

DBPLUS
Performance Monitor for MS SQL
description of changes in version 2021.4

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Below is a list of changes in the DBPLUS Performance Monitor system for monitoring MS SQL databases.

New in 2021.4

1 REST API – Performance Monitor

In the latest version of the application, we have added new methods to the REST API:

- Get information about Outage,
- Outage management.

1.1. REST API call

In order to call the appropriate method, it is necessary to complete the appropriate method in the link that calls the REST API for the platform indicated. For example, below is a call to the outages method for the SQL Server platform. An example of a method call:

<https://hostname/DPM.RestApi/outages>

1.2. REST API DBPLUS calling methods

1.2.1. Get information about Outage

Method	GET
Database platform	PostgreSQL, Oracle, MS SQL
Address	/outages
Action	Get information about temporary exclusions of instances from DBPLUS monitoring
Input data: null	
Output data::	
OutageList	Outage list
OutageRecord	Outage details
OutageId	Outage ID
ServerId	Server identifier in the DBPLUS repository
Enabled	Outage status
DateFrom	The date from Outage is effective. Format [YYYY:MM:DD]
DateTo	The date to Outage is effective. Format [YYYY:MM:DD]
TimeFrom	Time from Outage is effective. Format [hh:mm]
TimeTo	Time to Outage is effective. Format [hh:mm]
Description	Description
Monday	The day of the week that Outage is activated: <ul style="list-style-type: none"> ▪ true ▪ false
Tuesday	The day of the week that Outage is activated: <ul style="list-style-type: none"> ▪ true ▪ false
Wednesday	The day of the week that Outage is activated: <ul style="list-style-type: none"> ▪ true ▪ false
Thursday	The day of the week that Outage is activated: <ul style="list-style-type: none"> ▪ true ▪ false
Friday	The day of the week that Outage is activated: <ul style="list-style-type: none"> ▪ true ▪ false
Saturday	The day of the week that Outage is activated: <ul style="list-style-type: none"> ▪ true ▪ false
Sunday	The day of the week that Outage is activated:

- true
- false

Example [xml]:

```
<Root>
  <OutageList>
    <OutageRecord>
      <OutageId>7</OutageId>
      <ServerId>16</ServerId>
      <Enabled>true</Enabled>
      <DateFrom>2021-12-13</DateFrom>
      <DateTo>2021-12-21</DateTo>
      <TimeFrom />
      <TimeTo />
      <Description>Scheduledwork</Description>
      <Monday>false</Monday>
      <Tuesday>true</Tuesday>
      <Wednesday>false</Wednesday>
      <Thursday>true</Thursday>
      <Friday>false</Friday>
      <Saturday>true</Saturday>
      <Sunday>false</Sunday>
    </OutageRecord>
    <OutageRecord>
      <OutageId>8</OutageId>
      <ServerId>14</ServerId>
      <Enabled>true</Enabled>
      <DateFrom />
      <DateTo />
      <TimeFrom />
      <TimeTo />
      <Description>Scheduledwork</Description>
      <Monday>true</Monday>
      <Tuesday>true</Tuesday>
      <Wednesday>true</Wednesday>
      <Thursday>true</Thursday>
      <Friday>true</Friday>
      <Saturday>true</Saturday>
      <Sunday>true</Sunday>
    </OutageRecord>
  </OutageList>
</Root>
```

Example [JSON]:

```
{ "OutageList": [ { "OutageId": 7, "ServerId": 16, "Enabled": true, "DateFrom": "2021-12-13", "DateTo": "2021-12-21", "TimeFrom": "", "TimeTo": "", "Description": " Scheduledwork", "Monday": false, "Tuesday": true, "Wednesday": false, "Thursday": true, "Friday": false, "Saturday": true, "Sunday": false }, { "OutageId": 8, "ServerId": 14, "Enabled": true, "DateFrom": "", "DateTo": "", "TimeFrom": "", "TimeTo": "", "Description": "Scheduledwork", "Monday": true, "Tuesday": true, "Wednesday": true, "Thursday": true, "Friday": true, "Saturday": true, "Sunday": true } ] }
```

1.2.2. Outage management

Method	POST
Database platform	PostgreSQL, Oracle, MS SQL

Address	/outagemanage
Action	Outage management. It allows to set up, modify or remove a temporary exclusion of a given instance from monitoring
Input data:	
Action	Action To Do: <ul style="list-style-type: none"> ▪ Insert ▪ update ▪ delete
OutageId	Outage ID * value ignored for "Insert" action
ServerId	Server identifier in the DBPLUS repository * value ignored in the case of "update", "delete" actions
Enabled	Outage Status
DateFrom	The date from Outage is effective. Format [YYYY:MM:DD]
DateTo	The date to Outage is effective. Format [YYYY:MM:DD]
TimeFrom	Time from Outage is effective. Format [hh:mm]
TimeTo	Time to Outage is effective. Format [hh:mm]
Description	Description
Monday	The day of the week that Outage is activated: <ul style="list-style-type: none"> ▪ true ▪ false
Tuesday	The day of the week that Outage is activated: <ul style="list-style-type: none"> ▪ true ▪ false
Wednesday	The day of the week that Outage is activated: <ul style="list-style-type: none"> ▪ true ▪ false
Thursday	The day of the week that Outage is activated: <ul style="list-style-type: none"> ▪ true ▪ false
Friday	The day of the week that Outage is activated: <ul style="list-style-type: none"> ▪ true ▪ false
Saturday	The day of the week that Outage is activated: <ul style="list-style-type: none"> ▪ true ▪ false
Sunday	The day of the week that Outage is activated: <ul style="list-style-type: none"> ▪ true ▪ false
Output data:	
Action	Action To Do: <ul style="list-style-type: none"> ▪ Insert ▪ Update ▪ Delete
Response	Response record
Status	Reply status: <ul style="list-style-type: none"> ▪ OK ▪ ERROR
Message	Error Messenger * completed value for Status = ERROR
OutageId	Outage ID * value ignored for "Insert" action
ServerId	Server ID in the DBPLUS repository * value ignored in the case of "Update", "Delete" actions
Enabled	Outage Status
DateFrom	The date from Outage is effective. Format [YYYY:MM:DD]
DateTo	The date to Outage is effective. Format [YYYY:MM:DD]

TimeFrom	Time from Outage is effective. Format [hh:mm]
TimeTo	Time to Outage is effective. Format [hh:mm]
Description	Description
Monday	The day of the week that Outage is activated: <ul style="list-style-type: none"> ▪ true ▪ false
Tuesday	The day of the week that Outage is activated: <ul style="list-style-type: none"> ▪ true ▪ false
Wednesday	The day of the week that Outage is activated: <ul style="list-style-type: none"> ▪ true ▪ false
Thursday	The day of the week that Outage is activated: <ul style="list-style-type: none"> ▪ true ▪ false
Friday	The day of the week that Outage is activated: <ul style="list-style-type: none"> ▪ true ▪ false
Saturday	The day of the week that Outage is activated: <ul style="list-style-type: none"> ▪ true ▪ false
Sunday	The day of the week that Outage is activated: <ul style="list-style-type: none"> ▪ true ▪ false

Remove Outage

Example [xml] – input data:

```
<Root>
<Action>delete</Action>
<OutageId>20</OutageId>
<ServerId>16</ServerId>
<Enabled>true</Enabled>
<DateFrom>2021-12-13</DateFrom>
<DateTo>2021-12-18</DateTo>
<TimeFrom/>
<TimeTo/>
<Description> Scheduledwork</Description>
<Monday>true</Monday>
<Tuesday>true</Tuesday>
<Wednesday>true</Wednesday>
<Thursday>true</Thursday>
<Friday>true</Friday>
<Saturday>true</Saturday>
<Sunday>true</Sunday>
</Root>
```

Remove Outage

Example [xml] - output data:

```
<Root>
  <OutageId>20</OutageId>
  <ServerId>16</ServerId>
  <Enabled>true</Enabled>
  <DateFrom>2021-12-13</DateFrom>
  <DateTo>2021-12-18</DateTo>
  <TimeFrom />
```

```

<TimeTo />
<Description>Scheduledwork</Description>
<Monday>>true</Monday>
<Tuesday>>true</Tuesday>
<Wednesday>>true</Wednesday>
<Thursday>>true</Thursday>
<Friday>>true</Friday>
<Saturday>>true</Saturday>
<Sunday>>true</Sunday>
<Action>delete</Action>
<Response>
  <Status>OK</Status>
  <Message />
</Response>
</Root>

```

Create Outage scenario

Example [JSON] input data:

```

{
  "action": "insert",
  "outageId": ,
  "serverId": 16,
  "enabled": true,
  "dateFrom": "2021-12-20",
  "dateTo": "2021-12-23",
  "timeFrom": "11:20",
  "timeTo": "12:20",
  "description": "Scheduledwork",
  "monday": true,
  "tuesday": true,
  "wednesday": true,
  "thursday": true,
  "friday": true,
  "saturday": true,
  "sunday": true
}

```

Example [JSON] output data:

```

{
  "action": "insert",
  "response": {
    "status": "OK",
    "message": ""
  },
  "outageId": 12,
  "serverId": 16,
  "enabled": true,
  "dateFrom": "2021-12-20",
  "dateTo": "2021-12-23",
  "timeFrom": "11:20",
  "timeTo": "12:20",
  "description": "Scheduledwork",
  "monday": true,
  "tuesday": true,
  "wednesday": true,
  "thursday": true,

```

```

"friday": true,
"saturday": true,
"sunday": true
}

```

2 Add support for Azure SQL Managed Instance

In the latest version, the ability to configure the DBPLUS repository on a database using the Azure SQL Managed Instance service has been added. The repository configuration process has been modified and adapted to support this type of database.

3 Add original Login Name information

In the latest version of the application, we started collecting information on the user's original login. This is especially important when queries or procedures are run with the EXECUTE AS... option. In this case, the information in the original_login_name field returns information about the actual user who started the process and caused the lock.

Session screen

The information is visible from the level of the online session as well as saved to the repository and visible from the level of the session history tabs.

Logon time	Se-Id	Query Hash	Login name	Original Login name	Status	Last request start time	Elapsed Time (Seconds)	Cpu Time (Seconds)	Windows username	Host name	Program	Context Info	Block..session	Database	Wait	Wait time (Seconds)
2021-12-14 11:11:57	57	0xFOF48384...	dbplus	dbplus	running	2021-12-14 11:19:11	1.783	0		STATION-DEMO	DBPLUS Performance ...		0	master	XE_LIVE_TARGET_TV...	2.61
2021-12-14 09:...	63	0x797529C7...	dbplus_tester	dbplus_tester	running	2021-12-14 11:48:54	0	0		PERUN	.Net SqlClient Data Pro...		0	adv_works		0

Lock screen

Information about the original login (original_login_name) that triggered the query has been added to the details of the session.

List of locked sessions at snapshot time: 2021-12-27 11:59:01

- BLOCKER** Session Id: 84 Session status: sleeping Last Request Runtime: 28137 s Last Request Start Time: 2021-12-27 04:10:04 Transaction Begin Time: 2021-12-27 11:59:01 Username: IN/hrjobs0403 Hostname: HR-APP-03 Database: master Program: Microsoft Dynamics
- WAITER** Session Id: 96 Session status: running Wait: LCK_M_S Command: SELECT Last Request Start Time: 2021-12-27 11:59:01 Username: osb Hostname: nifi Database: master Program: Microsoft JDBC Driver for SQL Server

SQL STATEMENT FOR SESSION SID: 84

```

(8) nvarchar (10),81 nvarchar (20),82 tinyint)SELECT SUM("Warehouse_Entry"."SUMQuantity") AS "Sum_Quantity" FROM "Nav".dbo." HR6Warehouse EntryVSIPT41" AS "Warehouse_Entry" WITH (READUNCOMMITTED,NOEXPAND)
WHERE ("Warehouse_Entry"."Location Code"<=80 AND "Warehouse_Entry"."Item No."<=81 AND "Warehouse_Entry"."Available for Reservations"<=82) OPTION(OPTIMIZE FOR UNKNOWN,FAST 50,FORCE ORDER,LOOP JOIN)

```

SESSION DETAILS

Number of blocked sessions	1
Session Id	84
Is blocker for others	Yes
Transaction Isolation Level	Repeatable
Transaction Type	Read/write transaction
Transaction State	The transaction is active
Transaction Begin Time	2021-12-27 11:59:01
Login/User Name	IN/hrjobs04
Original Login Name	osb
Command	

4 Bug fixes and improvements

4.1.View database information

In the latest version, the problem with presenting information about the database name in the Performance Monitor application has been corrected. The problem was showing a blank value in the column with the name or presentation Not specified in the statistics summary.

One of the problems was related to saving database name and ID changes to history in DBPLUS repository. The problem has been fixed, the information about renaming or identifying databases will be refreshed every 15 minutes.

4.2. Assigning plans to query statistics

In the latest version, we fixed the problem with assigning the correct plan to the query statistics. In special cases, when frequent database changes took place on the monitored SQL instance, the mechanism of assigning plans for a given database configuration (identifier / name) in a given period did not work properly. The problem has been fixed.

Another fix related to displaying information about an empty execution plan (EMPTY_PLAN). In an MS SQL database, the database engine does not always assign an execution plan to a given query. When for a given query such a plan will be assigned during the next runs, such information will be updated in the DBPLUS repository database.

4.3. IIS bug fix at Configuration Wizard level

In the latest version of the application, we fixed the problem of displaying the IIS error at the Configuration Wizard level. The issue was with the message: *"The underlying connection was closed: An unexpected error occurred on a receive."* . The problem has been fixed, the message should not appear in the latest version.

4.4. Refreshing monitoring User rights

The problem of refreshing monitoring user rights has been corrected. The problem concerned the scenario of receiving administrator rights, in which we did not verify whether the user has VIEW SERVER STATE rights, which are required for the correct monitoring of MS SQL instances.

Another problem was related to the scenario in which the monitoring user's rights were taken away by the same user. In this case the operation ended with an error. The problem has been corrected.

4.5. Assigning waits to the Latches statistic

On the LoadTrends screen, add the Latches related waits (PAGELATCH_%) to the existing Latches statistics. The new Wait Latches statistic will contain information about both Latches and PageLatches, making it easier to diagnose the problem in the monitored SQL instance.

4.6. Improvements to the lock screen

In the latest version of the application, the presentation of locks on the Locks screen has been improved at the level of MS SQL instance details. The change concerns the mechanism of identifying the session that causes the blockage.

Another change concerns the additional marking in the "tree" which sessions cause blockades (BLOCKERS), and which ones are blocked (WAITERS). The change will make it easier to determine the cause of the lock problem for a given instance.

List of locked sessions at snapshot time: 2021-12-27 06:17:26	
▲ BLOCKER	Session id: 358 Session status: sleeping Last Request Runtime: 386 s Last Request Start Time: 2021-12-27 06:11:00 Transaction Begin Time: 2021-12-27 06:17:14 Username: INTER\roclent02s04 Hostname: RO-APP-Database: Navis Program: Microsoft Dynamics
▲	
BLOCKER WAITER	Session id: 280 Session status: running Wait: LCK_M_IX Command: INSERT Last Request Runtime: 3 s Last Request Start Time: 2021-12-27 06:17:23 Transaction Begin Time: 2021-12-27 06:17:23 Username: TER\roadc Hostname: RO-APP-03 Database: Navis Program: Microsoft Dynamics
WAITER	Session id: 421 Session status: running Wait: LCK_M_U Command: SELECT Last Request Runtime: 3 s Last Request Start Time: 2021-12-27 06:17:23 Transaction Begin Time: 2021-12-27 06:17:23 Username: TER\roclent0 Hostname: RO-APP-01 Database: Navi Program: Microsoft Dynamics
WAITER	Session id: 415 Session status: running Wait: LCK_M_IX Command: INSERT Last Request Runtime: 3 s Last Request Start Time: 2021-12-27 06:17:23 Transaction Begin Time: 2021-12-27 06:17:23 Username: TER\roadcs Hostname: RO-APP-03 Database: Navis Program: Microsoft Dynamics

An additional change is adding information on the number of blocked sessions. After selecting a blocking session, the details will be displayed with information on the number of blocked sessions.

List of locked sessions at snapshot time: 2021-12-27 06:17:26

BLOCKER Session Id: 358 Session status: sleeping Last Request Runtime: 386 s Last Request Start Time: 2021-12-27 06:11:00 Transaction Begin Time: 2021-12-27 06:17:14 Username: INTERclient02s04 Hostname: RO-APP-Database: Navis Program: Microsoft Dynamics

BLOCKER WAITER Session Id: 280 Session status: running Wait: LCK_M_U Command: INSERT Last Request Runtime: 3 s Last Request Start Time: 2021-12-27 06:17:23 Transaction Begin Time: 2021-12-27 06:17:23 Username: TERroadc Hostname: RO-APP-03 Database: Navis Program: Microsoft Dynamics

WAITER Session Id: 421 Session status: running Wait: LCK_M_U Command: SELECT Last Request Runtime: 3 s Last Request Start Time: 2021-12-27 06:17:23 Transaction Begin Time: 2021-12-27 06:17:23 Username: TERroclient0 Hostname: RO-APP-01 Database: Navis Program: Microsoft Dynamics

WAITER Session Id: 415 Session status: running Wait: LCK_M_U Command: INSERT Last Request Runtime: 3 s Last Request Start Time: 2021-12-27 06:17:23 Transaction Begin Time: 2021-12-27 06:17:23 Username: TERroadcs Hostname: RO-APP-03 Database: Navis Program: Microsoft Dynamics

SQL STATEMENT FOR SESSION SID: 358

```
Correction","Statistical Price","Entry Method","Campaign No_","Transaction Currency","Transaction Factor","Ignore in MinMax","IC Return Code","Global Dimension 3 Code","Item Status","Shipping Agent Code","Shipping Agent Service Code","Route ID","Route Departure","Car Category (Historical)","Invoice Type","Sales Retail","Custom Invoice No_","EU 3-Party Trade","Shipment Method Code","Tariff No_","Net Weight","Country_Region of Origin Code","Intrastat Transaction","SAD No_") VALUES
(80,81,82,83,84,85,86,87,88,89,90,91,92,93,94,95,96,97,98,99,100,101,102,103,104,105,106,107,108,109,110,111,112,113,114,115,116,117,118,119,120,121,122,123,124,125,126,127,128,129,130,131,132,133,134,135,136,137,138,139,140,141,142,143,144,145,146,147,148,149,150,151,152,153,154,155,156,157,158,159,160,161,162,163,164,165,166,167,168,169,170,171,172,173,174,175,176,177,178,179,180,181,182,183,184) SELECT @@DBTS,CAST(SCOPE_IDENTITY() AS INTEGER)
```

SESSION DETAILS

Number of blocked sessions	12
Session id	358
Is blocker for others	Yes
Transaction Isolation Level	Repeatable
Transaction Type	Read/write transaction
Transaction State	The transaction is active
Transaction Begin Time	2021-12-27 06:17:14

4.7. Nonperformance Wait dictionary updated

In the latest version of the application, we have updated the wait dictionary that does not affect performance. Waits were added to the dictionary:

- PWAIT_EXTENSIBILITY_CLEANUP_TASK,
- PVS_PREALLOCATE,
- HADR_FABRIC_CALLBACK,
- HT%