

ORACLE

Oracle Database Performance Tuning Using oratop

Tips and tricks

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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 cdb up: 13h, 12 sn, 4G sga, 10%fra, 22%db
ID %CPU LOAD AAS ASC ASI ASW ISW IORT MBPS %FRE PGA UCPS SQRT %DBC %DBW
1 53 5 1 0 1 6 5 7m 2 8 785M 40 2m 4 18

EVENT (C) T/O WAIT TIME AVG %DBT WAIT CLASS
SQL*Net more data from client 8k 1d 12s 93 Network
SQL*Net message from dblink 497k 38t 5m 2 Network
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*Net 14m
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

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:

```
oratom 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
```

```
$ ./oratom sys as sysdba
```

```
oratom: 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

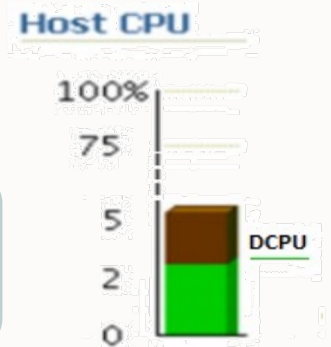
Column "%DCP" (in section 2) is the database instance cpu usage as %CPU of the host

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 cdb up: 13h, 11 sn, 1 ins, 1 pdb, 0 er, 6.9G sz, 3.7G sga, 10.4%fra, archive log 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.

```
$ ./oratom / sysdba -bn1
```

```
oratom: Release 16.5.1 Production on Thu Feb 10 19:42:40 UTC 2022  
Copyright (c) 2011, Oracle. All rights reserved.  
Enter password:  
Connecting
```

```
Cycle 1 - oratom: Release 16.5.1 Production on Thu Feb 10 19:42:49 UTC 2022  
Oracle 23c - 19:41:56 Pri r/w cdb$ 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 - oratom: Release 16.5.1 Production on Thu Feb 10 19:42:54 UTC 2022  
Oracle 23c - 19:41:56 Pri r/w cdb$ 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

SQL (key press 's')

```
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 buffer 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 | ah1vrygbhqdry | 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 cdb 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:

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

Monitoring a remote database:

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

or

```
$ ./oracatop -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
```


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

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 |
|----|-----|------|----------|---------|-----|---------|-----|---------------|-----|------|------|-----|-----|-----|------------|-------------------|-----|
|----|-----|------|----------|---------|-----|---------|-----|---------------|-----|------|------|-----|-----|-----|------------|-------------------|-----|

m : Toggle session [USERNAME/PROGRAM] & MODULE/ACTION (sections 4)

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 |

t : tablespace information (N/A on standby)

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: █



I : refresh interval, requires value in seconds [5]

```
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 | | | | | | | | | | | | |

(h) Help menu

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.

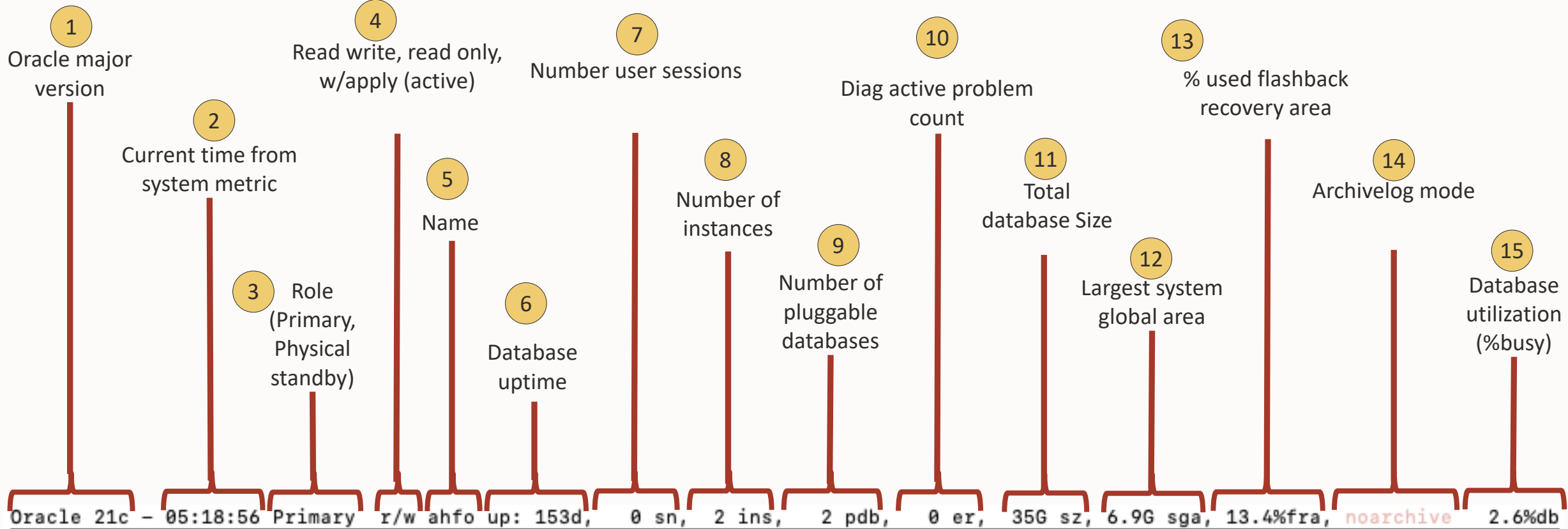
Symbols:

(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) |

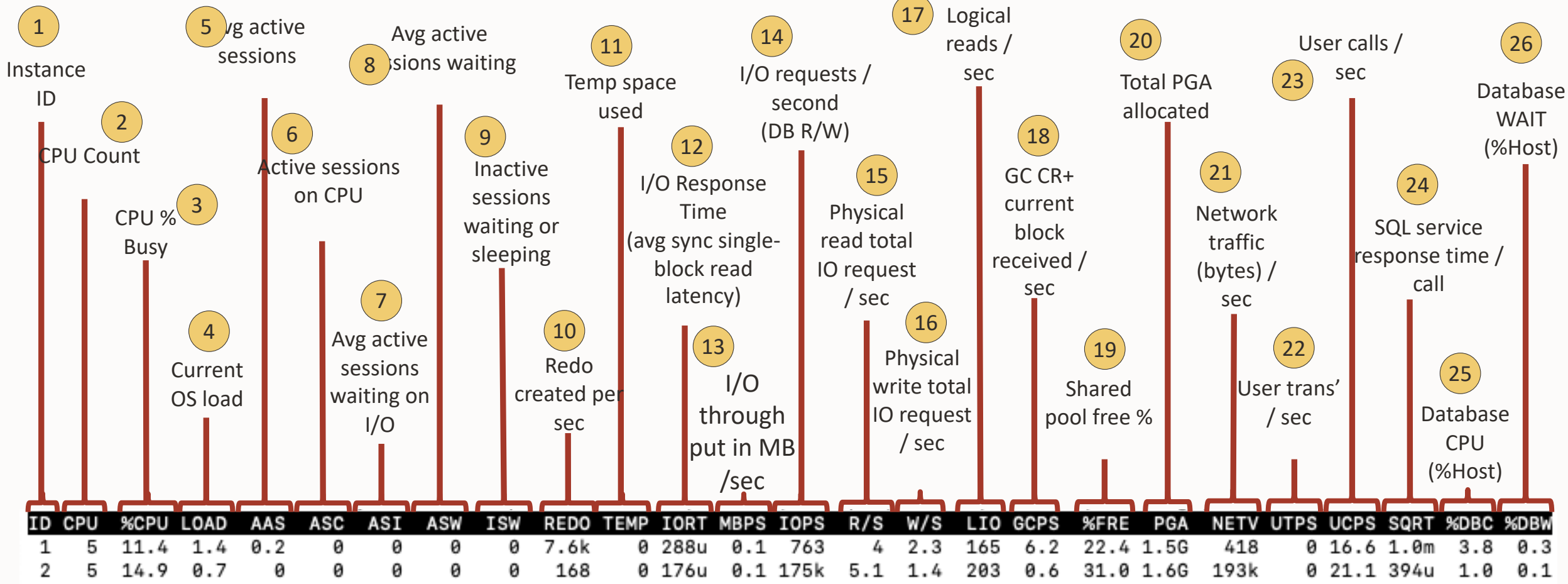
Enter selection number: 1



| 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 |





| 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

5

Avg wait time

3

Total number of waits for the event

6

% of database time

4

Total wait 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 |



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