DBPLUS
better performance

DBPLUS
Performance Monitor for Oracle
description of changes in version 2020.2

Date: July 9, 2020

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Table of Contents

Below is a list of changes to the DBPLUS Performance Monitor system for monitoring Oracle databases.

New in version 2020.2

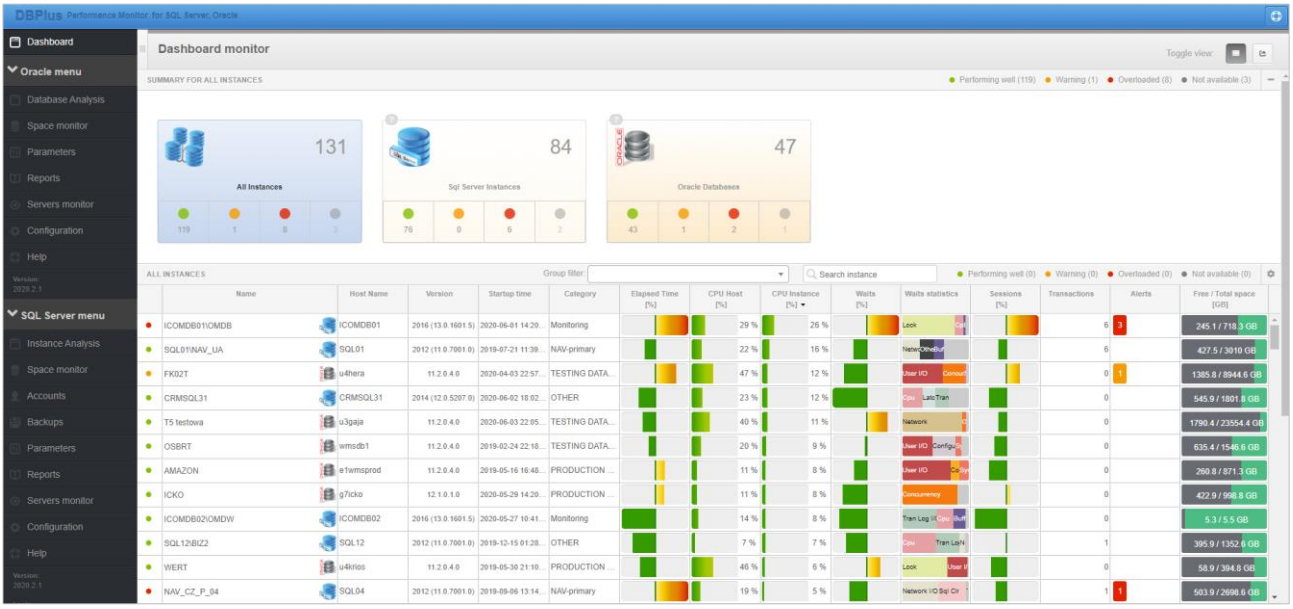
1.1 *Dashboard 2.0*

The new dashboard screen allows the User to view all databases from every version of DBPLUS application (Oracle, SQL Server, and PostgreSQL) at the same time. The current release will include a version of Dashboard with a grid view. The Dashboard will be expanded with a view with online charts in next release.

Dashboard presentation

The Dashboard screen is divided into areas:

- Information bar,
- Summary area,
- Instance area,
- Instance details.



Information bar

In this part of the screen, the User has the option of switching views between the old and the new version of the Dashboard screen using the ***Togle view*** button.

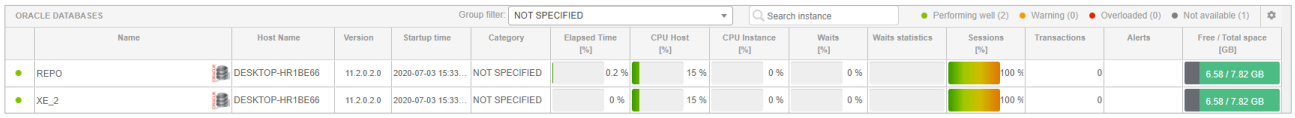
Summary area

This contains information about connected versions of the DBPLUS application. The summary area contains aggregated information about monitored databases available on a common screen. Each tile presents databases whose data is stored in separate database repositories. The User can present all databases together (All Instances) as well as each of the platforms separately. To change the view, click on the individual tile.

The tiles, apart from the platform type and name, present aggregate information on the status of monitored database instances.

Instance area

This area contains basic information about monitored databases. The view can be filtered using previously assigned groups to each of the databases - ***Group filter***, as well as by enter the database name in the ***Search instance*** field.

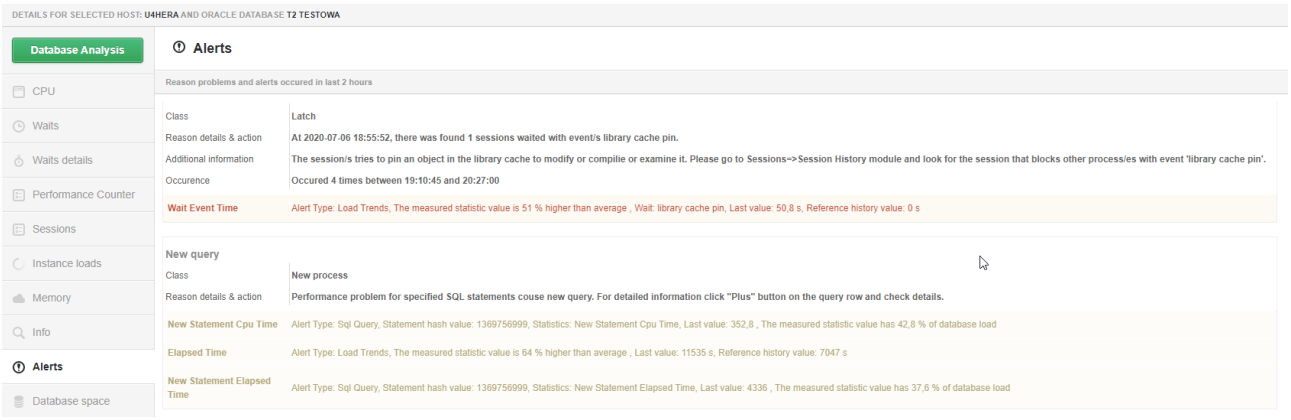


Basic data on databases contain information about:

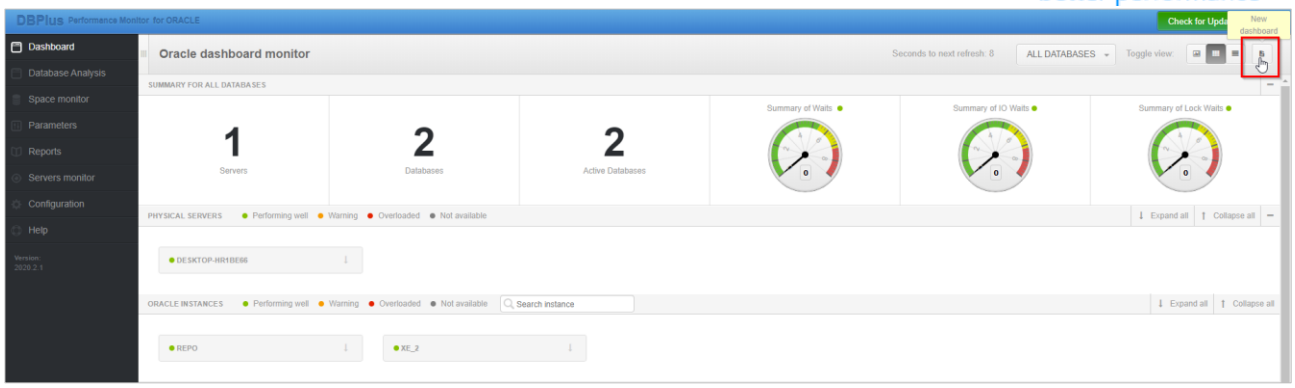
- Database status - the value is calculated based on performance indicators and alerts,
- Name - database name,
- Host Name - server name,
- Version – database version,
- Startup time – the date the database was last restarted,
- Category – categories assigned by the User in the DBPLUS application,
- Elapsed Time [%] – duration of queries based on the database in relation to the trend calculated for the last 30 days,
- CPU Host [%] – percentage of CPU utilization on the server,
- CPU [%] – percentage of CPU utilization by the database on the server,
- Waits [%] – percentage of all waits in relation to the historical trend,
- Waits statistics – ratio of top 3 statistics currently on the database,
- Sessions [%] – the number of active sessions in relation to the historical trend,
- Transactions – number of active transactions on the database,
- Alerts – alerts on the given instance in the last 2 hours,
- Free/Total space [GB] – ratio of free space to total database space.

Instance details

This area contains data on the most important performance statistics for the monitored database. If the User click on individual elements at the level of the instance area, they will receive detailed information about the given statistics at the level of instance details. For example, if User indicate a column with alerts, the user will receive detailed information about the type of alert, class, time of occurrence and information about possible next steps.



A new Dashboard screen has been introduced in the latest version of the application. After enter the link, User will see the previous version of Dashboard. To go to Dashboard, click the ***New dashboard*** button. The new dashboard is visible at the new address:
http://computer_name/DPMOracle/dashboard-main.aspx

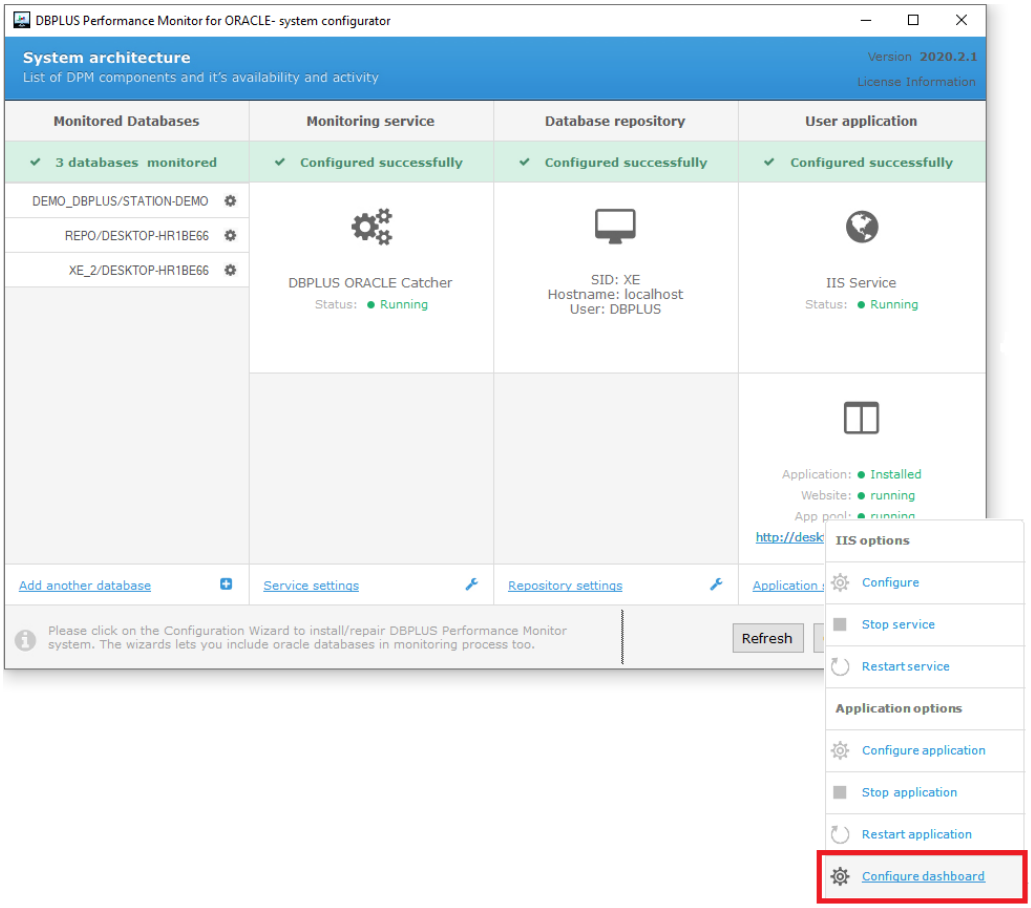


Dashboard Configuration

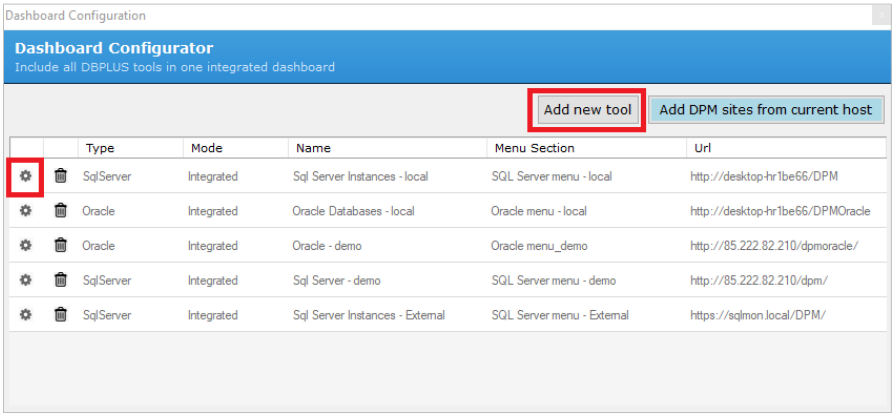
New dashboard screen visible since 2020.2 and higher. To use the common dashboard screen, each version of the DBPLUS application (for Oracle, SQL Server and PostgreSQL) that the User wants to see on the Dashboard must have a minimum version of 2020.2.

After completing the update process, the program automatically searches for the remaining versions of the application installed on the given application server. In case they meet the connection conditions they will be attached to the common Dashboard. Shared Dashboard is also possible when applications are installed on different application servers.

Common Dashboard configuration is available from the **Dbplus Configuration Wizard - Oracle** available in the Start menu. After starting the program, go to the **Application Settings** menu and then select the **Configure dashboard** option.



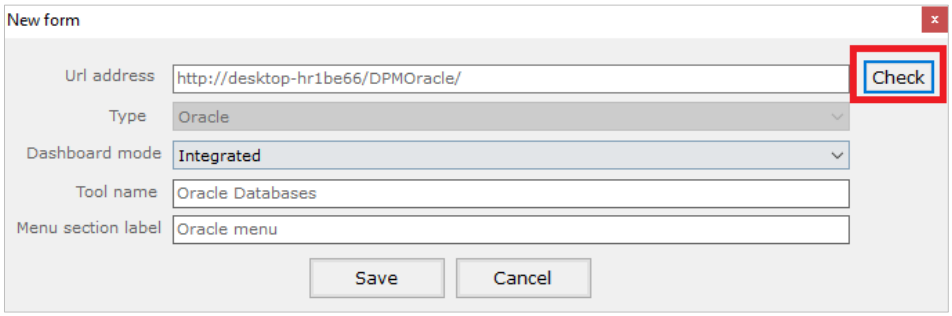
After enter the Dashboard configuration, the User can change the settings of current applications by click the [cog] button, remove previously added applications or add new applications to the common Dashboard.



To add a new application, enter the address in the ***Url address*** field. The address should always be entered in the format depending on the platform:

- http://server_name/DPMOracle/ (for the Oracle platform),
- http://server_name/DPM/ (for the SQL Server platform),
- http://server_name/DPMPostgres/ (for the PostgreSQL platform).

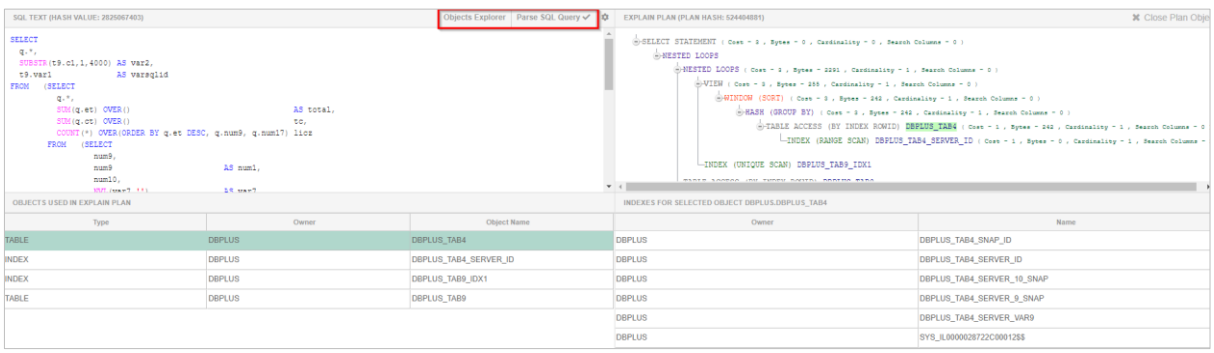
Then click the [**Check**] button, to verify the connection between the application servers. After successful verification, it is possible to set whether the newly added application should be part of the common Dashboard or we want it to be displayed separately. To do this, select the appropriate option in the ***Dashboard Mode*** field (Integrated - shared, Standalone - separate).



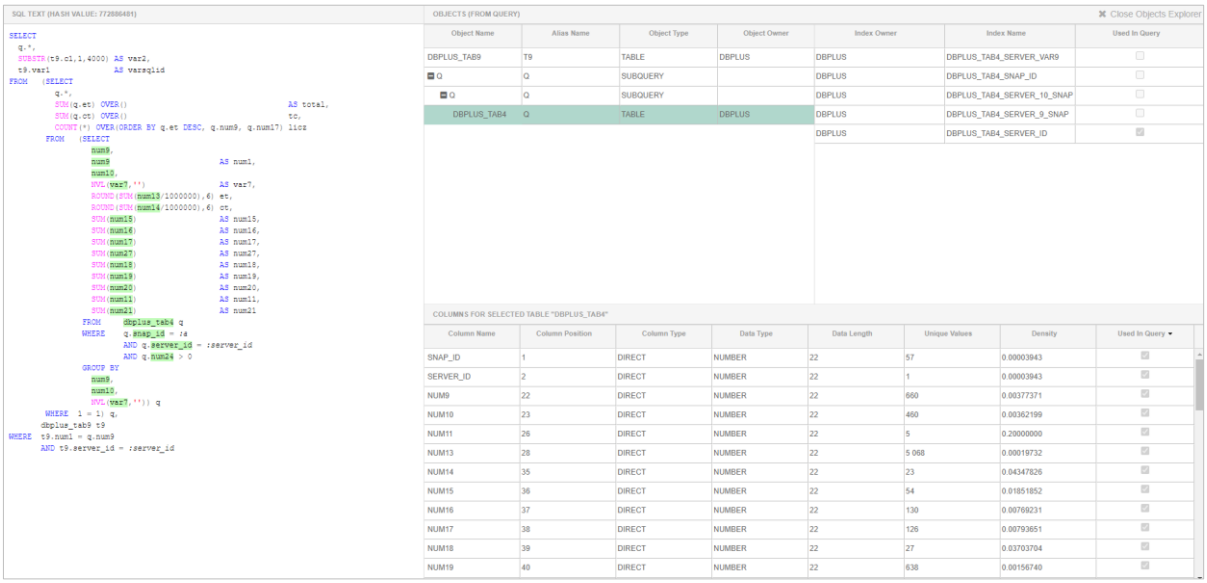
The User can also change the name that will be presented on the Dashboard main screen, as well as in the menu on the left. To do this, simply enter the appropriate name in the ***Tool name*** and ***Menu section label*** fields.

1.2 Query Object Explorer – query analysis

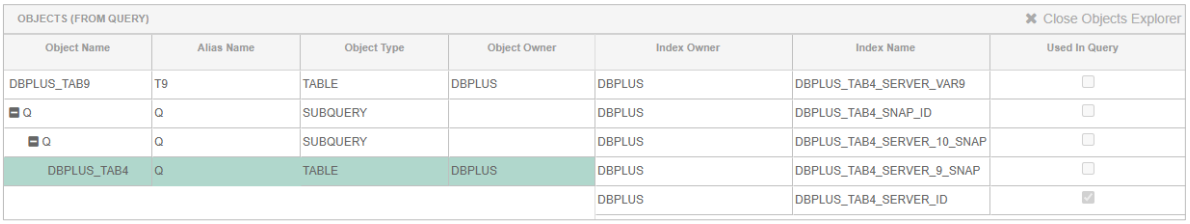
In the latest version we have introduced the ability to analyze query objects - **Object Explorer**. The function allows the User to analyze in detail the objects that make up a given query, which means it speeds up performance verification, e.g. whether the optimal index is used in the query.
Object Explorer is available from the level of query details (**Show Plan Object** in the **SQL Details** tab). To start the query explorer, first check whether the query can be optimized by clicking the [**Parse SQL Query**] button. Analysis for queries that contain system objects or temporary objects is not possible.



After checking the query, go to the explorer by click [**Object Explorer**]. The screen displays the formatted content of the query (SQL TEXT - window on the left), objects included in the query (OBJECTS FROM QUERY - top part) and details of the given object at the bottom of the page (COLUMNS FOR SELECTED ...).



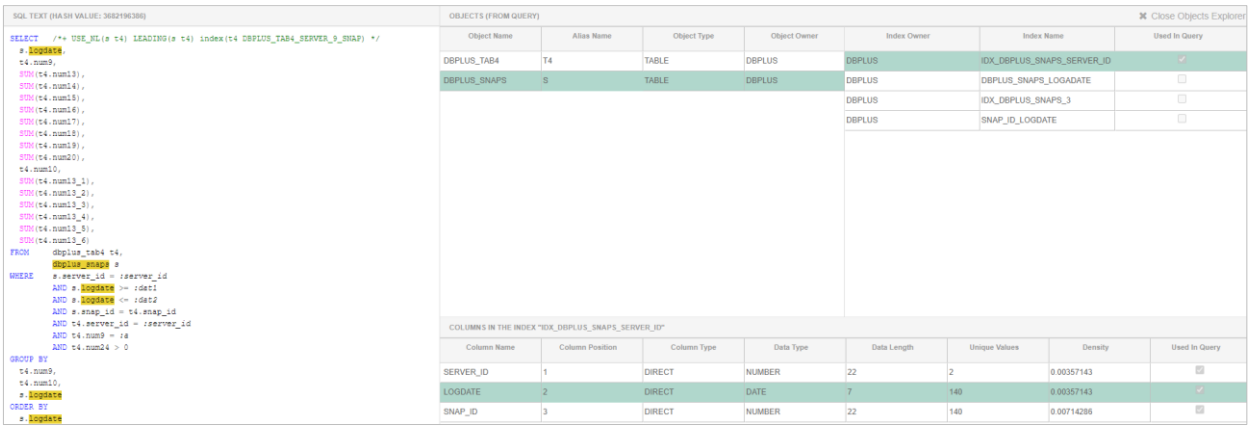
The object table contains information about tables and indexes. Additionally, for easier interpretation of the query structure, additional elements have been added, such as subquery (SUBQUERY) and WHERE clause (WHERE CLAUSE). If a specific query object is selected, the components involved in the query will be highlighted in the query text (green for the table or yellow for the index).
If User select a table in query objects (OBJECTS FROM QUERY), the indexes associated with the given table will be automatically displayed with an indication of which one was used in the analyzed query (the Used in Query column). In addition, the table below will display detailed information about the columns of the table with an indication of which of them participate in the query.



OBJECTS (FROM QUERY) — Close Objects Explorer

Object Name	Alias Name	Object Type	Object Owner	Index Owner	Index Name	Used In Query
DBPLUS_TAB9	T9	TABLE	DBPLUS	DBPLUS	DBPLUS_TAB4_SERVER_VAR9	☐
⊟ Q	Q	SUBQUERY		DBPLUS	DBPLUS_TAB4_SNAP_ID	☐
⊟ Q	Q	SUBQUERY		DBPLUS	DBPLUS_TAB4_SERVER_10_SNAP	☐
DBPLUS_TAB4	Q	TABLE	DBPLUS	DBPLUS	DBPLUS_TAB4_SERVER_9_SNAP	☐
				DBPLUS	DBPLUS_TAB4_SERVER_ID	☑

By selecting the index that belongs to the given table, the User will receive detailed information about the columns in the index. They will also be highlighted in the content of the query where the columns appear. By indicate the individual record in the table with columns (COLUMN IN INDEX), the places where the given record appears in the query will be highlighted.



A special Column Type column has been added to the table with columns. Indicates whether the given column comes directly from the selected object or is part of e.g. a view (VIEW).
There are three types of columns:
- DIRECT – means that the column is part of the selected object,
- COMPUTATIONAL – means that the column is additionally transformed, and the value is calculated,
- BASIC – indicates that the column is from another object but is also not transformed.

If a view has been used in the query or the query structure contains subqueries in the query, then a special row is added in the table with objects that allows displaying objects included in the view or subquery. In this line we have the ability to collapse or expand the rows included in the given object.

OBJECTS (FROM QUERY)

Object Name	Alias Name	Object Type	Object Owner
⊟ WMS_DOST_TOW_VIEW		VIEW	INTER
TOW_MAG	TM	TABLE	INTER
STA	S	TABLE	INTER
MAG	M	TABLE	INTER

By selecting the view in the row in the table below, we get information about the mapping of each row from the view to columns in the tables. In the presented case, the WMS_DOST_TOW_VIEW view consists of three tables. By selecting a view, we get column mappings from views to columns from tables that are part of the view.

COLUMNS FOR SELECTED VIEW "WMS_DOST_TOW_VIEW" WITH MAPPING TO SOURCE COLUMNS

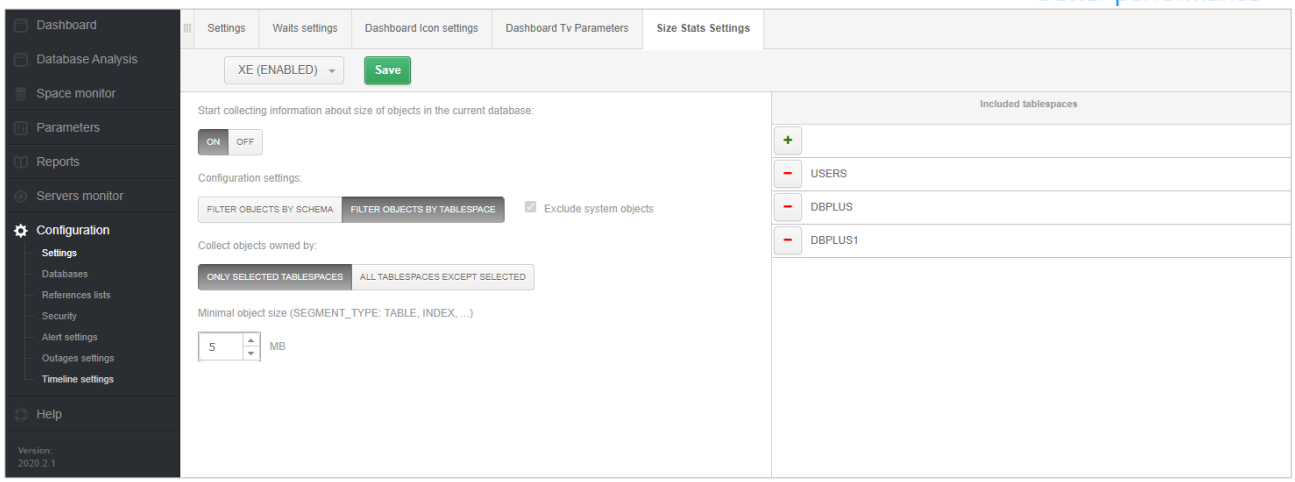
Column Name	Column Type	Query Code	Column Source Owner	Column Source Object Name	Column Source Column Name
MAG_FIR_KOD_1	BASIC	s.MAG_FIR_KOD_1	INTER	STA	MAG_FIR_KOD_1
SEK_KOD	BASIC	M.SEK_KOD	INTER	MAG	SEK_KOD
TOW_KOD	BASIC	s.TOW_KOD	INTER	STA	TOW_KOD
LP	BASIC	TM.LP	INTER	TOW_MAG	LP
WSK_ADR_POD	BASIC	TM.WSK_ADR_POD	INTER	TOW_MAG	WSK_ADR_POD

1.3 *Object Size explorer*

In the latest version we have added the function of collecting information about the size of objects in the database. From now on it will be possible to verify the space taken by a given object in time.
Collecting information about the size of objects over time is a function started by the user (disabled by default). This function, due to the large number of objects for which data have to be collected, can significantly affect the size of the DBPLUS repository. Object size data is collected every 2 hours and saved to the database repository.

DBPLUS recommends enabling object collection only for selected schemas or tablespaces.

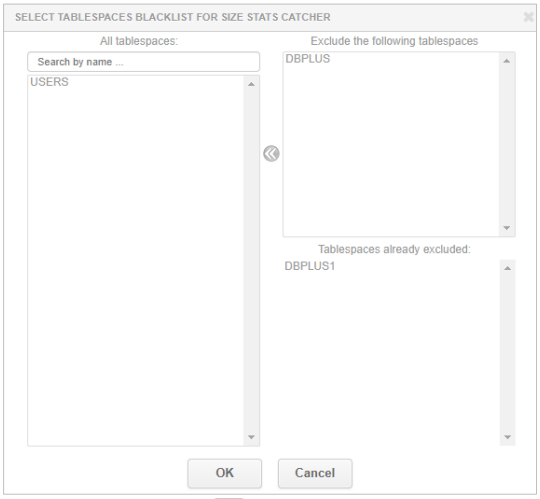
Configuration
To start collect data on the size of objects, go to the main menu Configuration and select the ***Settings*** submenu, then go to the ***Size Stats Settings*** tab.



Configuration is always completed for the selected single database. The configuration consists in choosing one of two options after which the User can filter objects. User can filter by:
- schema,
- tablespace.

In the next step, the User chooses whether they want to limit the previous selection:
- collect information only for selected objects,
- for all objects except the selected ones.

To add objects to the list the User have to click the + (plus) button. Then, the User selects objects from the list (note that it is not possible to select system objects).

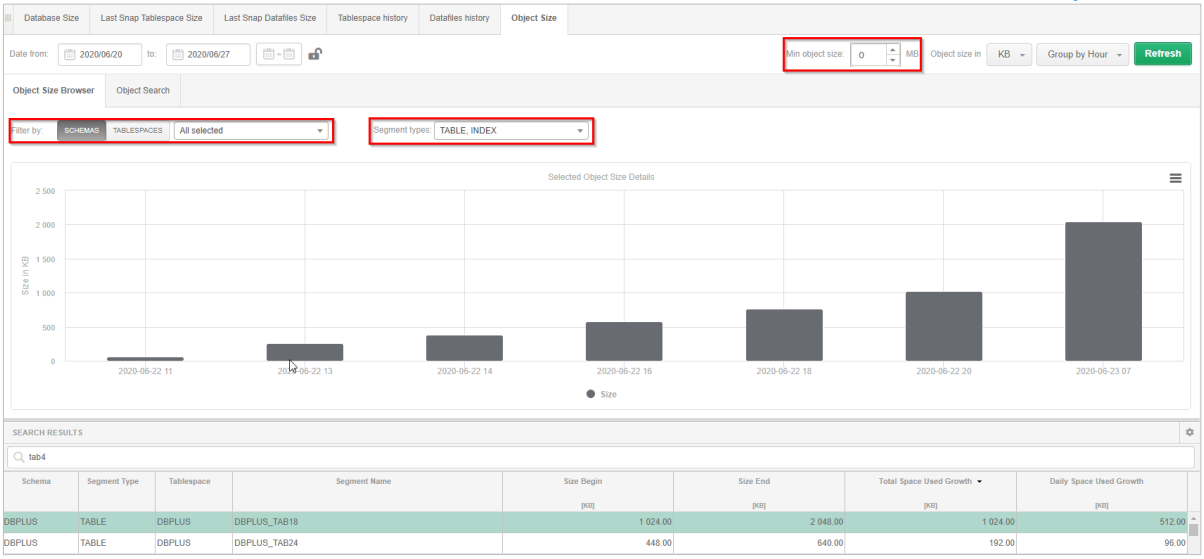


To delete previously added objects, just click the − (minus) button.

Presentation in DBPLUS

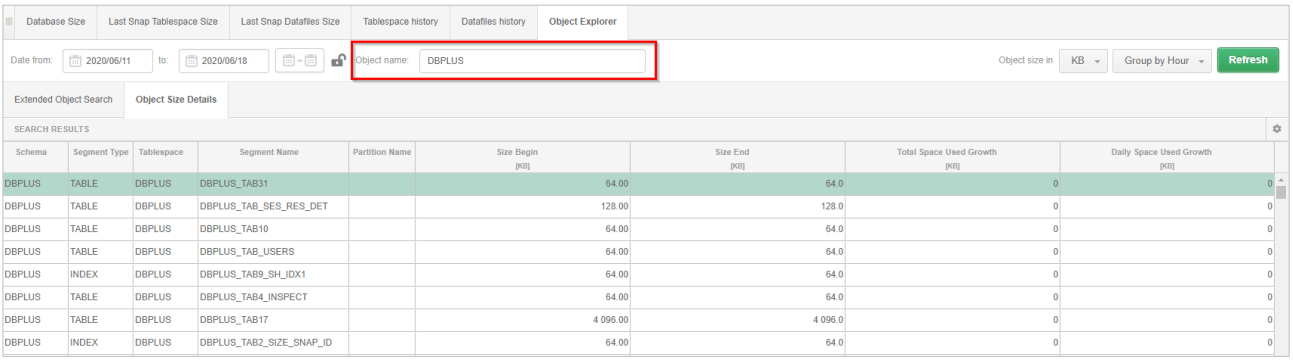
Data on the size of selected objects can be displayed at the database level by select the Space monitor menu from the **Size Object Explorer** tab.

Two options for searching objects:
In the **Objects Size Browser** tab, it is possible to display information about all objects in selected schemas or table spaces that the User selected during configuration.



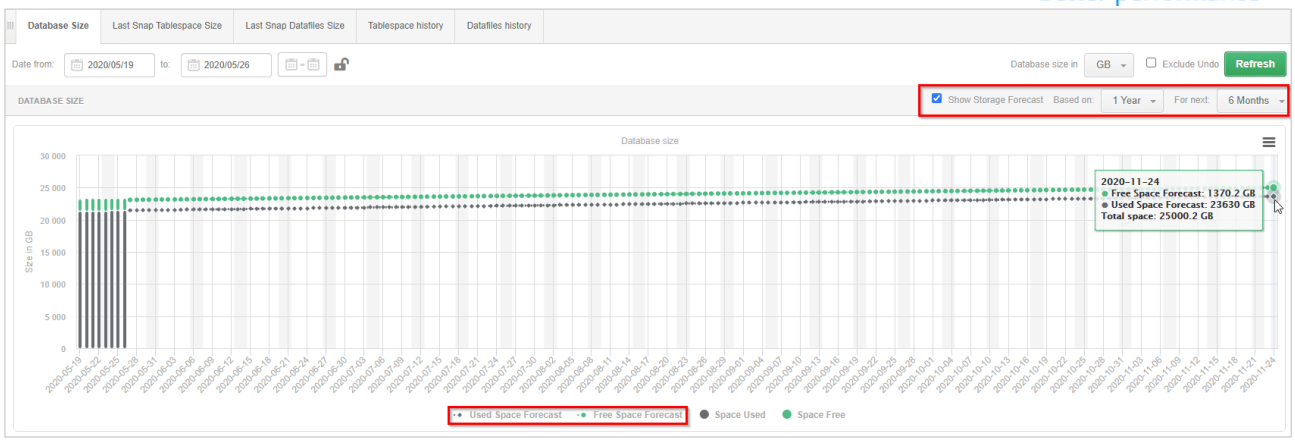
To display the data, select based on what type of object User wants to sort the data, choose between a scheme or a table space. Then they can choose the type of segment they want to display from the list available in Segments types (by default, objects of the type: Table, Index are selected). Additionally, User can limit the list by objects larger than the indicated size by selecting the value in the Min object size field (given in MB units). Data can be displayed for the indicated period and grouped by hour or day.
The object's history is visible on the graph for the indicated row in the table.

In the **Object Search** tab it is possible to search for an object by name. To do this, enter the object_name or schema.object_name in the search field (case insensitive). After entering, a list will be displayed that meets the conditions.



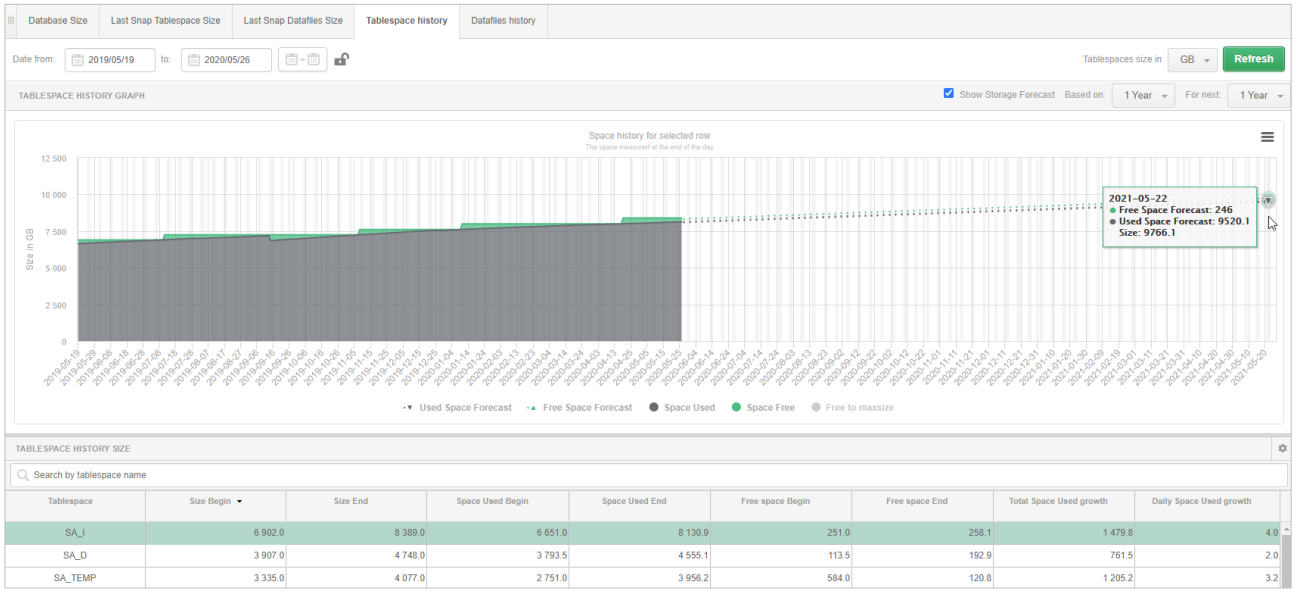
1.4 *Forecasting changes in database size*

In the latest version of the application we have introduced the functionality of forecasting disk space usage in the database. This functionality will easily help each database administrator predict the size of the database and facilitate the Capacity Planning process in their company.
To check database size in the future, select **Space Monitor** from the side menu and then select ***Show Storage Forecast*** in the ***Database Size*** tab.



Forecasting database occupation is calculated because of data collected by DBPLUS applications and saved in the repository database. Forecasting can be done based on historical data from the last 3, 6 months as well as the whole year.
Similarly, User can set the forecast period for 3.6 or 12 months in the future. After the forecast is made, the chart will display a chart with information about the future database size.

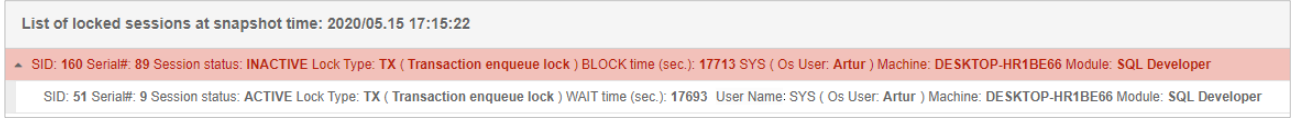
Checking the size in the future is also possible for individual TableSpaces. To do this, go to the Tablespace history tab, select a row in the table that represents the specified tablespace, and then perform a busy forecast.



1.5 *Lock Screen - improvements*

1.5.1 Unification of information about blocking sessions

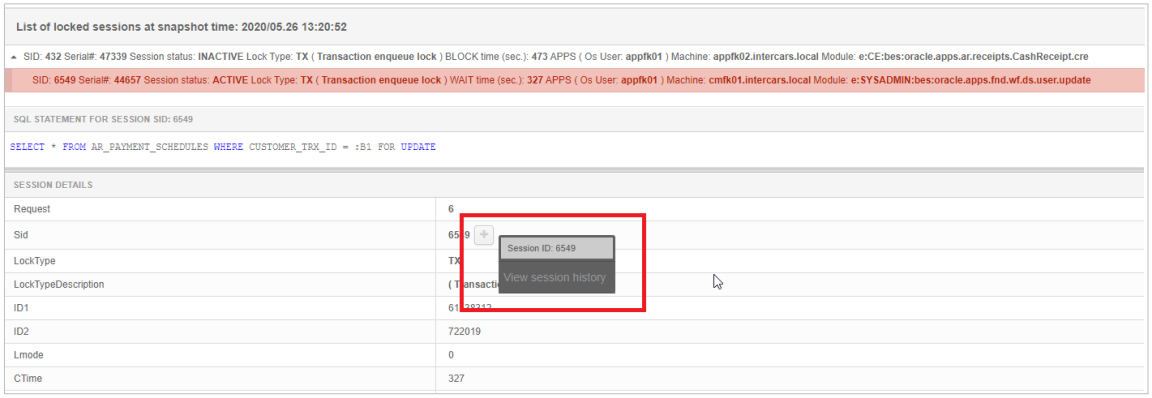
In the new version of the application we have unified information about the blocking and blocked sessions available for each version of the DBPLUS application.



In the latest version, information about the blocking and blocked sessions will be presented in order: **SID** >> **Serial#** >> **Session Status** >>**Lock Type** >> **Block Time** (sec) >> **User name** (OS User) >> **MACHINE** >> **MODULE**.

1.5.2 Locks - go to session history

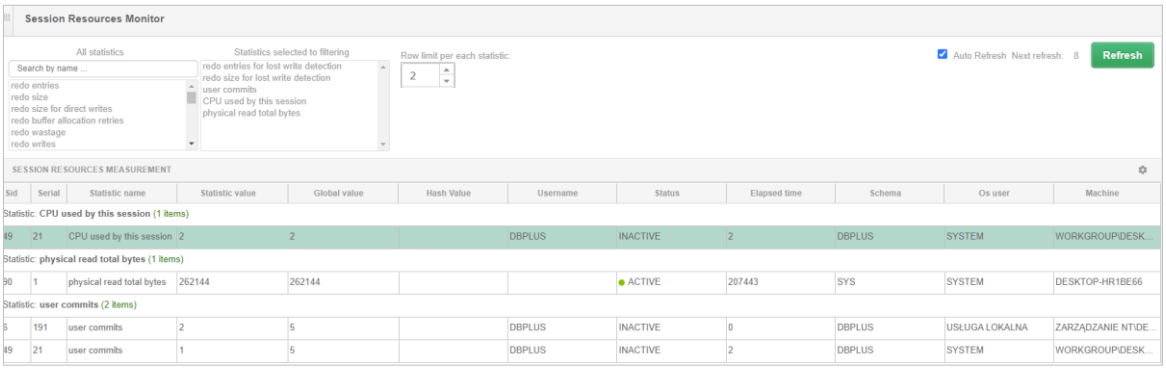
Another change on the lock screen is the ability to quickly go to session history based on the session ID: SID. To do this, simply click the [+] button in the row with session details in the table with session details.
After click the button, it will show that an additional menu with the option to go to session history for the selected session ID.



1.6 *Session menu*

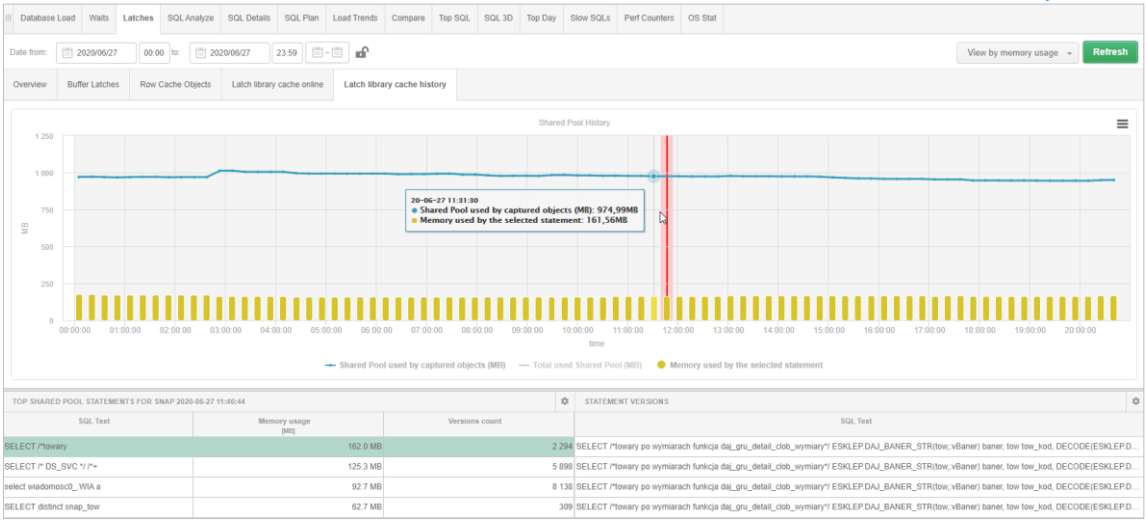
1.6.1 Session resources – improvements

In the latest version we have changed the presentation method on the **Session resources** page. This page contains detailed information about current sessions in the Oracle database. The page is available at the detail level of a given database in the **Sessions** menu of the **Sessions Resources** submenu.
In the new version, we have changed the way data is presented and facilitated the selection of statistics for which we want to display information about sessions.
User can choose up to 10 statistics at the same time. The number of rows returned for a given statistic can also be set by setting the value of the Row limit per each statistic parameter (also a maximum of 10).

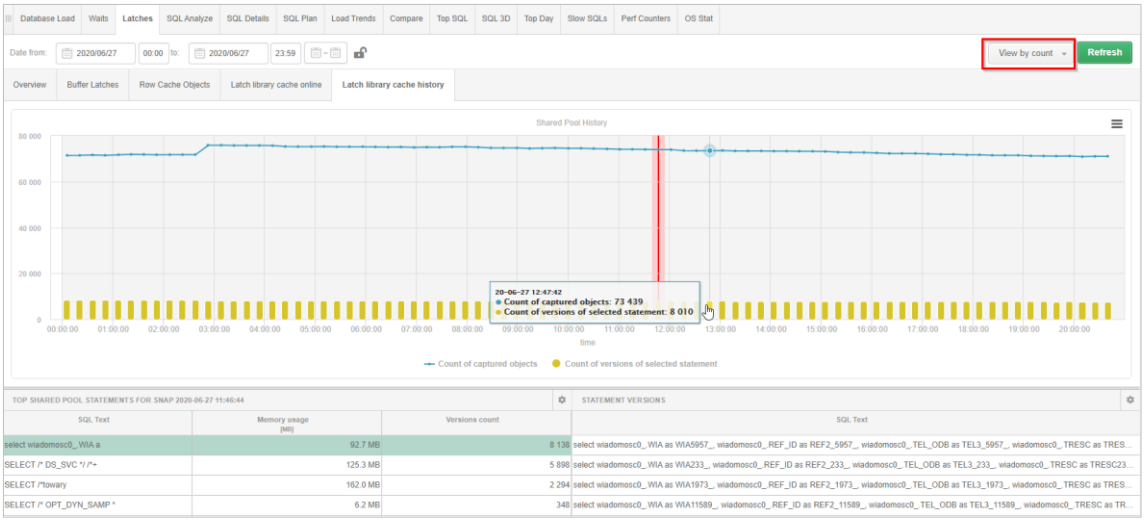


1.7 *History Latch library cache*

In the new version of the application, we have added the ability to collect information about the size of shared pool space by queries. From now on it will be possible to track the area occupied by query groups over time. The screen is available from the database details level in the **Latches** tab> **Latch Library cache history** subtab.
To display information about the history of size of the shared pool area, select the analyzed period and then indicate the point of interest in time on the chart. After clicking, User gets information about the top groups of queries that at the given time took up the most space in the shared pool buffer.



The User can also view information on the number of query versions in the group. To do this, change the view for the chart and set the View by count options. The chart presents information about the number of versions of a given query in the group, as in the example below.



To enable the collection of information on the history of latch on the database, go to the application settings available from the menu **Configuration**> **Settings**. The parameters responsible for collecting information on the latches level are:

- CATCH_SHARED_POOL_STATS,

The parameter enables the collection of information about the use of space shared pool in time. The default setting of OFF (means no collection of latches history information).

- CATCH_SHARED_POOL_SUBSTRING_LENGTH,

The parameter means how many characters in the content of the query (counting from the beginning of the query) are considered to combine the queries into groups. The default parameter value of 24 characters means that all queries whose first 24 characters will be the same will be put into a group of queries.

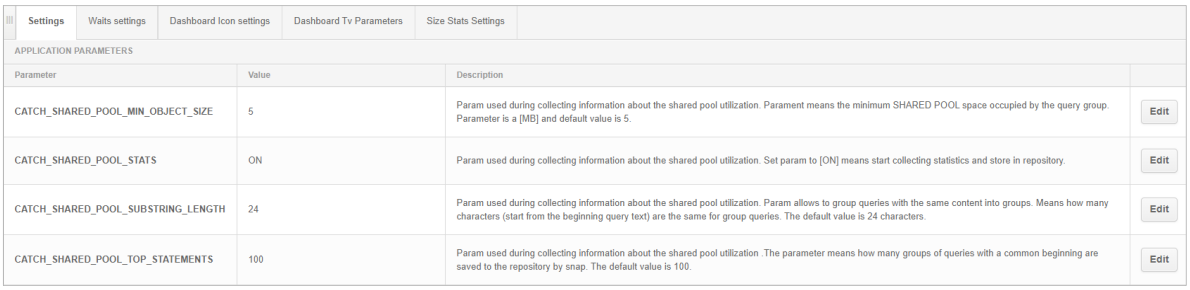
- CATCH_SHARED_POOL_MIN_OBJECT_SIZE,

The parameter is responsible for the minimum size of the query group in the shared pool spaces that queries must occupy to be collected into the query history and saved in the DBPLUS repository. The default value is 10 MB.

- CATCH_SHARED_POOL_TOP_STATEMENTS

The parameter means how many groups of queries will be collected for history and saved in the repository. The default value of the parameter has been set to 100. This means that a maximum of 100 top query groups will be collected for history and stored in the repository for each monitored database for which the collection of shared pool size information has been started.

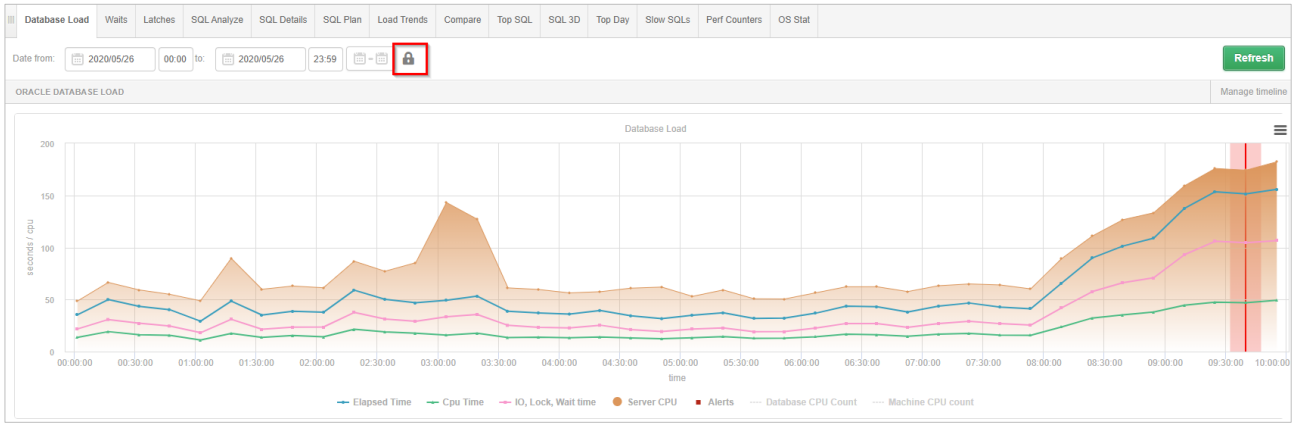
Parameters can be set at the general level for all databases as well as for dedicated databases. It is recommended to collect information on shared pool size only for databases with many queries with literals.



1.8 *General improvements*

1.8.1 Keep selection – save selected dates

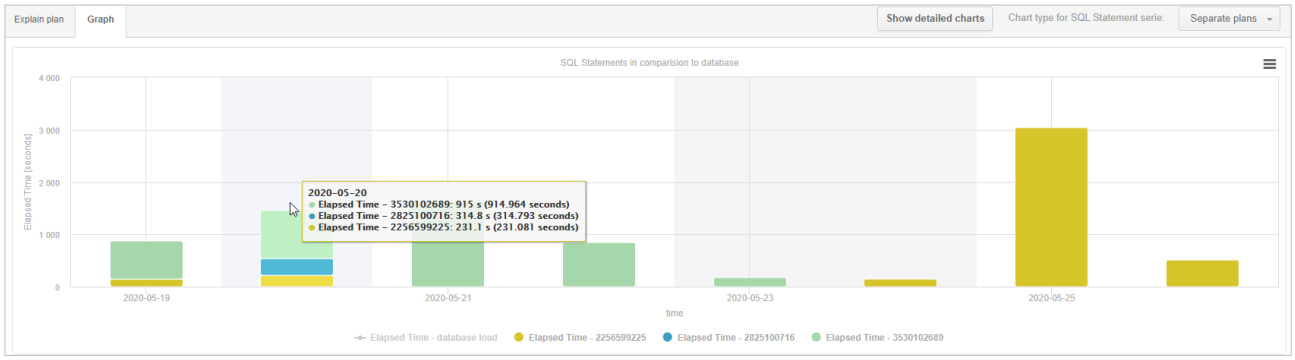
In the new version of the application we have changed the location of the function that remembers the selected date range for which we perform the analysis. This function is especially useful when a problem that has occurred in the past is analyzed, by remembering the setting. Individual pages in the application will always be opened with the selected date range. To save the settings, click the padlock icon. Closed icon means that dates will be remembered on application pages.



If User wants to return to the standard settings, just click the padlock icon again to turn off date storage.

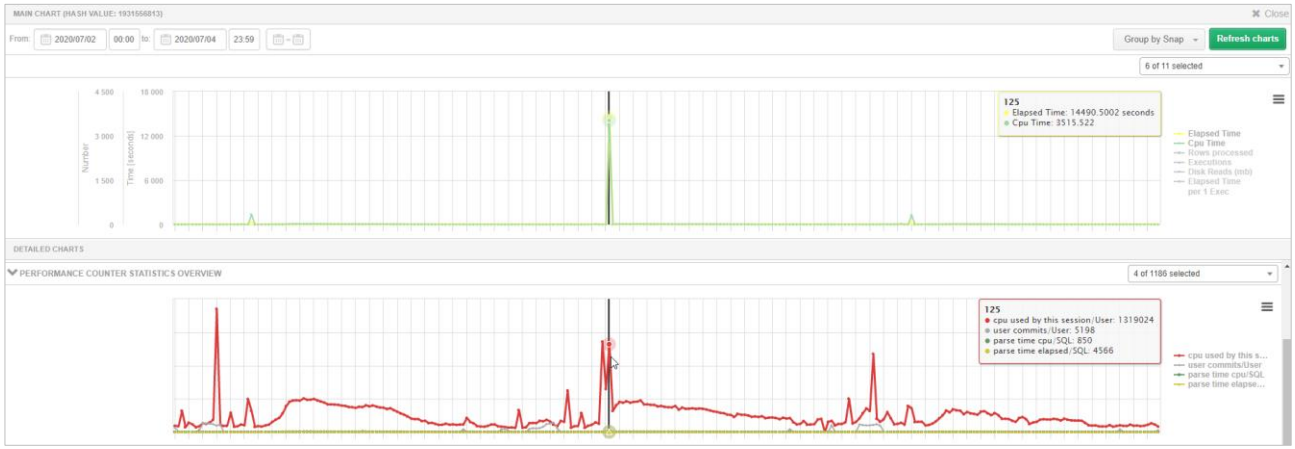
1.8.2 Improved order of the series on the chart SQL Details

In the SQL Details tab, we have improved the order of the series on the chart that shows the execution plans. After changes, the order of plans in each bar on the chart depends on the size of statistics for a given query plan.



1.8.3 Detailed charts – chart set

In the next version we have added some improvements on the **Detailed Charts** screen. This screen is available from the database details level on the SQL Details page in the Graph tab under the [Show detailed charts] button. The functionality is very useful when User wants to verify if other factors influenced the performance of the analyzed query. To perform the analysis, simply go to the Detailed charts screen, select the period for which you want to perform the analysis, and the appropriate type of grouping (snap, hour, day, month).
The page presents a list of charts that contain the most important statistics that affect the performance of the query being analyzed. Each of the charts presents default statistics that can be easily changed by selecting new statistics from the list available or by activating the remaining series from the level of the chart legend.



1.8.4 Security – database and functional profiles

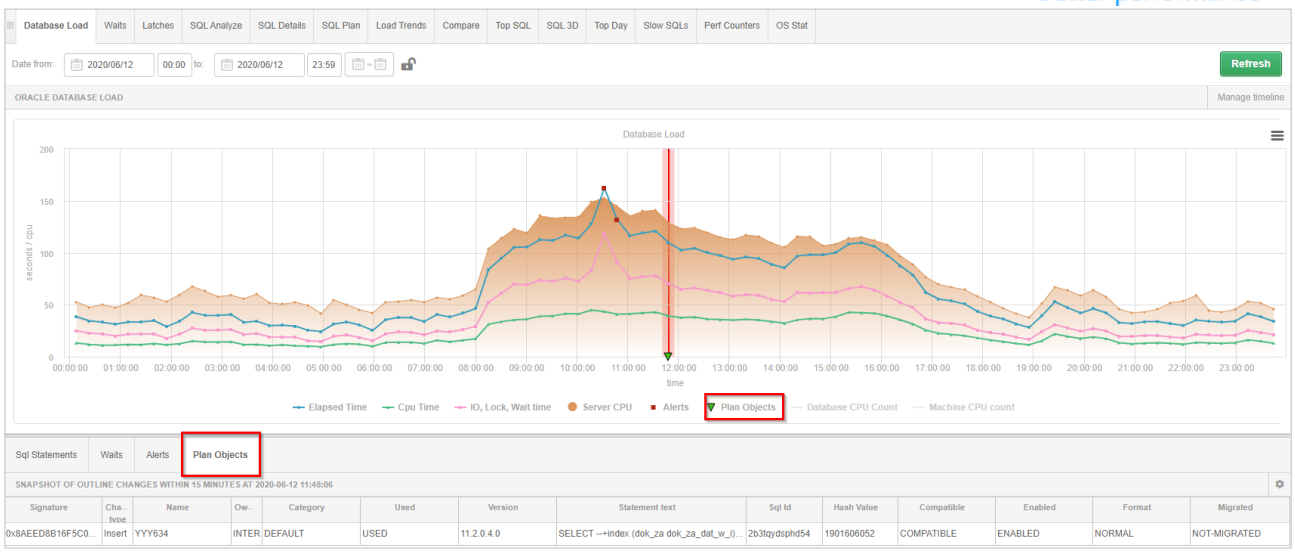
To provide easier access to statistics of monitored databases in the DBPLUS application, we have improved the process of assigning access profiles to users / user groups. In the latest version, it is possible to create a separate profile that gives access only to specific databases available in the monitoring, and separately User can assign permissions to the functional part of the application (access to pages and functionality).

If the User wants to create separate profiles that give access to the database, it is enough to create a profile that does not grant access at the function level (**Functions rights** tab), and do not select any access option.
Similarly, if the User wants to create a profile that contains only access to the application's pages, it should be indicated to which functionalities the user must have access and not to grant permissions at the database level (**Databases access** tab).
If profiles are created separately for each area, it should be remembered that the user for whom we grant permissions has access to both the functions of the DBPLUS application and databases.

Of course, when an access profile is created with authority to functions and databases, the function remains unchanged and is still available.

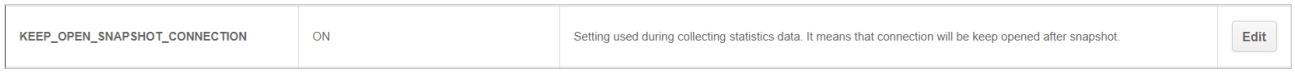
1.8.5 Plan objects - improvements

In the latest version, we have changed the way information about creating **Plan Objects** (Outline, Baseline, Profiles) on Database Load chart. Information about the new site will now be displayed as a "green" triangle icon. In addition, after select the snap where the object was created, User will be able to view information about the object in the new **Plan Objects** tab.



1.8.6 Keep connection – maintaining the monitoring session connection

In the latest version we have added a new parameter KEEP_OPEN_SNAPSHOT_CONNECTION which controls the operation of the DBPLUS application. The new parameter applies to maintaining the database connection after executing the commands collecting performance data from the monitored database. In the previous version, the DBPLUSORACLECATCHER service disconnected the connection to the monitored database after completing the snap procedure (collecting performance statistics). In the current version, the User can decide whether the session should be maintained. To set, go to the settings screen using the path **Configuration> Settings** and change the parameter settings.



If the parameter is set to ON, the session maintains the connection (goes into INACTIVE status) until the next snap (after 15 minutes). ¬¬ Maintaining a continuous connection to the monitored database is particularly useful while there is a scenario of total use of resources on the monitored database. If the connection is maintained, the User is guaranteed that monitoring will start collecting data as part of the snap at this time.

1.8.7 Check for update – information about the new version of the application

In the latest version of the application we have modified the presentation of information about new versions of the application. Information is available on the "old" version of the Dashboard screen. After verifying the availability of a newer version of the application, just click the [**Check for Updates**] button.