How to Interpret the OS stats section of an AWR report (Doc ID 762526.1)

In this Document

APPLIES TO:

Oracle Database - Enterprise Edition - Version 10.2.0.1 and later
Oracle Database Cloud Schema Service - Version N/A and later
Gen 1 Exadata Cloud at Customer (Oracle Exadata Database Cloud Machine) - Version N/A and later
Oracle Database Exadata Express Cloud Service - Version N/A and later
Oracle Cloud Infrastructure - Database Service - Version N/A and later
Information in this document applies to any platform.

GOAL

This article outline how to read the OS Stats section of an AWR report, and outlines what that section tells the user with regards to the CPU utilization.

SOLUTION

Thew following is an example section of an AWR OS Statistics section with annotation in the column to the right:

```
Statistic                                     Total
------------------------------ --------------------
NUM_LCPUS                                         0  /* probably 0 because LPARs not set up */
NUM_VCPUS                                         0  /* same thing */
AVG_BUSY_TIME                                77,518  /* BUSY_TIME / NUM_CPUS */
AVG_IDLE_TIME                               281,226  /* IDLE_TIME / NUM_CPUS */
AVG_IOWAIT_TIME                              24,128  /* IOWAIT_TIME / NUM_CPUS */
AVG_SYS_TIME                                  5,664  /* SYS_TIME / NUM_CPUS */
AVG_USER_TIME                                71,747  /* USER_TIME / NUM_CPUS */
BUSY_TIME                                   621,022  /* time equiv of %usr+%sys in sar output */
IDLE_TIME                                 2,250,637  /* time equiv of %idle in sar */
SYS_TIME                                     46,166  /* time equiv of %sys in sar */
USER_TIME                                   574,856  /* time equiv of %usr in sar */
LOAD                                              0  /* meaning unclear */
OS_CPU_WAIT_TIME                            677,100  /* supposedly time waiting on run queues */
RSRC_MGR_CPU_WAIT_TIME                            0  /* time waited coz of resource manager */
PHYSICAL_MEMORY_BYTES                16,508,780,544  /* total memory in use supposedly */
NUM_CPUS                                          8  /* number of CPUs reported by OS */

NUM_CPU_CORES                                     4  /* number of CPU sockets on motherboard */
IOWAIT_TIME                                 193,913  /* time equiv of %wio in sar */ /* this
statistic is misleading on Solaris and should be ignored */
```

NOTE: Statistic names can vary from Platform to Platform and even be version specific.

So if you want to convert the times (expressed in seconds) back into percentages, then total elapsed time is following:

```
e = BUSY_TIME            + IDLE_TIME + IOWAIT TIME
or
e = SYS_TIME + USER_TIME + IDLE_TIME + IOWAIT_TIME
        (since BUSY_TIME = (SYS_TIME+USER_TIME) )
```

E should also be roughly close to the elapsed time of the report:

```
 (59.78 min * 60 seconds/min * 8 (NUM_CPUS))
```

However, since the report itself takes time to run (actually the snapshots take time as well). Neither the snapshot, the V$ tables that the snapshot is taken from nor the report itself are from a single consistent point in time.

At this point you can see,

```
(BUSY_TIME / e) = %busy

CPU used by this session                  234,148           65.3         112.4
```

This is CPU time Oracle reports it used (though we don't include time spent in SQL*Net code and maybe not all background processes may be reporting the CPU time they used). It is expressed in centiseconds (1/100th of a second) rather than seconds. So:

```
234,148 / (e * 100)
```

will tell you what percent of the total CPU resources on the machine Oracle was keeping busy.
In fact it is probably easier to look at DB CPU statistic for this since that is already in seconds.

Note that:

```
BUSY_TIME - "DB CPU" = Activity outside of the database
```

i.e. the amount of CPU usage that seems to be because of things mostly happening outside the database.

Didn't find what you are looking for?