

OraPub is about Oracle performance.

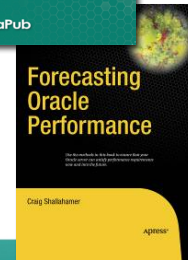
- OraPub is all about Oracle performance management; monitoring, firefighting, quantitative and predictive analysis.
- Web site started in 1995 and the company was founded in 1998 by Craig Shallahamer.
- OraPub has always been about disseminating Oracle database centric technical information.
- Consulting, training, books, papers, and products are now being offered.
- We have been on-site in 23 countries and our resources have been received in probably every country where there are DBAs.

Resources

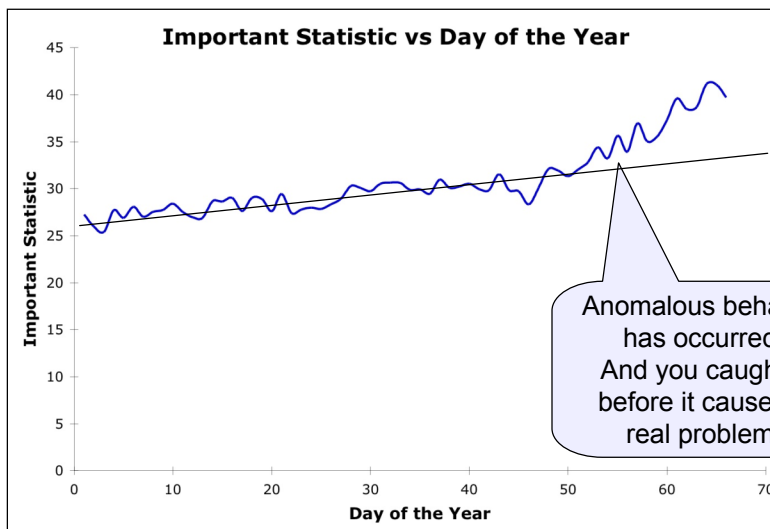
- Free Tools
- Free Papers
- Books
- Products
- Consulting
- Training

Short resume.

- Studies economics, mathematics, and computer science at university in California, US.
- Started working with Oracle technology in 1989 as a Forms 2.3 developer on Oracle version 5.
- Soon after started performance firefighting...daily!
- Co-found both Oracle's Core Technology and System Performance Groups.
- Left Oracle to start OraPub, Inc. in 1998.
- Authored 24 technical papers and worked in 23 countries.
- Authors and teaches his classes *Oracle Performance Firefighting*, *Adv Oracle Performance Analysis*, and *Oracle Forecasting & Predictive Analysis*.
- Authored the books, *Forecasting Oracle Performance*, and his new book, *Oracle Performance Firefighting*.



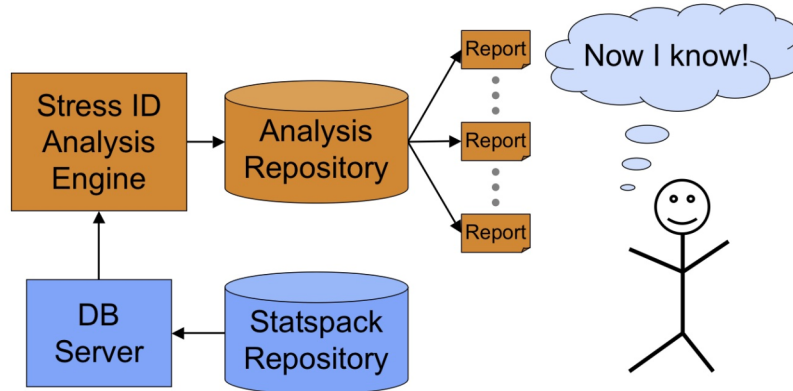
Stress Identifier: ID key metrics!



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The OraPub Stress Identifier

Discover how Oracle is stressing your database server so you can catch any anomalous activity fast.



http://resources.orapub.com/product_p/Stress_Identifier.html



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A day in the life of an Oracle server process



Hurry up and wait .

```
SQL> 1
      2 select event doings,
      3         time_waited/100 time_s
      4 from   v$session_event
      5 where  sid = &sid
      6       and time_waited > 0
      7 union
      8 select 'burning CPU' doings,
      9         value/1000000 time_s
     10 from   v$sess_time_model
     11 where  sid=&sid
     12*    and stat_name = 'DB CPU'
SQL> /

Doings                                TIME_S
-----
SQL*Net message from client          633.550
burning CPU                          0.088
db file scattered read                0.010

3 rows selected.
```



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Being probed is not pleasant!

```
[oracle@fourcore SEOUC]$ ps -eaf|grep 3635
oracle   3635   3634   0 16:35 ?          00:00:00 oracleprod18
oracle   9314   9268   0 16:51 pts/1    00:00:00 grep 3635

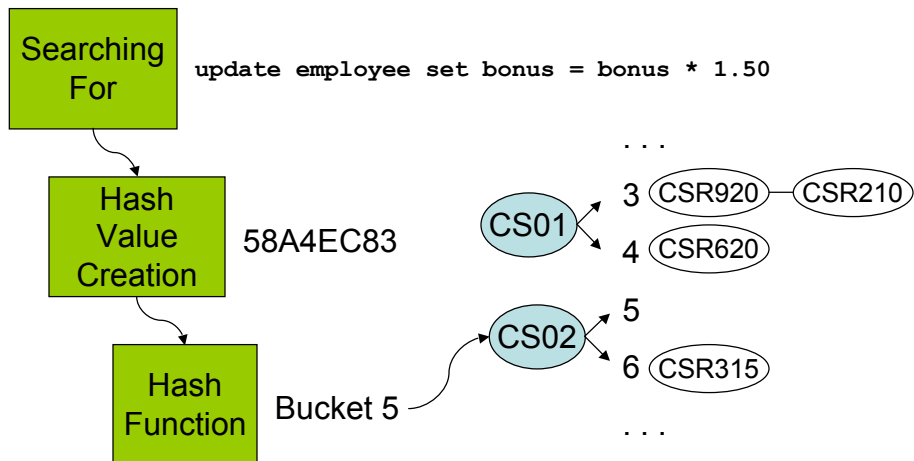
[oracle@fourcore SEOUC]$ strace -p 3635
Process 3635 attached - interrupt to quit
read(9,
```



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Client expectations are
so unbelievably high!

I'm very environmentally conscious.



I've got to "ask permission."

```
Function Get_Mutex(mutex_name,type,mode)
{
  If type eq 'nowait'
  If Fast_Get(mutex_name)
    return TRUE
  Else
    return FALSE
  End-If
  Else
  If Fast_Get(mutex_name)
  Then
    return TRUE
  Else
    While ( TRUE )
      If Spin_Get(mutex_name)
      Then
        return TRUE
      Else
        Register_Event("cursor: *")
        Mutex_Wait(try++)
      End-If
    End-While
  End-If
End-If
}

Function Mutex_Wait(try)
{
  options defined by kernel developers
  - CPU yield, blocking wait, sleep
}
```

```
Function Fast_Get(mutex_name)
{
  If mutex.holder := sid occurs
  Then
    Case mode:
      'X': If mutex.ref_count = 0
        Then
          return TRUE
        Else
          mutex.holder = clear
          return FALSE
        End-If
      'S': mutex.ref_count++
          mutex.holder = clear
          return TRUE
    End-Case
  Else
    return FALSE
  End-If
}

Function Spin_Get(mutex_name)
{
  for i = 1 to 255
  If Fast_Get(mutex_name)
  Then
    return TRUE
  End-If
  End-For
  return FALSE
}
```

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Burn and wait

```
SQL> 1
2   select event doings,
3         time_waited/100 time_s
4   from   v$session_event
5  where   sid = &sid and time_waited > 0
6  union
7  select 'burning CPU' doings,
8        value/1000000 time_s
9  from    v$sess_time_model
10 where   sid=&sid and stat_name = 'DB CPU'
11* order by time_s desc
SQL> /
```

Doings	TIME_S
SQL*Net message from client	763.252
burning CPU	130.955
library cache: mutex X	7.230
latch: shared pool	1.660
db file sequential read	0.070
db file scattered read	0.010

6 rows selected.

Cursor is not found! ...hard parse

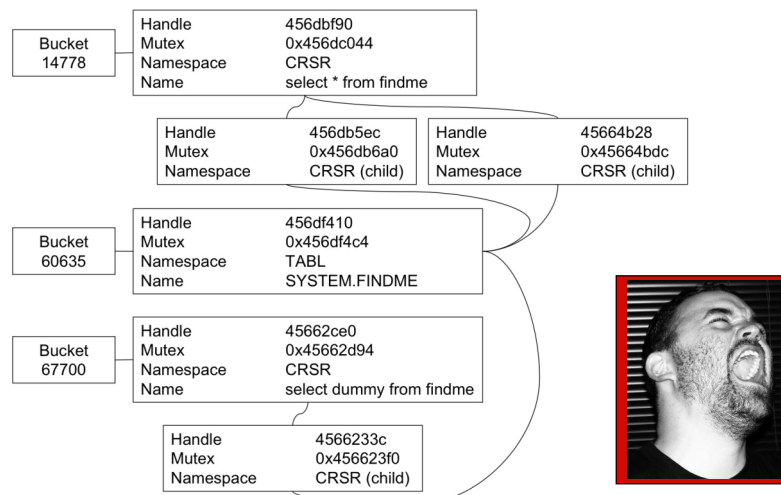
First, I've got to get some memory.



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Cursor is not found! ...hard parse

Second, I've got to establish relationships.



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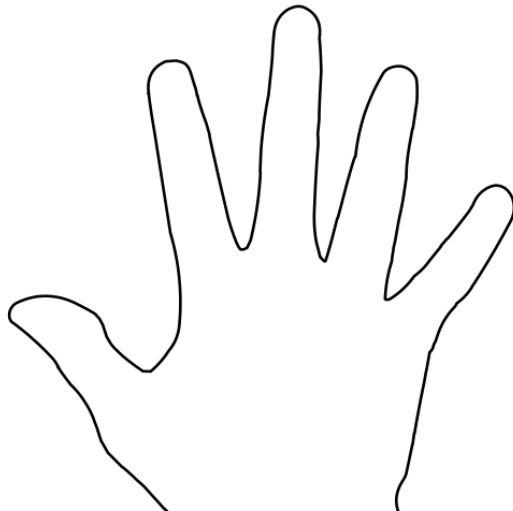
Time to run the SQL!

First, pin the cursor.
Second, find out where the block is.
Third, get the block and pin it.
Fourth, change the row/block.
Fifth, generate some redo, undo, redo.
Sixth, let my client know I'm done.



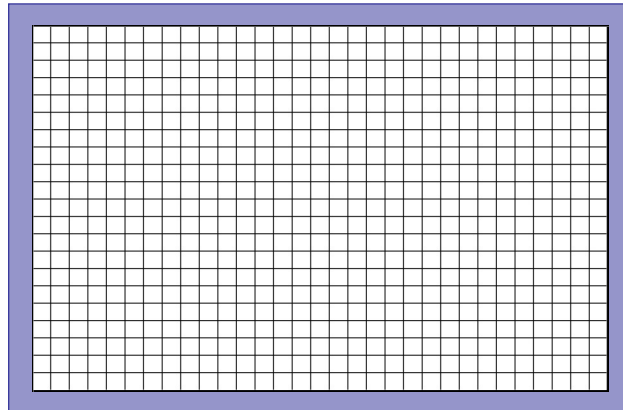
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Pin the cursor.

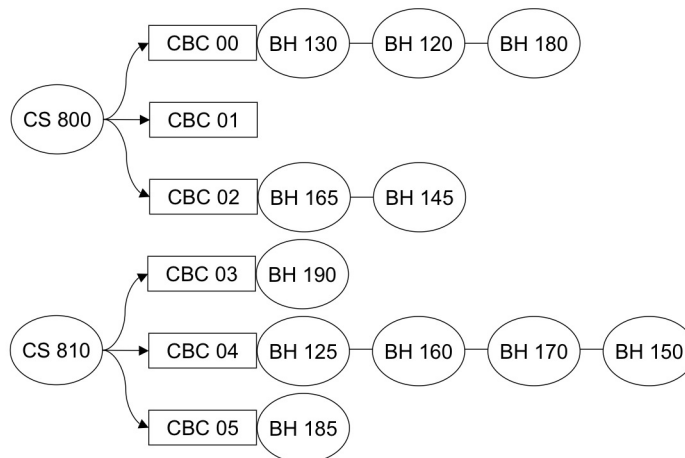


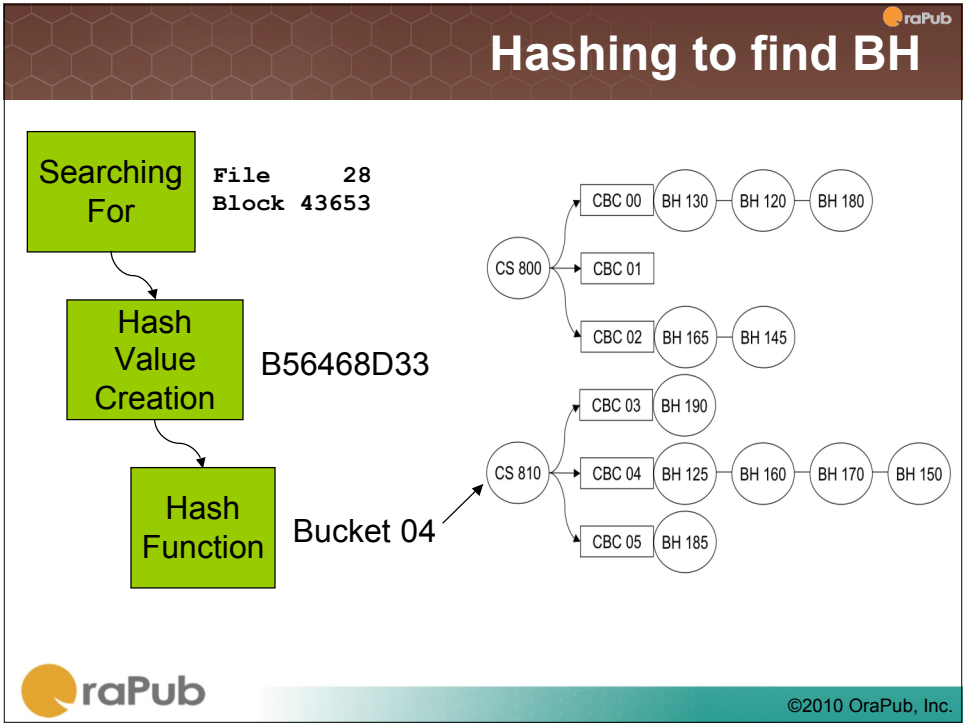
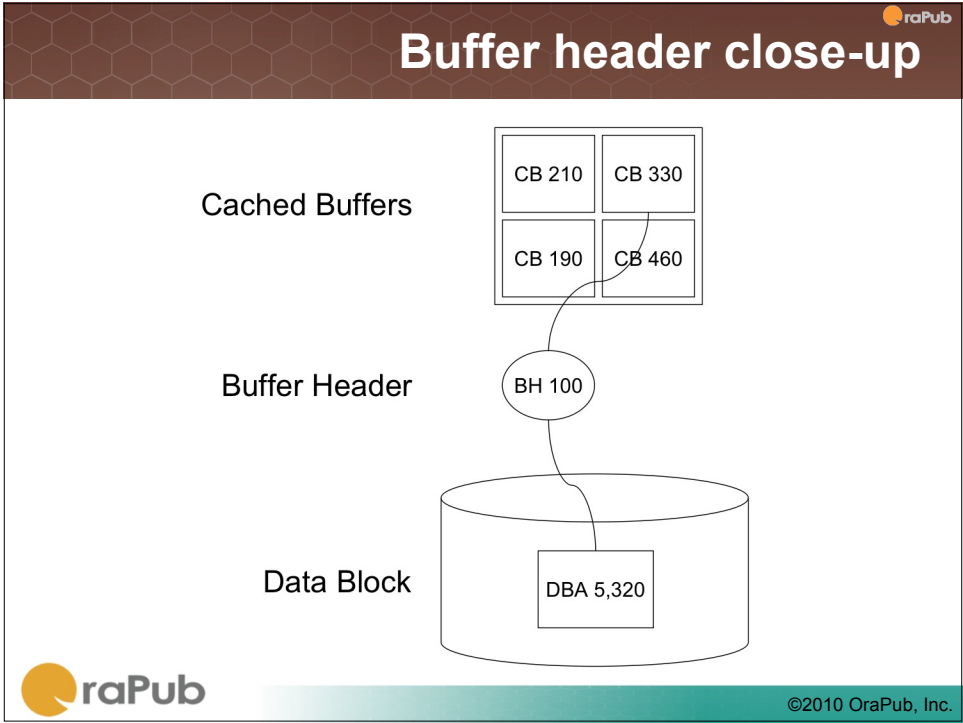
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Find out where the block is.



A man's got to have a good map!





CBC latch contention

```
SQL> 1
      2 select event doings,
      3           time_waited/100 time_s
      4 from   v$session_event
      5 where  sid = &sid and time_waited > 0
      6 union
      7 select 'burning CPU' doings,
      8       value/1000000 time_s
      9 from   v$sess_time_model
      0 where sid=&sid and stat_name = 'DB CPU'
      1 10* order by time_s desc
SQL> /
```

Doings	TIME_S
SQL*Net message from client	962.228
burning CPU	341.065
latch: cache buffers chains	9.230
db file scattered read	0.570
db file sequential read	0.321
read by other session	0.312

6 rows selected.



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Get the block from “disk”

```
[oracle@fourcore ~]$ strace -rp 15621
Process 15621 attached - interrupt to quit
. . .
0.000041 gettimeofday({1266354967, 147052}, NULL) = 0
0.000044 pread64(10, "\6\242\0\0a. . .1\0\3\246~\1"... , 8192, 766255104) = 8192
0.022104 gettimeofday({1266354967, 147200}, NULL) = 0
. . .
```



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I'm not a selfish person!

```
SQL> 1
2 select event doings,
3       time_waited/100 time_s
4 from   v$session_event
5 where  sid = &sid and time_waited > 0
6 union
7 select 'burning CPU' doings,
8       value/1000000 time_s
9 from   v$sess_time_model
10 where sid=&sid and stat_name = 'DB CPU'
11* order by time_s desc
SQL> /
```

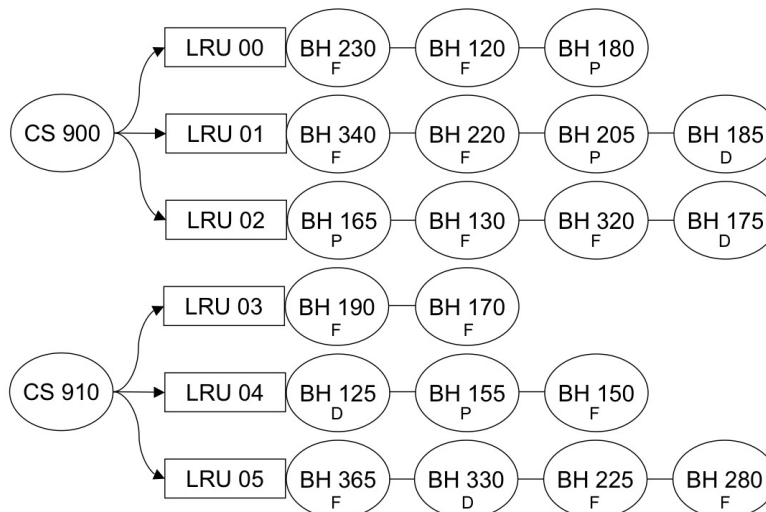
Doings	TIME_S
SQL*Net message from client	1231.286
burning CPU	413.591
direct path read	392.073
read by other session	69.612
db file sequential read	8.721
latch: cache buffers chains	7.230

6 rows selected.



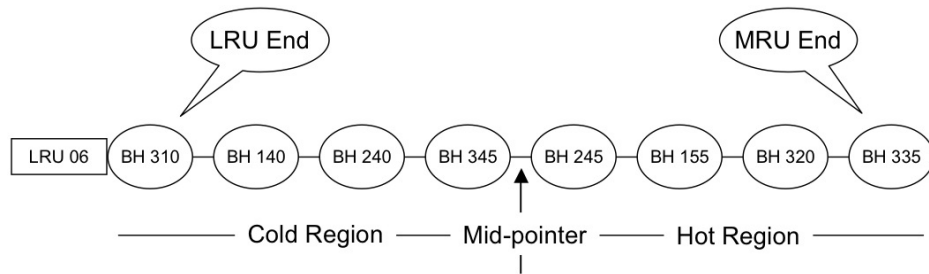
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Find a free buffer part 1



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Find a free buffer part 2



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Update the row

```
SQL> alter system dump datafile 1 block 75847;

System altered.
SQL> !cat prod5_ora_21741.trc
...
Block header dump: 0x00412847
Object id on Block? Y
seg/obj: 0xff6b csc: 0x00.50fcb6 itc: 3 flg: 0 typ: 1 - DATA
fsl: 0 fnx: 0x412848 ver: 0x01

Itl      Xid          Uba          Flag  Lck      Scn/Fsc
0x01     0x0003.00d.00000318 0x00c3e3d0.0593.0c ----   1    fsc 0x0000.00000000
0x02     0x0008.01b.00000340 0x00c41bce.0481.24 ----   1    fsc 0x0000.00000000
0x03     0x0001.000.00000320 0x00c45fa0.0599.0b ----   1    fsc 0x0000.00000000
...
```



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Let's not forget about redo, undo, redo.

```
SQL> 1
  2  select event doings,
  3         time_waited/100 time_s
  4  from   v$session_event
  5  where  sid = &sid and time_waited > 0
  6  union
  7  select 'burning CPU' doings,
  8         value/1000000 time_s
  9  from   v$sess_time_model
 10  where  sid=&sid and stat_name = 'DB CPU'
10* order by time_s desc
SQL> /
```

Doings	TIME_S
SQL*Net message from client	1231.286
burning CPU	490.890
log buffer space	196.219
log file parallel write	71.483
db file parallel write	42.309
direct path write	19.756

6 rows selected.



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Let my client know I'm done!

```
SQL> 1
  2  select event doings,
  3         time_waited/100 time_s
  4  from   v$session_event
  5  where  sid = &sid and time_waited > 0
  6  union
  7  select 'burning CPU' doings,
  8         value/1000000 time_s
  9  from   v$sess_time_model
 10  where  sid=&sid and stat_name = 'DB CPU'
10* order by time_s desc
SQL> /
```

Doings	TIME_S
SQL*Net message from client	1432.589
burning CPU	499.691
log buffer space	196.219
log file parallel write	71.483
db file parallel write	42.309
direct path write	19.756
SQL*Net message to client	0.086

7 rows selected.



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And life is boring once again!

```
SQL> 1
      2 select event doings,
      3           time_waited/100 time_s
      4 from   v$session_event
      5 where  sid = &sid and time_waited > 0
      6 union
      7 select 'burning CPU' doings,
      8       value/1000000 time_s
      9 from   v$sess_time_model
      10 where sid=&sid and stat_name = 'DB CPU'
      11 order by time_s desc
SQL> /
```

Doings	TIME_S
SQL*Net message from client	2576.002
burning CPU	521.621
log buffer space	196.219
log file parallel write	71.483
db file parallel write	42.309
direct path write	19.756
SQL*Net message to client	0.086

7 rows selected.



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Want to dig deeper?

- **Training** from OraPub
 - Oracle Performance Firefighting (I)
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 - OraPub 1-Day 2010 Perf Seminar
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 - All About Oracle In-Memory Undo
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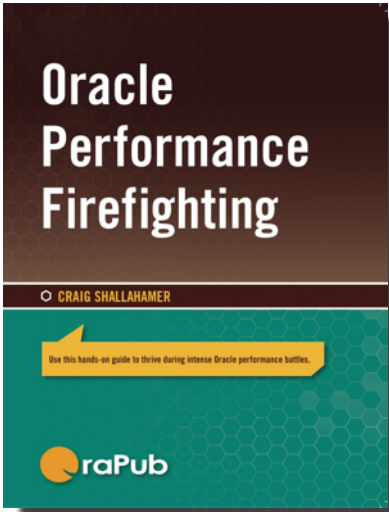
Houston/May
Munich/June
Istanbul/June


Florida/Fall


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