DBPLUS
better performance

DBPLUS
Performance Monitor for SQL Server
Description of changes in version 2019.2

Date: 28th June 2019

DBPLUS
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Table of Contents

1 New in 2019.2 version 3
1.1 Dictionary of non-performance Waits (not affecting performance) 3
1.2 Support for transactions with negative SPID 4
1.3 New statistics available in Load Trends and Compare 4
1.4 Change in the way alerts are sent by email 6
1.5 New alert definitions 7
1.5.1 Session inactive count. 7
1.5.2 Tempdb/Space used, Tempdb/Session using temdp 8
1.5.3 LogUsage/Space used, LogUsage/Record count in log, LogUsage/Sessions using log 8
1.5.4 Alert based on SQL statement (returning data grid) 8
1.6 General improvements 9
1.6.1 Online session Update 9
1.6.2 Improving the presentation of locks for individual databases 10
1.6.3 Collecting information about Waits after a day 10
1.6.4 Improve the ergonimics of display data on DBPLUS Sites 11
1.6.5 Add the new parameter that control the operation of the application. 11
1.6.6 Improving performance of SQL 3D screen 11

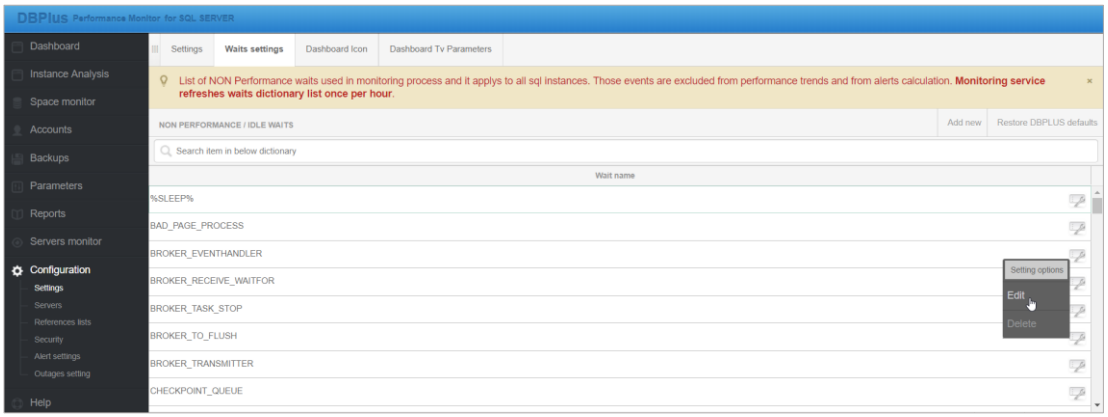
Below is a list of changes to the Microsoft SQL Server instances monitoring application, DBPLUS Performance Monitor.

1 New in 2019.2 version

1.1 *Dictionary of non-performance Waits (not affecting performance)*

The ability to manage the Waits dictionary has been added. The dictionary is available in the Configurations> Settings> Waits settings tab. Configuration provides the ability to assign wait to a group that does not affect performance and is not counted as performance Waits. This configuration is important to calculate the wait level for each snap in the Load Trends and Waits tab.
To change the dictionary, go to the Waits settings tab, where the entire configuration is visible. The screen is divided into two parts:

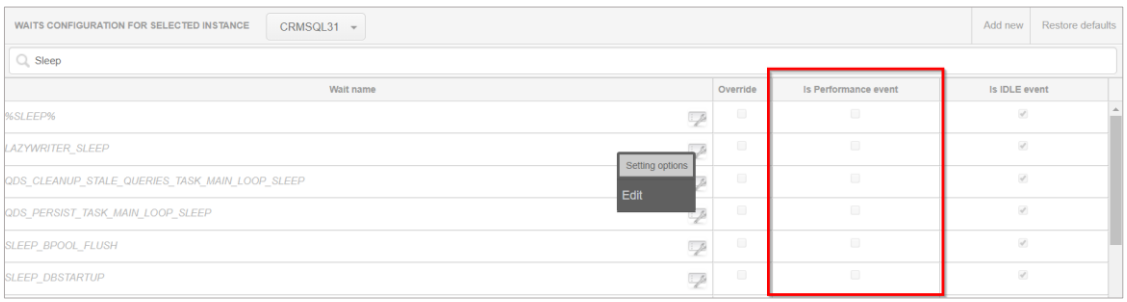
- The upper part presents a general dictionary of non-performance Waits. The dictionary can be updated (add / modify / delete). Modification here will cause that changes will be made for all instances available in monitoring.



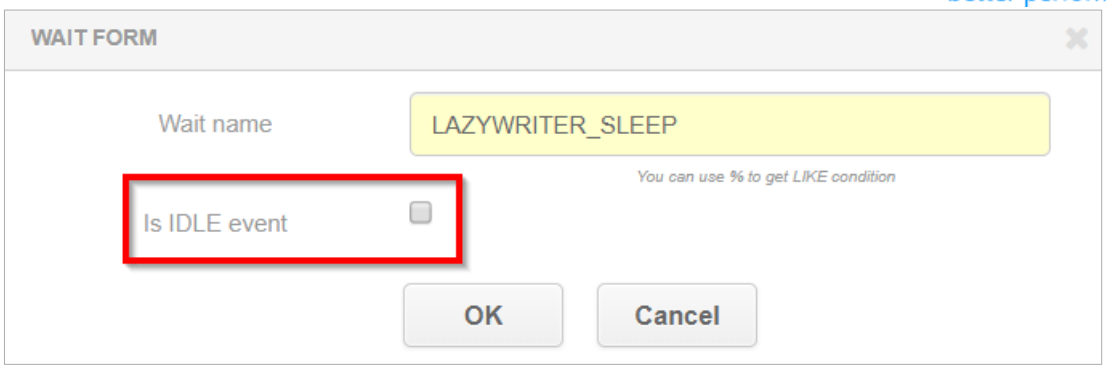
- The lower part contains the possibility of changes dedicated to a specific indicated SQL Server instance. In case of changes, select the base from the dropdown field [WAITS CONFIGURATION FOR SELECTED INSTANCE] and then make changes.

For example, the user wants Waits that contain the word SLEEP to be marked as waits that affect performance. To do this, display all wait events the word "SLEEP" is included (currently events classified as not affecting performance):
1. First select the instances the User wants to change.
2. Search for waits related to the given word - enter the word "% SLEEP%" in the search box (as on the screen below).
3. Waits that contain the word "SLEEP" are assigned to the Waits group, which don't affect performance. This should be changed by editing the given line (press the Edit button) and in the details uncheck the checkbox [Is IDLE event]
4. Repeat the operations for the rest of Waits from the group that contain "SLEEP".

The change made here will be visible on the Waits chart at the next snap (after the change).



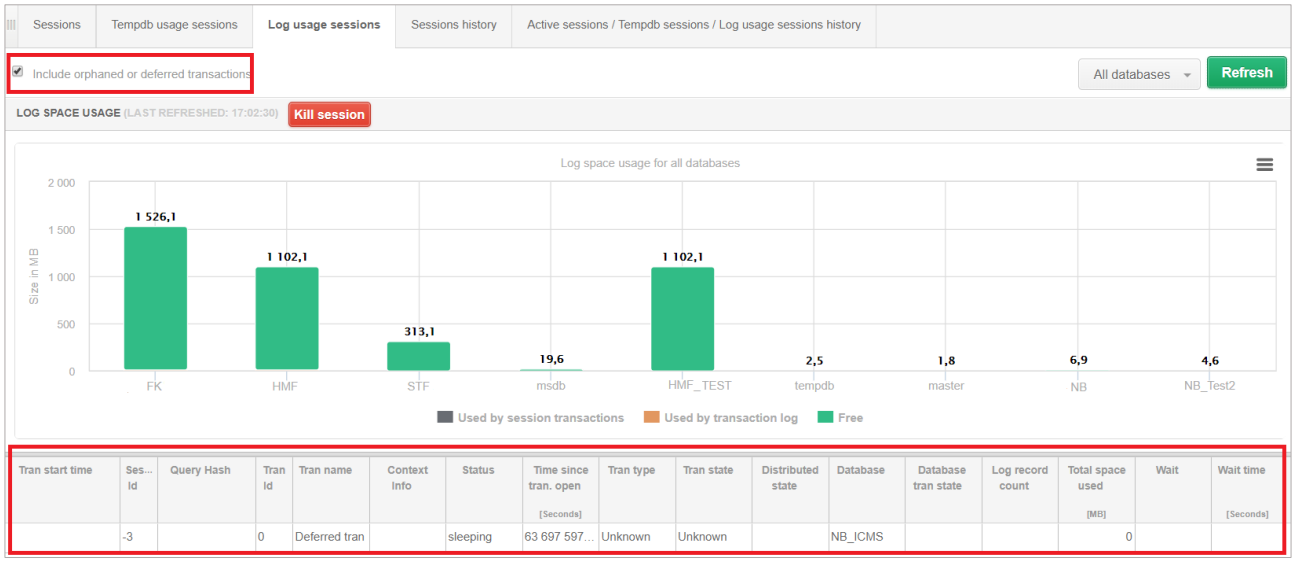
Modifying the details of the given Waits, unchecking the "Is IDLE event" checkbox will mean that this type of validity will be considered as a Wait affecting performance.



Every change at the database level is visible by displaying information in the dropdown field with database names.Always possible return to the factory settings by click on [Restore DBPLUS default] button.

1.2 *Support for transactions with negative SPID*

In the new version of the application, transaction support has been added where the value of the SPID negative identifier (less than zero). Information about such transactions is visible in the Sessions tab> Log usage sessions.
After select the checkbox, data on the mentioned sessions will be presented (if they occur in the monitored instance). Information is also visible on the session history screen in the Log usage sessions history tab.

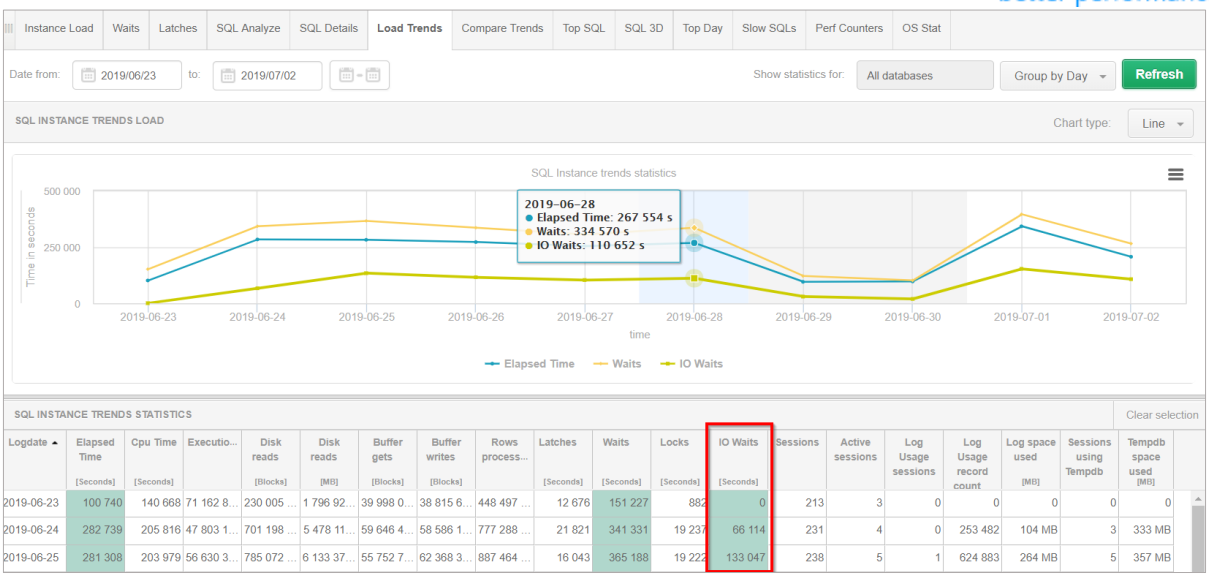


1.3 *New statistics available in Load Trends and Compare*

The latest version has been added new statistics that can track the Load Trends. This information is in the Load Trends tab (details of instances). New statistics:
- IO Waits,
- Sessions using Tempdb,
- Tempdb space used,
- Log space used,
- Log Usage sessions,
- Log Usage record count.

This information makes it easier and faster to analyze the sources of potential performance problems. Based on new alerts definitions, new definitions of the cause of the problem have been added [Reasons & Problems definition]. As part of this release, many definitions of the causes of problems have been modified. If users made changes on the definitions themselves, they will be restored to the default settings.

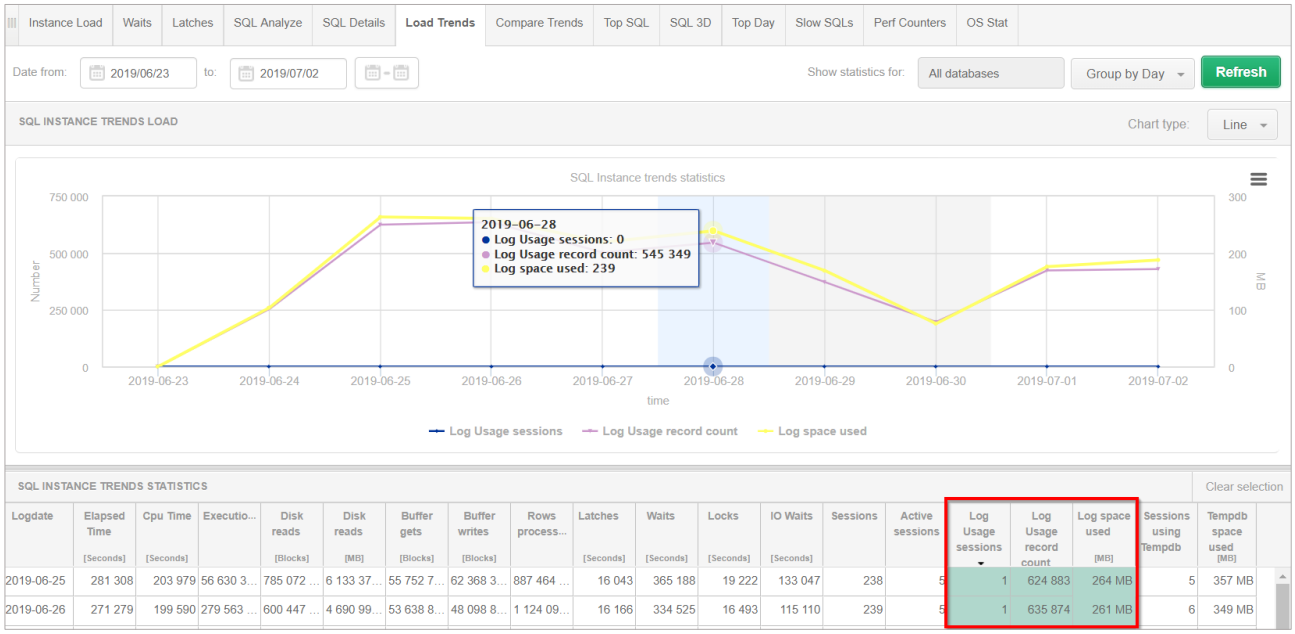
IO Waits
This information applies to Waits that are related with the IO. The statistics can be presented by click on the IO Waits column. The high level of this Wait means that the increase in query execution time is related to IO resources. The rest of the analysis should be performed by checking which Wait from the IO class was in each period, using the Waits> Analyze tab.



Logdate	Elapsed Time [Seconds]	Cpu Time [Seconds]	Executio...	Disk reads [Blocks]	Disk reads [MB]	Buffer gets [Blocks]	Buffer writes [Blocks]	Rows process...	Latches [Seconds]	Waits [Seconds]	Locks [Seconds]	IO Waits [Seconds]	Sessions	Active sessions	Log Usage sessions	Log Usage record count	Log space used [MB]	Sessions using Tempdb	Tempdb space used [MB]
2019-06-23	100 740	140 668	71 162 8...	230 005 ...	1 796 92...	39 998 0...	38 815 6...	448 497 ...	12 676	151 227	882	0	213	3	0	0	0	0	0
2019-06-24	282 739	205 816	47 803 1...	701 198 ...	5 478 11...	59 646 4...	58 586 1...	777 288 ...	21 821	341 331	19 237	66 114	231	4	0	253 482	104 MB	3	333 MB
2019-06-25	281 308	203 979	56 630 3...	785 072 ...	6 133 37...	55 752 7...	62 368 3...	887 464 ...	16 043	365 188	19 222	133 047	238	5	1	624 883	264 MB	5	357 MB

Log space used, Log Usage sessions, Log Usage record count

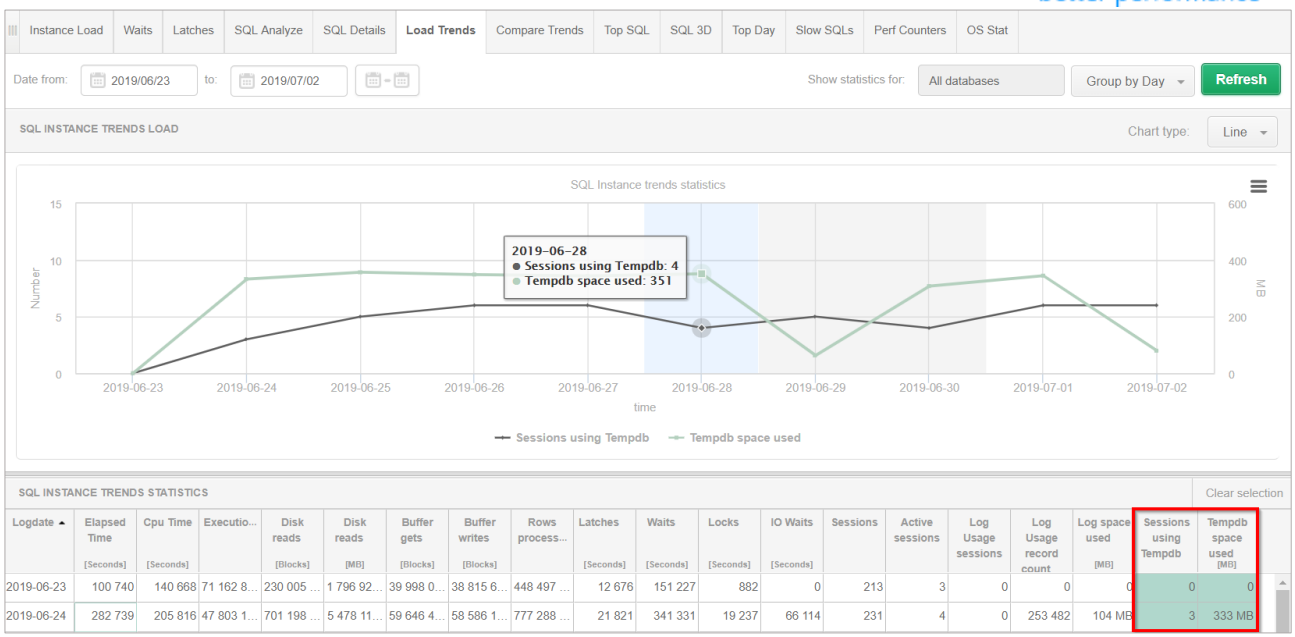
Statistics are about information about Log Usage. Statistics show number of sessions using the Log, the number of rows that are currently in the Log and the space used by these records at a given moment in the Log.



Logdate	Elapsed Time [Seconds]	Cpu Time [Seconds]	Executio...	Disk reads [Blocks]	Disk reads [MB]	Buffer gets [Blocks]	Buffer writes [Blocks]	Rows process...	Latches [Seconds]	Waits [Seconds]	Locks [Seconds]	IO Waits [Seconds]	Sessions	Active sessions	Log Usage sessions	Log Usage record count	Log space used [MB]	Sessions using Tempdb	Tempdb space used [MB]
2019-06-25	281 308	203 979	56 630 3...	785 072 ...	6 133 37...	55 752 7...	62 368 3...	887 464 ...	16 043	365 188	19 222	133 047	238	5	1	624 883	264 MB	5	357 MB
2019-06-26	271 279	199 590	279 563 ...	600 447 ...	4 690 99...	53 638 8...	48 098 8...	1 124 09...	16 166	334 525	16 493	115 110	239	5	1	635 874	261 MB	6	349 MB

Sessions using Tempdb, Tempdb Space used

Thanks to these statistics, the User can view information about the use of the Tempdb database. This makes it easier to track the trend of the number of sessions in the Tempdb database and the space occupancy in the Tempdb database by these sessions.

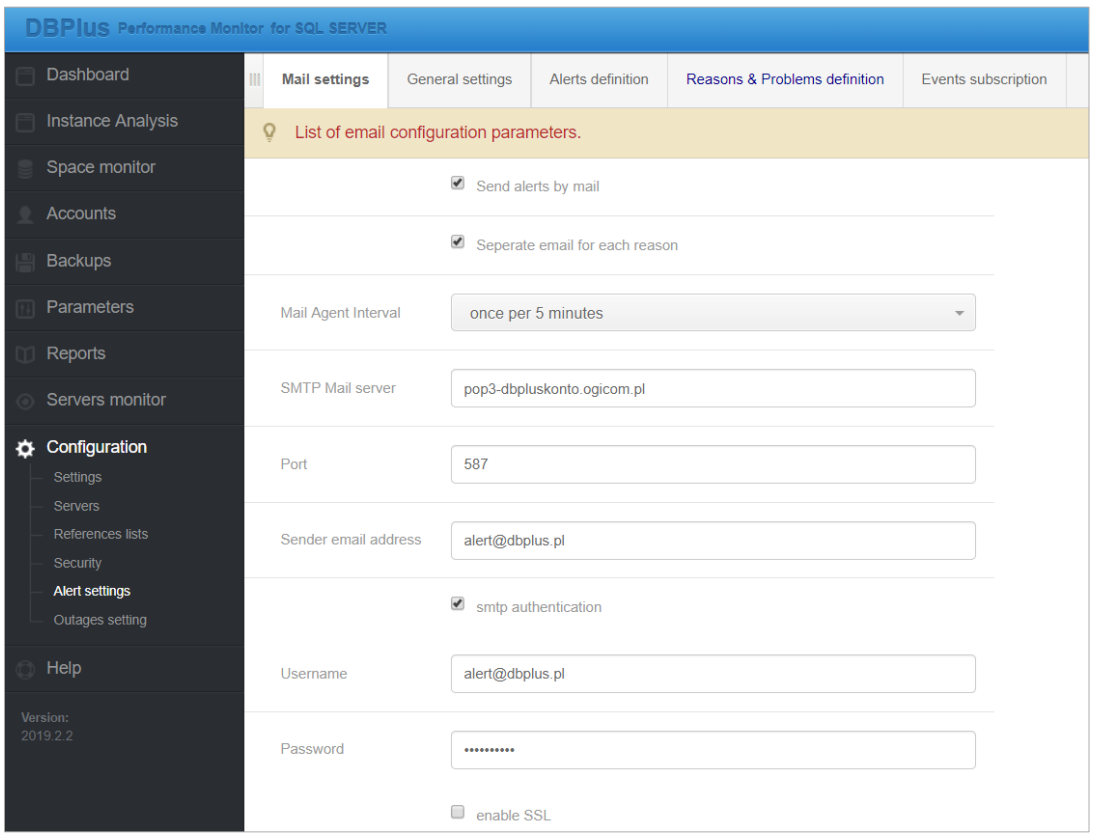


Information about new statistics can also be compared by Users (for individual days as well as periods in the Compare tab).

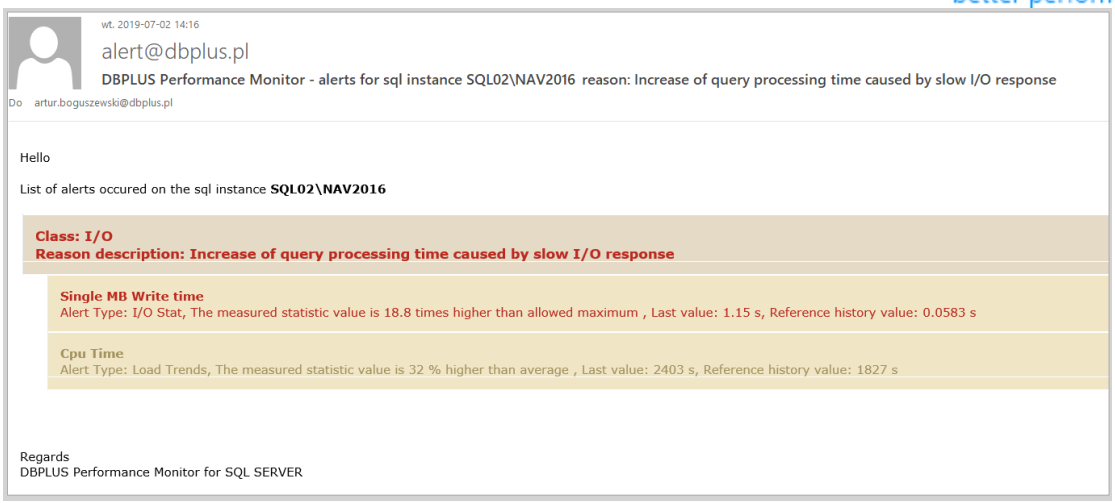
1.4 *Change in the way alerts are sent by email*

In the latest version of the application has been added the ability to set up the sending of information about alerts by email one by one for the given Reason. Until now information about alerts via email has been sent collectively for a given SQL Server instance. As part of such e-mail, the Client get information about several events grouped in the e-mail at the same time.

By check [Separate email for each reason], information about alerts will come separately - each email is a separate problem in a given instance. Configurations can be set globally for all instances.



As part of this change, email information will be sent separately for a given reason. The e-mail headline will be changed, where information with the name of the database and the reason for the alert will be.


wt. 2019-07-02 14:16

alert@dbplus.pl

DBPLUS Performance Monitor - alerts for sql instance SQL02\NAV2016 reason: Increase of query processing time caused by slow I/O response

Do artur.boguszewski@dbplus.pl

Hello

List of alerts occured on the sql instance **SQL02\NAV2016**

Class: I/O
Reason description: Increase of query processing time caused by slow I/O response

Single MB Write time
Alert Type: I/O Stat, The measured statistic value is 18.8 times higher than allowed maximum , Last value: 1.15 s, Reference history value: 0.0583 s

Cpu Time
Alert Type: Load Trends, The measured statistic value is 32 % higher than average , Last value: 2403 s, Reference history value: 1827 s

Regards
DBPLUS Performance Monitor for SQL SERVER

1.5 *New alert definitions*

New alert definitions have been added in the new version. They are available in Configuration> Alert setings> Alert definition.

List of new alert definitions:

- Load trends: Session inactive count
- Load trends: Tempdb/Space used
- Load trends: Tempdb/Session using temdp
- Load trends: LogUsage/Space used
- Load trends: LogUsage/Record count in log
- Load trends: LogUsage/Sessions using log
- Alert based on SQL statement (returning data grid)

Based on new definitions, new definitions of the cause of the problem have been added [Reasons & Problems definition].

Alerts definition tab
Alert definitions on the main level are updated, threshold (critical/ warning) values are restored to defaults
New definitions added by users with own queries "Alerts based on sql statements" (online / trends) are not overwritten at any level.

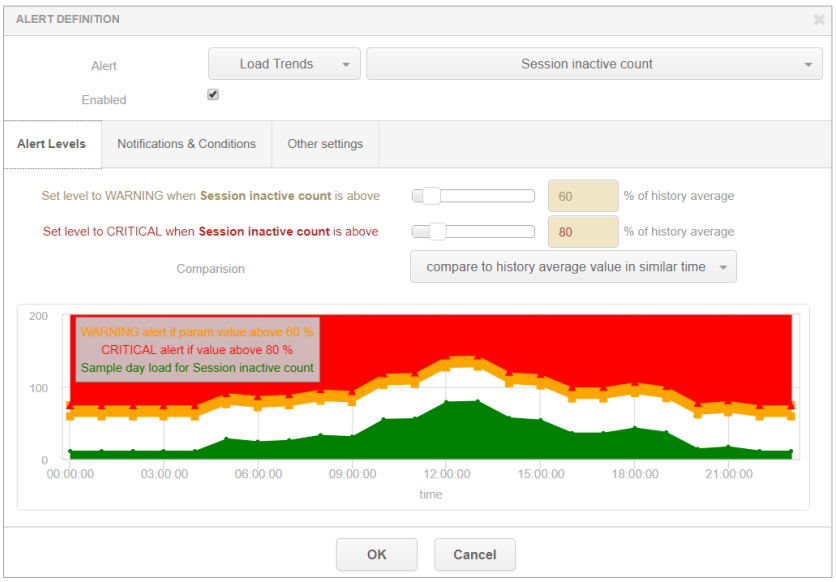
All changes made by users at the instance/database level are preserved and do not change.

Reasons & problem definition
The new reason definitions added by the user are not updated.
Modified reason definitions (name or class change) is not updated
All changes made by users at the instance/database level are not updated.

Only reason definitions that has not been modified by the user is updated.
Changes at the rule level without rename reason or class change will be overwritten during the upgrade.

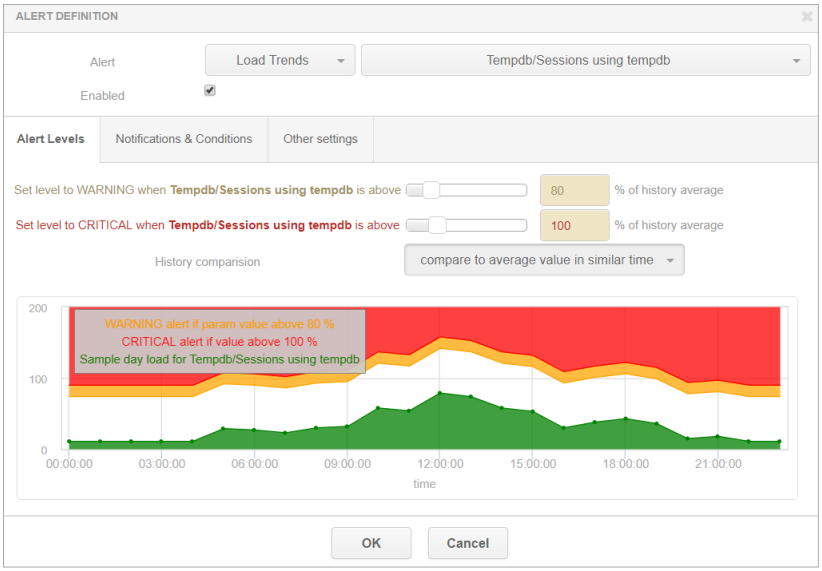
1.5.1 Session inactive count.

The information that activate the alarm is collected based on the Load Trend, that's why the alert is available in the Load trends group. This alert verifies the number of inactive sessions that run on the database. Depends on the configuration, User can compare the level of thresholds (warning, critical) relative to:
- parameter [user processes],
- to the historical value determined for a similar time interval,
- up to the maximum value.



1.5.2 Tempdb/Space used, Tempdb/Session using temdp

New alerts were based on statistics added in the latest version of SQL Server. They concern statistics calculated as part of Load Trend. Alarm Tempdb / Space used is about the occupancy of the temporary base. Session using temdp - alarm related to the number of sessions using temporary tables. Threshold values can be set by the user in relation to the highest historical value or compared to the values achieved in a similar period in previous days (the default period of 30 last days).



1.5.3 LogUsage/Space used, LogUsage/Record count in log, LogUsage/Sessions using log

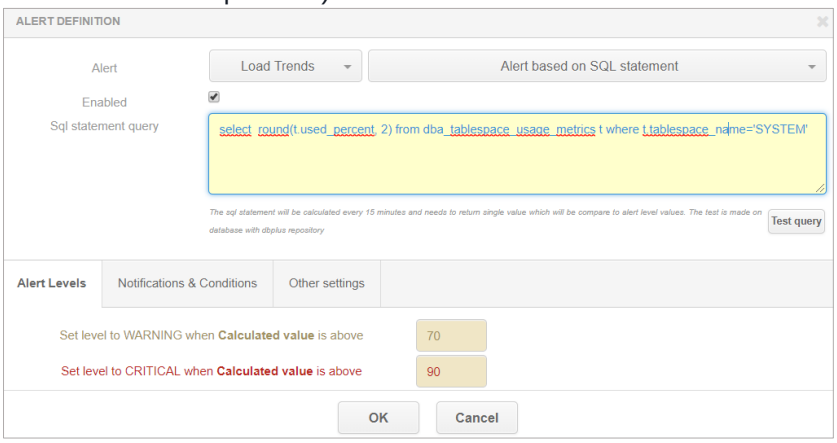
New alerts were based on statistics added in the latest version of the application. They concern statistics calculated as part of the Load Trend. Alarm LogUsage/Space used refers to the occupancy of log files. LogUsage/Sessions using log - alarm related to the number of sessions writing to the log. LogUsage/Record count in log is calculated based on the number of records currently in the log. Threshold values can be set by the User in relation to the highest historical value or compared to the values achieved in a similar period in previous days (the default period of 30 last days).

1.5.4 Alert based on SQL statement (returning data grid)

The new alert consists in executing a query created by the User. The query is run once every 15 minutes. Depending on the selection of the alert definition, the query may return:

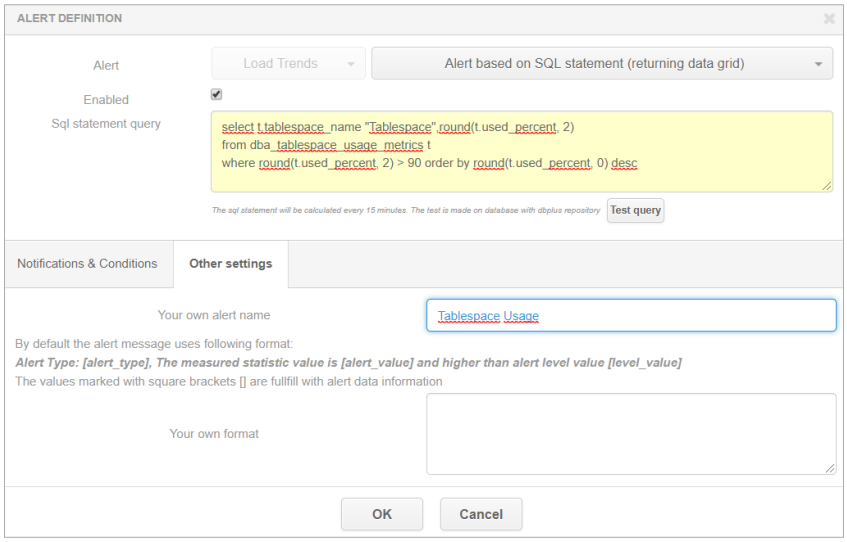
- single row with one column (Alert based on SQL statement),

In this case, it is possible to make the returned value dependent on the threshold above the alarm will be activated (Warnig / Critical thresholds possible).



- multiple rows with more columns (Alert based on SQL statement (returning data grid)).

If the user wants the query to return more data, they must choose the type of alert that returns the entire tables. In the example below, the alarm will be returned when the conditions saved in the query are met. If the condition is not met and the query returns null, the alarm will not be triggered.

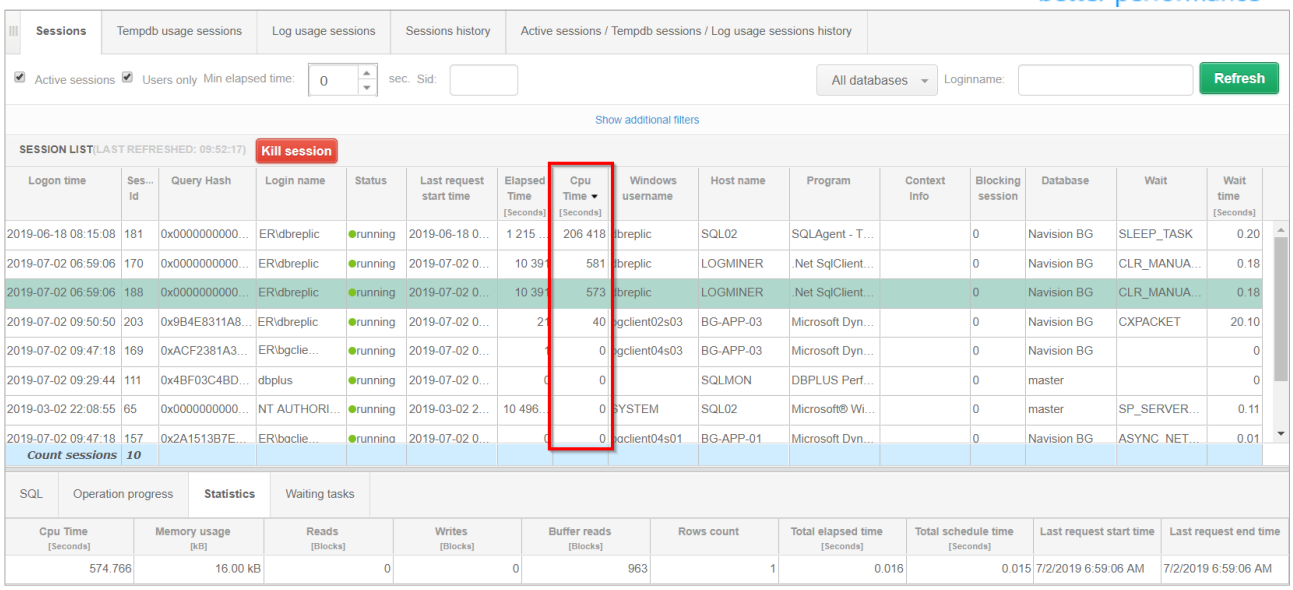


Example of the result for the query above:

1.6 *General improvements*

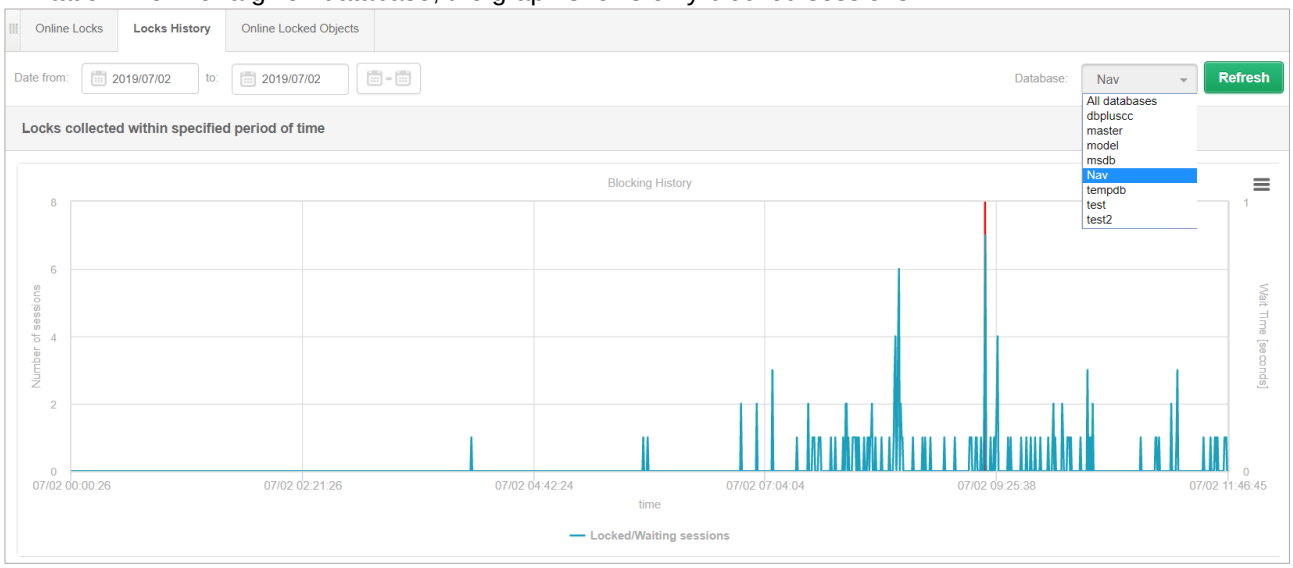
1.6.1 Online session Update

The new version has added information about the use of CPU by the session in the online session view. Information is available in the Sessions tab. The value shows the time the CPU was used by the query currently being performed in the session.



1.6.2 Improving the presentation of locks for individual databases

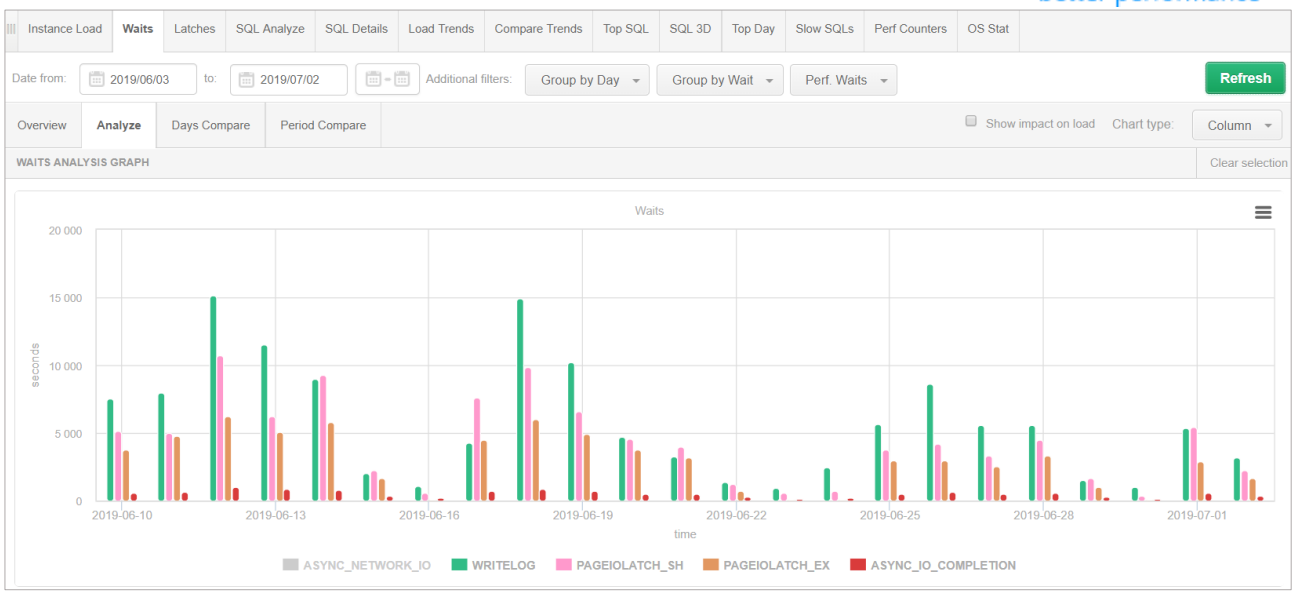
In the latest version of the application, the presentation of locks for individual databases has been improved. The problem was on the lock history screen - Locks> Locks History. In case the view was limited only to a specific database on the instance, the graph showed only the fragment where the blockages occurred. After the improvement, the graph for the whole day is presented in the same way as for the entire instance. Limitation: view for a given database, the graph shows only blocked sessions.



1.6.3 Collecting information about Waits after a day

Until now, detailed information on the level of Waits were collected after snap and stored for a maximum of 30 days (depending on the value of the parameter: KEEP_SNAPSHOT_HISTORY_DAYS). In the latest version, a mechanism for recording information about the details of objects grouped after a day has been added. This information (grouped after day) will be available without restrictions for the period indicated by the user. For statistics available after snap, history will still depend on the parameter.

Important! Information after day is collected from the moment of uploading the new version.



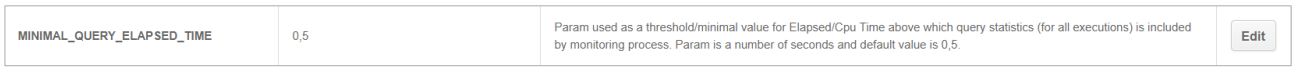
1.6.4 Improve the ergonimics of display data on DBPLUS Sites

In the latest version of the application, the presentation of data on individual pages has been improved. The correction [consisted in the modification of pages where empty sections were visible which could not be minimized or moved].

1.6.5 Add the new parameter that control the operation of the application.

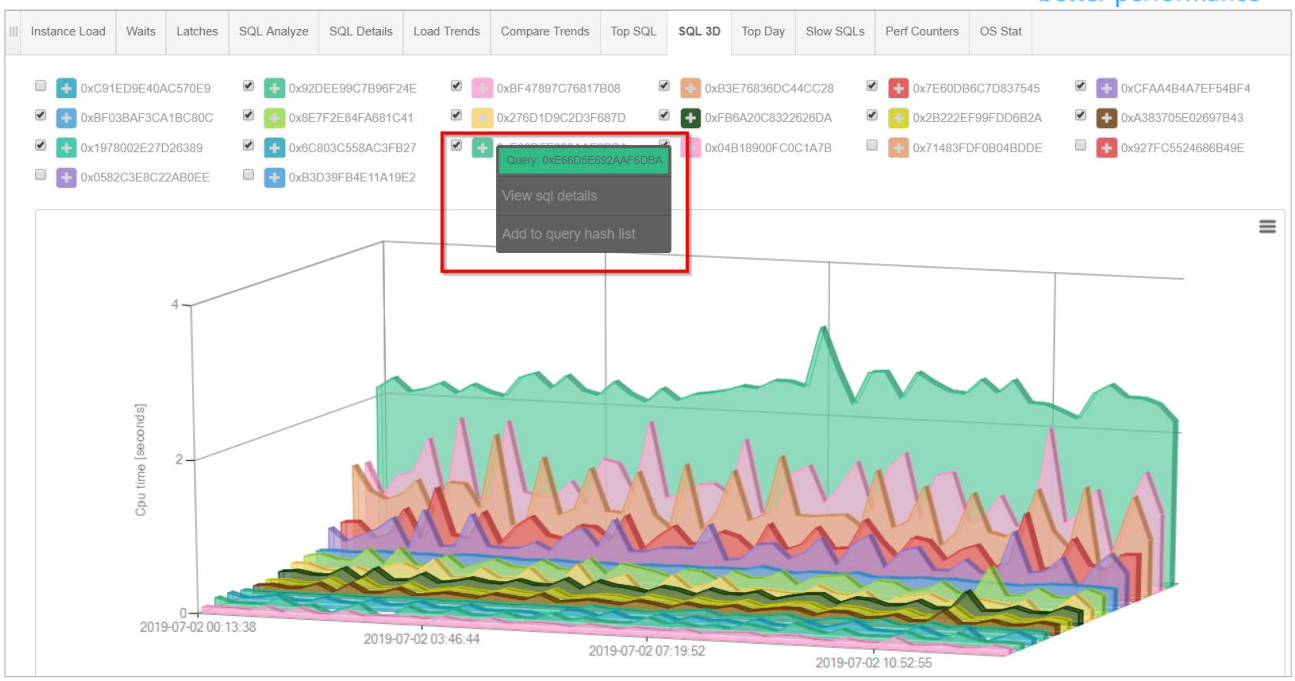
In the newest version a parameter that query statistics are collected has been added. The parameter is the number of seconds that a given query must last for all executions of a given query during a snap (15 minutes). If the query is shorter than the parameter value, the query statistics data is not collected.

The default value for the SQL Server database is 0,5 seconds, it means that the query data will be collected and presented in a given snap when the duration of all runs of this query exceeds 0,5 second.



1.6.6 Improving performance of SQL 3D screen

The latest version has been modified to display information on the SQL 3D chart. In some versions of top browsers, when the number of points on the chart is too high, the screen has been loading for a long time. The problem has been solved, and additionally, the ability to collect information about the query / plan ID has been added by click the [plus] button with the query identifier displayed above the graph.


Instance Load
Waits
Latches
SQL Analyze
SQL Details
Load Trends
Compare Trends
Top SQL
SQL 3D
Top Day
Slow SQLs
Perf Counters
OS Stat
0xC91ED9E40AC570E9
0x92DEE99C7B96F24E
0xBF47897C76817B08
0xB3E76836DC44CC28
0x7E60DB6C7D837545
0xCFAA4B4A7EF54BF4
0xBF03BAF3CA1BC80C
0x8E7F2E84FA681C41
0x276D1D9C2D3F687D
0xFB6A20C8322626DA
0x2B222EF99FDD6B2A
0xA383705E02697B43
0x1978002E27D26389
0x6C803C558AC3FB27
0x04B18900FC0C1A7B
0x71483FDF0B04BDDE
0x927FC5524686B49E
0x0582C3E8C22AB0EE
0xB3D39FB4E11A19E2
Query: 0xE66D5E692AAF6DBA
View sql details
Add to query hash list
Cpu time [seconds]
4
2
0
2019-07-02 00:13:38
2019-07-02 03:46:44
2019-07-02 07:19:52
2019-07-02 10:52:55