

DBPLUS Performance Monitor
description of changes in versions
2018.3.1, 2018.3.2

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Below is a list of changes to the Oracle database monitoring system, DBPLUS Performance Monitor.

1 New in versions 2018.3.1, 2018.3.2

1.1 Changes in alert functioning

The new version of the application expands the alert customisation options. A new feature for defining Problem Reasons and setting related alert rules has been added. New alert definitions have also been added.

1.1.1 Setting Problem Reasons

The essential change is related to the new approach to alert definitions. A **Reasons & Problems definition** has been added to the **Configuration > Alert Settings** screen, enabling problem reasons to be assigned based on defined alerts.


In the new version, alert configuration has been divided into two steps:

- selecting and configuring relevant CRITICAL/WARNING thresholds for individual alert types,
- defining rules based on configured alerts, and assigning reasons of problems.

In order to implement the changes, the alert view in the **Alerts definition** has been modified. Information on this page is presented in columns:

- alert type,
- alert description,
- availability,
- warning level,
- critical level.

The page only shows alerts that have been added to the configuration. If an alert has not been configured, it must be added using the **[Add new alert]** button.

Alerts can be configured for all or for dedicated databases. At any time you can delete a previously defined alert using the **[Wrench]**  button and selecting the "Delete" option; this will remove the alert from the configured alert list.

Another option is to disable an alert by deselecting the 'Enabled' checkbox. This can also be done by pressing the **[Key]** button and selecting the Edit option.

Mail settings	General settings	Alerts definition	Reasons & Problems definition	Events subscription	
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Refresh

List of alerts which apply to all oracle databases. Please be aware that Online alerts are calculated every 30 seconds other alerts every 15 minutes. Any changes in below lists are recognizes by DBPLUS.Catcher monitoring service up to 15 minutes

ALERTS CONFIGURATION						Add new alert
Alert type	Alert description		Enabled	Level value WARNING	Level value CRITICAL	
Online	Alert if database is not available		<input checked="" type="checkbox"/>			
Online	Total Waits		<input checked="" type="checkbox"/>	200 %	400 %	
Online	Lock waits		<input checked="" type="checkbox"/>	200 %	400 %	

Adding new alert definitions has also been changed in the new version. By defining specific alerts, they are no longer related to other alerts. Depending on the type of alert, the reference values are set differently. For Load Trends and I/O Stats alerts, thresholds are set based on historical (reference) values.

ALERT DEFINITION
✕

Alert
Load Trends
Cpu Time

Enabled

Alert Levels
Notifications & Conditions
Other settings

Set level to WARNING when Cpu Time is above

50
% of max from history

Set level to CRITICAL when Cpu Time is above

100
% of max from history

History comparison

compare with maximum value

WARNING alert if param value above 50 %
 CRITICAL alert if value above 100 %
 Sample day load for Cpu Time

OK
Cancel

The values are calculated as the average from all snaps in the given hour (min/max boundary values are ignored) for the last 30 days (default value is configurable). The calculation is made based on days marked as working days in the **General settings** tab. You can define which days are set as working days (History Days), and the number of days back that will be considered (Number of Days Back in History).

Mail settings	General settings	Alerts definition	Reasons & Problems definition	Events subscription
---------------	------------------	-------------------	-------------------------------	---------------------

Elapsed Time greater than seconds Alerts would only be ran if the elapsed time for all sql statements would take at least seconds in duration of 15 minutes (snapshot time)

History Days Mon Tue Wed Thu Fri Sat Sun
We recommend to select working days only

Number of Days Back in History How long history would be included in snapshot alerts calculation

The application also enables conditioning of the triggering of an alert from a general trend (for the entire database) for the given statistic in the snap. This option is only available to SQL Query alerts. For the configuration shown below, alerts with the SqlQuery Rows processed type will be:

- ignored if the Rows processed value for the given snap for a specific Query Hash is less than 10, and if the number of Rows processed returned for the given query is less than 15% of all rows returned for queries (this number depends on the Number of Top Queries to check parameter). Additionally, the WARNING/CRITICAL alarm threshold must be exceeded.
- triggered if the Rows processed value for the given snap in the query is above 25. The alert will be triggered even if the alarm threshold is not exceeded (in this case, a WARNING with the 'Above max constant value...' comment will be displayed).

4

Note! The number of queries will be estimated and calculated for the given alert, depending on the Number of Top Queries to check setting available in the **General settings** tab. In the configuration shown below, the first 20 queries selected for the Elapsed Time stat will be considered.

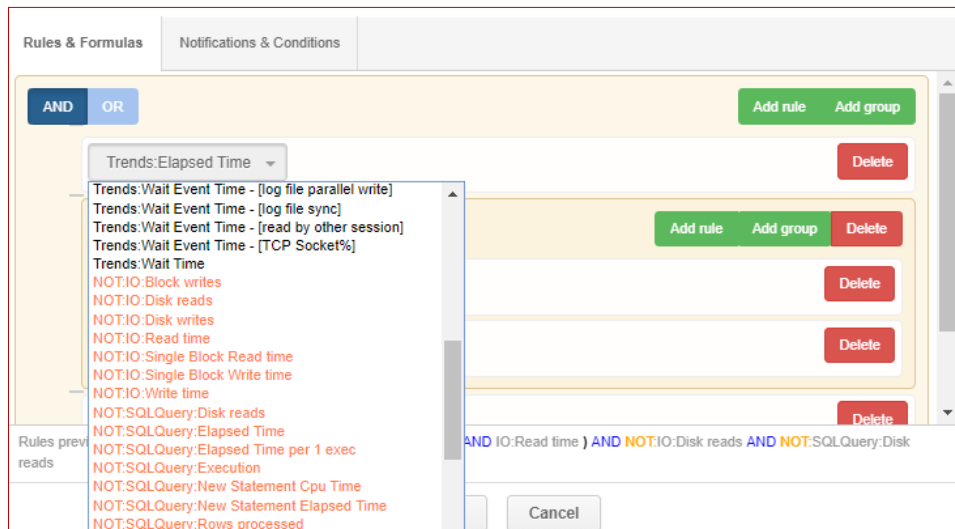
The next step in alert configuration is assigning the rules and defining dedicated reasons for the given rule. Below is a list of default alerts pre-configured by DBPLUS analysts. Definitions can be assigned to all databases or dedicated definitions can be created for selected databases.

The screenshot shows the DBPLUS configuration interface. At the top, there are tabs for 'Mail settings', 'General settings', 'Alerts definition', 'Reasons & Problems definition', and 'Events subscription'. The 'Reasons & Problems definition' tab is active, displaying a list of performance problems with columns for 'Type', 'Reason/Problem description', 'Enabled', and 'Rule preview'. A 'Refresh' button is in the top right. Below this is the 'INSTANCE PROBLEM CONFIGURATION' section, which includes a dropdown for 'PLEASE SELECT A DATABASE' (currently set to 'T5 testovna') and buttons for 'Add new definition' and 'Restore defaults'. The 'Add new definition' button is highlighted with a red box.

In order to add a new rule, first define the reason for the problem (reason description) for which you want to define the rule. Next, select the calculation type: trend-based or on-line. The most important part of configuring the alert is setting the right rules for problem/reason occurrence. In order to add the configuration, use groups (Add group) and **AND**, **OR** operators to create a rule from among previously configured alerts (the **Alerts definition** tab).

The screenshot shows the 'REASON DEFINITION' dialog box. The 'Reason description' field contains 'Data reads time problem caused by slow I/O response'. The 'Calculation Type' dropdown is set to 'Based on Trends'. The 'Enabled' checkbox is checked. Below this are two tabs: 'Rules & Formulas' (active) and 'Notifications & Conditions'. The 'Rules & Formulas' tab shows a list of rules with 'AND' and 'OR' operators. The rules are: 'Trends:Elapsed Time', 'IO:Single Block Read time', 'IO:Read time', and 'NOTIO:Disk reads'. Each rule has a 'Delete' button. At the bottom, there are 'OK' and 'Cancel' buttons. The 'Rules preview' at the bottom shows the resulting rule: 'Trends:Elapsed Time AND (IO:Single Block Read time AND IO:Read time) AND NOTIO:Disk reads AND NOT:SQLQuery:Disk reads'.

In some cases, it is necessary to use negation; these are marked in red in the alert list and start with the **NOT** operator.



Once a rule is defined, selecting the right operators and completing all added alarms will display the rule below.

Rules preview: (Trends:Elapsed Time AND Trends:Wait Time AND Trends:Execution) AND (NOT:SQLQuery:New Statement Cpu Time OR NOT:SQLQuery:New Statement Elapsed Time) AND NOT:IO:Single Block Read time AND SQLQuery:Elapsed Time

1.1.2 Changes in alert information presentation

The new version modifies alert information presentation under the Database Analysis > Performance > Database Load > Alerts chart. As problem reasons have been introduced, alerts are now grouped according to the configuration for the given reason.

If the same alert is assigned to multiple problems, its information will be copied for each Reason independently.

SNAPSHOT OF ALERTS GENERATED WITHIN 15 MINUTES AT 2018-10-16 10:59:09		
Logdate	Reason name	
2018/10/16 10:59:00	Increase of query processing time caused by slow I/O response	
	Elapsed Time	Alert Type: Load Trends, The measured statistic value is 109 % higher than average , Last value: 4194 s, Reference history value: 2009 s
	Single Block Read time	Alert Type: I/O Stat, The measured statistic value is 33 % higher than average , Last value: 0.0267 s, Reference history value: 0.0201 s
2018/10/16 10:59:00	Performance problem for specified SQL statements couse new query	
	Elapsed Time	Alert Type: Load Trends, The measured statistic value is 109 % higher than average , Last value: 4194 s, Reference history value: 2009 s
	New Statement Elapsed Time	Alert Type: Sql Query, Statement hash value: 1081262630 <input type="button" value="+"/> , Statistics: New Statement Elapsed Time, Last value: 913.1 , The measured statistic value has 21.8 % of database load

1.1.3 New alert definitions

New alert definitions are available in the new version:

- Load Trends group, Wait Event Time alert.

This alert measures the time for all waits in the given snap (default setting). The alert verifies whether the wait times in the given snap have exceeded the threshold value. The number of days considered depends on the *Number of Days Back in History* parameter (described below). Only top waits are verified, their number depending on the *Number of Top Waits to check* parameter.

The alert can be configured for a specific wait by entering its name in the *Wait name* field. In the example below, the alert measures time for waits with the name *log file sync*.

ALERT DEFINITION

Alert: Load Trends | Wait Event Time

Enabled:

Wait name: log file sync
You can use % character to run alert with like condition

Alert Levels: Notifications & Conditions | Other settings

Set level to WARNING when Wait Event Time is above: 10 % of max from history

Set level to CRITICAL when Wait Event Time is above: 50 % of max from history

History comparison: compare with maximum value

- SQL Query group, Wait Event Time alert

The alert measures wait durations for the given query based on snap history.

ALERT DEFINITION

Alert: Sql Query | Wait Time

Enabled:

Alert Levels: Notifications & Conditions | Other settings

Set level to WARNING when Wait Time is above: 10 % of max from history

Set level to CRITICAL when Wait Time is above: 20 % of max from history

Show Plan Changes Only

OK Cancel

Additionally, to handle alerts related to wait calculations, configuration parameters have been added in the *Configuration > Alert settings > General settings* tab.

The *Number of Top Waits to check* parameter is used to handle waits calculated using trends. The calculations take into account the values of top trends, depending on this parameter.

The *Number of Days Back in History* parameter means the number of days back that are considered when calculating history.

WAIT EVENTS SETTINGS

Number of Top Waits to check: 3

Number of Days Back in History: 7 How long wait history would be considered in snapshot alerts calculation

Save settings

1.2 Added information on number of query versions - Database Analysis > Performance > SQL Details

In the new version, the query details page in the Performance > SQL Details tab displays an additional *Versions count* column in the grid after pressing the Refresh button if the *Online values* checkbox is selected.

Version count is the number of versions of the given query (Query_Hash) found for the given plan (Plan Hash) at the given moment in the shared pool.

Numbers greater than 1 mean that the same query may have been made; for example, with different parameters, or that settings for the sessions making the queries are different (e.g. different OPTIMIZER_MODE for the given sessions).

The screenshot shows the 'Performance' tab in DBPLUS, specifically the 'SQL Details' sub-tab. At the top right, there is a search bar with a 'Find SQL' button highlighted in red. Below the search bar, the SQL statement is displayed. Underneath the SQL, there is a table of execution statistics. The 'Versions count' column in this table is highlighted in red. Below the statistics table, there is an 'Explain plan' section showing a tree view of the query execution plan.

1.3 Improvements to query search using Find SQL

The new version improves the query search using the feature available in the Performance>SQL Details >Find SQL tab.

1.3.1 Improvements to query search for Statement by text

The new version modifies the way results are presented when searching by text fragments (Statement by text). The issue occurred when searching for queries with double spaces or queries made in multiple lines. Following the changes, when multiple statements are entered in the search field, the results are returned in two separate grids:

- FIND RESULT FOR **EXACT** QUERY TEXT MATCHING WITH – means results exactly matching the entered query,
- FIND RESULT FOR **SIMILAR** QUERY TEXT MATCHING WITH – means results based on phrases similar to those in the entered query.

A result for a query search after entering "select max" is shown as an example. The top table returns queries that exactly match the search text "SELECT MAX (SNAP_ID)...".

The bottom table shows queries found for "select%max"
"SELECT NVL(MAX(P.LP), 0) + 1 FROM P_R_SAM P..."

The screenshot shows the 'Statement by text' search interface in DBPLUS. At the top, there is a search bar with 'select max' entered. Below the search bar, there are filters for 'Date from', 'Date to', and 'Max. returned statements'. The results are displayed in two tables: one for 'EXACT QUERY TEXT MATCHING WITH SELECT MAX' and one for 'SIMILAR QUERY TEXT MATCHING WITH SELECT%MAX'. The first table shows results for queries that exactly match 'select max', and the second table shows results for queries that contain 'select max' as a substring.

Hash Value	Last execution date	Elapsed Time [Seconds]	Cpu Time [Seconds]	Executions	Disk reads [MB]	Buffer gets [Blocks]	Rows processed	Query text
3715327	2018/09/18	5.40	2.20	16	7 MB	1 531 452	16	SELECT MAX (SNAP_ID) FROM DBPLUS_SNAPS WHERE LOGDA
8345023	2018/09/18	175.40	70.30	3 174	0 MB	41 822 477	351 808	select v.sek_kod as SECTOR, case when v.jest_foto = "SYS_B_00" t
24937523	2018/09/18	7.40	2.80	238 855	0 MB	1 057 889	238 855	select max(mod(nvl(option\$,0),2)), count(*) from objauth\$ where obj#
58585869	2018/09/18	4 298.40	1 500.10	16	130 537 MB	234 512 229	15	DECLARE job BINARY_INTEGER := job; next_date DATE := :mydat

Hash Value	Last execution date	Elapsed Time [Seconds]	Cpu Time [Seconds]	Executions	Disk reads [MB]	Buffer gets [Blocks]	Rows processed	Query text
103703884	2018/09/18	13.70	5.80	120 587	0	1 163 220	120 587	SELECT NVL(MAX(P.LP), 0) + 1 FROM P_R_SAM P WHERE 1 = 1
103748849	2018/09/18	60.80	25.00	1 016	17 MB	3 072 537	13 486	SELECT /*+ */ TRS_KOD,TRS_NAZ,STA_Z,ILE_DOK_ZA,WAR_DC
112012398	2018/09/18	8.40	2.90	23 160	0	62 247	23 160	SELECT ROWID,KH_KOD_2,KH_KOD,FIR_KOD,REA,DAT_W,DAT
119227748	2018/09/18	166.60	62.80	179	17 MB	6 873 284	165	SELECT WAL_KOD,WAR_W,WAR_WARN_W,WAR_WARN_W,WAR

1.3.2 Improved result display for Plan Flip-Flop Statements

When searching for queries with plan flip-flop, if queries (Query Hash) with more than one query plan (Plan Hash) are found in the result, but the query has not been completed for one or both plans, then these columns remain empty:

- Elapsed Time Per 1 exec,
- Times faster,
- Elapsed Time Per 1 exec difference,
- Elapsed Time to reduce,
- CPU Time to reduce.

This results from a lack of data to be compared.

FIND RESULTS									
Fastest plan statistics					Slowest vs Fastest		Estimation statistics		
Elapsed Time Per 1 exec [Seconds]	Plan Hash	Elapsed Time [Seconds]	Cpu Time [Seconds]	Executions	Elapsed Time Per 1 exec [Seconds]	Times faster	Elapsed Time Per 1 exec difference [Seconds]	Elapsed Time to reduce [Seconds]	Cpu Time to reduce [Seconds]
0	4002795227	0.70	0	0					
0	4046981917	15.80	3.10	2 236	0.0071				
0	1485030902	16.39	1.78	68	0.2411				
3	2.5745 504310476	0.17	0.25	0					
2	72.4938 365710348	17.79	1.42	0					
1	1 654.8275 936777868	0	0	0					
7	0.0002 972809494	0.61	0.21	2 637	0.0002	1	0.0000	0.0029	0.0386
1	0.0002 972809494	1.03	0.36	4 650	0.0002	1	0.0000	0.0039	0.0450
2	0.0029 1824052937	0.03	0.01	246	0.0001	25	0.0028	0.0056	0.0024
8	0.0003 260637354	0.78	0.17	1 001	0.0003	1	0.0000	0.0000	0.0000

1.3.3 Improvements to query search for Statement using objects

When searching for queries using objects, the query text is displayed in the new version. Below, the display for queries using the *DBPLUS_SNAPS* object.

Hash Value	Elapsed Time [Seconds]	Cpu Time [Seconds]	Executions	Disk reads [MB]	Buffer gets [Blocks]	Rows processed	Query text
3710599702	51.52	21.57	132	11 MB	3 710 599 702	132	SELECT MAX (SNAP_ID) FROM DBPLUS_SNAPS WHERE SNAP_ID < :b1 AND NUM
965693090	14.53	5.72	1 650	7 MB	965 693 090	1 650	SELECT MIN (SNAP_ID) FROM DBPLUS_SNAPS WHERE LOGDATE >= :b1
276493203	6.72	2.51	66	26 MB	276 493 203	66	SELECT NVL(MAX (LOGDATE) , '2000-01-01 00:00:00') , MAX (SNAP_ID) FROM DBF
3715327	5.41	2.20	16	7 MB	3 715 327	16	SELECT MAX (SNAP_ID) FROM DBPLUS_SNAPS WHERE LOGDATE <= SYSDATE -

1.3.4 Other improvements to the Find SQL feature

An error related to entering large values in the *Max.returned statements* has been fixed. After a "large" value was entered, an error related to incorrect data type was displayed. This issue has been fixed.

Increased size of the results window, the window has been enlarged by a further 10% in the new version.

1.4 Rights in the DBPLUS Configuration Wizard console

The new version fixes the IIS configuration process.

1.4.1 Fixed IIS configuration for Windows Server 2016/Windows 10

In the previous versions, if DBPLUS Performance Monitor was installed on a server running Windows Server 2016 or Windows 10, an issue with configuring IIS occurred - in some cases the process and the entire configuration console froze. This required restarting the configuration. The issue was related to reading the StandardOutput buffer. The new version fixes this issue.

1.5 Change in functioning of monitoring control parameters

Several changes improving the functioning or performance of the monitoring service have been implemented.

1.5.1 Change in parameter settings

The new version provides the ability to set more frequent calls to the monitored database. This setting can be modified in the Configuration>Settings menu. More frequent data downloads (currently set to 30 seconds) can only be set from a specific database (global settings applicable to all databases cannot be changed). In the new version, the minimum value that these parameters can be changed to is 1 second. Default values can always be restored using the [Restore] button.

INSTANCE PARAMETERS - PLEASE SELECT A SERVER:		DBMON1@XE (2 param/s overwritten)
Parameter	Value	Description
LOCKING_SNAPSHOT_FREQUENCY	1	The interval time in seconds between each snapshot of locks made by DBPLUS CATCHER service. The parameter can be setup separately for each instance. In a case of frequent locks, please consider lower value for LOCKING_SNAPSHOT_FREQUENCY. In a case of rarely occurred locks, please use bigger value for it.
MONITOR_LITERAL_QUERIES	OFF	DBPLUSCATCHER service can monitor literal queries executed on your databases. Set to [ON] to run feature on all databases or make such change for specified database.

1.5.2 Improved data download for Space Monitor

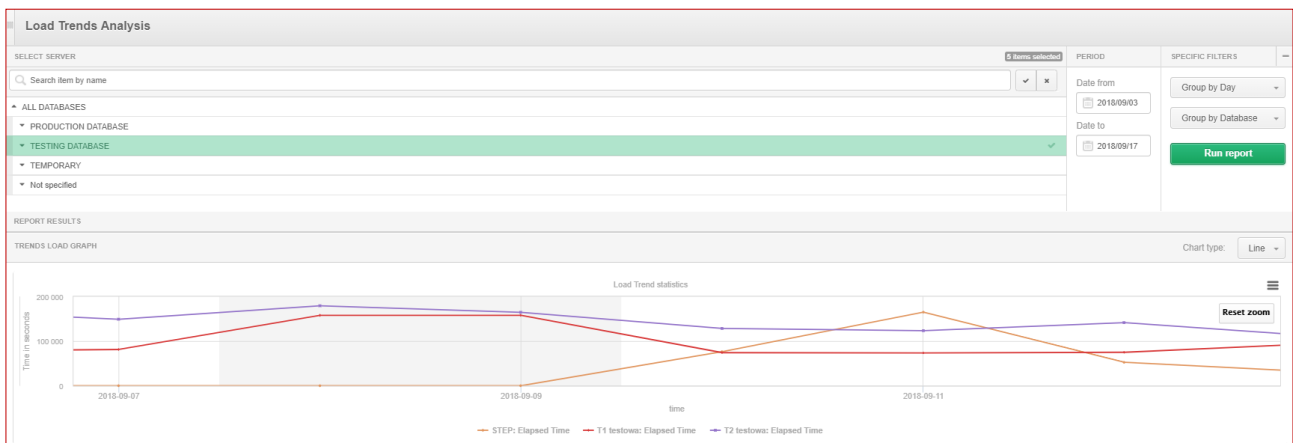
The new version fixes an issue with downloading data on database utilisation. The issue was related to an Oracle error related to the DBA_free_space view. In some cases, the error caused lengthy DBPLUS user sessions on monitored databases downloading database utilisation information.

Handling such cases has been added and the sessions are interrupted now.

1.6 General improvements

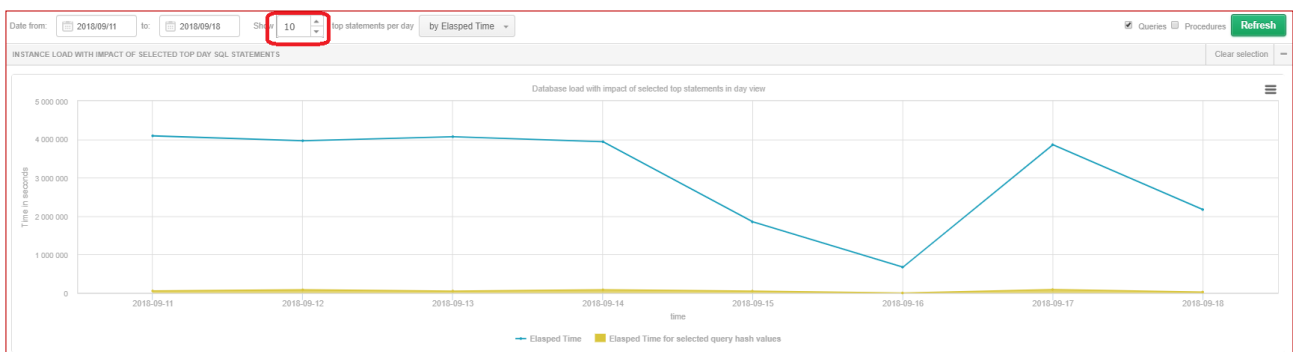
1.6.1 Fixed data display on charts in Reports > Load Trends

The new version of the application fixes data display in charts. The previous version had an issue with data sorting and charts were generated incorrectly in some cases. This issue has been fixed.



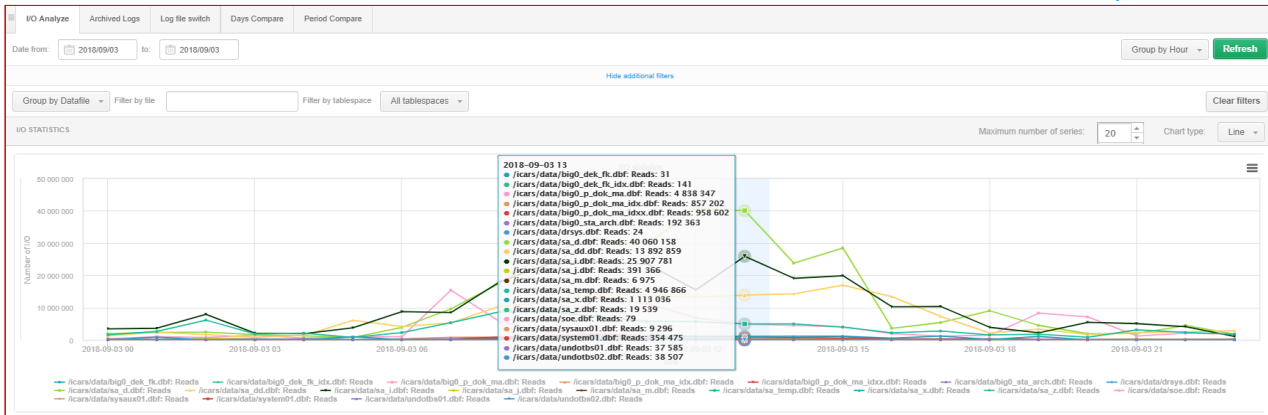
1.6.2 Improved query search - Database Analysis >Performance> Top Day

The new version fixes an issue with searching queries with limited numbers of returned queries. In the previous version, when a 'large' value was entered in the Show field, an error related to incorrect data format occurred. This issue has been fixed.



1.6.3 Improved chart display - Database Analysis> I/O Stats

In the new version, the chart generation feature has been improved. When an additional filter was selected for grouping using Datafile, the resulting chart was unreadable. This issue has been fixed.



1.6.4 Corrected selection of points on charts

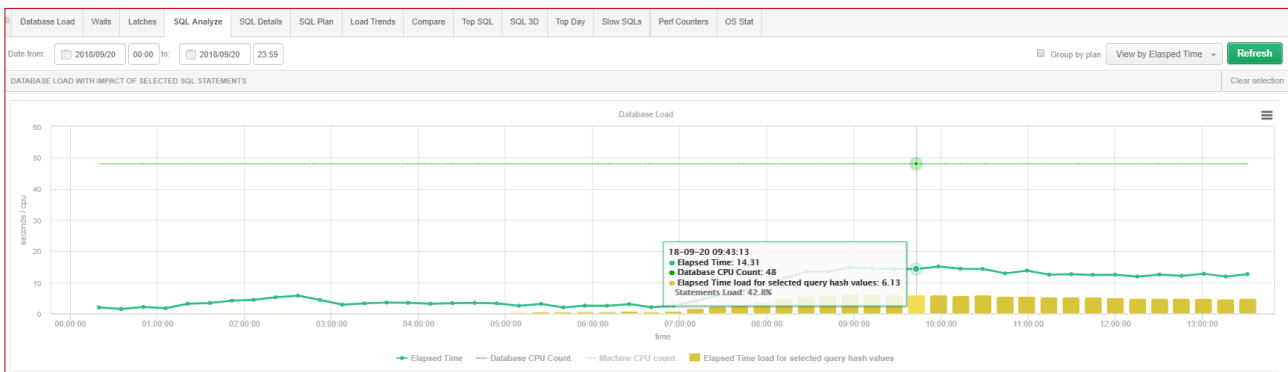
The new version corrects the way points on charts are selected. In the previous version, if the user clicked too far from a point on the chart, an incorrect snap was selected. In the new version this has been fixed and works more efficiently.

The improvement applies to charts in the Performance menu, in the tabs:

- Instance Load,
- Waits,
- Latches.

1.6.5 Improved CPU utilisation display for charts - Database Analysis> Performance> SQL Analyze

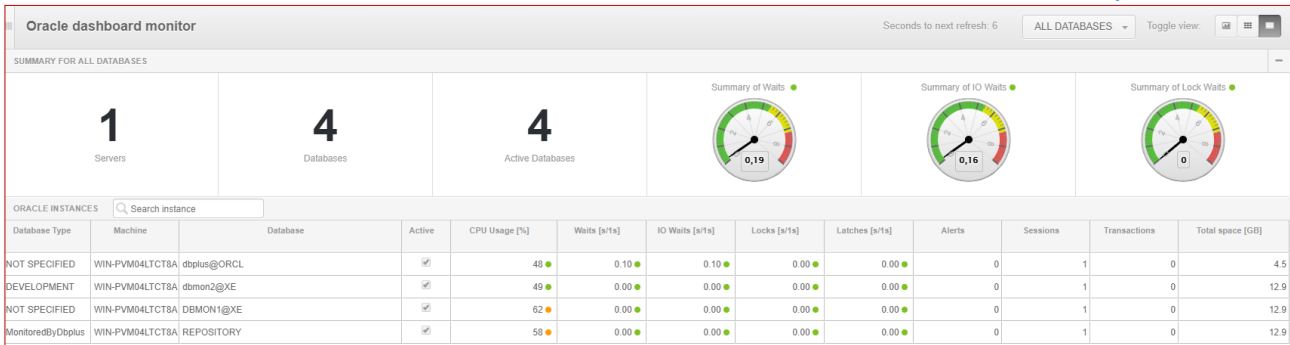
The new version fixes an issue related with incorrectly displayed Elapsed Time Load/CPU Time Load values if the Database CPU Count option was selected. When the CPU count was selected, the count displayed 100% regardless of the queries selected. This issue has been fixed.



1.6.6 Fixed CPU utilisation calculation

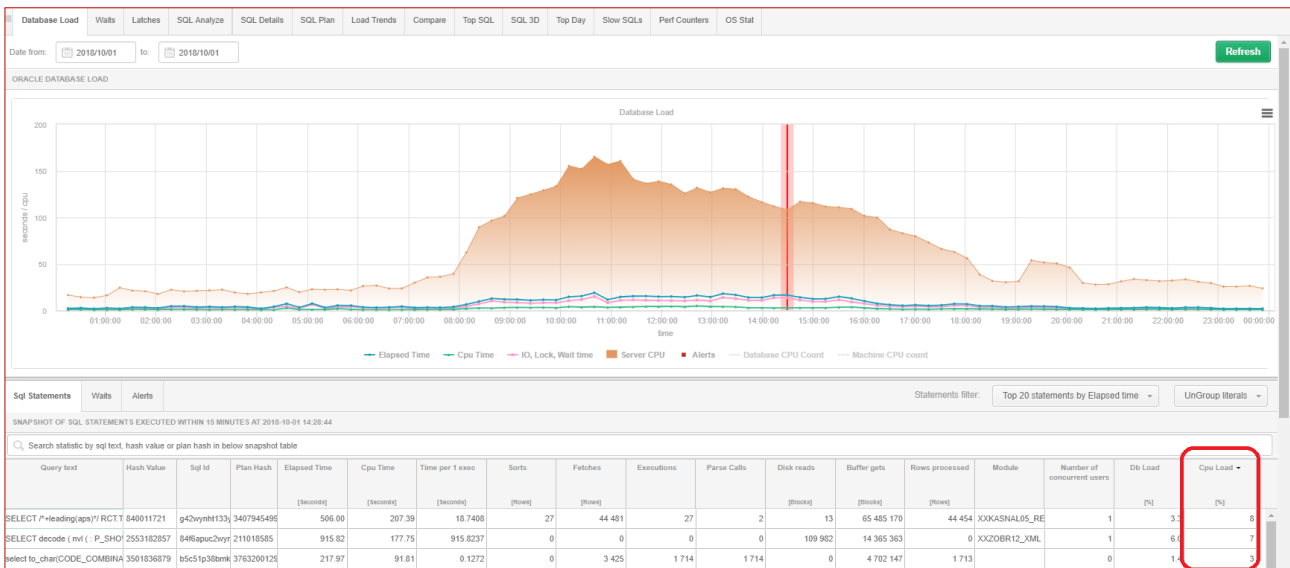
Dashboard screen

The new version fixes CPU utilisation calculation for grid view. In previous versions, this view displayed the number of CPUs assigned to the SQL instance.



Database Analysis> Performance> Database Load

The new version fixes percentage database CPU load displayed under the chart in the DatabaseLoad. In the previous version, the load was incorrectly calculated in some cases.

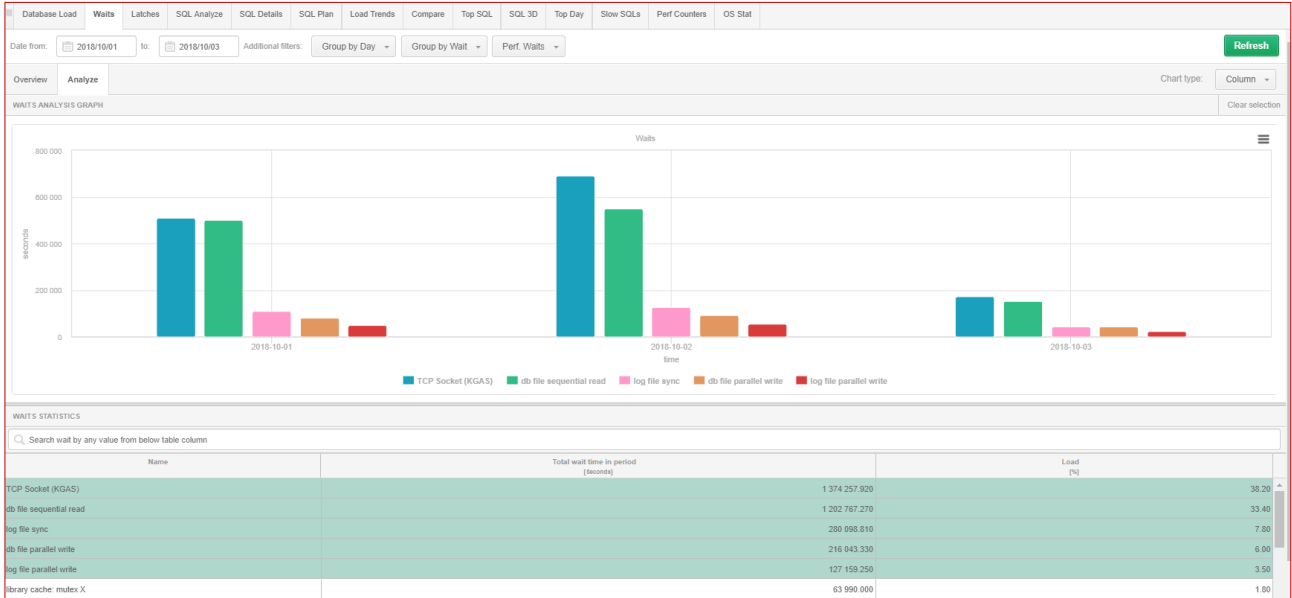


1.6.7 Tab merging - Performance> Waits

The new version merges the data displayed in the Analyze and Statistics sub-tabs of the Performance>Waits menu.

Following the change, the Analyze tab will display any wait type in the grid under the chart only once, regardless of the selected range (Day, Hour, Snap) - the previous version displayed each occurrence of waits of the given type in the selected time unit.

The way waits are displayed on the chart remains unchanged.



1.6.8 Fixed data display on charts - Database Analysis> Performance> OS Stat

The new version fixes an error related to MB units being incorrectly assigned on the chart to the Sys Time (CPUs) stat expressed in seconds. This caused charts for this stat to be drawn incorrectly. This issue has been fixed.

