



Speedgain for DB2

Unit of Work Monitoring

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Unit of Work Monitoring

To find the reason for the log space problem we are searching for an application with a red traffic light in the application list. There is an application with a threshold violation because of a long running transaction. This is the reason for the problem because the log space cannot be released. After forcing this application the log space is released.

But as it can be seen from the following picture the log space needed by the application is very thin!

The screenshot shows the DB2 System Monitor interface. The left pane displays a tree view of system components, with 'Applications' expanded to show several instances of 'FPBPROD C0A8D0D7.C...'. One instance has a red traffic light icon. The right pane shows the 'UOW-Activity for application FPBPROD C0A8D0D7.C...' window. It contains a 'Current Snapshot' section with the following data:

| Property | Value |
|----------------------------------|-------------------------|
| Snapshot Time | 2006-02-04 11:15:22.663 |
| Unit Of Work Status | EXECUTING |
| Unit Of Work Age [s] | 24.769,792726 |
| Unit Of Work Start Timestamp | 2006-02-04 04:22:32.0 |
| Unit Of Work Stop Timestamp | |
| Unit Of Work Log Space Used | 12.384 |
| Unit Of Work Lock Wait Time [ms] | 0 |
| Unit Of Work Completion Status | NOT DEFINED |
| Prev Unit Of Work Compl Tstamp | 2006-02-04 04:22:32.0 |
| Recent Unit Of Work Elapsed [s] | 0,008129 |
| Total Units Of Work | 7.524 |

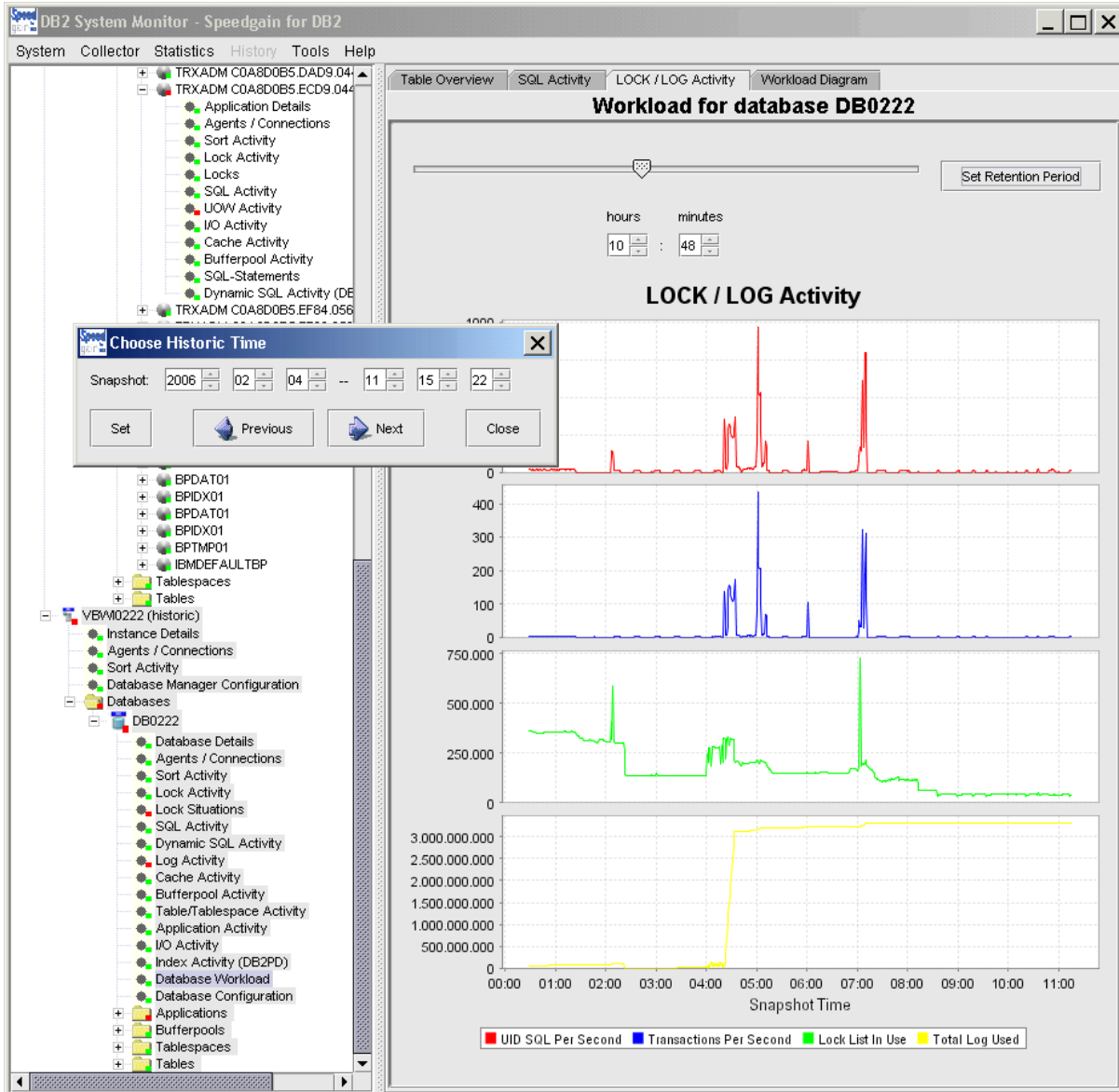
Below the current snapshot is a 'Last Snapshots' table:

| Snapshot Time | Unit Of Work Status | Unit Of Work Age [s] | Unit Of Work Start Time |
|---------------|---------------------|----------------------|-------------------------|
| 11:15:22 | EXECUTING | 24.769,792726 | 2006-02-04 04:22:32.0 |
| 11:07:22 | EXECUTING | 24.289,769846 | 2006-02-04 04:22:32.0 |
| 11:06:22 | EXECUTING | 24.229,769049 | 2006-02-04 04:22:32.0 |
| 11:05:22 | EXECUTING | 24.169,765896 | 2006-02-04 04:22:32.0 |
| 11:04:22 | EXECUTING | 24.109,763653 | 2006-02-04 04:22:32.0 |

A 'Choose Historic Time' dialog box is overlaid on the table, showing a date picker for 2006-02-04 and a time picker for 11:15:22. The dialog includes 'Set', 'Previous', 'Next', and 'Close' buttons.

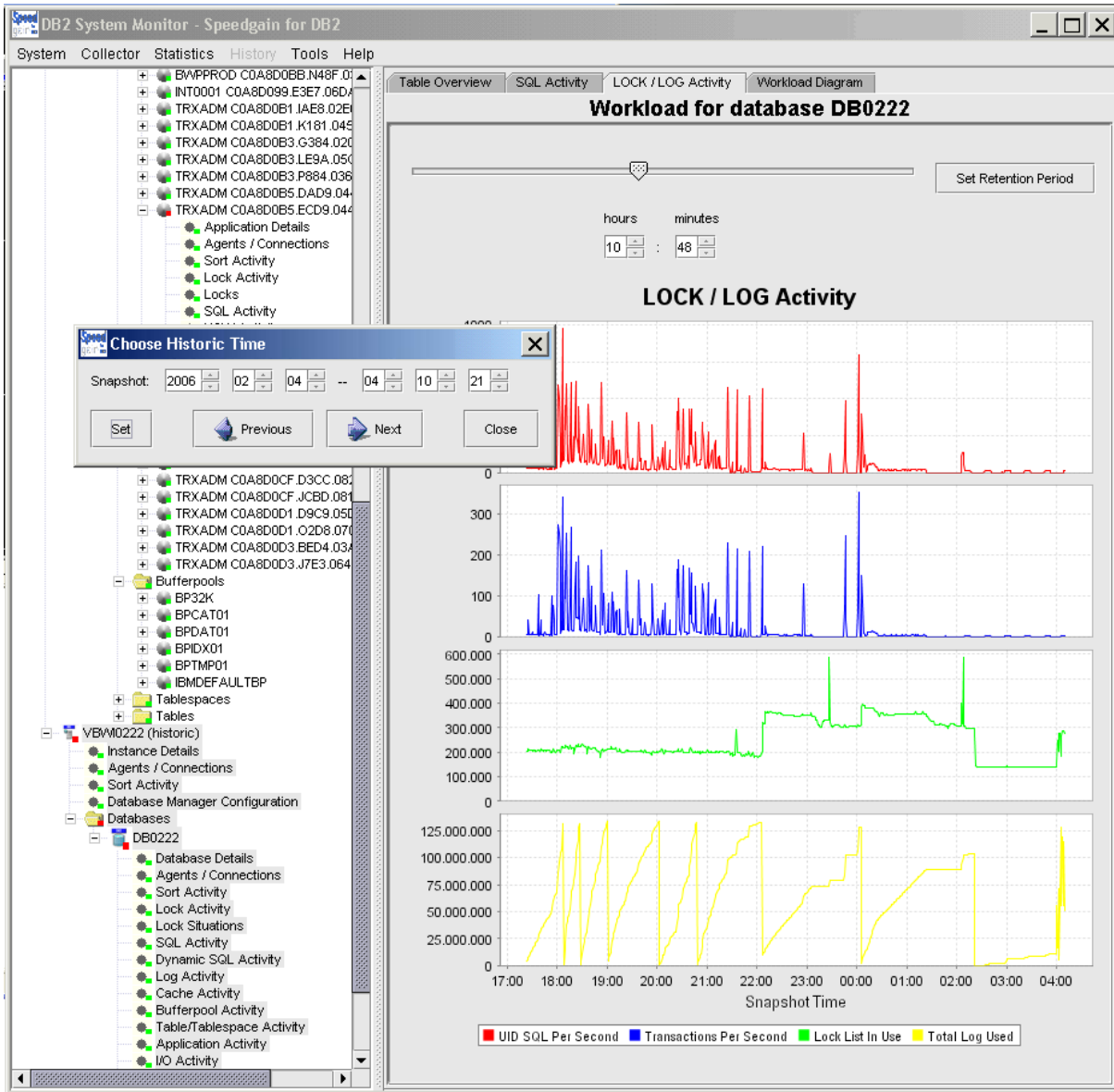
Unit of Work Monitoring

The Workload diagram from Speedgain for DB2 3.0 shows the course of time of the log space usage. The log space usage increases at 4:00 am.



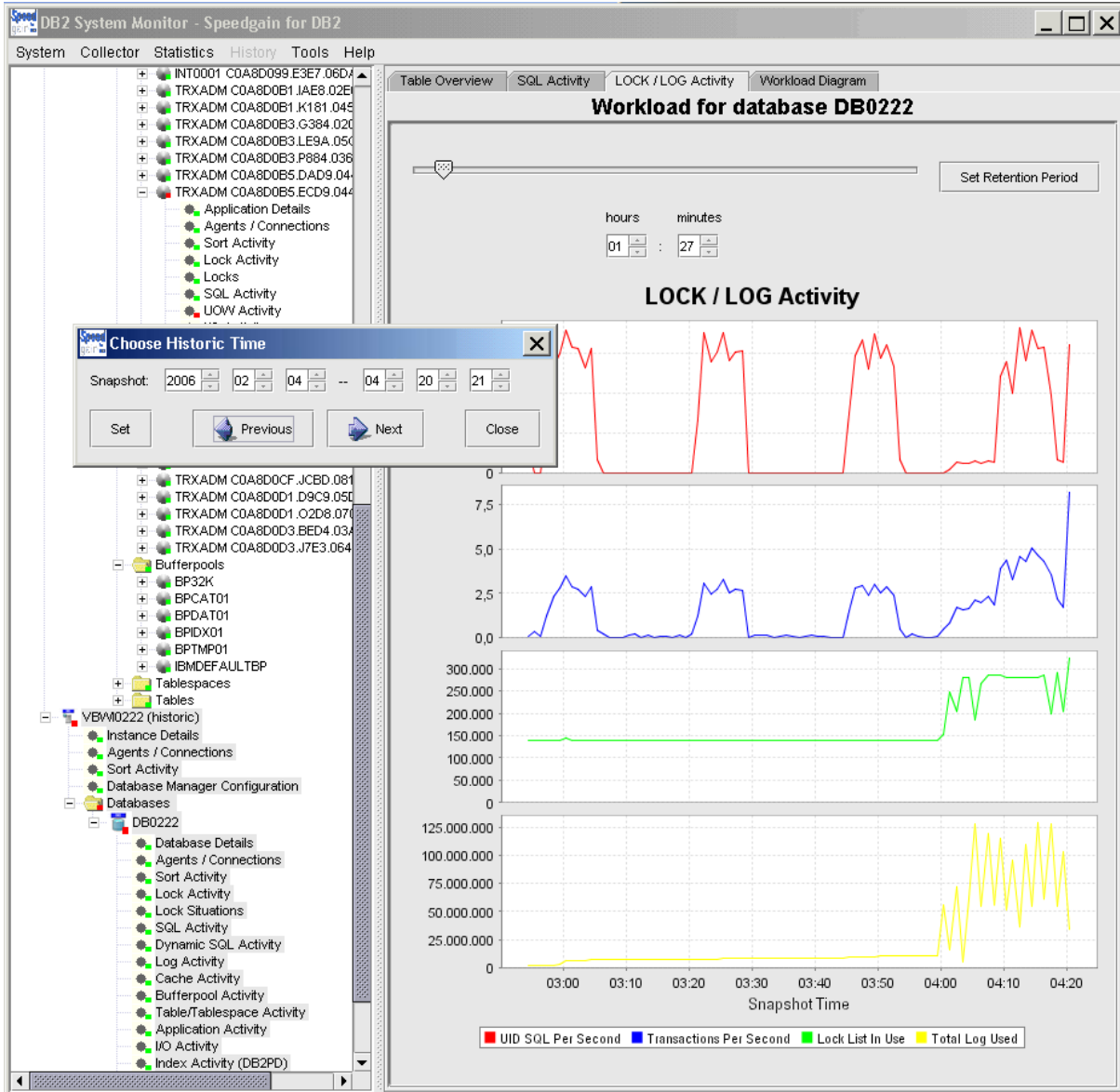
Unit of Work Monitoring

To see what happened we travel back in time with "Choose History Time Functionality".



Unit of Work Monitoring

Decrease the "Retention Period" of the Workload diagram with the slider to see in detail the course in time for the log storage usage.



Unit of Work Monitoring

Look for the applications with a red traffic light.

The screenshot displays the DB2 System Monitor interface. A dialog box titled "Choose Historic Time" is open, showing a snapshot of 2006-02-04 04:20:21. The main window shows the "Agents/Connections for application FPBPROD C0A8D0D7.GAA2.060..." section. A "Current Snapshot" panel shows the following data:

- Snapshot Time: 2006-02-04 04:20:21.491
- User CPU Time [s]: 811,403710
- User CPU Time Relative [s]: 41,161205
- System CPU Time [s]: 17,174329
- System CPU Time Relative [s]: 0,745003
- Agents Working On A Statement: 1
- Stolen Agents: 0
- Number Of Associated Agents: 1
- Max Number Associated Agents: 1
- Curr Agents Waiting On Locks: 0
- Application Agent Priority: 0
- Application Priority Type: 2
- Connec Req Start Tstamp: 2006-02-04 04:00:35.0
- Connec Req Completion Tstamp: 2006-02-04 04:00:35.0

The "Last Snapshots" table below shows a history of snapshots with the following columns: Snapshot Time, User CPU Time [s], User CPU Time Relative [s], System CPU Time [s], and System CPU Time Relative [s]. Several rows are highlighted in red, indicating high relative CPU times.

| Snapshot Time | User CPU Time [s] | User CPU Time Relative [s] | System CPU Time [s] | System CPU Time Relative [s] |
|---------------|-------------------|----------------------------|---------------------|------------------------------|
| 04:20:21 | 811,403710 | 41,161205 | 17,174329 | 0,745003 |
| 04:19:21 | 770,242505 | 39,070344 | 16,429326 | 0,745003 |
| 04:18:21 | 731,172161 | 40,494891 | 15,523118 | 0,745003 |
| 04:17:21 | 690,677270 | 41,152412 | 14,746851 | 0,745003 |
| 04:16:21 | 649,524858 | 41,646774 | 13,942251 | 0,745003 |
| 04:15:21 | 607,878084 | 42,532017 | 13,172375 | 0,745003 |
| 04:14:21 | 565,346067 | 43,072298 | 12,390246 | 0,745003 |
| 04:13:21 | 522,273769 | 42,585752 | 11,457659 | 0,745003 |
| 04:12:21 | 479,688017 | 42,612579 | 10,530934 | 0,745003 |
| 04:11:21 | 437,075438 | 38,631671 | 9,611048 | 0,745003 |
| 04:10:21 | 398,443767 | 42,217871 | 8,734150 | 1,021388 |
| 04:09:21 | 356,225896 | 40,915001 | 7,620818 | 0,745003 |
| 04:08:21 | 315,310895 | 41,993161 | 6,957863 | 0,745003 |
| 04:07:21 | 273,317734 | 41,367352 | 6,024319 | 0,745003 |
| 04:06:21 | 231,950382 | 40,687360 | 5,113226 | 0,745003 |
| 04:04:21 | 149,930842 | 39,832933 | 3,449843 | 0,745003 |
| 04:03:21 | 110,097909 | 41,291146 | 2,676507 | 0,745003 |
| 04:02:21 | 68,806763 | 40,331732 | 1,927596 | 0,745003 |
| 04:01:21 | 28,475031 | | 1,021388 | |

Unit of Work Monitoring

Look in detail about the characteristic of the application with a lot of cpu consumption. It is a online tablespace reorg (inplace reorg).

The screenshot displays the DB2 System Monitor interface. The left pane shows a tree view of system components, with 'Applications' expanded to show 'FPBPROD C0A8D0D7.GAA2.060204030035'. A 'Choose Historic Time' dialog box is open, showing a date of 2006-02-04 04:20:21. The main pane is titled 'Details for application FPBPROD C0A8D0D7.GAA2.060204030035' and contains two 'Current Snapshot' sections and a 'Last Snapshots' table.

Current Snapshot (Left):

- Snapshot Time: 2006-02-04 04:20:21.491
- Application Handle: 516
- Application Status: connect completed
- Is Blocking: No
- ID Of Code Page Used By ...: 819
- Number Of Associated Ag...: 1
- Coordinating Node: 0
- Authorization Level: 18.291.774
- Application Name: db2reorg
- Application ID: C0A8D0D7.GAA2.060204030035
- Sequence Number: 0004
- Authorization ID: FPBPROD

Current Snapshot (Right):

- Configuration NNAME Of Cli...: BRZ1SRVBL26
- Client Product Version ID: SQL08022
- Input Database Alias: DB0222
- Database Alias Used By Appl: DB0222
- Database Name: DB0222
- Database Path: /db2/data1/db0222/bwi0222/
- User Login ID: FPBPROD
- DRDA Correlation Token: C0A8D0D7.GAA2.05F864030035
- TP Mon Client User ID:
- TP Mon Client Workstation N...:
- TP Mon Client Application N...:
- TP Mon Client Account String:
- Time Waited For Prefetch [ms]: 0
- Application Idle Time [s]: 0
- Last Reset Timestamp:
- Statement Exec Elapsed Time:
- Inbound Communication Ad...:

Last Snapshots Table:

| Snapshot Time | Application Handle | Application Status | Is Blocking | ID Of Code Page Used By Appl | Number Of Associated Agents |
|---------------|--------------------|--------------------|-------------|------------------------------|-----------------------------|
| 04:20:21 | 516 | connect completed | No | 819 | |
| 04:19:21 | 516 | connect completed | No | 819 | |
| 04:18:21 | 516 | connect completed | No | 819 | |
| 04:17:21 | 516 | connect completed | No | 819 | |
| 04:16:21 | 516 | connect completed | No | 819 | |
| 04:15:21 | 516 | connect completed | No | 819 | |
| 04:14:21 | 516 | connect completed | No | 819 | |
| 04:13:21 | 516 | connect completed | No | 819 | |
| 04:12:21 | 516 | connect completed | No | 819 | |
| 04:11:21 | 516 | connect completed | No | 819 | |
| 04:10:21 | 516 | connect completed | No | 819 | |
| 04:09:21 | 516 | connect completed | No | 819 | |
| 04:08:21 | 516 | connect completed | No | 819 | |
| 04:07:21 | 516 | connect completed | No | 819 | |
| 04:06:21 | 516 | connect completed | No | 819 | |
| 04:05:21 | 516 | connect completed | No | 819 | |
| 04:04:21 | 516 | connect completed | No | 819 | |
| 04:03:21 | 516 | connect completed | No | 819 | |
| 04:02:21 | 516 | connect completed | No | 819 | |
| 04:01:21 | 516 | connect completed | No | 819 | |

Unit of Work Monitoring

With the Table/Tablespace Activity Information Speedgain for DB2 3.0 we display the table with the most page reorganizations.

Table/Tablespace Activity for database DB0222

Most rows read/written (select first 30 rows)

| Table/Space | Rows Affected | Rows Read | Rows Written | Accesses To Overflow Rec | Page Reorganizations |
|-------------|---------------|---------------|--------------|--------------------------|----------------------|
| | 204,123 | 0 | 204,123 | 0 | 134,796 |
| | 1,192,998,413 | 1,192,776,162 | | 0 | 64,180 |
| | 142,744 | 125,999 | | 0 | 11,723 |
| | 83,487,108 | 83,451,413 | | 0 | 10,947 |
| | 22,343 | 6,986 | 15,357 | 0 | 9,119 |
| | 7,756,693 | 7,140,734 | 615,959 | 0 | 7,055 |
| | 1,038,383 | 1,001,469 | 36,914 | 0 | 6,904 |
| | 216,169 | 84,208 | 131,961 | 0 | 1,373 |
| | 6,445,484 | 6,439,293 | 6,191 | 0 | 792 |
| | 3,842,546 | 3,442,463 | 400,083 | 0 | 678 |
| | 271,307 | 108,446 | 162,861 | 0 | 581 |
| | 123,431 | 48,932 | 74,499 | 0 | 494 |
| | 755,207 | 692,389 | 62,818 | 0 | 407 |
| | 207,970 | 95,546 | 112,424 | 0 | 267 |
| | 68,250 | 27,300 | 40,950 | 0 | 139 |
| | 468,704 | 467,889 | 815 | 0 | 126 |
| | 37,645,856 | 37,643,247 | 2,609 | 0 | 99 |
| | 1,942,836 | 1,349,054 | 593,782 | 0 | 67 |
| | 91,015 | 36,406 | 54,609 | 0 | 55 |
| | 80,981 | 32,000 | 48,981 | 0 | 34 |
| | 171,848 | 69,314 | 102,534 | 0 | 31 |

Choose Historic Time

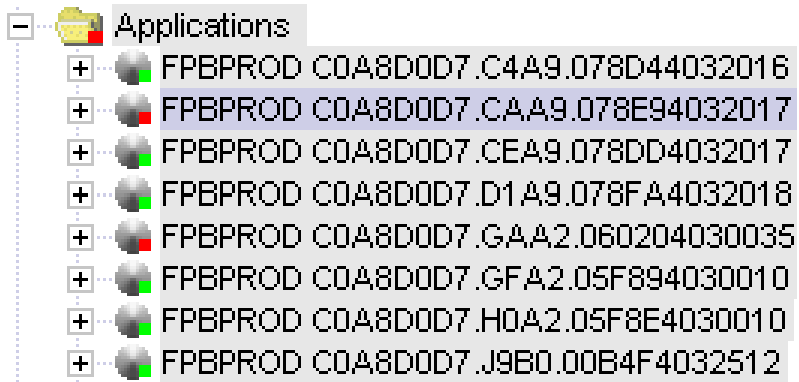
Snapshot: 2006-02-04 04:20:21

Previous Next Close

| Time | Table/Space | Rows Read | Buffer Data Logical Reac |
|----------|-------------|-----------|--------------------------|
| 04:20:21 | R55FP2128 | 0,00 | 228,243 |
| 04:20:21 | R55FP2126 | 0,00 | 228,248 |
| 04:20:21 | R55FP2124 | 0,00 | 228,259 |
| 04:20:21 | R55FP2122 | 0,00 | 228,252 |
| 04:20:21 | R55FP2120 | 0,00 | 228,240 |
| 04:20:21 | R55FP2118 | 0,00 | 228,256 |
| 04:20:21 | R55FP2116 | 0,00 | 228,236 |
| 04:20:21 | R55FP2114 | 0,00 | 228,259 |
| 04:20:21 | R55FP2112 | 0,00 | 228,253 |
| 04:20:21 | R55FP2110 | 0,00 | 16,000 |
| 04:20:21 | R55FP2108 | 0,00 | 16,000 |
| 04:20:21 | R55FP2106 | 0,00 | 16,000 |
| 04:20:21 | R55FP2131 | 0,00 | 228,255 |
| 04:20:21 | R55FP2129 | 0,00 | 228,276 |
| 04:20:21 | R55FP2127 | 0,00 | 228,249 |

Unit of Work Monitoring

There are two applications, which were responsible for the stagnation of the database.



Unit of Work Monitoring

The causer application, which disabled the release of the log space is the application with the open UOW over a long time.

The screenshot displays the DB2 System Monitor interface. The left pane shows a tree view of system components, with 'Applications' expanded to show several instances of 'FPBPROD'. The right pane is titled 'UOW-Activity for application FPBPROD C0A8D0D7.C...' and contains two sections: 'Current Snapshot' and 'Last Snapshots'.

Current Snapshot

| | |
|----------------------------------|-------------------------|
| Snapshot Time | 2006-02-04 04:33:21.525 |
| Unit Of Work Status | EXECUTING |
| Unit Of Work Age [s] | 648,656397 |
| Unit Of Work Start Timestamp | 2006-02-04 04:22:32.0 |
| Unit Of Work Stop Timestamp | |
| Unit Of Work Log Space Used | 12.364 |
| Unit Of Work Lock Wait Time [ms] | 0 |
| Unit Of Work Completion Status | NOT DEFINED |
| Prev Unit Of Work Compl Tstamp | 2006-02-04 04:22:32.0 |
| Recent Unit Of Work Elapsed [s] | 0,008129 |
| Total Units Of Work | 7.524 |

Last Snapshots

| Snapshot Time | Unit Of Work Status | Unit Of Work Age [s] | Unit Of Work Start Tim |
|---------------|---------------------|----------------------|------------------------|
| 04:33:21 | EXECUTING | 648,656397 | 2006-02-04 04:22:32.0 |
| 04:32:21 | EXECUTING | 588,652662 | 2006-02-04 04:22:32.0 |
| 04:31:21 | EXECUTING | 528,650029 | 2006-02-04 04:22:32.0 |
| 04:30:21 | EXECUTING | 468,647011 | 2006-02-04 04:22:32.0 |
| 04:29:21 | EXECUTING | 408,649163 | 2006-02-04 04:22:32.0 |
| 04:28:21 | EXECUTING | 348,677088 | 2006-02-04 04:22:32.0 |
| 04:27:21 | EXECUTING | 288,640598 | 2006-02-04 04:22:32.0 |
| 04:26:21 | EXECUTING | 228,638040 | 2006-02-04 04:22:32.0 |
| 04:25:21 | EXECUTING | 168,635377 | 2006-02-04 04:22:32.0 |
| 04:24:21 | EXECUTING | 108,634995 | 2006-02-04 04:22:32.0 |
| 04:23:21 | EXECUTING | 48,627524 | 2006-02-04 04:22:32.0 |
| 04:22:21 | EXECUTING | 0,436152 | 2006-02-04 04:22:21.0 |

Unit of Work Monitoring

The causer application for the racy shortage of the log space was the online reorg.

The screenshot shows the DB2 System Monitor interface. On the left is a tree view of system components, with 'Applications' expanded to show several instances of 'FPBPROD'. The main pane displays 'Details for application FPBPROD C0A8D0D7.GAA2.06...'. This pane is divided into two 'Current Snapshot' sections and a 'Last Snapshots' table.

Current Snapshot (Left):

- Snapshot Time: 2006-02-04 04:33:21
- Application Handle: 516
- Application Status: connect completed
- Is Blocking: No
- ID Of Code Page Us...: 819
- Number Of Associa...: 1
- Coordinating Node: 0
- Authorization Level: 18.291.774
- Client Process ID: 23430
- Coordinator Agent: 2543
- Application Status ...:
- Client Operating Plat...: Linux
- Client Communicatio...: TCPIP
- Database Country ...: 49
- Application Name: db2reorg
- Application ID: C0A8D0D7.GAA2.06
- Sequence Number: 0004
- Authorization ID: FPBPROD

Current Snapshot (Right):

- Configuration NNAM...: BRZ1SRVBL26
- Client Product Versio...: SQL08022
- Input Database Alias: DB0222
- Database Alias Used...: DB0222
- Database Name: DB0222
- Database Path: /db2/data1/db0222/fo
- User Login ID: FPBPROD
- DRDA Correlation To...: C0A8D0D7.GAA2.05F
- TP Mon Client User ID:
- TP Mon Client Workst...:
- TP Mon Client Applic...:
- TP Mon Client Accou...:
- Time Waited For Pref...: 999
- Application Idle Time ...: 0
- Last Reset Timestamp:
- Statement Exec Elap...:
- Inbound Communicati...:

Last Snapshots Table:

| Snapshot Time | Application Handle | Application Status | Is Blocking | ID Of Code |
|---------------|--------------------|--------------------|-------------|------------|
| 04:33:21 | 516 | connect completed | No | 819 |
| 04:32:21 | 516 | connect completed | No | 819 |
| 04:31:21 | 516 | connect completed | No | 819 |
| 04:29:31 | 516 | connect completed | No | 819 |

Unit of Work Monitoring

Often there are more than one reason for a database problem. With this picture Speedgain for DB2 shows the increase in log space usage.

⇒ The db2 reorg online application floods the log space.

⇒ The application without a commit or a rollback prevents the release of the log space.

The screenshot shows the DB2 System Monitor interface. The left pane displays a tree view of system components, with 'Log Activity' highlighted under the 'DB0222' database. The right pane shows the 'Current Snapshot' and 'Last Snapshots' data.

Current Snapshot

| | |
|---------------------------------------|-------------------------|
| Snapshot Time | 2006-02-04 04:33:21.525 |
| Max Secondary Log Space Used | 2.640.441.334 |
| Max Total Log Space Used | 3.308.908.534 |
| Total Log Space Used | 3.106.874.448 |
| Total Log Available | 235.461.552 |
| Total Log Used Ratio | 92,95 |
| Sec Logs Allocated Currently | 20 |
| Number Of Log Pages Read | 3.501 |
| Number Of Log Pages Written | 109.214.659 |
| Num Log Read IO (V 8.2) | 0 |
| Log Read Time [ms] (V 8.2) | 0,032863 |
| Num Log Write IO (V 8.2) | 71.762.373 |
| Log Write Time [s] (V 8.2) | 139.260,204635 |
| Log Read Time Per IO Req [s] (V 8.2) | 0,000000 |
| Log Write Time Per IO Req [s] (V 8.2) | 0,001940 |
| Log IO Time Per IO Req [s] (V 8.2) | 0,001940 |

Last Snapshots

| Snapshot Time | Total Log Space Used | Total Log Available | Total Log Used Ratio | Sec Logs Allocated |
|---------------|----------------------|---------------------|----------------------|--------------------|
| 04:33:21 | 3.106.874.448 | 235.461.552 | 92,95 | |
| 04:32:21 | 2.780.503.582 | 561.832.418 | 83,19 | |
| 04:31:21 | 2.472.183.501 | 870.152.499 | 73,96 | |
| 04:30:21 | 2.180.109.081 | 1.162.226.919 | 65,22 | |
| 04:29:21 | 1.909.231.759 | 1.433.104.241 | 57,12 | |
| 04:28:21 | 1.694.236.297 | 1.648.099.703 | 50,69 | |
| 04:27:21 | 1.466.750.832 | 1.875.585.168 | 43,88 | |
| 04:26:21 | 1.231.155.007 | 2.111.180.993 | 36,83 | |
| 04:25:21 | 1.008.922.181 | 2.333.413.819 | 30,18 | |
| 04:24:21 | 719.475.871 | 2.622.860.129 | 21,52 | |
| 04:23:21 | 394.579.850 | 2.947.756.150 | 11,80 | |
| 04:22:21 | 73.520.154 | 3.268.815.846 | 2,19 | |
| 04:21:21 | 45.246.359 | 3.297.089.641 | 1,35 | |
| 04:20:21 | 34.078.381 | 3.308.257.619 | 1,01 | |
| 04:19:21 | 103.053.365 | 3.239.282.635 | 3,08 | |
| 04:18:21 | 54.895.532 | 3.287.440.468 | 1,64 | |
| 04:17:21 | 127.544.792 | 3.214.791.208 | 3,81 | |
| 04:16:21 | 61.423.754 | 3.280.912.246 | 1,83 | |

Unit of Work Monitoring

Speedgain shows also the reason for the long running UOW. The application is blocked within a TCP/IP communication named C55TCPT.

The screenshot displays the DB2 System Monitor interface. The left pane shows a tree view of system components, with 'SQL-Statements' selected under the application 'FPBPROD C0A8D0D7.CAA9.078E94032017'. The main pane shows details for the current snapshot of a SQL statement, including its execution time, cursor name, and package name. A 'Last Snapshots' table lists previous snapshots with their respective times, statements, cursor names, and package names. A 'Choose Historic Time' dialog box is open, allowing the user to select a specific snapshot for viewing.

Current Snapshot

| | |
|-----------------------------|-------------------------|
| Snapshot Time | 2006-02-04 04:26:21.507 |
| Statement | |
| Cursor Name | |
| Appl Creator | BWMADM |
| Package Name | C55JTCPT |
| Rows Read | 1 |
| Rows Written | 0 |
| Agents Working On A Stat... | 0 |
| Number Of Agents Created | 1 |
| Strnt Type | Static |
| Strnt Operation | SQL Execute |
| Section Number | 1 |
| Query Cost Estimate | 13 |
| Query Number Rows Esti... | 1 |

Current Snapshot

| | |
|---------------------------------|----------|
| Degree Of Parallelism | 1 |
| Strnt Sorts | 0 |
| Total Sort Time [ms] | 0 |
| Sort Overflows | 0 |
| Int Rows Deleted | 0 |
| Int Rows Updated | 0 |
| Int Rows Inserted | 0 |
| Number Of Successful Fet... | 0 |
| User CPU Time By Strnt [s] | 0,000000 |
| System CPU Time By Strnt [s] | 0,000000 |
| Most Recent Strnt Elapsed Ti... | 0,000128 |
| Blocking Cursor | No |
| Strnt Node | 0 |

Last Snapshots

| Snapshot Time | Statement | Cursor Name | Appl Creator | Package Name |
|---------------|-----------|-------------|--------------|--------------|
| 04:26:21 | | | BWMADM | C55JTCPT |
| 04:26:21 | | CFP012 | BWMADM | U55F603 |
| 04:26:21 | | CFP011 | BWMADM | U55F033 |
| 04:26:21 | | CFE062 | FPPCOB2 | B55F006 |
| 04:25:21 | | | BWMADM | C55JTCPT |
| 04:25:21 | | | BWMADM | U55F603 |
| 04:25:21 | | | BWMADM | U55F033 |
| 04:25:21 | | | FPPCOB2 | B55F006 |
| 04:25:21 | | | BWMADM | C55JTCPT |
| 04:25:21 | | | BWMADM | U55F603 |
| 04:25:21 | | | BWMADM | U55F033 |
| 04:25:21 | | | FPPCOB2 | B55F006 |
| 04:23:21 | | | BWMADM | C55JTCPT |
| 04:23:21 | | CFP012 | BWMADM | U55F603 |
| 04:23:21 | | CFP011 | BWMADM | U55F033 |
| 04:23:21 | | CFE062 | FPPCOB2 | B55F006 |
| 04:22:21 | | | BWMADM | C55JTCPT |
| 04:22:21 | | CFP011 | BWMADM | U55F033 |
| 04:22:21 | | CFE062 | FPPCOB2 | B55F006 |
| 04:21:21 | | | FPPCOB2 | U55J990 |
| 04:21:21 | | CFE062 | FPPCOB2 | B55F006 |
| 04:20:21 | | | | |
| 04:20:21 | | CFE062 | FPPCOB2 | B55F006 |

Choose Historic Time

Snapshot: 2006-02-04 04:26:21

Buttons: Set, Previous, Next, Close

Further information about Speedgain for DB2

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