DBPLUS
better performance

# DBPLUS
# Performance Monitor for SQL Server
# description of changes in version 2019.3

Date: October 11, 2019

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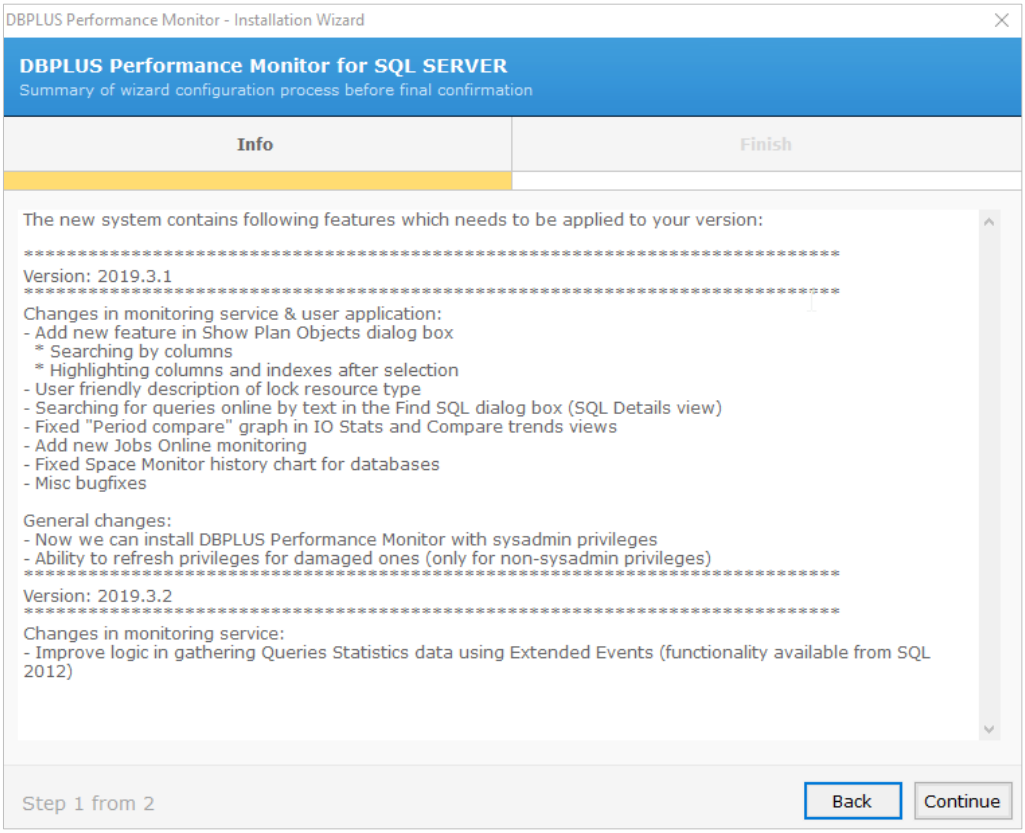
Below is a list of changes to the DBPLUS Performance Monitor system for monitoring Microsoft SQL Server instances.

# 1 New in version 2019.3

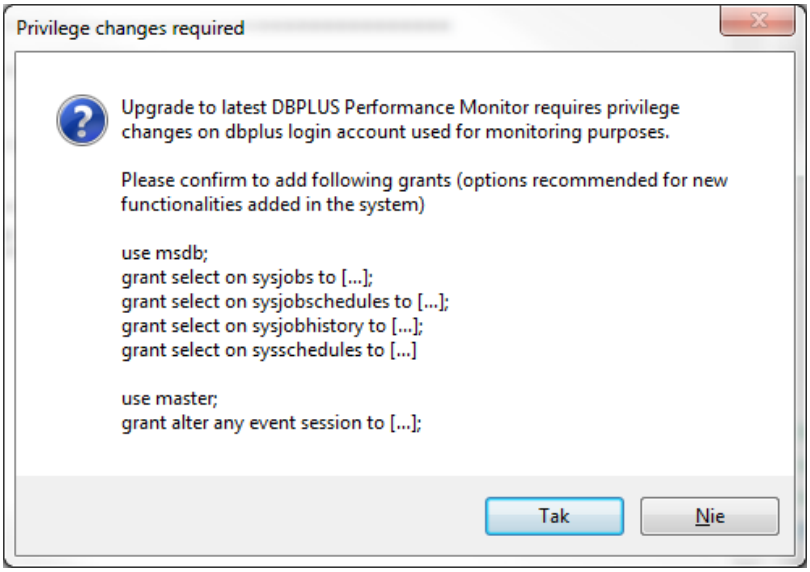
## 1.1 *Upgrade the DBPLUS PM to version 2019.3*

The upgrade process has changed in the latest version of the DBPLUS Performance Monitor application. The change consists in adding the update step of the user rights indicated for monitoring the given SQL instance. The change is caused by the addition of a new screen containing information about Jobs launched on the SQL instance and also the modification of the process collecting statistics data about queries by using the events mechanism.

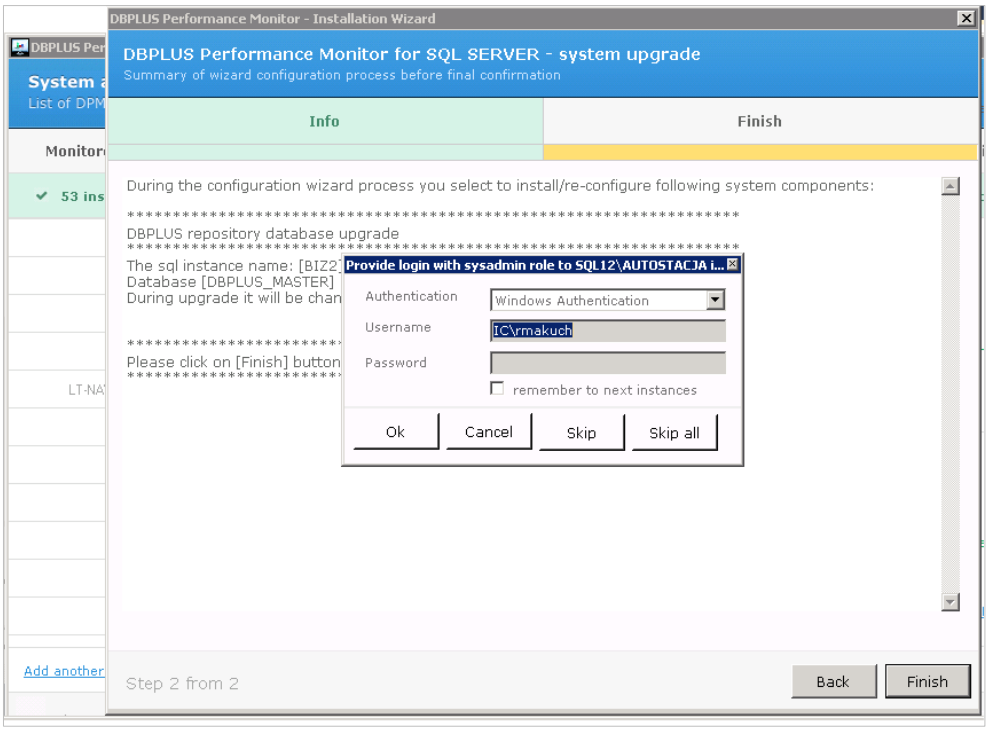
As always, the update process starts by running the dpmMssqlInstaller.exe file downloaded from the link sent by email. Then User perform the standard installation of the program. After installation is complete, run the Configuration Wizard program. After starting the program, the availability of a new version of the software will be detected. Then, after accepting the start of the upgrade, information about the release scope will be presented.




The next window will present information about requires privileges changes on dbplus login account for monitoring the given SQL instance.




If permission denied, no additional grants will be added. Permissions can be granted later using the rights refresh functionality (described in chapter 1.7 Changing monitoring user rights).
If accepted as part of the upgrade process, an additional window will be presented for each SQL instance connected to the monitoring in order to provide the login and password of the user with sysadmin privileges (password needed only for the updating process).



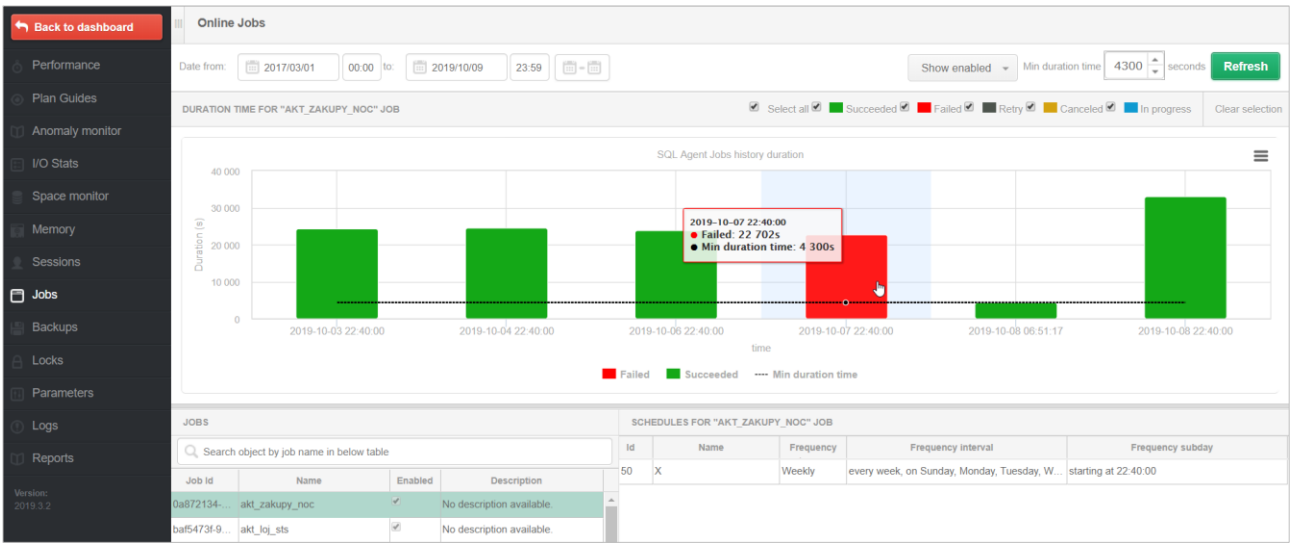

You can stop the update process or skip updates for a given instance or all at any time.

## 1.2 *New Jobs menu*

In the latest version of the application we have added a new view to our application. The view contains information about jobs created in each SQL instance. The data presented in the application contain information downloaded online directly from the SQL Instance. Data is not saved and collected in the DBPLUS repository database.

The screen shows the occurrences of all jobs in a given period of time. Users can choose from filters that limit job list in the grid below, such as:

- Show enabled / Show disabled / Show all
- Min duration time,
- Job end status - by selecting the appropriate statuses in the checkbox.




After clicking on a point on the chart, a row is selected presenting the details of a given occurrence.

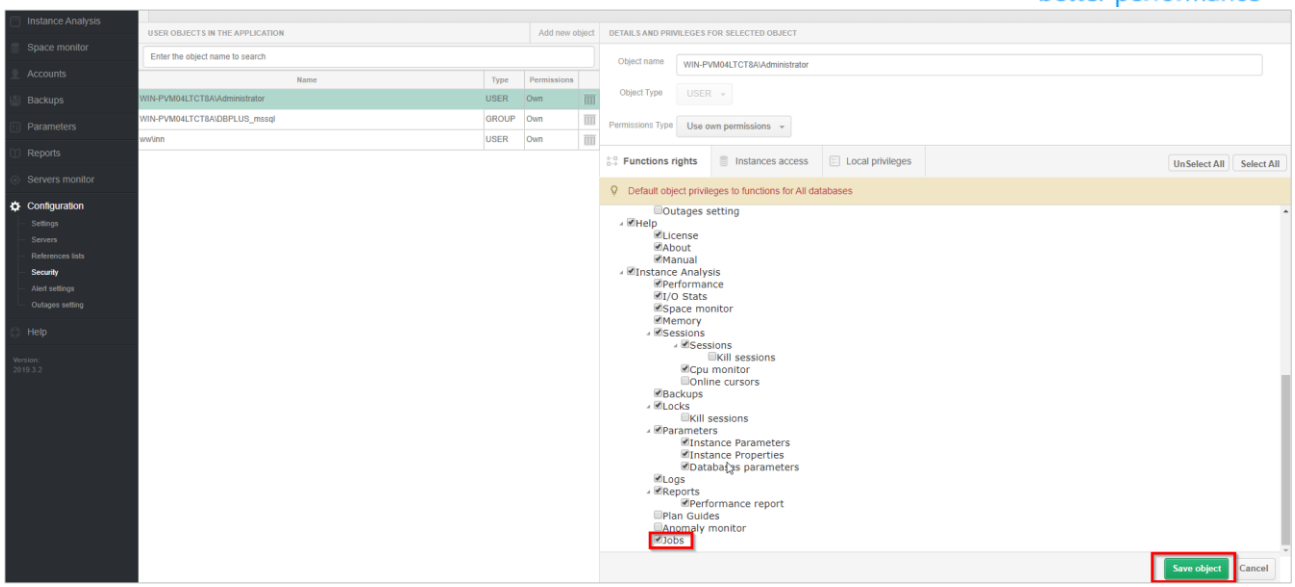
ACTIVITY HISTORY FOR "AKT_ZAKUPY_NOC" JOB

| Instance Id | Message | Duration (seconds) | Run date time | End date time | Status |
|---|---|---|---|---|---|
| 3472228 | The job succeeded. The Job was invoked by Schedule 50 (X). The last step to run was step 3 (load_tab_zak_rekl_bi). | 24408 | 2019-10-03 22:40:00 | 2019-10-04 05:26:48 | Succeeded |
| 3476122 | The job succeeded. The Job was invoked by Schedule 50 (X). The last step to run was step 3 (load_tab_zak_rekl_bi). | 24638 | 2019-10-04 22:40:00 | 2019-10-05 05:30:38 | Succeeded |
| 3483735 | The job succeeded. The Job was invoked by Schedule 50 (X). The last step to run was step 3 (load_tab_zak_rekl_bi). | 23829 | 2019-10-06 22:40:00 | 2019-10-07 05:17:09 | Succeeded |
| 3487599 | The job failed. The Job was invoked by Schedule 50 (X). The last step to run was step 2 (Aktualizacja zakupów 2). | 22702 | 2019-10-07 22:40:00 | 2019-10-08 04:58:22 | Failed |
| 3488558 | The job succeeded. The Job was invoked by User IC\wkossako. The last step to run was step 3 (load_tab_zak_rekl_bi). The j... | 4307 | 2019-10-08 06:51:17 | 2019-10-08 08:03:04 | Succeeded |
| 3491600 | The job succeeded. The Job was invoked by Schedule 50 (X). The last step to run was step 3 (load_tab_zak_rekl_bi). | 33135 | 2019-10-08 22:40:00 | 2019-10-09 07:52:15 | Succeeded |

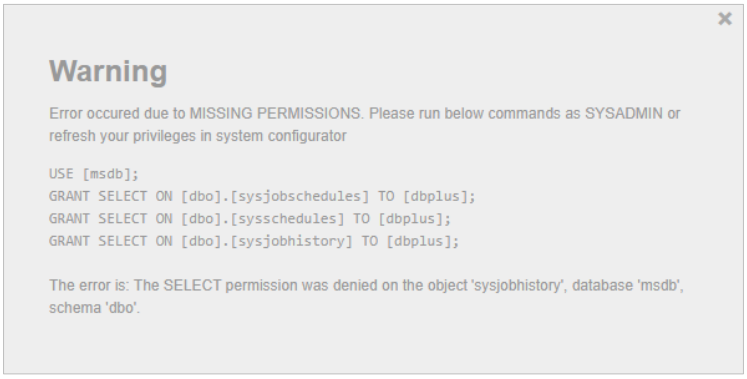
In order to display data about jobs, the "dbplus" monitoring user must have additional rights that have not been granted by default. The "dbplus" login account should have grants to the views:

- dbo.sysjobschedules,
- dbo.sysschedules,
- dbo.sysjobhistory.

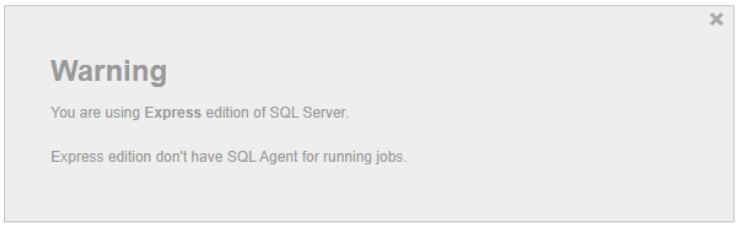
In the application in which the Security module is enabled and access to pages is granted by the Administrator,User need to chcange setings in the Configuration> Security menu, grant permissions to the new page by checking the checkbox for the Jobs page and saving the changes made.




In case the skip step was omitted in the upgrade process, when entering the Performance Monitor application, the Jobs menu will display a message about insufficient permissions:



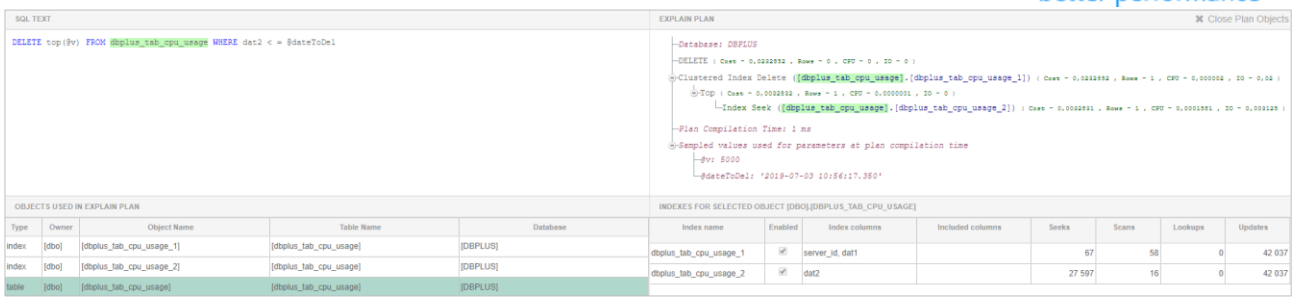

In addition, for Azure and Express version of SQL Servers, the Jobs view is not supported, and when entering the Jobs menu the following message will be displayed (example for Express version):



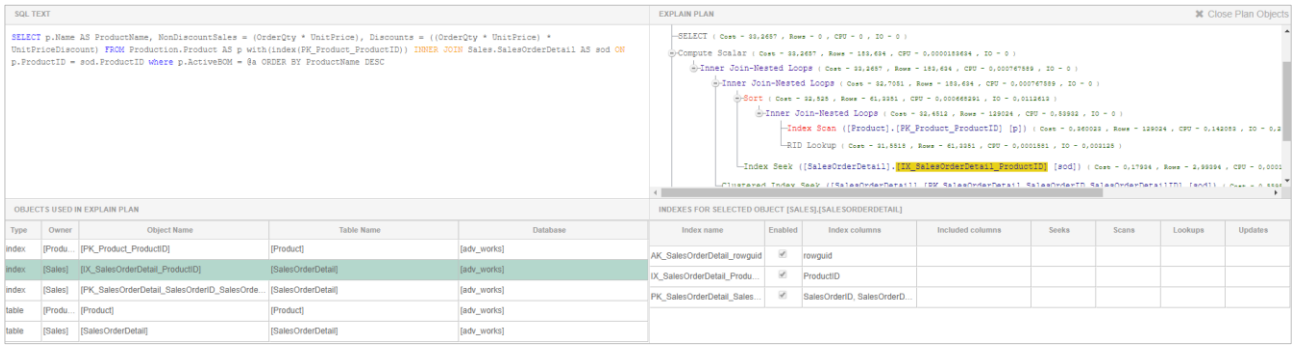

### 1.3 *Improvements in Show Plan Objects*

In the latest version, a function that highlights objects has been added in the Show Plan Objects window in the query details. After select the object in the table [OBJECTS USED IN EXPLAIN PLAN] - the table or index will be highlighted in the content of the query and the query plan.
Depending on the object, tables are highlighted in green, index in yellow.

View for the selected table:

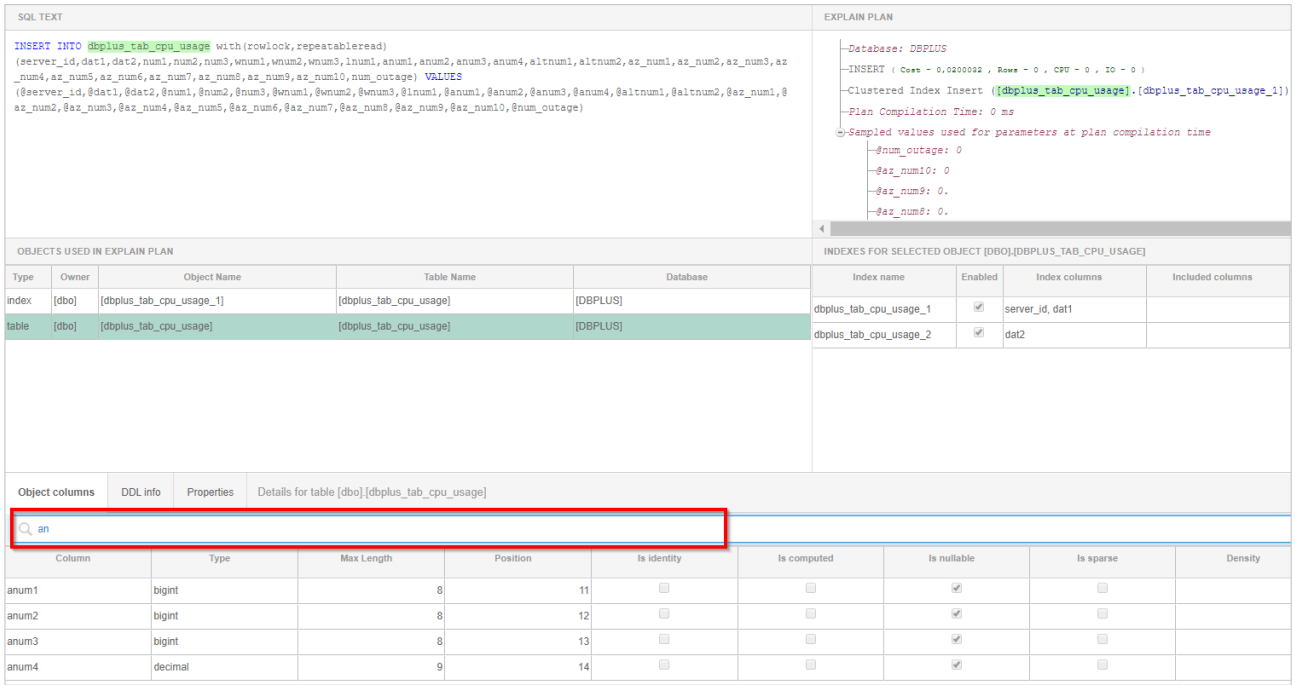



View for the selected index:



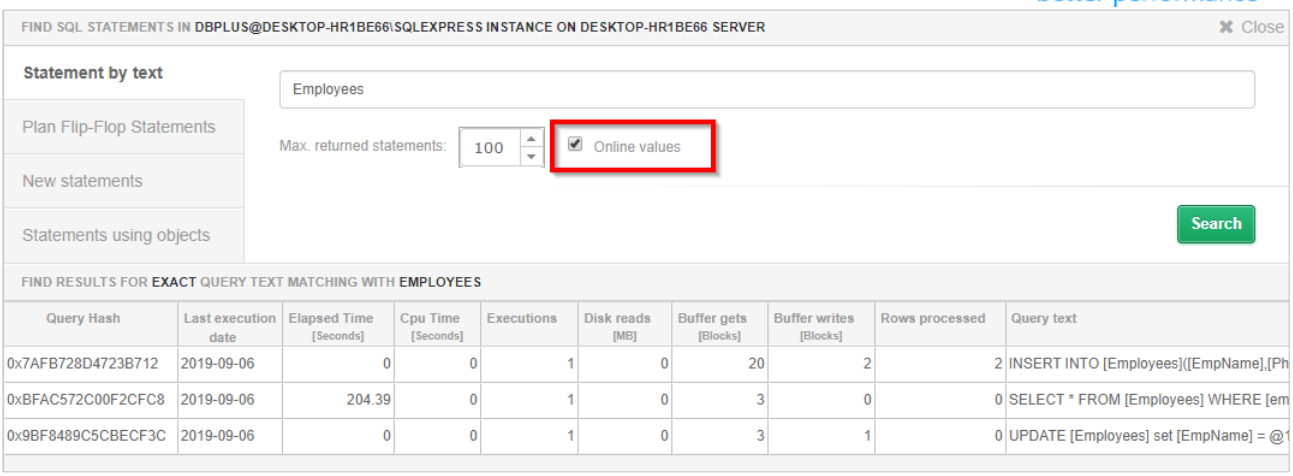

If the query has a view, then the table object will not be highlighted in the view content.

A column finder has also been added. After select an object, user can filter the columns by enter their name in the search box. The columns will filter according to the value entered.




## 1.4 *SQL FIND query search - online*

In the new version, the option of searching queries using the Online function has been added. Thanks to this, the user can search for queries that are currently being made and are not yet saved in the repository. The information is retrieved from the system view directly from the monitored SQL instance.




The search for queries with special characters has also been improved (for the option of searching by text - Statement by text). In some cases, the special character in the query text resulted in an incorrect search for the query.

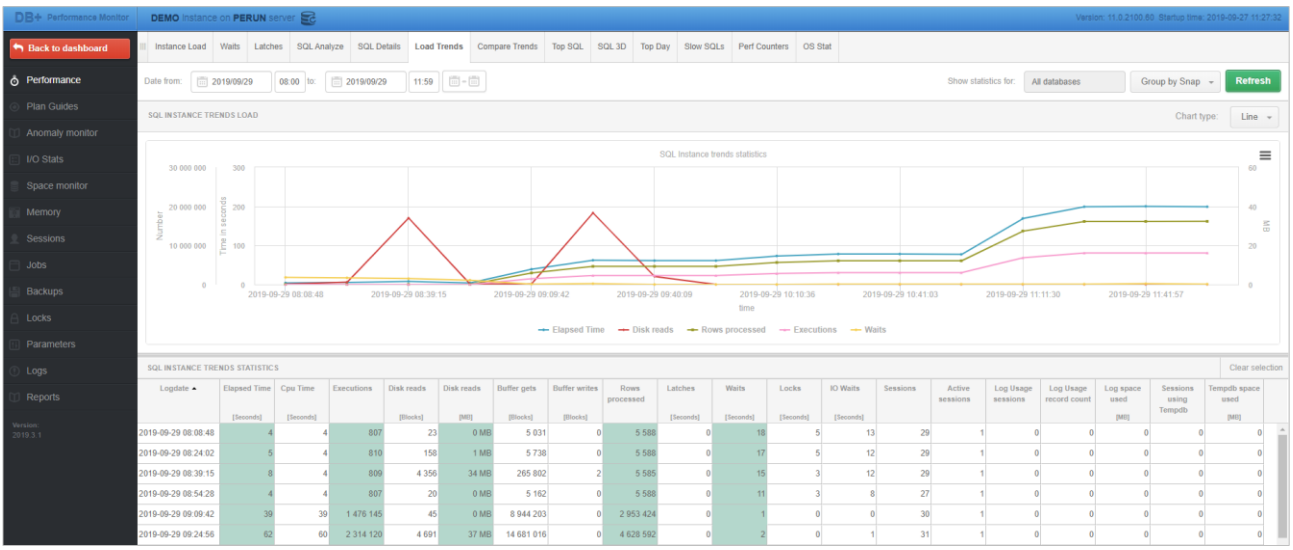
### 1.5 *Addition hours:minutes to time filter*

In the latest version of the application we have added the functionality to present data in a narrower range than today. Until now, in most charts, data could only be filtered for a given day. In this version, we have also added the hour and minute to the date, which allows you to narrow down the range of displayed data.

The changes made to pages:

- Instance Load,
- Waits (Overview / Analyze),
- Latches,
- Load Trends,
- Slow SQLs,
- Perf Counters,
- OS Stat,
- I/O Stats (Analyze / Archivelogs),
- Session history,
- Locks history.

An example of the Load Trends tab has a limited view presents below:

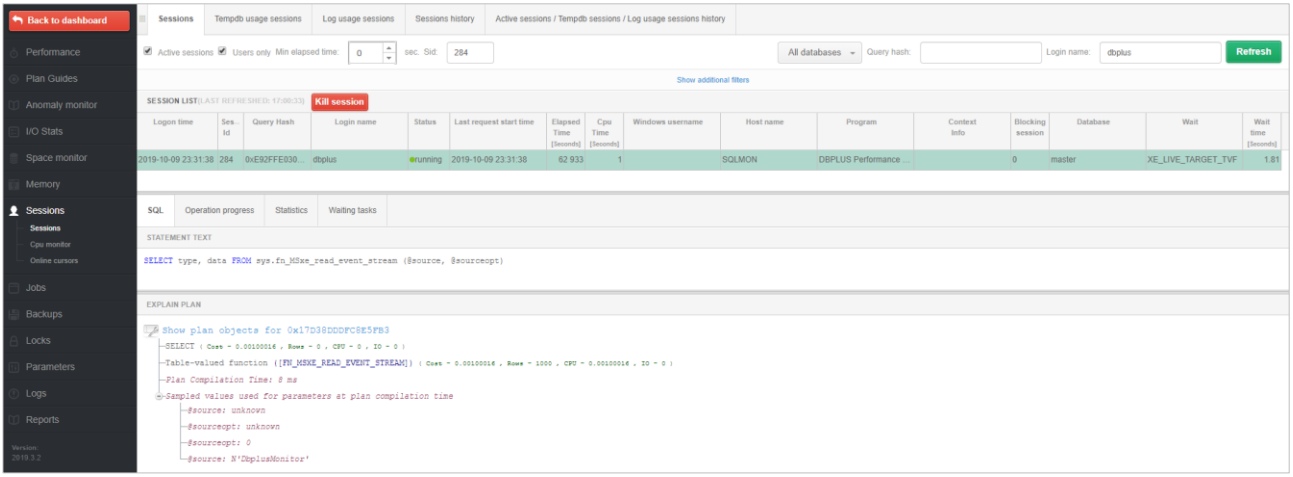


If a narrow time range is selected, in addition to the data presentation on the chart, the performance statistics under the chart are also converted to match the selected range.

### 1.6 *Statements monitoring by Events mechanism*

In the new version of the application, the mechanism of collecting information on query statistics has been modified. The change consists in using the Extended Events mechanism available in higher versions of SQL Server. The change is caused by the improvement of the quality of data collection regarding queries.

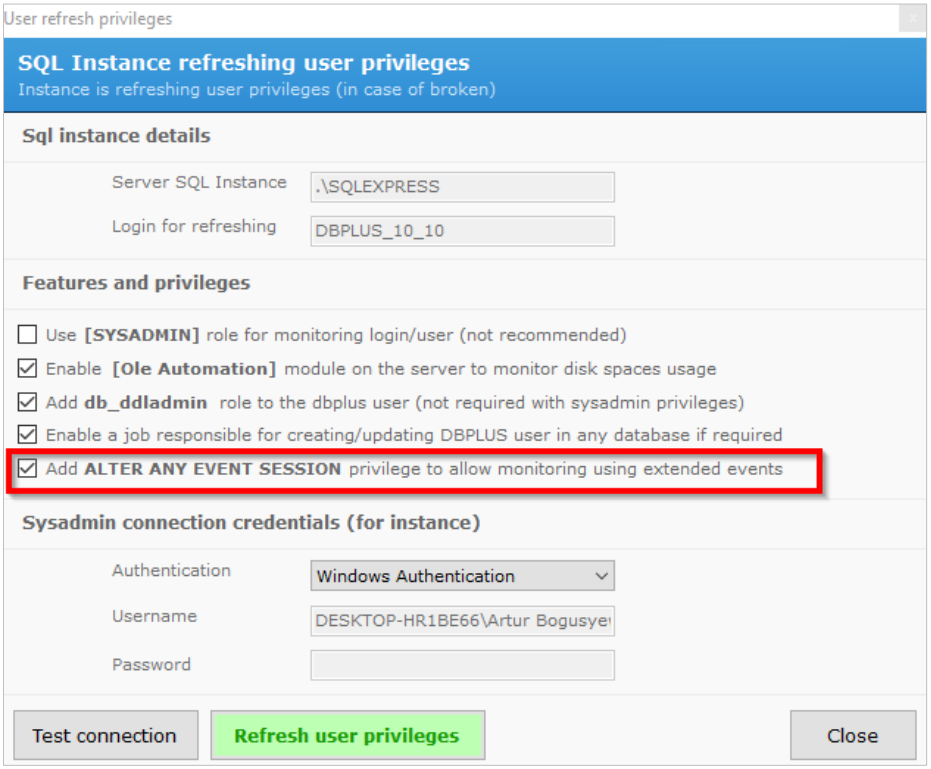
As a result of adding a new mechanism for collecting statistics, the dbplus user session reading events will be visible in the online session screen (this is expected behavior, without affecting performance).




The value of MONITOR_DDL_STATEMENTS has been changed to enabled. This parameter is responsible for collecting information about DDL operations.

Technical information's:

- Applies to SQL Server 2012 and higher (except SQL Azure).
- The queue is created automatically if the dbplus user has the alter event session or sysadmin roles.
- The new functionality can be enabled / disabled by updating the monitoring user rights from the Configuration Wizard.

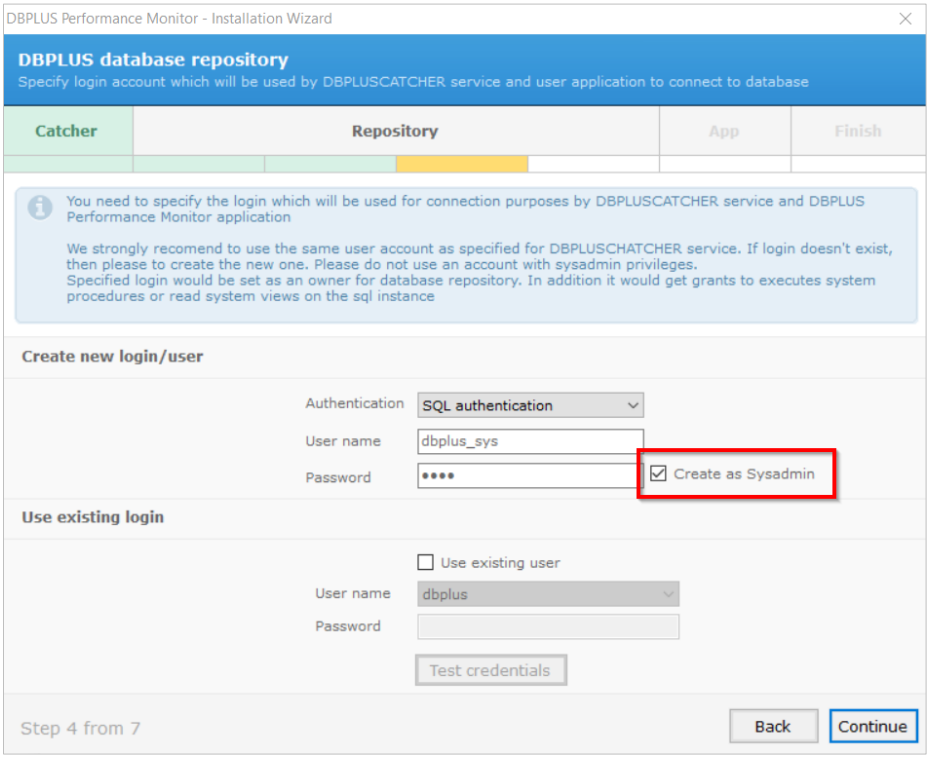



## 1.7 *Changing monitoring login accounts rights*

In the new version, the functionality of manual change of user rights which is indicated as the monitoring user has been added.

### 1.7.1 Permissions granted during user creation

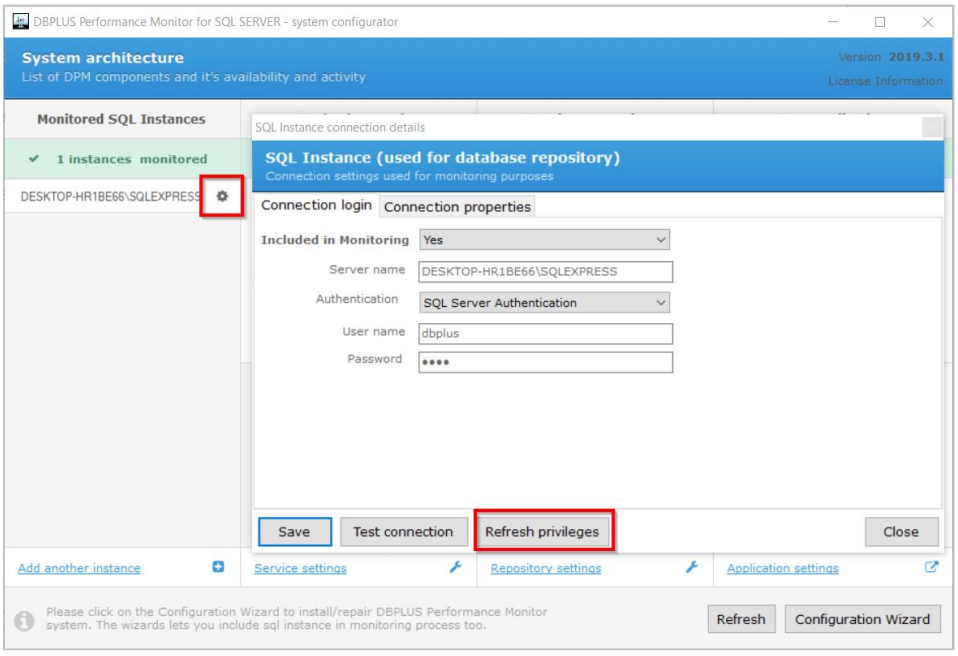
During the process of adding to monitoring a new SQL instance or creating a database repository user, a new user is created. When adding a new SQL instance to monitoring, you must indicate an existing one or create a new user on the database that will collect data on instance performance. Selecting the option to create a new user added a user with limited permissions (sufficient to monitor SQL instances). In the new version, a newly added monitoring user can be created with sysadmin privileges. All you have to do is select the sysadmin checkbox in the user creation process, as shown below:



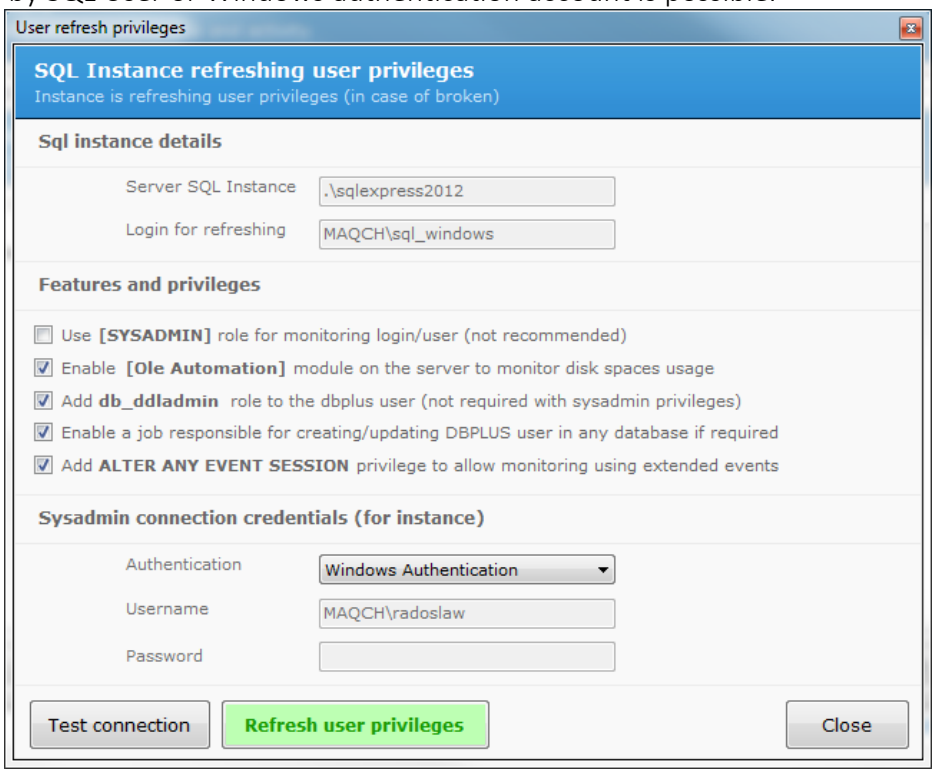

### 1.7.2 Modifying permissions of an existing user

The new version has the option of refreshing the rights of an existing user indicated in the monitoring. We use refreshing when the monitoring user does not have access to all databases on the SQL instance and we want to grant such grants. When connecting the monitoring instance, the rights for the monitoring user are granted to all databases in the SQL instance.
Refreshing permissions is also useful if you need to grant additional permissions that have not been previously granted (or were received), and are needed for the correct display of data (e.g. Job screen) or using the Event mechanism to collect statistics.

To modify the permissions, open the "DBPlus Configuration Wizard" program, then go to the settings of the given SQL instance by clicking the button ⚙ next to the name of the SQL instance for which you want to refresh / give permission. Then click the [Refresh privileges] button.



On the next screen we provide user data with Sysadmin privileges for a given SQL instance. Authorization by SQL User or Windows authentication account is possible.




The screen shows the current permissions of the monitoring dbplus user. Checking or unchecking a given option will grant or revoke the given rights.
In the case of the [ALTER ANY EVENT SESSION] option, in addition to changing permissions, a trigger is also created that is run on the event queue.

To make changes, confirm by clicking the [Refresh user privileges] button.

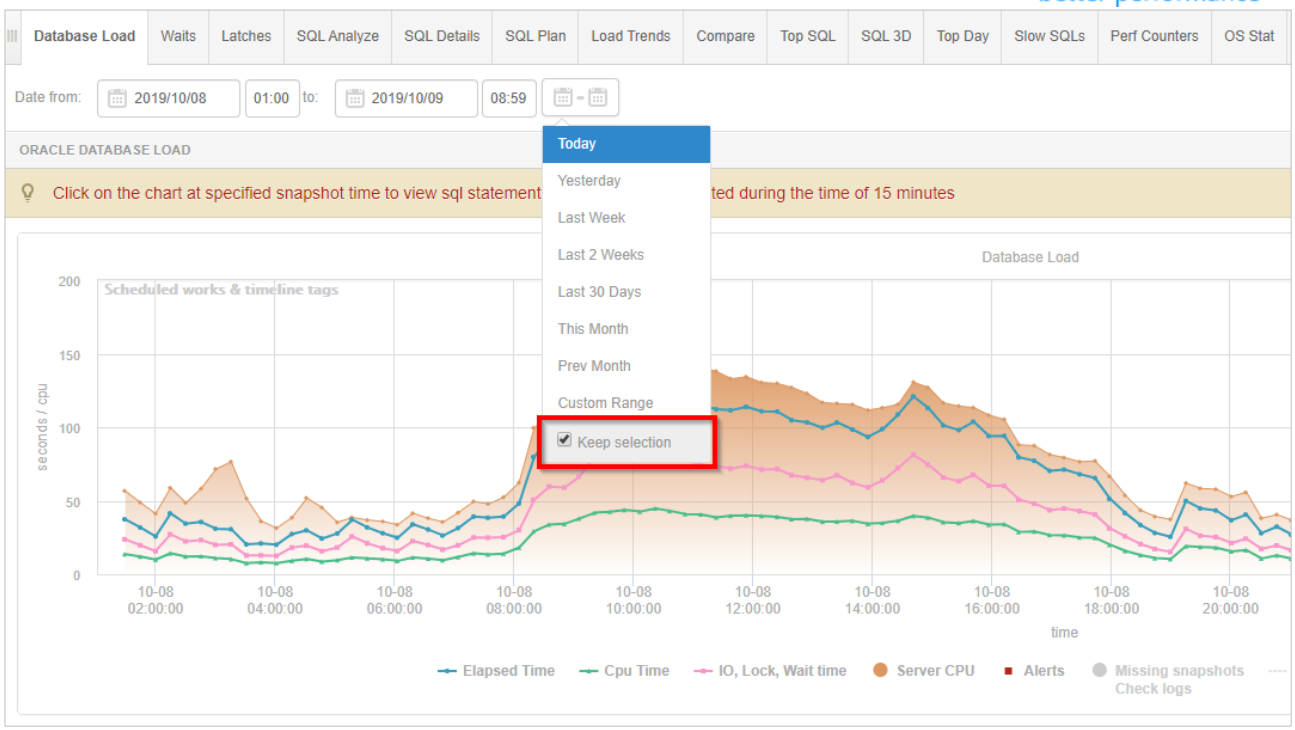
### 1.8 *Remind and sharing settings*

In the new version we have added the functionality to remember changes made on a selected tab in the database details. Currently, each page refresh, change of date or moving to a different tab results in a return to the default settings for a given tab. The introduced change consists in remembering the settings of the given tab for:

- date
- column selection in the table,
- series on the chart,
- grouping
- choices in the dropdown box,
- checkbox options.

Each setting will be remembered within a given tab. The selections made on each tab will be remembered.

If you want the selected date range to be the same for most tab, You need do select [Keep selection].




Remembering the date ("Keep selection" function) does not work on the tabs:

- Load Trends (viewing data over a large time range),
- SQL Top SQL (detailed data viewed for 1 day range),
- SQL 3D (detailed data viewed for 1 day range).

When you exit from details to the Dashboard screen, changing the database or close the application, the settings will be restored to their default settings.

## 1.9 *General improvements*

### 1.9.1 Improvements on the Locks page

In the latest version, a function has been added to the lock screen in the Online Locks and Locks History tab that indicates the object standing in the lock. Until now, information about the object standing in the blockade was passed as the object identifier:

| | |
|---|---|
| Resource Type | OBJECT |
| Wait Resource | OBJECT: 5:574625090:5 |
| Resource Description | objectlock lockPartition=5 objid=574625090 subresource=FULL dbid=5 id=lock106fe7c800 mode=Sch-M associatedObjectId=574625090 |

In the new version, the identifier has been assigned the name of the object that waits in the lock, as in the example below:

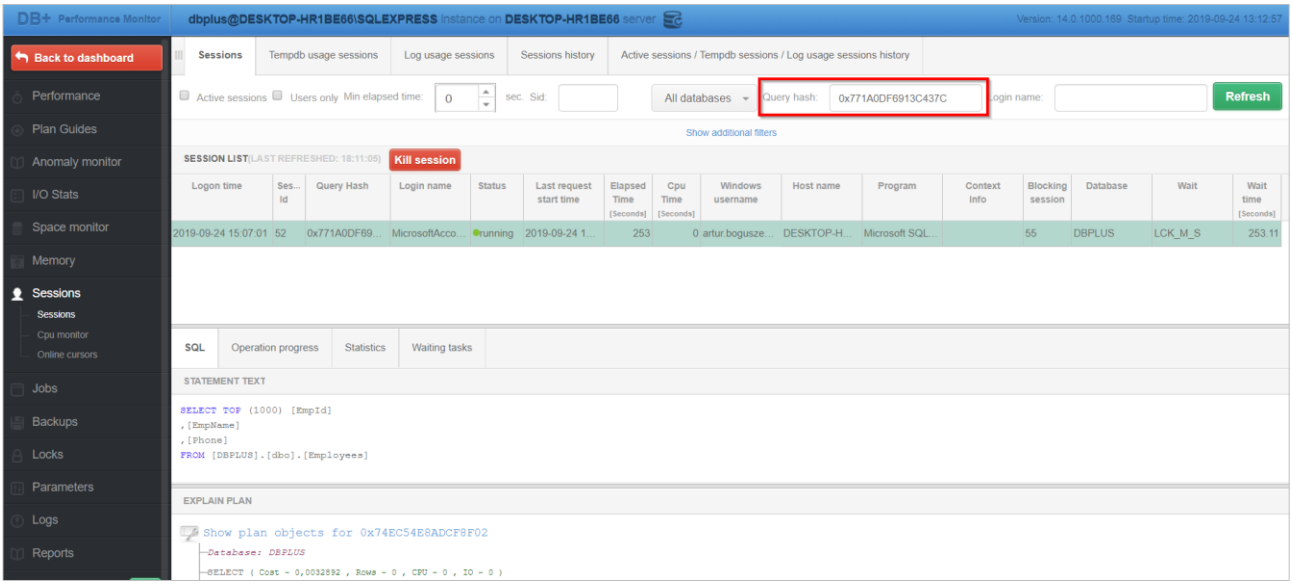
| | |
|---|---|
| Program | Microsoft SQL Server Management Studio - Query |
| Wait | LCK_M_SCH_M |
| Database | DBPLUS |
| Resource Type | OBJECT |
| Wait Resource | Table (user-defined): Employees (OBJECT: 7:978102525:0 ) |
| Resource Description | objectlock lockPartition=0 objid=978102525 subresource=FULL dbid=7 id=lock231e9386200 mode=IX associatedObjectId=978102525 |

### 1.9.2 Improvement in the authorization module

The new version includes an correction that applies to page permissions in the application (Security menu). The problem was related to the scenario when the user shared their own authority and a domain group where many different authorization profiles were used. The problem was the lack of access to all screens despite assigning such permissions to the login.

### 1.9.3 Searching for sessions online

In the new version, an additional Query hash filter has been added to search queries on the online session page (Sessions menu). After entering the query hash value in the search field, the query list will be filtered only for the selected query. The functionality also works with other filters.



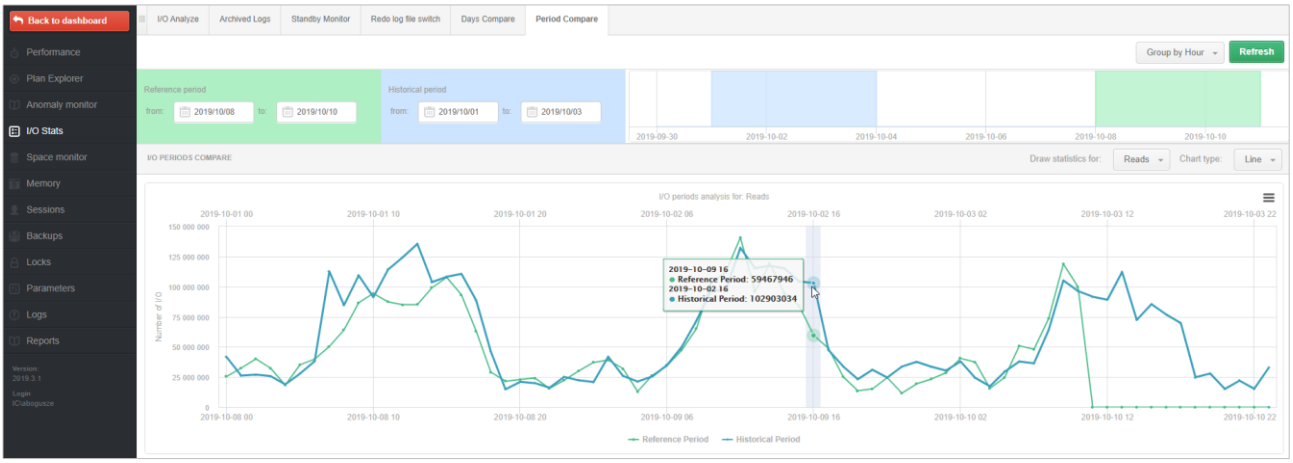
### 1.9.4 Corrections in the Space Monitor model

The latest version has an error related to data refresh in the chart when disk space usage for a file type is displaying. The problem has been corrected at the general level as well as instance details. The problem related to the presentation of data on the chart in case of selecting multiple Instances from different types of servers has also been corrected. In such cases, the chart presented the data incorrectly. The problem has been corrected.

### 1.9.5 Improve Period compare tabs

In the new version we have improved the performance of the statistics comparison tool for the selected range [Period Compare]. Comparing statistics for a selected period of time is available in:

- I/O Stats menu,
- Performance menu in the Waits tab,
- Performance menu on the Compare tab.




In each of the aforementioned tabs, period comparison is available in groups for hours and days. By choosing a point on the graph, we will receive information about the value of a given statistic for a selected hour or day depending on the selected grouping level.