ORACLE

Oracle Database Performance Tuning Using oratop

Tips and tricks

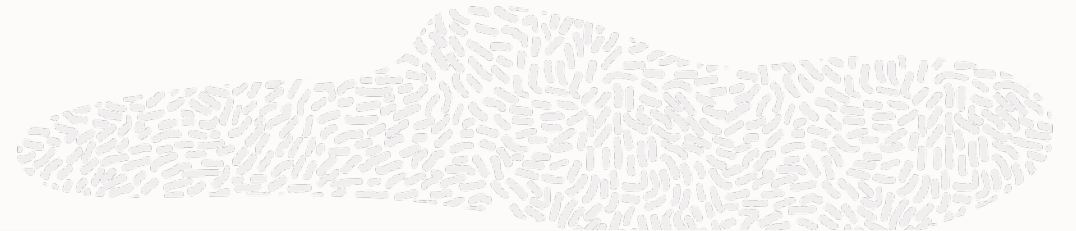**Sandesh Rao**

VP AIOps for the Autonomous

@sandeshr

https://www.linkedin.com/in/raosandesh/
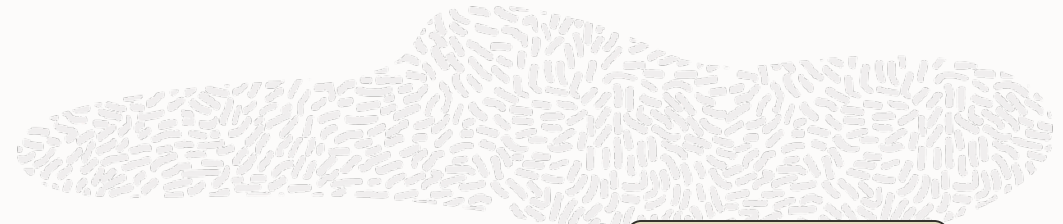
https://www.slideshare.net/SandeshRao4

What is oratop

A text-based interface like "top", which can be run against Real Application Cluster (RAC) or non-RAC databases

It provides the ability to monitor the database in near real time

Visual layout

```
Oracle 21c - 19:30:56 Pri r/w cdbs up:   13h,   12 sn,    4G sga,   10%fra,
ID %CPU LOAD  AAS  ASC  ASI  ASW  ISW IORT MBPS  %FRE   PGA  UCPS SQRT %
 1   53    5    1    0    1    6    5   7m    2     8  785M    40   2m

EVENT (C)                            T/O  WAIT  TIME   AVG  %DBT     WAIT CLASS
SQL*Net more data from client              8k    1d   12s    93
SQL*Net message from dblink              497k   38t    5m     2
DB CPU                                          37t           2
oracle thread bootstrap                    9k   27t  185m     2          Other
log file parallel write                  239k    3t  800u     0     System I/O

ID    SID       SPID USR PROG S OPN SQLID/BLOCKER  E/T %CPU  PGA ACT EVENT/OB  W/T
 1    802        439 TPC tpcc D PL/ 582r1jmmm3tgj  14m    3   4M INA SQL*Ne
 1    792        517 TPC tpcc D PL/ 582r1jmmm3tgj   1s    3   4M INA SQL*Net   219m
 1     34        426 TPC tpcc D PL/ 582r1jmmm3tgj  11m    2   4M INA SQL*Net   11m
 1   1164        396 TPC tpcc D PL/ fg32srx6d3fxc  25s    0   4M INA SQL*Net   25s
 1     16        513 TPC tpcc D PL/ 582r1jmmm3tgj   2t    0   4M INA SQL*Net   2t
 1    418        413 TPC tpcc D PL/ fg32srx6d3fxc   2t    0   4M INA SQL*Net   2t
```

(1) Database

(2) Instance activity

(3) AWR like
"Top 5 Timed Events"

(4) Process or SQL

Command line mode

```
$ export ORACLE_HOME=<path>
$ export LD_LIBRARY_PATH=$ORACLE_HOME/lib
$ export PATH=$ORACLE_HOME/bin:$ORACLE_HOME/suptools/oratop:$PATH

$ ./oratop –h
oratop: Release 16.5.1

The oratop program provides a dynamic near real-time view of an open database
It also provides a limited on-line interactive interface.

Usage:
    oratop [ [Options] [Logon] ]

    Logon:  {username[@connect_identifier] | / } [AS SYSDBA]
    Password is prompted and the connect_identifier is TNS/ EZconnect

    Options:
        -b: batch mode. Used with –n iteration (default is console)
        -n: maximum number of iterations (requires a value)
        -o: Write console output to a file (in batch mode)
        -i: interval delay (requires a value, default: 5)
        -r: real-time (RT) wait events. (section 3, default: Cumulative)
        -m: Session/Process MODULE/ACTION (default: USERNAME/PROGRAM)
        -s: SQL mode. (section 4, default: session/process mode)
        -f: detailed format, 132 columns. (default: standard, 80 columns)
        -v: oratop release version number
        -h: this help
```

Command line mode

```
$ export ORACLE_HOME=<path>
$ export LD_LIBRARY_PATH=$ORACLE_HOME/lib
$ export PATH=$ORACLE_HOME/bin:$ORACLE_HOME/suptools/oratop:$PATH
```

```
$ ./oratop –h
```

```
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        -m: Session/Process MODULE/ACTION (default: USERNAME/PROGRAM)
        -s: SQL mode. (section 4, default: session/process mode)
        -f: detailed format, 132 columns. (default: standard, 80 columns)
        -v: oratop release version number
        -h: this help
```

Login

Connection method is like sqlplus

```
$ oratop / as sysdba
```

Connecting " / as sysdba" is allowed only for bequeath connections

The remote database requires setting the parameter "REMOTE_LOGIN_PASSWORDFILE" paired with the availability of an Oracle password file.

Login

TNS:
export TNS_ADMIN and connect with a TNS alias name as defined in tnsnames.ora

EZConnect, example:

```
oratop sys@rmtdbhost:1521/db1.domain.com as sysdba
```

TWO_TASK can be set with any of the above for ease of use, example

```
$ export TWO_TASK= rmtdbhost:1521/db1.domain.com
```

```
$ ./oratop sys as sysdba
```

```
oratop: Release 16.5.1 Production on Fri Feb 11 05:54:50 UTC 2022
Copyright (c) 2011, Oracle. All rights reserved.
Enter password:
```

Interactive Mode

Options can be seen after starting the utility followed by pressing the keyboard key 'h'

```
oratop: Release 16.5.1

Interactive Keys: [default]
        f : toggle between [standard] & detailed format
        r : toggle between [Cumulative ©] & Real-Time (RT) (section 3)
        s : switch to SQL mode (section 4)
        p : switch to [session/process] mode (section 4)
        m : Toggle session [USERNAME/PROGRAM] & MODULE/ACTION (sections 4)
        t : tablespace information (N/A on standby)
        x : SQL plan table (requires a value)
        I : refresh interval, requires value in seconds [5]
        q : quit/ exit program
      Esc : pause.

Symbols:
      (B)tyle, (K)illo, (M)ega, (G)iga, (T)err, [PEXY]
      (u)micro, (m)illi, (s)econd, minu(t)e, (h)our, (d)ay, (y)ear
      [60s/ 15s] – metric interval size, else current.

Abbreviations Help Menu:
      Section 1 – DATABASE         .. [1]
      Section 2 – INSTANCE         .. [2]
      Section 3 – DB WAIT EVENTS   .. [3]
      Section 4 – SESSION/PROCESS  .. [4]
      Quit Help                    .. (q|Q)

Enter selection number:
```

Miscellaneous

Values appearing in RED color
Values flagged and highlighted in red color are merely an emphasis of warning

Header's "archivelog" and "er" (incidents) These two values are static, they are acquired once upon start of monitoring only. They are not auto refreshed because the first incur expensive recursive query and the second adds to diagnosability database waits

Header's %DCP
Column "%DCP" (in section 2) is the database instance cpu usage as %CPU of the host
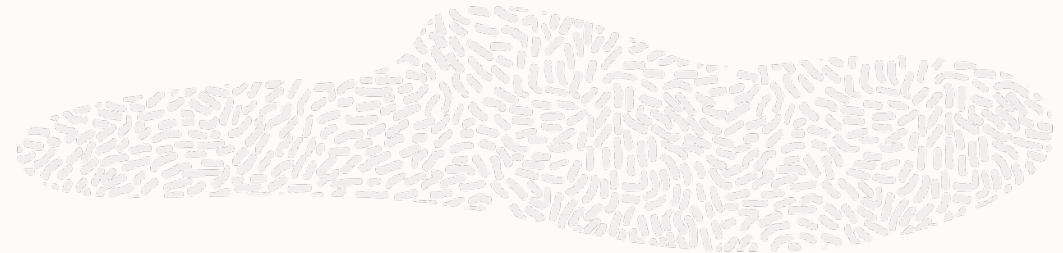
Tablespaces listing
A list of all the tablespaces (cdb and pdb) can be obtained online with keyboard key press 't'

Wait Events (section 3)
Keyboard key press 'r' will toggle the wait event section between Cumulative and Realtime.
For C, the stats shown is the accumulation since the last database restart
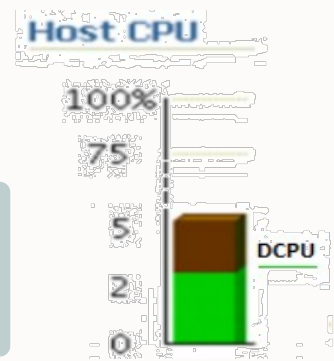
Miscellaneous

Detailed format (long)

```
Oracle 21c - 19:55:57 Primary  r/w cdbs up:  13h,  11 sn,  1 ins,  1 pdb,  0 er, 6.9G sz, 3.7G sga, 10.4%fra, archivelog 12.2%db
ID CPU  %CPU LOAD  AAS  ASC  ASI  ASW  ISW  REDO TEMP IORT MBPS IOPS  R/S  W/S  LIO GCPS  %FRE  PGA  NETV UTPS UCPS SQRT %DBC %DBW
 1   4  56.9  3.8  0.5    0    0    6    5  158k  12M 7.3m  0.9  375  8.2  324   3k    0   9.6 527M  362k 18.0 42.2 1.1m  3.8  8.4


EVENT (RT)                                            SESSIONS  WAIT  TIME   AVG  %DBT                              WAIT_CLASS
SQL*Net more data from client                              2  2.2k  2.0t   55m  84.9                                 Network
SQL*Net message from dblink                                  720  5.6s  7.8m   4.0                                 Network
Sharding: commit                                             1k  3.2s  3.1m   2.3                                  Commit
oracle thread bootstrap                                      13  3.2s  247m   2.3                                   Other
db file sequential read                                     279  2.2s  7.8m   1.5                                User I/O


ID   SID    SPID USERNAME PROGRAM     SRV SERVICE OPN SQLID/BLOCKER  E/T %CPU %LIO  PGA STS STE WAIT_CLASS EVENT/OBJECT NAME    W/T
 1   400   9556 TPCC     tpcc.exe@ DED wsvc    PL/ gz8100xp0fbc9 248m  3.1 47.8 4.2M INA WAI Idle       SQL*Net message fro 248m
 1   407   9586 TPCC     tpcc.exe@ DED wsvc    PL/ 582r1jmmm3tgj 242m  2.6 36.2 3.8M INA WAI Idle       SQL*Net message fro 242m
 1   414   9615 TPCC     tpcc.exe@ DED wsvc    PL/ fg32srx6d3fxc  94m  1.2 12.8 3.5M INA WAI Idle       SQL*Net message fro  94m
 1   798   9599 TPCC     tpcc.exe@ DED wsvc    PL/ 582r1jmmm3tgj  16s  0.2  2.4 3.7M INA WAI Idle       SQL*Net message fro  16s
 1  1160   9573 TPCC     tpcc.exe@ DED wsvc    PL/ fg32srx6d3fxc  47s    0    0 3.8M INA WAI Idle       SQL*Net message fro  47s
```

Note. in RAC environment, while section 2 (instance section) is restricted to the top 5 instances in the text-based user interface, all of the available instances will be listed in the batch mode.

Batch Mode

Batch mode is applicable at the command line with the relevant input options.

```
$ ./oratop / sysdba -bn1
```

```
oratop: Release 16.5.1 Production on Fri Apr 28 19:42:40 UTC 2023
Copyright (c) 2011, Oracle. All rights reserved.
Enter password:
Connecting
```

```
Cycle 1 - oratop: Release 16.5.1 Production on Fri Apr 28 19:42:49 UTC 2023
Oracle 21c - 19:41:56 Pri r/w cdbs up: 13h, 12 sn, 4G sga, 10%fra, 15%db
ID %CPU LOAD AAS ASC ASI ASW ISW IORT MBPS %FRE PGA UCPS SQRT %DBC %DBW
--------------------------------------------------------------------
 1 51 3 1 0 0 6 6 17m 2 8 834M 42 1m 4 11
EVENT (C) T/O WAIT TIME AVG %DBT WAIT_CLASS
--------------------------------------------------------------------
SQL*Net more data from client 31k 1d 3s 93 Network
SQL*Net message from dblink 505k 39t 5m 2 Network
DB CPU 39t 2
oracle thread bootstrap 9k 27t 186m 2 Other
db file sequential read 35k 4t 6m 0 User I/O
ID SID SPID USR PROG S OPN SQLID/BLOCKER E/T %CPU PGA ACT EVENT/OB W/T
--------------------------------------------------------------------
 1 792 517 TPC tpcc D PL/ 582r1jmmm3tgj 3s 3 4M INA SQL*Net 3s
 1 802 439 TPC tpcc D PL/ 582r1jmmm3tgj 184m 3 4M INA SQL*Net 184m
 1 418 413 TPC tpcc D PL/ 582r1jmmm3tgj 185m 1 4M INA SQL*Net 185m
```

```
Cycle 2 - oratop: Release 16.5.1 Production on Fri Apr 28 19:42:54 UTC 2023
Oracle 21c - 19:41:56 Pri r/w cdbs up: 13h, 12 sn, 4G sga, 10%fra, 15%db
ID %CPU LOAD AAS ASC ASI ASW ISW IORT MBPS %FRE PGA UCPS SQRT %DBC %DBW
--------------------------------------------------------------------
 1 51 3 1 0 0 6 6 17m 2 8 834M 42 1m 4 11
EVENT (C) T/O WAIT TIME AVG %DBT WAIT_CLASS
```

SQL
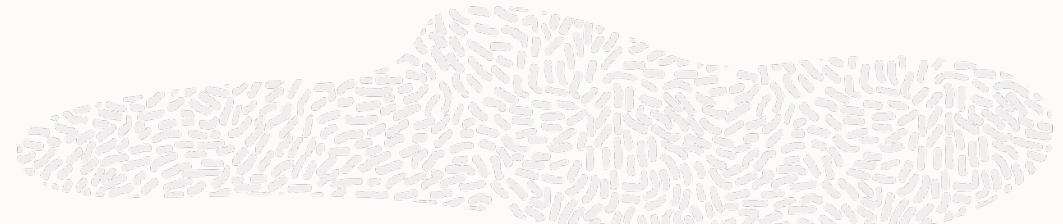
```
Oracle 21c - sh1 02:01:57 up:  4.3d,   2 ins,   128 sn,    1 us,   10G sga,    84.6%db
```

ID	%CPU	%DCP	LOAD	AAS	ASC	ASI	ASW	IDL	MBPS	%FR	PGA	UTPS	RT/C	DCTR	DWTR
2	19.2	13.7	10.2	39.2	11	4	22	26	100M	7	3.1G	656	56m	17	81
1	20.3	16.9	15.6	42.0	15	1	22	27	104M	14	2.7G	719	48m	16	78

EVENT (C)	TOT WAITS	TIME(s)	AVG MS	PCT	WAIT CLASS
log file sync	17841193	266406	14.1	39	Commit
DB CPU		154327		23	
gc current block busy	71129790	108578	1.5	16	Cluster
gc buff^r busy acquire	8896661	73845	9.9	11	Cluster
enq: TX - row lock contention	3220952	71866	24.0	11	Application

ID	USER	SQL_ID	SQL_TEXT	X	ELAP	EXEC	ROWS	BH%	LOAD
1	TPCC	00b6x98mnx89t	SELECT count (DISTINC	S	271m	12k	0	100	15
2	TPCC	00b6x98mnx89t	SELECT count (DISTINC	S	239m	7.5k	0	100	9
1	TPCC	ahlvrygbhqdry	DELETE FROM NORD N WH	S	33m	12k	9	100	2

SQL Plan

SQL (key press '**x**')

```
Oracle 21c - 20:05:55 Pri r/w cdbs up:  13h,  12 sn,    4G sga,  10%fra,    13%db
ID %CPU LOAD   AAS  ASC  ASI  ASW  ISW IORT MBPS  %FRE  PGA  UCPS SQRT %DBC %DBW
 1   49    6     1    0    0    6    6  11m    1     9 536M    43 987u    4   10

EVENT (RT)                            SESS  WAIT  TIME   AVG  %DBT      WAIT_CLASS
SQL*Net more data from client            2    2k    2t   56m    81         Network
SQL*Net message from dblink                  720    8s   11m     5         Network
Sharding: commit                              1k    5s    4m     3          Commit
oracle thread bootstrap                       13    3s  231m     2           Other
Sharding: replication log                     4k    3s  631u     2      System I/O

ID   SID     SPID USR PROG S OPN SQLID/BLOCKER  E/T %CPU  PGA ACT EVENT/OB  W/T
 1   400     9556 TPC tpcc D UPD 4mfv9xfuxbfhw 124m    2   4M ACT CPU Runq 124m
 1   798     9599 TPC tpcc D PL/ gz8100xp0fbc9   5s    3   4M INA SQL*Net    5s
 1    16    10939 TPC tpcc D PL/ fg32srx6d3fxc   5s    1   3M INA SQL*Net    6s
 1   414     9615 TPC tpcc D PL/ 582r1jmmm3tgj  10m    1   4M INA SQL*Net   10m
 1  1160     9573 TPC tpcc D PL/ gz8100xp0fbc9  11m    0   4M INA SQL*Net   11m
 1   407     9586 TPC tpcc D PL/ 582r1jmmm3tgj   2t    0   4M INA SQL*Net    2t
Enter sql_id: 4mfv9xfuxbfhw

PLAN_TABLE_OUTPUT

--------------------------------------------------------------------------------
SQL_ID  4mfv9xfuxbfhw, child number 0
-------------------------------------------
UPDATE ORDR SET O_CARRIER_ID = :B1 WHERE O_ID = :B4 AND O_D_ID =
:B3 AND O_W_ID = :B2 RETURNING O_C_ID INTO :O0

Plan hash value: 950365053


-------------------------------------------------------------
| Id  | Operation                                  | Name  |
-------------------------------------------------------------
|   0 | UPDATE STATEMENT                           |       |
|   1 |  UPDATE                                    | ORDR  |
|   2 |   PARTITION REFERENCE SINGLE               |       |
|   3 |    TABLE ACCESS BY LOCAL INDEX ROWID BATCHED| ORDR |
|   4 |     INDEX RANGE SCAN                       | IORDR |
-------------------------------------------------------------

press Enter to return
```
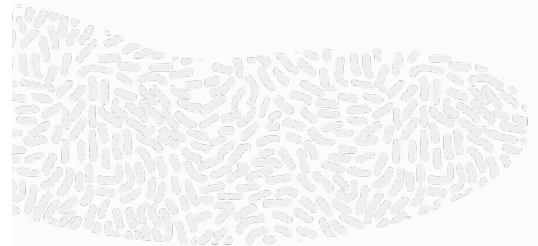
Miscellaneous

Exiting

To quit the program gracefully, user may press keyboard keys: "q" or "Q", or Esc key. A Ctrl+c to abort forcibly. In all cases, proper database logout is performed

Unprivileged user

A typical error encountered by a non-privileged user upon connection to the database using the tool is "ORA-00942: table or view does not exist"

To allow the non-privileged user to use oratop, the system administrator with a DBA role may issue the following grant: "GRANT SELECT ANY DICTIONARY TO ;"

Standby or mounted database instance

- **STANDBY** - key press "t" for "TABLESPACE INFORMATION" will not return any rows. Reason: BUG 27841703
- **MOUNTED** Instance – Section 2 will show inst_id highlighted in red color. Reason: Required statistics is not available until instance is opened.

Monitoring a database every 10 seconds

Monitor a local database:

```
$ ./oratop -i 10 / as sysdba
```

Monitoring a remote database:

```
$ ./oratop -i 10 username/password@tns_alias
```

or

```
$ ./oratop -i 10 system/manager@tns_alias
```

Running from AHF

tfactl menu..
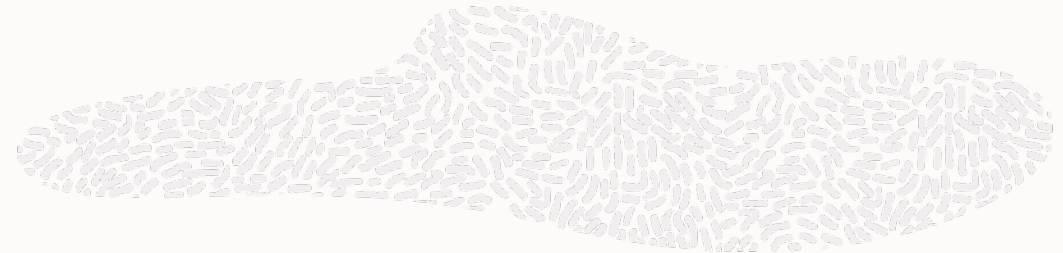
```
Trace File Analyzer Collector Menu System
==========================================

TFA Main Menu


     The Oracle Trace File Analyzer Menu provides a simple
     interface to the TFA tools.


     Select one of the following categories:

        1.   System Analysis
        2.   Collections
        3.   Administration



     (B)ack   (M)ain   (H)elp   E(x)it

     Please enter your selection : 1
```

tfactl menu..

```
Trace File Analyzer Collector Menu System
==========================================

System Analysis


      Select one of the following categories:

          1. Summary
          2. Events
          3. Analyze logs
          4. TFA Utilities
          5. Support Tool Bundle
          6. Tools status



   (B)ack    (M)ain    (H)elp    E(x)it

   Please enter your selection : 4
```

tfactl menu..
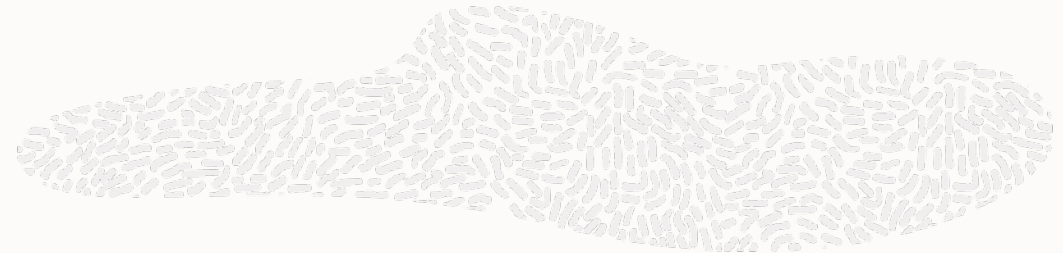
```
Trace File Analyzer Collector Menu System
===========================================

TFA Utilities


    Select One of the following options:

        1. ORAchk/ EXAchk
        2. Oratop
        3. alertsummary
        4. calog
        5. grep
        6. ls
        7. managelogs
        8. param
        9. ps
       10. pstack
       11. tail
       12. vi



    (B)ack    (M)ain    (H)elp    E(x)it

    Please enter your selection : 2
Please enter the database name: ahforcl

Running /opt/oracle.ahf/tfa/bin/tfactl oratop —database "ahforcl"
```

```
Oracle 21c - 04:50:53 Primary  r/w ahfo up: 153d,    0 sn,   2 ins,    2 pdb,    0 er,   35G sz, 6.9G sga, 13.4%fra,    noarchive    0.7%db
ID CPU  %CPU  LOAD   AAS   ASC   ASI   ASW   ISW   REDO TEMP IORT MBPS IOPS   R/S   W/S  LIO GCPS  %FRE   PGA   NETV UTPS UCPS SQRT %DBC %DBW
 1   5   8.6   0.6     0     0     0     0     0      4    0 231u    0  762   5.5   0.7  159  0.3  22.4 1.5G    690    0 15.6 352u  0.6  0.2
 2   5  14.6   0.6     0     0     0     0     0      6    0  77u  0.1 175k   5.1   0.9  155  0.5    31 1.6G   193k    0 15.6 281u  0.6    0

EVENT (C)                                               T/O  WAIT  TIME   AVG  %DBT                            WAIT_CLASS
log file sync                                                1.6M  6.1d  168m  21.7                                Commit
DB CPU                                                             5.7d        20.3
write complete waits                                         18k   2.3d   11s   8.1                         Configuration
db file sequential read                                     9.8M   2.2d   10m   7.8                             User I/O
log file switch (checkpoint incomplete)                     2.7k   1.8d   57s   6.3                         Configuration

ID    SID      SPID USERNAME PROGRAM     SRV SERVICE OPN SQLID/BLOCKER   E/T %CPU %LIO   PGA STS STE WAIT_CLASS EVENT/OBJECT NAME     W/T
```

f : toggle between [standard] & detailed format

```
Oracle 21c - 04:50:56 Pri r/w ahfo up: 153d,    0 sn,    7G sga,   13%fra,      1%db
ID %CPU LOAD   AAS   ASC   ASI   ASW   ISW IORT MBPS  %FRE   PGA  UCPS SQRT %DBC %DBW
 1    9    1     0     0     0     0     0 231u    0    22    2G    18 352u    1    0
 2   15    1     0     0     0     0     0 115u    0    31    2G    17 265u    0    0

EVENT (C)                      T/O  WAIT  TIME   AVG  %DBT      WAIT_CLASS
log file sync                        2M    6d  168m    22          Commit
DB CPU                                     6d          20
write complete waits                18k    2d   11s     8   Configuration
db file sequential read             10M    2d   10m     8        User I/O
log file switch (checkpoint incomp   3k    2d   57s     6   Configuration

ID    SID      SPID USR PROG S OPN SQLID/BLOCKER   E/T %CPU   PGA ACT EVENT/OB   W/T
```

```
Oracle 21c - 04:52:57 Primary  r/w ahfo up: 153d,   0 sn,  2 ins,   2 pdb,   0 er,  35G sz, 6.9G sga, 13.4%fra, noarchive   0.8%db
ID CPU  %CPU LOAD   AAS   ASC   ASI   ASW   ISW   REDO TEMP IORT MBPS IOPS   R/S  W/S  LIO GCPS  %FRE   PGA  NETV UTPS UCPS SQRT %DBC %DBW
 1   5  12.3  0.4     0     0     0     0     0     48    0 206u    0  761   3.9    1  237  0.4  22.4 1.5G   387    0   23 339u  0.7  0.2
 2   5  14.7  0.8     0     0     0     0     0   1.2k    0 119u  0.1 175k   6.5  2.8  138  1.4    31 1.6G  193k    0 14.8 258u  0.7    0

EVENT (C)                                                        T/O  WAIT  TIME   AVG  %DBT                                  WAIT CLASS
log file sync                                                         1.6M  6.1d  168m  21.7                                      Commit
DB CPU                                                                      5.7d        20.3
write complete waits                                                  18k   2.3d   11s   8.1                               Configuration
db file sequential read                                              9.8M   2.2d   10m   7.8                                    User I/O
log file switch (checkpoint incomplete)                              2.7k   1.8d   57s   6.3                               Configuration

ID    SID      SPID USERNAME PROGRAM     SRV SERVICE OPN SQLID/BLOCKER  E/T %CPU %LIO   PGA STS STE WAIT_CLASS EVENT/OBJECT NAME      W/T
```

r : toggle between [Cumulative ©] & Real-Time (RT) (section 3)

```
Oracle 21c - 04:52:57 Primary  r/w ahfo up: 153d,   0 sn,  2 ins,   2 pdb,   0 er,  35G sz, 6.9G sga, 13.4%fra, noarchive   0.8%db
ID CPU  %CPU LOAD   AAS   ASC   ASI   ASW   ISW   REDO TEMP IORT MBPS IOPS   R/S  W/S  LIO GCPS  %FRE   PGA  NETV UTPS UCPS SQRT %DBC %DBW
 1   5  12.3  0.4     0     0     0     0     0     48    0 206u    0  761   3.9    1  153  0.4  22.4 1.5G   387    0 15.6 339u  0.7  0.2
 2   5  14.7  0.8     0     0     0     0     0   1.2k    0 119u  0.1 175k   6.5  2.8  210  1.4    31 1.6G  193k    0 21.8 258u  0.7    0

EVENT (RT)                                                  SESSIONS  WAIT  TIME   AVG  %DBT                                  WAIT CLASS
control file sequential read                                    621  480m  783u  21.5                                      System I/O
PX Deq: Join ACK                                                370  300m  828u  13.5                                           Other
enq: PS - contention                                            398  210m  529u   9.3                                           Other
IMR slave acknowledgement msg                                   360  170m  486u   7.7                                           Other
IPC send completion sync                                        898  120m  139u   5.5                                           Other

ID    SID      SPID USERNAME PROGRAM     SRV SERVICE OPN SQLID/BLOCKER  E/T %CPU %LIO   PGA STS STE WAIT_CLASS EVENT/OBJECT NAME      W/T
```
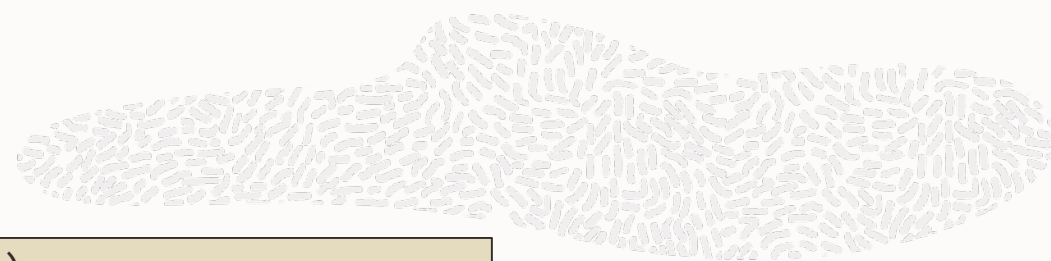
```
Oracle 21c - 05:15:56 Primary  r/w ahfo up: 153d,   0 sn,  2 ins,   2 pdb,   0 er,  35G sz, 6.9G sga, 13.4%fra, noarchive   0.9%db
ID CPU   %CPU LOAD   AAS   ASC   ASI   ASW   ISW   REDO TEMP IORT MBPS IOPS  R/S  W/S  LIO GCPS   %FRE  PGA  NETV UTPS UCPS SQRT %DBC %DBW
 1   5   23.2    2     0     1     0     0     0   1.3k    0 516u    0  775  4.0  2.1 1.8k  1.3   22.4 1.5G   532    0 44.9 335u  0.7  0.2
 2   5   32.9  1.3     0     0     0     0     0    163    0 151u  0.1 175k  5.1  2.3  150  0.5   31.0 1.6G  193k    0 15.9 313u  0.7  0.1


EVENT (RT)                                              SESSIONS WAIT  TIME   AVG  %DBT                              WAIT_CLASS
control file sequential read                                536  510m  959u  18.4                                  System I/O
PX Deq: Join ACK                                            348  360m  1.0m    13                                      Other
enq: PS - contention                                       377  220m  603u   8.2                                      Other
log file parallel write                                     94  220m  2.4m     8                                  System I/O
IMR slave acknowledgement msg                              357  170m  476u   6.1                                      Other

ID   SID   SPID MODULE   ACTION    SRV SERVICE OPN SQLID/BLOCKER  E/T %CPU %LIO  PGA STS STE WAIT_CLASS EVENT/OBJECT NAME    W/T
 1   530   32734 MMON_SLA JAVAVM JI DED SYS$BAC                  12s    0    0 7.4M ACT RUN            On CPU                3u
```

```
Oracle 21c – 05:11:56 Primary  r/w ahfo up: 153d,   0 sn,   2 ins,   2 pdb,   0 er,   35G sz, 6.9G sga, 13.4%fra, noarchive   0.9%db
ID CPU  %CPU LOAD  AAS  ASC  ASI  ASW  ISW  REDO TEMP IORT MBPS IOPS  R/S  W/S  LIO GCPS  %FRE  PGA  NETV UTPS UCPS SQRT %DBC %DBW
 1   5   7.6  1.3    0    0    0    0    0  915    0 427u    0  762  4.0  1.2  229  1.1  22.4 1.5G  436    0 16.6 345u  0.8  0.3
 2   5  13.9  0.7    0    0    0    0    0   92    0 123u  0.1 175k  5.5  1.3  152  0.5  31.0 1.6G  193k   0 16.9 294u  0.6  0.1
```

```
EVENT (RT)                                          SESSIONS  WAIT  TIME   AVG  %DBT                    WAIT_CLASS
control file sequential read                             574  520m  918u    21                         System I/O
PX Deq: Join ACK                                         407  480m  1.2m  19.4                              Other
enq: PS – contention                                     405  220m  553u   9.0                              Other
IPC send completion sync                                 896  210m  235u   8.4                              Other
IMR slave acknowledgement msg                            363  150m  422u   6.1                              Other
```

```
ID    SID    SPID MODULE    ACTION    SRV SERVICE OPN SQLID/BLOCKER  E/T %CPU %LIO  PGA STS STE WAIT_CLASS EVENT/OBJECT NAME    W/T
```

```
TABLESPACE INFORMATION:

TABLESPACE_NAME            SIZE  USED  USED%  STATUS    BIG  LOGGING    CONTENTS    EXTENT       SEGMENT   ALLOC_TYPE   ENCR  CID
–––––––––––––––––––––––    ––––  ––––  –––––  –––––––––  –––  –––––––––  ––––––––––  ––––––––––   –––––––   ––––––––––   ––––  –––
SOE                        24G   20G   85.9  ONLINE    YES  LOGGING    PERMANENT   LOCAL        AUTO      UNIFORM      NO      4
SYSAUX                    3.3G  2.5G   76.6  ONLINE     NO  LOGGING    PERMANENT   LOCAL        AUTO      SYSTEM       NO      1
SYSTEM                    1.9G  1.4G   73.5  ONLINE     NO  LOGGING    PERMANENT   LOCAL        MANUAL    SYSTEM       NO      1
SYSTEM                    522M  307M   58.9  ONLINE     NO  LOGGING    PERMANENT   LOCAL        MANUAL    SYSTEM       NO      4
SYSTEM                    522M  303M   58.1  ONLINE     NO  LOGGING    PERMANENT   LOCAL        MANUAL    SYSTEM       NO      3
SYSAUX                    1.1G  614M   52.4  ONLINE     NO  LOGGING    PERMANENT   LOCAL        AUTO      SYSTEM       NO      4
SYSAUX                    1.1G  605M   52.1  ONLINE     NO  LOGGING    PERMANENT   LOCAL        AUTO      SYSTEM       NO      3
USERS                     522M  2.7M    0.5  ONLINE     NO  LOGGING    PERMANENT   LOCAL        AUTO      SYSTEM       NO      1
USERS                     522M    1M    0.2  ONLINE     NO  LOGGING    PERMANENT   LOCAL        AUTO      SYSTEM       NO      3
USERS                     522M    1M    0.2  ONLINE     NO  LOGGING    PERMANENT   LOCAL        AUTO      SYSTEM       NO      4
TEMP                       32G    0      0   ONLINE     NO  NOLOGGING  TEMPORARY   LOCAL        MANUAL    UNIFORM      NO      1
TEMP                      2.4G    0      0   ONLINE     NO  NOLOGGING  TEMPORARY   LOCAL        MANUAL    UNIFORM      NO      4
TEMP                      522M    0      0   ONLINE     NO  NOLOGGING  TEMPORARY   LOCAL        MANUAL    UNIFORM      NO      3
UNDOTBS1                   32G   18M     0   ONLINE     NO  LOGGING    UNDO        LOCAL        MANUAL    SYSTEM       NO      1
UNDO_2                     32G   10M     0   ONLINE     NO  LOGGING    UNDO        LOCAL        MANUAL    SYSTEM       NO      4
UNDO_2                     32G  9.3M     0   ONLINE     NO  LOGGING    UNDO        LOCAL        MANUAL    SYSTEM       NO      3
```

```
press Enter to return
```
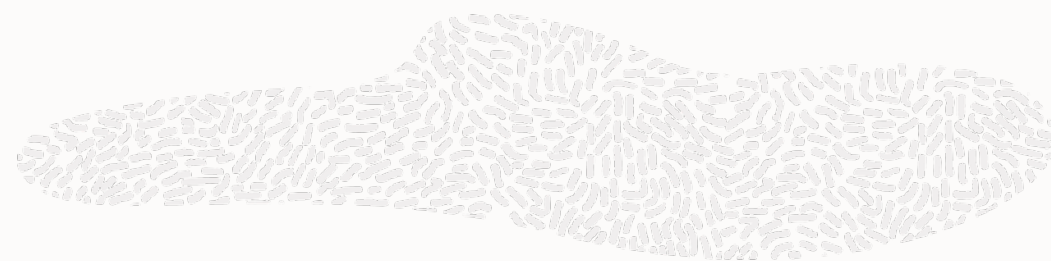
x : SQL plan table (requires a value)

```
Oracle 21c - 05:12:56 Primary  r/w ahfo up: 153d,   0 sn,  2 ins,   2 pdb,   0 er,  35G sz, 6.9G sga, 13.4%fra, noarchive   0.4%db
ID CPU  %CPU LOAD  AAS  ASC  ASI  ASW  ISW  REDO TEMP IORT MBPS IOPS  R/S  W/S  LIO GCPS  %FRE  PGA  NETV UTPS UCPS SQRT %DBC %DBW
 1   5     7  1.2    0    0    0    0    0    39    0 166u    0  761  3.9  0.9  106  0.4  22.4 1.5G   234    0 10.4 242u  0.4    0
 2   5  13.8  0.4    0    0    0    0    0   497    0 127u  0.2 178k    5  5.7  109  0.5  31.0 1.6G  196k    0 10.7 244u  0.4    0


EVENT (RT)                                                  SESSIONS  WAIT TIME   AVG  %DBT                          WAIT_CLASS
control file sequential read                                    532  430m 810u  25.0                                System I/O
db file parallel write                                         284  180m 657u  10.8                                System I/O
IMR slave acknowledgement msg                                  360  160m 468u   9.8                                     Other
PX Deq: Join ACK                                               164  120m 768u   7.3                                     Other
PX Deq: reap credit                                            13k  110m   9u   6.9                                     Other


ID   SID    SPID MODULE    ACTION    SRV SERVICE OPN SQLID/BLOCKER  E/T %CPU %LIO  PGA STS STE WAIT_CLASS EVENT/OBJECT NAME    W/T
Enter sql_id:
```

```
Oracle 21c - 05:18:56 Primary  r/w ahfo up: 153d,   0 sn,  2 ins,   2 pdb,   0 er,   35G sz, 6.9G sga, 13.4%fra, noarchive   2.6%db
ID CPU  %CPU LOAD  AAS   ASC   ASI   ASW   ISW  REDO TEMP IORT MBPS IOPS  R/S  W/S  LIO GCPS  %FRE  PGA  NETV UTPS UCPS SQRT %DBC %DBW
 1   5  11.4  1.4  0.2     0     0     0     0  7.6k    0 288u  0.1  763    4  2.3  165  6.2  22.4 1.5G   418    0 16.6 1.0m  3.8  0.3
 2   5  14.9  0.7    0     0     0     0     0   168    0 176u  0.1 175k  5.1  1.4  203  0.6  31.0 1.6G  193k    0 21.1 394u  1.0  0.1


EVENT (RT)                                        SESSIONS  WAIT  TIME   AVG  %DBT                      WAIT_CLASS
control file sequential read                          553  490m  890u  19.4                            System I/O
PX Deq: Join ACK                                      398  310m  800u  12.5                                 Other
DB CPU                                                      240m        9.5
enq: PS - contention                                  424  230m  563u   9.4                                 Other
IMR slave acknowledgement msg                         360  160m  446u   6.3                                 Other


USERNAME   SQL_TEXT                          SQL_ID         DOP   (CI)   DUR  CPUT  IOWT  WAIT  EXEC  BUFG  DISK  BH%  LOAD
Enter interval in seconds [5]: 5
```
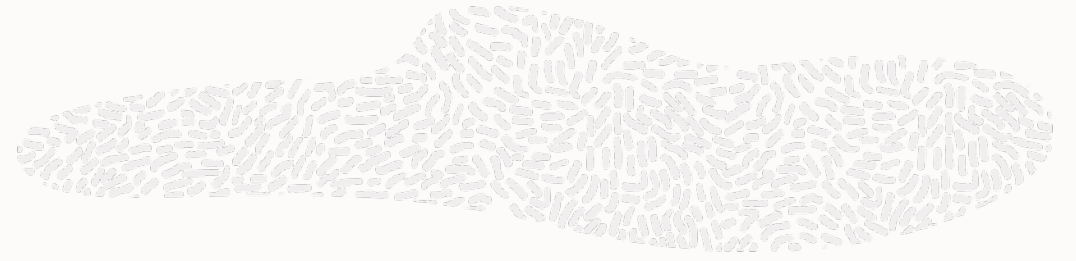
```
oratop: Release 16.5.1

Interactive Keys: [default]
        f : toggle between [standard] & detailed format
        r : toggle between [Cumulative (C)] & Real-Time (RT) (section 3)
        s : switch to SQL mode (section 4)
        p : switch to [session/process] mode (section 4)
        m : Toggle sessions [USERNAME/PROGRAM] & MODULE/ACTION (section 4)
        t : tablespace information (N/A on standby)
        a : ASM diskgroup information
        x : SQL plan table (requires a value)
        i : refresh interval, requires value in seconds [5]
        q : quit/ exit program
      Esc : pause.

Symbols:
        (B)yte, (k)illo, (M)ega, (G)iga, (T)erra, [PEZY]
        (u)micro, (m)illi, (s)econd, minu(t)e, (h)our, (d)ay, (y)ear
        [60s/ 15s] - metric interval size, else current.

Abbreviations Help Menu:
        Section 1 - DATABASE           .. [1]
        Section 2 - INSTANCE           .. [2]
        Section 3 - DB WAIT EVENTS     .. [3]
        Section 4 - SQL                .. [4]
        Quit Help                      .. (q|Q)

Enter selection number: 1
```
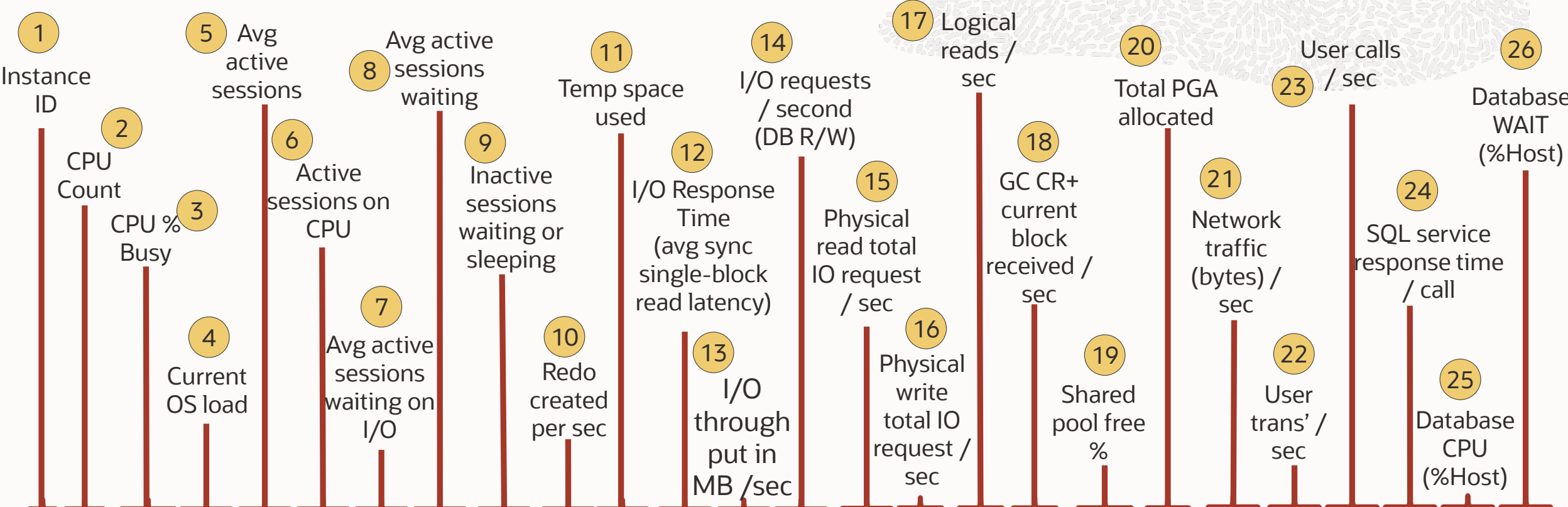
Labels:

1. Oracle major version
2. Current time from system metric
3. Role (Primary, Physical standby)
4. Read write, read only, w/apply (active)
5. Name
6. Database uptime
7. Number user sessions
8. Number of instances
9. Number of pluggable databases
10. Diag active problem count
11. Total database Size
12. Largest system global area
13. % used flashback recovery area
14. Archivelog mode
15. Database utilization (%busy)

```
Oracle 21c - 05:18:56 Primary  r/w ahfo up: 153d,     0 sn,   2 ins,    2 pdb,     0 er,   35G sz,  6.9G sga, 13.4%fra,   noarchive      2.6%db
```
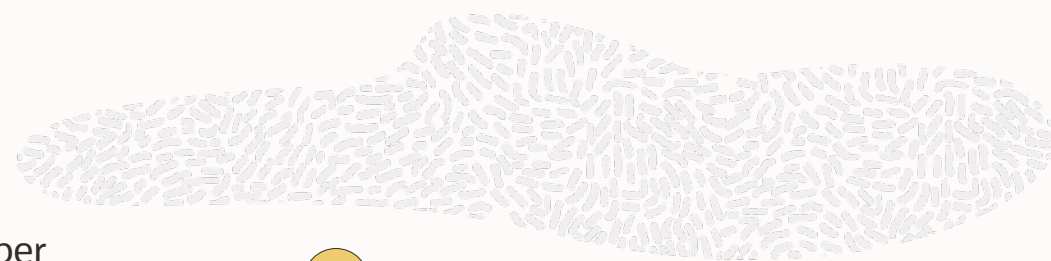
ID	CPU	%CPU	LOAD	AAS	ASC	ASI	ASW	ISW	REDO	TEMP	IORT	MBPS	IOPS	R/S	W/S	LIO	GCPS	%FRE	PGA	NETV	UTPS	UCPS	SQRT	%DBC	%DBW
1	5	11.4	1.4	0.2	0	0	0	0	7.6k	0	288u	0.1	763	4	2.3	165	6.2	22.4	1.5G	418	0	16.6	1.0m	3.8	0.3
2	5	14.9	0.7	0	0	0	0	0	168	0	176u	0.1	175k	5.1	1.4	203	0.6	31.0	1.6G	193k	0	21.1	394u	1.0	0.1

EVENT (RT)	SESSIONS	WAIT	TIME	AVG	%DBT	WAIT_CLASS
control file sequential read	553		490m	890u	19.4	System I/O
PX Deq: Join ACK	398		310m	800u	12.5	Other
DB CPU			240m		9.5	
enq: PS - contention	424		230m	563u	9.4	Other
IMR slave acknowledgement msg	360		160m	446u	6.3	Other

1 Instance ID
2 CPU Count
3 CPU % Busy
4 Current OS load
5 Avg active sessions
6 Active sessions on CPU
7 Avg active sessions waiting on I/O
8 Avg active sessions waiting
9 Inactive sessions waiting or sleeping
10 Redo created per sec
11 Temp space used
12 I/O Response Time (avg sync single-block read latency)
13 I/O through put in MB /sec
14 I/O requests / second (DB R/W)
15 Physical read total IO request / sec
16 Physical write total IO request / sec
17 Logical reads / sec
18 GC CR+ current block received / sec
19 Shared pool free %
20 Total PGA allocated
21 Network traffic (bytes) / sec
22 User trans' / sec
23 User calls / sec
24 SQL service response time / call
25 Database CPU (%Host)
26 Database WAIT (%Host)

ID	CPU	%CPU	LOAD	AAS	ASC	ASI	ASW	ISW	REDO	TEMP	IORT	MBPS	IOPS	R/S	W/S	LIO	GCPS	%FRE	PGA	NETV	UTPS	UCPS	SQRT	%DBC	%DBW
1	5	11.4	1.4	0.2	0	0	0	0	7.6k	0	288u	0.1	763	4	2.3	165	6.2	22.4	1.5G	418	0	16.6	1.0m	3.8	0.3
2	5	14.9	0.7	0	0	0	0	0	168	0	176u	0.1	175k	5.1	1.4	203	0.6	31.0	1.6G	193k	0	21.1	394u	1.0	0.1

EVENT (RT)	SESSIONS	WAIT	TIME	AVG	%DBT	WAIT_CLASS
control file sequential read	553	490m	890u	19.4		System I/O
PX Deq: Join ACK	398	310m	800u	12.5		Other
DB CPU		240m		9.5		
enq: PS - contention	424	230m	563u	9.4		Other
IMR slave acknowledgement msg	360	160m	446u	6.3		Other

1 Wait event name (real time mode)

2 Number sessions waiting

3 Total number of waits for the event

4 Total wait time

5 Avg wait time

6 % of database time

7 Name of wait class

EVENT (RT)	SESSIONS	WAIT	TIME	AVG	%DBT	WAIT_CLASS
control file sequential read		553	490m	890u	19.4	System I/O
PX Deq: Join ACK		398	310m	800u	12.5	Other
DB CPU			240m		9.5	
enq: PS - contention		424	230m	563u	9.4	Other
IMR slave acknowledgement msg		360	160m	446u	6.3	Other

Thank you

Any Questions?

Sandesh Rao
VP AIOps for the Autonomous Database

@sandeshr
https://www.linkedin.com/in/raosandesh/
https://www.slideshare.net/SandeshRao4