

## **Speedgain for DB2 LUW Version 3.5 – *What's New***

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## Speedgain for DB2 LUW Version 3.5 – *What's New*

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## Speedgain for DB2 LUW Version 3.5 – *What's New*

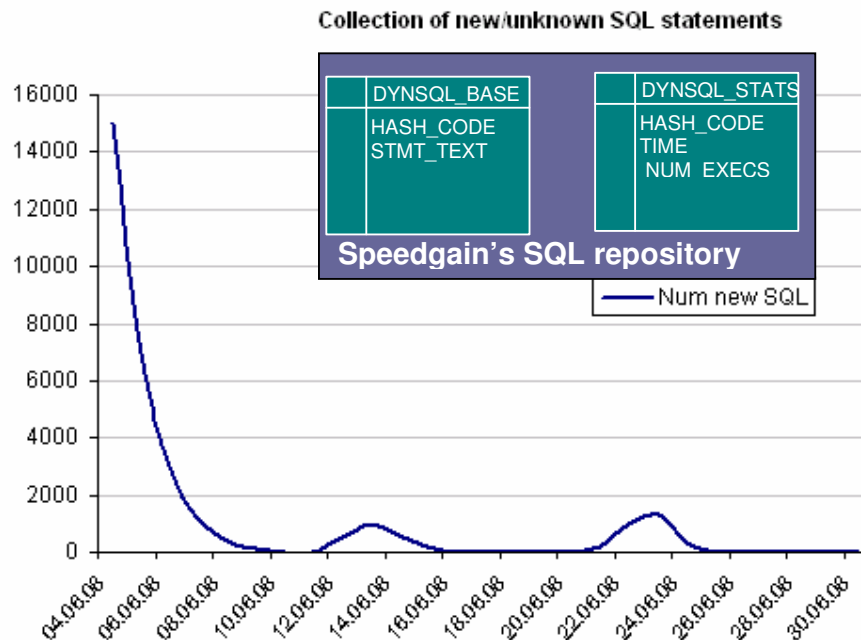
### - Normalization and Standardization of the SQL Workload

Speedgain collects dynamic SQL statements at a regular base and treats statement texts as monitor objects. By default it also replaces literals inside the SQL statement text in order to group similar statements together to standardize SQL statements. This SQL workload is stored in Speedgain's DB2 tables. This is an excellent starting point to tune SQL in respect to the whole database SQL workload.

Database administrators and application developers need to know the **SQL workload** in order to find appropriate indexes, MDCs and MQTs to increase the overall throughput.

### - Normalization

Every SQL statement is stored as a performance object in Speegain's performance repository. For typical database applications Speedgain has all SQL statement text collected for a couple of days.



*In the beginning Speedgain starts capturing a lot of new SQL statements. The normalization and standardization process allows Speedgain to identify already known statements and just updates statement runtime statistics like elapsed time and number of executions.*

- **Standardization**

- Equalize and group similar statements (same access path, different literals)
- Replace literals inside sql statements
- Upper and lower case SQL smoothing
- Trim and strip blanks

**Sample**

```
select * from table WHERE id = '4711' -- 1 Execution, CPU 2000 ms
Select * from table where id = '4712' -- 1 Execution, CPU 1278 ms
```

(two different statements with the same characteristics)

becomes:

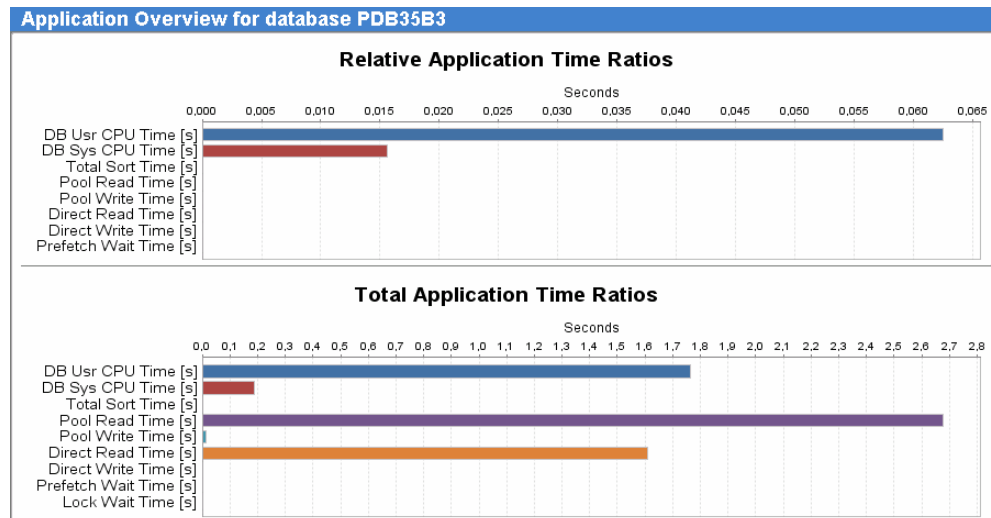
```
SELECT * FROM TABLE WHERE ID = ? -- 2 Executions, CPU 3278 ms
```

(one statement with aggregated runtime statistics)

Imagine you have an application firing 1 million times the same statement with different literals. Instead of having a workload with 1 million entries you just have a workload file with 1 entry and aggregated runtime statistics. You can use Speedgain's SQL Workbench to analyze that workload and work with index recommendations and virtual indexes.

- **Enhanced and new performance views**

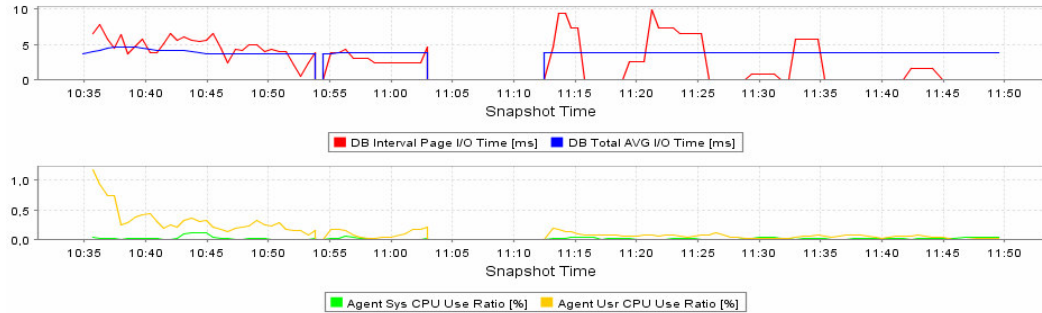
- **Application time distribution**



Speedgain aggregates application information at database level, see what time DB2 spends on SQL processing like User CPU time or prefetch wait.

**I/O and CPU Activity**

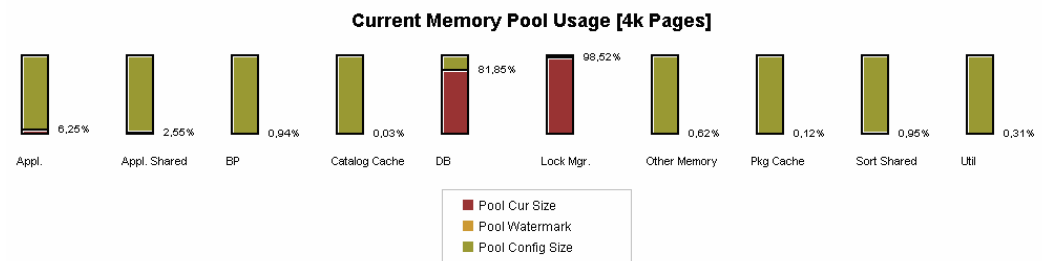
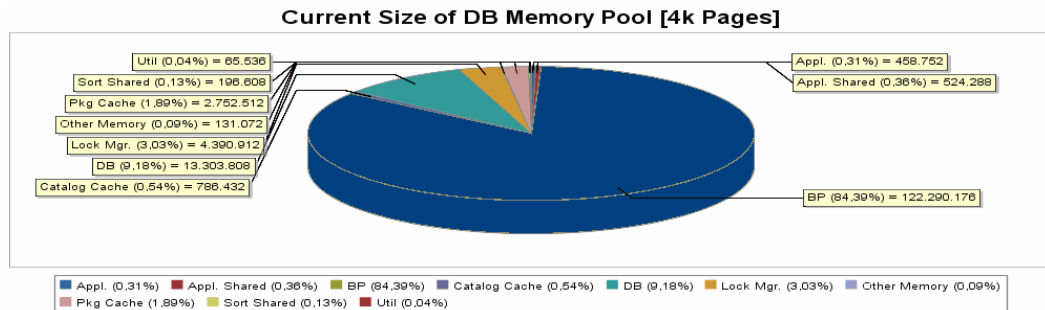
Speedgain provides performance charts for I/O, CPU and Memory activity of DB2 systems.



*Is your system CPU bound or I/O bound?*

**Memory Pool information**

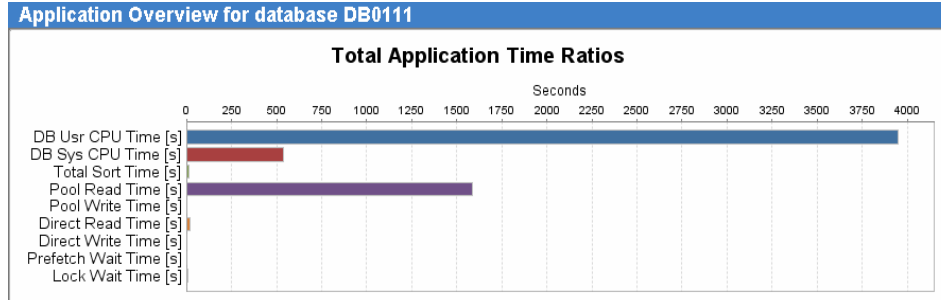
See Memory Pool allocation, utilization and high watermarks at database level.



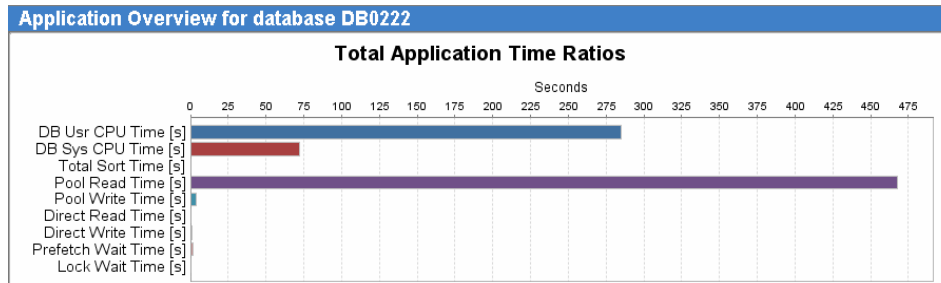
*See the allocation of memory heaps and their actual utilization*

- **Database and application i/o and cpu times**

Speedgain 3.5 now delivers aggregated application information at database level. You now see where particular parts of the DB2 engine spends most of their time for certain tasks like sorts, locks, prefetching or even CPU usage. Is your system CPU bound or I/O bound?



*CPU bound system*



*i/o bound system*

- **DB2HADR**

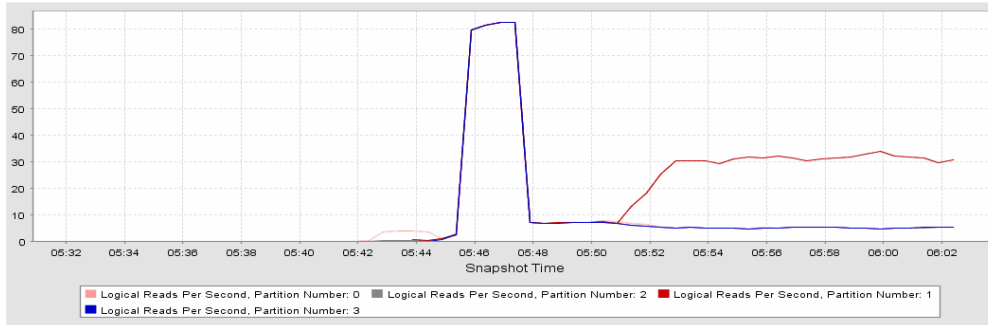
Speedgain shows the HADR state. In order to have a working HADR standby machine you definitely want to see the HADR state “connected, in peer”. You can define a threshold values that would also send an alert email or show a red light if the standby machine is not ready to take over the primary database.

HADR Infos for database DB0111	
<b>Current Snapshot</b>	<b>Current Snapshot</b>
Snapshot Time 2008-06-04 17:19:49.954	Primary Log Page Rel 1.313
Primary Log Lsn Rel 5.378.607	Standby Log Page Rel 1.312
Standby Log Lsn Rel 5.372.690	Connect Time 2008-05-23 10:15:31.962771
Log Gap 7706	Local Host 10.99.99.244
Role Primary HADR database	Local Service 52006
State <b>connected, in peer</b>	Remote Host 10.99.99.222
Sync Mode Nearsync mode	Remote Service 52006
Connect Status <b>connected to partner node</b>	Remote Instance bwi0111
Heartbeat 0	Primary Log File S0037011.LOG
Timeout 60	Standby Log File S0037011.LOG

*Speedgain shows HADR information: is the standby database ready to take over control?*

- **DB2DPF**

Speedgain automatically detects DPF databases when monitoring is activated for those kinds of databases. It will provide additional information about DPF environments in order to show the workload for each partition and the traffic between partitions (Subsection information at database and application level and DPF activity information at database level)



Number of logical ready for partition 1 is higher

- **DB2PD**

DB2PD, the DB2 problem determination tool, is a DB2 server side command line tool which provides additional information about DB2 performance metrics and DB2 objects. Actually Speedgain for DB2 is the only performance monitor system which integrates DB2PD and leverages snapshot information with new performance counters.

- **Index Activity**

Most important Speedgain can now show which indexes were used and those that are not. This is a perfect database to start with index tuning and to encourage DBAs to drop unused indexes. Speedgain 3.5 added a separate snapshot interval for index activity monitoring. This can provide a database with index usage per year or per batch run.

Snapshot Time	Table	Index ID	Scans
16:11:15	SYSIBM.SYSROUTINES	6	6.360
16:11:15	DB2MONITOR.DYNSQL_STMT_TEXT	1	702
16:11:15	DB2MONITOR.NORMALIZED_DYNSQ...	1	702
16:11:15	DB2MONITOR.TTS_MANAGER_MAIN	1	462
16:11:15	DB2MONITOR.TTS_MANAGER_SUB	1	462
16:11:15	DB2MONITOR.USER_EXIT_CONFIG	1	374
16:11:15	SYSIBM.SYSTABLES	1	280
16:11:15	DB2MONITOR.TABLE	2	246
16:11:15	DB2MONITOR.TABLESPACE_CONT...	1	64
16:11:15	DB2MONITOR.DBASE	1	41
16:11:15	DB2MONITOR.APPL	1	40
16:11:15	DB2MONITOR.TTS_RESULT	1	40
16:11:15	DB2MONITOR.AGENT	1	40
16:11:15	DB2MONITOR.AGENT_MEMORY_PO...	1	40
16:11:15	DB2MONITOR.APPL_MEMORY_POOL	2	40
16:11:15	DB2MONITOR.TABLESPACE	1	35
16:11:15	DB2MONITOR.TABLESPACE_MODEL	4	25

Speedgain and the indexes which were used since last database start

- **Operating system monitoring**

DB2PD also allows Speedgain to show operating system information

OS Infos for Instance DB2	
<b>Current Snapshot</b>	
Snapshot Time	2008-06-04 11:49:30.421
Virtual Mem Total	2.917
Virtual Mem Free	2.139
Free Swap	1.388
Total Swap	870
Free Mem	751
Total Mem	2.047
Partition ID	

*Speedgain and OS info.*

- **Customizable snapshot intervals**

Speedgain now allows users to define their own snapshot intervals (besides the default interval snapshots) for

- DB2PD
  - Index activity
  - OS monitoring
- Tablespace monitoring
- Table monitoring
- Database configuration
- Database manager configuration

- **User interface presentation improvement**

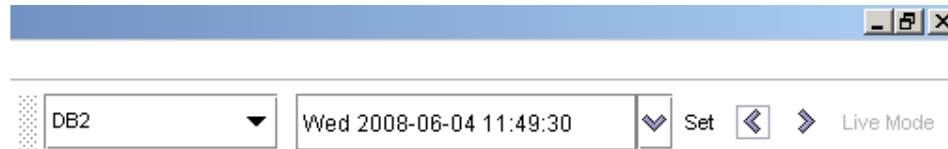
We have been working on user interface enhancements to make it easier to see threshold violations, to travel back in time and to setup threshold notifications.



*New tree layout, symbols even better readable for colorblind people*

- **New history function with direct access**

the history function to travel back in time is now integrated within the main window which makes it easier to access performance data



*History function with top level access*

- **Improved online help system**

content menus are available for all performance metrics in Speedgain. This will allow DB2 beginners to learn about DB2 performance and even help experienced DBAs to learn about the meaning of certain metrics.

- **Integrated email notification**

You can now use the threshold declaration window to setup threshold notifications via email. The threshold notification function also allows one to react to certain thresholds with predefined DB2 scripts or pass alerts to external applications like IBM's Tivoli Tech Console or even one of your enterprise alerting systems.

ID	instance	Test Name	active	Red Value	Yellow Value	appl trigg	Thresh	Operator	Notification defined
01	default	Executing Connections	<input checked="" type="checkbox"/>	90,00	80,00			upper limit	<input type="checkbox"/>
02	default	Unit of Work Age [s]	<input checked="" type="checkbox"/>	180,00	60,00			upper limit	<input type="checkbox"/>
03	default	FCM Buffer Use Ratio	<input checked="" type="checkbox"/>	60,00	50,00			upper limit	<input type="checkbox"/>
04	default	Perc. Connected Applications	<input checked="" type="checkbox"/>	90,00	75,00			upper limit	<input type="checkbox"/>
08	default	Piped Sorts Rejected	<input checked="" type="checkbox"/>	5,00	1,00			upper limit	<input type="checkbox"/>
10	default	Files Closed per min.	<input checked="" type="checkbox"/>	5,00	1,00			upper limit	<input type="checkbox"/>
13	default	Deadlocks per min.	<input checked="" type="checkbox"/>	1,00	0,00			upper limit	<input type="checkbox"/>
18	default	DynSql Average Exec Time [ms]	<input checked="" type="checkbox"/>	500,00	100,00			upper limit	<input type="checkbox"/>
20	default	Log Space Use Ratio	<input checked="" type="checkbox"/>	75,00	50,00			upper limit	<input type="checkbox"/>
21	default	Total Bufferpool Hit-Ratio	<input type="checkbox"/>	80,00	90,00			lower limit	<input type="checkbox"/>
22	default	Lock-Wait Situation	<input checked="" type="checkbox"/>	0,00	0,00			upper limit	<input type="checkbox"/>

**Configure Threshold notification**

Instance:

Threshold:

Description:

Execution Command (red):

Execution Command (yellow):

Repeat notification if violation of threshold continues in: hours:  minutes:

*Threshold notification window*

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- **Further Information**

- **ITGAIN's website**

<http://www.itgain.de/en/produkte/speedgain.html>

- **Sales: North and South America**

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