



GETTING STARTED GUIDE

Database Performance Analyzer

Version 2024.2



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How do I get started with DPA?

Welcome to the Database Performance Analyzer (DPA) Getting Started Guide.

To learn about performance monitoring with DPA, SolarWinds recommends that you complete the following tasks:

- ☐ **Install** DPA and create the database repository.
See the [DPA Installation and Upgrade Guide](#) for system requirements, planning checklists, and installation or upgrade instructions.
- ☐ **Register** the database instances you want to monitor.
- ☐ **Investigate** performance issues.
 - Learn about the [DPA approach](#) to monitoring.
 - Walk through an example of [investigating an application performance issue](#).
 - Walk through an example of [investigating an increase in wait time](#).
 - Walk through an example of [investigating a wait time anomaly](#).
- ☐ Set up [alerts](#) to monitor database performance.
- ☐ Create [reports](#) to track the effects of your tuning efforts and share your progress with others.
- ☐ After evaluating DPA, [activate a license](#) for each instance you want to monitor.
- ☐ [Integrate](#) DPA with the SolarWinds Platform
- ☐ After you become familiar with DPA basics, learn about [other DPA features](#).

When you have finished this guide, see [Beyond Getting Started with DPA](#) for information about other DPA functionality.

Existing customers: Access your licensed software from the [SolarWinds Customer Portal](#). If you need any implementation help, contact our [Support Reps](#).

Evaluators: Download your free 14-day evaluation from www.solarwinds.com. If you need assistance with your evaluation, contact sales@solarwinds.com.

Register a single Oracle database instance

You must register all of the database instances that you plan to monitor with DPA. You can register an individual instance using the Register Instance wizard, or you can [register multiple instances](#).

DPA can monitor [many database types](#), including SQL Server, Sybase, Db2, PostgreSQL, MySQL, AWS, and Azure. This example in the DPA Getting Started Guide shows you how to register an Oracle database with a manually created monitoring user. For information about registering other types of database instances, see [Register a database instance for monitoring](#) in the DPA Administrator Guide.

Before you start

Before you run the Register Instance wizard, make sure:

- The database instance is a [version that DPA can monitor](#).
- You know the password a user with the `SYSDBA` role (such as `SYS`). You will connect to the Oracle database as that user to run a script, but you will not enter the password into DPA.

Register the instance

Run a script to create the DPA monitoring user, which is used to collect information for DPA. Then run the wizard to complete registration.

Task 1: Create the monitoring user

1. Copy one of the following scripts to a file:

- [CreateMonUserOracleOptimized.sql](#)

This is the **performance-optimized** option. This script creates objects under the `SYS` schema. (See the Requirements Overview section of [this article](#) for more information about the objects created.)

- [CreateMonUserOracleReducedPermissions.sql](#)

This is the **reduced-permission** option. This script does not create any objects under the `SYS` schema. With this option, DPA cannot retrieve the names of Oracle control files. If a wait event is associated with a control file, the Top Files trends chart cannot display the control file name. Instead, the chart displays the placeholder "Control File(s)". All other DPA functionality is available.

2. Edit the script to update the user name and password values.
3. Connect to the Oracle database as a user with the `SYSDBA` role (such as `SYS`), and run the script.

Task 2: Complete the registration wizard

1. In the upper-left corner of the DPA home page, click Register DB Instance for Monitoring.
2. Under Self-managed, select Oracle.
3. If the monitoring user prompt is shown, select I will create the monitoring user manually. Then click Next.
4. Complete the Connection information panel:

- a. Select the connection method, and then complete the fields required for the selected method:

Connection method	Required fields
Direct connect	<ul style="list-style-type: none"> Enter the host name or IP address of the server that hosts the database instance. Verify or update the port used for the connection. The default port is 1521. Specify the SID (System Identifier) or Service name of the database instance.
TNS connect descriptor	<p>In the TNS descriptor box, enter everything after <code>NAME=</code> in the <code>tnsnames.ora</code> file. The beginning <code>(DESCRIPTION=</code> is necessary. For example:</p> <pre>(DESCRIPTION = (ADDRESS_LIST = (ADDRESS = (PROTOCOL = TCP) (HOST = myserver.mycompany.com) (PORT = 1521))) (CONNECT_DATA = (SERVICE_NAME = myserver)))</pre>
TNS name	<p>In the TNS name box, enter the <code>SERVICE_NAME</code> value from the <code>tnsnames.ora</code> file.</p> <div> <i>i</i> To use this option, Oracle Name Resolution must be configured. For instructions, see Connect to Oracle using name resolution. </div>
LDAP	<p>In the LDAP box, enter the LDAP distinguished name.</p> <div> <i>i</i> To use this option, Oracle Name Resolution must be configured. For instructions, see Connect to Oracle using name resolution. </div>

- b. Under SSL mode (if [SSL mode is enabled](#)), specify the type of secure socket layer (SSL) connections established between the instance and the DPA server.

i SSL connections are **not** available if LDAP is selected as the Connection method.

SSL mode	Description
Disable	SSL encryption is not used.

SSL mode	Description
Validate server certificate	SSL is enabled. The client verifies that the server is trustworthy by checking the certificate chain up to a trusted certificate authority (CA).
Validate server certificate and match hostname	SSL is enabled. The client verifies the certificate chain and also verifies that the server hostname matches its certificate's Subject Alternative Name or Common Name (CN).

- c. Enter the user name and password of the [monitoring user](#) created previously. Or, if DPA is configured to use CyberArk, enter the CyberArk credentials query for the monitoring user.
- d. Click Next.
- e. DPA validates the connection information and the privileges of the monitoring user. If the validation is successful, the Instance options pane opens.

5. Specify the following Instance options.

 The instance name and group membership can be changed after registration.

- a. If your repository database is Oracle, choose the tablespace in the repository database to store DPA performance data for this monitored instance.

By default, the performance data is stored in the default tablespace of the repository user. However, data for monitored instances can be stored in separate tablespaces.


- b. If the monitored instance contains the Oracle E-Business Suite, specify whether you want DPA to collect additional information about the suite.

DPA can capture Oracle E-Business data to identify the screens, modules, and users generating the database requests. This gives you increased visibility into the causes of performance problems in the Oracle E-Business Suite, Oracle Enterprise Resource Planning (ERP), and Oracle Applications environments.


- c. Enter the name that DPA will display to identify this database instance.

The Display name field defaults to the name retrieved from the database instance.

- d. (Optional) If you have manually created instance groups, you can assign this database instance to one of the groups.

 If no manual groups exist, this option is not shown.

- e. (Optional) If you have existing alert groups, you can assign this database instance to one or more groups.

 If no alert groups exist, or the existing groups do not match this instance's database type, this option is not shown.

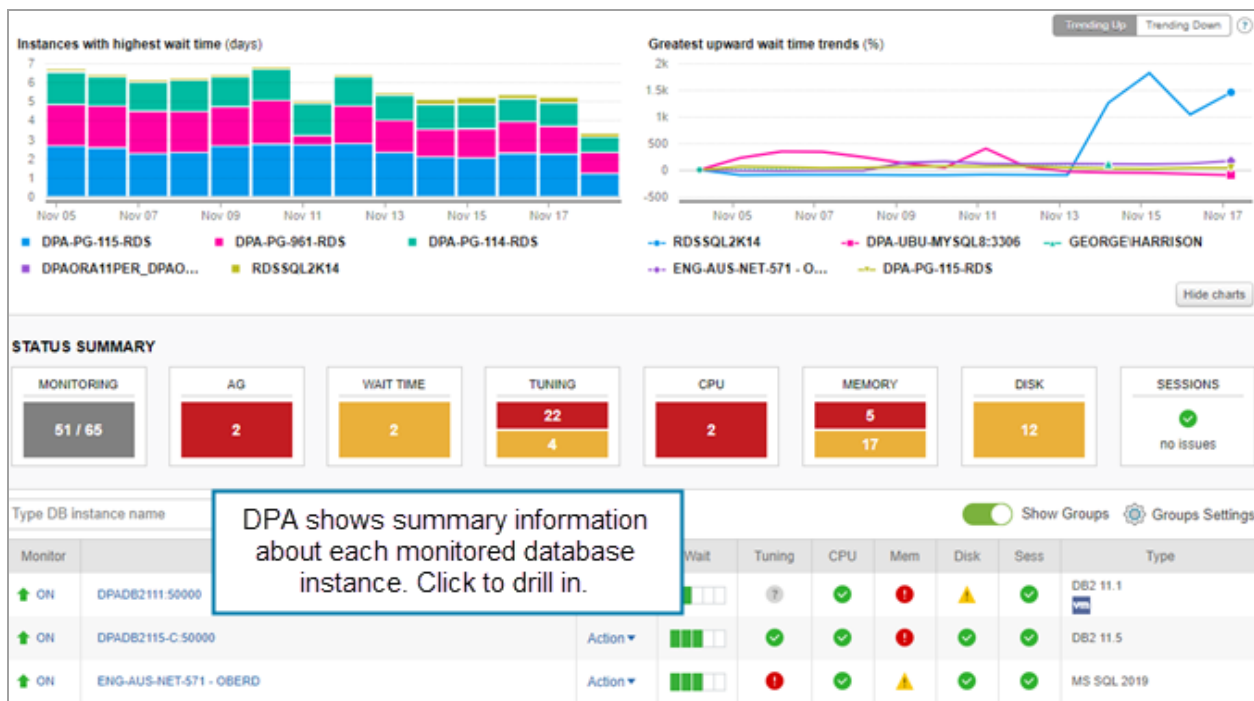
- f. Click Next.

6. Review the information on the Summary page. Click Back if you need to make changes. When the information is correct, click Register.

View performance data for the database instance

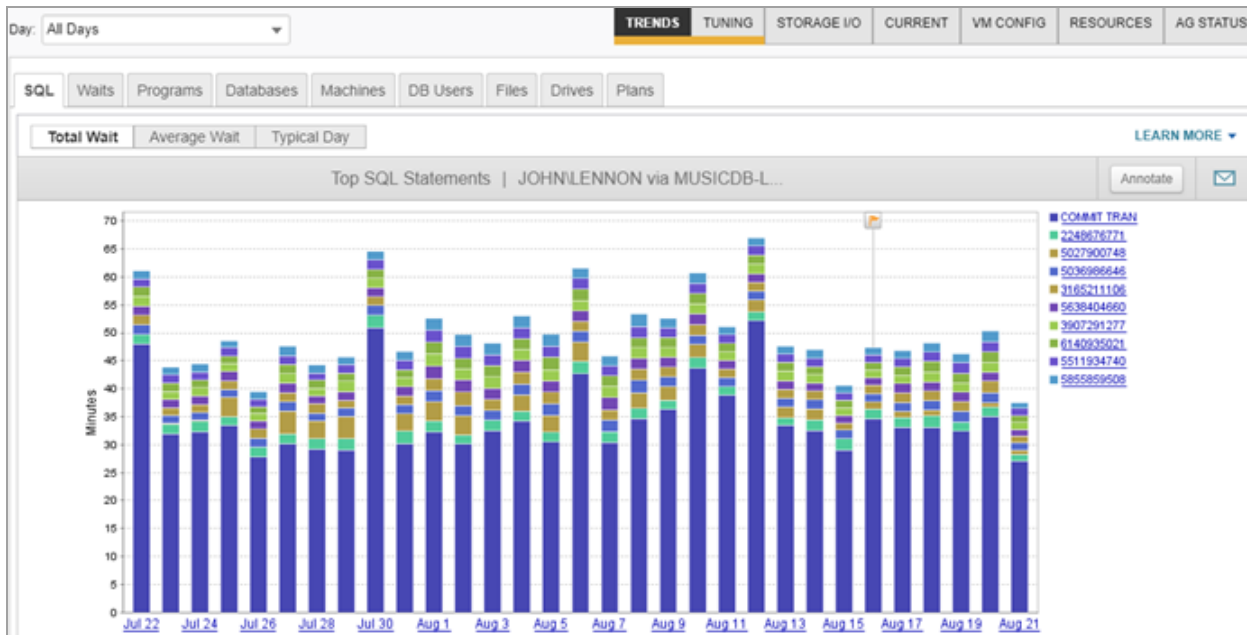
If you register a database instance within the 14-day trial period, DPA begins monitoring the instance immediately. After the trial period, you must [activate a license](#) to monitor the database instance.

When DPA is monitoring an instance, the home page shows summary information about the instance.



For the first two hours after you register the instance, data is shown **only** on the home page. After two hours, all DPA pages are populated.

Click the instance name to view detailed information about that instance. For more information, see [Investigate a SQL statement causing long waits](#).




Examples of investigating performance issues with DPA

Learn about the [DPA approach to investigating performance issues](#) and then walk through examples of investigating a performance issue:

- [Investigate an application performance problem with DPA](#)
- [Investigate an increase in wait time with DPA](#)
- [Investigate a wait time anomaly with DPA](#)

The DPA approach to investigating performance issues

DPA provides a unique approach to investigating performance issues. Use the wait-based analysis approach in DPA to focus on issues that provide the greatest performance improvements.

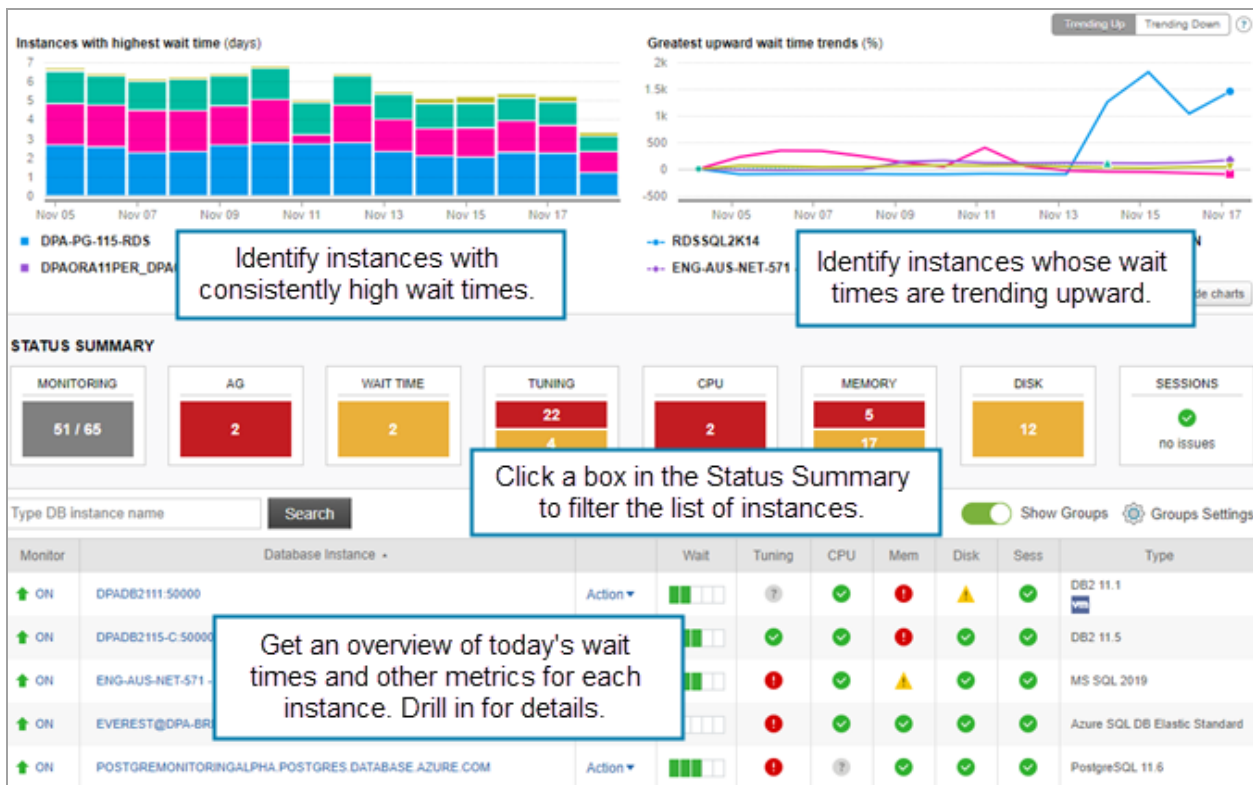
 The agentless architecture in DPA uses less than one percent of database resources, so it can monitor production systems without affecting their performance.

Wait-based analysis

Traditional database monitoring tools focus on database health metrics to troubleshoot performance problems. DBAs can spend hours tuning the database to improve these metrics, only to find that their changes had little or no effect on performance.

Instead of database health metrics, DPA focuses on application and end-user wait times. DPA graphically shows you where the longest wait times are, and it also identifies time periods when wait times that are longer than expected (anomalies). You can drill in to find the root cause of a performance issue and get advice on how to fix it. When you use DPA to find and fix the issues that are directly responsible for long wait times, you can deliver performance improvements that get noticed.

Use the DPA home page to quickly identify database instances with high wait times or anomalies, and then drill down for details.



Query performance analysis

To help you investigate the root cause of a query's performance problems, DPA intelligently assembles the most relevant data about the query and displays it on the Query Details page. Use this information to:

- Find out what type of waits are affecting performance, and view detailed information and recommendations about each type of wait
- Review query and table tuning advisors
- Examine statistics and metrics charts to correlate query wait times with other events

DPA uses the predominant type of wait and other information to automatically select the most relevant statistics, blocking, plan, and metrics charts. When you scroll down to view these charts, the Top Waits chart remains visible so you can correlate query wait times with other events during the same time period. This information provides the context you need to identify the root cause of complex performance problems.



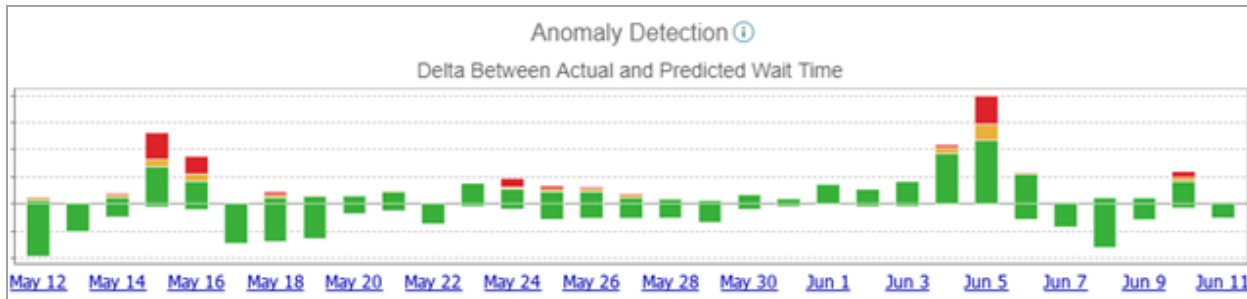
Table tuning advisors

You must consider many factors when you're determining how to improve the performance of an inefficient query—that is, a query that reads a large number of rows but returns relatively few. DPA's table tuning advisors help you make informed decisions. Each day, DPA identifies tables that had inefficient queries run against them. For each table, the Table Tuning Advisor page displays aggregated information about the inefficient queries, the table structure, and any existing indexes. This information can help you answer questions such as:

- Which steps should I focus on when I review the plan for the query?
- How many indexes currently exist on the table and what do they look like?
- Can I add an index to improve performance?
- Are statistics stale?
- How much churn (inserts, updates, and deletes) does the table undergo?

Anomaly detection

DPA uses an [anomaly detection](#) algorithm to identify unexpected increases in wait time. During certain time periods, high wait times might be normal. DPA uses historical data to "learn" what normal is and makes predictions based on this data. When wait times for a time period are significantly higher than expected, DPA reports an anomaly.



Investigate an application performance problem with DPA

The following example shows how DPA can be used to find the root cause of an application performance problem.

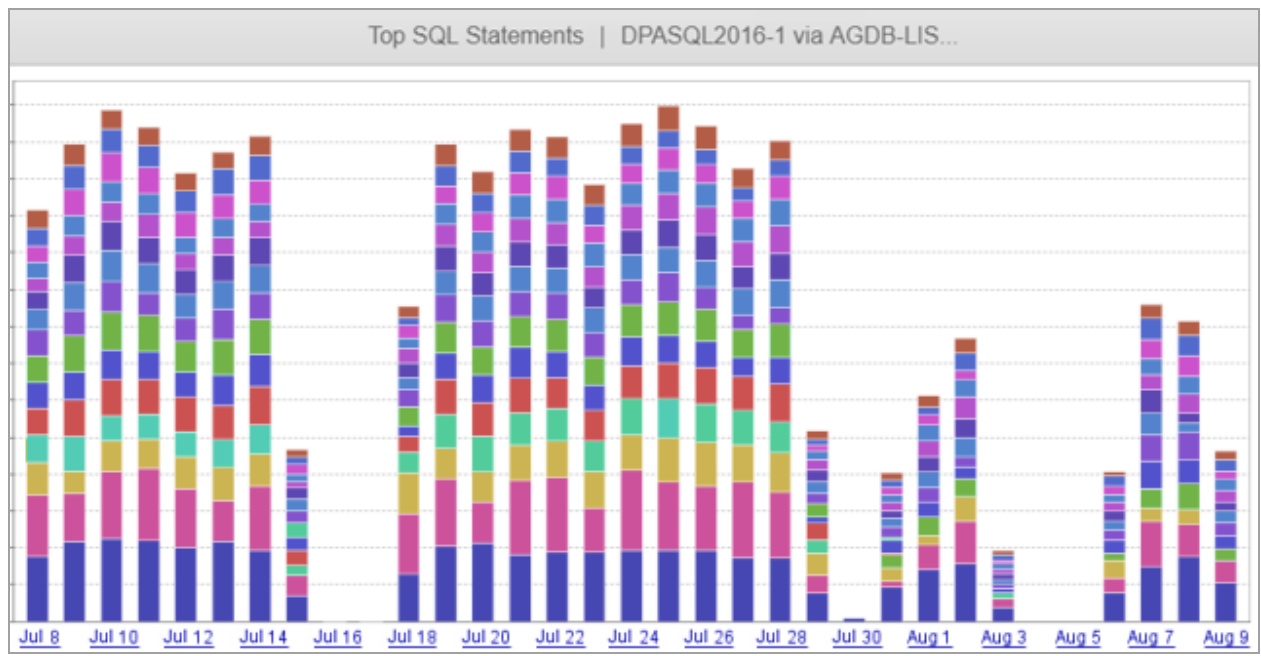
The problem

Users are complaining about the performance of an application developed in-house. The performance problems always occur around 2 PM, during core business hours.

The investigation

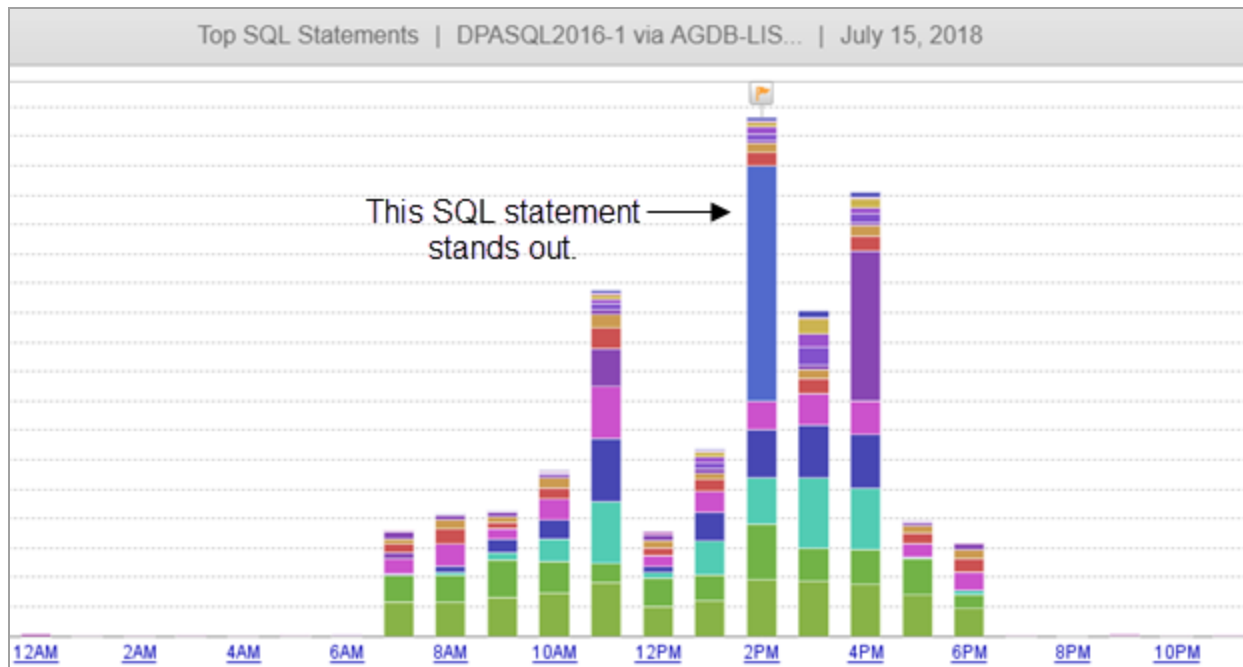
1. From the DPA home page, click the database instance that the application runs against.

The Top SQL Statements trend chart shows the 15 SQL statements with the highest wait times for the past 31 days.

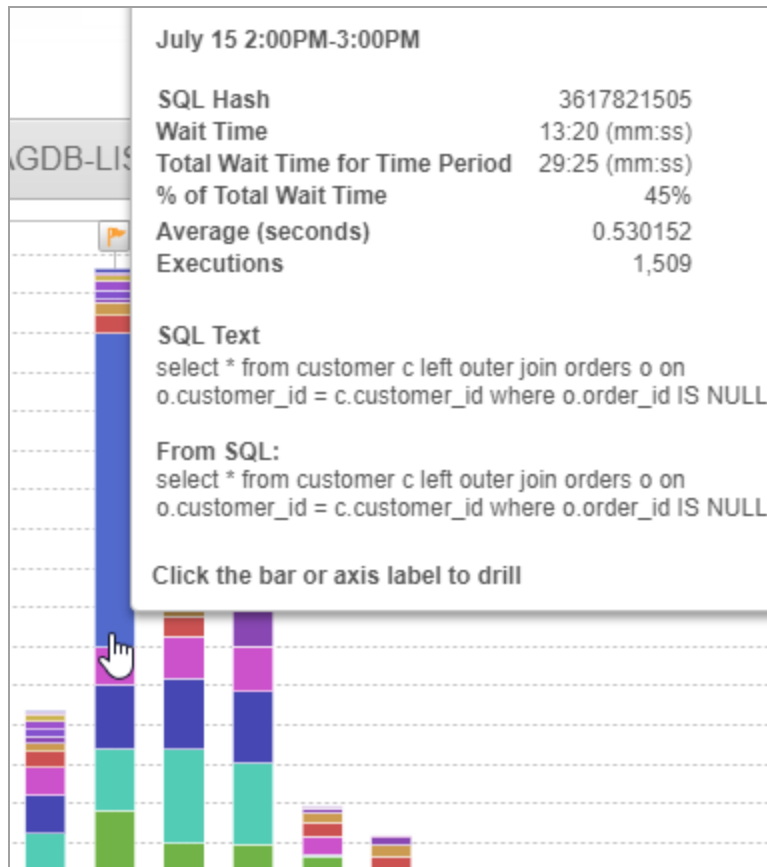


- Click a bar that represents a day when users experienced slow performance.

The chart shows the top SQL statements for each hour. During the 2 PM hour, one SQL statement caused significantly longer waits than all the others.

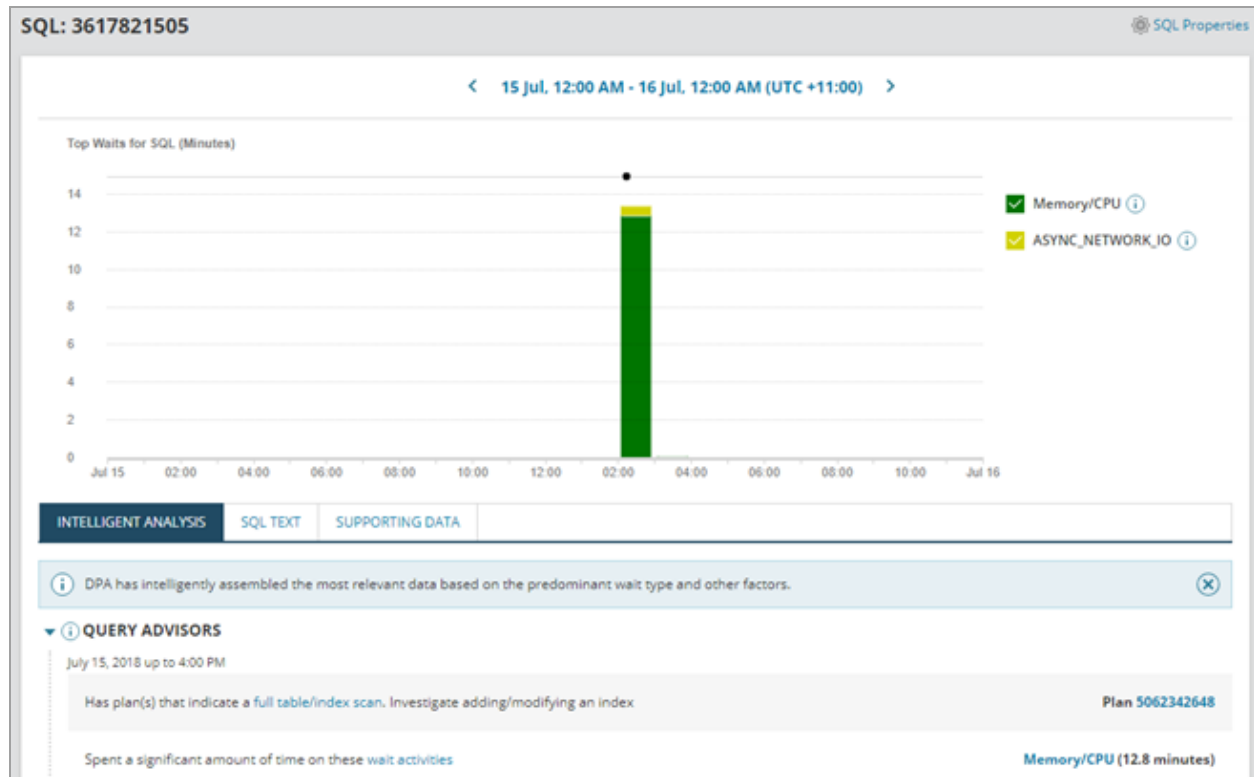


- Point to that segment in the bar to display additional information about the SQL statement. Note the SQL hash.



4. In the chart legend, click the hash value that represents the SQL statement.

The Query Detail page displays DPA's analysis of the query performance, including the types of waits, query advisors, and the most relevant charts. By default, the time period is the same as the period that you selected on the trends chart.

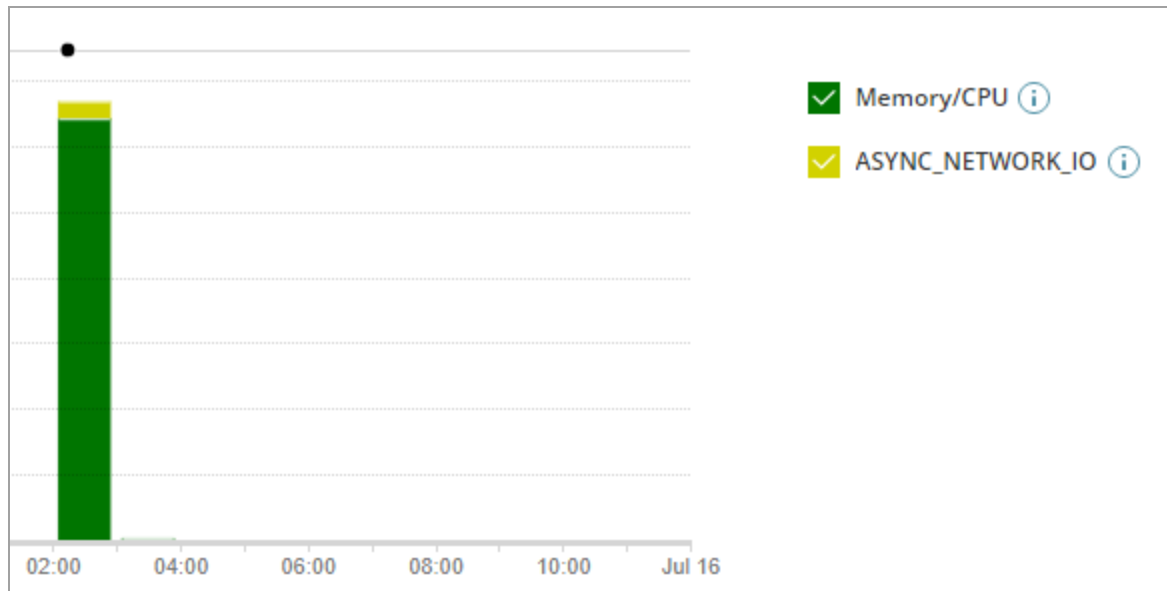


5. To make this statement easier to identify in charts and reports, name the SQL statement:
 - a. In the upper-right corner, click SQL Properties.
 - b. In the SQL Properties dialog, enter the name and click OK.

Legends and reports now identify the SQL statement by name instead of by hash value.

6. Look at the Top Waits chart to see what type of waits are causing delays.

The chart shows that this SQL statement spends most of its time in Memory/CPU waits.



- Click the information icon ⓘ next to the wait type in the legend to see more information about Memory/CPU waits.

DPA provides detailed information about this wait type, including possible solutions.

Memory/CPU

The database is typically using the CPU and/or memory (not necessarily waiting to use the CPU).

RESOLVED BY
DBA and sometimes System Administrators

SOLUTIONS

From within SolarWinds DPA, review the amount of logical I/O (logical reads and writes) performed by this SQL statement. Large amounts of logical I/O is typically caused by inefficient SQL statements that read more data than necessary, and that data is already loaded into memory. If the data required is not in the buffer cache, it will read from disk and the SQL statement will experience physical I/O waits. In most cases, you will see a mixture of waits on CPU and physical I/O for inefficient SQL statements while it reads some data from memory and some from disk. Solution #1 below is used the most for solving this issue.

1. Memory Scans Queries that have high waits on CPU may be reading more data from memory than necessary.

The following are two high-level cases where this could occur:

Full Table Scans: If the database server has enough memory, it may have an entire table cached. Although the query may be reading this table from memory, it will show excessive CPU time since it must read and process a large number of blocks in memory. Consider adding an index that would require fewer memory reads.

- In the Query Advisors section, notice that DPA's analysis shows that a full table scan is being performed and suggests adding an index.

You can click the full table scan link for details, or click the plan hash on the right to view the plan.

i **QUERY ADVISORS**
 July 15, 2018 up to 4:00 PM
 Has plan(s) that indicate a full table/index scan. Investigate adding/modifying an index Plan 5062342648

Before you add the index, you decide to find out more about where this query comes from.

- Click the Supporting Data tab, which shows that the query is being run by Accounting.

INTELLIGENT ANALYSIS	SQL TEXT	SUPPORTING DATA
► DATABASES	Silver	
► DATABASE USERS	swload	
► FILES	None detected.	
► MACHINES	acct-server	
► PROGRAMS	Accounting	

Rather than add an index immediately, you decide to first contact the Accounting team and ask if they can tune the SQL statement. In this scenario, the Accounting department replies that the SQL statement cannot be changed. With this information, you decide to add the index.

i After you add the index, you can [add an annotation](#) to let the rest of the team know what changed and to help determine whether the change is effective.

The new index improves the execution time of the SQL statement, and users no longer complain about slow performance when it runs.

Next steps

- To make sure this SQL statement doesn't cause problems in the future, you can [add an alert](#) to notify you if the average wait time for this statement increases.
- You can [create a report](#) to track wait times and determine if your tuning efforts were effective.
- For other examples of using DPA to investigate a performance issue, see:
 - [Investigate an increase in wait time with DPA](#)
 - [Investigate a wait time anomaly with DPA](#)

Investigate an increase in wait time with DPA

The following example shows how DPA can be used to find the root cause of an increase in wait time.

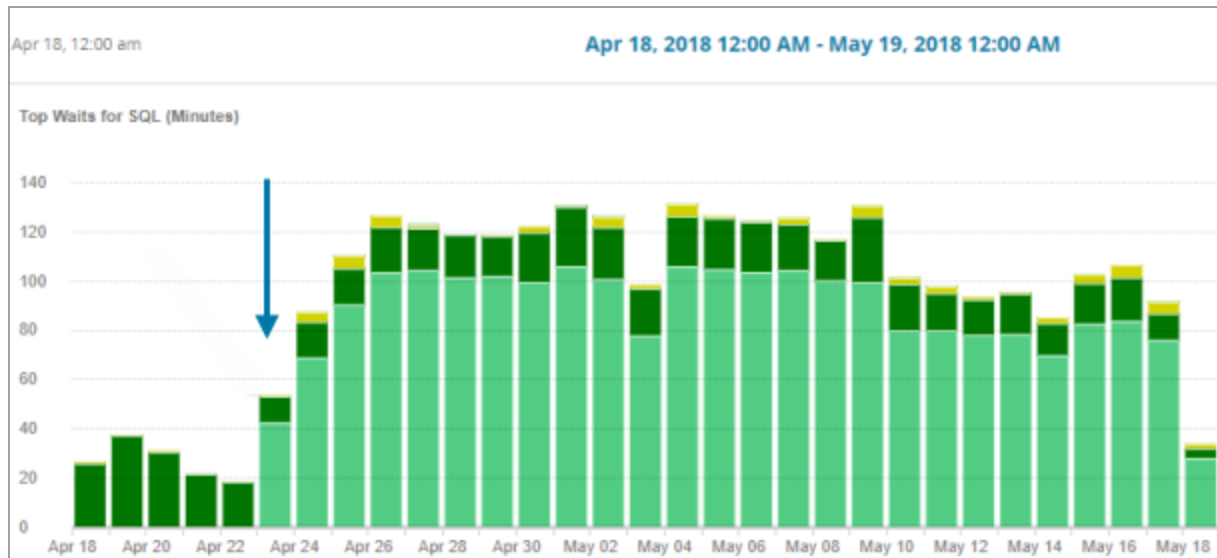
The problem

The wait time for a SQL statement that runs regularly has increased significantly.

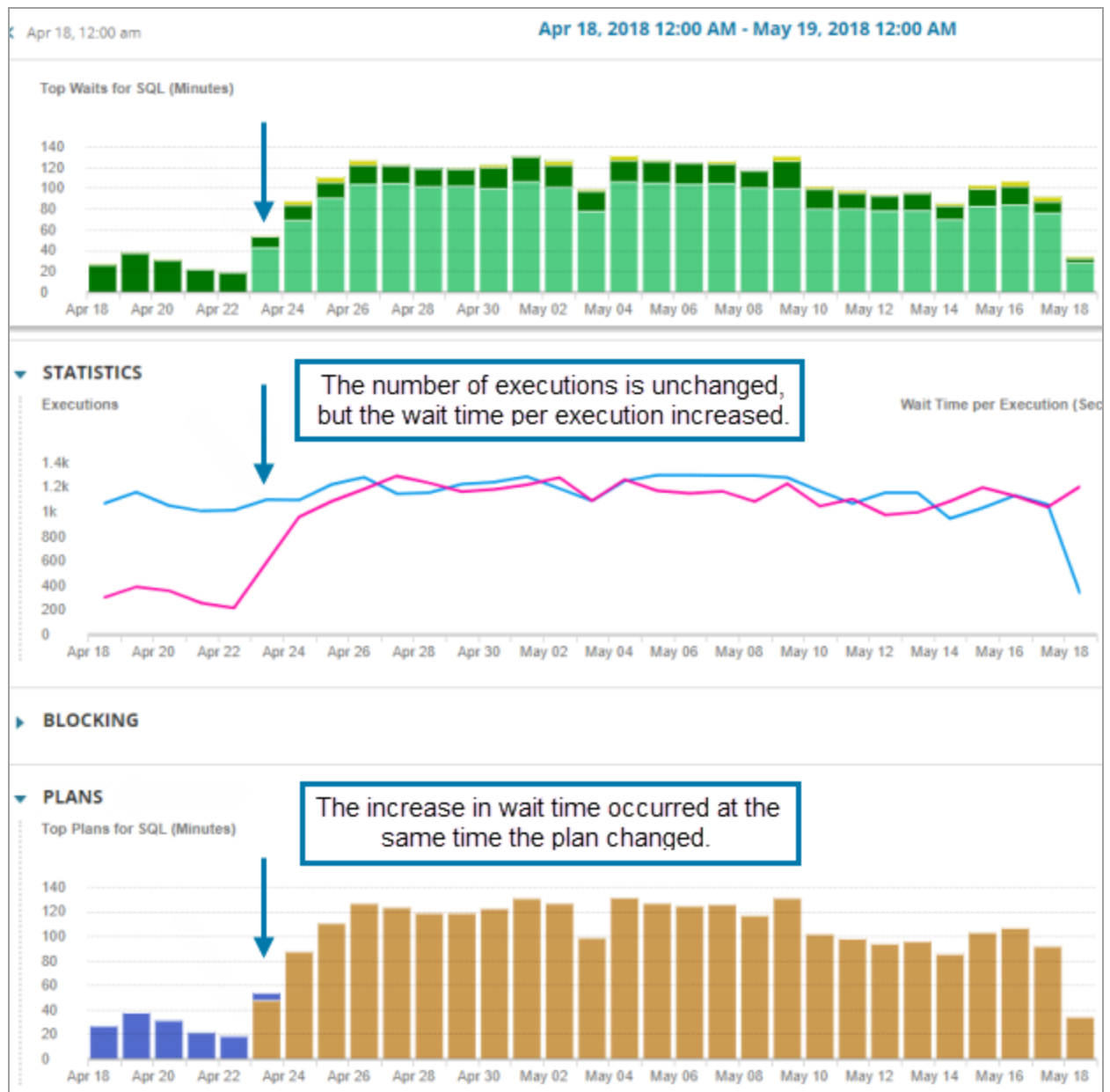
The investigation

1. From the DPA home page, click the database instance that the SQL statement runs against.
2. In the Top SQL Statements trend chart legend, click the SQL statement's name or hash value.

The Query Details page shows the wait times for the past 30 days. You can see that the wait time started to increase around April 23.

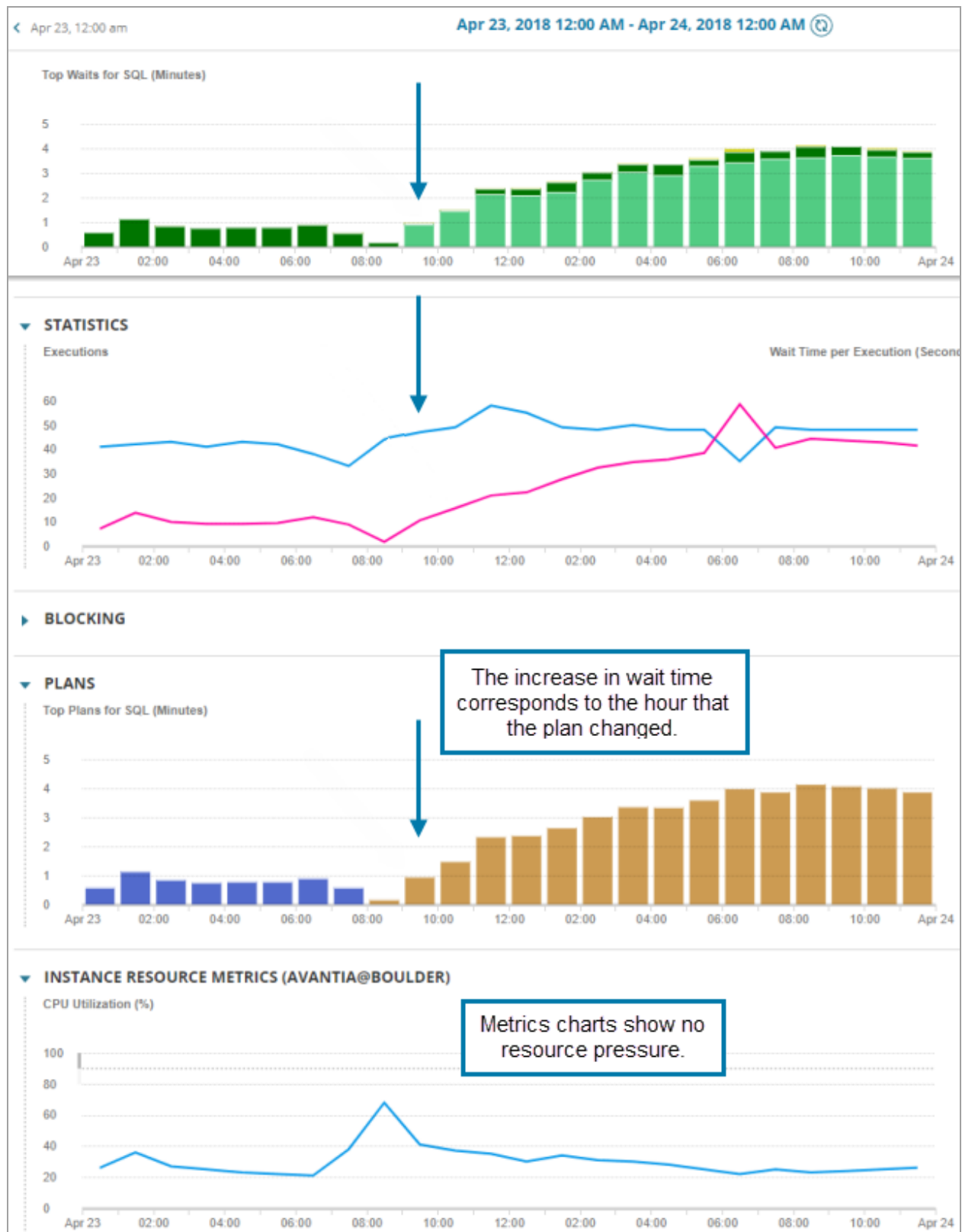


3. Scroll down the page to review the charts. Notice that:
 - The Statistics chart shows that the Number of Executions is unchanged but Wait Time Per Execution increased significantly around April 23.
 - DPA detected a plan change and displayed the Plans chart automatically. The Plans chart shows that the increase in wait time occurred at the same time the plan changed.



4. On any chart, click the bar that represents April 23 to see more details about that day.

The Top Waits and Statistics charts confirm that the wait times started increasing during the hour that the plan changed. You can also see that charts in the Instance Resource Metrics section don't indicate any resource pressure.



After determining the root cause, you can click the hash values in the Plans section to display each plan and find out what changed.

Learn more

Learn more about the [DPA approach to investigating performance issues](#). For other examples of using DPA to investigate a performance issue, see:

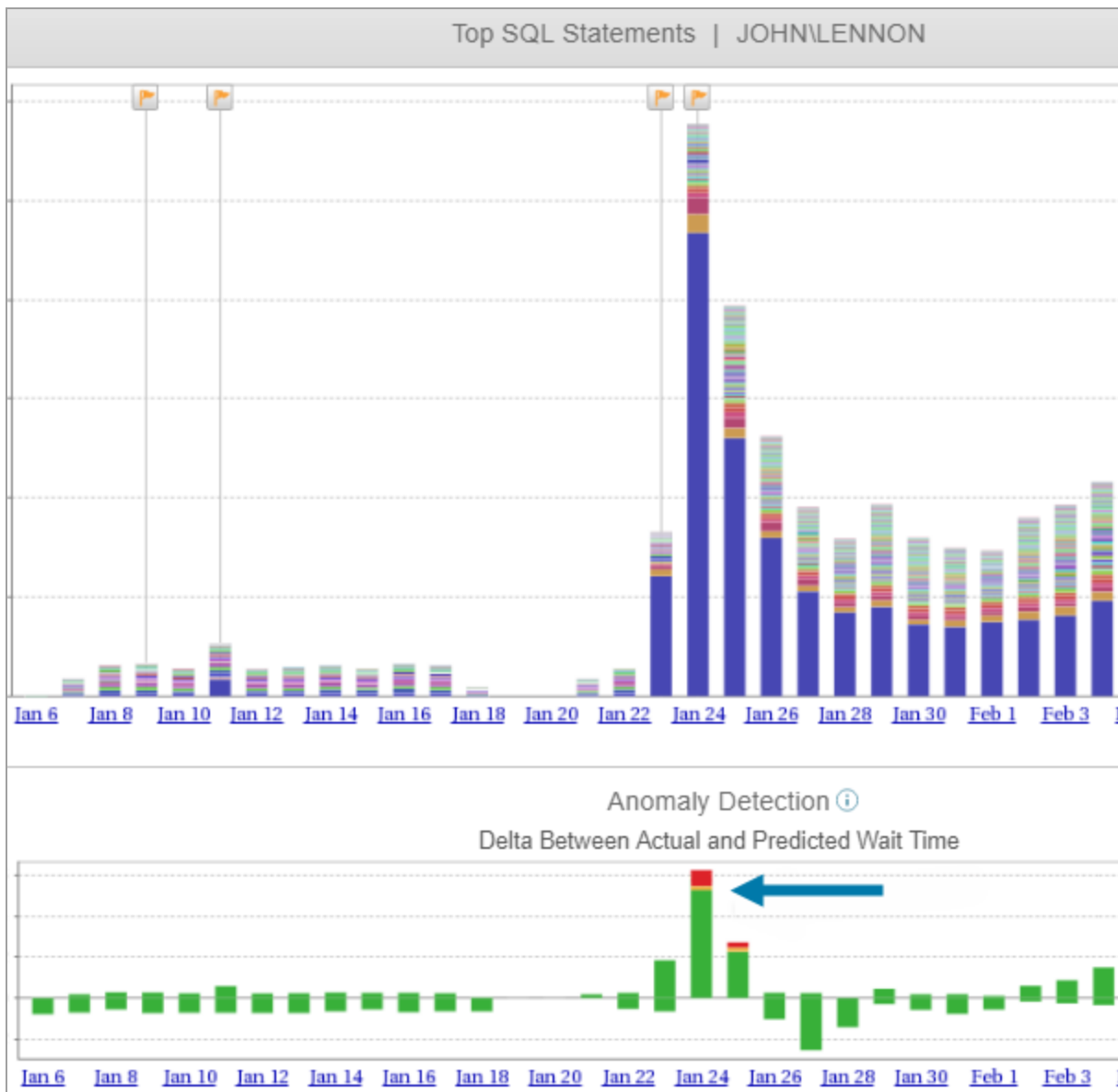
- [Investigate an application performance problem with DPA](#)
- [Investigate a wait time anomaly with DPA](#)

Investigate a wait time anomaly with DPA

DPA uses an [anomaly detection](#) algorithm to identify unexpected increases in wait time. The following example shows how DPA can be used to find the root cause of an unexpected increase in wait time.

The problem

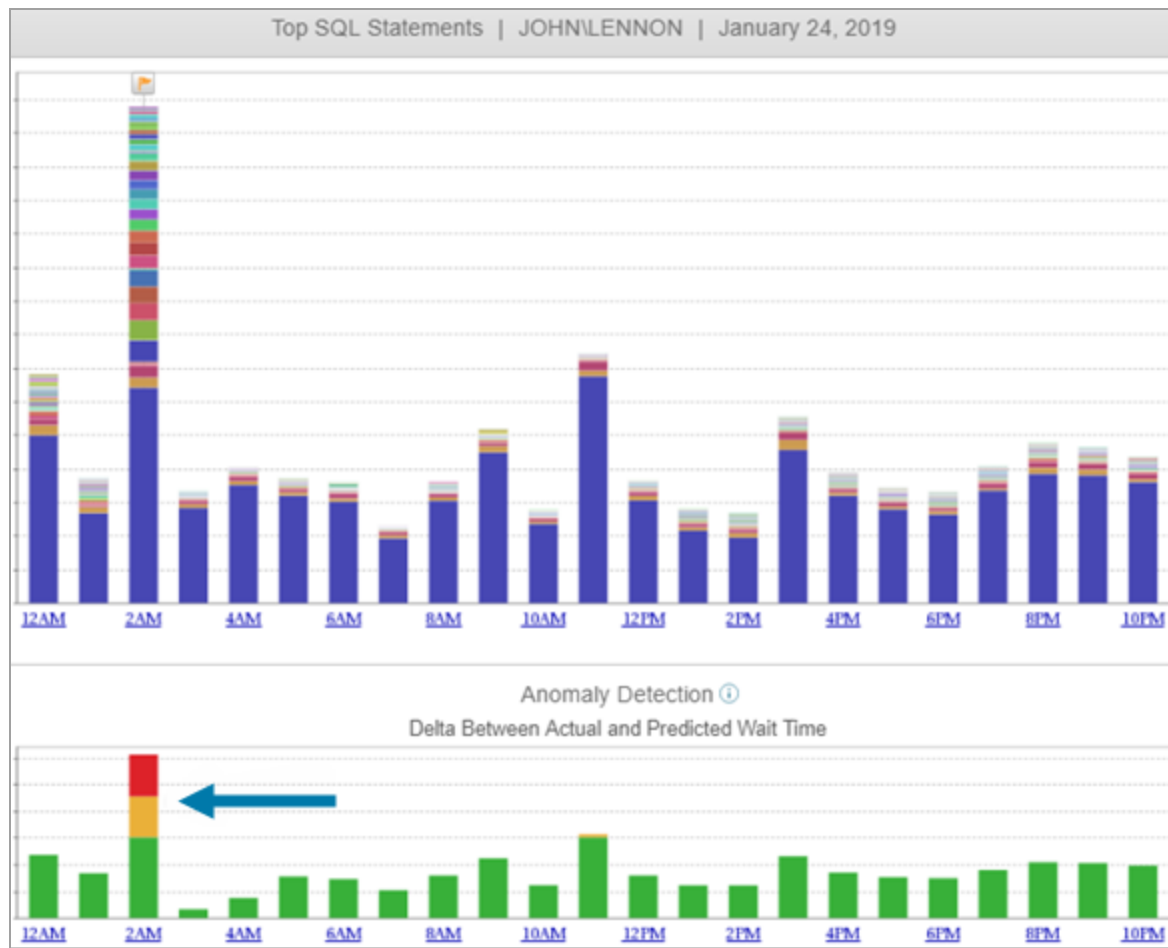
When you click a database instance from the DPA home page, DPA displays the Anomaly Detection chart below the Top SQL Statements chart. In this example, the chart shows that DPA detected critical anomalies for January 24.



The investigation

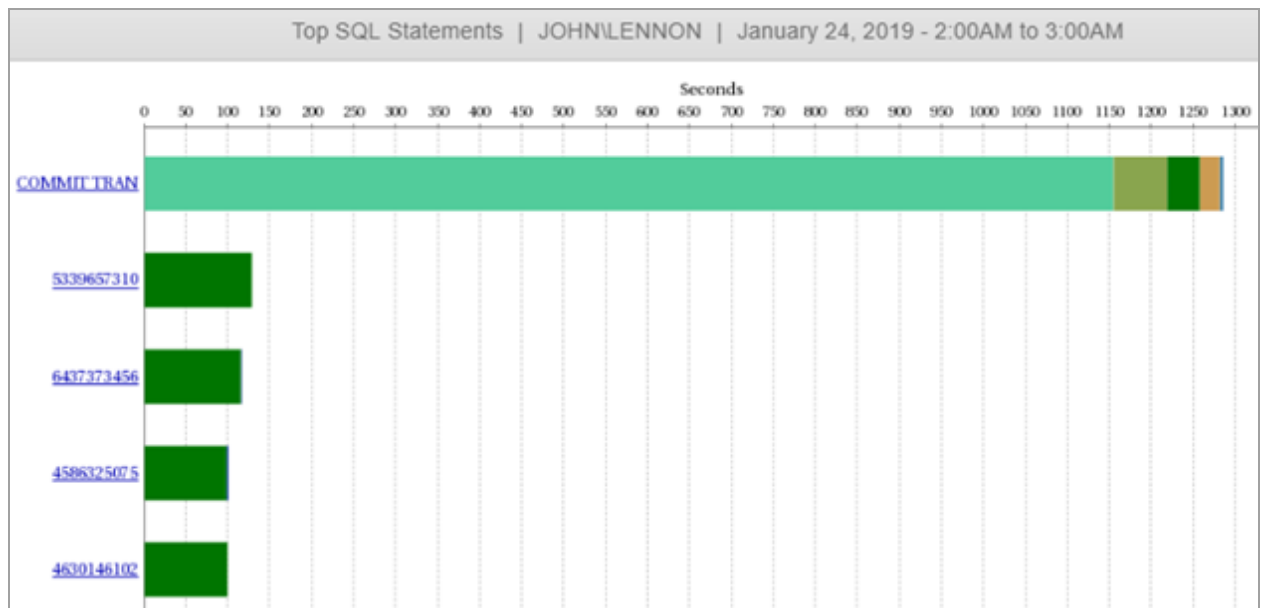
1. On the Anomaly Detection chart, click the bar that represents January 24.

The one-day Anomaly Detection chart shows that the anomaly occurred during the 2 AM hour.



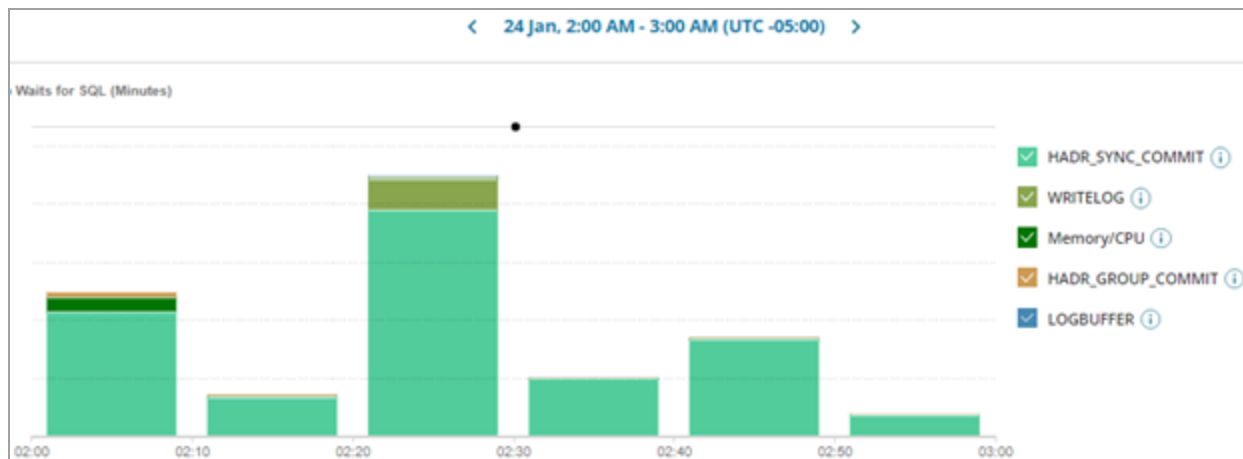
2. Click the bar that represents the 2 AM hour.

The chart shows the top SQL statements that were executed during that hour. In this example, the COMMIT TRAN SQL statement had significantly higher wait times than any other statement. It is likely to be the cause of the anomaly.



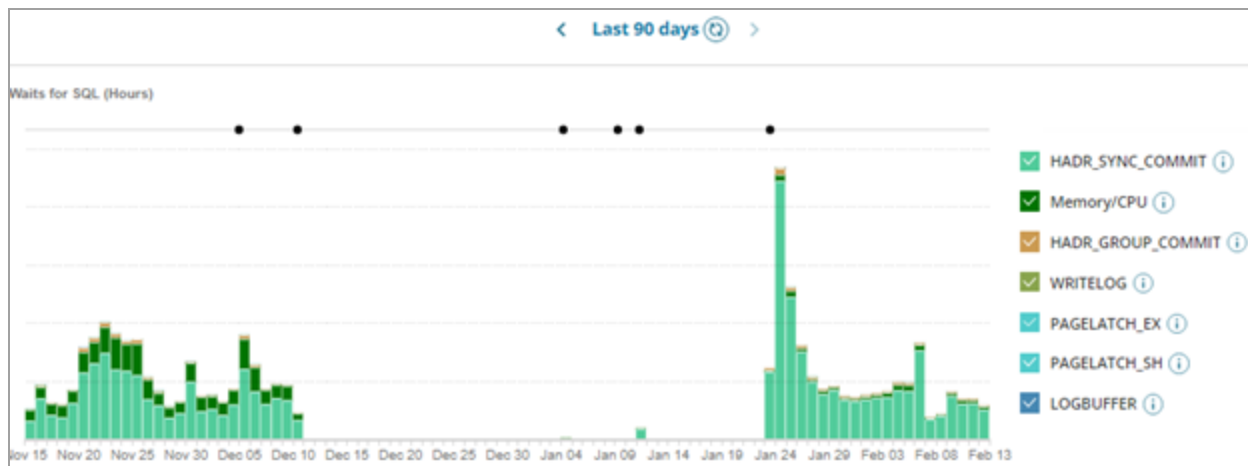
- Click the name of the COMMIT TRAN SQL statement to open the Query Details page, which shows detailed information about that SQL statement's performance during the selected time period (2:00 AM to 3:00 AM in this case).

Notice that the predominant wait type during that hour is HADR_SYNC_COMMIT. This wait indicates that the primary AG replica is waiting for secondary replicas to commit their data. The most likely issue is that there are slowdowns within the AG environment.



- To get an idea of what is normal for COMMIT TRAN, click the date control in the top center of the screen and choose Last 90 Days.

The chart displays wait times for the COMMIT TRAN SQL statement during the last 90 days.



You can see that:

- The SQL statement had long HADR_SYNC_COMMIT waits from November 15 through December 10, but the waits were not as severe as January 24.
- From December 10 through January 24, there were almost no issues.
- Unusually long waits occurred on January 24, and DPA reported an anomaly.
- Even though the waits are not as severe as on January 24, the problem continues to occur.

5. Click the AG status tab, and then click the availability group name to view information about the AG status. In this case, you find that there are noticeable delays.

TRENDS

TUNING

STORAGE I/O

CURRENT

VM CONFIG

RESOURCES

AG STATUS

AG: MUSICDB

Date is 3 minutes old.

Refresh

Monitoring primary replica on JOHNLENNON.

OVERALL AG HEALTH

Healthy

PRIMARY'S FAILOVER MODE

Manual

CLUSTER

Beetles

Replicas (4)

Health	Name	Role	Availability Mode	Failover Mode	Sync Status	Estimated Recovery Time	Failover Readiness	Estimated Data Loss	Connection Status
✓	GEORGEHARRISON	Secondary	Asynchronous	Manual	Synchronizing	17 seconds	Data loss	0 seconds	Connected
✓	JOHNLENNON	Primary	Synchronous	Manual	Synchronized	11 seconds	No data loss	0 seconds	Connected
✓	PAULMCCARTNEY	Secondary	Synchronous	Automatic	Synchronized	0 seconds	No data loss	0 seconds	Connected
✓	RINGOSTARR	Secondary	Synchronous	Automatic	Synchronized	0 seconds	No data loss	0 seconds	Connected

Databases (2)

Health	Name	Replica	Role	Sync Status	Estimated Recovery Time	Estimated Data Loss	Last Hardened LSN	Last Secondary Hardened Time
✓	dpa_dpa_AG	GEORGEHARRISON	Secondary	Synchronizing	0 seconds	19 seconds	51179000185493800001	06/12/19 04:09:27 PM
✓	dpa_dpa_AG	JOHNLENNON	Primary	Synchronized	0 seconds	0 seconds	51179000185493800001	
✓	dpa_dpa_AG	PAULMCCARTNEY	Secondary	Synchronized	0 seconds	0 seconds	51179000185493800001	06/12/19 04:09:27 PM

Based on this data, your team uses SolarWinds SAM to investigate further, and you identify network issues between the primary and replica databases as the underlying cause of the anomalies.

You also configure a Database Instance Wait Time anomaly [alert](#) to notify you when anomalies are detected.

Learn more

Learn more about the [DPA approach to investigating performance issues](#). For other examples of using DPA to investigate a performance issue, see:

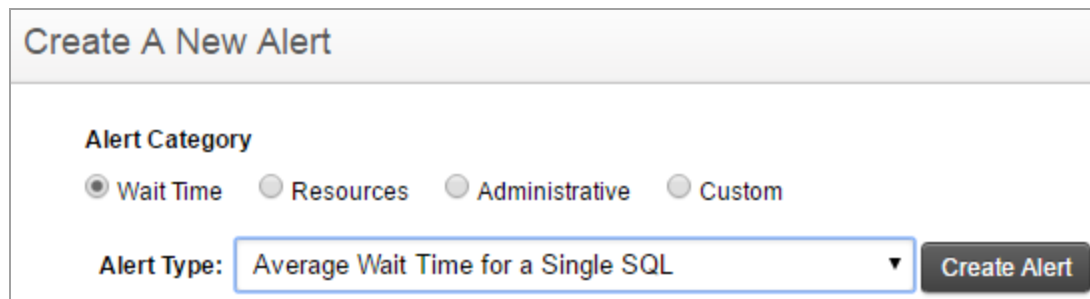
- [Investigate an application performance problem with DPA](#)
- [Investigate an increase in wait time with DPA](#)

Create a DPA alert to monitor SQL statement execution time

Use DPA alerts to send notifications about potential problems so that your team can take steps to resolve the issue before it affects end users.

A previous example showed how to use DPA to [resolve performance problems](#) that were caused by a long-running SQL statement. This example adds an alert to notify the DBA group if the average execution time of that SQL statement is above the specified threshold. If this alert is triggered, the team can stop the query before end users notice a performance problem.

1. On the DPA menu, click Alerts.
2. Click the Manage Alerts tab.
3. For the Alert Category, select Wait Time.
4. For the Alert Type, select Average Wait Time for a Single SQL.




Create A New Alert

Alert Category

☒ Wait Time ☐ Resources ☐ Administrative ☐ Custom

Alert Type: Average Wait Time for a Single SQL ▼ **Create Alert**

5. Click Create Alert.
6. Enter a unique name, select the execution interval, and enter the email notification text.

 SolarWinds recommends an execution interval of at least 10 minutes. This allows time for valid samples and prevents unnecessary alerts from a single slow execution.

Alert Information

Type	Average Wait Time for a Single SQL
Description	Average execution time (in seconds) for the specified SQL
Alert Name	Average Wait Time for SELECT FROM CUST OUTER JOIN
Active	<input checked="" type="checkbox"/>
Execution Interval	10 Minutes
Notification Text - Explanation or resolution steps to be sent with alert email	
The average wait time for SELECT FROM <u>CUST</u> OUTER JOIN is above 30 seconds for the execution interval. Kill this query to prevent performance problems.	

7. Select the database instance that the SQL statement runs against.

Database Instances

Available Database Instances	Selected Database Instances View All
DPA-SUSE-MYSQL56:3306 DPAMARIADB:3306 DPAORA11R2ST_DPAORA11R2-STAN DPAORA11R2_DPAORA11R2 DPASQL2K14-BI DPASQL2K14-CS DPASQL2K16-RC3 DPASQL2K8 DPASQL2K8R2-WRG DPASY155:5000 DPAORA11R2ST_DPAORA11R2-STAN	DPASQL2016
Add	Remove

8. Select the SQL statement the alert monitors.

- Click Search next to the SQL Hash field.
- Because this SQL statement has a name, leave Name and Hash selected as the SQL Search Type.

- c. Select the name of the SQL statement from the list.

Search

DB Instance: DPAORA11R2ST_DPAORA11R2-STAN

Search String:

Search

Treat SQL wildcard characters as literals by prefacing with exclamation mark (!)

SQL wildcard characters may differ depending on the Repository database type

SQL Search Type:

☒ Name and Hash
 ☐ SQL Text
 ☐ SQL ID (Oracle 10g+ only)

Search Results

Commits

Insert CONPT_1

Select

SELECT FROM CUST OUTER JOIN



test item.

Unknown SQL from DBMS_JOB


- d. Click OK. The hash value of the SQL statement is displayed in the SQL Hash field.







9. Specify the thresholds for each alert level you want to enable.

In this example, a High alert is triggered if the average wait time of the SQL statement during an execution interval is 30 seconds or more.

	Min (seconds)	Max (seconds)
 HIGH	<input type="text" value="30"/>	<input type="text"/>
 MEDIUM	<input type="text"/>	<input type="text"/>
 LOW	<input type="text"/>	<input type="text"/>
 INFO	<input type="text"/>	<input type="text"/>

10. Select the person or group who gets notified when an alert level is triggered and when the alert is broken. (The alert status is set to Broken if an error occurs during execution.)

 If you have not added the person or group as a contact in DPA, click Add Contact or Add Contact Group. See [Create contacts and contact groups](#) in the DPA Administrator Guide.

	Min (seconds)	Max (seconds)	Notification Group or Contact
 HIGH	<input type="text" value="30"/>	<input type="text"/>	<input type="text" value="(GROUP)On Call"/>
 MEDIUM	<input type="text"/>	<input type="text"/>	-- Select a recipient --
 LOW	<input type="text"/>	<input type="text"/>	-- Select a recipient --
 INFO	<input type="text"/>	<input type="text"/>	-- Select a recipient --
 NORMAL			-- Select a recipient --
 BROKEN			-- Select a recipient --

11. Click Test Alert to verify that no errors occur when the alert is executed.
12. Click Save.

Create a DPA report to track wait types for a single SQL statement

Use DPA reports to identify database trends and track the results of your performance tuning.

The following example creates a report to track wait types for a specific SQL statement. If you made changes to [reduce a specific type of wait for a SQL statement](#), you can use this report to determine if your tuning efforts were effective.

1. On the DPA menu, click Reports.
2. Select the database instance and the report type.

For this example, choose Top Waits for single SQL.



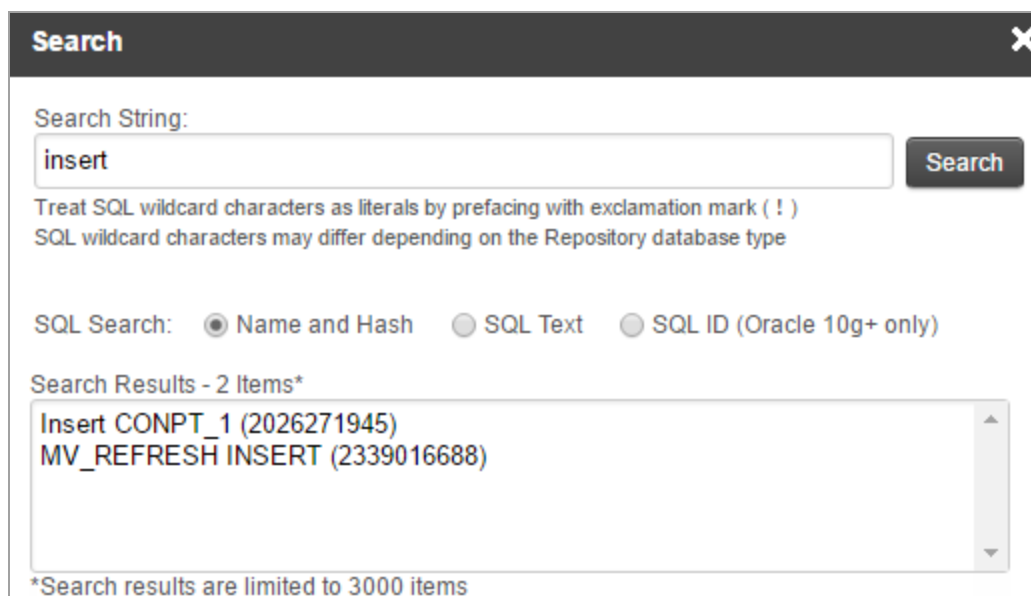
Database Instance: JOHN\LENNON via MUSICDB-LIST

Report Type: Top Waits for single SQL

3. Click Search and locate the SQL statement.

If you named the statement, enter part of the name and make sure Name and Hash is selected. Then click Search.

The Search Results lists all SQL statements run against the selected database instance that match your criteria.



Search

Search String: insert

Treat SQL wildcard characters as literals by prefacing with exclamation mark (!)
SQL wildcard characters may differ depending on the Repository database type

SQL Search: ☒ Name and Hash ☐ SQL Text ☐ SQL ID (Oracle 10g+ only)

Search Results - 2 Items*

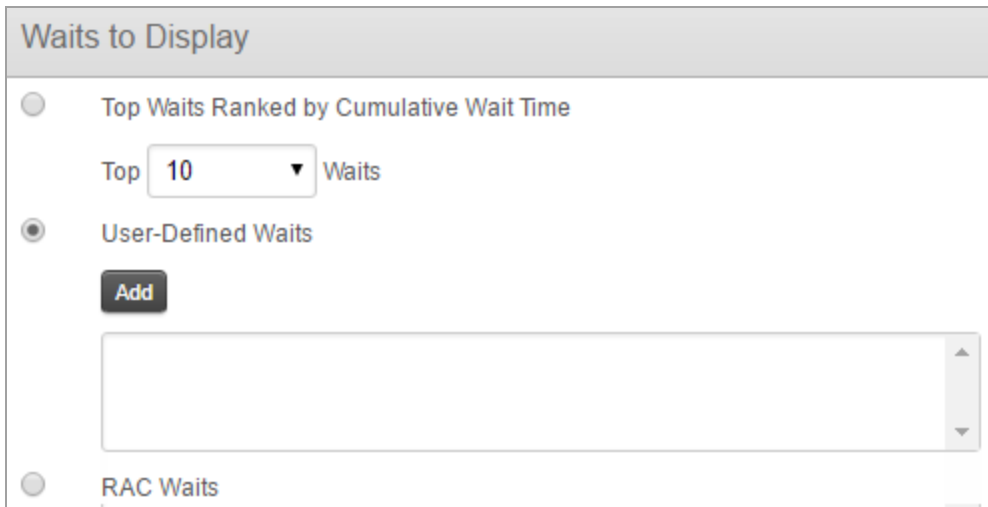
Insert CONPT_1 (2026271945)
MV_REFRESH INSERT (2339016688)

*Search results are limited to 3000 items

4. Select the SQL statement, and click OK.
5. Click Report Options.

This report can show the top waits, or it can show specific wait types (regardless of their wait times).

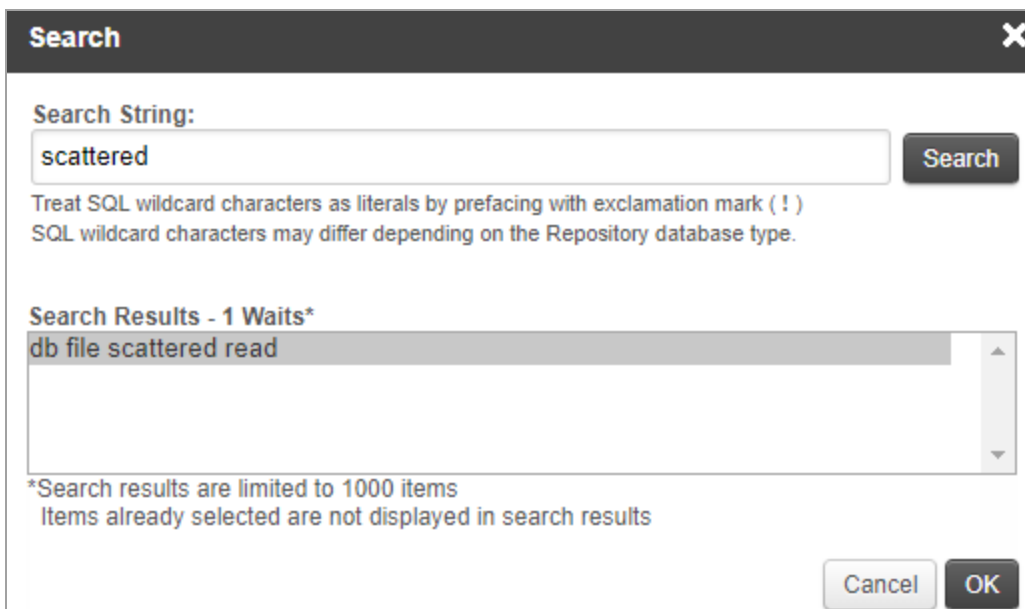
6. For this example, complete the following steps to specify `db_file_scattered read` waits and Memory/CPU waits.
 - a. Under Waits to Display, select User-Defined Waits and click Add.



The 'Waits to Display' dialog box has a title bar 'Waits to Display'. It contains three radio buttons: 'Top Waits Ranked by Cumulative Wait Time', 'User-Defined Waits' (which is selected), and 'RAC Waits'. Under 'Top Waits Ranked by Cumulative Wait Time', there is a 'Top' label, a text box containing '10', and a 'Waits' label. Under 'User-Defined Waits', there is an 'Add' button and a large empty text area for listing wait types.

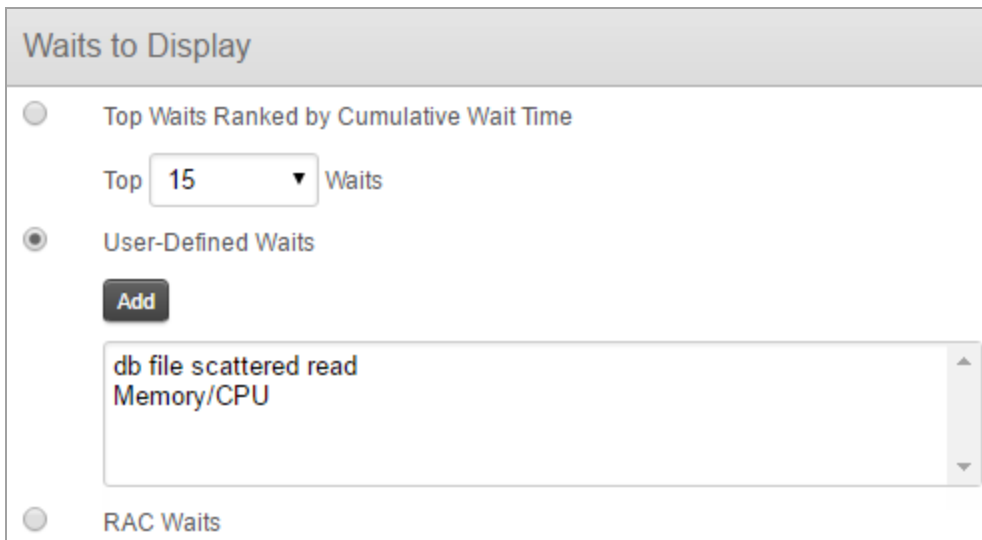
- b. Enter part of the wait name (for example, `scattered`), and click Search.

The Search Results section lists all waits that match your search criteria.




The 'Search' dialog box has a title bar 'Search' with a close button. It contains a 'Search String:' label, a text box containing 'scattered', and a 'Search' button. Below the text box, there is a note: 'Treat SQL wildcard characters as literals by prefacing with exclamation mark (!) SQL wildcard characters may differ depending on the Repository database type.' Below this, there is a section titled 'Search Results - 1 Waits*' with a list box containing 'db file scattered read'. At the bottom, there is a note: '*Search results are limited to 1000 items Items already selected are not displayed in search results' and two buttons: 'Cancel' and 'OK'.

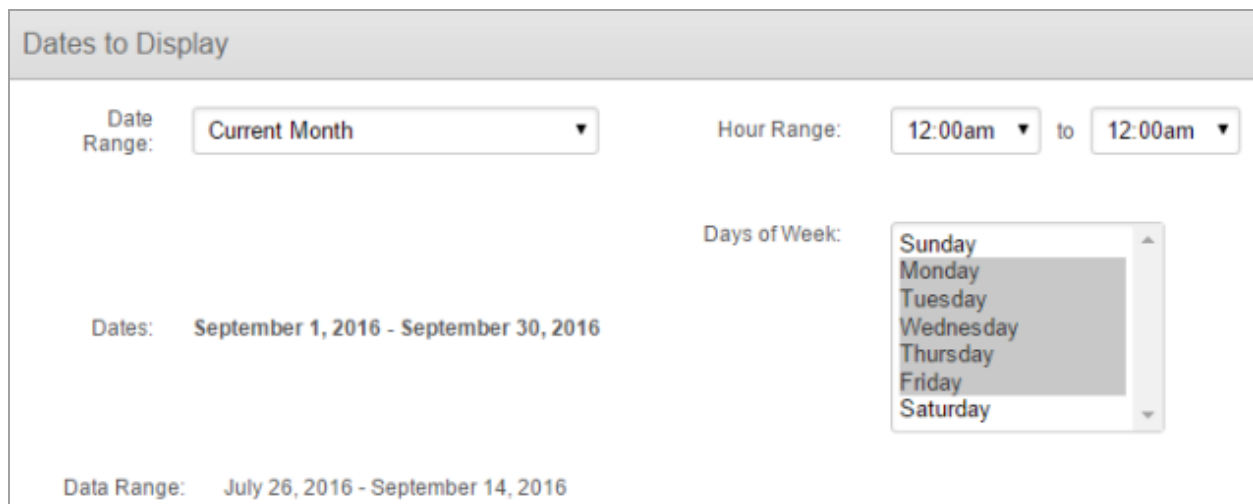
- c. Select `db file scattered read`, and click OK.
- d. Repeat the previous steps to add `Memory/CPU` waits, and click OK.



7. Under Dates to Display, specify the dates that the report should include.

In this example, the date range is the current month, and the report includes only weekdays.

 The Data Range at the bottom of this section shows the time period for which data is available.



8. Under General, complete the following fields.

Report Name	Enter a unique name to identify this report in the report list.
----------------	---

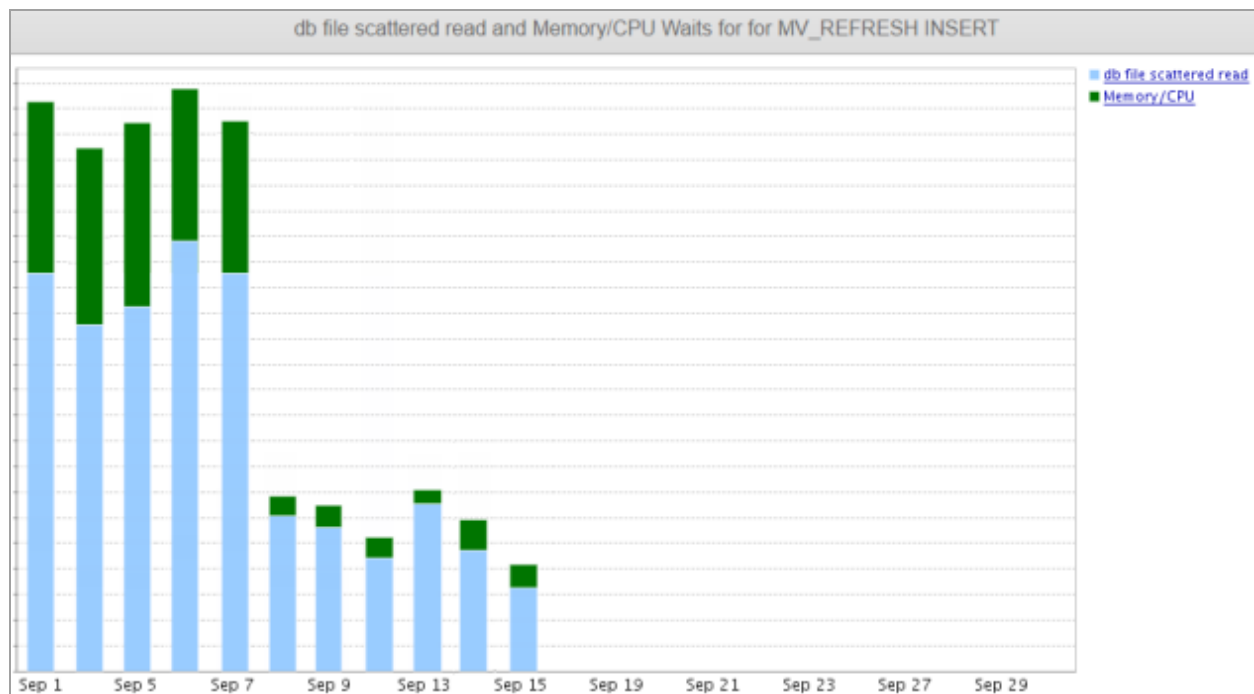
Report Title (Optional) Enter a title to display at the top of the report. If you leave this field blank, the report title defaults to the report type, database instance, and time period.

Report Description (Optional) Enter a description to explain the report's content or purpose.


General	
Report Name:	Waits for MV_REFRESH INSERT
Report Title:	db file scattered read and Memory/CPU Waits for for MV_REFRESH INS
Report Description:	Tracking tuning efforts to reduce db file scattered read and Memory/CPU

- In the New Report section at the top of the window, click Display Report.

The report opens. In this example, the drop in wait times after September 7 shows that the tuning efforts were effective.



- Click Save and then OK to save the report.
- To return to the list of reports, click Reports in the breadcrumb navigation at the top of the window.



You can view the report from the Reports tab at any time, or [schedule the report](#) to run automatically and be emailed to a group of recipients.

After evaluation, activate DPA licenses

After the DPA trial period ends, DPA monitors only licensed instances. If your DPA server uses [individual licenses](#), you must activate a license for each database instance that you want to monitor. Make sure you have the correct [license types](#) for the instances you want to monitor.

Activate licenses online

If your DPA server is connected to the Internet, you can activate licenses online. [Create a user profile](#) in the SolarWinds Customer Portal if you do not already have one.

i If your DPA server is not connected to the Internet, you can [activate your licenses offline](#).

1. Complete the following steps to retrieve your license activation key from the Customer Portal.

If you are evaluating DPA and have received a license activation key from a SolarWinds representative, continue with step 2.

- a. Log in to the [SolarWinds Customer Portal](#).
 - b. Choose Licenses > Manage Licenses.
 - c. Locate the license, and expand it.
 - d. Copy the activation key.
2. On the DPA home page, click License Management. Then click License Manager.
 3. Click Enter Activation Key.
 4. Select Online Activation, and click Next.
 5. On the Online Activation page, paste the activation key into the correct field.
 6. In the Amount to Activate section, select All Available or Specify Amount.

i Unactivated licenses can be activated later. You can use the same activation key to activate licenses on a different DPA server. For example, if an activation key includes 10 licenses, you can enter the activation key on one DPA server and allocate 5 licenses, and then enter it on a second DPA server and activate the remaining 5 licenses.

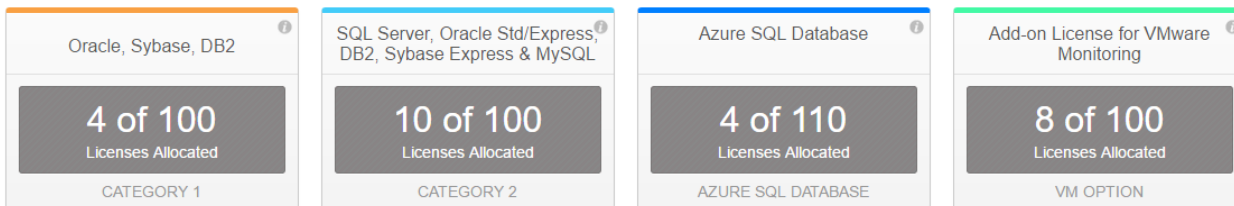
7. Enter the remaining information, and click Activate.

When you activate a license, DPA automatically allocates the license to a registered database instance **if** you have enough licenses to monitor all registered instances in that license category. If you do not have enough licenses to monitor all registered instances, you must [manually allocate licenses](#) to the instances you want to monitor.

View current license allocation

Use the License Allocation page to see how many activated licenses are available and how many have been allocated.

1. On the DPA home page, click License Management.
2. See the current license allocations in the summary boxes near the top of the License Allocation page.



Integrate DPA with the SolarWinds Platform

Storage administrators, network administrators, and DBAs often function within silos, using tools that give them an incomplete view of the factors that affect performance.

Integrating DPA with the [SolarWinds Platform](#) expands the information available in the SolarWinds Platform Web Console, making it easier to determine the root cause of performance problems. You can view database instance information alongside other environmental factors to get a more comprehensive view of issues affecting users and your IT infrastructure.

After integration, the SolarWinds Platform displays DPA-specific resources that poll information directly from DPA. Integration also expands the information available in other SolarWinds Platform resources. Information from DPA, such as database wait time, improves your ability to troubleshoot slow response times or pinpoint database instances that need additional resources.

Benefits of integrating DPA with the SolarWinds Platform

After integrating DPA with the SolarWinds Platform, you can:

- **View information from multiple DPA servers**

If you integrate multiple DPA servers with the SolarWinds Platform, the Databases Summary view displays aggregated data from all servers. You can drill down to see information from a specific server.

- **Integrate with SolarWinds Server & Application Monitor (SAM) or the server and application monitoring capabilities in Hybrid Cloud Observability Essentials**

If you have SAM or Hybrid Cloud Observability Essentials, integration with DPA adds views and resources that are available only with integration. For example, you can see which applications are querying a database, and then click through for information about response time.



This information gives you an application-centric perspective of database performance and helps you determine if the root cause of performance problems is in the application or the database. Database administrators and system administrators can use this integration to:

- Analyze database performance within the context of a specific application.
- Monitor applications, databases, and server performance from a single interface, and drill down to find the root cause of slow application performance.
- Understand the relationships and dependencies among the layers of infrastructure from the perspective of an application.

In addition, a Database Instance category is added to the Application Stack (AppStack) provided in the SolarWinds Platform. Use the Database Instance category to assess the overall health of your database instances and to troubleshoot performance and availability problems.

• Integrate with SolarWinds Storage Resource Monitor (SRM)

If you have SRM, integration with DPA adds views and resources that are available only with integration. You can see contextually relevant information on storage objects related to databases monitored by DPA, and correlate storage health and performance with the databases mapped to the storage objects.

Storage Objects By Performance Risk

EDITHELP

RESOURCE	TYPE	ARRAY	LATENCY	IOPS	THROUGHPUT
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This information gives you a storage-centric perspective of database performance and helps you determine if the root cause of performance problems is in the storage object or the database.

- **Build SolarWinds Platform alerts and reports using information from DPA**


You can create alerts in the SolarWinds Platform Web Console that are triggered by data collected from database instances. You can also select DPA resources when you create reports in the SolarWinds Platform Web Console.

- **Include DPA data in Performance Analysis (PerfStack™) dashboards**

When you include DPA metrics with metrics from other SolarWinds Platform products, PerfStack dashboards can show how queries and database wait times relate to application and infrastructure performance. Both DBAs and non-DBAs can use DPA data in PerfStack to answer the question "Is it the database or the application?"

How do I integrate DPA with the SolarWinds Platform?

For integration instructions and information about using these features, see information about [viewing DPA data in the SolarWinds Platform Web Console](#).

 If you have Hybrid Cloud Observability or multiple SolarWinds Platform products installed, SolarWinds does **not** recommend installing DPA and the SolarWinds Platform products on the same server. For more information, see [Requirements for the DPA Integration Module](#).

Beyond Getting Started with DPA

Now that you've [gotten started with DPA](#), check out the [DPA Administrator Guide](#) to learn more about using other DPA features. For example, you can:

- Register [multiple database instances](#) at once
- Add [other DPA users](#) and assign user privileges
- Use [table tuning advisors](#) to make informed decisions about how to improve the performance of inefficient queries
- Identify [blocking sessions and deadlocks](#)
- Learn about monitoring [SQL Server Availability Groups \(AGs\)](#) and [Oracle multitenant databases \(CDBs\)](#)
- Create [DPA alerts](#)
- Use [alert groups](#) to simplify alert configuration
- [Schedule reports](#) for email delivery
- [Stop monitoring a database](#) for a specified time period

You can also connect with the SolarWinds DPA user community on [THWACK](#), where you'll find training videos, blog posts, and information about what the DPA team is working on.