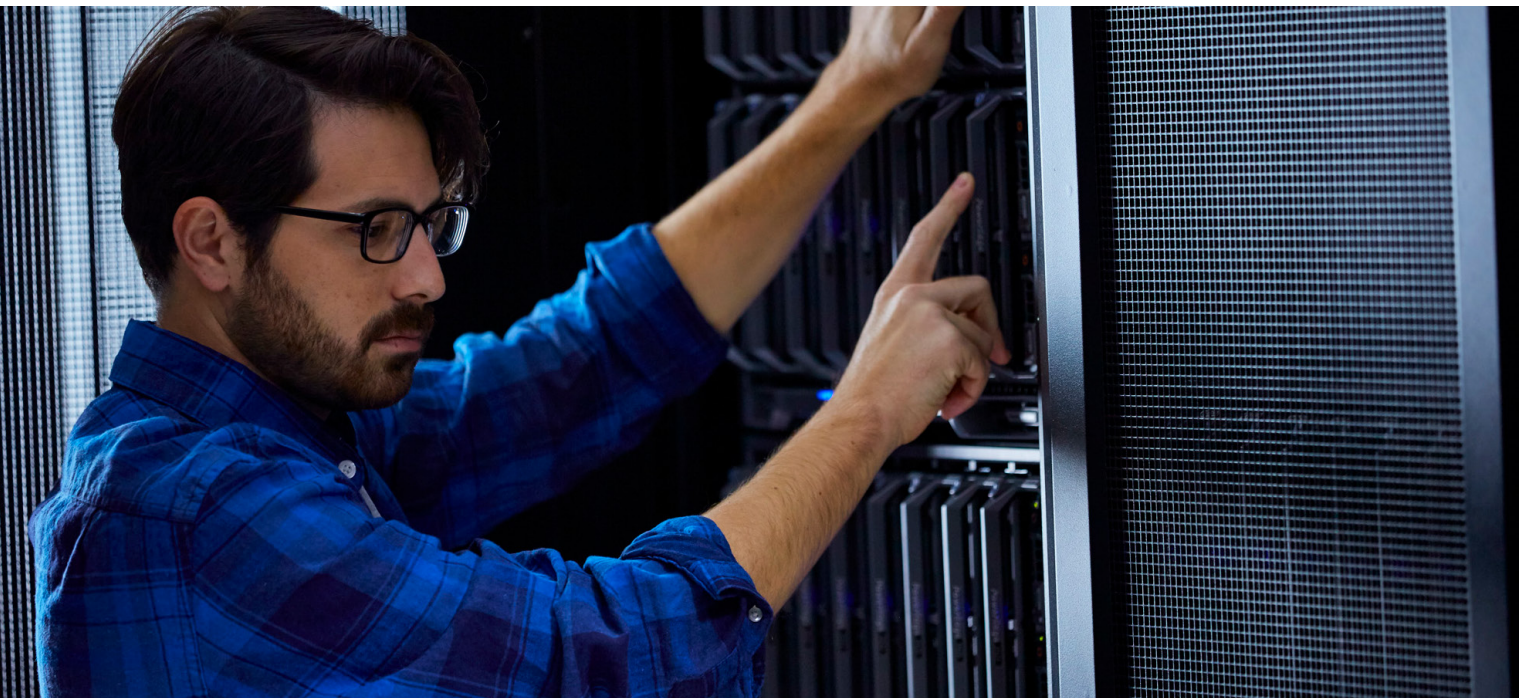


# Accelerate Database Efficiency with SQL Performance Investigator (PI)

Solve performance issues faster with deep SQL workload visibility and lock analytics



## INTRODUCTION

Traditionally, as a DBA, your primary responsibility has been maintaining the integrity and availability of your organization's data. But you no longer have the luxury of managing only a handful of servers. Your responsibilities span multiple database platforms and servers. And you're also challenged with strategic business initiatives such as big data, along with the everyday firefighting necessary to keep all systems up and running. In fact, recent surveys show that DBAs estimate 60 to 70 percent of their time is spent troubleshooting issues. While the number of database servers continues to grow, the number of DBAs employed to manage them has not kept pace. So you just keep fighting the fires and hope it all works out.

But you can't continue on this path. Doing so means you aren't proactively managing your databases but you will also fall behind the competition. What if there was a tool that helped you keep your systems running efficiently so you can direct your expertise to more strategic responsibilities? What if, with more visibility into database issues, you could discover how to most efficiently use your valuable database assets?

## Evolving DBA challenges

With the database landscape evolving around you, you're faced with new challenges, such as having to:

- Accommodate cost-cutting measures while supporting growth and big data challenges
- Firefight database performance issues to ensure service levels
- Maintain SQL efficiency through performance tuning
- Use time-consuming manual analysis that distracts from strategic business initiatives
- Deal with a lack of upstream visibility into impacted applications and end users
- Manage a variety of new and old database technologies
- Change base technologies (virtualization, cloud and storage) resulting in reduced control over available resources

With a smarter database management tool, you can address these challenges with confidence and with less impact than conventional data collection methods.

Take preventative action with Foglight and avoid service interruptions or slowdowns that impact users.

Foglight® SQL Performance Investigator (PI) ensures optimal database performance with comprehensive database, storage and virtualization monitoring, along with advanced workload analytics. Institute a seamless workflow using integrated transaction workload investigations and database resource monitoring. While database resource monitoring ensures that database components operate within their limits — and alerts you when these resources are overextended — transaction workload analysis measures and analyzes the SQL that connects users to resources, enabling you to meet database service levels.

### MULTIDIMENSIONAL WORKLOAD ANALYSIS

Foglight’s multidimensional analysis allows you to “slice and dice” workload data from multiple perspectives. For example, you can drill into the list of databases to find the database with the most load, and then drill into that database to view the top users or see SQL statements for individual users. Each user session can be individually investigated, even in cases where the user name is masked by connection pooling.

By drilling into any database dimension, you can quickly pull up a list of:

- TSQL batches
- Users and sessions
- Locked objects
- Command types
- And more

### LOCK AND WAIT ANALYSIS

SQL databases use locks to ensure only one command can execute on a database table or record at any given time. Locks often cause considerable application delays, especially in deadlock situations that need to be addressed manually. By proactively alerting you to deadlocks and blocks, Foglight enables you to take preventative action and avoid service interruptions or slowdowns that impact users. When lock timeouts exceed a predefined threshold, Foglight immediately notifies you with an alarm dialog box that contains helpful details and advice, such as:

- Affected components
- Number of timeouts graphed over time

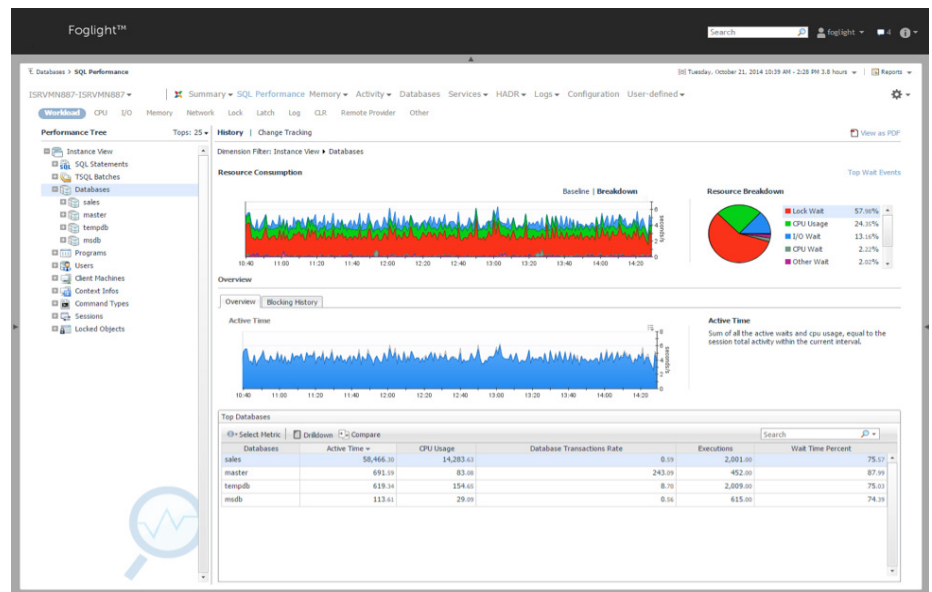


Figure 1: SQL workload data can be sliced across multiple dimensions, such as by users, databases, programs, client machines or SQL statements.

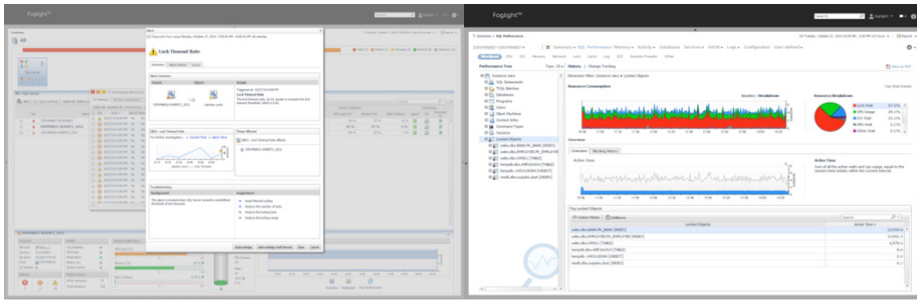


Figure 2: Proactive alerts on deadlocks and blocks with contextual alarms advisories and detailed wait-event analysis enable DBAs to prevent lock waits from causing noticeable delays.

- Expert suggestions (such as for avoiding manual locking or reducing the locking time, range or number)

To assist with collaboration and troubleshooting workflows, Foglight enables you to add notes to alarms and view the history of similar alarms all from the same dialog box. Workload investigations allow you to drill deeper into database locking for troubleshooting and assist you in quickly finding the user, session, SQL or program that caused the lock. You can also immediately identify the users impacted by the lock.

### CHANGE ANALYSIS

Workload comparison capabilities allow you to track changes in database environments and spot configuration drift issues. This data can be visualized in the investigative drill downs or used in the comparison reports.

#### Foglight tracks changes in:

- Database objects
- System configuration
- Database configuration
- Execution plans

Workload comparison capabilities allow you to track changes in database environments and spot configuration drift issues.

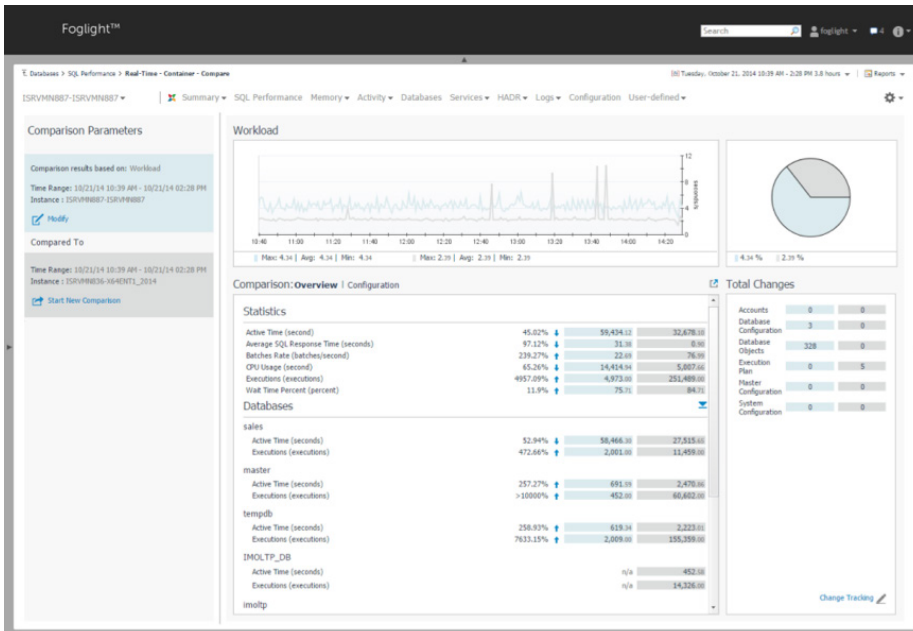


Figure 3: At any point in the investigation, you can generate a comparison report to contrast your current configuration to another point in time for that selection of data or even compare across instances.



Figure 4: Integrated virtualization and storage monitoring enable DBAs to collaborate with infrastructure administrators to manage the impact of virtualized resources on database performance.

Foglight SQL PI has a variety of architectural features that reduce implementation costs, ensure rapid ROI and enable fast deployment and time to value.

### Execution plan analysis

After identifying a potentially problematic SQL statement, you can automatically compare its execution plan to prior plans stored in the historical repository to see if there are any significant changes in the plan that may have impacted performance.

### Comparison reporting

Built-in smarts ensure that only events worthy of deeper investigation are reported to the historical data repository, which then acts as a data warehouse for future trend analysis and reporting purposes. Comparison reports can be run against the historical data stored here to track deviations from any known good state, informing troubleshooters regarding appropriate corrective actions to take.

### VIRTUALIZED RESOURCE MANAGEMENT

Given that a large proportion of SQL Server instances in production are virtualized, DBAs can get visibility into performance issues related to CPU and memory allocation in virtualized

environments by integrating with Foglight for Virtualization. If a storage area network (SAN) is part of the environment, Foglight for Storage Management can deliver the necessary visibility to troubleshoot, plan and optimize resources. Using a single platform across multiple teams enables collaboration to appropriately allocate and plan capacity for databases and applications. If provided with the relevant details, virtualization and storage administrators can work cohesively with DBAs on troubleshooting database performance issues.

### ENTERPRISE-READY ARCHITECTURE

Foglight SQL PI has a variety of architectural features that reduce implementation costs, ensure rapid return on investment (ROI) and enable fast deployment and time to value:

- **Scalable:** Hundreds of database instances can be monitored with a single monitoring instance to support enterprise-scale deployments.
- **Low overhead:** Agentless data collection executed through remote agents ensures that no more than 2 percent CPU overhead is added to monitored database instances.

- **High granularity:** Frequent collection at one-second intervals ensures high-integrity data collection. Collection frequency is adjustable according to your overhead requirements.
- **Embedded repository:** A data warehouse for storing historical monitoring data is embedded in the product, eliminating the need to purchase or install additional database instances for storage of monitoring data.
- **Web-based interface:** Web user interface (UI) provides easy access to workload analysis data from any laptop, PC or mobile device with access to the Foglight server.
- **Intuitive UI:** Extensive product training isn't required with an interface that reduces the learning curve for DBAs.

## CONCLUSION

Support your organization's database initiatives more effectively. Stop merely fighting fires to solve database performance issues, manage and prevent them. Foglight SQL PI helps you proactively and efficiently manage your complex database environment. It extends your resource monitoring workflows with integrated transaction workload analytics — delivering a wealth of information at a fraction of the impact of conventional collection methods. Address configuration drift issues with change tracking and comparison reporting. Find and fix issues in SQL generated by application code using SQL execution plans and workload analysis. And proactively address deadlocks and blocking issues with SQL PI's contextual alarms and detailed wait-event analysis.



## ABOUT QUEST

At Quest, our purpose is to solve complex problems with simple solutions. We accomplish this with a philosophy focused on great products, great service and an overall goal of being simple to do business with. Our vision is to deliver technology that eliminates the need to choose between efficiency and effectiveness, which means you and your organization can spend less time on IT administration and more time on business innovation.

© 2018 Quest Software Inc. ALL RIGHTS RESERVED.

This guide contains proprietary information protected by copyright. The software described in this guide is furnished under a software license or nondisclosure agreement. This software may be used or copied only in accordance with the terms of the applicable agreement. No part of this guide may be reproduced or transmitted in any form or by any means, electronic or mechanical, including photocopying and recording for any purpose other than the purchaser's personal use without the written permission of Quest Software Inc.

The information in this document is provided in connection with Quest Software products. No license, express or implied, by estoppel or otherwise, to any intellectual property right is granted by this document or in connection with the sale of Quest Software products. EXCEPT AS SET FORTH IN THE TERMS AND CONDITIONS AS SPECIFIED IN THE LICENSE AGREEMENT FOR THIS PRODUCT, QUEST SOFTWARE ASSUMES NO LIABILITY WHATSOEVER AND DISCLAIMS ANY EXPRESS, IMPLIED OR STATUTORY WARRANTY RELATING TO ITS PRODUCTS INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTY OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE, OR NON-INFRINGEMENT. IN NO EVENT SHALL QUEST SOFTWARE BE LIABLE FOR ANY DIRECT, INDIRECT, CONSEQUENTIAL, PUNITIVE, SPECIAL OR INCIDENTAL DAMAGES (INCLUDING, WITHOUT LIMITATION, DAMAGES FOR LOSS OF PROFITS, BUSINESS INTERRUPTION OR LOSS OF INFORMATION) ARISING OUT OF THE USE OR INABILITY TO USE THIS DOCUMENT, EVEN IF QUEST SOFTWARE HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES. Quest Software makes no representations or warranties with respect to the accuracy or completeness of the contents of this document and reserves the right to make changes to specifications and product descriptions at any time without notice. Quest Software does not make any commitment to update the information contained in this document.

### Patents

Quest Software is proud of our advanced technology. Patents and pending patents may apply to this product. For the most current information about applicable patents for this product, please visit our website at [www.quest.com/legal](http://www.quest.com/legal)

### Trademarks

Quest, Foglight and the Quest logo are trademarks and registered trademarks of Quest Software Inc. For a complete list of Quest marks, visit [www.quest.com/legal/trademark-information.aspx](http://www.quest.com/legal/trademark-information.aspx). All other trademarks are property of their respective owners.

If you have any questions regarding your potential use of this material, contact:

#### Quest Software Inc.

Attn: LEGAL Dept  
4 Polaris Way  
Aliso Viejo, CA 92656

Refer to our website ([www.quest.com](http://www.quest.com)) for regional and international office information.