flushes') v\_1,  
 (**SELECT** **sum**(e.**VALUE**) - **sum**(b.**value**)  
 **FROM** DBA\_HIST\_SYSSTAT b, DBA\_HIST\_SYSSTAT e  
 **WHERE** B.SNAP\_ID = &beg\_snap  
 **AND** E.SNAP\_ID = &end\_snap  
 **AND** B.DBID = &DBID  
 **AND** E.DBID = &DBID  
 **AND** B.INSTANCE\_NUMBER = &INST\_NUM  
 **AND** E.INSTANCE\_NUMBER = &INST\_NUM  
 **and** e.STAT\_NAME = 'gc cr blocks served'  
 **and** b.stat\_name = 'gc cr blocks served') v\_2  
 **from** dual);

*---- Avg global cache cr block flush time (ms):*

**select** decode(v\_2, 0, '', v\_1 / v\_2)  
 **from** (**select** 10 \* (**SELECT** **sum**(e.**VALUE**) - **sum**(b.**value**)  
 **FROM** DBA\_HIST\_SYSSTAT b, DBA\_HIST\_SYSSTAT e  
 **WHERE** B.SNAP\_ID = &beg\_snap  
 **AND** E.SNAP\_ID = &end\_snap  
 **AND** B.DBID = &DBID  
 **AND** E.DBID = &DBID  
 **AND** B.INSTANCE\_NUMBER = &INST\_NUM  
 **AND** E.INSTANCE\_NUMBER = &INST\_NUM  
 **and** e.STAT\_NAME = 'gc cr block flush time'  
 **and** e.STAT\_NAME = 'gc cr block flush time') v\_1,  
 (**SELECT** **sum**(e.**VALUE**) - **sum**(b.**value**)  
 **FROM** DBA\_HIST\_SYSSTAT b, DBA\_HIST\_SYSSTAT e  
 **WHERE** B.SNAP\_ID = &beg\_snap  
 **AND** E.SNAP\_ID = &end\_snap  
 **AND** B.DBID = &DBID  
 **AND** E.DBID = &DBID  
 **AND** B.INSTANCE\_NUMBER = &INST\_NUM  
 **AND** E.INSTANCE\_NUMBER = &INST\_NUM  
 **and** e.STAT\_NAME = 'cr\_flushes'  
 **and** b.stat\_name = 'cr\_flushes') v\_2  
 **from** dual);

*---- Avg global cache current block pin time (ms):*

**select** decode(v\_2, 0, '', v\_1 / v\_2)  
 **from** (**select** 10 \* (**SELECT** **sum**(e.**VALUE**) - **sum**(b.**value**)  
 **FROM** DBA\_HIST\_SYSSTAT b, DBA\_HIST\_SYSSTAT e  
 **WHERE** B.SNAP\_ID = &beg\_snap  
 **AND** E.SNAP\_ID = &end\_snap  
 **AND** B.DBID = &DBID  
 **AND** E.DBID = &DBID  
 **AND** B.INSTANCE\_NUMBER = &INST\_NUM  
 **AND** E.INSTANCE\_NUMBER = &INST\_NUM  
 **and** e.STAT\_NAME = 'gc current block pin time'  
 **and** e.STAT\_NAME = 'gc current block pin time') v\_1,  
 (**SELECT** **sum**(e.**VALUE**) - **sum**(b.**value**)  
 **FROM** DBA\_HIST\_SYSSTAT b, DBA\_HIST\_SYSSTAT e  
 **WHERE** B.SNAP\_ID = &beg\_snap  
 **AND** E.SNAP\_ID = &end\_snap  
 **AND** B.DBID = &DBID  
 **AND** E.DBID = &DBID  
 **AND** B.INSTANCE\_NUMBER = &INST\_NUM  
 **AND** E.INSTANCE\_NUMBER = &INST\_NUM  
 **and** e.STAT\_NAME = 'gc current blocks served'  
 **and** b.stat\_name = 'gc current blocks served') v\_2  
 **from** dual);

*---- Avg global cache current block send time (ms):*

**select** decode(v\_2, 0, '', v\_1 / v\_2)  
 **from** (**select** 10 \* (**SELECT** **sum**(e.**VALUE**) - **sum**(b.**value**)  
 **FROM** DBA\_HIST\_SYSSTAT b, DBA\_HIST\_SYSSTAT e  
 **WHERE** B.SNAP\_ID = &beg\_snap  
 **AND** E.SNAP\_ID = &end\_snap  
 **AND** B.DBID = &DBID  
 **AND** E.DBID = &DBID  
 **AND** B.INSTANCE\_NUMBER = &INST\_NUM  
 **AND** E.INSTANCE\_NUMBER = &INST\_NUM  
 **and** e.STAT\_NAME = 'gc current block send time'  
 **and** e.STAT\_NAME = 'gc current block send time') v\_1,  
 (**SELECT** **sum**(e.**VALUE**) - **sum**(b.**value**)  
 **FROM** DBA\_HIST\_SYSSTAT b, DBA\_HIST\_SYSSTAT e  
 **WHERE** B.SNAP\_ID = &beg\_snap  
 **AND** E.SNAP\_ID = &end\_snap  
 **AND** B.DBID = &DBID  
 **AND** E.DBID = &DBID  
 **AND** B.INSTANCE\_NUMBER = &INST\_NUM  
 **AND** E.INSTANCE\_NUMBER = &INST\_NUM  
 **and** e.STAT\_NAME = 'gc current blocks served'  
 **and** b.stat\_name = 'gc current blocks served') v\_2  
 **from** dual);

*---- Global cache log flushes for current blocks served %:*

**select** decode(v\_2, 0, '', v\_1 / v\_2)  
 **from** (**select** 10 \*  
 (**SELECT** **sum**(e.**VALUE**) - **sum**(b.**value**)  
 **FROM** DBA\_HIST\_SYSSTAT b, DBA\_HIST\_SYSSTAT e  
 **WHERE** B.SNAP\_ID = &beg\_snap  
 **AND** E.SNAP\_ID = &end\_snap  
 **AND** B.DBID = &DBID  
 **AND** E.DBID = &DBID  
 **AND** B.INSTANCE\_NUMBER = &INST\_NUM  
 **AND** E.INSTANCE\_NUMBER = &INST\_NUM  
 **and** e.STAT\_NAME = 'gc current block flush time'  
 **and** e.STAT\_NAME = 'gc current block flush time') v\_1,  
 (**SELECT** **sum**(e.**VALUE**) - **sum**(b.**value**)  
 **FROM** DBA\_HIST\_SYSSTAT b, DBA\_HIST\_SYSSTAT e  
 **WHERE** B.SNAP\_ID = &beg\_snap  
 **AND** E.SNAP\_ID = &end\_snap  
 **AND** B.DBID = &DBID  
 **AND** E.DBID = &DBID  
 **AND** B.INSTANCE\_NUMBER = &INST\_NUM  
 **AND** E.INSTANCE\_NUMBER = &INST\_NUM  
 **and** e.STAT\_NAME = 'current\_flushes'  
 **and** b.stat\_name = 'current\_flushes') v\_2  
 **from** dual);

*---- Avg global cache current block flush time (ms):*

**select** decode(v\_2, 0, '', v\_1 / v\_2)  
 **from** (**select** 10 \* (**SELECT** **sum**(e.**VALUE**) - **sum**(b.**value**)  
 **FROM** DBA\_HIST\_SYSSTAT b, DBA\_HIST\_SYSSTAT e  
 **WHERE** B.SNAP\_ID = &beg\_snap  
 **AND** E.SNAP\_ID = &end\_snap  
 **AND** B.DBID = &DBID  
 **AND** E.DBID = &DBID  
 **AND** B.INSTANCE\_NUMBER = &INST\_NUM  
 **AND** E.INSTANCE\_NUMBER = &INST\_NUM  
 **and** e.STAT\_NAME = 'current\_flushes'  
 **and** e.STAT\_NAME = 'current\_flushes') v\_1,  
 (**SELECT** **sum**(e.**VALUE**) - **sum**(b.**value**)  
 **FROM** DBA\_HIST\_SYSSTAT b, DBA\_HIST\_SYSSTAT e  
 **WHERE** B.SNAP\_ID = &beg\_snap  
 **AND** E.SNAP\_ID = &end\_snap  
 **AND** B.DBID = &DBID  
 **AND** E.DBID = &DBID  
 **AND** B.INSTANCE\_NUMBER = &INST\_NUM  
 **AND** E.INSTANCE\_NUMBER = &INST\_NUM  
 **and** e.STAT\_NAME = 'gc current blocks served'  
 **and** b.stat\_name = 'gc current blocks served') v\_2  
 **from** dual);

*---- Avg message sent queue time (ms):*

**select** decode(v\_2, 0, '', v\_1 / v\_2)  
 **from** (**select** (**SELECT** **sum**(e.**VALUE**) - **sum**(b.**value**)  
 **FROM** DBA\_HIST\_SYSSTAT b, DBA\_HIST\_SYSSTAT e  
 **WHERE** B.SNAP\_ID = &beg\_snap  
 **AND** E.SNAP\_ID = &end\_snap  
 **AND** B.DBID = &DBID  
 **AND** E.DBID = &DBID  
 **AND** B.INSTANCE\_NUMBER = &INST\_NUM  
 **AND** E.INSTANCE\_NUMBER = &INST\_NUM  
 **and** e.STAT\_NAME = 'msgs sent queue time (ms)'  
 **and** e.STAT\_NAME = 'msgs sent queue time (ms)') v\_1,  
 (**SELECT** **sum**(e.**VALUE**) - **sum**(b.**value**)  
 **FROM** DBA\_HIST\_SYSSTAT b, DBA\_HIST\_SYSSTAT e  
 **WHERE** B.SNAP\_ID = &beg\_snap  
 **AND** E.SNAP\_ID = &end\_snap  
 **AND** B.DBID = &DBID  
 **AND** E.DBID = &DBID  
 **AND** B.INSTANCE\_NUMBER = &INST\_NUM  
 **AND** E.INSTANCE\_NUMBER = &INST\_NUM  
 **and** e.STAT\_NAME = 'msgs sent queued'  
 **and** b.stat\_name = 'msgs sent queued') v\_2  
 **from** dual);

*---- Avg message sent queue time on ksxp (ms):*

**select** decode(v\_2, 0, '', v\_1 / v\_2)  
 **from** (**select** (**SELECT** **sum**(e.**VALUE**) - **sum**(b.**value**)  
 **FROM** DBA\_HIST\_SYSSTAT b, DBA\_HIST\_SYSSTAT e  
 **WHERE** B.SNAP\_ID = &beg\_snap  
 **AND** E.SNAP\_ID = &end\_snap  
 **AND** B.DBID = &DBID  
 **AND** E.DBID = &DBID  
 **AND** B.INSTANCE\_NUMBER = &INST\_NUM  
 **AND** E.INSTANCE\_NUMBER = &INST\_NUM  
 **and** e.STAT\_NAME = 'msgs sent queue time on ksxp (ms)'  
 **and** e.STAT\_NAME = 'msgs sent queue time on ksxp (ms)') v\_1,  
 (**SELECT** **sum**(e.**VALUE**) - **sum**(b.**value**)  
 **FROM** DBA\_HIST\_SYSSTAT b, DBA\_HIST\_SYSSTAT e  
 **WHERE** B.SNAP\_ID = &beg\_snap  
 **AND** E.SNAP\_ID = &end\_snap  
 **AND** B.DBID = &DBID  
 **AND** E.DBID = &DBID  
 **AND** B.INSTANCE\_NUMBER = &INST\_NUM  
 **AND** E.INSTANCE\_NUMBER = &INST\_NUM  
 **and** e.STAT\_NAME = 'msgs sent queued on ksxp'  
 **and** b.stat\_name = 'msgs sent queued on ksxp') v\_2  
 **from** dual);

*---- Avg message received queue time (ms):*

**select** decode(v\_2, 0, '', v\_1 / v\_2)  
 **from** (**select** (**SELECT** **sum**(e.**VALUE**) - **sum**(b.**value**)  
 **FROM** DBA\_HIST\_SYSSTAT b, DBA\_HIST\_SYSSTAT e  
 **WHERE** B.SNAP\_ID = &beg\_snap  
 **AND** E.SNAP\_ID = &end\_snap  
 **AND** B.DBID = &DBID  
 **AND** E.DBID = &DBID  
 **AND** B.INSTANCE\_NUMBER = &INST\_NUM  
 **AND** E.INSTANCE\_NUMBER = &INST\_NUM  
 **and** e.STAT\_NAME = 'msgs received queue time (ms)'  
 **and** e.STAT\_NAME = 'msgs received queue time (ms)') v\_1,  
 (**SELECT** **sum**(e.**VALUE**) - **sum**(b.**value**)  
 **FROM** DBA\_HIST\_SYSSTAT b, DBA\_HIST\_SYSSTAT e  
 **WHERE** B.SNAP\_ID = &beg\_snap  
 **AND** E.SNAP\_ID = &end\_snap  
 **AND** B.DBID = &DBID  
 **AND** E.DBID = &DBID  
 **AND** B.INSTANCE\_NUMBER = &INST\_NUM  
 **AND** E.INSTANCE\_NUMBER = &INST\_NUM  
 **and** e.STAT\_NAME = 'msgs received queued'  
 **and** b.stat\_name = 'msgs received queued') v\_2  
 **from** dual);

*---- Avg GCS message process time (ms):*

**select** decode(v\_2, 0, '', v\_1 / v\_2)  
 **from** (**select** (**SELECT** **sum**(e.**VALUE**) - **sum**(b.**value**)  
 **FROM** DBA\_HIST\_SYSSTAT b, DBA\_HIST\_SYSSTAT e  
 **WHERE** B.SNAP\_ID = &beg\_snap  
 **AND** E.SNAP\_ID = &end\_snap  
 **AND** B.DBID = &DBID  
 **AND** E.DBID = &DBID  
 **AND** B.INSTANCE\_NUMBER = &INST\_NUM  
 **AND** E.INSTANCE\_NUMBER = &INST\_NUM  
 **and** e.STAT\_NAME = 'gcs msgs process time(ms)'  
 **and** e.STAT\_NAME = 'gcs msgs process time(ms)') v\_1,  
 (**SELECT** **sum**(e.**VALUE**) - **sum**(b.**value**)  
 **FROM** DBA\_HIST\_SYSSTAT b, DBA\_HIST\_SYSSTAT e  
 **WHERE** B.SNAP\_ID = &beg\_snap  
 **AND** E.SNAP\_ID = &end\_snap  
 **AND** B.DBID = &DBID  
 **AND** E.DBID = &DBID  
 **AND** B.INSTANCE\_NUMBER = &INST\_NUM  
 **AND** E.INSTANCE\_NUMBER = &INST\_NUM  
 **and** e.STAT\_NAME = 'gcs msgs received'  
 **and** b.stat\_name = 'gcs msgs received') v\_2  
 **from** dual);

*---- Avg GES message process time (ms):*

**select** decode(v\_2, 0, '', v\_1 / v\_2)  
 **from** (**select** (**SELECT** **sum**(e.**VALUE**) - **sum**(b.**value**)  
 **FROM** DBA\_HIST\_SYSSTAT b, DBA\_HIST\_SYSSTAT e  
 **WHERE** B.SNAP\_ID = &beg\_snap  
 **AND** E.SNAP\_ID = &end\_snap  
 **AND** B.DBID = &DBID  
 **AND** E.DBID = &DBID  
 **AND** B.INSTANCE\_NUMBER = &INST\_NUM  
 **AND** E.INSTANCE\_NUMBER = &INST\_NUM  
 **and** e.STAT\_NAME = 'ges msgs process time(ms)'  
 **and** e.STAT\_NAME = 'ges msgs process time(ms)') v\_1,  
 (**SELECT** **sum**(e.**VALUE**) - **sum**(b.**value**)  
 **FROM** DBA\_HIST\_SYSSTAT b, DBA\_HIST\_SYSSTAT e  
 **WHERE** B.SNAP\_ID = &beg\_snap  
 **AND** E.SNAP\_ID = &end\_snap  
 **AND** B.DBID = &DBID  
 **AND** E.DBID = &DBID  
 **AND** B.INSTANCE\_NUMBER = &INST\_NUM  
 **AND** E.INSTANCE\_NUMBER = &INST\_NUM  
 **and** e.STAT\_NAME = 'ges msgs received'  
 **and** b.stat\_name = 'ges msgs received') v\_2  
 **from** dual);

*---- % of direct sent messages:*

**select** decode(v\_2, 0, '', v\_1 / v\_2)  
 **from** (**select** 100 \* (**SELECT** **sum**(e.**VALUE**) - **sum**(b.**value**)  
 **FROM** DBA\_HIST\_SYSSTAT b, DBA\_HIST\_SYSSTAT e  
 **WHERE** B.SNAP\_ID = &beg\_snap  
 **AND** E.SNAP\_ID = &end\_snap  
 **AND** B.DBID = &DBID  
 **AND** E.DBID = &DBID  
 **AND** B.INSTANCE\_NUMBER = &INST\_NUM  
 **AND** E.INSTANCE\_NUMBER = &INST\_NUM  
 **and** e.STAT\_NAME = 'messages sent directly'  
 **and** e.STAT\_NAME = 'messages sent directly') v\_1,  
 (**SELECT** **sum**(e.**VALUE**) - **sum**(b.**value**)  
 **FROM** DBA\_HIST\_SYSSTAT b, DBA\_HIST\_SYSSTAT e  
 **WHERE** B.SNAP\_ID = &beg\_snap  
 **AND** E.SNAP\_ID = &end\_snap  
 **AND** B.DBID = &DBID  
 **AND** E.DBID = &DBID  
 **AND** B.INSTANCE\_NUMBER = &INST\_NUM  
 **AND** E.INSTANCE\_NUMBER = &INST\_NUM  
 **and** e.STAT\_NAME **in**  
 ('messages sent directly', 'messages sent indirectly',  
 'messages flow controlled')  
 **and** b.stat\_name **in**  
 ('messages sent directly', 'messages sent indirectly',  
 'messages flow controlled')) v\_2  
 **from** dual);

*---- % of indirect sent messages:*

**select** decode(v\_2, 0, '', v\_1 / v\_2)  
 **from** (**select** 100 \* (**SELECT** **sum**(e.**VALUE**) - **sum**(b.**value**)  
 **FROM** DBA\_HIST\_SYSSTAT b, DBA\_HIST\_SYSSTAT e  
 **WHERE** B.SNAP\_ID = &beg\_snap  
 **AND** E.SNAP\_ID = &end\_snap  
 **AND** B.DBID = &DBID  
 **AND** E.DBID = &DBID  
 **AND** B.INSTANCE\_NUMBER = &INST\_NUM  
 **AND** E.INSTANCE\_NUMBER = &INST\_NUM  
 **and** e.STAT\_NAME = 'messages sent indirectly'  
 **and** e.STAT\_NAME = 'messages sent indirectly') v\_1,  
 (**SELECT** **sum**(e.**VALUE**) - **sum**(b.**value**)  
 **FROM** DBA\_HIST\_SYSSTAT b, DBA\_HIST\_SYSSTAT e  
 **WHERE** B.SNAP\_ID = &beg\_snap  
 **AND** E.SNAP\_ID = &end\_snap  
 **AND** B.DBID = &DBID  
 **AND** E.DBID = &DBID  
 **AND** B.INSTANCE\_NUMBER = &INST\_NUM  
 **AND** E.INSTANCE\_NUMBER = &INST\_NUM  
 **and** e.STAT\_NAME **in**  
 ('messages sent directly', 'messages sent indirectly',  
 'messages flow controlled')  
 **and** b.stat\_name **in**  
 ('messages sent directly', 'messages sent indirectly',  
 'messages flow controlled')) v\_2  
 **from** dual);

*---- % of flow controlled messages:*

**select** decode(v\_2, 0, '', v\_1 / v\_2)  
 **from** (**select** 100 \* (**SELECT** **sum**(e.**VALUE**) - **sum**(b.**value**)  
 **FROM** DBA\_HIST\_SYSSTAT b, DBA\_HIST\_SYSSTAT e  
 **WHERE** B.SNAP\_ID = &beg\_snap  
 **AND** E.SNAP\_ID = &end\_snap  
 **AND** B.DBID = &DBID  
 **AND** E.DBID = &DBID  
 **AND** B.INSTANCE\_NUMBER = &INST\_NUM  
 **AND** E.INSTANCE\_NUMBER = &INST\_NUM  
 **and** e.STAT\_NAME = 'messages flow controlled'  
 **and** e.STAT\_NAME = 'messages flow controlled') v\_1,  
 (**SELECT** **sum**(e.**VALUE**) - **sum**(b.**value**)  
 **FROM** DBA\_HIST\_SYSSTAT b, DBA\_HIST\_SYSSTAT e  
 **WHERE** B.SNAP\_ID = &beg\_snap  
 **AND** E.SNAP\_ID = &end\_snap  
 **AND** B.DBID = &DBID  
 **AND** E.DBID = &DBID  
 **AND** B.INSTANCE\_NUMBER = &INST\_NUM  
 **AND** E.INSTANCE\_NUMBER = &INST\_NUM  
 **and** e.STAT\_NAME **in**  
 ('messages sent directly', 'messages sent indirectly',  
 'messages flow controlled')  
 **and** b.stat\_name **in**  
 ('messages sent directly', 'messages sent indirectly',  
 'messages flow controlled')) v\_2  
 **from** dual);

----Time Model Statistics

**select** stat\_name,  
 seconds,  
 decode((dbt + bglast), 0, **percent**, to\_number(**null**)),  
 (dbt + bglast) order\_col  
 **from** (**select** b.stat\_name,  
 (b.**value** - a.**value**) / 1000000 **as** seconds,  
 100 \*  
 ((b.**value** - a.**value**) /  
 (**SELECT** **sum**(e.**value**) - **sum**(b.**value**)  
 **FROM** DBA\_HIST\_SYS\_TIME\_MODEL b, DBA\_HIST\_SYS\_TIME\_MODEL e  
 **WHERE** b.snap\_id = &beg\_snap  
 **and** e.snap\_id = &end\_snap  
 **and** b.dbid = &dbid  
 **and** e.dbid = &dbid  
 **and** b.instance\_number = &inst\_num  
 **and** e.instance\_number = &inst\_num  
 **AND** b.STAT\_NAME = 'DB time'  
 **and** e.stat\_name = 'DB time')) **as** **percent**,  
 decode(b.stat\_name, 'DB time', 1, 0) dbt,  
 decode(instr(b.stat\_name, 'background'), 1, 2, 0) bglast  
 **from** dba\_hist\_sys\_time\_model a, dba\_hist\_sys\_time\_model b  
 **where** a.dbid = &dbid  
 **and** b.dbid = &dbid  
 **and** a.instance\_number = &inst\_num  
 **and** b.instance\_number = &inst\_num  
 **and** a.snap\_id = &beg\_snap  
 **and** b.snap\_id = &end\_snap  
 **and** a.stat\_id = b.stat\_id  
 **and** b.**value** - a.**value** > 0)  
 **order** **by** order\_col **asc**, seconds **desc**, stat\_name;

----Wait Class

**select** e.wait\_class wait\_class,  
 **sum**(e.total\_waits - nvl(b.total\_waits, 0)) waits,  
 decode(**sum**(e.total\_waits - nvl(b.total\_waits, 0)),  
 0,  
 to\_number(**NULL**),  
 100 \* **sum**(e.total\_timeouts - nvl(b.total\_timeouts, 0)) /  
 **sum**(e.total\_waits - nvl(b.total\_waits, 0))) topct,  
 **sum**(e.time\_waited\_micro - nvl(b.time\_waited\_micro, 0)) / 1000000 **time**,  
 decode(**sum**(e.total\_waits - nvl(b.total\_waits, 0)),  
 0,  
 to\_number(**NULL**),  
 (**sum**(e.time\_waited\_micro - nvl(b.time\_waited\_micro, 0)) / 1000) /  
 **sum**(e.total\_waits - nvl(b.total\_waits, 0))) avgwt,  
 **sum**(e.total\_waits - nvl(b.total\_waits, 0)) /  
 (**SELECT** **sum**(e.**VALUE**) - **sum**(b.**value**)  
 **FROM** DBA\_HIST\_SYSSTAT b, DBA\_HIST\_SYSSTAT e  
 **WHERE** B.SNAP\_ID = &beg\_snap  
 **AND** E.SNAP\_ID = &end\_snap  
 **AND** B.DBID = &DBID  
 **AND** E.DBID = &DBID  
 **AND** B.INSTANCE\_NUMBER = &INST\_NUM  
 **AND** E.INSTANCE\_NUMBER = &INST\_NUM  
 **and** e.STAT\_NAME **in** ('user rollbacks', 'user commits')  
 **and** b.stat\_name **in** ('user rollbacks', 'user commits')) txwaits  
 **from** dba\_hist\_system\_event b, dba\_hist\_system\_event e  
 **where** b.snap\_id(+) = &beg\_snap  
 **and** e.snap\_id = &end\_snap  
 **and** b.dbid(+) = &dbid  
 **and** e.dbid = &dbid  
 **and** b.instance\_number(+) = &inst\_num  
 **and** e.instance\_number = &inst\_num  
 **and** b.event\_id(+) = e.event\_id  
 **and** e.total\_waits > nvl(b.total\_waits, 0)  
 **and** e.wait\_class != 'Idle'  
 **group** **by** e.wait\_class  
 **order** **by** **time** **desc**, waits **desc**, wait\_class;

----Wait Events

**select** e.event\_name event,  
 e.total\_waits - nvl(b.total\_waits, 0) waits,  
 decode(e.total\_waits - nvl(b.total\_waits, 0),  
 0,  
 to\_number(**NULL**),  
 100 \* (e.total\_timeouts - nvl(b.total\_timeouts, 0)) /  
 (e.total\_waits - nvl(b.total\_waits, 0))) pctto,  
 (e.time\_waited\_micro - nvl(b.time\_waited\_micro, 0)) / 1000000 **time**,  
 decode((e.total\_waits - nvl(b.total\_waits, 0)),  
 0,  
 to\_number(**NULL**),  
 ((e.time\_waited\_micro - nvl(b.time\_waited\_micro, 0)) / 1000) /  
 (e.total\_waits - nvl(b.total\_waits, 0))) avgwt,  
 (e.total\_waits - nvl(b.total\_waits, 0)) /  
 (**SELECT** **sum**(e.**VALUE**) - **sum**(b.**value**)  
 **FROM** DBA\_HIST\_SYSSTAT b, DBA\_HIST\_SYSSTAT e  
 **WHERE** B.SNAP\_ID = &beg\_snap  
 **AND** E.SNAP\_ID = &end\_snap  
 **AND** B.DBID = &DBID  
 **AND** E.DBID = &DBID  
 **AND** B.INSTANCE\_NUMBER = &INST\_NUM  
 **AND** E.INSTANCE\_NUMBER = &INST\_NUM  
 **and** e.STAT\_NAME **in** ('user rollbacks', 'user commits')  
 **and** b.stat\_name **in** ('user rollbacks', 'user commits')) txwaits,  
 decode(e.wait\_class, 'Idle', 99, 0) idle  
 **from** dba\_hist\_system\_event b, dba\_hist\_system\_event e  
 **where** b.snap\_id(+) = &beg\_snap  
 **and** e.snap\_id = &end\_snap  
 **and** b.dbid(+) = &dbid  
 **and** e.dbid = &dbid  
 **and** b.instance\_number(+) = &inst\_num  
 **and** e.instance\_number = &inst\_num  
 **and** b.event\_id(+) = e.event\_id  
 **and** e.total\_waits > nvl(b.total\_waits, 0)  
 **and** e.event\_name **not** **in** ('smon timer',  
 'pmon timer',  
 'dispatcher timer',  
 'dispatcher listen timer',  
 'rdbms ipc message')  
 **order** **by** idle, **time** **desc**, waits **desc**, event;

----Background Wait Events

**select** e.event\_name event,  
 e.total\_waits - nvl(b.total\_waits, 0) waits,  
 decode(e.total\_waits - nvl(b.total\_waits, 0),  
 0,  
 to\_number(**NULL**),  
 100 \* (e.total\_timeouts - nvl(b.total\_timeouts, 0)) /  
 (e.total\_waits - nvl(b.total\_waits, 0))) pctto,  
 (e.time\_waited\_micro - nvl(b.time\_waited\_micro, 0)) / 1000000 **time**,  
 decode((e.total\_waits - nvl(b.total\_waits, 0)),  
 0,  
 to\_number(**NULL**),  
 ((e.time\_waited\_micro - nvl(b.time\_waited\_micro, 0)) / 1000) /  
 (e.total\_waits - nvl(b.total\_waits, 0))) avgwt,  
 (e.total\_waits - nvl(b.total\_waits, 0)) /  
 (**SELECT** **sum**(e.**VALUE**) - **sum**(b.**value**)  
 **FROM** DBA\_HIST\_SYSSTAT b, DBA\_HIST\_SYSSTAT e  
 **WHERE** B.SNAP\_ID = &beg\_snap  
 **AND** E.SNAP\_ID = &end\_snap  
 **AND** B.DBID = &DBID  
 **AND** E.DBID = &DBID  
 **AND** B.INSTANCE\_NUMBER = &INST\_NUM  
 **AND** E.INSTANCE\_NUMBER = &INST\_NUM  
 **and** e.STAT\_NAME **in** ('user rollbacks', 'user commits')  
 **and** b.stat\_name **in** ('user rollbacks', 'user commits')) txwaits,  
 decode(e.wait\_class, ' Idle ', 99, 0) idle  
 **from** dba\_hist\_bg\_event\_summary b, dba\_hist\_bg\_event\_summary e  
 **where** b.snap\_id(+) = &beg\_snap  
 **and** e.snap\_id = &end\_snap  
 **and** b.dbid(+) = &dbid  
 **and** e.dbid = &dbid  
 **and** b.instance\_number(+) = &inst\_num  
 **and** e.instance\_number = &inst\_num  
 **and** b.event\_id(+) = e.event\_id  
 **and** e.total\_waits > nvl(b.total\_waits, 0)  
 **order** **by** idle, **time** **desc**, waits **desc**, event;

----Operating System Statistics

**select**   
 substr(e.stat\_name, 1, 35) **as** **name**,  
 (**case** **when** e.stat\_name **like** 'NUM\_CPU%' **then** e.**value**  
 **when** e.stat\_name = 'LOAD' **then** e.**value**  
 **when** e.stat\_name = 'PHYSICAL\_MEMORY\_BYTES' **then** e.**value**  
 **else** e.**value** - b.**value**  
 **end**) **as** **value**,  
 ( decode(instrb(e.stat\_name, 'TIME'), 0, 0, 1)  
 + decode(instrb(e.stat\_name, 'LOAD'), 0, 0, 2)  
 + decode(instrb(e.stat\_name, 'CPU\_WAIT'), 0, 0, 3)  
 + decode(instrb(e.stat\_name, 'VM\_'), 0, 0, 4)  
 + decode(instrb(e.stat\_name, 'PHYSICAL\_MEMORY'), 0, 0, 5)  
 + decode(instrb(e.stat\_name, 'NUM\_CPU'), 0, 0, 6)  
 ) styp  
 **from** dba\_hist\_osstat b,   
 dba\_hist\_osstat e  
 **where** b.dbid = &dbid  
 **and** e.dbid = &dbid  
 **and** b.instance\_number = &inst\_num  
 **and** e.instance\_number = &inst\_num  
 **and** b.snap\_id = &beg\_snap  
 **and** e.snap\_id = &end\_snap  
 **and** b.stat\_id = e.stat\_id  
 **order** **by** styp **asc**, **name** **asc**

----Service Statistics

**select** service\_name,  
 round(db\_time / 1000000, 1),  
 round(db\_cpu / 1000000, 1),  
 phy\_reads,  
 log\_reads  
 **from** (**select** s1.service\_name,  
 **sum**(decode(s1.stat\_name, 'DB time', s1.diff, 0)) db\_time,  
 **sum**(decode(s1.stat\_name, 'DB CPU', s1.diff, 0)) db\_cpu,  
 **sum**(decode(s1.stat\_name, 'physical reads', s1.diff, 0)) phy\_reads,  
 **sum**(decode(s1.stat\_name,  
 ' session logical reads ',  
 s1.diff,  
 0)) log\_reads  
 **from** (**select** e.service\_name service\_name,  
 e.stat\_name stat\_name,  
 e.**value** - b.**value** diff  
 **from** dba\_hist\_service\_stat b, dba\_hist\_service\_stat e  
 **where** b.snap\_id = &beg\_snap  
 **and** e.snap\_id = &end\_snap  
 **and** b.instance\_number = &inst\_num  
 **and** e.instance\_number = &inst\_num  
 **and** b.dbid = &dbid  
 **and** e.dbid = &dbid  
 **and** b.stat\_id = e.stat\_id  
 **and** b.service\_name\_hash = e.service\_name\_hash) s1  
 **group** **by** s1.service\_name  
 **order** **by** db\_time **desc**, service\_name)  
 **where** **rownum** <= 5;

----Service Wait Class Stats

**select** service\_name,  
 uio\_waits,  
 uio\_time,  
 con\_waits,  
 con\_time,  
 adm\_waits,  
 adm\_time,  
 net\_waits,  
 net\_time  
 **from** (**select** stat1.service\_name service\_name,  
 db\_time,  
 uio\_waits,  
 uio\_time,  
 con\_waits,  
 con\_time,  
 adm\_waits,  
 adm\_time,  
 net\_waits,  
 net\_time  
 **from** (**select** s1.service\_name,  
 **sum**(decode(s1.stat\_name, ' DB time ', s1.diff, 0)) db\_time  
 **from** (**select** e.service\_name service\_name,  
 e.stat\_name stat\_name,  
 e.**value** - b.**value** diff  
 **from** dba\_hist\_service\_stat b,  
 dba\_hist\_service\_stat e  
 **where** b.snap\_id = &beg\_snap  
 **and** e.snap\_id = &end\_snap  
 **and** b.instance\_number = &inst\_num  
 **and** e.instance\_number = &inst\_num  
 **and** b.dbid = &dbid  
 **and** e.dbid = &dbid  
 **and** b.stat\_id = e.stat\_id  
 **and** b.service\_name\_hash = e.service\_name\_hash) s1  
 **group** **by** s1.service\_name) stat1,  
 (**select** s2.service\_name,  
 **sum**(decode(s2.wait\_class,  
 'User I/O',  
 s2.total\_waits,  
 0)) uio\_waits,  
 **sum**(decode(s2.wait\_class,  
 'User I/O',  
 s2.time\_waited,  
 0)) uio\_time,  
 **sum**(decode(s2.wait\_class,  
 'Concurrency',  
 s2.total\_waits,  
 0)) con\_waits,  
 **sum**(decode(s2.wait\_class,  
 'Concurrency',  
 s2.time\_waited,  
 0)) con\_time,  
 **sum**(decode(s2.wait\_class,  
 'Administrative',  
 s2.total\_waits,  
 0)) adm\_waits,  
 **sum**(decode(s2.wait\_class,  
 'Administrative',  
 s2.time\_waited,  
 0)) adm\_time,  
 **sum**(decode(s2.wait\_class, 'Network', s2.total\_waits, 0)) net\_waits,  
 **sum**(decode(s2.wait\_class, 'Network', s2.time\_waited, 0)) net\_time  
 **from** (**select** e.service\_name service\_name,  
 e.wait\_class wait\_class,  
 e.total\_waits - b.total\_waits total\_waits,  
 e.time\_waited - b.time\_waited time\_waited  
 **from** dba\_hist\_service\_wait\_class b,  
 dba\_hist\_service\_wait\_class e  
 **where** b.snap\_id = &beg\_snap  
 **and** e.snap\_id = &end\_snap  
 **and** b.instance\_number = &inst\_num  
 **and** e.instance\_number = &inst\_num  
 **and** b.dbid = &dbid  
 **and** e.dbid = &dbid  
 **and** b.wait\_class\_id = e.wait\_class\_id  
 **and** b.service\_name\_hash = e.service\_name\_hash) s2  
 **group** **by** s2.service\_name) stat2  
 **where** stat1.service\_name = stat2.service\_name  
 **order** **by** db\_time **desc**, service\_name)  
 **where** **rownum** <= 5;

----SQL ordered by Elapsed Time

**select** \*  
 **from** (**select** nvl((sqt.elap / 1000000), to\_number(**null**)),  
 nvl((sqt.cput / 1000000), to\_number(**null**)),  
 sqt.**exec**,  
 decode(sqt.**exec**,  
 0,  
 to\_number(**null**),  
 (sqt.elap / sqt.**exec** / 1000000)),  
 (100 \*  
 (sqt.elap / (**SELECT** **sum**(e.**VALUE**) - **sum**(b.**value**)  
 **FROM** DBA\_HIST\_SYSSTAT b, DBA\_HIST\_SYSSTAT e  
 **WHERE** B.SNAP\_ID = &beg\_snap  
 **AND** E.SNAP\_ID = &end\_snap  
 **AND** B.DBID = &DBID  
 **AND** E.DBID = &DBID  
 **AND** B.INSTANCE\_NUMBER = &INST\_NUM  
 **AND** E.INSTANCE\_NUMBER = &INST\_NUM  
 **and** e.STAT\_NAME = 'DB time'  
 **and** b.stat\_name = 'DB time'))) norm\_val,  
 sqt.sql\_id,  
 to\_clob(decode(sqt.**module**,  
 **null**,  
 **null**,  
 'Module: ' || sqt.**module**)),  
 nvl(st.sql\_text, to\_clob(' \*\* SQL Text Not Available \*\* '))  
 **from** (**select** sql\_id,  
 **max**(**module**) **module**,  
 **sum**(elapsed\_time\_delta) elap,  
 **sum**(cpu\_time\_delta) cput,  
 **sum**(executions\_delta) **exec**  
 **from** dba\_hist\_sqlstat  
 **where** dbid = &dbid  
 **and** instance\_number = &inst\_num  
 **and** &beg\_snap < snap\_id  
 **and** snap\_id <= &end\_snap  
 **group** **by** sql\_id) sqt,  
 dba\_hist\_sqltext st  
 **where** st.sql\_id(+) = sqt.sql\_id  
 **and** st.dbid(+) = &dbid  
 **order** **by** nvl(sqt.elap, -1) **desc**, sqt.sql\_id)  
 **where** **rownum** < 65  
 **and** (**rownum** <=10 **or** norm\_val > 1);

----SQL ordered by CPU Time

**select** \*  
 **from** (**select** nvl((sqt.cput / 1000000), to\_number(**null**)),  
 nvl((sqt.elap / 1000000), to\_number(**null**)),  
 sqt.**exec**,  
 decode(sqt.**exec**,  
 0,  
 to\_number(**null**),  
 (sqt.cput / sqt.**exec** / 1000000)),  
 (100 \* (sqt.elap /  
 (**SELECT** **sum**(e.**VALUE**) - **sum**(b.**value**)  
 **FROM** DBA\_HIST\_SYSSTAT b, DBA\_HIST\_SYSSTAT e  
 **WHERE** B.SNAP\_ID = &beg\_snap  
 **AND** E.SNAP\_ID = &end\_snap  
 **AND** B.DBID = &DBID  
 **AND** E.DBID = &DBID  
 **AND** B.INSTANCE\_NUMBER = &INST\_NUM  
 **AND** E.INSTANCE\_NUMBER = &INST\_NUM  
 **and** e.STAT\_NAME = 'DB time'  
 **and** b.stat\_name = 'DB time'))) norm\_val,  
 sqt.sql\_id,  
 to\_clob(decode(sqt.**module**,  
 **null**,  
 **null**,  
 'Module: ' || sqt.**module**)),  
 nvl(st.sql\_text, to\_clob('\*\* SQL Text Not Available \*\*'))  
 **from** (**select** sql\_id,  
 **max**(**module**) **module**,  
 **sum**(cpu\_time\_delta) cput,  
 **sum**(elapsed\_time\_delta) elap,  
 **sum**(executions\_delta) **exec**  
 **from** dba\_hist\_sqlstat  
 **where** dbid = &dbid  
 **and** instance\_number = &inst\_num  
 **and** &beg\_snap < snap\_id  
 **and** snap\_id <= &end\_snap  
 **group** **by** sql\_id) sqt,  
 dba\_hist\_sqltext st  
 **where** st.sql\_id(+) = sqt.sql\_id  
 **and** st.dbid(+) = &dbid  
 **order** **by** nvl(sqt.cput, -1) **desc**, sqt.sql\_id)  
 **where** **rownum** < 65  
 **and** (**rownum** <= 10 **or** norm\_val > 1)

----SQL ordered by Gets

**select** \*  
 **from** (**select** sqt.bget,  
 sqt.**exec**,  
 decode(sqt.**exec**, 0, to\_number(**null**), (sqt.bget / sqt.**exec**)),  
 (100 \* sqt.bget) /  
 (**SELECT** **sum**(e.**VALUE**) - **sum**(b.**value**)  
 **FROM** DBA\_HIST\_SYSSTAT b, DBA\_HIST\_SYSSTAT e  
 **WHERE** B.SNAP\_ID = &beg\_snap  
 **AND** E.SNAP\_ID = &end\_snap  
 **AND** B.DBID = &DBID  
 **AND** E.DBID = &DBID  
 **AND** B.INSTANCE\_NUMBER = &INST\_NUM  
 **AND** E.INSTANCE\_NUMBER = &INST\_NUM  
 **and** e.STAT\_NAME = 'session logical reads'  
 **and** b.stat\_name = 'session logical reads') norm\_val,  
 nvl((sqt.cput / 1000000), to\_number(**null**)),  
 nvl((sqt.elap / 1000000), to\_number(**null**)),  
 sqt.sql\_id,  
 to\_clob(decode(sqt.**module**,  
 **null**,  
 **null**,  
 'Module: ' || sqt.**module**)),  
 nvl(st.sql\_text, to\_clob('\*\* SQL Text Not Available \*\*'))  
 **from** (**select** sql\_id,  
 **max**(**module**) **module**,  
 **sum**(buffer\_gets\_delta) bget,  
 **sum**(executions\_delta) **exec**,  
 **sum**(cpu\_time\_delta) cput,  
 **sum**(elapsed\_time\_delta) elap  
 **from** dba\_hist\_sqlstat  
 **where** dbid = &dbid  
 **and** instance\_number = &inst\_num  
 **and** &beg\_snap < snap\_id  
 **and** snap\_id <= &end\_snap  
 **group** **by** sql\_id) sqt,  
 dba\_hist\_sqltext st  
 **where** st.sql\_id(+) = sqt.sql\_id  
 **and** st.dbid(+) = &dbid  
 **order** **by** nvl(sqt.bget, -1) **desc**, sqt.sql\_id)  
 **where** **rownum** < 65  
 **and** (**rownum** <= 10 **or** norm\_val > 1)

----SQL ordered by Reads

**select** \*  
 **from** (**select** sqt.dskr,  
 sqt.**exec**,  
 decode(sqt.**exec**, 0, to\_number(**null**), (sqt.dskr / sqt.**exec**)),  
 (100 \* sqt.dskr) /  
 (**SELECT** **sum**(e.**VALUE**) - **sum**(b.**value**)  
 **FROM** DBA\_HIST\_SYSSTAT b, DBA\_HIST\_SYSSTAT e  
 **WHERE** B.SNAP\_ID = &beg\_snap  
 **AND** E.SNAP\_ID = &end\_snap  
 **AND** B.DBID = &DBID  
 **AND** E.DBID = &DBID  
 **AND** B.INSTANCE\_NUMBER = &INST\_NUM  
 **AND** E.INSTANCE\_NUMBER = &INST\_NUM  
 **and** e.STAT\_NAME = 'physical reads'  
 **and** b.stat\_name = 'physical reads') norm\_val,  
 nvl((sqt.cput / 1000000), to\_number(**null**)),  
 nvl((sqt.elap / 1000000), to\_number(**null**)),  
 sqt.sql\_id,  
 decode(sqt.**module**, **null**, **null**, 'Module: ' || sqt.**module**),  
 nvl(st.sql\_text, to\_clob('\*\* SQL Text Not Available \*\*'))  
 **from** (**select** sql\_id,  
 **max**(**module**) **module**,  
 **sum**(disk\_reads\_delta) dskr,  
 **sum**(executions\_delta) **exec**,  
 **sum**(cpu\_time\_delta) cput,  
 **sum**(elapsed\_time\_delta) elap  
 **from** dba\_hist\_sqlstat  
 **where** dbid = &dbid  
 **and** instance\_number = &inst\_num  
 **and** &beg\_snap < snap\_id  
 **and** snap\_id <= &end\_snap  
 **group** **by** sql\_id) sqt,  
 dba\_hist\_sqltext st  
 **where** st.sql\_id(+) = sqt.sql\_id  
 **and** st.dbid(+) = &dbid  
 **and** (**SELECT** **sum**(e.**VALUE**) - **sum**(b.**value**)  
 **FROM** DBA\_HIST\_SYSSTAT b, DBA\_HIST\_SYSSTAT e  
 **WHERE** B.SNAP\_ID = &beg\_snap  
 **AND** E.SNAP\_ID = &end\_snap  
 **AND** B.DBID = &DBID  
 **AND** E.DBID = &DBID  
 **AND** B.INSTANCE\_NUMBER = &INST\_NUM  
 **AND** E.INSTANCE\_NUMBER = &INST\_NUM  
 **and** e.STAT\_NAME = 'physical reads'  
 **and** b.stat\_name = 'physical reads') > 0  
 **order** **by** nvl(sqt.dskr, -1) **desc**, sqt.sql\_id)  
 **where** **rownum** < 65**and**(**rownum** <= 10  
 **or** norm\_val > 1)

----SQL ordered by Executions

**select** \*  
 **from** (**select** sqt.**exec** **exec**,  
 sqt.rowp,  
 sqt.rowp / sqt.**exec**,  
 sqt.cput / sqt.**exec** / 1000000,  
 sqt.elap / sqt.**exec** / 1000000,  
 sqt.sql\_id,  
 decode(sqt.**module**, **null**, **null**, 'Module: ' || sqt.**module**),  
 nvl(st.sql\_text, to\_clob('\*\* SQL Text Not Available \*\*'))  
 **from** (**select** sql\_id,  
 **max**(**module**) **module**,  
 **sum**(executions\_delta) **exec**,  
 **sum**(rows\_processed\_delta) rowp,  
 **sum**(cpu\_time\_delta) cput,  
 **sum**(elapsed\_time\_delta) elap  
 **from** dba\_hist\_sqlstat  
 **where** dbid = &dbid  
 **and** instance\_number = &inst\_num  
 **and** &beg\_snap < snap\_id  
 **and** snap\_id <= &end\_snap  
 **group** **by** sql\_id) sqt,  
 dba\_hist\_sqltext st  
 **where** st.sql\_id(+) = sqt.sql\_id  
 **and** st.dbid(+) = &dbid  
 **and** sqt.**exec** > 0  
 **order** **by** nvl(sqt.**exec**, -1) **desc**, sqt.sql\_id)  
 **where** **rownum** < 65  
 **and** (**rownum** <= 10 **or**  
 (100 \* **exec**) /  
 (**SELECT** **sum**(e.**VALUE**) - **sum**(b.**value**)  
 **FROM** DBA\_HIST\_SYSSTAT b, DBA\_HIST\_SYSSTAT e  
 **WHERE** B.SNAP\_ID = &beg\_snap  
 **AND** E.SNAP\_ID = &end\_snap  
 **AND** B.DBID = &DBID  
 **AND** E.DBID = &DBID  
 **AND** B.INSTANCE\_NUMBER = &INST\_NUM  
 **AND** E.INSTANCE\_NUMBER = &INST\_NUM  
 **and** e.STAT\_NAME = 'execute count'  
 **and** b.stat\_name = 'execute count') > 1)

----SQL ordered by Parse Calls

**select** \*  
 **from** (**select** sqt.prsc,  
 sqt.**exec**,  
 decode((**SELECT** **sum**(e.**VALUE**) - **sum**(b.**value**)  
 **FROM** DBA\_HIST\_SYSSTAT b, DBA\_HIST\_SYSSTAT e  
 **WHERE** B.SNAP\_ID = &beg\_snap  
 **AND** E.SNAP\_ID = &end\_snap  
 **AND** B.DBID = &DBID  
 **AND** E.DBID = &DBID  
 **AND** B.INSTANCE\_NUMBER = &INST\_NUM  
 **AND** E.INSTANCE\_NUMBER = &INST\_NUM  
 **and** e.STAT\_NAME = 'parse count (total)'  
 **and** b.stat\_name = 'parse count (total)'),  
 0,  
 0,  
 100 \* sqt.prsc /  
 (**SELECT** **sum**(e.**VALUE**) - **sum**(b.**value**)  
 **FROM** DBA\_HIST\_SYSSTAT b, DBA\_HIST\_SYSSTAT e  
 **WHERE** B.SNAP\_ID = &beg\_snap  
 **AND** E.SNAP\_ID = &end\_snap  
 **AND** B.DBID = &DBID  
 **AND** E.DBID = &DBID  
 **AND** B.INSTANCE\_NUMBER = &INST\_NUM  
 **AND** E.INSTANCE\_NUMBER = &INST\_NUM  
 **and** e.STAT\_NAME = 'parse count (total)'  
 **and** b.stat\_name = 'parse count (total)')) norm\_val,  
 sqt.sql\_id,  
 decode(sqt.**module**, **null**, **null**, 'Module: ' || sqt.**module**),  
 nvl(st.sql\_text, to\_clob('\*\* SQL Text Not Available \*\*'))  
 **from** (**select** sql\_id,  
 **max**(**module**) **module**,  
 **sum**(buffer\_gets\_delta) bget,  
 **sum**(disk\_reads\_delta) dskr,  
 **sum**(executions\_delta) **exec**,  
 **sum**(parse\_calls\_delta) prsc  
 **from** dba\_hist\_sqlstat  
 **where** dbid = &dbid  
 **and** instance\_number = &inst\_num  
 **and** &beg\_snap < snap\_id  
 **and** snap\_id <= &end\_snap  
 **group** **by** sql\_id) sqt,  
 dba\_hist\_sqltext st  
 **where** st.sql\_id(+) = sqt.sql\_id  
 **and** st.dbid(+) = &dbid  
 **order** **by** nvl(sqt.prsc, -1) **desc**, sqt.sql\_id)  
 **where** **rownum** < 65  
 **and** (**rownum** <= 10 **or** norm\_val > 1)

----SQL ordered by Sharable Memory

**select** \*  
 **from** (**select** */\*+ ordered use\_nl (b st) \*/*  
 e.sharable\_mem,  
 sqt.**exec**,  
 decode((**SELECT** **sum**(**value**)  
 **FROM** DBA\_HIST\_PARAMETER  
 **WHERE** SNAP\_ID = &end\_snap  
 **AND** DBID = &DBID  
 **AND** INSTANCE\_NUMBER = &INST\_NUM  
 **AND** PARAMETER\_NAME = '\_\_shared\_pool\_size'),  
 0,  
 0,  
 100 \* e.sharable\_mem /  
 (**SELECT** **sum**(**value**)  
 **FROM** DBA\_HIST\_PARAMETER  
 **WHERE** SNAP\_ID = &end\_snap  
 **AND** DBID = &DBID  
 **AND** INSTANCE\_NUMBER = &INST\_NUM  
 **AND** PARAMETER\_NAME = '\_\_shared\_pool\_size')),  
 e.sql\_id,  
 decode(e.**module**, **null**, **null**, 'Module: ' || e.**module**),  
 nvl(st.sql\_text, to\_clob('\*\* SQL Text Not Available \*\*'))  
 **from** dba\_hist\_sqlstat e,  
 (**select** sql\_id, **sum**(executions\_delta) **exec**  
 **from** dba\_hist\_sqlstat  
 **where** dbid = &dbid  
 **and** instance\_number = &inst\_num  
 **and** &beg\_snap < snap\_id  
 **and** snap\_id <= &end\_snap  
 **group** **by** sql\_id) sqt,  
 dba\_hist\_sqltext st  
 **where** sqt.sql\_id(+) = e.sql\_id  
 **and** e.snap\_id = &end\_snap  
 **and** e.dbid = &dbid  
 **and** e.instance\_number = &inst\_num  
 **and** st.sql\_id(+) = e.sql\_id  
 **and** st.dbid(+) = &dbid  
 **and** e.sharable\_mem > 1048576  
 **order** **by** nvl(e.sharable\_mem, -1) **desc**, e.sql\_id)  
 **where** **rownum** < 65;

----SQL ordered by Version Count

**select** \*  
 **from** (**select** */\*+ ordered use\_nl (b st) \*/*  
 e.version\_count,  
 sqt.**exec**,   
 e.sql\_id,   
 decode(e.**module**, **null**, **null**, 'Module: ' || e.**module**),  
 nvl(st.sql\_text, to\_clob('\*\* SQL Text Not Available \*\*'))  
 **from** dba\_hist\_sqlstat e,  
 (**select** sql\_id, **sum**(executions\_delta) **exec**  
 **from** dba\_hist\_sqlstat   
 **where** dbid = &dbid  
 **and** instance\_number = &inst\_num  
 **and** &beg\_snap < snap\_id  
 **and** snap\_id <= &end\_snap  
 **group** **by** sql\_id) sqt,  
 dba\_hist\_sqltext st   
 **where** sqt.sql\_id(+) = e.sql\_id  
 **and** e.snap\_id = &end\_snap  
 **and** e.dbid = &dbid  
 **and** e.instance\_number = &inst\_num  
 **and** st.sql\_id(+) = e.sql\_id  
 **and** st.dbid(+) = &dbid  
 **and** e.version\_count > 20  
 **order** **by** nvl(e.version\_count, -1) **desc**, e.sql\_id)  
 **where** **rownum** < 65;

----SQL ordered by Cluster Wait Time

**select** \*  
 **from** (**select**   
 sqt.clwait / 1000000,  
 decode(sqt.elap, 0, sqt.clwait, 100 \* sqt.clwait / sqt.elap),  
 sqt.elap / 1000000,  
 sqt.cput / 1000000,  
 sqt.**exec**,  
 sqt.sql\_id,  
 decode(sqt.**module**, **null**, **null**, 'Module: ' || sqt.**module**),  
 nvl(st.sql\_text, to\_clob('\*\* SQL Text Not Available \*\*'))  
 **from** (**select** sql\_id, **max**(**module**) **module**,  
 **sum**(executions\_delta) **exec**,   
 **sum**(cpu\_time\_delta) cput,   
 **sum**(elapsed\_time\_delta) elap,  
 **sum**(clwait\_delta) clwait  
 **from** dba\_hist\_sqlstat  
 **where** dbid = &dbid  
 **and** instance\_number = &inst\_num  
 **and** &beg\_snap < snap\_id  
 **and** snap\_id <= &end\_snap  
 **group** **by** sql\_id) sqt,  
 dba\_hist\_sqltext st   
 **where** st.sql\_id(+) = sqt.sql\_id  
 **and** st.dbid(+) = &dbid  
 **and** sqt.clwait > 5000  
 **order** **by** nvl(sqt.clwait, -1) **desc**, sqt.sql\_id)  
 **where** **rownum** < 65

----Instance Activity Stats

**select** b.stat\_name st,  
 e.**value** - b.**value**,  
 round((e.**value** - b.**value**) /  
 (**SELECT** EXTRACT(**DAY** **FROM**  
 E.END\_INTERVAL\_TIME - B.END\_INTERVAL\_TIME) \*  
 86400 + EXTRACT(HOUR **FROM** E.END\_INTERVAL\_TIME -  
 B.END\_INTERVAL\_TIME) \* 3600 +  
 EXTRACT(MINUTE **FROM**  
 E.END\_INTERVAL\_TIME - B.END\_INTERVAL\_TIME) \* 60 +  
 EXTRACT(**SECOND** **FROM**  
 E.END\_INTERVAL\_TIME - B.END\_INTERVAL\_TIME)  
 **FROM** DBA\_HIST\_SNAPSHOT B, DBA\_HIST\_SNAPSHOT E  
 **WHERE** B.SNAP\_ID = &beg\_snap  
 **AND** E.SNAP\_ID = &end\_snap  
 **AND** B.DBID = &DBID  
 **AND** E.DBID = &DBID  
 **AND** B.INSTANCE\_NUMBER = &INST\_NUM  
 **AND** E.INSTANCE\_NUMBER = &INST\_NUM  
 **AND** B.STARTUP\_TIME = E.STARTUP\_TIME  
 **AND** B.END\_INTERVAL\_TIME < E.END\_INTERVAL\_TIME),  
 2),  
 round((e.**value** - b.**value**) /  
 (**SELECT** **sum**(e.**value**) - **sum**(b.**value**)  
 **FROM** DBA\_HIST\_SYSSTAT B, DBA\_HIST\_SYSSTAT E  
 **WHERE** B.SNAP\_ID = &beg\_snap  
 **AND** E.SNAP\_ID = &end\_snap  
 **AND** B.DBID = &DBID  
 **AND** E.DBID = &DBID  
 **AND** B.INSTANCE\_NUMBER = &INST\_NUM  
 **AND** E.INSTANCE\_NUMBER = &INST\_NUM  
 **and** e.STAT\_NAME **in** ('user rollbacks', 'user commits')  
 **and** b.STAT\_NAME **in** ('user rollbacks', 'user commits')),  
 2)  
 **from** dba\_hist\_sysstat b, dba\_hist\_sysstat e  
 **where** b.snap\_id = &beg\_snap  
 **and** e.snap\_id = &end\_snap  
 **and** b.dbid = &dbid  
 **and** e.dbid = &dbid  
 **and** b.instance\_number = &inst\_num  
 **and** e.instance\_number = &inst\_num  
 **and** b.stat\_id = e.stat\_id  
 **and** e.stat\_name **not** **in**  
 ('logons current', 'opened cursors current',  
 'workarea memory allocated', 'session cursor cache count')  
 **and** e.**value** >= b.**value**  
 **and** e.**value** > 0  
 **order** **by** st;

----Instance Activity Stats - Absolute Values

**select** b.stat\_name st,  
 b.**value**,  
 e.**value**  
 **from** dba\_hist\_sysstat b,  
 dba\_hist\_sysstat e  
 **where** b.snap\_id = &beg\_snap  
 **and** e.snap\_id = &end\_snap  
 **and** b.dbid = &dbid  
 **and** e.dbid = &dbid  
 **and** b.instance\_number = &inst\_num  
 **and** e.instance\_number = &inst\_num  
 **and** b.stat\_id = e.stat\_id  
 **and** e.stat\_name **in**   
 ('logons current',  
 'opened cursors current',  
 'workarea memory allocated',  
 'session cursor cache count')  
 **and** e.**value** > 0

----Instance Activity Stats - Thread Activity

**select** 'log switches (derived)',  
 e.**sequence**# - b.**sequence**#,  
 (e.**sequence**# - b.**sequence**#) /  
 ((**SELECT** EXTRACT(**DAY** **FROM** E.END\_INTERVAL\_TIME - B.END\_INTERVAL\_TIME) \*  
 86400 +  
 EXTRACT(HOUR **FROM** E.END\_INTERVAL\_TIME - B.END\_INTERVAL\_TIME) \* 3600 +  
 EXTRACT(MINUTE **FROM**  
 E.END\_INTERVAL\_TIME - B.END\_INTERVAL\_TIME) \* 60 +  
 EXTRACT(**SECOND** **FROM**  
 E.END\_INTERVAL\_TIME - B.END\_INTERVAL\_TIME)  
 **FROM** DBA\_HIST\_SNAPSHOT B, DBA\_HIST\_SNAPSHOT E  
 **WHERE** B.SNAP\_ID = &beg\_snap  
 **AND** E.SNAP\_ID = &end\_snap  
 **AND** B.DBID = &DBID  
 **AND** E.DBID = &DBID  
 **AND** B.INSTANCE\_NUMBER = &INST\_NUM  
 **AND** E.INSTANCE\_NUMBER = &INST\_NUM  
 **AND** B.STARTUP\_TIME = E.STARTUP\_TIME  
 **AND** B.END\_INTERVAL\_TIME < E.END\_INTERVAL\_TIME) / 3600)  
 **from** dba\_hist\_thread e, dba\_hist\_thread b  
 **where** b.snap\_id = &beg\_snap  
 **and** e.snap\_id = &end\_snap  
 **and** b.dbid = &dbid  
 **and** e.dbid = &dbid  
 **and** b.instance\_number = &inst\_num  
 **and** e.instance\_number = &inst\_num  
 **and** b.**thread**# = e.**thread**#  
 **and** b.thread\_instance\_number = e.thread\_instance\_number  
 **and** e.thread\_instance\_number = &inst\_num

----Operating System Statistics

**select**   
 substr(e.stat\_name, 1, 35) **as** **name**,  
 (**case** **when** e.stat\_name **like** 'NUM\_CPU%' **then** e.**value**  
 **when** e.stat\_name = 'LOAD' **then** e.**value**  
 **when** e.stat\_name = 'PHYSICAL\_MEMORY\_BYTES' **then** e.**value**  
 **else** e.**value** - b.**value**  
 **end**) **as** **value**,  
 ( decode(instrb(e.stat\_name, 'TIME'), 0, 0, 1)  
 + decode(instrb(e.stat\_name, 'LOAD'), 0, 0, 2)  
 + decode(instrb(e.stat\_name, 'CPU\_WAIT'), 0, 0, 3)  
 + decode(instrb(e.stat\_name, 'VM\_'), 0, 0, 4)  
 + decode(instrb(e.stat\_name, 'PHYSICAL\_MEMORY'), 0, 0, 5)  
 + decode(instrb(e.stat\_name, 'NUM\_CPU'), 0, 0, 6)  
 ) styp  
 **from** dba\_hist\_osstat b,   
 dba\_hist\_osstat e  
 **where** b.dbid = &dbid  
 **and** e.dbid = &dbid  
 **and** b.instance\_number = &inst\_num  
 **and** e.instance\_number = &inst\_num  
 **and** b.snap\_id = &beg\_snap  
 **and** e.snap\_id = &end\_snap  
 **and** b.stat\_id = e.stat\_id  
 **order** **by** styp **asc**, **name** **asc**

----Service Statistics

**select** service\_name,  
 round(db\_time / 1000000, 1),  
 round(db\_cpu / 1000000, 1),  
 phy\_reads,  
 log\_reads  
 **from** (**select** s1.service\_name,  
 **sum**(decode(s1.stat\_name, 'DB time', s1.diff, 0)) db\_time,  
 **sum**(decode(s1.stat\_name, 'DB CPU', s1.diff, 0)) db\_cpu,  
 **sum**(decode(s1.stat\_name, 'physical reads', s1.diff, 0)) phy\_reads,  
 **sum**(decode(s1.stat\_name,  
 ' session logical reads ',  
 s1.diff,  
 0)) log\_reads  
 **from** (**select** e.service\_name service\_name,  
 e.stat\_name stat\_name,  
 e.**value** - b.**value** diff  
 **from** dba\_hist\_service\_stat b, dba\_hist\_service\_stat e  
 **where** b.snap\_id = &beg\_snap  
 **and** e.snap\_id = &end\_snap  
 **and** b.instance\_number = &inst\_num  
 **and** e.instance\_number = &inst\_num  
 **and** b.dbid = &dbid  
 **and** e.dbid = &dbid  
 **and** b.stat\_id = e.stat\_id  
 **and** b.service\_name\_hash = e.service\_name\_hash) s1  
 **group** **by** s1.service\_name  
 **order** **by** db\_time **desc**, service\_name)  
 **where** **rownum** <= 5;

----Service Wait Class Stats

**select** service\_name,  
 uio\_waits,  
 uio\_time,  
 con\_waits,  
 con\_time,  
 adm\_waits,  
 adm\_time,  
 net\_waits,  
 net\_time  
 **from** (**select** stat1.service\_name service\_name,  
 db\_time,  
 uio\_waits,  
 uio\_time,  
 con\_waits,  
 con\_time,  
 adm\_waits,  
 adm\_time,  
 net\_waits,  
 net\_time  
 **from** (**select** s1.service\_name,  
 **sum**(decode(s1.stat\_name, ' DB time ', s1.diff, 0)) db\_time  
 **from** (**select** e.service\_name service\_name,  
 e.stat\_name stat\_name,  
 e.**value** - b.**value** diff  
 **from** dba\_hist\_service\_stat b,  
 dba\_hist\_service\_stat e  
 **where** b.snap\_id = &beg\_snap  
 **and** e.snap\_id = &end\_snap  
 **and** b.instance\_number = &inst\_num  
 **and** e.instance\_number = &inst\_num  
 **and** b.dbid = &dbid  
 **and** e.dbid = &dbid  
 **and** b.stat\_id = e.stat\_id  
 **and** b.service\_name\_hash = e.service\_name\_hash) s1  
 **group** **by** s1.service\_name) stat1,  
 (**select** s2.service\_name,  
 **sum**(decode(s2.wait\_class,  
 'User I/O',  
 s2.total\_waits,  
 0)) uio\_waits,  
 **sum**(decode(s2.wait\_class,  
 'User I/O',  
 s2.time\_waited,  
 0)) uio\_time,  
 **sum**(decode(s2.wait\_class,  
 'Concurrency',  
 s2.total\_waits,  
 0)) con\_waits,  
 **sum**(decode(s2.wait\_class,  
 'Concurrency',  
 s2.time\_waited,  
 0)) con\_time,  
 **sum**(decode(s2.wait\_class,  
 'Administrative',  
 s2.total\_waits,  
 0)) adm\_waits,  
 **sum**(decode(s2.wait\_class,  
 'Administrative',  
 s2.time\_waited,  
 0)) adm\_time,  
 **sum**(decode(s2.wait\_class, 'Network', s2.total\_waits, 0)) net\_waits,  
 **sum**(decode(s2.wait\_class, 'Network', s2.time\_waited, 0)) net\_time  
 **from** (**select** e.service\_name service\_name,  
 e.wait\_class wait\_class,  
 e.total\_waits - b.total\_waits total\_waits,  
 e.time\_waited - b.time\_waited time\_waited  
 **from** dba\_hist\_service\_wait\_class b,  
 dba\_hist\_service\_wait\_class e  
 **where** b.snap\_id = &beg\_snap  
 **and** e.snap\_id = &end\_snap  
 **and** b.instance\_number = &inst\_num  
 **and** e.instance\_number = &inst\_num  
 **and** b.dbid = &dbid  
 **and** e.dbid = &dbid  
 **and** b.wait\_class\_id = e.wait\_class\_id  
 **and** b.service\_name\_hash = e.service\_name\_hash) s2  
 **group** **by** s2.service\_name) stat2  
 **where** stat1.service\_name = stat2.service\_name  
 **order** **by** db\_time **desc**, service\_name)  
 **where** **rownum** <= 5;

----Tablespace IO Stats

**select** e.tsname tsname,  
 **sum**(e.phyrds - nvl(b.phyrds, 0)) **reads**,  
 **sum**(e.phyrds - nvl(b.phyrds, 0)) /  
 (**SELECT** EXTRACT(**DAY** **FROM** E.END\_INTERVAL\_TIME - B.END\_INTERVAL\_TIME) \*  
 86400 +  
 EXTRACT(HOUR **FROM** E.END\_INTERVAL\_TIME - B.END\_INTERVAL\_TIME) \* 3600 +  
 EXTRACT(MINUTE **FROM** E.END\_INTERVAL\_TIME - B.END\_INTERVAL\_TIME) \* 60 +  
 EXTRACT(**SECOND** **FROM** E.END\_INTERVAL\_TIME - B.END\_INTERVAL\_TIME)  
 **FROM** DBA\_HIST\_SNAPSHOT B, DBA\_HIST\_SNAPSHOT E  
 **WHERE** B.SNAP\_ID = &beg\_snap  
 **AND** E.SNAP\_ID = &end\_snap  
 **AND** B.DBID = &DBID  
 **AND** E.DBID = &DBID  
 **AND** B.INSTANCE\_NUMBER = &INST\_NUM  
 **AND** E.INSTANCE\_NUMBER = &INST\_NUM  
 **AND** B.STARTUP\_TIME = E.STARTUP\_TIME  
 **AND** B.END\_INTERVAL\_TIME < E.END\_INTERVAL\_TIME) rps,  
 decode(**sum**(e.phyrds - nvl(b.phyrds, 0)),  
 0,  
 0,  
 10 \* (**sum**(e.readtim - nvl(b.readtim, 0)) /  
 **sum**(e.phyrds - nvl(b.phyrds, 0)))) atpr,  
 decode(**sum**(e.phyrds - nvl(b.phyrds, 0)),  
 0,  
 0,  
 **sum**(e.phyblkrd - nvl(b.phyblkrd, 0)) /  
 **sum**(e.phyrds - nvl(b.phyrds, 0))) bpr,  
 **sum**(e.phywrts - nvl(b.phywrts, 0)) writes,  
 **sum**(e.phywrts - nvl(b.phywrts, 0)) /  
 (**SELECT** EXTRACT(**DAY** **FROM** E.END\_INTERVAL\_TIME - B.END\_INTERVAL\_TIME) \*  
 86400 +  
 EXTRACT(HOUR **FROM** E.END\_INTERVAL\_TIME - B.END\_INTERVAL\_TIME) \* 3600 +  
 EXTRACT(MINUTE **FROM** E.END\_INTERVAL\_TIME - B.END\_INTERVAL\_TIME) \* 60 +  
 EXTRACT(**SECOND** **FROM** E.END\_INTERVAL\_TIME - B.END\_INTERVAL\_TIME)  
 **FROM** DBA\_HIST\_SNAPSHOT B, DBA\_HIST\_SNAPSHOT E  
 **WHERE** B.SNAP\_ID = &beg\_snap  
 **AND** E.SNAP\_ID = &end\_snap  
 **AND** B.DBID = &DBID  
 **AND** E.DBID = &DBID  
 **AND** B.INSTANCE\_NUMBER = &INST\_NUM  
 **AND** E.INSTANCE\_NUMBER = &INST\_NUM  
 **AND** B.STARTUP\_TIME = E.STARTUP\_TIME  
 **AND** B.END\_INTERVAL\_TIME < E.END\_INTERVAL\_TIME) wps,  
 **sum**(e.wait\_count - nvl(b.wait\_count, 0)) waits,  
 decode(**sum**(e.wait\_count - nvl(b.wait\_count, 0)),  
 0,  
 0,  
 10 \* (**sum**(e.**time** - nvl(b.**time**, 0)) /  
 **sum**(e.wait\_count - nvl(b.wait\_count, 0)))) atpwt,  
 **sum**(e.phyrds - nvl(b.phyrds, 0)) +  
 **sum**(e.phywrts - nvl(b.phywrts, 0)) ios  
 **from** dba\_hist\_filestatxs e, dba\_hist\_filestatxs b  
 **where** b.snap\_id(+) = &beg\_snap  
 **and** e.snap\_id = &end\_snap  
 **and** b.dbid(+) = &dbid  
 **and** e.dbid = &dbid  
 **and** b.dbid(+) = e.dbid  
 **and** b.instance\_number(+) = &inst\_num  
 **and** e.instance\_number = &inst\_num  
 **and** b.instance\_number(+) = e.instance\_number  
 **and** b.tsname(+) = e.tsname  
 **and** b.**file**#(+) = e.**file**#  
 **and** b.creation\_change#(+) = e.creation\_change#  
 **and** ((e.phyrds - nvl(b.phyrds, 0)) + (e.phywrts - nvl(b.phywrts, 0))) > 0  
 **group** **by** e.tsname  
**union** **all**  
**select** e.tsname tsname,  
 **sum**(e.phyrds - nvl(b.phyrds, 0)) **reads**,  
 **sum**(e.phyrds - nvl(b.phyrds, 0)) /  
 (**SELECT** EXTRACT(**DAY** **FROM** E.END\_INTERVAL\_TIME - B.END\_INTERVAL\_TIME) \*  
 86400 +  
 EXTRACT(HOUR **FROM** E.END\_INTERVAL\_TIME - B.END\_INTERVAL\_TIME) \* 3600 +  
 EXTRACT(MINUTE **FROM** E.END\_INTERVAL\_TIME - B.END\_INTERVAL\_TIME) \* 60 +  
 EXTRACT(**SECOND** **FROM** E.END\_INTERVAL\_TIME - B.END\_INTERVAL\_TIME)  
 **FROM** DBA\_HIST\_SNAPSHOT B, DBA\_HIST\_SNAPSHOT E  
 **WHERE** B.SNAP\_ID = &beg\_snap  
 **AND** E.SNAP\_ID = &end\_snap  
 **AND** B.DBID = &DBID  
 **AND** E.DBID = &DBID  
 **AND** B.INSTANCE\_NUMBER = &INST\_NUM  
 **AND** E.INSTANCE\_NUMBER = &INST\_NUM  
 **AND** B.STARTUP\_TIME = E.STARTUP\_TIME  
 **AND** B.END\_INTERVAL\_TIME < E.END\_INTERVAL\_TIME) rps,  
 decode(**sum**(e.phyrds - nvl(b.phyrds, 0)),  
 0,  
 0,  
 (**sum**(e.readtim - nvl(b.readtim, 0)) /  
 **sum**(e.phyrds - nvl(b.phyrds, 0))) \* 10) atpr,  
 decode(**sum**(e.phyrds - nvl(b.phyrds, 0)),  
 0,  
 to\_number(**NULL**),  
 **sum**(e.phyblkrd - nvl(b.phyblkrd, 0)) /  
 **sum**(e.phyrds - nvl(b.phyrds, 0))) bpr,  
 **sum**(e.phywrts - nvl(b.phywrts, 0)) writes,  
 **sum**(e.phywrts - nvl(b.phywrts, 0)) /  
 (**SELECT** EXTRACT(**DAY** **FROM** E.END\_INTERVAL\_TIME - B.END\_INTERVAL\_TIME) \*  
 86400 +  
 EXTRACT(HOUR **FROM** E.END\_INTERVAL\_TIME - B.END\_INTERVAL\_TIME) \* 3600 +  
 EXTRACT(MINUTE **FROM** E.END\_INTERVAL\_TIME - B.END\_INTERVAL\_TIME) \* 60 +  
 EXTRACT(**SECOND** **FROM** E.END\_INTERVAL\_TIME - B.END\_INTERVAL\_TIME)  
 **FROM** DBA\_HIST\_SNAPSHOT B, DBA\_HIST\_SNAPSHOT E  
 **WHERE** B.SNAP\_ID = &beg\_snap  
 **AND** E.SNAP\_ID = &end\_snap  
 **AND** B.DBID = &DBID  
 **AND** E.DBID = &DBID  
 **AND** B.INSTANCE\_NUMBER = &INST\_NUM  
 **AND** E.INSTANCE\_NUMBER = &INST\_NUM  
 **AND** B.STARTUP\_TIME = E.STARTUP\_TIME  
 **AND** B.END\_INTERVAL\_TIME < E.END\_INTERVAL\_TIME) wps,  
 **sum**(e.wait\_count - nvl(b.wait\_count, 0)) waits,  
 decode(**sum**(e.wait\_count - nvl(b.wait\_count, 0)),  
 0,  
 0,  
 (**sum**(e.**time** - nvl(b.**time**, 0)) /  
 **sum**(e.wait\_count - nvl(b.wait\_count, 0))) \* 10) atpwt,  
 **sum**(e.phyrds - nvl(b.phyrds, 0)) +  
 **sum**(e.phywrts - nvl(b.phywrts, 0)) ios  
 **from** dba\_hist\_tempstatxs e, dba\_hist\_tempstatxs b  
 **where** b.snap\_id(+) = &beg\_snap  
 **and** e.snap\_id = &end\_snap  
 **and** b.dbid(+) = &dbid  
 **and** e.dbid = &dbid  
 **and** b.dbid(+) = e.dbid  
 **and** b.instance\_number(+) = &inst\_num  
 **and** e.instance\_number = &inst\_num  
 **and** b.instance\_number(+) = e.instance\_number  
 **and** b.tsname(+) = e.tsname  
 **and** b.**file**#(+) = e.**file**#  
 **and** b.creation\_change#(+) = e.creation\_change#  
 **and** ((e.phyrds - nvl(b.phyrds, 0)) + (e.phywrts - nvl(b.phywrts, 0))) > 0  
 **group** **by** e.tsname  
 **order** **by** ios **desc**, tsname;

----File IO Stats

**select** e.tsname,  
 substr(e.filename, 1, 52) filename,  
 e.phyrds - nvl(b.phyrds, 0) **reads**,  
 (e.phyrds - nvl(b.phyrds, 0)) /  
 (**SELECT** EXTRACT(**DAY** **FROM** E.END\_INTERVAL\_TIME - B.END\_INTERVAL\_TIME) \*  
 86400 +  
 EXTRACT(HOUR **FROM** E.END\_INTERVAL\_TIME - B.END\_INTERVAL\_TIME) \* 3600 +  
 EXTRACT(MINUTE **FROM** E.END\_INTERVAL\_TIME - B.END\_INTERVAL\_TIME) \* 60 +  
 EXTRACT(**SECOND** **FROM** E.END\_INTERVAL\_TIME - B.END\_INTERVAL\_TIME)  
 **FROM** DBA\_HIST\_SNAPSHOT B, DBA\_HIST\_SNAPSHOT E  
 **WHERE** B.SNAP\_ID = &beg\_snap  
 **AND** E.SNAP\_ID = &end\_snap  
 **AND** B.DBID = &DBID  
 **AND** E.DBID = &DBID  
 **AND** B.INSTANCE\_NUMBER = &INST\_NUM  
 **AND** E.INSTANCE\_NUMBER = &INST\_NUM  
 **AND** B.STARTUP\_TIME = E.STARTUP\_TIME  
 **AND** B.END\_INTERVAL\_TIME < E.END\_INTERVAL\_TIME) rps,  
 decode((e.phyrds - nvl(b.phyrds, 0)),  
 0,  
 to\_number(**NULL**),  
 ((e.readtim - nvl(b.readtim, 0)) /  
 (e.phyrds - nvl(b.phyrds, 0))) \* 10) atpr,  
 decode((e.phyrds - nvl(b.phyrds, 0)),  
 0,  
 to\_number(**NULL**),  
 (e.phyblkrd - nvl(b.phyblkrd, 0)) /  
 (e.phyrds - nvl(b.phyrds, 0))) bpr,  
 e.phywrts - nvl(b.phywrts, 0) writes,  
 (e.phywrts - nvl(b.phywrts, 0)) /  
 (**SELECT** EXTRACT(**DAY** **FROM** E.END\_INTERVAL\_TIME - B.END\_INTERVAL\_TIME) \*  
 86400 +  
 EXTRACT(HOUR **FROM** E.END\_INTERVAL\_TIME - B.END\_INTERVAL\_TIME) \* 3600 +  
 EXTRACT(MINUTE **FROM** E.END\_INTERVAL\_TIME - B.END\_INTERVAL\_TIME) \* 60 +  
 EXTRACT(**SECOND** **FROM** E.END\_INTERVAL\_TIME - B.END\_INTERVAL\_TIME)  
 **FROM** DBA\_HIST\_SNAPSHOT B, DBA\_HIST\_SNAPSHOT E  
 **WHERE** B.SNAP\_ID = &beg\_snap  
 **AND** E.SNAP\_ID = &end\_snap  
 **AND** B.DBID = &DBID  
 **AND** E.DBID = &DBID  
 **AND** B.INSTANCE\_NUMBER = &INST\_NUM  
 **AND** E.INSTANCE\_NUMBER = &INST\_NUM  
 **AND** B.STARTUP\_TIME = E.STARTUP\_TIME  
 **AND** B.END\_INTERVAL\_TIME < E.END\_INTERVAL\_TIME) wps,  
 e.wait\_count - nvl(b.wait\_count, 0) waits,  
 decode((e.wait\_count - nvl(b.wait\_count, 0)),  
 0,  
 0,  
 ((e.**time** - nvl(b.**time**, 0)) /  
 (e.wait\_count - nvl(b.wait\_count, 0))) \* 10) atpwt  
 **from** dba\_hist\_filestatxs e, dba\_hist\_filestatxs b  
 **where** b.snap\_id(+) = &beg\_snap  
 **and** e.snap\_id = &end\_snap  
 **and** b.dbid(+) = &dbid  
 **and** e.dbid = &dbid  
 **and** b.dbid(+) = e.dbid  
 **and** b.instance\_number(+) = &inst\_num  
 **and** e.instance\_number = &inst\_num  
 **and** b.instance\_number(+) = e.instance\_number  
 **and** b.tsname(+) = e.tsname  
 **and** b.**file**#(+) = e.**file**#  
 **and** b.creation\_change#(+) = e.creation\_change#  
 **and** ((e.phyrds - nvl(b.phyrds, 0)) + (e.phywrts - nvl(b.phywrts, 0))) > 0  
**union** **all**  
**select** e.tsname,  
 substr(e.filename, 1, 52) filename,  
 e.phyrds - nvl(b.phyrds, 0) **reads**,  
 (e.phyrds - nvl(b.phyrds, 0)) /  
 (**SELECT** EXTRACT(**DAY** **FROM** E.END\_INTERVAL\_TIME - B.END\_INTERVAL\_TIME) \*  
 86400 +  
 EXTRACT(HOUR **FROM** E.END\_INTERVAL\_TIME - B.END\_INTERVAL\_TIME) \* 3600 +  
 EXTRACT(MINUTE **FROM** E.END\_INTERVAL\_TIME - B.END\_INTERVAL\_TIME) \* 60 +  
 EXTRACT(**SECOND** **FROM** E.END\_INTERVAL\_TIME - B.END\_INTERVAL\_TIME)  
 **FROM** DBA\_HIST\_SNAPSHOT B, DBA\_HIST\_SNAPSHOT E  
 **WHERE** B.SNAP\_ID = &beg\_snap  
 **AND** E.SNAP\_ID = &end\_snap  
 **AND** B.DBID = &DBID  
 **AND** E.DBID = &DBID  
 **AND** B.INSTANCE\_NUMBER = &INST\_NUM  
 **AND** E.INSTANCE\_NUMBER = &INST\_NUM  
 **AND** B.STARTUP\_TIME = E.STARTUP\_TIME  
 **AND** B.END\_INTERVAL\_TIME < E.END\_INTERVAL\_TIME) rps,  
 decode((e.phyrds - nvl(b.phyrds, 0)),  
 0,  
 to\_number(**NULL**),  
 ((e.readtim - nvl(b.readtim, 0)) /  
 (e.phyrds - nvl(b.phyrds, 0))) \* 10) atpr,  
 decode((e.phyrds - nvl(b.phyrds, 0)),  
 0,  
 to\_number(**NULL**),  
 (e.phyblkrd - nvl(b.phyblkrd, 0)) /  
 (e.phyrds - nvl(b.phyrds, 0))) bpr,  
 e.phywrts - nvl(b.phywrts, 0) writes,  
 (e.phywrts - nvl(b.phywrts, 0)) /  
 (**SELECT** EXTRACT(**DAY** **FROM** E.END\_INTERVAL\_TIME - B.END\_INTERVAL\_TIME) \*  
 86400 +  
 EXTRACT(HOUR **FROM** E.END\_INTERVAL\_TIME - B.END\_INTERVAL\_TIME) \* 3600 +  
 EXTRACT(MINUTE **FROM** E.END\_INTERVAL\_TIME - B.END\_INTERVAL\_TIME) \* 60 +  
 EXTRACT(**SECOND** **FROM** E.END\_INTERVAL\_TIME - B.END\_INTERVAL\_TIME)  
 **FROM** DBA\_HIST\_SNAPSHOT B, DBA\_HIST\_SNAPSHOT E  
 **WHERE** B.SNAP\_ID = &beg\_snap  
 **AND** E.SNAP\_ID = &end\_snap  
 **AND** B.DBID = &DBID  
 **AND** E.DBID = &DBID  
 **AND** B.INSTANCE\_NUMBER = &INST\_NUM  
 **AND** E.INSTANCE\_NUMBER = &INST\_NUM  
 **AND** B.STARTUP\_TIME = E.STARTUP\_TIME  
 **AND** B.END\_INTERVAL\_TIME < E.END\_INTERVAL\_TIME) wps,  
 e.wait\_count - nvl(b.wait\_count, 0) waits,  
 decode((e.wait\_count - nvl(b.wait\_count, 0)),  
 0,  
 to\_number(**NULL**),  
 ((e.**time** - nvl(b.**time**, 0)) /  
 (e.wait\_count - nvl(b.wait\_count, 0))) \* 10) atpwt  
 **from** dba\_hist\_tempstatxs e, dba\_hist\_tempstatxs b  
 **where** b.snap\_id(+) = &beg\_snap  
 **and** e.snap\_id = &end\_snap  
 **and** b.dbid(+) = &dbid  
 **and** e.dbid = &dbid  
 **and** b.dbid(+) = e.dbid  
 **and** b.instance\_number(+) = &inst\_num  
 **and** e.instance\_number = &inst\_num  
 **and** b.instance\_number(+) = e.instance\_number  
 **and** b.tsname(+) = e.tsname  
 **and** b.**file**#(+) = e.**file**#  
 **and** b.creation\_change#(+) = e.creation\_change#  
 **and** ((e.phyrds - nvl(b.phyrds, 0)) + (e.phywrts - nvl(b.phywrts, 0))) > 0  
 **order** **by** tsname, filename;

----Buffer Pool Statistics

**select** **replace**(e.block\_size / 1024 || 'k',  
 (**SELECT** **VALUE**  
 **FROM** DBA\_HIST\_PARAMETER  
 **WHERE** SNAP\_ID = &beg\_snap  
 **AND** DBID = &dbid  
 **AND** INSTANCE\_NUMBER = &INST\_NUM  
 **AND** PARAMETER\_NAME = 'db\_block\_size') / 1024 || 'k',  
 substr(e.**name**, 1, 1)) **name**,  
 e.set\_msize numbufs,  
 decode(e.db\_block\_gets - nvl(b.db\_block\_gets, 0) + e.consistent\_gets -  
 nvl(b.consistent\_gets, 0),  
 0,  
 to\_number(**null**),  
 (100 \* (1 - ((e.physical\_reads - nvl(b.physical\_reads, 0)) /  
 (e.db\_block\_gets - nvl(b.db\_block\_gets, 0) +  
 e.consistent\_gets - nvl(b.consistent\_gets, 0)))))) poolhr,  
 e.db\_block\_gets - nvl(b.db\_block\_gets, 0) + e.consistent\_gets -  
 nvl(b.consistent\_gets, 0) buffs,  
 e.physical\_reads - nvl(b.physical\_reads, 0) phread,  
 e.physical\_writes - nvl(b.physical\_writes, 0) phwrite,  
 e.free\_buffer\_wait - nvl(b.free\_buffer\_wait, 0) fbwait,  
 e.write\_complete\_wait - nvl(b.write\_complete\_wait, 0) wcwait,  
 e.buffer\_busy\_wait - nvl(b.buffer\_busy\_wait, 0) bbwait  
 **from** dba\_hist\_buffer\_pool\_stat b, dba\_hist\_buffer\_pool\_stat e  
 **where** b.snap\_id(+) = &beg\_snap  
 **and** e.snap\_id = &end\_snap  
 **and** b.dbid(+) = &dbid  
 **and** e.dbid = &dbid  
 **and** b.dbid(+) = e.dbid  
 **and** b.instance\_number(+) = &inst\_num  
 **and** e.instance\_number = &inst\_num  
 **and** b.instance\_number(+) = e.instance\_number  
 **and** b.**id**(+) = e.**id**  
 **order** **by** e.**name;**

----Instance Recovery Stats

**select** 'B' beg,  
 target\_mttr tm,  
 estimated\_mttr em,  
 recovery\_estimated\_ios rei,  
 actual\_redo\_blks arb,  
 target\_redo\_blks trb,  
 log\_file\_size\_redo\_blks lfrb,  
 log\_chkpt\_timeout\_redo\_blks lctrb,  
 log\_chkpt\_interval\_redo\_blks lcirb,  
 snap\_id snid  
 **from** dba\_hist\_instance\_recovery b  
 **where** b.snap\_id = &beg\_snap  
 **and** b.dbid = &dbid  
 **and** b.instance\_number = &inst\_num  
**union** **all**  
**select** 'E' beg,  
 target\_mttr tm,  
 estimated\_mttr em,  
 recovery\_estimated\_ios rei,  
 actual\_redo\_blks arb,  
 target\_redo\_blks trb,  
 log\_file\_size\_redo\_blks lfrb,  
 log\_chkpt\_timeout\_redo\_blks lctrb,  
 log\_chkpt\_interval\_redo\_blks lcirb,  
 snap\_id snid  
 **from** dba\_hist\_instance\_recovery e  
 **where** e.snap\_id = &end\_snap  
 **and** e.dbid = &dbid  
 **and** e.instance\_number = &inst\_num  
 **order** **by** snid;

----Buffer Pool Advisory

**select** **replace**(block\_size / 1024 || 'k',  
 (**SELECT** **VALUE**  
 **FROM** DBA\_HIST\_PARAMETER  
 **WHERE** SNAP\_ID = &beg\_snap  
 **AND** DBID = &dbid  
 **AND** INSTANCE\_NUMBER = &INST\_NUM  
 **AND** PARAMETER\_NAME = 'db\_block\_size') / 1024 || 'k',  
 substr(**name**, 1, 1)) **name**,  
 size\_for\_estimate,  
 size\_factor,  
 buffers\_for\_estimate,  
 decode(base\_physical\_reads,  
 0,  
 to\_number(**null**),  
 round((physical\_reads / base\_physical\_reads), 4)) estd\_physical\_read\_factor,  
 decode(base\_physical\_reads,  
 0,  
 physical\_reads,  
 round((physical\_reads \*  
 (actual\_physical\_reads / base\_physical\_reads)),  
 0)) estd\_physical\_reads,  
 decode(e.block\_size,  
 (**SELECT** **VALUE**  
 **FROM** DBA\_HIST\_PARAMETER  
 **WHERE** SNAP\_ID = &beg\_snap  
 **AND** DBID = &dbid  
 **AND** INSTANCE\_NUMBER = &INST\_NUM  
 **AND** PARAMETER\_NAME = 'db\_block\_size'),  
 1,  
 2) order\_def\_bs  
 **from** dba\_hist\_db\_cache\_advice e  
 **where** snap\_id = &end\_snap  
 **and** dbid = &dbid  
 **and** instance\_number = &inst\_num  
 **and** physical\_reads > 0  
 **order** **by** order\_def\_bs, block\_size, e.**name**, buffers\_for\_estimate;

----PGA Aggr Summary

**select** 100  
 \* (e.bytes - nvl(b.bytes,0))  
 / (e.bytes - nvl(b.bytes,0) + e.bytesrw - nvl(b.bytesrw,0))  
 , (e.bytes - nvl(b.bytes,0)) /1024/1024 tbp  
 , (e.bytesrw - nvl(b.bytesrw,0))/1024/1024 tbrw  
 **from** (**select** **sum**(**case** **when** **name** = 'bytes processed'  
 **then** **value** **else** 0 **end**) bytes  
 , **sum**(**case** **when** **name** = 'extra bytes read/written'  
 **then** **value** **else** 0 **end**) bytesrw  
 **from** dba\_hist\_pgastat e1  
 **where** e1.snap\_id = &end\_snap  
 **and** e1.dbid = &dbid  
 **and** e1.instance\_number = &inst\_num  
 **and** e1.**name** **in** ('bytes processed',  
 'extra bytes read/written')  
 ) e  
 , (**select** **sum**(**case** **when** **name** = 'bytes processed'  
 **then** **value** **else** 0 **end**) bytes  
 , **sum**(**case** **when** **name** = 'extra bytes read/written'  
 **then** **value** **else** 0 **end**) bytesrw  
 **from** dba\_hist\_pgastat b1  
 **where** b1.snap\_id = &beg\_snap  
 **and** b1.dbid = &dbid  
 **and** b1.instance\_number = &inst\_num  
 **and** b1.**name** **in** ('bytes processed',  
 'extra bytes read/written')  
 ) b  
 **where** e.bytes - nvl(b.bytes,0) > 0;

----PGA Aggr Target Stats

**select** 'B' snap,  
 to\_number(p.**value**) / 1024 / 1024 pgaat,  
 mu.pat / 1024 / 1024 pat,  
 mu.PGA\_alloc / 1024 / 1024 tot\_pga\_allo,  
 (mu.PGA\_used\_auto + mu.PGA\_used\_man) / 1024 / 1024 tot\_tun\_used,  
 100 \* (mu.PGA\_used\_auto + mu.PGA\_used\_man) / PGA\_alloc pct\_tun,  
 decode(mu.PGA\_used\_auto + mu.PGA\_used\_man,  
 0,  
 0,  
 100 \* mu.PGA\_used\_auto / (mu.PGA\_used\_auto + mu.PGA\_used\_man)) pct\_auto\_tun,  
 decode(mu.PGA\_used\_auto + mu.PGA\_used\_man,  
 0,  
 0,  
 100 \* mu.PGA\_used\_man / (mu.PGA\_used\_auto + mu.PGA\_used\_man)) pct\_man\_tun,  
 mu.glob\_mem\_bnd / 1024 glo\_mem\_bnd  
 **from** (**select** **sum**(**case**  
 **when** **name** = 'total PGA allocated' **then**  
 **value**  
 **else**  
 0  
 **end**) PGA\_alloc,  
 **sum**(**case**  
 **when** **name** = 'total PGA used for auto workareas' **then**  
 **value**  
 **else**  
 0  
 **end**) PGA\_used\_auto,  
 **sum**(**case**  
 **when** **name** = 'total PGA used for manual workareas' **then**  
 **value**  
 **else**  
 0  
 **end**) PGA\_used\_man,  
 **sum**(**case**  
 **when** **name** = 'global memory bound' **then**  
 **value**  
 **else**  
 0  
 **end**) glob\_mem\_bnd,  
 **sum**(**case**  
 **when** **name** = 'aggregate PGA auto target' **then**  
 **value**  
 **else**  
 0  
 **end**) pat  
 **from** dba\_hist\_pgastat pga  
 **where** pga.snap\_id = &beg\_snap  
 **and** pga.dbid = &dbid  
 **and** pga.instance\_number = &inst\_num) mu,  
 dba\_hist\_parameter p  
 **where** p.snap\_id = &beg\_snap  
 **and** p.dbid = &dbid  
 **and** p.instance\_number = &inst\_num  
 **and** p.parameter\_name = 'pga\_aggregate\_target'  
 **and** p.**value** != '0'  
**union**  
**select** 'E' snap,  
 to\_number(p.**value**) / 1024 / 1024 pgaat,  
 mu.pat / 1024 / 1024 pat,  
 mu.PGA\_alloc / 1024 / 1024 tot\_pga\_allo,  
 (mu.PGA\_used\_auto + mu.PGA\_used\_man) / 1024 / 1024 tot\_tun\_used,  
 100 \* (mu.PGA\_used\_auto + mu.PGA\_used\_man) / PGA\_alloc pct\_tun,  
 decode(mu.PGA\_used\_auto + mu.PGA\_used\_man,  
 0,  
 0,  
 100 \* mu.PGA\_used\_auto / (mu.PGA\_used\_auto + mu.PGA\_used\_man)) pct\_auto\_tun,  
 decode(mu.PGA\_used\_auto + mu.PGA\_used\_man,  
 0,  
 0,  
 100 \* mu.PGA\_used\_man / (mu.PGA\_used\_auto + mu.PGA\_used\_man)) pct\_man\_tun,  
 mu.glob\_mem\_bnd / 1024 glo\_mem\_bnd  
 **from** (**select** **sum**(**case**  
 **when** **name** = 'total PGA allocated' **then**  
 **value**  
 **else**  
 0  
 **end**) PGA\_alloc,  
 **sum**(**case**  
 **when** **name** = 'total PGA used for auto workareas' **then**  
 **value**  
 **else**  
 0  
 **end**) PGA\_used\_auto,  
 **sum**(**case**  
 **when** **name** = 'total PGA used for manual workareas' **then**  
 **value**  
 **else**  
 0  
 **end**) PGA\_used\_man,  
 **sum**(**case**  
 **when** **name** = 'global memory bound' **then**  
 **value**  
 **else**  
 0  
 **end**) glob\_mem\_bnd,  
 **sum**(**case**  
 **when** **name** = 'aggregate PGA auto target' **then**  
 **value**  
 **else**  
 0  
 **end**) pat  
 **from** dba\_hist\_pgastat pga  
 **where** pga.snap\_id = &end\_snap  
 **and** pga.dbid = &dbid  
 **and** pga.instance\_number = &inst\_num) mu,  
 dba\_hist\_parameter p  
 **where** p.snap\_id = &end\_snap  
 **and** p.dbid = &dbid  
 **and** p.instance\_number = &inst\_num  
 **and** p.parameter\_name = 'pga\_aggregate\_target'  
 **and** p.**value** != '0'  
 **order** **by** snap;

----PGA Aggr Target Histogram

**select** **case**  
 **when** e.low\_optimal\_size >= 1024 \* 1024 \* 1024 \* 1024 **then**  
 lpad(round(e.low\_optimal\_size / 1024 / 1024 / 1024 / 1024) || 'T',7)  
 **when** e.low\_optimal\_size >= 1024 \* 1024 \* 1024 **then**  
 lpad(round(e.low\_optimal\_size / 1024 / 1024 / 1024) || 'G', 7)  
 **when** e.low\_optimal\_size >= 1024 \* 1024 **then**  
 lpad(round(e.low\_optimal\_size / 1024 / 1024) || 'M', 7)  
 **when** e.low\_optimal\_size >= 1024 **then**  
 lpad(round(e.low\_optimal\_size / 1024) || 'K', 7)  
 **else**  
 lpad(e.low\_optimal\_size || ' B ', 7)  
 **end** low\_o,  
 **case**  
 **when** e.high\_optimal\_size >= 1024 \* 1024 \* 1024 \* 1024 **then**  
 lpad(round(e.high\_optimal\_size / 1024 / 1024 / 1024 / 1024) || 'T', 7)  
 **when** e.high\_optimal\_size >= 1024 \* 1024 \* 1024 **then**  
 lpad(round(e.high\_optimal\_size / 1024 / 1024 / 1024) || 'G', 7)  
 **when** e.high\_optimal\_size >= 1024 \* 1024 **then**  
 lpad(round(e.high\_optimal\_size / 1024 / 1024) || 'M', 7)  
 **when** e.high\_optimal\_size >= 1024 **then**  
 lpad(round(e.high\_optimal\_size / 1024) || 'K', 7)  
 **else**  
 e.high\_optimal\_size || ' B '  
 **end** high\_o,  
 e.total\_executions - nvl(b.total\_executions, 0) tot\_e,  
 e.optimal\_executions - nvl(b.optimal\_executions, 0) opt\_e,  
 e.onepass\_executions - nvl(b.onepass\_executions, 0) one\_e,  
 e.multipasses\_executions - nvl(b.multipasses\_executions, 0) mul\_e  
 **from** dba\_hist\_sql\_workarea\_hstgrm e, dba\_hist\_sql\_workarea\_hstgrm b  
 **where** e.snap\_id = &end\_snap  
 **and** e.dbid = &dbid  
 **and** e.instance\_number = &inst\_num  
 **and** b.snap\_id(+) = &beg\_snap  
 **and** b.dbid(+) = e.dbid  
 **and** b.instance\_number(+) = e.instance\_number  
 **and** b.low\_optimal\_size(+) = e.low\_optimal\_size  
 **and** b.high\_optimal\_size(+) = e.high\_optimal\_size  
 **and** e.total\_executions - nvl(b.total\_executions, 0) > 0  
 **order** **by** e.low\_optimal\_size;

----PGA Memory Advisory

**select** pga\_target\_for\_estimate / 1024 / 1024 pga\_t,  
 pga\_target\_factor pga\_tf,  
 bytes\_processed / 1024 / 1024 byt\_p,  
 estd\_extra\_bytes\_rw / 1024 / 1024 byt\_rw,  
 estd\_pga\_cache\_hit\_percentage epchp,  
 estd\_overalloc\_count eoc  
 **from** dba\_hist\_pga\_target\_advice e  
 **where** snap\_id = &end\_snap  
 **and** dbid = &dbid  
 **and** instance\_number = &inst\_num  
 **order** **by** pga\_target\_for\_estimate;

----Shared Pool Advisory

**select** shared\_pool\_size\_for\_estimate,  
 shared\_pool\_size\_factor,  
 estd\_lc\_size,  
 estd\_lc\_memory\_objects,  
 estd\_lc\_time\_saved,  
 estd\_lc\_time\_saved\_factor,  
 estd\_lc\_load\_time,  
 estd\_lc\_load\_time\_factor,  
 estd\_lc\_memory\_object\_hits  
 **from** dba\_hist\_shared\_pool\_advice  
 **where** snap\_id = &end\_snap  
 **and** dbid = &dbid  
 **and** instance\_number = &inst\_num  
 **order** **by** shared\_pool\_size\_for\_estimate;

----SGA Target Advisory

**select** sga\_size, sga\_size\_factor, estd\_db\_time, estd\_physical\_reads  
 **from** dba\_hist\_sga\_target\_advice e  
 **where** snap\_id = &end\_snap  
 **and** dbid = &dbid  
 **and** instance\_number = &inst\_num  
 **order** **by** sga\_size;

----Streams Pool Advisory

**select** size\_for\_estimate,  
 size\_factor,  
 estd\_spill\_count,  
 estd\_spill\_time,  
 estd\_unspill\_count,  
 estd\_unspill\_time  
 **from** dba\_hist\_streams\_pool\_advice e  
 **where** snap\_id = &end\_snap  
 **and** dbid = &dbid  
 **and** instance\_number = &inst\_num  
 **order** **by** size\_factor;

----Java Pool Advisory

**select** java\_pool\_size\_for\_estimate,  
 java\_pool\_size\_factor,  
 estd\_lc\_size,  
 estd\_lc\_memory\_objects,  
 estd\_lc\_time\_saved,  
 nvl(estd\_lc\_time\_saved\_factor, 0),  
 estd\_lc\_load\_time,  
 nvl(estd\_lc\_load\_time\_factor, 0),  
 estd\_lc\_memory\_object\_hits  
 **from** dba\_hist\_java\_pool\_advice  
 **where** snap\_id = &end\_snap  
 **and** dbid = &dbid  
 **and** instance\_number = &inst\_num  
 **and** estd\_lc\_memory\_objects > 0  
 **order** **by** java\_pool\_size\_for\_estimate;

----Buffer Wait Statistics

**select** e.**class** **class**,  
 e.wait\_count - nvl(b.wait\_count, 0) icnt,  
 (e.**time** - nvl(b.**time**, 0)) / 100 itim,  
 10 \* (e.**time** - nvl(b.**time**, 0)) /  
 (e.wait\_count - nvl(b.wait\_count, 0)) iavg  
 **from** dba\_hist\_waitstat b, dba\_hist\_waitstat e  
 **where** b.snap\_id = &beg\_snap  
 **and** e.snap\_id = &end\_snap  
 **and** b.dbid = &dbid  
 **and** e.dbid = &dbid  
 **and** b.dbid = e.dbid  
 **and** b.instance\_number = &inst\_num  
 **and** e.instance\_number = &inst\_num  
 **and** b.instance\_number = e.instance\_number  
 **and** b.**class** = e.**class**  
 **and** b.wait\_count < e.wait\_count  
 **order** **by** itim **desc**, icnt **desc**, **class;**

----Enqueue Activity

**select** */\*+ ordered \*/*  
 substr(e.eq\_type || ' - ' || to\_char(nvl(l.**name**, ' ')) ||  
 decode(upper(e.req\_reason),  
 ' CONTENTION ',  
 **null**,  
 ' - ',  
 **null**,  
 '(' || e.req\_reason || ') '),  
 1,  
 78) ety,  
 e.total\_req# - nvl(b.total\_req#, 0) reqs,  
 e.succ\_req# - nvl(b.succ\_req#, 0) sreq,  
 e.failed\_req# - nvl(b.failed\_req#, 0) freq,  
 e.total\_wait# - nvl(b.total\_wait#, 0) waits,  
 (e.cum\_wait\_time - nvl(b.cum\_wait\_time, 0)) / 1000 wttm,  
 decode((e.total\_wait# - nvl(b.total\_wait#, 0)),  
 0,  
 to\_number(**NULL**),  
 ((e.cum\_wait\_time - nvl(b.cum\_wait\_time, 0)) /  
 (e.total\_wait# - nvl(b.total\_wait#, 0)))) awttm  
 **from** dba\_hist\_enqueue\_stat b, dba\_hist\_enqueue\_stat e, v$lock\_type l  
 **where** b.snap\_id(+) = &beg\_snap  
 **and** e.snap\_id = &end\_snap  
 **and** b.dbid(+) = &dbid  
 **and** e.dbid = &dbid  
 **and** b.dbid(+) = e.dbid  
 **and** b.instance\_number(+) = &inst\_num  
 **and** e.instance\_number = &inst\_num  
 **and** b.instance\_number(+) = e.instance\_number  
 **and** b.eq\_type(+) = e.eq\_type  
 **and** b.req\_reason(+) = e.req\_reason  
 **and** e.total\_wait# - nvl(b.total\_wait#, 0) > 0  
 **and** l.**type**(+) = e.eq\_type  
 **order** **by** wttm **desc**, waits **desc**, e.eq\_type;

----Undo Segment Summary

**select** undotsn,  
 **sum**(undoblks) / 1000 undob,  
 **sum**(txncount) txcnt,  
 **max**(maxquerylen) maxq,  
 **max**(maxconcurrency) maxc,  
 **min**(tuned\_undoretention) / 60 || '/' ||  
 **max**(tuned\_undoretention) / 60 mintun,  
 **sum**(ssolderrcnt) || '/' || **sum**(nospaceerrcnt) snolno,  
 **sum**(unxpstealcnt) || '/' || **sum**(unxpblkrelcnt) || '/' ||  
 **sum**(unxpblkreucnt) || '/' || **sum**(expstealcnt) || '/' ||  
 **sum**(expblkrelcnt) || '/' || **sum**(expblkreucnt) blkst  
 **from** dba\_hist\_undostat  
 **where** dbid = &dbid  
 **and** instance\_number = &inst\_num  
 **and** end\_time > (**SELECT** END\_INTERVAL\_TIME  
 **FROM** DBA\_HIST\_SNAPSHOT  
 **WHERE** SNAP\_ID = &beg\_snap  
 **AND** DBID = &DBID  
 **AND** INSTANCE\_NUMBER = &INST\_NUM)  
 **and** begin\_time < (**SELECT** END\_INTERVAL\_TIME  
 **FROM** DBA\_HIST\_SNAPSHOT  
 **WHERE** SNAP\_ID = &end\_snap  
 **AND** DBID = &DBID  
 **AND** INSTANCE\_NUMBER = &INST\_NUM)  
 **group** **by** undotsn;

----Undo Segment Stats

**select** endt, undob, txcnt, maxq, maxc, mintun, snolno, blkst, undotsn  
 **from** (**select** undotsn,  
 to\_char(end\_time, 'DD-Mon HH24:MI') endt,  
 undoblks undob,  
 txncount txcnt,  
 maxquerylen maxq,  
 maxconcurrency maxc,  
 tuned\_undoretention / 60 mintun,  
 ssolderrcnt || '' / '' || nospaceerrcnt snolno,  
 unxpstealcnt || '/' || unxpblkrelcnt || '/' || unxpblkreucnt || '/' ||  
 expstealcnt || '/' || expblkrelcnt || '/' || expblkreucnt blkst  
 **from** dba\_hist\_undostat  
 **where** dbid = &dbid  
 **and** instance\_number = &inst\_num  
 **and** end\_time > (**SELECT** END\_INTERVAL\_TIME  
 **FROM** DBA\_HIST\_SNAPSHOT  
 **WHERE** SNAP\_ID = &beg\_snap  
 **AND** DBID = &DBID  
 **AND** INSTANCE\_NUMBER = &INST\_NUM)  
 **and** begin\_time <  
 (**SELECT** END\_INTERVAL\_TIME  
 **FROM** DBA\_HIST\_SNAPSHOT  
 **WHERE** SNAP\_ID = &end\_snap  
 **AND** DBID = &DBID  
 **AND** INSTANCE\_NUMBER = &INST\_NUM)  
 **order** **by** begin\_time **desc**)  
 **where** **rownum** < 35;

----Latch Activity

**select** b.latch\_name **name**,  
 e.gets - b.gets gets,  
 to\_number(decode(e.gets,  
 b.gets,  
 **null**,  
 (e.misses - b.misses) \* 100 / (e.gets - b.gets))) missed,  
 to\_number(decode(e.misses,  
 b.misses,  
 **null**,  
 (e.sleeps - b.sleeps) / (e.misses - b.misses))) sleeps,  
 (e.wait\_time - b.wait\_time) / 1000000 wt,  
 e.immediate\_gets - b.immediate\_gets nowai,  
 to\_number(decode(e.immediate\_gets,  
 b.immediate\_gets,  
 **null**,  
 (e.immediate\_misses - b.immediate\_misses) \* 100 /  
 (e.immediate\_gets - b.immediate\_gets))) imiss  
 **from** dba\_hist\_latch b, dba\_hist\_latch e  
 **where** b.snap\_id = &beg\_snap  
 **and** e.snap\_id = &end\_snap  
 **and** b.dbid = &dbid  
 **and** e.dbid = &dbid  
 **and** b.instance\_number = &inst\_num  
 **and** e.instance\_number = &inst\_num  
 **and** b.latch\_hash = e.latch\_hash  
 **and** (e.gets - b.gets + e.immediate\_gets - b.immediate\_gets) > 0  
 **order** **by** b.latch\_name;

----Latch Sleep Breakdown

**select** b.latch\_name **name**,  
 e.gets - b.gets gets,  
 e.misses - b.misses misses,  
 e.sleeps - b.sleeps sleeps,  
 e.spin\_gets - b.spin\_gets spin\_gets,  
 e.sleep1 - b.sleep1 sleep1,  
 e.sleep2 - b.sleep2 sleep2,  
 e.sleep3 - b.sleep3 sleep3  
 **from** dba\_hist\_latch b, dba\_hist\_latch e  
 **where** b.snap\_id = &beg\_snap  
 **and** e.snap\_id = &end\_snap  
 **and** b.dbid = &dbid  
 **and** e.dbid = &dbid  
 **and** b.instance\_number = &inst\_num  
 **and** e.instance\_number = &inst\_num  
 **and** b.latch\_hash = e.latch\_hash  
 **and** e.sleeps - b.sleeps > 0  
 **order** **by** misses **desc**, **name;**

----Latch Miss Sources

**select** e.parent\_name **parent**,  
 e.where\_in\_code where\_from,  
 e.nwfail\_count - nvl(b.nwfail\_count, 0) nwmisses,  
 e.sleep\_count - nvl(b.sleep\_count, 0) sleeps,  
 e.wtr\_slp\_count - nvl(b.wtr\_slp\_count, 0) waiter\_sleeps  
 **from** dba\_hist\_latch\_misses\_summary b, dba\_hist\_latch\_misses\_summary e  
 **where** b.snap\_id(+) = &beg\_snap  
 **and** e.snap\_id = &end\_snap  
 **and** b.dbid(+) = &dbid  
 **and** e.dbid = &dbid  
 **and** b.dbid(+) = e.dbid  
 **and** b.instance\_number(+) = &inst\_num  
 **and** e.instance\_number = &inst\_num  
 **and** b.instance\_number(+) = e.instance\_number  
 **and** b.parent\_name(+) = e.parent\_name  
 **and** b.where\_in\_code(+) = e.where\_in\_code  
 **and** e.sleep\_count > nvl(b.sleep\_count, 0)  
 **order** **by** e.parent\_name, sleeps **desc**, e.where\_in\_code;

----Parent Latch Statistics

**select** e.latch\_name **parent**,  
 e.gets - b.gets gets,  
 e.misses - b.misses misses,  
 e.sleeps - b.sleeps sleeps,  
 to\_char(e.spin\_gets - b.spin\_gets) || ' / ' ||  
 to\_char(e.sleep1 - b.sleep1) || ' / ' ||  
 to\_char(e.sleep2 - b.sleep2) || ' / ' ||  
 to\_char(e.sleep3 - b.sleep3) sleephist  
 **from** dba\_hist\_latch\_parent b, dba\_hist\_latch\_parent e  
 **where** b.snap\_id = &beg\_snap  
 **and** e.snap\_id = &end\_snap  
 **and** b.dbid = &dbid  
 **and** e.dbid = &dbid  
 **and** b.instance\_number = &inst\_num  
 **and** e.instance\_number = &inst\_num  
 **and** b.latch\_hash = e.latch\_hash  
 **and** e.sleeps - b.sleeps > 0  
 **order** **by** **parent;**

----Child Latch Statistics

**select** */\*+ ordered use\_hash(b) \*/*  
 e.latch\_name **name**,  
 e.**child**# **child**,  
 e.gets - b.gets gets,  
 e.misses - b.misses misses,  
 e.sleeps - b.sleeps sleeps,  
 to\_char(e.spin\_gets - b.spin\_gets) || ' / ' ||  
 to\_char(e.sleep1 - b.sleep1) || ' / ' || to\_char(e.sleep2 - b.sleep2) ||  
 ' / ' || to\_char(e.sleep3 - b.sleep3) sleephist  
 **from** dba\_hist\_latch\_children e, dba\_hist\_latch\_children b  
 **where** b.snap\_id = &beg\_snap  
 **and** e.snap\_id = &eid  
 **and** b.dbid = &dbid  
 **and** e.dbid = &dbid  
 **and** b.instance\_number = &inst\_num  
 **and** e.instance\_number = &inst\_num  
 **and** b.latch\_hash = e.latch\_hash  
 **and** b.**child**# = e.**child**#  
 **and** e.sleeps - b.sleeps > 0  
 **and** (e.sleeps - b.sleeps) /  
 decode(e.gets - b.gets, 0, 1, e.gets - b.gets) > .00001  
 **order** **by** **name**, gets **desc;**

----Segments by Logical Reads

**select** owner,  
 tablespace\_name,  
 object\_name,  
 subobject\_name,  
 object\_type,  
 logical\_reads,  
 ratio  
 **from** (**select** n.owner,  
 n.tablespace\_name,  
 n.object\_name,  
 **case**  
 **when** length(n.subobject\_name) < 11 **then**  
 n.subobject\_name  
 **else**  
 substr(n.subobject\_name, length(n.subobject\_name) - 9)  
 **end** subobject\_name,  
 n.object\_type,  
 r.logical\_reads,  
 decode((**SELECT** **sum**(e.**VALUE**) - **sum**(b.**value**)  
 **FROM** DBA\_HIST\_SYSSTAT b, DBA\_HIST\_SYSSTAT e  
 **WHERE** B.SNAP\_ID = &beg\_snap  
 **AND** E.SNAP\_ID = &end\_snap  
 **AND** B.DBID = &DBID  
 **AND** E.DBID = &DBID  
 **AND** B.INSTANCE\_NUMBER = &INST\_NUM  
 **AND** E.INSTANCE\_NUMBER = &INST\_NUM  
 **and** e.STAT\_NAME = 'session logical reads'  
 **and** b.stat\_name = 'session logical reads'),  
 0,  
 to\_number(**null**),  
 100 \* logical\_reads /  
 (**SELECT** **sum**(e.**VALUE**) - **sum**(b.**value**)  
 **FROM** DBA\_HIST\_SYSSTAT b, DBA\_HIST\_SYSSTAT e  
 **WHERE** B.SNAP\_ID = &beg\_snap  
 **AND** E.SNAP\_ID = &end\_snap  
 **AND** B.DBID = &DBID  
 **AND** E.DBID = &DBID  
 **AND** B.INSTANCE\_NUMBER = &INST\_NUM  
 **AND** E.INSTANCE\_NUMBER = &INST\_NUM  
 **and** e.STAT\_NAME = 'session logical reads'  
 **and** b.stat\_name = 'session logical reads')) ratio  
 **from** dba\_hist\_seg\_stat\_obj n,  
 (**select** dataobj#,  
 obj#,  
 dbid,  
 **sum**(logical\_reads\_delta) logical\_reads  
 **from** dba\_hist\_seg\_stat  
 **where** &beg\_snap < snap\_id  
 **and** snap\_id <= &end\_snap  
 **and** dbid = &dbid  
 **and** instance\_number = &inst\_num  
 **group** **by** dataobj#, obj#, dbid) r  
 **where** n.dataobj# = r.dataobj#  
 **and** n.obj# = r.obj#  
 **and** n.dbid = r.dbid  
 **and** r.logical\_reads > 0  
 **order** **by** r.logical\_reads **desc**, object\_name, owner, subobject\_name)  
 **where** **rownum** <= 5;

----Segments by Physical Reads

**select** owner,  
 tablespace\_name,  
 object\_name,  
 subobject\_name,  
 object\_type,  
 physical\_reads,  
 ratio  
 **from** (**select** n.owner,  
 n.tablespace\_name,  
 n.object\_name,  
 **case**  
 **when** length(n.subobject\_name) < 11 **then**  
 n.subobject\_name  
 **else**  
 substr(n.subobject\_name, length(n.subobject\_name) - 9)  
 **end** subobject\_name,  
 n.object\_type,  
 r.physical\_reads,  
 decode((**SELECT** **sum**(e.**VALUE**) - **sum**(b.**value**)  
 **FROM** DBA\_HIST\_SYSSTAT b, DBA\_HIST\_SYSSTAT e  
 **WHERE** B.SNAP\_ID = &beg\_snap  
 **AND** E.SNAP\_ID = &end\_snap  
 **AND** B.DBID = &DBID  
 **AND** E.DBID = &DBID  
 **AND** B.INSTANCE\_NUMBER = &INST\_NUM  
 **AND** E.INSTANCE\_NUMBER = &INST\_NUM  
 **and** e.STAT\_NAME = 'physical reads'  
 **and** b.STAT\_NAME = 'physical reads'),  
 0,  
 to\_number(**null**),  
 100 \* r.physical\_reads /  
 (**SELECT** **sum**(e.**VALUE**) - **sum**(b.**value**)  
 **FROM** DBA\_HIST\_SYSSTAT b, DBA\_HIST\_SYSSTAT e  
 **WHERE** B.SNAP\_ID = &beg\_snap  
 **AND** E.SNAP\_ID = &end\_snap  
 **AND** B.DBID = &DBID  
 **AND** E.DBID = &DBID  
 **AND** B.INSTANCE\_NUMBER = &INST\_NUM  
 **AND** E.INSTANCE\_NUMBER = &INST\_NUM  
 **and** e.STAT\_NAME = 'physical reads'  
 **and** b.STAT\_NAME = 'physical reads')) ratio  
 **from** dba\_hist\_seg\_stat\_obj n,  
 (**select** dataobj#,  
 obj#,  
 dbid,  
 **sum**(physical\_reads\_delta) physical\_reads  
 **from** dba\_hist\_seg\_stat  
 **where** &beg\_snap < snap\_id  
 **and** snap\_id <= &end\_snap  
 **and** dbid = &dbid  
 **and** instance\_number = &inst\_num  
 **group** **by** dataobj#, obj#, dbid) r  
 **where** n.dataobj# = r.dataobj#  
 **and** n.obj# = r.obj#  
 **and** n.dbid = r.dbid  
 **and** r.physical\_reads > 0  
 **order** **by** r.physical\_reads **desc**, object\_name, owner, subobject\_name)  
 **where** **rownum** <= 5;

----Segments by Row Lock Waits

**select** owner,  
 tablespace\_name,  
 object\_name,  
 subobject\_name,  
 object\_type,  
 row\_lock\_waits,  
 ratio  
 **from** (**select** n.owner,  
 n.tablespace\_name,  
 n.object\_name,  
 **case**  
 **when** length(n.subobject\_name) < 11 **then**  
 n.subobject\_name  
 **else**  
 substr(n.subobject\_name, length(n.subobject\_name) - 9)  
 **end** subobject\_name,  
 n.object\_type,  
 r.row\_lock\_waits,  
 round(r.ratio \* 100, 2) ratio  
 **from** dba\_hist\_seg\_stat\_obj n,  
 (**select** dataobj#,  
 obj#,  
 dbid,  
 **sum**(row\_lock\_waits\_delta) row\_lock\_waits,  
 ratio\_to\_report(**sum**(row\_lock\_waits\_delta)) over() ratio  
 **from** dba\_hist\_seg\_stat  
 **where** &beg\_snap < snap\_id  
 **and** snap\_id <= &end\_snap  
 **and** dbid = &dbid  
 **and** instance\_number = &inst\_num  
 **group** **by** dataobj#, obj#, dbid) r  
 **where** n.dataobj# = r.dataobj#  
 **and** n.obj# = r.obj#  
 **and** n.dbid = r.dbid  
 **and** r.row\_lock\_waits > 0  
 **order** **by** r.row\_lock\_waits **desc**, object\_name, owner, subobject\_name)  
 **where** **rownum** <= 5;

----Segments by ITL Waits

**select** owner,  
 tablespace\_name,  
 object\_name,  
 subobject\_name,  
 object\_type,  
 itl\_waits,  
 ratio  
 **from** (**select** n.owner,  
 n.tablespace\_name,  
 n.object\_name,  
 **case**  
 **when** length(n.subobject\_name) < 11 **then**  
 n.subobject\_name  
 **else**  
 substr(n.subobject\_name, length(n.subobject\_name) - 9)  
 **end** subobject\_name,  
 n.object\_type,  
 r.itl\_waits,  
 round(r.ratio \* 100, 2) ratio  
 **from** dba\_hist\_seg\_stat\_obj n,  
 (**select** dataobj#,  
 obj#,  
 dbid,  
 **sum**(itl\_waits\_delta) itl\_waits,  
 ratio\_to\_report(**sum**(itl\_waits\_delta)) over() ratio  
 **from** dba\_hist\_seg\_stat  
 **where** &beg\_snap < snap\_id  
 **and** snap\_id <= &end\_snap  
 **and** dbid = &dbid  
 **and** instance\_number = &inst\_num  
 **group** **by** dataobj#, obj#, dbid) r  
 **where** n.dataobj# = r.dataobj#  
 **and** n.obj# = r.obj#  
 **and** n.dbid = r.dbid  
 **and** r.itl\_waits > 0  
 **order** **by** r.itl\_waits **desc**, object\_name, owner, subobject\_name)  
 **where** **rownum** <= 5;

----Segments by Buffer Busy Waits

**select** owner,  
 tablespace\_name,  
 object\_name,  
 subobject\_name,  
 object\_type,  
 buffer\_busy\_waits,  
 ratio  
 **from** (**select** n.owner,  
 n.tablespace\_name,  
 n.object\_name,  
 **case**  
 **when** length(n.subobject\_name) < 11 **then**  
 n.subobject\_name  
 **else**  
 substr(n.subobject\_name, length(n.subobject\_name) - 9)  
 **end** subobject\_name,  
 n.object\_type,  
 r.buffer\_busy\_waits,  
 round(r.ratio \* 100, 2) ratio  
 **from** dba\_hist\_seg\_stat\_obj n,  
 (**select** dataobj#,  
 obj#,  
 dbid,  
 **sum**(buffer\_busy\_waits\_delta) buffer\_busy\_waits,  
 ratio\_to\_report(**sum**(buffer\_busy\_waits\_delta)) over() ratio  
 **from** dba\_hist\_seg\_stat  
 **where** &beg\_snap < snap\_id  
 **and** snap\_id <= &end\_snap  
 **and** dbid = &dbid  
 **and** instance\_number = &inst\_num  
 **group** **by** dataobj#, obj#, dbid) r  
 **where** n.dataobj# = r.dataobj#  
 **and** n.obj# = r.obj#  
 **and** n.dbid = r.dbid  
 **and** r.buffer\_busy\_waits > 0  
 **order** **by** r.buffer\_busy\_waits **desc**,  
 object\_name,  
 owner,  
 subobject\_name)  
 **where** **rownum** <= 5;

----Segments by Global Cache Buffer Busy

**select** owner,  
 tablespace\_name,  
 object\_name,  
 subobject\_name,  
 object\_type,  
 gc\_buffer\_busy,  
 ratio  
 **from** (**select** n.owner,  
 n.tablespace\_name,  
 n.object\_name,  
 **case**  
 **when** length(n.subobject\_name) < 11 **then**  
 n.subobject\_name  
 **else**  
 substr(n.subobject\_name, length(n.subobject\_name) - 9)  
 **end** subobject\_name,  
 n.object\_type,  
 r.gc\_buffer\_busy,  
 round(r.ratio \* 100, 2) ratio  
 **from** dba\_hist\_seg\_stat\_obj n,  
 (**select** dataobj#,  
 obj#,  
 dbid,  
 **sum**(gc\_buffer\_busy\_delta) gc\_buffer\_busy,  
 ratio\_to\_report(**sum**(gc\_buffer\_busy\_delta)) over() ratio  
 **from** dba\_hist\_seg\_stat  
 **where** &beg\_snap < snap\_id  
 **and** snap\_id <= &end\_snap  
 **and** dbid = &dbid  
 **and** instance\_number = &inst\_num  
 **group** **by** dataobj#, obj#, dbid) r  
 **where** n.dataobj# = r.dataobj#  
 **and** n.obj# = r.obj#  
 **and** n.dbid = r.dbid  
 **and** r.gc\_buffer\_busy > 0  
 **order** **by** r.gc\_buffer\_busy **desc**, object\_name, owner, subobject\_name)  
 **where** **rownum** <= 5;

----Segments by CR Blocks Received

**select** owner,  
 tablespace\_name,  
 object\_name,  
 subobject\_name,  
 object\_type,  
 cr\_blocks\_received,  
 ratio  
 **from** (**select** n.owner,  
 n.tablespace\_name,  
 n.object\_name,  
 **case**  
 **when** length(n.subobject\_name) < 11 **then**  
 n.subobject\_name  
 **else**  
 substr(n.subobject\_name, length(n.subobject\_name) - 9)  
 **end** subobject\_name,  
 n.object\_type,  
 r.cr\_blocks\_received,  
 decode((**SELECT** **sum**(e.**VALUE**) - **sum**(b.**value**)  
 **FROM** DBA\_HIST\_SYSSTAT b, DBA\_HIST\_SYSSTAT e  
 **WHERE** B.SNAP\_ID = &beg\_snap  
 **AND** E.SNAP\_ID = &end\_snap  
 **AND** B.DBID = &DBID  
 **AND** E.DBID = &DBID  
 **AND** B.INSTANCE\_NUMBER = &INST\_NUM  
 **AND** E.INSTANCE\_NUMBER = &INST\_NUM  
 **and** e.STAT\_NAME = 'gc cr blocks received'  
 **and** b.stat\_name = 'gc cr blocks received'),  
 0,  
 to\_number(**null**),  
 100 \* cr\_blocks\_received /  
 (**SELECT** **sum**(e.**VALUE**) - **sum**(b.**value**)  
 **FROM** DBA\_HIST\_SYSSTAT b, DBA\_HIST\_SYSSTAT e  
 **WHERE** B.SNAP\_ID = &beg\_snap  
 **AND** E.SNAP\_ID = &end\_snap  
 **AND** B.DBID = &DBID  
 **AND** E.DBID = &DBID  
 **AND** B.INSTANCE\_NUMBER = &INST\_NUM  
 **AND** E.INSTANCE\_NUMBER = &INST\_NUM  
 **and** e.STAT\_NAME = 'gc cr blocks received'  
 **and** b.stat\_name = 'gc cr blocks received')) ratio  
 **from** dba\_hist\_seg\_stat\_obj n,  
 (**select** dataobj#,  
 obj#,  
 dbid,  
 **sum**(gc\_cr\_blocks\_received\_delta) cr\_blocks\_received  
 **from** dba\_hist\_seg\_stat  
 **where** &beg\_snap < snap\_id  
 **and** snap\_id <= &end\_snap  
 **and** dbid = &dbid  
 **and** instance\_number = &inst\_num  
 **group** **by** dataobj#, obj#, dbid) r  
 **where** n.dataobj# = r.dataobj#  
 **and** n.obj# = r.obj#  
 **and** n.dbid = r.dbid  
 **and** r.cr\_blocks\_received > 0  
 **order** **by** r.cr\_blocks\_received **desc**,  
 object\_name,  
 owner,  
 subobject\_name)  
 **where** **rownum** <= 5;

----Segments by Current Blocks Received

**select** owner,  
 tablespace\_name,  
 object\_name,  
 subobject\_name,  
 object\_type,  
 cu\_blocks\_received,  
 ratio  
 **from** (**select** n.owner,  
 n.tablespace\_name,  
 n.object\_name,  
 **case**  
 **when** length(n.subobject\_name) < 11 **then**  
 n.subobject\_name  
 **else**  
 substr(n.subobject\_name, length(n.subobject\_name) - 9)  
 **end** subobject\_name,  
 n.object\_type,  
 r.cu\_blocks\_received,  
 decode((**SELECT** **sum**(e.**VALUE**) - **sum**(b.**value**)  
 **FROM** DBA\_HIST\_SYSSTAT b, DBA\_HIST\_SYSSTAT e  
 **WHERE** B.SNAP\_ID = &beg\_snap  
 **AND** E.SNAP\_ID = &end\_snap  
 **AND** B.DBID = &DBID  
 **AND** E.DBID = &DBID  
 **AND** B.INSTANCE\_NUMBER = &INST\_NUM  
 **AND** E.INSTANCE\_NUMBER = &INST\_NUM  
 **and** e.STAT\_NAME = 'gc current blocks received'  
 **and** b.stat\_name = 'gc current blocks received'),  
 0,  
 to\_number(**null**),  
 100 \* cu\_blocks\_received /  
 (**SELECT** **sum**(e.**VALUE**) - **sum**(b.**value**)  
 **FROM** DBA\_HIST\_SYSSTAT b, DBA\_HIST\_SYSSTAT e  
 **WHERE** B.SNAP\_ID = &beg\_snap  
 **AND** E.SNAP\_ID = &end\_snap  
 **AND** B.DBID = &DBID  
 **AND** E.DBID = &DBID  
 **AND** B.INSTANCE\_NUMBER = &INST\_NUM  
 **AND** E.INSTANCE\_NUMBER = &INST\_NUM  
 **and** e.STAT\_NAME = 'gc current blocks received'  
 **and** b.stat\_name = 'gc current blocks received')) ratio  
 **from** dba\_hist\_seg\_stat\_obj n,  
 (**select** dataobj#,  
 obj#,  
 dbid,  
 **sum**(gc\_cu\_blocks\_received\_delta) cu\_blocks\_received  
 **from** dba\_hist\_seg\_stat  
 **where** &beg\_snap < snap\_id  
 **and** snap\_id <= &end\_snap  
 **and** dbid = &dbid  
 **and** instance\_number = &inst\_num  
 **group** **by** dataobj#, obj#, dbid) r  
 **where** n.dataobj# = r.dataobj#  
 **and** n.obj# = r.obj#  
 **and** n.dbid = r.dbid  
 **and** r.cu\_blocks\_received > 0  
 **order** **by** r.cu\_blocks\_received **desc**,  
 object\_name,  
 owner,  
 subobject\_name)  
 **where** **rownum** <= 5;

----Dictionary Cache Stats

**select** lower(b.parameter) param,  
 e.gets - b.gets gets,  
 to\_number(decode(e.gets,  
 b.gets,  
 **null**,  
 (e.getmisses - b.getmisses) \* 100 /  
 (e.gets - b.gets))) getm,  
 e.scans - b.scans scans,  
 to\_number(decode(e.scans,  
 b.scans,  
 **null**,  
 (e.scanmisses - b.scanmisses) \* 100 /  
 (e.scans - b.scans))) scanm,  
 e.modifications - b.modifications mods,  
 e.**usage** **usage**  
 **from** dba\_hist\_rowcache\_summary b, dba\_hist\_rowcache\_summary e  
 **where** b.snap\_id = &beg\_snap  
 **and** e.snap\_id = &end\_snap  
 **and** b.dbid = &dbid  
 **and** e.dbid = &dbid  
 **and** b.instance\_number = &inst\_num  
 **and** e.instance\_number = &inst\_num  
 **and** b.parameter = e.parameter  
 **and** e.gets - b.gets > 0  
 **order** **by** param;

----Dictionary Cache Stats (RAC)

**select** lower(b.parameter) param,  
 e.dlm\_requests - b.dlm\_requests dreq,  
 e.dlm\_conflicts - b.dlm\_conflicts dcon,  
 e.dlm\_releases - b.dlm\_releases drel  
 **from** dba\_hist\_rowcache\_summary b, dba\_hist\_rowcache\_summary e  
 **where** b.snap\_id = &beg\_snap  
 **and** e.snap\_id = &end\_snap  
 **and** b.dbid = &dbid  
 **and** e.dbid = &dbid  
 **and** b.instance\_number = &inst\_num  
 **and** e.instance\_number = &inst\_num  
 **and** b.parameter = e.parameter  
 **and** e.dlm\_requests - b.dlm\_requests > 0  
 **order** **by** param;

----Library Cache Activity

**select** b.namespace,  
 e.gets - b.gets gets,  
 to\_number(decode(e.gets,  
 b.gets,  
 **null**,  
 100 -  
 (e.gethits - b.gethits) \* 100 / (e.gets - b.gets))) getm,  
 e.pins - b.pins pins,  
 to\_number(decode(e.pins,  
 b.pins,  
 **null**,  
 100 -  
 (e.pinhits - b.pinhits) \* 100 / (e.pins - b.pins))) pinm,  
 e.reloads - b.reloads reloads,  
 e.invalidations - b.invalidations inv  
 **from** dba\_hist\_librarycache b, dba\_hist\_librarycache e  
 **where** b.snap\_id = &beg\_snap  
 **and** e.snap\_id = &end\_snap  
 **and** b.dbid = &dbid  
 **and** e.dbid = &dbid  
 **and** b.instance\_number = &inst\_num  
 **and** e.instance\_number = &inst\_num  
 **and** b.namespace = e.namespace  
 **and** e.gets - b.gets > 0;

----Library Cache Activity (RAC)

**select** b.namespace,  
 e.dlm\_lock\_requests - b.dlm\_lock\_requests dlreq,  
 e.dlm\_pin\_requests - b.dlm\_pin\_requests dpreq,  
 e.dlm\_pin\_releases - b.dlm\_pin\_releases dprel,  
 e.dlm\_invalidation\_requests - b.dlm\_invalidation\_requests direq,  
 e.dlm\_invalidations - b.dlm\_invalidations dinv  
 **from** dba\_hist\_librarycache b, dba\_hist\_librarycache e  
 **where** b.snap\_id = &beg\_snap  
 **and** e.snap\_id = &end\_snap  
 **and** b.dbid = &dbid  
 **and** e.dbid = &dbid  
 **and** b.instance\_number = &inst\_num  
 **and** e.instance\_number = &inst\_num  
 **and** b.namespace = e.namespace  
 **and** e.dlm\_lock\_requests - b.dlm\_lock\_requests > 0;

----Process Memory Summary

**select** decode(snap\_id, &beg\_snap, 'B', &end\_snap, 'E') b\_or\_e,  
 **category**,  
 allocated\_total / 1024 / 1024,  
 used\_total / 1024 / 1024,  
 allocated\_avg / 1024 / 1024,  
 allocated\_stddev / 1024 / 1024,  
 allocated\_max / 1024 / 1024,  
 max\_allocated\_max / 1024 / 1024,  
 num\_processes,  
 non\_zero\_allocs  
 **from** dba\_hist\_process\_mem\_summary  
 **where** dbid = &dbid  
 **and** instance\_number = &inst\_num  
 **and** snap\_id **in** (&beg\_snap, &end\_snap)  
 **order** **by** snap\_id, allocated\_total **desc;**

----SGA Memory Summary

**select** s1.**name**,  
 s1.**value**,  
 decode(s2.**value**,  
 s1.**value**,  
 **NULL**,  
 to\_char(s2.**value**, '99,999,999,999,990'))  
 **from** dba\_hist\_sga s1, dba\_hist\_sga s2  
 **where** s1.snap\_id = &beg\_snap  
 **and** s2.snap\_id = &end\_snap  
 **and** s1.dbid = &dbid  
 **and** s2.dbid = &dbid  
 **and** s1.instance\_number = &inst\_num  
 **and** s2.instance\_number = &inst\_num  
 **and** s1.**name** = s2.**name**  
 **order** **by** **name;**

----SGA breakdown difference

**select** **replace**(pool, 'pool', '') pool, **name**, snap1, snap2, diff  
 **from** (**select** nvl(e.pool, b.pool) pool,  
 nvl(e.**name**, b.**name**) **name**,  
 b.bytes / 1024 / 1024 snap1,  
 e.bytes / 1024 / 1024 snap2,  
 decode(b.bytes,  
 **NULL**,  
 to\_number(**NULL**),  
 100 \* (nvl(e.bytes, 0) - b.bytes) / b.bytes) diff  
 **from** (**select** \*  
 **from** dba\_hist\_sgastat  
 **where** snap\_id = &beg\_snap  
 **and** dbid = &dbid  
 **and** instance\_number = &inst\_num) b  
 **full** **outer** **join** (**select** \*  
 **from** dba\_hist\_sgastat  
 **where** snap\_id = &end\_snap  
 **and** dbid = &dbid  
 **and** instance\_number = &inst\_num) e **on** b.**name** =  
 e.**name**  
 **and** nvl(b.pool,  
 'a') =  
 nvl(e.pool,  
 'a')  
 **order** **by** nvl(e.bytes, b.bytes))  
 **order** **by** pool, **name;**

----Streams CPU/IO Usage

**select** e.session\_type,  
 e.sum\_cpu\_time - nvl(b.sum\_cpu\_time, 0) cpu,  
 e.sum\_user\_io\_wait - nvl(b.sum\_user\_io\_wait, 0),  
 e.sum\_sys\_io\_wait - nvl(b.sum\_sys\_io\_wait, 0)  
 **from** dba\_hist\_sess\_time\_stats b, dba\_hist\_sess\_time\_stats e  
 **where** b.snap\_id(+) = &beg\_snap  
 **and** e.snap\_id = &end\_snap  
 **and** b.dbid(+) = e.dbid  
 **and** e.dbid = &dbid  
 **and** b.instance\_number(+) = e.instance\_number  
 **and** e.instance\_number = &inst\_num  
 **and** b.min\_logon\_time(+) = e.min\_logon\_time  
 **and** b.session\_type(+) = e.session\_type  
 **order** **by** cpu **desc;**

----Streams Capture

**select** e.capture\_name capname,  
 (e.total\_messages\_captured - nvl(b.total\_messages\_captured, 0)) /  
 (**SELECT** EXTRACT(**DAY** **FROM** E.END\_INTERVAL\_TIME - B.END\_INTERVAL\_TIME) \*  
 86400 +  
 EXTRACT(HOUR **FROM** E.END\_INTERVAL\_TIME - B.END\_INTERVAL\_TIME) \* 3600 +  
 EXTRACT(MINUTE **FROM** E.END\_INTERVAL\_TIME - B.END\_INTERVAL\_TIME) \* 60 +  
 EXTRACT(**SECOND** **FROM** E.END\_INTERVAL\_TIME - B.END\_INTERVAL\_TIME)  
 **FROM** DBA\_HIST\_SNAPSHOT B, DBA\_HIST\_SNAPSHOT E  
 **WHERE** B.SNAP\_ID = &beg\_snap  
 **AND** E.SNAP\_ID = &end\_snap  
 **AND** B.DBID = &DBID  
 **AND** E.DBID = &DBID  
 **AND** B.INSTANCE\_NUMBER = &INST\_NUM  
 **AND** E.INSTANCE\_NUMBER = &INST\_NUM  
 **AND** B.STARTUP\_TIME = E.STARTUP\_TIME  
 **AND** B.END\_INTERVAL\_TIME < E.END\_INTERVAL\_TIME),  
 (e.total\_messages\_enqueued - nvl(b.total\_messages\_enqueued, 0)) /  
 (**SELECT** EXTRACT(**DAY** **FROM** E.END\_INTERVAL\_TIME - B.END\_INTERVAL\_TIME) \*  
 86400 +  
 EXTRACT(HOUR **FROM** E.END\_INTERVAL\_TIME - B.END\_INTERVAL\_TIME) \* 3600 +  
 EXTRACT(MINUTE **FROM** E.END\_INTERVAL\_TIME - B.END\_INTERVAL\_TIME) \* 60 +  
 EXTRACT(**SECOND** **FROM** E.END\_INTERVAL\_TIME - B.END\_INTERVAL\_TIME)  
 **FROM** DBA\_HIST\_SNAPSHOT B, DBA\_HIST\_SNAPSHOT E  
 **WHERE** B.SNAP\_ID = &beg\_snap  
 **AND** E.SNAP\_ID = &end\_snap  
 **AND** B.DBID = &DBID  
 **AND** E.DBID = &DBID  
 **AND** B.INSTANCE\_NUMBER = &INST\_NUM  
 **AND** E.INSTANCE\_NUMBER = &INST\_NUM  
 **AND** B.STARTUP\_TIME = E.STARTUP\_TIME  
 **AND** B.END\_INTERVAL\_TIME < E.END\_INTERVAL\_TIME),  
 (e.lag - nvl(b.lag, 0)) \* 24 \* 60 \* 60,  
 (e.elapsed\_rule\_time - nvl(b.elapsed\_rule\_time, 0)) /  
 (**SELECT** EXTRACT(**DAY** **FROM** E.END\_INTERVAL\_TIME - B.END\_INTERVAL\_TIME) \*  
 86400 +  
 EXTRACT(HOUR **FROM** E.END\_INTERVAL\_TIME - B.END\_INTERVAL\_TIME) \* 3600 +  
 EXTRACT(MINUTE **FROM** E.END\_INTERVAL\_TIME - B.END\_INTERVAL\_TIME) \* 60 +  
 EXTRACT(**SECOND** **FROM** E.END\_INTERVAL\_TIME - B.END\_INTERVAL\_TIME)  
 **FROM** DBA\_HIST\_SNAPSHOT B, DBA\_HIST\_SNAPSHOT E  
 **WHERE** B.SNAP\_ID = &beg\_snap  
 **AND** E.SNAP\_ID = &end\_snap  
 **AND** B.DBID = &DBID  
 **AND** E.DBID = &DBID  
 **AND** B.INSTANCE\_NUMBER = &INST\_NUM  
 **AND** E.INSTANCE\_NUMBER = &INST\_NUM  
 **AND** B.STARTUP\_TIME = E.STARTUP\_TIME  
 **AND** B.END\_INTERVAL\_TIME < E.END\_INTERVAL\_TIME),  
 (e.elapsed\_enqueue\_time - nvl(b.elapsed\_enqueue\_time, 0)) /  
 (**SELECT** EXTRACT(**DAY** **FROM** E.END\_INTERVAL\_TIME - B.END\_INTERVAL\_TIME) \*  
 86400 +  
 EXTRACT(HOUR **FROM** E.END\_INTERVAL\_TIME - B.END\_INTERVAL\_TIME) \* 3600 +  
 EXTRACT(MINUTE **FROM** E.END\_INTERVAL\_TIME - B.END\_INTERVAL\_TIME) \* 60 +  
 EXTRACT(**SECOND** **FROM** E.END\_INTERVAL\_TIME - B.END\_INTERVAL\_TIME)  
 **FROM** DBA\_HIST\_SNAPSHOT B, DBA\_HIST\_SNAPSHOT E  
 **WHERE** B.SNAP\_ID = &beg\_snap  
 **AND** E.SNAP\_ID = &end\_snap  
 **AND** B.DBID = &DBID  
 **AND** E.DBID = &DBID  
 **AND** B.INSTANCE\_NUMBER = &INST\_NUM  
 **AND** E.INSTANCE\_NUMBER = &INST\_NUM  
 **AND** B.STARTUP\_TIME = E.STARTUP\_TIME  
 **AND** B.END\_INTERVAL\_TIME < E.END\_INTERVAL\_TIME),  
 (e.elapsed\_redo\_wait\_time - nvl(b.elapsed\_redo\_wait\_time, 0)) /  
 (**SELECT** EXTRACT(**DAY** **FROM** E.END\_INTERVAL\_TIME - B.END\_INTERVAL\_TIME) \*  
 86400 +  
 EXTRACT(HOUR **FROM** E.END\_INTERVAL\_TIME - B.END\_INTERVAL\_TIME) \* 3600 +  
 EXTRACT(MINUTE **FROM** E.END\_INTERVAL\_TIME - B.END\_INTERVAL\_TIME) \* 60 +  
 EXTRACT(**SECOND** **FROM** E.END\_INTERVAL\_TIME - B.END\_INTERVAL\_TIME)  
 **FROM** DBA\_HIST\_SNAPSHOT B, DBA\_HIST\_SNAPSHOT E  
 **WHERE** B.SNAP\_ID = &beg\_snap  
 **AND** E.SNAP\_ID = &end\_snap  
 **AND** B.DBID = &DBID  
 **AND** E.DBID = &DBID  
 **AND** B.INSTANCE\_NUMBER = &INST\_NUM  
 **AND** E.INSTANCE\_NUMBER = &INST\_NUM  
 **AND** B.STARTUP\_TIME = E.STARTUP\_TIME  
 **AND** B.END\_INTERVAL\_TIME < E.END\_INTERVAL\_TIME),  
 (e.elapsed\_pause\_time - nvl(b.elapsed\_pause\_time, 0)) /  
 (**SELECT** EXTRACT(**DAY** **FROM** E.END\_INTERVAL\_TIME - B.END\_INTERVAL\_TIME) \*  
 86400 +  
 EXTRACT(HOUR **FROM** E.END\_INTERVAL\_TIME - B.END\_INTERVAL\_TIME) \* 3600 +  
 EXTRACT(MINUTE **FROM** E.END\_INTERVAL\_TIME - B.END\_INTERVAL\_TIME) \* 60 +  
 EXTRACT(**SECOND** **FROM** E.END\_INTERVAL\_TIME - B.END\_INTERVAL\_TIME)  
 **FROM** DBA\_HIST\_SNAPSHOT B, DBA\_HIST\_SNAPSHOT E  
 **WHERE** B.SNAP\_ID = &beg\_snap  
 **AND** E.SNAP\_ID = &end\_snap  
 **AND** B.DBID = &DBID  
 **AND** E.DBID = &DBID  
 **AND** B.INSTANCE\_NUMBER = &INST\_NUM  
 **AND** E.INSTANCE\_NUMBER = &INST\_NUM  
 **AND** B.STARTUP\_TIME = E.STARTUP\_TIME  
 **AND** B.END\_INTERVAL\_TIME < E.END\_INTERVAL\_TIME)  
 **from** dba\_hist\_streams\_capture b, dba\_hist\_streams\_capture e  
 **where** b.snap\_id(+) = &beg\_snap  
 **and** e.snap\_id = &end\_snap  
 **and** b.dbid(+) = e.dbid  
 **and** e.dbid = &dbid  
 **and** b.instance\_number(+) = e.instance\_number  
 **and** e.instance\_number = &inst\_num  
 **and** b.startup\_time(+) = e.startup\_time  
 **and** b.capture\_name(+) = e.capture\_name  
 **order** **by** capname;

----Streams Apply

**select** e.apply\_name appname,  
 (e.coord\_total\_applied - nvl(b.coord\_total\_applied, 0)) /  
 (**SELECT** EXTRACT(**DAY** **FROM** E.END\_INTERVAL\_TIME - B.END\_INTERVAL\_TIME) \*  
 86400 +  
 EXTRACT(HOUR **FROM** E.END\_INTERVAL\_TIME - B.END\_INTERVAL\_TIME) \* 3600 +  
 EXTRACT(MINUTE **FROM** E.END\_INTERVAL\_TIME - B.END\_INTERVAL\_TIME) \* 60 +  
 EXTRACT(**SECOND** **FROM** E.END\_INTERVAL\_TIME - B.END\_INTERVAL\_TIME)  
 **FROM** DBA\_HIST\_SNAPSHOT B, DBA\_HIST\_SNAPSHOT E  
 **WHERE** B.SNAP\_ID = &beg\_snap  
 **AND** E.SNAP\_ID = &end\_snap  
 **AND** B.DBID = &DBID  
 **AND** E.DBID = &DBID  
 **AND** B.INSTANCE\_NUMBER = &INST\_NUM  
 **AND** E.INSTANCE\_NUMBER = &INST\_NUM  
 **AND** B.STARTUP\_TIME = E.STARTUP\_TIME  
 **AND** B.END\_INTERVAL\_TIME < E.END\_INTERVAL\_TIME),  
 decode((**SELECT** **sum**(e.**value**) - **sum**(b.**value**)  
 **FROM** DBA\_HIST\_SYSSTAT B, DBA\_HIST\_SYSSTAT E  
 **WHERE** B.SNAP\_ID = &beg\_snap  
 **AND** E.SNAP\_ID = &end\_snap  
 **AND** B.DBID = &DBID  
 **AND** E.DBID = &DBID  
 **AND** B.INSTANCE\_NUMBER = &INST\_NUM  
 **AND** E.INSTANCE\_NUMBER = &INST\_NUM  
 **and** e.STAT\_NAME **in** ('user rollbacks', 'user commits')  
 **and** b.STAT\_NAME **in** ('user rollbacks', 'user commits')),  
 0,  
 0,  
 100 \* (e.coord\_total\_applied - nvl(b.coord\_total\_applied, 0)) /  
 (**SELECT** **sum**(e.**value**) - **sum**(b.**value**)  
 **FROM** DBA\_HIST\_SYSSTAT B, DBA\_HIST\_SYSSTAT E  
 **WHERE** B.SNAP\_ID = &beg\_snap  
 **AND** E.SNAP\_ID = &end\_snap  
 **AND** B.DBID = &DBID  
 **AND** E.DBID = &DBID  
 **AND** B.INSTANCE\_NUMBER = &INST\_NUM  
 **AND** E.INSTANCE\_NUMBER = &INST\_NUM  
 **and** e.STAT\_NAME **in** ('user rollbacks', 'user commits')  
 **and** b.STAT\_NAME **in** ('user rollbacks', 'user commits'))),  
 decode((e.coord\_total\_applied - nvl(b.coord\_total\_applied, 0)),  
 0,  
 0,  
 ((e.coord\_total\_wait\_deps - nvl(b.coord\_total\_wait\_deps, 0)) \* 100) /  
 (e.coord\_total\_applied - nvl(b.coord\_total\_applied, 0))),  
 decode((e.coord\_total\_applied - nvl(b.coord\_total\_applied, 0)),  
 0,  
 0,  
 ((e.coord\_total\_wait\_cmts - nvl(b.coord\_total\_wait\_cmts, 0)) \* 100) /  
 (e.coord\_total\_applied - nvl(b.coord\_total\_applied, 0))),  
 decode((e.coord\_total\_applied - nvl(b.coord\_total\_applied, 0)),  
 0,  
 0,  
 ((e.coord\_total\_rollbacks - nvl(b.coord\_total\_rollbacks, 0)) \* 100) /  
 (e.coord\_total\_applied - nvl(b.coord\_total\_applied, 0))),  
 (e.server\_total\_messages\_applied -  
 nvl(b.server\_total\_messages\_applied, 0)) /  
 (**SELECT** EXTRACT(**DAY** **FROM** E.END\_INTERVAL\_TIME - B.END\_INTERVAL\_TIME) \*  
 86400 +  
 EXTRACT(HOUR **FROM** E.END\_INTERVAL\_TIME - B.END\_INTERVAL\_TIME) \* 3600 +  
 EXTRACT(MINUTE **FROM** E.END\_INTERVAL\_TIME - B.END\_INTERVAL\_TIME) \* 60 +  
 EXTRACT(**SECOND** **FROM** E.END\_INTERVAL\_TIME - B.END\_INTERVAL\_TIME)  
 **FROM** DBA\_HIST\_SNAPSHOT B, DBA\_HIST\_SNAPSHOT E  
 **WHERE** B.SNAP\_ID = &beg\_snap  
 **AND** E.SNAP\_ID = &end\_snap  
 **AND** B.DBID = &DBID  
 **AND** E.DBID = &DBID  
 **AND** B.INSTANCE\_NUMBER = &INST\_NUM  
 **AND** E.INSTANCE\_NUMBER = &INST\_NUM  
 **AND** B.STARTUP\_TIME = E.STARTUP\_TIME  
 **AND** B.END\_INTERVAL\_TIME < E.END\_INTERVAL\_TIME),  
 decode(e.server\_total\_messages\_applied -  
 nvl(b.server\_total\_messages\_applied, 0),  
 0,  
 0,  
 10 \* (e.server\_elapsed\_dequeue\_time -  
 nvl(b.server\_elapsed\_dequeue\_time, 0)) /  
 (e.server\_total\_messages\_applied -  
 nvl(b.server\_total\_messages\_applied, 0))),  
 decode(e.server\_total\_messages\_applied -  
 nvl(b.server\_total\_messages\_applied, 0),  
 0,  
 0,  
 10 \* (e.server\_elapsed\_apply\_time -  
 nvl(b.server\_elapsed\_apply\_time, 0)) /  
 (e.server\_total\_messages\_applied -  
 nvl(b.server\_total\_messages\_applied, 0))),  
 (e.coord\_lwm\_lag - nvl(b.coord\_lwm\_lag, 0)) \* 24 \* 60 \* 60  
 **from** dba\_hist\_streams\_apply\_sum b, dba\_hist\_streams\_apply\_sum e  
 **where** b.snap\_id(+) = &beg\_snap  
 **and** e.snap\_id = &end\_snap  
 **and** e.dbid = &dbid  
 **and** b.dbid(+) = e.dbid  
 **and** e.instance\_number = &inst\_num  
 **and** b.instance\_number(+) = e.instance\_number  
 **and** b.startup\_time(+) = e.startup\_time  
 **and** b.apply\_name(+) = e.apply\_name  
 **order** **by** appname;

----Buffered Queues

**select** e.queue\_schema || ' . ' || e.queue\_name queuename,  
 (e.cnum\_msgs - nvl(b.cnum\_msgs, 0)) /  
 (**SELECT** EXTRACT(**DAY** **FROM** E.END\_INTERVAL\_TIME - B.END\_INTERVAL\_TIME) \*  
 86400 +  
 EXTRACT(HOUR **FROM** E.END\_INTERVAL\_TIME - B.END\_INTERVAL\_TIME) \* 3600 +  
 EXTRACT(MINUTE **FROM** E.END\_INTERVAL\_TIME - B.END\_INTERVAL\_TIME) \* 60 +  
 EXTRACT(**SECOND** **FROM** E.END\_INTERVAL\_TIME - B.END\_INTERVAL\_TIME)  
 **FROM** DBA\_HIST\_SNAPSHOT B, DBA\_HIST\_SNAPSHOT E  
 **WHERE** B.SNAP\_ID = &beg\_snap  
 **AND** E.SNAP\_ID = &end\_snap  
 **AND** B.DBID = &DBID  
 **AND** E.DBID = &DBID  
 **AND** B.INSTANCE\_NUMBER = &INST\_NUM  
 **AND** E.INSTANCE\_NUMBER = &INST\_NUM  
 **AND** B.STARTUP\_TIME = E.STARTUP\_TIME  
 **AND** B.END\_INTERVAL\_TIME < E.END\_INTERVAL\_TIME),  
 (e.cnum\_msgs - e.num\_msgs - nvl((b.cnum\_msgs - b.num\_msgs), 0)) /  
 (**SELECT** EXTRACT(**DAY** **FROM** E.END\_INTERVAL\_TIME - B.END\_INTERVAL\_TIME) \*  
 86400 +  
 EXTRACT(HOUR **FROM** E.END\_INTERVAL\_TIME - B.END\_INTERVAL\_TIME) \* 3600 +  
 EXTRACT(MINUTE **FROM** E.END\_INTERVAL\_TIME - B.END\_INTERVAL\_TIME) \* 60 +  
 EXTRACT(**SECOND** **FROM** E.END\_INTERVAL\_TIME - B.END\_INTERVAL\_TIME)  
 **FROM** DBA\_HIST\_SNAPSHOT B, DBA\_HIST\_SNAPSHOT E  
 **WHERE** B.SNAP\_ID = &beg\_snap  
 **AND** E.SNAP\_ID = &end\_snap  
 **AND** B.DBID = &DBID  
 **AND** E.DBID = &DBID  
 **AND** B.INSTANCE\_NUMBER = &INST\_NUM  
 **AND** E.INSTANCE\_NUMBER = &INST\_NUM  
 **AND** B.STARTUP\_TIME = E.STARTUP\_TIME  
 **AND** B.END\_INTERVAL\_TIME < E.END\_INTERVAL\_TIME),  
 (e.cspill\_msgs - nvl(b.cspill\_msgs, 0)) /  
 (**SELECT** EXTRACT(**DAY** **FROM** E.END\_INTERVAL\_TIME - B.END\_INTERVAL\_TIME) \*  
 86400 +  
 EXTRACT(HOUR **FROM** E.END\_INTERVAL\_TIME - B.END\_INTERVAL\_TIME) \* 3600 +  
 EXTRACT(MINUTE **FROM** E.END\_INTERVAL\_TIME - B.END\_INTERVAL\_TIME) \* 60 +  
 EXTRACT(**SECOND** **FROM** E.END\_INTERVAL\_TIME - B.END\_INTERVAL\_TIME)  
 **FROM** DBA\_HIST\_SNAPSHOT B, DBA\_HIST\_SNAPSHOT E  
 **WHERE** B.SNAP\_ID = &beg\_snap  
 **AND** E.SNAP\_ID = &end\_snap  
 **AND** B.DBID = &DBID  
 **AND** E.DBID = &DBID  
 **AND** B.INSTANCE\_NUMBER = &INST\_NUM  
 **AND** E.INSTANCE\_NUMBER = &INST\_NUM  
 **AND** B.STARTUP\_TIME = E.STARTUP\_TIME  
 **AND** B.END\_INTERVAL\_TIME < E.END\_INTERVAL\_TIME) spillrate,  
 (decode(e.num\_msgs, 0, 0, (e.spill\_msgs / e.num\_msgs)) -  
 nvl(decode(b.num\_msgs, 0, 0, (b.spill\_msgs / b.num\_msgs)), 0)) \* 100  
 **from** dba\_hist\_buffered\_queues b, dba\_hist\_buffered\_queues e  
 **where** b.snap\_id(+) = &beg\_snap  
 **and** e.snap\_id = &end\_snap  
 **and** e.dbid = &dbid  
 **and** b.dbid(+) = e.dbid  
 **and** e.instance\_number = &inst\_num  
 **and** b.instance\_number(+) = e.instance\_number  
 **and** b.queue\_schema(+) = e.queue\_schema  
 **and** b.queue\_name(+) = e.queue\_name  
 **order** **by** spillrate **desc**, queuename;

----Buffered Subscribers

**select** decode(e.subscriber\_type,  
 'PROXY',  
 'PROXY: ' || e.subscriber\_address,  
 e.subscriber\_name) subsname,  
 (e.cnum\_msgs - nvl(b.cnum\_msgs, 0)) /  
 (**SELECT** EXTRACT(**DAY** **FROM** E.END\_INTERVAL\_TIME - B.END\_INTERVAL\_TIME) \*  
 86400 +  
 EXTRACT(HOUR **FROM** E.END\_INTERVAL\_TIME - B.END\_INTERVAL\_TIME) \* 3600 +  
 EXTRACT(MINUTE **FROM** E.END\_INTERVAL\_TIME - B.END\_INTERVAL\_TIME) \* 60 +  
 EXTRACT(**SECOND** **FROM** E.END\_INTERVAL\_TIME - B.END\_INTERVAL\_TIME)  
 **FROM** DBA\_HIST\_SNAPSHOT B, DBA\_HIST\_SNAPSHOT E  
 **WHERE** B.SNAP\_ID = &beg\_snap  
 **AND** E.SNAP\_ID = &end\_snap  
 **AND** B.DBID = &DBID  
 **AND** E.DBID = &DBID  
 **AND** B.INSTANCE\_NUMBER = &INST\_NUM  
 **AND** E.INSTANCE\_NUMBER = &INST\_NUM  
 **AND** B.STARTUP\_TIME = E.STARTUP\_TIME  
 **AND** B.END\_INTERVAL\_TIME < E.END\_INTERVAL\_TIME),  
 (e.cnum\_msgs - e.num\_msgs - nvl((b.cnum\_msgs - b.num\_msgs), 0)) /  
 (**SELECT** EXTRACT(**DAY** **FROM** E.END\_INTERVAL\_TIME - B.END\_INTERVAL\_TIME) \*  
 86400 +  
 EXTRACT(HOUR **FROM** E.END\_INTERVAL\_TIME - B.END\_INTERVAL\_TIME) \* 3600 +  
 EXTRACT(MINUTE **FROM** E.END\_INTERVAL\_TIME - B.END\_INTERVAL\_TIME) \* 60 +  
 EXTRACT(**SECOND** **FROM** E.END\_INTERVAL\_TIME - B.END\_INTERVAL\_TIME)  
 **FROM** DBA\_HIST\_SNAPSHOT B, DBA\_HIST\_SNAPSHOT E  
 **WHERE** B.SNAP\_ID = &beg\_snap  
 **AND** E.SNAP\_ID = &end\_snap  
 **AND** B.DBID = &DBID  
 **AND** E.DBID = &DBID  
 **AND** B.INSTANCE\_NUMBER = &INST\_NUM  
 **AND** E.INSTANCE\_NUMBER = &INST\_NUM  
 **AND** B.STARTUP\_TIME = E.STARTUP\_TIME  
 **AND** B.END\_INTERVAL\_TIME < E.END\_INTERVAL\_TIME),  
 (e.total\_spilled\_msg - nvl(b.total\_spilled\_msg, 0)) /  
 (**SELECT** EXTRACT(**DAY** **FROM** E.END\_INTERVAL\_TIME - B.END\_INTERVAL\_TIME) \*  
 86400 +  
 EXTRACT(HOUR **FROM** E.END\_INTERVAL\_TIME - B.END\_INTERVAL\_TIME) \* 3600 +  
 EXTRACT(MINUTE **FROM** E.END\_INTERVAL\_TIME - B.END\_INTERVAL\_TIME) \* 60 +  
 EXTRACT(**SECOND** **FROM** E.END\_INTERVAL\_TIME - B.END\_INTERVAL\_TIME)  
 **FROM** DBA\_HIST\_SNAPSHOT B, DBA\_HIST\_SNAPSHOT E  
 **WHERE** B.SNAP\_ID = &beg\_snap  
 **AND** E.SNAP\_ID = &end\_snap  
 **AND** B.DBID = &DBID  
 **AND** E.DBID = &DBID  
 **AND** B.INSTANCE\_NUMBER = &INST\_NUM  
 **AND** E.INSTANCE\_NUMBER = &INST\_NUM  
 **AND** B.STARTUP\_TIME = E.STARTUP\_TIME  
 **AND** B.END\_INTERVAL\_TIME < E.END\_INTERVAL\_TIME) spillrate  
 **from** dba\_hist\_buffered\_subscribers b, dba\_hist\_buffered\_subscribers e  
 **where** b.snap\_id(+) = &beg\_snap  
 **and** e.snap\_id = &end\_snap  
 **and** e.dbid = &dbid  
 **and** b.dbid(+) = e.dbid  
 **and** e.instance\_number = &inst\_num  
 **and** b.instance\_number(+) = e.instance\_number  
 **and** b.subscriber\_id(+) = e.subscriber\_id  
 **order** **by** spillrate **desc**, subsname;

----Rule Set

**select** e.owner || '.' || e.**name** rulesetname,  
 e.evaluations - nvl(b.evaluations, 0) evaluations,  
 e.sql\_free\_evaluations - nvl(b.sql\_free\_evaluations, 0),  
 e.sql\_executions - nvl(b.sql\_executions, 0),  
 e.cpu\_time - nvl(b.cpu\_time, 0),  
 e.elapsed\_time - nvl(b.elapsed\_time, 0)  
 **from** dba\_hist\_rule\_set b, dba\_hist\_rule\_set e  
 **where** b.snap\_id(+) = &beg\_snap  
 **and** e.snap\_id = &end\_snap  
 **and** e.dbid = &dbid  
 **and** b.dbid(+) = e.dbid  
 **and** e.instance\_number = &inst\_num  
 **and** b.instance\_number(+) = e.instance\_number  
 **and** b.owner(+) = e.owner  
 **and** b.**name**(+) = e.**name**  
 **and** b.startup\_time(+) = e.startup\_time  
 **order** **by** evaluations **desc;**

----Resource Limit Stats

**select** resource\_name rname,  
 current\_utilization curu,  
 max\_utilization maxu,  
 initial\_allocation inita,  
 limit\_value lim  
 **from** dba\_hist\_resource\_limit  
 **where** snap\_id = &end\_snap  
 **and** dbid = &dbid  
 **and** instance\_number = &inst\_num  
 **and** (nvl(current\_utilization, 0) / limit\_value > .8 **or**  
 nvl(max\_utilization, 0) / limit\_value > .8)  
 **order** **by** rname;

----init.ora Parameters

**select** e.parameter\_name **name**,  
 b.**value** bval,  
 decode(b.**value**, e.**value**, **NULL**, e.**value**) eval  
 **from** dba\_hist\_parameter b, dba\_hist\_parameter e  
 **where** b.snap\_id(+) = &beg\_snap  
 **and** e.snap\_id = &end\_snap  
 **and** b.dbid(+) = &dbid  
 **and** e.dbid = &dbid  
 **and** b.instance\_number(+) = &inst\_num  
 **and** e.instance\_number = &inst\_num  
 **and** b.parameter\_hash(+) = e.parameter\_hash  
 **and** (nvl(b.isdefault, 'X') = 'FALSE' **or**  
 nvl(b.ismodified, 'X') != 'FALSE' **or** e.ismodified != 'FALSE' **or**  
 nvl(e.**value**, 0) != nvl(b.**value**, 0))  
 **and** e.parameter\_name **not** **like** '\\_\\_%' **escape** '\'  
 **order** **by** e.parameter\_name;

----Global Enqueue Statistics

**select** b.**name** st,  
 e.**value** - b.**value** dif,  
 round(e.**value** - b.**value**) /  
 (**SELECT** EXTRACT(**DAY** **FROM** E.END\_INTERVAL\_TIME - B.END\_INTERVAL\_TIME) \*  
 86400 +  
 EXTRACT(HOUR **FROM** E.END\_INTERVAL\_TIME - B.END\_INTERVAL\_TIME) \* 3600 +  
 EXTRACT(MINUTE **FROM** E.END\_INTERVAL\_TIME - B.END\_INTERVAL\_TIME) \* 60 +  
 EXTRACT(**SECOND** **FROM** E.END\_INTERVAL\_TIME - B.END\_INTERVAL\_TIME)  
 **FROM** DBA\_HIST\_SNAPSHOT B, DBA\_HIST\_SNAPSHOT E  
 **WHERE** B.SNAP\_ID = &beg\_snap  
 **AND** E.SNAP\_ID = &end\_snap  
 **AND** B.DBID = &DBID  
 **AND** E.DBID = &DBID  
 **AND** B.INSTANCE\_NUMBER = &INST\_NUM  
 **AND** E.INSTANCE\_NUMBER = &INST\_NUM  
 **AND** B.STARTUP\_TIME = E.STARTUP\_TIME  
 **AND** B.END\_INTERVAL\_TIME < E.END\_INTERVAL\_TIME) ps,  
 round(e.**value** - b.**value**) /  
 (**SELECT** **sum**(e.**value**) - **sum**(b.**value**)  
 **FROM** DBA\_HIST\_SYSSTAT B, DBA\_HIST\_SYSSTAT E  
 **WHERE** B.SNAP\_ID = &beg\_snap  
 **AND** E.SNAP\_ID = &end\_snap  
 **AND** B.DBID = &DBID  
 **AND** E.DBID = &DBID  
 **AND** B.INSTANCE\_NUMBER = &INST\_NUM  
 **AND** E.INSTANCE\_NUMBER = &INST\_NUM  
 **and** e.STAT\_NAME **in** ('user rollbacks', 'user commits')  
 **and** b.STAT\_NAME **in** ('user rollbacks', 'user commits')) pt  
 **from** dba\_hist\_dlm\_misc b, dba\_hist\_dlm\_misc e  
 **where** b.snap\_id = &beg\_snap  
 **and** e.snap\_id = &end\_snap  
 **and** b.instance\_number = &inst\_num  
 **and** e.instance\_number = &inst\_num  
 **and** b.dbid = &dbid  
 **and** e.dbid = &dbid  
 **and** e.statistic# = b.statistic#  
 **order** **by** b.**name;**

----Global CR Served Stats

**select** 'CR Block Requests', e.cr\_requests - b.cr\_requests  
 **from** dba\_hist\_cr\_block\_server b,   
 dba\_hist\_cr\_block\_server e  
 **where** b.snap\_id = &beg\_snap  
 **and** e.snap\_id = &end\_snap  
 **and** b.instance\_number = &inst\_num  
 **and** e.instance\_number = &inst\_num  
 **and** b.dbid = &dbid  
 **and** e.dbid = &dbid  
 **union** **all**  
 **select** 'CURRENT Block Requests', e.current\_requests - b.current\_requests  
 **from** dba\_hist\_cr\_block\_server b,   
 dba\_hist\_cr\_block\_server e  
 **where** b.snap\_id = &beg\_snap  
 **and** e.snap\_id = &end\_snap  
 **and** b.instance\_number = &inst\_num  
 **and** e.instance\_number = &inst\_num  
 **and** b.dbid = &dbid  
 **and** e.dbid = &dbid  
 **union** **all**  
 **select** 'Data Block Requests', e.data\_requests - b.data\_requests  
 **from** dba\_hist\_cr\_block\_server b,   
 dba\_hist\_cr\_block\_server e  
 **where** b.snap\_id = &beg\_snap  
 **and** e.snap\_id = &end\_snap  
 **and** b.instance\_number = &inst\_num  
 **and** e.instance\_number = &inst\_num  
 **and** b.dbid = &dbid  
 **and** e.dbid = &dbid  
 **union** **all**  
 **select** 'Undo Block Requests', e.undo\_requests - b.undo\_requests  
 **from** dba\_hist\_cr\_block\_server b,   
 dba\_hist\_cr\_block\_server e  
 **where** b.snap\_id = &beg\_snap  
 **and** e.snap\_id = &end\_snap  
 **and** b.instance\_number = &inst\_num  
 **and** e.instance\_number = &inst\_num  
 **and** b.dbid = &dbid  
 **and** e.dbid = &dbid  
 **union** **all**  
 **select** 'TX Block Requests', e.tx\_requests - b.tx\_requests  
 **from** dba\_hist\_cr\_block\_server b,   
 dba\_hist\_cr\_block\_server e  
 **where** b.snap\_id = &beg\_snap  
 **and** e.snap\_id = &end\_snap  
 **and** b.instance\_number = &inst\_num  
 **and** e.instance\_number = &inst\_num  
 **and** b.dbid = &dbid  
 **and** e.dbid = &dbid  
 **union** **all**  
 **select** 'Current Results', e.current\_results - b.current\_results  
 **from** dba\_hist\_cr\_block\_server b,   
 dba\_hist\_cr\_block\_server e  
 **where** b.snap\_id = &beg\_snap  
 **and** e.snap\_id = &end\_snap  
 **and** b.instance\_number = &inst\_num  
 **and** e.instance\_number = &inst\_num  
 **and** b.dbid = &dbid  
 **and** e.dbid = &dbid  
 **union** **all**  
 **select** 'Private results', e.private\_results - b.private\_results  
 **from** dba\_hist\_cr\_block\_server b,   
 dba\_hist\_cr\_block\_server e  
 **where** b.snap\_id = &beg\_snap  
 **and** e.snap\_id = &end\_snap  
 **and** b.instance\_number = &inst\_num  
 **and** e.instance\_number = &inst\_num  
 **and** b.dbid = &dbid  
 **and** e.dbid = &dbid  
 **union** **all**  
 **select** 'Zero Results', e.zero\_results - b.zero\_results  
 **from** dba\_hist\_cr\_block\_server b,   
 dba\_hist\_cr\_block\_server e  
 **where** b.snap\_id = &beg\_snap  
 **and** e.snap\_id = &end\_snap  
 **and** b.instance\_number = &inst\_num  
 **and** e.instance\_number = &inst\_num  
 **and** b.dbid = &dbid  
 **and** e.dbid = &dbid  
 **union** **all**  
 **select** 'Disk Read Results', e.disk\_read\_results -b.disk\_read\_results   
 **from** dba\_hist\_cr\_block\_server b,   
 dba\_hist\_cr\_block\_server e  
 **where** b.snap\_id = &beg\_snap  
 **and** e.snap\_id = &end\_snap  
 **and** b.instance\_number = &inst\_num  
 **and** e.instance\_number = &inst\_num  
 **and** b.dbid = &dbid  
 **and** e.dbid = &dbid  
 **union** **all**  
 **select** 'Fail Results', e.fail\_results - b.fail\_results  
 **from** dba\_hist\_cr\_block\_server b,   
 dba\_hist\_cr\_block\_server e  
 **where** b.snap\_id = &beg\_snap  
 **and** e.snap\_id = &end\_snap  
 **and** b.instance\_number = &inst\_num  
 **and** e.instance\_number = &inst\_num  
 **and** b.dbid = &dbid  
 **and** e.dbid = &dbid  
 **union** **all**  
 **select** 'Fairness Down Converts',   
 e.fairness\_down\_converts - b.fairness\_down\_converts  
 **from** dba\_hist\_cr\_block\_server b,   
 dba\_hist\_cr\_block\_server e  
 **where** b.snap\_id = &beg\_snap  
 **and** e.snap\_id = &end\_snap  
 **and** b.instance\_number = &inst\_num  
 **and** e.instance\_number = &inst\_num  
 **and** b.dbid = &dbid  
 **and** e.dbid = &dbid  
 **union** **all**  
 **select** 'Fairness Clears', e.fairness\_clears - b.fairness\_clears  
 **from** dba\_hist\_cr\_block\_server b,   
 dba\_hist\_cr\_block\_server e  
 **where** b.snap\_id = &beg\_snap  
 **and** e.snap\_id = &end\_snap  
 **and** b.instance\_number = &inst\_num  
 **and** e.instance\_number = &inst\_num  
 **and** b.dbid = &dbid  
 **and** e.dbid = &dbid  
 **union** **all**  
 **select** 'Free GC Elements', e.free\_gc\_elements - b.free\_gc\_elements  
 **from** dba\_hist\_cr\_block\_server b,   
 dba\_hist\_cr\_block\_server e  
 **where** b.snap\_id = &beg\_snap  
 **and** e.snap\_id = &end\_snap  
 **and** b.instance\_number = &inst\_num  
 **and** e.instance\_number = &inst\_num  
 **and** b.dbid = &dbid  
 **and** e.dbid = &dbid  
 **union** **all**  
 **select** 'Flushes', e.flushes - b.flushes  
 **from** dba\_hist\_cr\_block\_server b,   
 dba\_hist\_cr\_block\_server e  
 **where** b.snap\_id = &beg\_snap  
 **and** e.snap\_id = &end\_snap  
 **and** b.instance\_number = &inst\_num  
 **and** e.instance\_number = &inst\_num  
 **and** b.dbid = &dbid  
 **and** e.dbid = &dbid  
 **union** **all**  
 **select** 'Flushes Queued', e.flushes\_queued - b.flushes\_queued  
 **from** dba\_hist\_cr\_block\_server b,   
 dba\_hist\_cr\_block\_server e  
 **where** b.snap\_id = &beg\_snap  
 **and** e.snap\_id = &end\_snap  
 **and** b.instance\_number = &inst\_num  
 **and** e.instance\_number = &inst\_num  
 **and** b.dbid = &dbid  
 **and** e.dbid = &dbid  
 **union** **all**  
 **select** 'Flush Queue Full', e.flush\_queue\_full - b.flush\_queue\_full  
 **from** dba\_hist\_cr\_block\_server b,   
 dba\_hist\_cr\_block\_server e  
 **where** b.snap\_id = &beg\_snap  
 **and** e.snap\_id = &end\_snap  
 **and** b.instance\_number = &inst\_num  
 **and** e.instance\_number = &inst\_num  
 **and** b.dbid = &dbid  
 **and** e.dbid = &dbid  
 **union** **all**  
 **select** 'Flush Max Time (us)', e.flush\_max\_time - b.flush\_max\_time  
 **from** dba\_hist\_cr\_block\_server b,   
 dba\_hist\_cr\_block\_server e  
 **where** b.snap\_id = &beg\_snap  
 **and** e.snap\_id = &end\_snap  
 **and** b.instance\_number = &inst\_num  
 **and** e.instance\_number = &inst\_num  
 **and** b.dbid = &dbid  
 **and** e.dbid = &dbid  
 **union** **all**  
 **select** 'Light Works', e.light\_works - b.light\_works  
 **from** dba\_hist\_cr\_block\_server b,   
 dba\_hist\_cr\_block\_server e  
 **where** b.snap\_id = &beg\_snap  
 **and** e.snap\_id = &end\_snap  
 **and** b.instance\_number = &inst\_num  
 **and** e.instance\_number = &inst\_num  
 **and** b.dbid = &dbid  
 **and** e.dbid = &dbid  
 **union** **all**  
 **select** 'Errors', e.**errors** - b.**errors**  
 **from** dba\_hist\_cr\_block\_server b,   
 dba\_hist\_cr\_block\_server e  
 **where** b.snap\_id = &beg\_snap  
 **and** e.snap\_id = &end\_snap  
 **and** b.instance\_number = &inst\_num  
 **and** e.instance\_number = &inst\_num  
 **and** b.dbid = &dbid  
 **and** e.dbid = &dbid;

----Global CURRENT Served Stats

**select** 'Pins', pins,   
 decode(pins,0,0,100\*pin1/pins),  
 decode(pins,0,0,100\*pin10/pins),  
 decode(pins,0,0,100\*pin100/pins),  
 decode(pins,0,0,100\*pin1000/pins),  
 decode(pins,0,0,100\*pin10000/pins)  
 **from** (**select** (e.pin1+e.pin10+e.pin100+e.pin1000+e.pin10000 -  
 (b.pin1+b.pin10+b.pin100+b.pin1000+b.pin10000)) pins,  
 e.pin1 - b.pin1 pin1,  
 e.pin10 - b.pin10 pin10,  
 e.pin100 - b.pin100 pin100,  
 e.pin1000 - b.pin1000 pin1000,  
 e.pin10000 - b.pin10000 pin10000  
 **from** dba\_hist\_current\_block\_server b  
 , dba\_hist\_current\_block\_server e  
 **where** b.snap\_id = &beg\_snap  
 **and** e.snap\_id = &end\_snap  
 **and** b.instance\_number = &inst\_num  
 **and** e.instance\_number = &inst\_num  
 **and** b.dbid = &dbid  
 **and** e.dbid = &dbid)  
 **union** **all**  
 **select** 'Flushes', flushes,   
 decode(flushes,0,0,100\*flush1/flushes),  
 decode(flushes,0,0,100\*flush10/flushes),  
 decode(flushes,0,0,100\*flush100/flushes),  
 decode(flushes,0,0,100\*flush1000/flushes),  
 decode(flushes,0,0,100\*flush10000/flushes)  
 **from** (**select**   
 (e.flush1+e.flush10+e.flush100+e.flush1000+e.flush10000 -  
 (b.flush1+b.flush10+b.flush100+b.flush1000+b.flush10000)) flushes,  
 e.flush1 - b.flush1 flush1,  
 e.flush10 - b.flush10 flush10,  
 e.flush100 - b.flush100 flush100,  
 e.flush1000 - b.flush1000 flush1000,  
 e.flush10000 - b.flush10000 flush10000  
 **from** dba\_hist\_current\_block\_server b  
 , dba\_hist\_current\_block\_server e  
 **where** b.snap\_id = &beg\_snap  
 **and** e.snap\_id = &end\_snap  
 **and** b.instance\_number = &inst\_num  
 **and** e.instance\_number = &inst\_num  
 **and** b.dbid = &dbid  
 **and** e.dbid = &dbid)  
 **union** **all**  
 **select** 'Writes', writes,   
 decode(writes,0,0,100\*write1/writes),  
 decode(writes,0,0,100\*write10/writes),  
 decode(writes,0,0,100\*write100/writes),  
 decode(writes,0,0,100\*write1000/writes),  
 decode(writes,0,0,100\*write10000/writes)  
 **from** (**select**   
 (e.write1+e.write10+e.write100+e.write1000+e.write10000 -  
 (b.write1+b.write10+b.write100+b.write1000+b.write10000)) writes,  
 e.write1 - b.write1 write1,  
 e.write10 - b.write10 write10,  
 e.write100 - b.write100 write100,  
 e.write1000 - b.write1000 write1000,  
 e.write10000 - b.write10000 write10000  
 **from** dba\_hist\_current\_block\_server b  
 , dba\_hist\_current\_block\_server e  
 **where** b.snap\_id = &beg\_snap  
 **and** e.snap\_id = &end\_snap  
 **and** b.instance\_number = &inst\_num  
 **and** e.instance\_number = &inst\_num  
 **and** b.dbid = &dbid  
 **and** e.dbid = &dbid);

----Global Cache Transfer Stats

**select** inst,  
 **class**,  
 crtotal,  
 100 \* decode(crtotal, 0, to\_number(**null**), crblk / crtotal),  
 100 \* decode(crtotal, 0, to\_number(**null**), crbusy / crtotal),  
 100 \* decode(crtotal, 0, to\_number(**null**), crcong / crtotal),  
 cutotal,  
 100 \* decode(cutotal, 0, to\_number(**null**), cublk / cutotal),  
 100 \* decode(cutotal, 0, to\_number(**null**), cubusy / cutotal),  
 100 \* decode(cutotal, 0, to\_number(**null**), cucong / cutotal)  
 **from** (**select** e.**instance** inst,  
 e.**class** **class**,  
 e.cr\_block - nvl(b.cr\_block, 0) crblk,  
 e.cr\_busy - nvl(b.cr\_busy, 0) crbusy,  
 e.cr\_congested - nvl(b.cr\_congested, 0) crcong,  
 (e.cr\_block - nvl(b.cr\_block, 0) + e.cr\_busy -  
 nvl(b.cr\_busy, 0) + e.cr\_congested - nvl(b.cr\_congested, 0)) crtotal,  
 e.current\_block - nvl(b.current\_block, 0) cublk,  
 e.current\_busy - nvl(b.current\_busy, 0) cubusy,  
 e.current\_congested - nvl(b.current\_congested, 0) cucong,  
 (e.current\_block - nvl(b.current\_block, 0) + e.current\_busy -  
 nvl(b.current\_busy, 0) + e.current\_congested -  
 nvl(b.current\_congested, 0)) cutotal  
 **from** dba\_hist\_inst\_cache\_transfer b,  
 dba\_hist\_inst\_cache\_transfer e  
 **where** b.snap\_id(+) = &beg\_snap  
 **and** e.snap\_id = &end\_snap  
 **and** b.instance\_number(+) = &inst\_num  
 **and** e.instance\_number = &inst\_num  
 **and** b.dbid(+) = &dbid  
 **and** e.dbid = &dbid  
 **and** b.**class**(+) = e.**class**  
 **and** b.**instance**(+) = e.**instance**  
 **and** (e.cr\_block + e.current\_block + e.cr\_busy + e.current\_busy +  
 e.cr\_congested + e.current\_congested) -  
 (nvl(b.cr\_block, 0) + nvl(b.current\_block, 0) +  
 nvl(b.cr\_busy, 0) + nvl(b.cr\_congested, 0) +  
 nvl(b.current\_busy, 0) + nvl(b.current\_congested, 0)) > 0)  
 **order** **by** crtotal + cutotal **desc**, **class;**