

TEN TIPS FOR USING AWR

TOP TEN TIPS

Sometimes we just want to get a quick idea of how things look on a database. Reviewing an AWR report is one way to do that. Here are ten most-used methods.



CHECK THE TOP-5 FOREGROUND EVENTS

Almost always, a database will be waiting most often on disk reads--usually sequential reads for OLTP-type applications, or direct path read (or scattered read) for databases running batch jobs doing full scans. Very often, CPU time is the next event. Below is one such typical report.

Top 5 Timed Foreground Events

Event	Waits	Time(s)	Avg wait (ms)	% DB time	Wait Class
db file sequential read	7,202,983	54,532	8	37.40	User I/O
db file scattered read	1,638,646	26,803	16	18.38	User I/O
DB CPU		20,566		14.11	
gc cr grant 2-way	2,096,011	5,021	2	3.44	Cluster
gc current block 3-way	850,526	2,637	3	1.81	Cluster

CHECK THE SEQUENTIAL READ RATE

The sequential read rate is a great metric. You can compare that number across platforms, whereas the scattered read metric is not easily comparable. Disk latency should always be below 10 ms, or at least 100 reads/sec. Depending on how the SAN is caching data, the sequential read rate is sometimes as low as 2 ms. That indicates the SAN has already cached the data, not that the disk drives are really fast.

In the excerpt above, you can see we have 8 ms latency.

REVIEW TOP-SQL BY ELAPSED TIME

This is a convenient, easy way to see the longest runtime for that period. Here is an example:

SQL ordered by Elapsed Time

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Elapsed Time (s)	Executions	Elapsed Time per Exec (s)	%Total	%CPU	%IO	SQL Id	SQL Module	SQL Text
143,527.95	0		19.74	3.47	93.08	3dbr0dbpm8jt2	rtsora@cisint01 (TNS V1-V3)	select A.ACCT_ID , TO_CHAR(max...
95,211.87	7,639,784	0.01	13.10	1.10	96.17	gzyskq2d6cn4z	rtsora@cisint01 (TNS V1-V3)	select BSQ.BILL_SQ into :b1 fr...
60,758.69	427,550	0.14	8.36	2.82	93.44	bc7nxbnyxjhhq	CMSMBILL	SELECT MAX(BSEG.END_DT) FROM C...
40,266.72	29,964	1.34	5.54	6.61	88.38	190gt92kqvkvg	rtsora@cisint01 (TNS V1-V3)	select SM208.SA_ID , SM208.INT...
36,586.55	18,249,214	0.00	5.03	2.36	88.57	1yxngg5scc836	WFET	SELECT EVT.WF_PROC_ID, EVT.EVT...
33,491.51	18,236,268	0.00	4.61	4.26	65.05	a02ab5abgf9u	WFET	SELECT EVT1.WF_PROC_ID, EVT1.E...

CHECK TOTAL DATABASE TIME

This value is shown in several places; here is one place to look for it.

Time Model Statistics

Statistic Name	Time (s)	% of DB Time
sql execute elapsed time	712,756.64	98.03
DB CPU	36,385.55	5.00
connection management call elapsed time	1,239.24	0.17
parse time elapsed	1,072.93	0.15
hard parse elapsed time	866.78	0.12
DB time	727,051.18	

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background elapsed time	21,263.36	
background cpu time	5,751.13	

CHECK FOR EXTREME DISK CONSUMERS

It's a good idea to know which sql is doing all the disk reads.

SQL ordered by Reads

Physical Reads	Executions	Reads per Exec	%Total	Elapsed Time (s)	%CPU	%IO	SQL Id	SQL Module	SQL Text
29,923,048	0		22.51	143,527.95	3.47	93.08	3dbr0dbpm8jt2	rtsora@cisint01 (TNS V1-V3)	select A.ACCT_ID , TO_CHAR(max...
26,037,592	427,550	60.90	19.59	60,758.69	2.82	93.44	bc7nxbnyxjihq	CMSMBILL	SELECT MAX(BSEG.END_DT) FROM C...
17,710,668	20	885,533.40	13.33	7,860.62	2.02	94.90	a5u9a5sfvv9x7	CMISO1	SELECT A.BSEG_ID, A.SA_ID, A.E...
8,343,008	8	1,042,876.00	6.28	2,102.37	7.31	83.96	a22bn9ftt78ys	APAYCRET	SELECT BILL_ID, ACCT_ID, APAY_...
5,781,406	7,639,784	0.76	4.35	95,211.87	1.10	96.17	gzyskq2d6cn4z	rtsora@cisint01 (TNS V1-V3)	select BSQ.BILL_SQ into :b1 fr...
4,371,069	29,964	145.88	3.29	40,266.72	6.61	88.38	190gt92kqvkyg	rtsora@cisint01 (TNS V1-V3)	select SM208.SA_ID , SM208.INT...
2,875,952	18,249,214	0.16	2.16	36,586.55	2.36	88.57	1yxngg5scc836	WFET	SELECT EVT.WF_PROC_ID, EVT.EVT...

CHECK FOR LOGICAL READS HOGS

This is really helpful to spot inefficient sql, because sub-optimum sql often uses a ton of gets per execution.

SQL ordered by Gets

Buffer Gets	Executions	Gets per Exec	%Total	Elapsed Time (s)	%CPU	%IO	SQL Id	SQL Module	SQL Text
1,242,039,408	18,236,268	68.11	51.10	33,491.51	4.26	65.05	a02ab5abgf9u	WFET	SELECT EVT1.WF_PROC_ID,

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									EVT1.E...
439,666,977	0		18.09	143,527.95	3.47	93.08	3dbr0dbpm8jt2	rtsora@cisint01 (TNS V1-V3)	select A.ACCT_ID , TO_CHAR(max...
165,172,647	29,964	5,512.37	6.80	40,266.72	6.61	88.38	190gt92kqvkvg	rtsora@cisint01 (TNS V1-V3)	select SM208.SA_ID , SM208.INT...
129,835,289	18,249,214	7.11	5.34	36,586.55	2.36	88.57	1yxngg5scc836	WFET	SELECT EVT.WF_PROC_ID, EVT.EVT...
36,665,704	7,639,784	4.80	1.51	95,211.87	1.10	96.17	gzyskq2d6cn4z	rtsora@cisint01 (TNS V1-V3)	select BSQ.BILL_SQ into :b1 fr...
36,388,692	427,550	85.11	1.50	60,758.69	2.82	93.44	bc7nxbnyxijhq	CMSMBILL	SELECT MAX(BSEG.END_DT) FROM C...
21,523,310	3,311,776	6.50	0.89	1,853.92	3.08	77.67	ax9dtwr4bmx94	WFET	SELECT WFPC.CHAR_VAL, WFPC.ADH...
19,269,938	1	19,269,938.00	0.79	1,453.02	9.28	81.06	2mu49wczxm04v	SQL*Plus	BEGIN pkg_sm_i80b_utilities.S P...

CHECK COMMIT RATE

If there is any problem with log syncs, or slowness performing a ton of transactions, it's worth seeing how often the user is committing. You can see this under the section, "Instance Activity," as shown below:

Instance Activity Stats

Statistic	Total	per Second	per Trans
user calls	82,406,181	4,580.45	131.73
user commits	610,551	33.94	0.98
user rollbacks	15,008	0.83	0.02

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SPOT UNUSUAL SYSTEM LOAD

I like to look at the change in load by time, as shown in the OS Detail:

Operating System Statistics - Detail

Snap Time	Load	%busy	%user	%sys	%idle	%iowait
19-Apr 01:00:10	4.79					
19-Apr 02:00:05	5.03	5.59	3.77	1.82	94.41	2.53
19-Apr 03:00:02	6.55	3.69	2.46	1.23	96.31	2.06
19-Apr 04:00:16	6.12	7.34	5.17	2.17	92.66	2.48
19-Apr 05:00:12	5.26	6.22	4.51	1.71	93.78	2.05
19-Apr 06:00:00	12.19	7.95	5.30	2.66	92.05	2.87

CHECK TOP SEGMENTS OF LOGICAL READS

This is useful to see if there are any objects that are very "hot."

Segments by Logical Reads

Owner	Tablespace Name	Object Name	Subobject Name	Obj. Type	Logical Reads	%Total
CCBP	MASTER_TABLES_DATA_01	CI_INTV_PF		TABLE	90,129,744	3.71
CCBP	CI_INTV_DATA_GLBL_INDX_01	XT234P0		INDEX	35,699,520	1.47
CCBP	CI_FT_GLBL_INDX_01	XT112S1		INDEX	28,612,848	1.18
CCBP	MASTER_TABLES_INDX_01	XM208S1		INDEX	28,432,816	1.17
CCBP	CI_WF_EVT_INDX_01	XT042P0	XT042P0_040	INDEX PARTITION	26,150,064	1.08

CHECK TOP SEGMENTS BY PHYSICAL READS

Similarly, see where all the disk i/o is going:

Segments by Physical Reads

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Owner	Tablespace Name	Object Name	Subobject Name	Obj. Type	Physical Reads	%Total
CCBP	CI_INTV_DATA_GLBL_INDX_01	XT234P0		INDEX	4,079,235	3.07
CCBP	CI_FT_GLBL_INDX_01	XT112S1		INDEX	2,317,052	1.74
CCBP	CI_BSEG_GLBL_INDX_01	XT048S2		INDEX	1,420,668	1.07
CCBP	CM_TABLES_DATA_007	CM_CC_ST		TABLE	616,577	0.46
CCBP	CI_FT_DATA_008	CI_FT	CI_FT_PART_056	TABLE PARTITION	447,772	0.34