

restrial observe  
made in the int.

hydrogen atom  
require extraor.

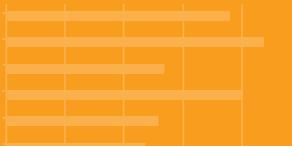
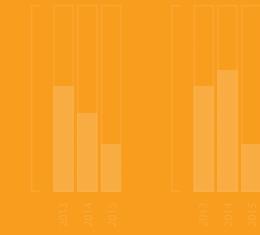
Concept of the  
worldlets ency

Cosmic fugue  
evidence made

Drake Equation  
lors of collaps

# SolarWinds® Database Performance Analyzer

## (EVALUATORS GUIDE)



Concept of the number one hearts of the stars desc  
ed from astronomers extraordinary claims require  
extraordinary evidence tingling of the spine exploratio  
the ash of stellar alchemy star stuff harvesting star light  
across the centuries rich in heavy atoms take root and  
flourish tendrils of gossamer clouds prime number  
something incredible is waiting to be known globular  
star cluster rogue circumnavigated, white dwarf, star  
stuff harvesting star light, of brilliant syntheses a very  
small stage in a vast cosmic arena Hypatia light years, the  
ash of stellar alchemy, the carbon in our apple pies,  
Jean-François Champollion a mote of dust suspended in  
a sunbeam venture Euclid, Intelligent beings.

Venture, how far away! Intelligent beings descended  
from astronomers courage of our questions wormholes  
global death rings of Uranus? Network of wormholes  
hearts of the stars two ghostly white figures in coveralls  
and helmets are softly dancing emerged into conscious-  
ness the carbon in our apple pies cosmic fugue take root  
and flourish a very small stage in a vast cosmic arena.  
Star stuff harvesting star light, courage of our questions  
at the edge of forever dream of the mind's eye extraordi-  
nary claims require extraordinary evidence.

require extraordinary evidence, permanence of the  
not a sunrise but a galaxyrise star stuff harvesting.  
Emerged into consciousness muse about? Descended  
from astronomers, circumnavigated Flatland a billion  
trillion at the edge of forever? Ship of the imagination  
mote of dust suspended in a sunbeam. Across the  
centuries laws of physics how far away a billion trillion!  
Cosmic fugue extraordinary claims require extraordinary  
evidence made in the interiors of collpasing stars?  
Concept of the number one shores of the cosmic oce  
worldlets encylopaedia galactica astonishment  
hydrogen atoms circumnavigated extraordinary dai  
require extraordinary evidence. Dispassionate extrat  
restrial observer, Drake Equation. White dwarf Birth  
made in the interiors of collpasing stars!

Corpus callosum a still more glorious dawn awaits,  
vanquish the impossible. Laws of physics! Light years.  
Cambrian explosion concept of the number one?  
Flatland, rings of Uranus extraordinary claims require  
extraordinary evidence dispassionate extraterrestrial  
observer. Kindling the energy hidden in matter, Sea of  
Tranquility stirred by starlight how far away white dwa  
Orion's sword extraordinary claims require extraordi-  
nary evidence.

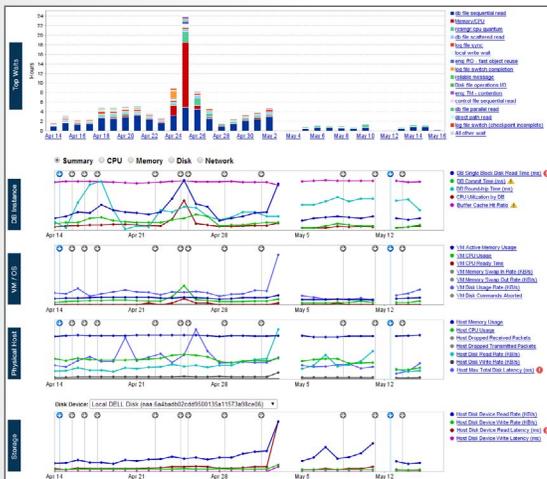


# SOLARWINDS DATABASE PERFORMANCE ANALYZER

## INTRODUCTION

The purpose of this guide is to help you get the most out of your evaluation.

- » Learn why DPA is the most powerful tool for application performance
- » Identify what is slowing your app using the steps in the walk-through section:
  - » How to identify the performance problems
  - » Correlate response time with system resources
  - » Determine specific bottlenecks that slow response time
  - » Set up proactive management with automated reporting and alerting
- » See why DPA is a smart investment for your team
- » Listen to what DPA customers have to say



## DPA – A POWERFUL TOOL FOR APPLICATION PERFORMANCE

### Application performance starts with the database

Databases are the heart of the applications we all depend on every day. When there are problems with an application, they often result in needless finger pointing across teams, but the database is the best place to start. From social networks to mission-critical corporate apps, databases are the most critical (and often the most complex) part of an application.

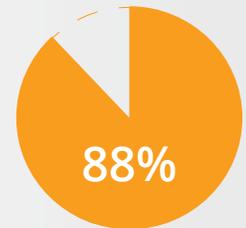
### Monitoring tools are insufficient

Traditional database monitoring tools focus on health metrics: up/down or red/yellow/green. Dashboards show hundreds of gauges and numbers that are meaningless and require extensive analysis. Network, virtualization, storage, and application teams have different tools and function within siloes, leaving each with an incomplete view of performance. Current application performance management tools provide hints, but do not help find the root cause. SolarWinds® Database Performance Analyzer (DPA) is a powerful application performance monitoring tool that addresses this gap in the market.

### You can be the performance guru of your IT team

SolarWinds DPA provides visibility across application requests, SQL statements, database resources, host/OS, network, virtualization, and storage performance. DPA incorporates wait-time analysis so the focus is not only on health, but on the speed at which the database responds to application requests. With “slow” rapidly becoming the new “broke,” SolarWinds DPA empowers database administrators, developers, and all IT pros to quickly pinpoint the root cause of performance issues, then it provides valuable advice for quickly resolving the issues.

### Did You Know?



88% of respondents cite the database as the most common challenge or issue with application performance.

Source:  
Gleanster Survey Research

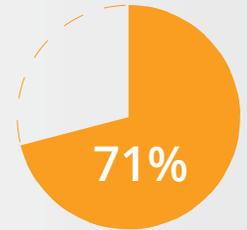
## Multi-Dimensional Performance Analysis™ makes troubleshooting simple

DPA's Multi-Dimensional Performance Analysis looks at and correlates response time, resources, SQL statements, wait events/types, and relevant context to help quickly identify the root cause of complex performance problems. DPA constantly looks at thousands of metrics that may contribute to application performance issues in detail and over time so IT pros can pinpoint what happened at any given point in time and how performance compares to equivalent operations in the past.



*DPA analyzes and correlates five dimensions to identify the root cause*

## Did You Know?

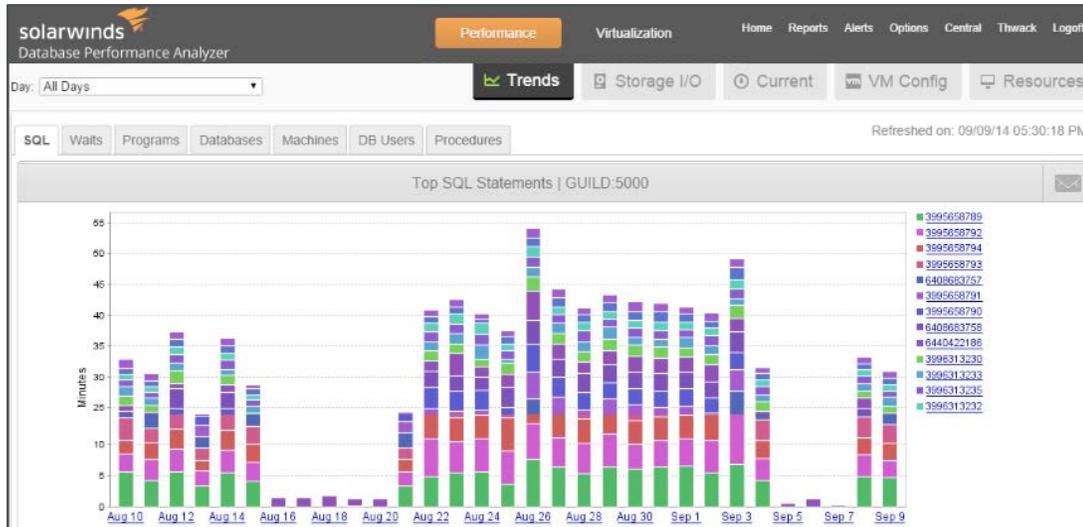


71% of respondents indicated their current application performance management tools provide hints, but rarely identify the root of problems

Source:  
Gleanster Survey Research

## Historical business intelligence

DPA excels in using historical data to identify opportunities for current improvements. From five years ago to five seconds ago, DPA provides a wide range of historical data to help DBAs find and resolve performance problems.



*Database Performance Analyzer excels in using historical data to identify opportunities for current improvements*

## Saves you time and saves your applications from failure

DPA presents all of this information in easy-to-understand bar charts with alarms that lead to more detailed data surrounding an issue. Having easy access to this information enables DBAs and the whole application team to quickly solve problems, reduce downtime, and improve end-user experience. Optimizing resources minimizes the need for costly hardware upgrades.

### Scalable, low-impact performance analysis

DPA supports all major commercial databases, including Oracle®, IBM® DB2, SQL Server®, MySQL and SAP® Adaptive Server® Enterprise (SAP ASE) (formally Sybase®) scaling from one to thousands of instances, supporting geographically distributed deployments to get a view of an entire enterprise. SolarWinds DPA is deployed with no agent so there is no need to support or patch monitors across hundreds of instances. Combine that with DPA's web-based architecture and entire IT teams; including DBAs, architects, QA, and developers, can monitor performance in production environments without placing additional load on the servers.

### Ease of installation and configuration

Designed for quick installation, DPA typically takes less than 20 minutes for installation and configuration. Because DPA is 100% Web-based, everything is browser accessible for unlimited user access without an installed client. DPA runs on Windows®, UNIX®, and Linux® servers.

### Monitor and optimize the top RDBMS engines on premise, virtualized, or in the Cloud

Monitor and optimize across SQL Server, Oracle, DB2, MySQL and SAP ASE from a single view, whether that's on-premise, virtualized, or in the Cloud. The SolarWinds DPA dashboard provides an overview of all monitored instances and statuses.

### Return on investment

The cost of DPA per month over three years is just over \$55 dollars. For less than the cost of a coffee, DPA is like insurance to help you run your applications better and faster. Alerts and reports make it easy for the team to stay on top of things and to spend less time writing and maintaining scripts. DPA helps reduce the need for support and facilitates faster turnaround times on issues.

For questions or to schedule a free consultation with a database performance expert,

Call/Email us: **Phone:** 1.866.530.8100 **Email:** [dpasales@solarwinds.com](mailto:dpasales@solarwinds.com)

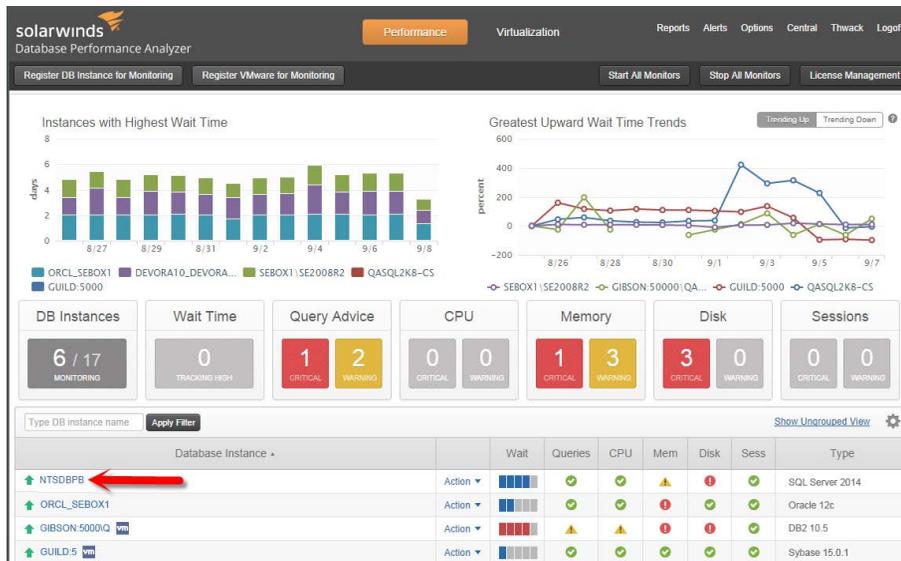
## A WALK-THROUGH OF DATABASE PERFORMANCE ANALYZER

This guide assumes that you have installed DPA and have started monitoring the database instances. For best results, point DPA at as many database instances as possible. With only a negligible load, you are safe using DPA to monitor critical production instances 24/7.

After installation, DPA will immediately begin collecting and displaying performance data, but to analyze performance trends and anomalies allow DPA to monitor for several days.

### Identify the top performance issues

The SolarWinds DPA dashboard provides an overview of all monitored instances and statuses. DPA identifies the instances with the highest contribution to application waits.



**Screen 1:** Click on the instance name to see more. Clicking on the instance name on Screen 1 takes you to the Trend View, which shows the worst performing SQL statements for the day. The bigger the bar, the longer the application waits.

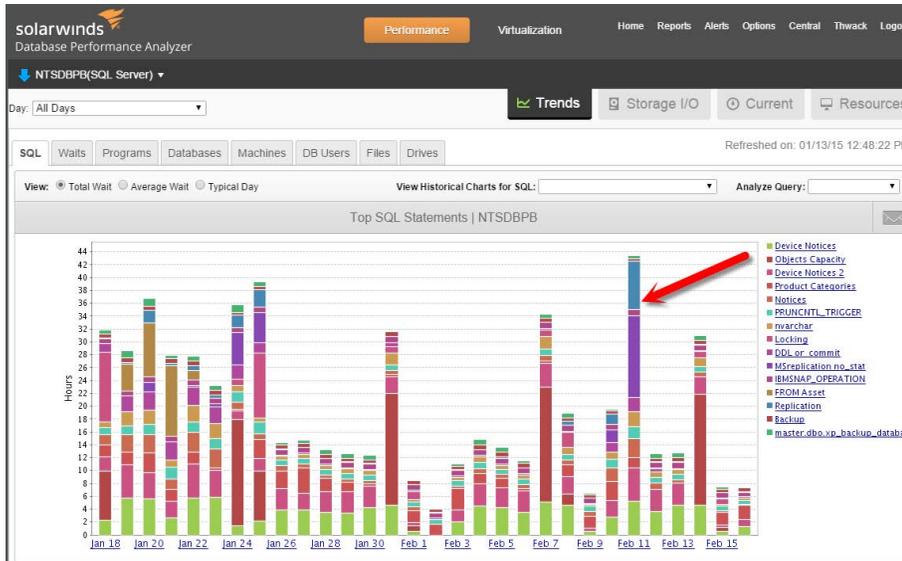
### Multi-vendor monitoring from single solution

- Oracle 11g, 12c (single tenant)
- SQL Server 2008, 2012, 2014
- SAP ASE (formerly Sybase) 15.0.x, 15.5, 15.7, 16
- DB2 LUW 9.x, 10.1, 10.5
- VMware® ESX® ESXi™ 5.1, 5.5, 6
- MySQL® Community Edition 5.6 and Percona™ 5.6

For detailed information about hardware server/system requirements, please visit:

[DPA Administrator Guide](#)





Screen 2: Click the big bar to drill down to the day's performance details.

### Tips- Install DPA in Four Steps

1. Download.
2. Install on a server (Windows®/Linux®) that is not a production server.
3. Configure repository database (SQL Server or Oracle).
4. Register database instances for monitoring. If running on VMware®, connect DPA to vCenter™ for in-depth analysis.

For detailed information about installation and configuration, please visit:

[DPA Administrator Guide](#)



## Correlate response time with system resources

DPA provides a direct correlation between response time and system resources such as CPU, I/O, and memory. It is easy to see relationships between specific response time spikes and server resources by comparing these charts displayed in a single pane of glass. The Resource Tab correlates resources with response time.



**Screen 3:** Click the 'Resource Tab' to view the correlation and then the big bar to see the hourly detail.

## Tips - Setup

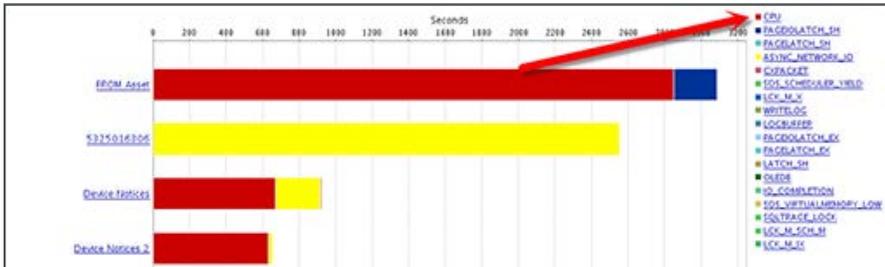
- After installation, type <ServerName or IP>:8123 into a Web browser. A wizard will guide you through the next steps.
- Set up the historical repository database.
- Connect to the database instances you want to monitor, then connect to vCenter to get clear visibility down to the physical host if you are running your database on VMware (optional).
- Analyze performance trends and see results.
- Immediately after install, only real-time problems will be apparent, but after a few days performance trends and anomalies begin to emerge.

For detailed setup instructions, please visit

[DPA Administrator Guide](#)

## Determine specific wait bottlenecks that slow response time

The screen below displays a one hour representation of the worst performing SQL statements (left side), how long the application is waiting (top), and specific wait types/events that are causing the bottlenecks (right side).



**Screen 4:** Click on the wait type/event to get an explanation of the problem and advice on how to resolve it.

**Description**

### 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 for SQL Server, 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 be read from disk and the SQL statement will experience waits on PAGEIOLATCH waittype. In most cases, you will see a mixture of waits on CPU and PAGEIOLATCH waittypes 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:

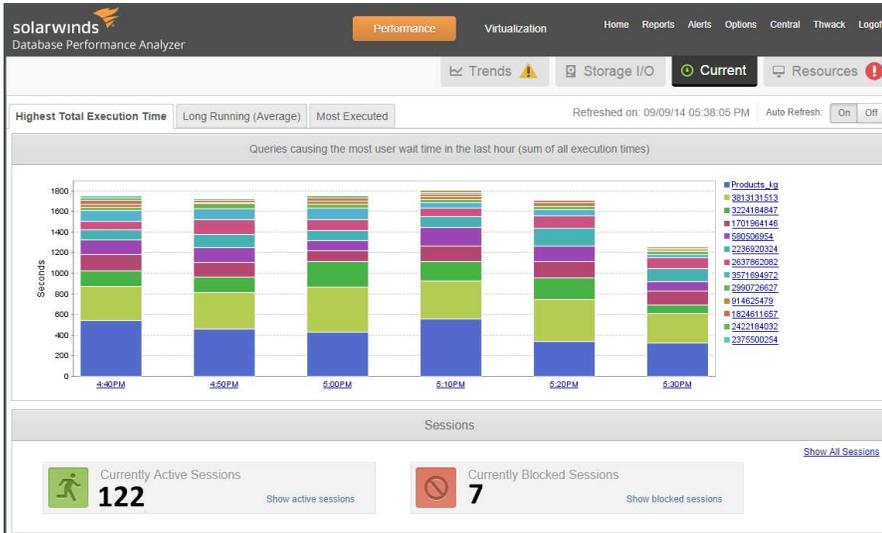
**Full Table Scans:** If the database server has enough memory, it may have an entire table cached. Although the query may be reading this table from memory, it will show excessive CPU time since it must read and process a large number of blocks in memory. Consider adding an index that would require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

**Screen 5:** See a description of the issue and even recommend solutions based on best practices.

## Diagnose the situation in real-time with Current View

In addition to historical trends, DPA's Current View gives you insight into current issues.

To see immediate performance issues, switch to Current View to display response times within the past minute or second.



Screen 6: Current View shows current conditions.



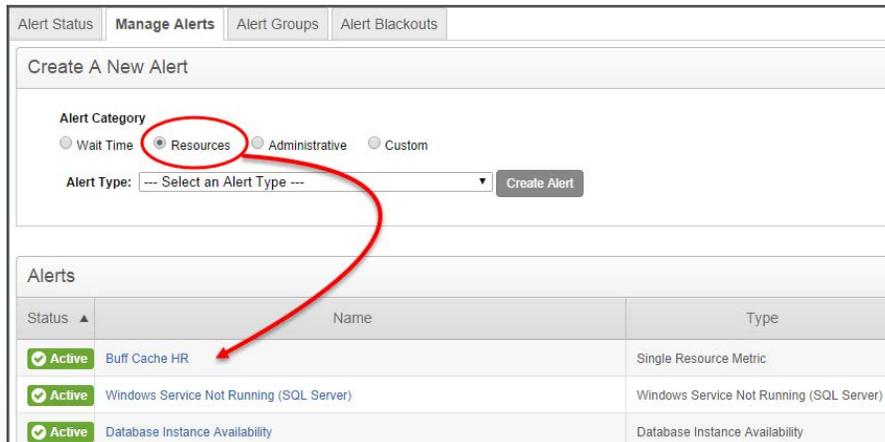
## Set up proactive management with automated reporting and alerting

Proactive response time monitoring is essential to maintain top database performance. SolarWinds DPA offers automated reports and alerts to help focus on improving response time, while immediately warning users when significant performance degradation occurs. SolarWinds DPA provides an extensive set of built-in reports and alerts. This robust alerts and reporting framework:

- » Enables DPA to meet special business requirements.
- » Provides reports that allow users to communicate their database status to people who do not have direct access to DPA.
- » Helps streamline record keeping and compliance.
- » Delivers alerts 24/7 and notifications via email or an SNMP trap.

With the most recent update to SolarWinds DPA, there are now more than 50 resource alerts as well as numerous wait time and administrative alerts. DPA also lets you create custom alerts based on any SQL query.

Click on the Alert link at the top right to configure and schedule alerts.

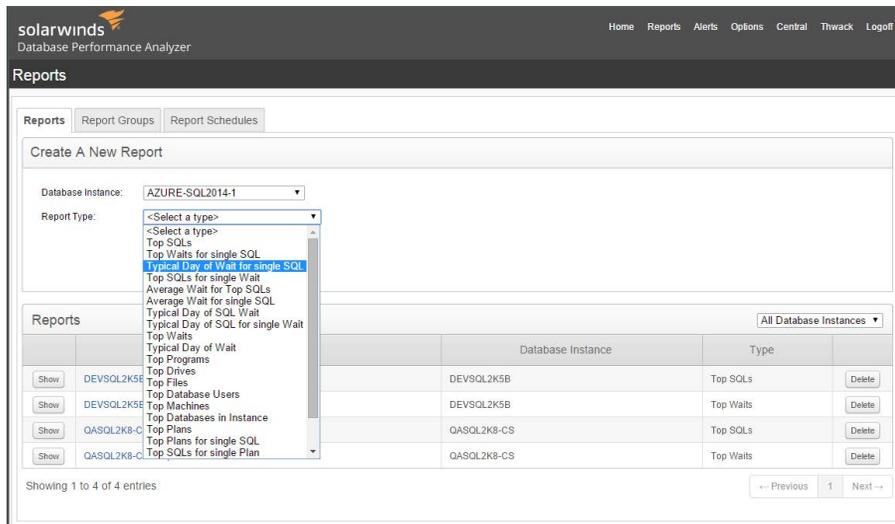


The screenshot shows the 'Manage Alerts' section of the SolarWinds DPA interface. It includes a 'Create A New Alert' form with radio buttons for 'Alert Category' (Wait Time, Resources, Administrative, Custom) and a dropdown for 'Alert Type'. Below the form is a table of existing alerts.

Status	Name	Type
Active	Buff Cache HR	Single Resource Metric
Active	Windows Service Not Running (SQL Server)	Windows Service Not Running (SQL Server)
Active	Database Instance Availability	Database Instance Availability

Screen 7: Custom Alerts in DPA

To schedule and configure reports, click on the link at the top right of the screen.



The screenshot shows the 'Reports' section of the SolarWinds Database Performance Analyzer. The 'Create A New Report' form is visible, with the 'Report Type' dropdown menu open, highlighting 'Typical Day of Wait for single SQL'. Below the form, a table lists existing reports:

	Database Instance	Type	
<input type="button" value="Show"/>	DEVSQL2K5B	Top SQLs	<input type="button" value="Delete"/>
<input type="button" value="Show"/>	DEVSQL2K5B	Top Waits	<input type="button" value="Delete"/>
<input type="button" value="Show"/>	QASQL2K8-C	Top SQLs	<input type="button" value="Delete"/>
<input type="button" value="Show"/>	QASQL2K8-C	Top Waits	<input type="button" value="Delete"/>

Showing 1 to 4 of 4 entries

Screen 8: Create a new report

View the [Guided Tour Video](#) for a walk-through of DPA

For questions or to schedule a free consultation with a database performance expert,

Call/Email us: **Phone:** 1.866.530.8100 **Email:** [dpasales@solarwinds.com](mailto:dpasales@solarwinds.com)



## WHY DPA IS A SMART INVESTMENT FOR YOUR TEAM

### Prevent slow-downs before they impact your business

What is the cost of downtime (or a slow application) to your business per hour?

DPA lets you identify problems before they escalate and impact business operations - and the bottom line. Dynamic baselines, wait time analysis, and custom reports allow your team to stay on top of application performance. When an application is down, your team will be able to quickly respond, and within 3-4 clicks identify most problems in a database system or in the systems that support it. Often, customers who have been trying to find the root cause of performance issues for months, use DPA's advanced correlation capabilities to find those lurking problems in a few minutes.

### Affordable cost of ownership

How much is your team's time worth? How much time (hours per month) would DPA have to save your team to make it a worthwhile investment?

Starting at \$1,995 per instance, the cost of DPA per month over three years is just **over \$55 dollars a month - or \$1.80 a day**. For less than the cost of a coffee, DPA helps you run your applications better and faster.

### Complements traditional monitoring tools

How many hours does your team spend trying to find the root cause of problems across tools?

DPA is not a traditional performance monitoring tool. It is a performance analysis tool with a unique approach: Multi-Dimensional Performance Analysis, an evolution of the wait-time analysis methodology we pioneered 10 years ago. DPA is often used as a complementary solution to traditional monitoring tools (i.e. Oracle, OEM, or SCCM) code-centric APM tools (App Dynamics or NewRelic®) and database monitoring tools (Idera, Foglight, etc.). The insights and drill-down capabilities that DBAs and application teams get from DPA are not available in any other tool.

#### DPA Pricing Basics:

- SolarWinds DPA is licensed by the number of instances monitored
- First year maintenance is included free
- Floating licenses with discounts for volume
- The VM Option provides visibility into VMWare-based resources

### Increased team productivity

How much time does your team spend writing, maintaining, and interpreting the information of each script? Alerts and reports make it easy for teams to handle their workloads and spend less time writing and maintaining scripts. Multi-Dimensional Performance Analysis does the complex work for you, presenting a simple UI to quickly identify the root cause of a performance problem. DBAs can support more applications and broaden their impact with the increased effectiveness they gain from using DPA. It gives all application teams a single version of the truth to focus on solving problems.

### Smarter hardware investment and better business decisions

Should you buy SSD drives or a bigger server? What do you virtualize?

DPA helps you understand exactly how much time applications spend reading and writing to disks, waiting for the network, or waiting for the CPU, so you don't have to guess. You will know where you need to invest to accelerate application performance. Or, if no new hardware is needed and if bottlenecks can be resolved by fixing or improving code or database/system configuration. With DPA, your team will have visibility into how virtualization resources and host/OS impact performance. It gives all application teams a single version of the truth to focus on solving problems.

### Proactive optimization; not reactive troubleshooting

How do you get your team out of fire-fighting mode? DPA continuously analyzes application performance and pinpoints areas that can be optimized, reduces bottlenecks, and improves efficiency. This can result in considerable cost savings in the future as well as avoid performance problems or downtime.

### Safe to use for everyone who needs to see how an application performs

Because DPA uses no agents, adds less than 1% load, and cannot make changes to a database, it is safe for every team member to use it in production environments. Developers writing code can see the impact of their code changes in production. Storage, virtualization, and system admins can see how their system's support applications perform and the impact of their changes. Application teams can see where the applications are spending time across database operations.

What do other application professionals and DBAs think about DPA?

[Read independent research facts here.](#)

### DPA Pricing

- SolarWinds DPA for SQL Server, MySQL, or Oracle Standard Edition: License starts at **\$1,995 USD**
- SolarWinds DPA for Oracle Enterprise Edition, DB2, or SAP ASE: License starts at **\$3,495 USD**
- SolarWinds DPA - VM Option: License starts at **\$850 USD**

## WHAT DO DBAS AND IT PROFESSIONALS THINK ABOUT DPA?

Today, thousands of customers with well over 100,000 instances depend on SolarWinds Database Performance Analyzer (DPA) to manage their critical business applications.

Listen to what our customers have to say: **Watch these Videos**



### Collaboration is key to resolving Database Performance Problems

*"My life is considerably easier because of DPA. I highly recommend it for anybody. It is clearly the best tool out there."*

Barry Duran – Principal SQL Server Architect



### Database Performance in the Cloud and on Premise

*"We are using DPA with the Cloud and it is working flawlessly. DPA is unique in the market. I have never seen a product that is as powerful and yet as agnostic across all major relational databases."*

Adam Japhet – IT Director



### Database Performance Historical Analysis

*"The nice thing about DPA is it really allows us to discern where the real issue really is occurring."*

Leigh Freijo - Manager, Database Administration

### Read About What the Experts Think

- Jeremy Kadlec's review of [DPA for SQL Server](#)
- Kyle Hailey's review of [DPA for Oracle](#)
- Pinal Dave's [Product Review](#)

Read more feedback on DPA from this TechValidate survey: <http://bit.ly/DPAquotes>

DPA case studies conducted by TechValidate: <http://bit.ly/DPAcasesstudies>



## MORE ABOUT SOLARWINDS DATABASE PERFORMANCE ANALYZER

SolarWinds delivers powerful and affordable IT management and monitoring software to over 100,000 customers worldwide—from Global 1000 enterprises to Mike's Car Wash. SolarWinds products give you the power to get things done and solve problems fast, without the barriers to try, buy, deploy, and use that are associated with the “enterprise” IT monitoring solutions.

Whether you are an experienced DBA or someone new to database performance, SolarWinds DPA makes it easy to solve complex database issues and optimize application response times including the ability to:

- » Quickly see what the problem is and how to fix it.
- » Analyze and optimize existing hardware resources before investing in costly upgrades.
- » Safely monitor SQL code performance in production.
- » Maintain high performance during periods of rapid data growth.

### Additional Resources:

- » Guided Tour Video: [YouTube.com/watch?v=YCxwoqGlzfo](https://www.youtube.com/watch?v=YCxwoqGlzfo)
- » Administrative Guide: [Administrator's Guide](#)
- » SolarWinds thwack® Community: [Solarwinds thwack online community adds value to IT pros](#)
- » DPA on [Thwack](#)
- » Follow us On Twitter: [@SolarWinds](#)

For questions or to schedule a free consultation with a database performance expert,  
Call/Email us: **Phone:** 1.866.530.8100 **Email:** [dpasales@solarwinds.com](mailto:dpasales@solarwinds.com)

