

IBM DB2 for i: Tips

Database monitor analysis queries

For [database monitor analysis queries](#) to run against data collected on IBM i servers with pre-V5R4M0 releases installed.

*) Identify the most time consuming jobs
 *) (can use QVC102 instead of QQUSET to group on current user):
 SELECT SUM(qqi6) "Total Time", COUNT(*) "Total SQL Requests",
 qqjnum, qqjob, qquser FROM ??File Name
 WHERE qqrnid=1000 AND qqc21 <> 'MT'
 GROUP BY qqjob, qquser, qqjnum ORDER BY 1 DESC

*) Identify which type of SQL operations account for the most run time:
 SELECT SUM(qqi6) "Total Time", COUNT(*) "Nbr of Requests",
 qqc21 "Operation Type" FROM ??File Name
 WHERE qqrnid=1000 AND qqc21 <> 'MT' AND qqjnum=??'xxxxxx'
 GROUP BY qqc21 ORDER BY 1 DESC

*) Which SQL statements account for the most run time:
 SELECT SUM(qqi6) "Total Time" , COUNT(*) "Nbr Times Run", qq1000
 FROM ??File Name
 WHERE qqjnum=??'xxxxxx' AND qqrnid=1000 AND qqcnt<>0
 AND qqc21<>'MT'
 GROUP BY qq1000 ORDER BY 1 DESC

*) Which SQL statements are the longest running
 *) (include Fetch & Close time with SELECT statement):
 WITH ExecTime AS (SELECT qqjfld, sum(qqi6)
 AS exectot FROM ??File Name
 WHERE qqrnid=1000 AND
 (qqc21 IN ('SI','OP','FE','CL','IN','UP','DL')
 OR (qqcnt>0 AND qqc21 IN('SV','VI'))) GROUP BY qqjfld),
 StmtText AS (SELECT DISTINCT qqjfld, qq1000L FROM ??File Name
 WHERE qqrnid=1000 AND (qqc21 IN ('SI','OP','IN','UP','DL')
 OR (qqcnt>0 AND qqc21 IN('SV','VI'))))
 SELECT sum(x.exectot) "Total Time", s.qq1000L
 FROM ExecTime x, StmtText s
 WHERE x.qqjfld = s.qqjfld GROUP BY s.qq1000L ORDER BY 1 DESC

*) Which SQL statements are the longest running and how many times have they been
 *) executed (include Fetch & Close time with SELECT statement):
 WITH ExecTime AS (SELECT qqjfld, sum(qqi6) AS exectot FROM
 ??File Name WHERE qqrnid=1000 AND
 (qqc21 IN ('SI','OP','FE','CL','IN','UP','DL')
 OR (qqcnt>0 AND qqc21 IN('SV','VI'))) GROUP BY qqjfld) ,
 StmtText AS (SELECT DISTINCT qqjfld, qq1000L FROM
 ??File Name WHERE qqrnid=1000 AND (qqc21 IN

```
('SI','OP','IN','UP','DL')
OR (qqucnt>0 AND qqc21 IN('SV','VI'))),
StmtCnt AS (SELECT qq1000L, count(*) AS cntr FROM
??File Name WHERE qqrid=1000 AND
(qqc21 IN ('SI','OP','FE','CL','IN','UP','DL')
OR (qqucnt>0 AND qqc21 IN('SV','VI')) )
GROUP BY qq1000L) SELECT sum(x.exectot)
"Total Time", max(cntr) "Nbr Times Run", s.qq1000L
FROM ExecTime x, StmtText s, StmtCnt c
WHERE x.qqjfld = s.qqjfld AND s.qq1000L = c.qq1000L
GROUP BY s.qq1000L ORDER BY 1 DESC
```

*) Which queries involve table scans and show the "Estimated rows"

*) selected" versus "Total rows in tables":

```
WITH tablescans AS (SELECT DISTINCT qqjfld, qqucnt,
qqrest,qqtotr FROM ??File Name
WHERE qqrid=3000)
SELECT SUM(qqi6) "Total Time", COUNT(*) "Times Run",
a.qqucnt, integer(avg(b.qqrest)) "Est Rows Selected",
integer(avg(b.qqtotr)) "Total Rows in Table", qq1000
FROM ??File Name a, tablescans b WHERE
qqrid=1000 AND a.qqjfld = b.qqjfld AND qqc21 IN
('OP','SI','SV','UP','IN','DL')
GROUP BY a.qqucnt, qq1000 ORDER BY 1 DESC
```

*) Which indexes are advised the most often?

```
SELECT qqucnt, qvqtbl "Table Name", qvqlib "Schema",
qqi2 "Nbr of Primary Keys", SUBSTR(qqidxd, 1,100) "Keys Advised"
FROM ??File Name
WHERE qqrid IN (3000, 3001, 3002) and qqidxa='Y' ORDER BY 5,2
```

*) Which index builds are done the most often?

```
SELECT qqucnt, qqc16 "Index Reused" qvptbl "Table Name",
qvplib "Schema", qqtotr "Rows in Table",
qqridx "Entries in Index",
qq1000L "Key Fields" FROM ??File Name
WHERE qqrid=3002 AND qqjnum=??'xxxxxx'
ORDER BY qqridx DESC
```

*) Which queries had access plans rebuilt?

```
WITH rebuilds AS (SELECT DISTINCT qqjfld, qqucnt, qqrcod
FROM ggpl.snapshot1 WHERE qqrid=3006 )
SELECT a.qqucnt, b.qqrcod "Rebuild Reason",
qvc24 "Plan Saved Status", qq1000 FROM ggpl.snapshot1 a,
rebuilds b WHERE a.qqjfld=b.qqjfld AND qqrid=1000
AND qqc21 NOT IN ('MT','FE','CL','HC') ORDER BY 4, 1
```

*) Which queries were processed by SQE vs CQE?

```
(QQC16='Y' implies SQE, 'N'= CQE)
SELECT qqc16, COUNT(*) FROM ??File Name
WHERE qqrid=3014 GROUP BY qqc16
```

*) Which column statistics have been advised by SQE?

```
SELECT qqucnt, qvqtbl "Table", qvqlib "Schema",
qqc11"Reason Stat Advised", SUBSTR(qq1000,1,100) "Column name"
FROM ??File Name
WHERE qqrid=3015
ORDER BY 2,5
```

```
*) Analyze I/O activity for most time consuming SQL
statements: WITH retrieved AS
(SELECT qqjfld, qqi3, qqi5 FROM ??File Name
WHERE qgrid=3019 ) SELECT SUM(qqi6) "Total Time" ,
COUNT(*) "Nbr Times Run",
SUM(b.qqi3) "Sync DB Reads", SUM((b.qqi5) "ASync DB Reads",
qq1000 FROM ??File Name a, retrieved b
WHERE a.qqjfld=b.qqjfld AND qgrid=1000
AND qqcnt<>0 AND qqc21<>'MT'
GROUP BY qq1000 ORDER BY 1 DESC
```

```
*) Which SQL requests are significantly affected by Full Opens:
SELECT SUM(qqi6) "Total Time" , COUNT(*) "Nbr Full Opens",
qq1000 FROM ??File Name
WHERE qqjnum=??'xxxxxx' AND qgrid=1000 AND qqi5=0
AND (qqc21 IN ('OP','SI','DL','IN','UP')
OR (qqcnt>0 AND qqc21 IN('SV','VI')))
GROUP BY qq1000 ORDER BY 1 DESC
```

```
*) What are the reasons causing the Full Opens:
SELECT qqc21, qqc15 "HC Reason", qqc23 "HC Subcode",
COUNT(*) "HC Count" FROM ??File Name
WHERE qgrid=1000 AND qqc21 IN ('HC','IN','UP','DL') AND
qqc15>'' AND qqc23>'' AND qqjnum= ??'xxxxxx'
GROUP BY qqc21, qqc15, qqc23 ORDER BY 1
```

```
*) How long are the stored procedure calls running and how many
*) SQL operations are being performed during the calls
(Replace QQC103 with QVC1282 to return the "long"
SQL Procedure Name)?
SELECT qqc104 AS "Proc Schema", qqc103 AS "Procedure" ,
SUM (qqi6) "Total Time" , COUNT (*) "Nbr of Requests" ,
qqc21 "Operation Type" FROM ??File Name
WHERE qgrid=1000 AND qqc21<>'MT' AND qqc103<> ''
GROUP BY qqc104, qqc103, qqc21 ORDER BY 1,2,5
```

```
*) Which SQL instances (QQUCNT) account for the most run time ?
SELECT SUM(qqi6) "Total Time" , COUNT(*) "Nbr Times Run", qqcnt
FROM ??File Name
WHERE qqjnum=??'xxxxxx' AND qgrid=1000 AND qqcnt<>0
AND qqc21<>'MT'
GROUP BY qqcnt ORDER BY 1 DESC
```

```
*) Which SQL instances (QQUCNT & text) account for
the most run time ?
SELECT SUM(qqi6) "Total Time" , COUNT(*) "Nbr Times Run",
qqcnt, qq1000
FROM ??File Name
WHERE qqjnum=??'xxxxxx' AND qgrid=1000 AND qqcnt<>0
AND qqc21<>'MT'
GROUP BY qqcnt, qq1000 ORDER BY qqcnt, 1 DESC
```

```
*) Which queries involve use of a query sort?
WITH sorts AS (SELECT qqjfld, qqcnt FROM ??File Name
WHERE qgrid=3003 )
SELECT SUM(qqi6) "Total Time" , COUNT(*) "Nbr Times Run",
a.qqcnt, qq1000
FROM ??File Name a, sorts b
WHERE qgrid=1000 AND a.qqjfld=b.qqjfld
```

```
GROUP BY a.qqucnt,qq1000 ORDER BY 1 DESC
```

*) Analyze I/O & CPU activity for most frequently run SQL statements:

```
WITH listSQL AS (SELECT DISTINCT qqjfld, qq1000L
FROM ??File Name WHERE qqrid=1000 AND
(qqc21 IN ('SI','OP','IN','UP','DL')
OR (qqucnt>0 AND qqc21 IN('SV','VI')) )
SELECT COUNT(*) timesrun, SUM(a.qqil) cpums,
SUM(a.qqi2) elpms, SUM(a.qqi3) synrds,
SUM(a.qqi4) synwrts, SUM(a.qqi5) asyrdts,
SUM(a.qqi6) asywrtts, SUM(a.qqi7) rowsread,
SUM(a.qqi8) as readcalls,
qq1000L FROM ??File Name a, listSQL b
WHERE a.qqjfld=b.qqjfld AND a.qqrid=3019
GROUP BY b.qq1000L ORDER BY 1 DESC
```

*) Which non-SQL queries are the most time consuming?

```
WITH retrieved AS (SELECT qqjfld, qqucnt, qqi2,qqi7
FROM ??File Name WHERE qqrid=3019 )
SELECT (qqi1+b.qqi2) "Total Query Time",
b.qqi7 "Number Rows Retrieved", qqc101 "Open ID", qquser
FROM ??File Name a, retrieved b
WHERE a.qqjfld=b.qqjfld AND qqrid=3014
ORDER BY 1 DESC
```
