

SQL Performance monitoring and troubleshooting

Using free community tools

Javier Villegas

IT Director

MSC



Empowering Data & AI Transformation





javier.ignacio.villegas@gmail.com



javier_vill



javiervillegas



sql-javier-villegas.blogspot.com.ar

Javier Villegas

IT Director – Data and BI at Mediterranean Shipping Company

Involved with the Microsoft SQL Server since early versions

Specialization in SQL Server Administration, Performance Tuning and High Availability

Microsoft MVP Data Platform

MCP and MCT

Technical Speaker

SQL PASS, 24 HOP, SQL Saturdays , PASS Marathon and PASS Virtual Groups,
vOpen, Microsoft AI+ Tour, GroupBy and DataPlatformGeeks



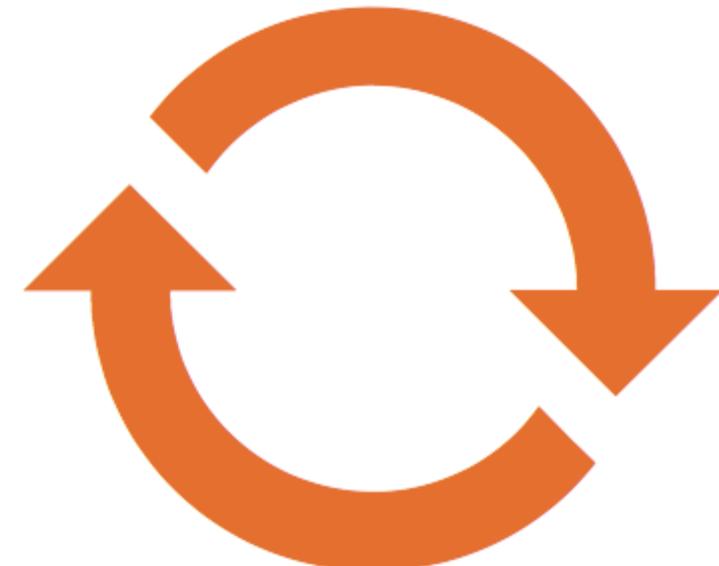
Every expert has their own set of tools they use to find and fix the problem areas of queries, but SQL Server provides the necessary information to both diagnose and troubleshoot where those problems actually are, and help you fix those issues, right in the box.

In this session we will examine a variety of tools to analyze and solve query performance problems

“No magic will fix bad code”

Troubleshooting Process

- Observe Behavior
- Capture Performance Metrics
 - I/O counts
 - Runtime Stats
 - Memory Grants
- Adjust Query to reduce resource Usage
- Observe Behavior
- Repeat



Agenda

- Perfmon and Profiler
- SSMS Activity Monitor
- SSMS Performance Dashboard
- Dynamic Management Objects
- Azure Data Studio Extensions / Notebooks
- Extended Events
- Query Store
- Currently Exec / SP_whoisactive
- Brent Ozar First Responder Kit
- Sentry One Plan Explorer
- Dbatools
- Glenn Barry Diagnostics Tools
- SQLWatch.IO

Perfmon and Profiler

- Perfmon allows you to capture performance counters
- View the results live in graphic or text format
- Capture the results to a file in various formats
- Profiler allows you to view SQL Server activity
- Never Ever use Profiler to capture live activity
 - It has a dramatic affect on performance
 - Use a server-side trace to a file, then view in Profiler
- Together you can tie perfmon data with trace data

SSMS Activity Monitor

- Significant improvements have been made
- Filter Process by SessionID, User/System processes, Login, Database, etc.
- View Resource Waits, with similar filters
- View Data File I/O showing reads, writes and latency
- View Recent Expensive Queries
- View Active Expensive Queries
- Lightweight Query Profiling !!!

SSMS Performance Dashboard Report

- Shows graphs on CPU Utilization and Waiting Requests
- Shows Current Activity by User Requests and User Sessions
- Provides links to drill down on Waits, Latches, IO Stats
- Drill into details on Expensive Queries by various criteria

Dynamic Management Objects

- Transactional
 - `sys.dm_tran_locks`
 - `sys.dm_tran_active_transactions`
 - `sys.dm_tran_database_transactions`
- Index
 - `sys.dm_db_index_usage_stats`
 - `sys.dm_db_index_operational_stats`
 - `sys.dm_db_index_physical_stats`
- Missing Indexes
 - `sys.dm_db_missing_index_details`
 - `sys.dm_db_missing_index_columns`
 - `sys.dm_db_missing_index_groups`
- Query Stats and Plans
 - `sys.dm_exec_query_stats`
 - `sys.dm_exec_query_plan`
 - `sys.dm_exec_sql_text`

Extended Events

- Allow you to track events in SQL Server
- Supercedes Trace
 - Trace remains fixed at 180 events, SQL 2017 supports over 1500
 - Trace filters after the event is captured, EE filters before capture
- Far more lightweight than Trace

Extended Events

- Packages: Containers that define available objects and their definitions
- Events: Correspond to well-known points in SQL Server code
 - i.e. SP:StmtCompleted, Deadlock Graph, Sort Warning
- Predicates: Filter that defines whether or not the event fires
- Actions: An additional operation when the event fires
- Targets: Event consumers
 - i.e. Event File or Ring Buffer
- Types and Maps:
 - Types define data type for an event column
 - Maps provide lookup for values returned.

Graphical Query Plan

- Provides details of the steps the Query Processor takes
- Provides estimates of amount of data at each step
- Actual plans are the Estimated Plan with runtime statistics
- Live Executions Stats



Get the best SQL Server query analysis and optimization tool—**free!**

Plan Explorer helps you quickly get to the root of SQL Server query problems

Break through database performance barriers with advanced query tuning features not found in any other tool.

This standalone Windows application contains many of the plan analysis features included in the full SentryOne software, but does not require a collector service or database.

Plan Explorer is a single installation file containing the application and the SQL Server Management Studio (SSMS) add-in, which allows you to jump directly to Plan Explorer from SSMS.

[DOWNLOAD PLAN EXPLORER](#)

.NET 4.7.1 MUST BE PRE-INSTALLED.

[DOWNLOAD .NET 4.7.1](#)

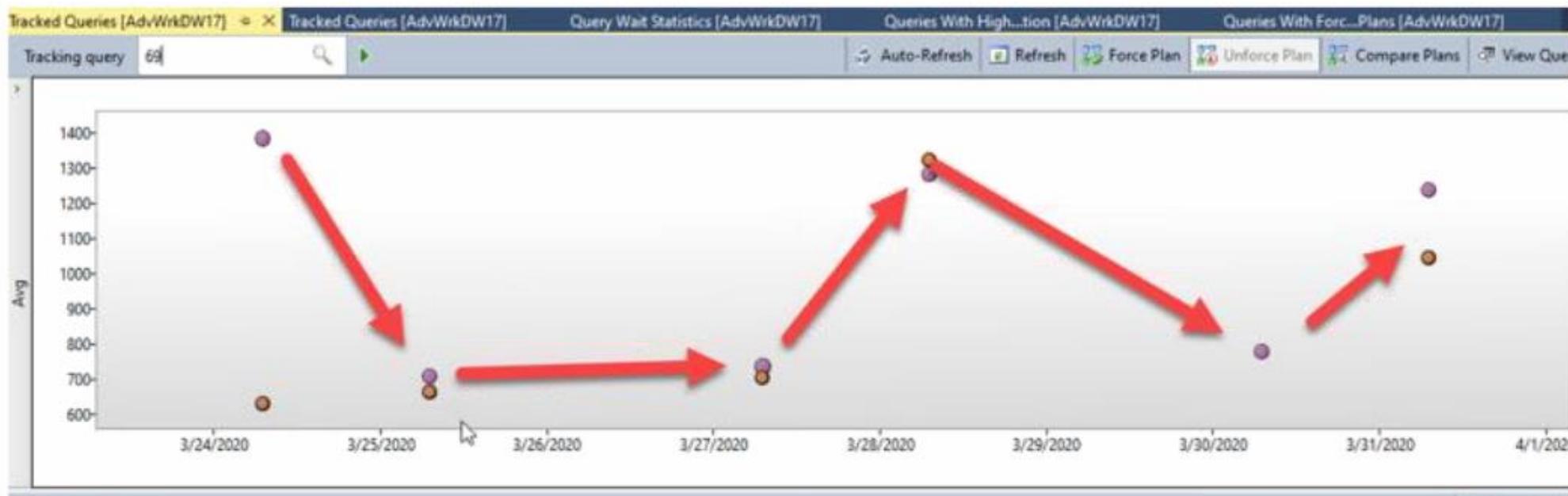
By clicking download, you agree to the SentryOne [Privacy Policy](#) and [End User License Agreement](#).

<https://www.sentryone.com/plan-explorer>

Query Store

- “Flight Data Recorder” for your queries
- Available in all editions of SQL Server from 2016 SP1 on
- Enabled in each database
 - Data is persisted in internal tables in each database
 - Data and state backed up with database backup
- Data viewable via SSMS or in catalog views
- Data captured includes Plan Store and Runtime Stats Store

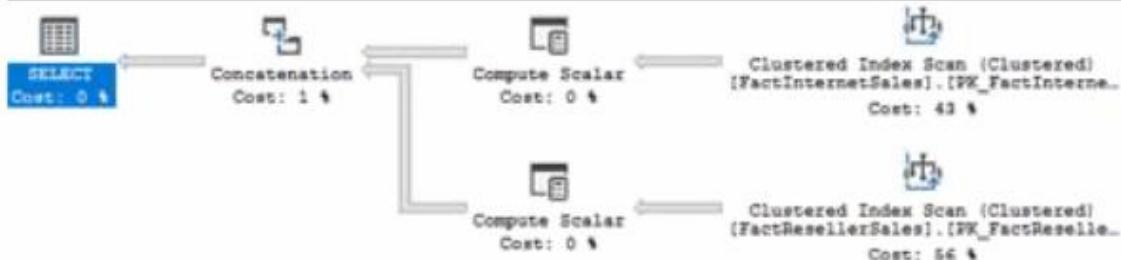
Query Store



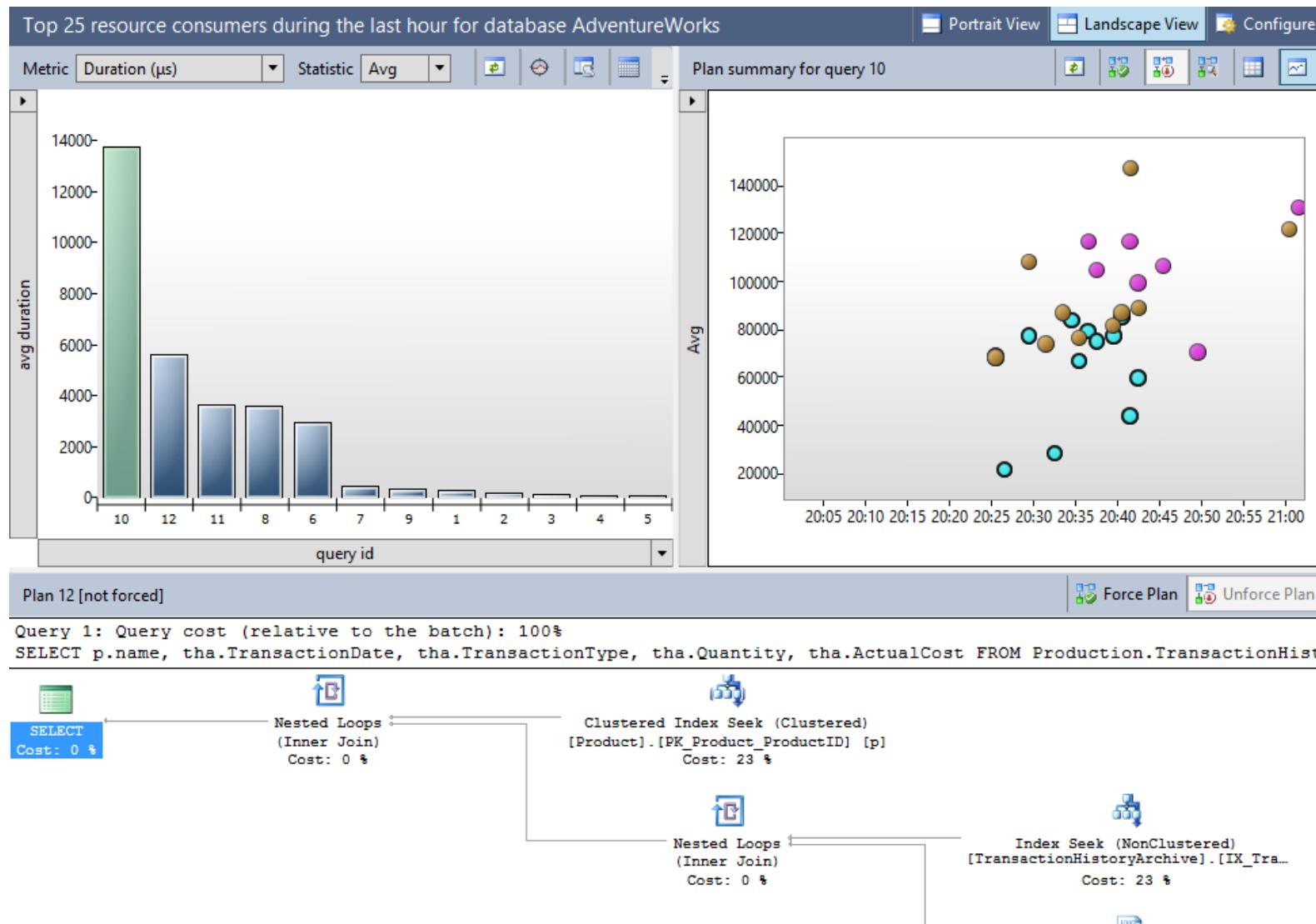
Plan 6 [not forced]

Force Plan

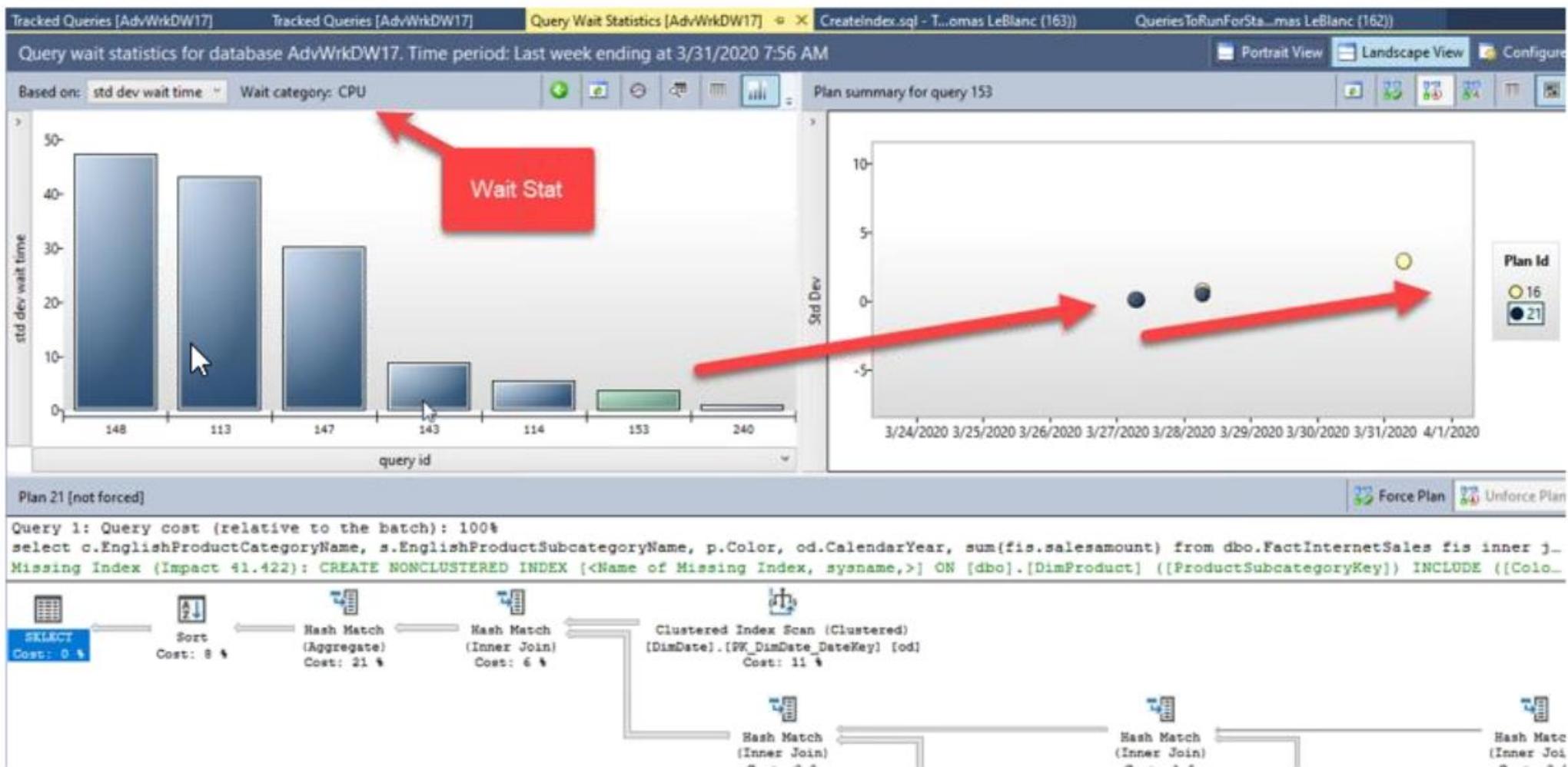
Query 1: Query cost (relative to the batch): 100%
SELECT [dbo].[vwSalesSummary].* FROM [dbo].[vwSalesSummary]



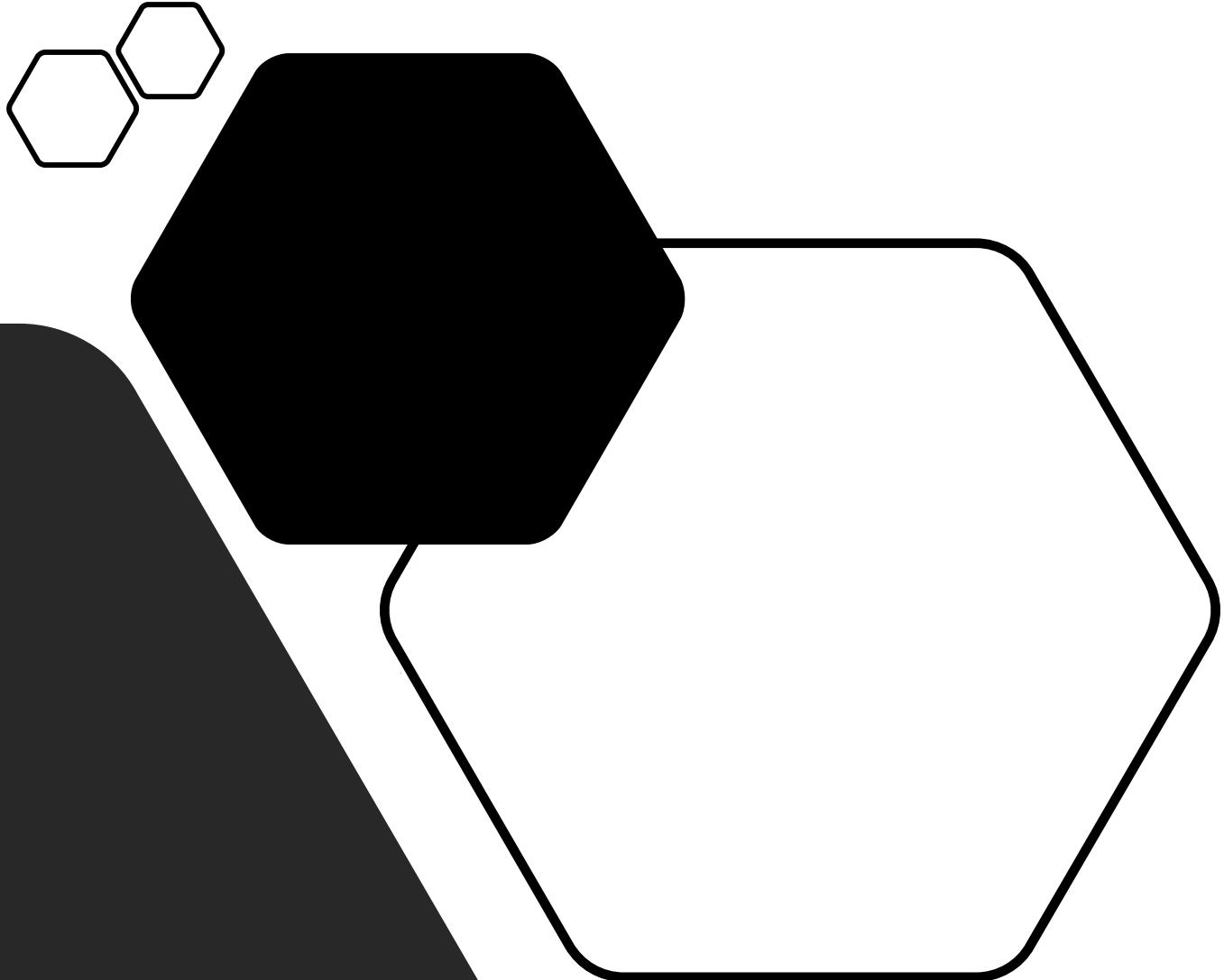
Query Store



Query Store



DEMO



Hey DBA! Why is the application so slow?

Hey DBA! Why is my query taking, like, forever to return the results?

Hey DBA! Something is broken! Fix it, quick!

SP_WhoIsActive

The Who is Active stored procedure correlates a large amount of data from 15 of the DMVs, to allow DBAs to get a complete picture when doing real-time activity monitoring.

Although it has been well-received and is designed to make it easy to get information from the DMVs

<http://whoisactive.com/>

<https://www.mssqltips.com/sqlservertip/6345/spwhoisactive-data-collection-and-analysis/>

sp_whoisactive Documentation

[Home](#) ... [Downloads](#)

Want more tips and tricks? Sign up for the sp_whoisactive email list.

Email Address

The sp_whoisactive documentation consists of the following articles. Please note that these articles were migrated from blog posts and are still being edited. Please excuse the occasional contextual oddities.

- 01: [A Brief History of Activity Monitoring](#)
- 02: [Design Philosophy](#)
- 03: [The License](#)
- 04: [Installing sp_whoisactive](#)
- 05: [Less Data is More Data](#)
- 06: [Options](#)
- 07: [Default Columns](#)
- 08: [Active Request, Sleeping Session](#)
- 09: [Deciding What \(Not\) To See](#)
- 10: [Commands, Batches, and the Mysteries of Text](#)
- 11: ["Planning" for Success](#)
- 12: [The Almighty Transaction](#)
- 13: [How Queries Are Processed](#)
- 14: [Blocking, Blockers, and Other B Words](#)
- 15: [Seeing the Wait That Matters Most](#)
- 16: [Seeing All of the Waits](#)
- 17: [Is This Normal?](#)
- 18: [Getting More Information](#)
- 19: [Why Am I Blocked?](#)
- 20: [The Node Knows](#)
- 21: [Analyzing Tempdb Contention](#)
- 22: [The Key to Your Locks](#)
- 23: [Leader of the Block](#)
- 24: [The Output of Your Dreams](#)
- 25: [Capturing the Output](#)
- 26: [Delta Force](#)
- 27: [Who is Active's Hidden Gems](#)
- 28: [Access for All!](#)

<http://whoisactive.com>

SP_DBA_Currentlyexec

Custom version to check SQL Server Activity

https://github.com/jvillegas74/SQL_CurrentlyExecuting

<https://www.pass.org/EventDownload.aspx?uid=11909>



<https://www.brentozar.com/first-aid/>



Health Check: sp_Blitz

Is my SQL Server healthy, or sick?



Speed Check: sp_BlitzFirst

Why is my SQL Server slow right now?



Vital Stats: Power BI

Graph server and query performance over time.



Cloud Restores: sp_AllNightLog

How can I use the cloud for disaster recovery?

Our free First Responder Kit (zip) is packed with scripts, worksheets, and checklists like:

- sp_Blitz, sp_BlitzIndex, sp_BlitzCache – free health check scripts
- White papers – on Availability Groups, Google Compute Engine, disaster recovery in the cloud, and more
- Worksheets and e-books – like our SQL Server Setup Checklist and the HA/DR Worksheet

It's totally free because we've been there too. We're database administrators and developers who know how hard it is to keep SQL Server fast and reliable, and we want to make your job easier. Later, if you need consulting for tough pains that have you stumped, we hope you'll remember us and stop by.



Query Check: sp_BlitzCache

Which queries have been using the most resources?



Index Check: sp_BlitzIndex

Are my indexes designed for speed?



Query Trending: sp_BlitzQueryStore

How has my query plan changed over time?



Who's Doing What: sp_BlitzWho

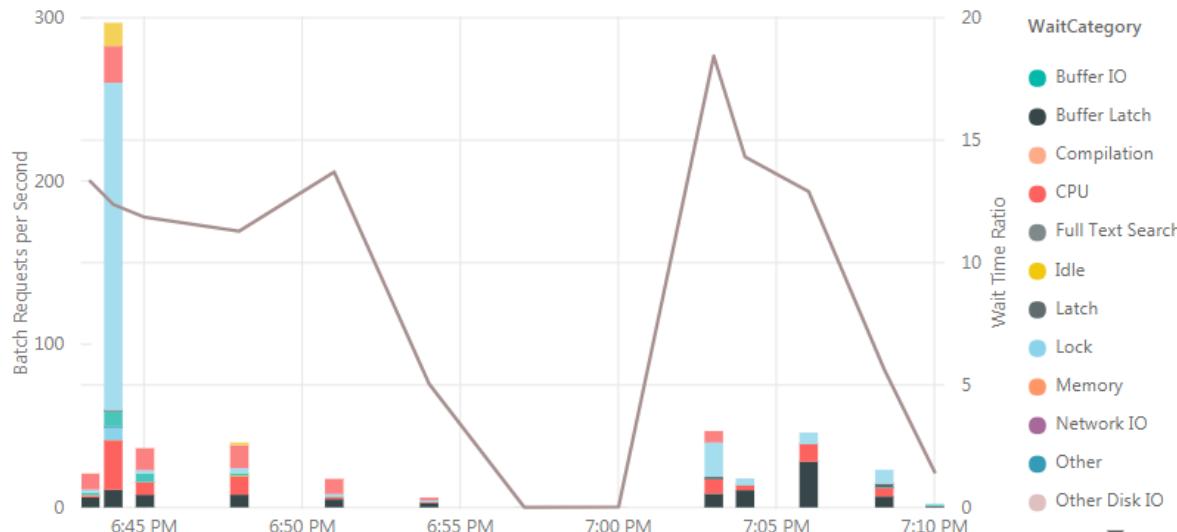
Who's running what queries right now?

FirstResponderKit.org

CheckDate
2/8/2018 2/8/2018

CheckDateHour
16 19

Vital Stats: Batch Requests/sec and Wait Stats



Wait Type Details (BlitzFirst_WaitStats)

wait_type	Minutes
CLR_AUTO_EVENT	9.56
PAGELATCH_SH	9.12
WRITETLOG	8.76
SOS_SCHEDULER_YIELD	8.74
CLR_MANUAL_EVENT	8.34
PAGELATCH_UP	2.25
CXPACKET	1.48
THREADPOOL	1.01
PREEMPTIVE_OS_AUTHORIZATIONOPS	0.40
LCK_M_X	0.37
PAGELATCH_EX	0.30
PREEMPTIVE_OS_AUTHENTICATIONOPS	0.23
SLEEP_BPOOL_FLUSH	0.13
MSQL_XP	0.05
PREEMPTIVE_OS_REVERTTOSSELF	0.04
PREEMPTIVE_OS_QUERYCONTEXTATTRIBUTES	0.03
PREEMPTIVE_OS_AUTHZINITIALIZECONTEXTFROMSID	0.03

Quick Diagnosis (from sp_BlitzFirst)

CheckDate	Priority	FindingsGroup	Finding	Details
2/8/2018 6:42:00 PM	50	Query Problems	Plan Cache Erased Recently	The oldest query in the plan cache was created at Feb 8 2018 6:38PM. This indicates that someone ran DBCC FREEPROCCACHE at that time, Giving SQL Server temporary...
2/8/2018 6:42:00 PM	50	Server Performance	High CPU Utilization	100%.
2/8/2018 6:42:00 PM	50	Server Performance	High CPU Utilization - Not SQL	93% - Other Processes (not SQL Server) are using this much CPU. This may impact on the performance of your SQL Server instance
2/8/2018 6:42:46 PM	50	Query Problems	Plan Cache Erased Recently	The oldest query in the plan cache was created at Feb 8 2018 6:38PM. This indicates that someone ran DBCC FREEPROCCACHE at that time, Giving SQL Server temporary...
2/8/2018 6:42:46 PM	50	Server Performance	High CPU Utilization	100%.
2/8/2018 6:42:46 PM	50	Server Performance	High CPU Utilization - Not SQL	93% - Other Processes (not SQL Server) are using this much CPU. This may impact on the performance of your SQL Server instance

Resource-Intensive Queries (from sp_Blitz)

CheckDate	DatabaseName	QueryType
2/8/2018 6:42:00 PM	-- N/A --	
2/8/2018 6:42:00 PM	-- N/A --	
2/8/2018 6:42:00 PM	-- N/A --	
2/8/2018 6:42:00 PM	-- N/A --	
2/8/2018 6:42:00 PM	AdventureWorks2014	Procedure or Function: [dbo].[uspGetEmployeeManagers]

Show Data

Include

Exclude

Drillthrough

nings

couldn't find a plan for this query. Possible reasons for this include dynamic SQL, RECOMPILE hints, and encrypted code.

couldn't find a plan for this query. Possible reasons for this include dynamic SQL, RECOMPILE hints, and encrypted code.

couldn't find a plan for this query. Possible reasons for this include dynamic SQL, RECOMPILE hints, and encrypted code.

Possible reasons for this include dynamic SQL, RECOMPILE hints, and encrypted code.

Frequent execution, Plan created last 4hrs, Long Running With Low CPU

QueryText100

QueryText100

if exists (select *

insert #nt select

insert #nt select

select TOP 1

CREATE PROC

>

<

Overview

Query Details

Instructions



BPCheck - SQL Best Practices and Performance checks

Purpose:

Checks SQL Server in scope for some of most common skewed Best Practices and performance issues. Valid from SQL Server 2005 onwards. By default all databases in the SQL Server instance are eligible for the several database specific checks, and you may use the optional parameter to narrow these checks to specific databases. All checks marked with an asterisk can be disabled by @ptocheck parameter. Check the PARAMETERS.md file or script header for all usage parameters.

Parameters for executing BPCheck

- **@duration** Sets the number of seconds between data collection points regarding perf counters, waits and latches. Duration must be between 10s and 255s (4m 15s), with a default of 90s.
- **@ptochecks** Set to OFF if you want to skip more performance tuning and optimization oriented checks. Uncomment **@custompath** below and set the custom desired path for .ps1 files. If not, default location for .ps1 files is the Log folder.
- **@allow_xpcmdshell** Set to OFF if you want to skip checks that are dependant on xp_cmdshell. Note that original server setting for xp_cmdshell would be left unchanged if tests were allowed.
- **@spn_check** Set to OFF if you want to skip SPN checks.
- **@diskfrag** Set to ON if you want to check for disk physical fragmentation. Can take some time in large disks. Requires elevated privileges.
- **@ixfrag** Set to ON if you want to check for index fragmentation. Can take some time to collect data depending on number of databases and indexes, as well as the scan mode chosen in **@ixfragscanmode**.
- **@ixfragscanmode** Set to the scanning mode you prefer. More detail on scanning modes available at <http://msdn.microsoft.com/en-us/library/ms188917.aspx>
- **@logdetail** Set to OFF if you want to get just the summary info on issues in the Errorlog, rather than the full detail.
- **@bpool_consumer** Set to OFF if you want to list what are the Buffer Pool Consumers from Buffer Descriptors. Mind that it may take some time in servers with large caches.
- **@gen_scripts** Set to ON if you want to generate index related scripts. These include drops for Duplicate, Redundant, Hypothetical and Rarely Used indexes, as well as creation statements for FK and Missing Indexes.
- **@dbScope** Set to the appropriate list of database IDs if there's a need to have a specific scope for database specific checks. Valid input should be numeric value(s) between single quotes, as follows: '1,6,15,123'. Leave NULL for all databases.



SQL Server Tiger Team

Glenn's SQL Server Performance

SQL Server Diagnostic Queries

Here are links to the latest versions of these diagnostic queries for SQL Managed Instance, Azure SQL Database, SQL Server 2019, SQL Server 2017, SQL Server 2016 SP2, SQL Server 2016, SQL Server 2014, SQL Server 2012, SQL Server 2008 R2, SQL Server 2008, and SQL Server 2005.

All of the SQL Server Diagnostic queries will also work on IaaS virtual machines and Azure ARC.

There are two separate links for each version of the queries. The first one on the top left is the actual diagnostic query script, and the one below on the right is the matching blank diagnostic results spreadsheet, with labeled tabs that correspond to each query in the set.

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Focused on improving SQL Server performance and scalability

Azure Diagnostic Queries

- SQL Managed Instance Diagnostic Information Queries
 - [SQL Managed Instance Diagnostic Results Spreadsheet](#)
- Azure SQL Database Diagnostic Information Queries
 - [Azure SQL Database Diagnostic Results Spreadsheet](#)

SQL Server Diagnostic Queries

- SQL Server 2019 Diagnostic Information Queries
 - [SQL Server 2019 Diagnostic Results Spreadsheet](#)
- SQL Server 2017 Diagnostic Information Queries
 - [SQL Server 2017 Diagnostic Results Spreadsheet](#)
- SQL Server 2016 SP2 Diagnostic Information Queries
 - [SQL Server 2016 SP2 Diagnostic Results Spreadsheet](#)
- SQL Server 2016 Diagnostic Information Queries
 - [SQL Server 2016 Diagnostic Results Spreadsheet](#)

Legacy SQL Server Diagnostic Queries

- SQL Server 2014 Diagnostic Information Queries
 - [SQL Server 2014 Diagnostic Results Spreadsheet](#)
- SQL Server 2012 Diagnostic Information Queries
 - [SQL Server 2012 Diagnostic Results Spreadsheet](#)
- SQL Server 2008 R2 Diagnostic Information Queries
 - [SQL Server 2008 R2 Diagnostic Results Spreadsheet](#)
- SQL Server 2008 Diagnostic Information Queries
 - [SQL Server 2008 Diagnostic Results Spreadsheet](#)
- SQL Server 2005 Diagnostic Information Queries
 - [SQL Server 2005 Diagnostic Results Spreadsheet](#)

<https://glennsqlperformance.com/resources/>

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Results		Messages			
SQL Server and OS Version Info					
1 Microsoft SQL Server 2008 (SP2) - 10.0.4064.0 (X64) Feb 25 2011 13:56:11 Copyright (c) 1988-2008 Microsoft Corporation Developer Edition (64-bit) on Windows NT 6.1 <X64> (Build 7601: Service Pack 1) (VM)					
Logical CPU Count Hyperthread Ratio Physical CPU Count Physical Memory (MB) sqlserver_start_time					
1 2 1 2047 2012-02-13 17:32:06.457					
name value value_in_use description					
1 access check cache bucket count 0 0 Default hash bucket count for the access check ...					
2 access check cache quota 0 0 Default quota for the access check result security ...					
3 Ad Hoc Distributed Queries 0 0 Enable or disable Ad Hoc Distributed Queries					
Database Name file_id name physical_name type_desc state_desc Total Size in MB					
1 Active 1 Active C:\Program Files\Microsoft SQL Server\MSSQL10.MSSQLSERVER\MSSQL\DATA\Active.mdf ROWS ONLINE 3					
2 Active 2 Active_log C:\Program Files\Microsoft SQL Server\MSSQL10.MSSQLSERVER\MSSQL\DATA\Active_log.ldf LOG ONLINE 1					
3 aspnetdb 1 aspnetdb C:\Program Files\Microsoft SQL Server\MSSQL10.MSSQLSERVER\MSSQL\DATA\aspnetdb.mdf ROWS ONLINE 2					
Database Name Recovery Model Log Reuse Wait Description Log Size (KB) Log Used (KB) Log Used % DB Compatibility Level Page Verify Option is_auto_create_stats_on is_auto_update_stats_on is_auto_update_stats_async_on is_parameterization_forced snapshot_isolation_state_desc is_read_comr					
1 Active FULL NOTHING 1016 386 38.00 100 CHECKSUM 1 1 0 0 OFF 0					
2 aspnetdb FULL NOTHING 824 468 57.00 100 CHECKSUM 1 1 0 0 OFF 0					
!!!					
Database Name physical_name io_stall_read_ms num_of_reads avg_read_stall_ms io_stall_write_ms num_of_writes avg_write_stall_ms io_stalls total_io avg_io_stall_ms					
1 blogengine C:\Program Files\Microsoft SQL Server\MSSQL10.MSSQLSERVER\MSSQL\DATA\bogengine_log.ldf 489 8 54.3 63 1 31.5 552 9 55.2					
2 tempdb C:\Program Files\Microsoft SQL Server\MSSQL10.MSSQLSERVER\MSSQL\DATA\tempdb.mdf 3178 169 18.7 12783 129 98.3 15961 298 53.4					
3 csaadb C:\Program Files\Microsoft SQL Server\MSSQL10.MSSQLSERVER\MSSQL\DATA\csaadb_log.ldf 728 11 60.7 89 15 5.6 817 26 30.3					
Database Name Cached Size (MB)					
1 Security 1.437500					
2 csaadb 1.039062					
3 msdb 0.000000					
wait_type wait_time_s pct running_pct					
1 BROKER_EVENTHANDLER 1103553.83 99.98 99.98					
%signal (cpu) waits %resource waits					
1 22.39 77.61					
login_name session_count					
1 sa 24					
2 DEV2Jeff 8					
3 NT AUTHORITY\NETWORK SERVICE 2					
Avg Task Count Avg Runnable Task Count AvgPendingDiskIOCount					
1 9 0 0					
SQL Server Process CPU Utilization System Idle Process Other Process CPU Utilization Event Time					
1 0 85 15 2012-02-27 11:50:26.567					
total_physical_memory_kb available_physical_memory_kb total_page_file_kb available_page_file_kb system_memory_state_desc					
1 2096632 315464 6288828 881776 Available physical memory is high					
physical_memory_in_use_kb locked_page_allocations_kb page_fault_count memory_utilization_percentage available_commit_limit_kb process_physical_memory_low process_virtual_memory_low					

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PowerShell



SQL Server

Instance migrations and best practice implementations have never been safer, faster or freer.

[DOWNLOAD](#)[GET STARTED](#)



features

- 
free & open source
no cost to you or your company
- 
community driven
created by the SQL Server community
- 
automation is awesome
less room for human error
- 
lots of upvotes
★★★★★ (394)

Categories

Availability Groups	Diagnostics and Performance	Mirroring	SQL Agent
Backup and Restore	Endpoints	Network and connectivity	SQL Client Configuration
Community Tools	Export	Policy-Based Management	SQL Management Objects
Connection Strings	File System and Storage	Registered Servers	SSIS
Databases	FileStream	Replication	System startup
Data Masking	Finders	Resource Governor	tempdb
dbatools Computer Management	General	Security and Encryption	Data Masking
dbatools Configuration	Log Shipping	Server Management	Traces, Profiler and Extended Events
dbatools Support tools	Login and User Management	Service Principal Names (SPNs)	Utilities
dbatools update watcher	Mail and logging	Services	Windows Server Failover Cluster
DBCC	Max Memory	Snapshots	Writing to SQL Tables
Detach and Attach	Migration	sp_configure	

<https://dbatools.io/>

Azure Data Studio - Notebooks

- Run BPCheck scripts as Notebook
- Run Glenn Berry scripts as Notebook
- Run “Any Support Scripts” as Notebook

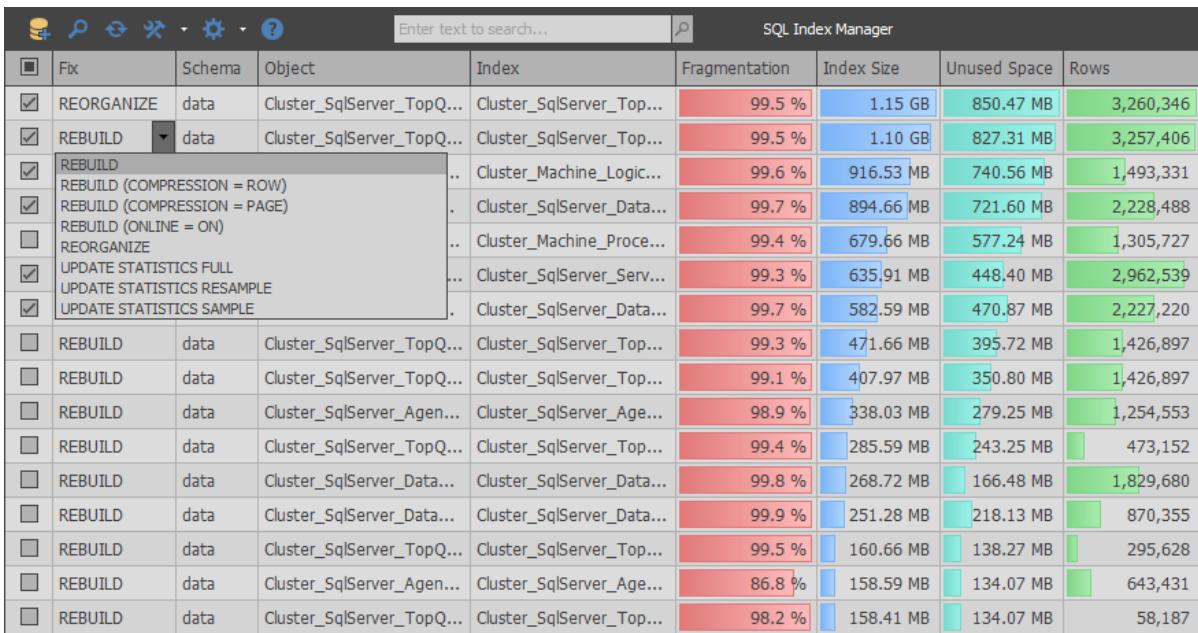
Ola Hallangren Maintenance Solution

- SQL Server Backup, Integrity Check, and Index and Statistics Maintenance
- The SQL Server Maintenance Solution comprises scripts for running backups, integrity checks, and index and statistics maintenance on all editions of Microsoft SQL Server 2008, SQL Server 2008 R2, SQL Server 2012, SQL Server 2014, SQL Server 2016, SQL Server 2017, and SQL Server 2019. The solution is based on stored procedures. The solution has been designed for the most mission-critical environments

SQL Index Manager

This tool lets you quickly and easily find out the status of your indexes and discover which databases need maintenance.

You can do maintenance through the UI, or generate a T-SQL script to run in SSMS.



The screenshot shows a Windows application window titled "SQL Index Manager". The interface includes a toolbar with icons for Fix, Schema, Object, Index, Fragmentation, Index Size, Unused Space, and Rows. There is also a search bar labeled "Enter text to search...". The main area is a grid table with the following columns: Fix, Schema, Object, Index, Fragmentation, Index Size, Unused Space, and Rows. The rows list various database objects and their index details, such as Cluster_Server_TopQ... with 99.5% fragmentation and 1.15 GB index size. A context menu is open over one of the rows, showing options like REBUILD, REBUILD (COMPRESSION = ROW), REBUILD (COMPRESSION = PAGE), REBUILD (ONLINE = ON), REORGANIZE, UPDATE STATISTICS FULL, UPDATE STATISTICS RESAMPLE, and UPDATE STATISTICS SAMPLE. The "REBUILD" option is currently selected. The "Unused Space" column uses color coding to indicate free space: red for low, light blue for medium, and green for high.

Fix	Schema	Object	Index	Fragmentation	Index Size	Unused Space	Rows
<input checked="" type="checkbox"/>	REORGANIZE	data	Cluster_Server_TopQ...	99.5 %	1.15 GB	850.47 MB	3,260,346
<input checked="" type="checkbox"/>	REBUILD	data	Cluster_Server_TopQ...	99.5 %	1.10 GB	827.31 MB	3,257,406
<input checked="" type="checkbox"/>	REBUILD		Cluster_Machine_Logic...	99.6 %	916.53 MB	740.56 MB	1,493,331
<input checked="" type="checkbox"/>	REBUILD (COMPRESSION = ROW)		Cluster_Server_Data...	99.7 %	894.66 MB	721.60 MB	2,228,488
<input checked="" type="checkbox"/>	REBUILD (COMPRESSION = PAGE)		Cluster_Machine_Proce...	99.4 %	679.66 MB	577.24 MB	1,305,727
<input checked="" type="checkbox"/>	REBUILD (ONLINE = ON)		Cluster_Server_Serv...	99.3 %	635.91 MB	448.40 MB	2,962,539
<input checked="" type="checkbox"/>	REORGANIZE		Cluster_Server_Data...	99.7 %	582.59 MB	470.87 MB	2,227,220
<input checked="" type="checkbox"/>	UPDATE STATISTICS FULL		Cluster_Server_TopQ...	99.3 %	471.66 MB	395.72 MB	1,426,897
<input checked="" type="checkbox"/>	UPDATE STATISTICS RESAMPLE		Cluster_Server_TopQ...	99.1 %	407.97 MB	350.80 MB	1,426,897
<input checked="" type="checkbox"/>	UPDATE STATISTICS SAMPLE		Cluster_Server_Agen...	98.9 %	338.03 MB	279.25 MB	1,254,553
<input checked="" type="checkbox"/>	REBUILD	data	Cluster_Server_TopQ...	99.4 %	285.59 MB	243.25 MB	473,152
<input checked="" type="checkbox"/>	REBUILD		Cluster_Server_Data...	99.8 %	268.72 MB	166.48 MB	1,829,680
<input checked="" type="checkbox"/>	REBUILD		Cluster_Server_Data...	99.9 %	251.28 MB	218.13 MB	870,355
<input checked="" type="checkbox"/>	REBUILD		Cluster_Server_TopQ...	99.5 %	160.66 MB	138.27 MB	295,628
<input checked="" type="checkbox"/>	REBUILD	data	Cluster_Server_Agen...	86.8 %	158.59 MB	134.07 MB	643,431
<input checked="" type="checkbox"/>	REBUILD		Cluster_Server_TopQ...	98.2 %	158.41 MB	134.07 MB	58,187

<https://github.com/sergiisrovatchenko/SQLIndexManager>

DEMO

SQLWatch.IO



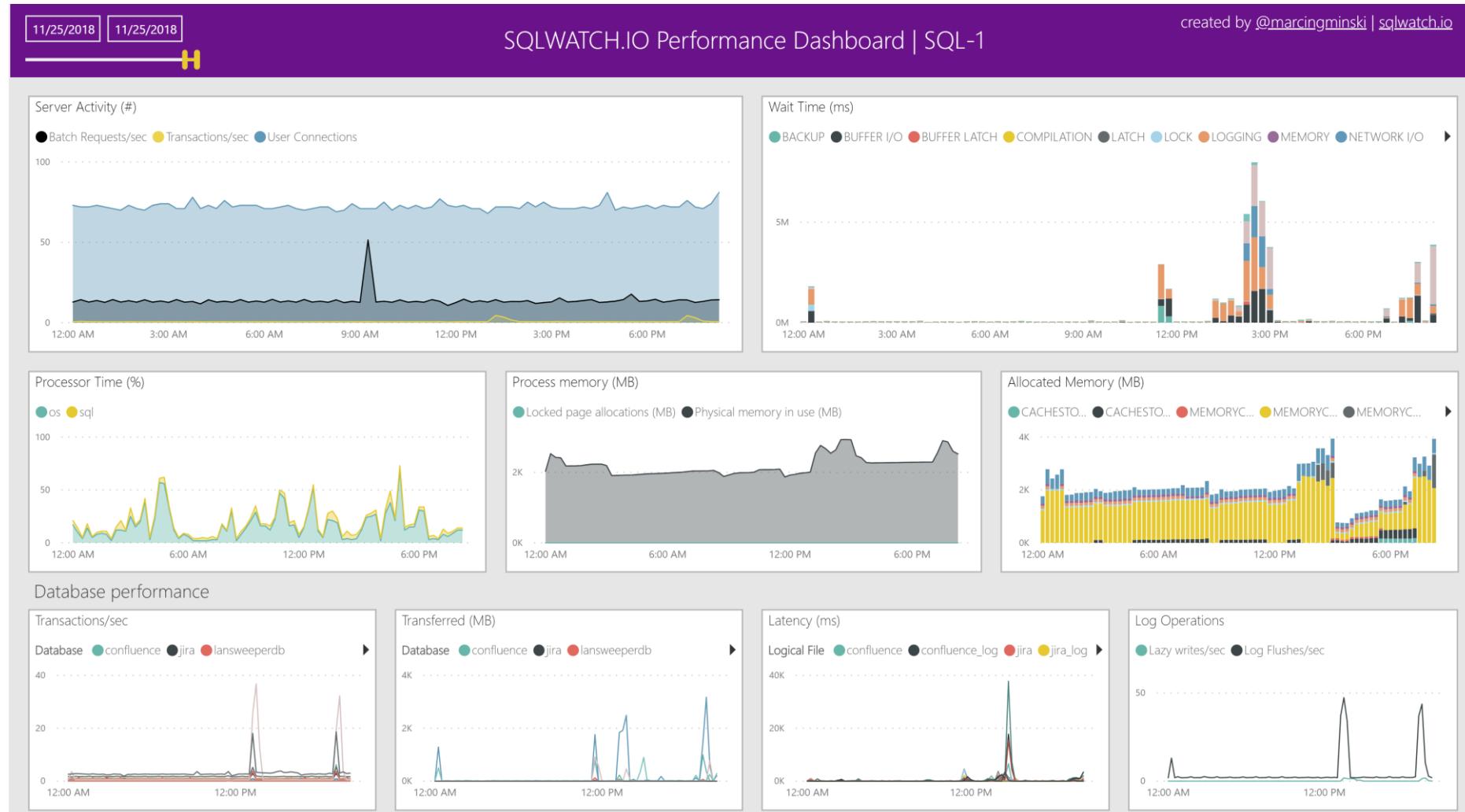
[Home](#) [Get started](#) [Changelog](#) [Docs](#) [The Team](#) [Blog](#)

Community driven SQL Server Performance Monitor

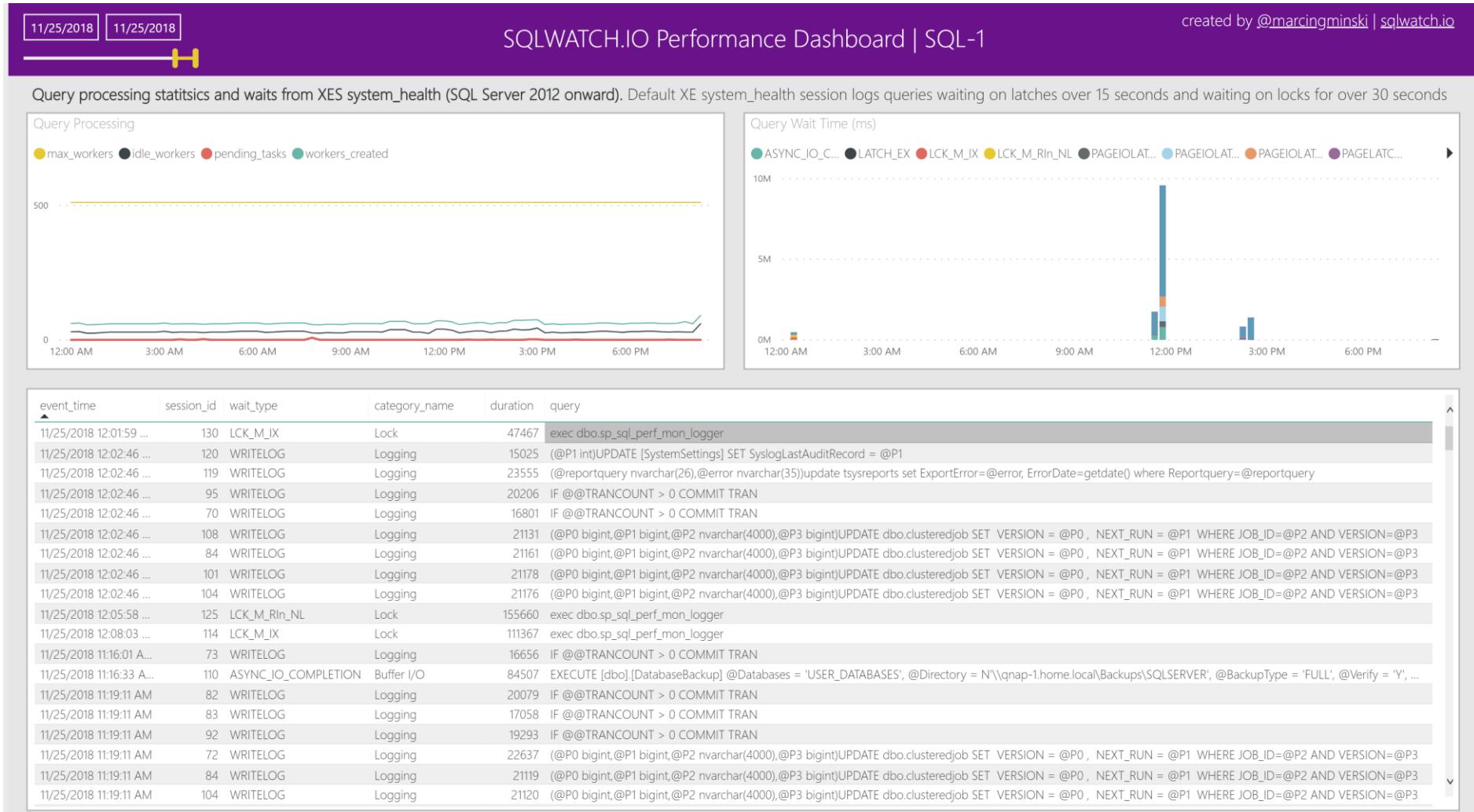
Completely free and Open Source, developed by SQL Server DBAs...

...because we have all been there, blindly trying to figure out why things aren't as fast as they used to be.

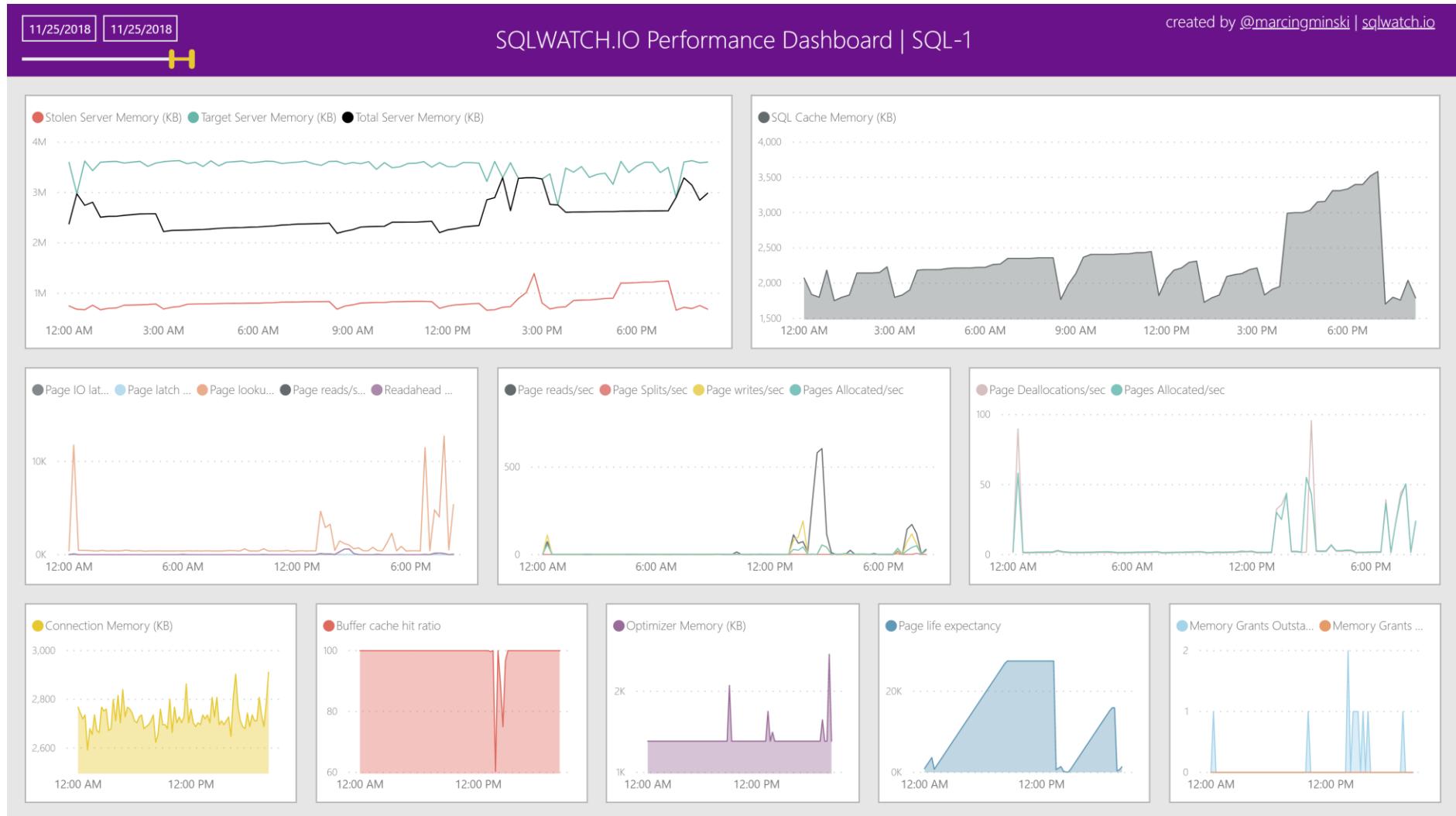
SQLWatch.IO



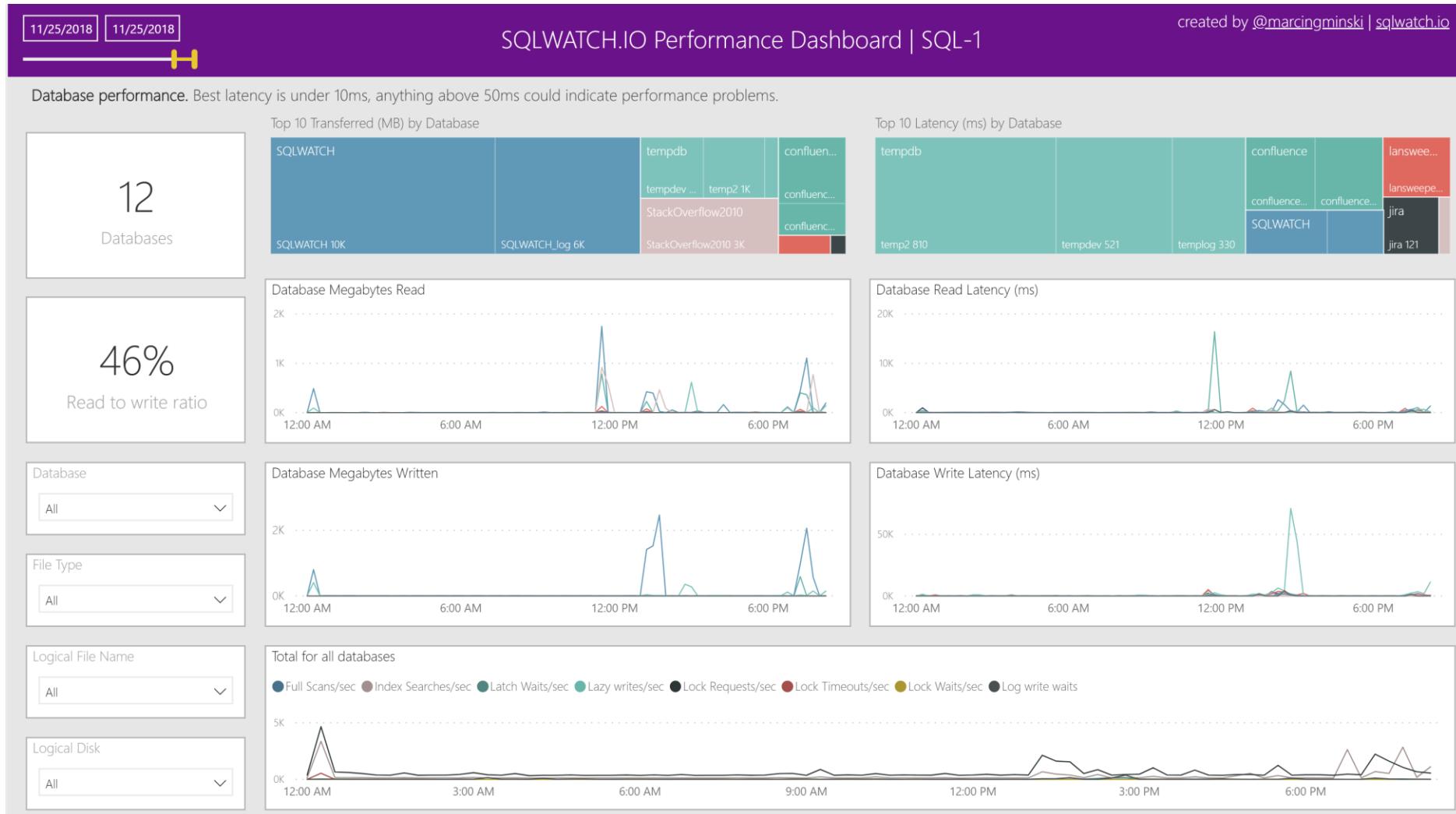
SQLWatch.IO



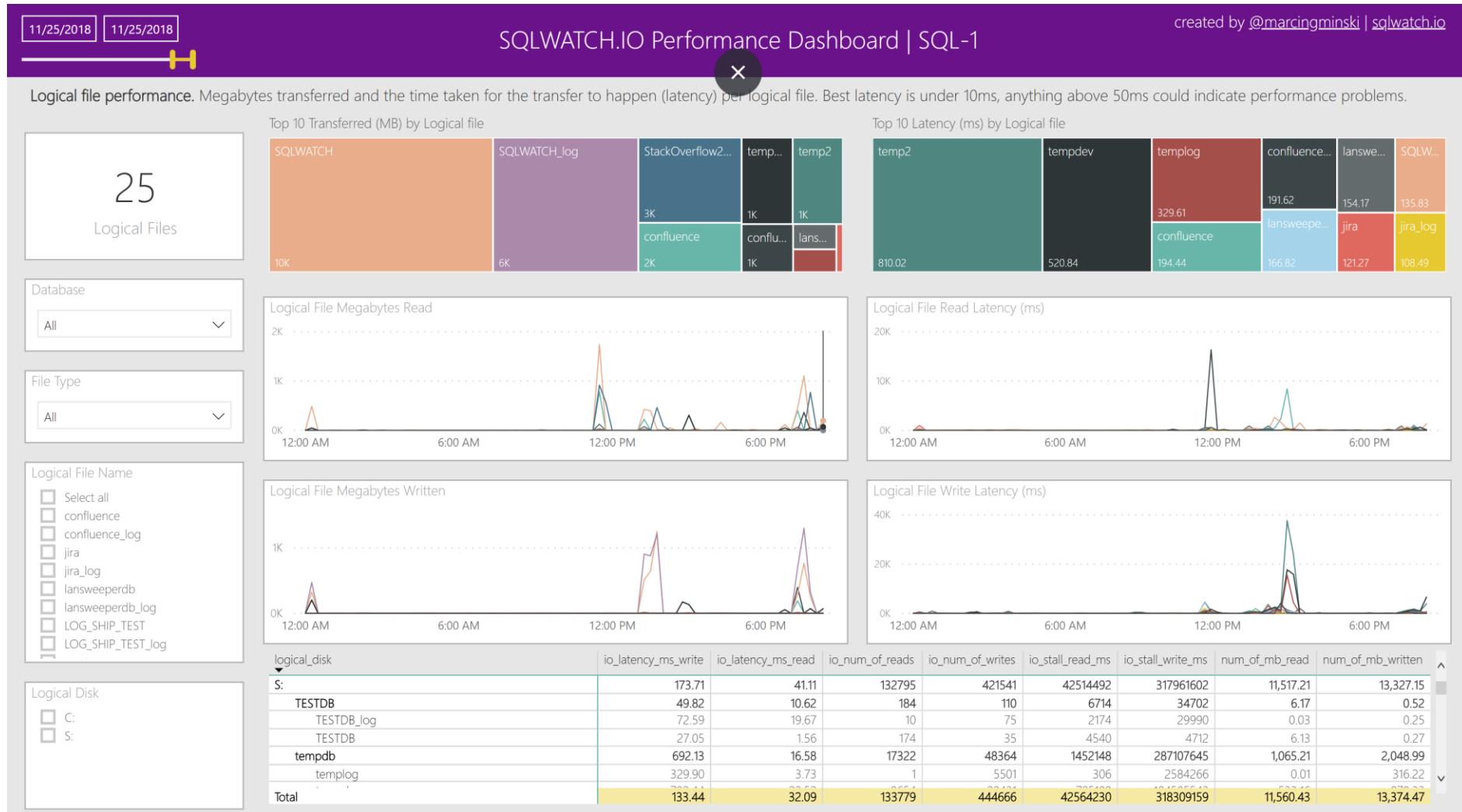
SQLWatch.IO



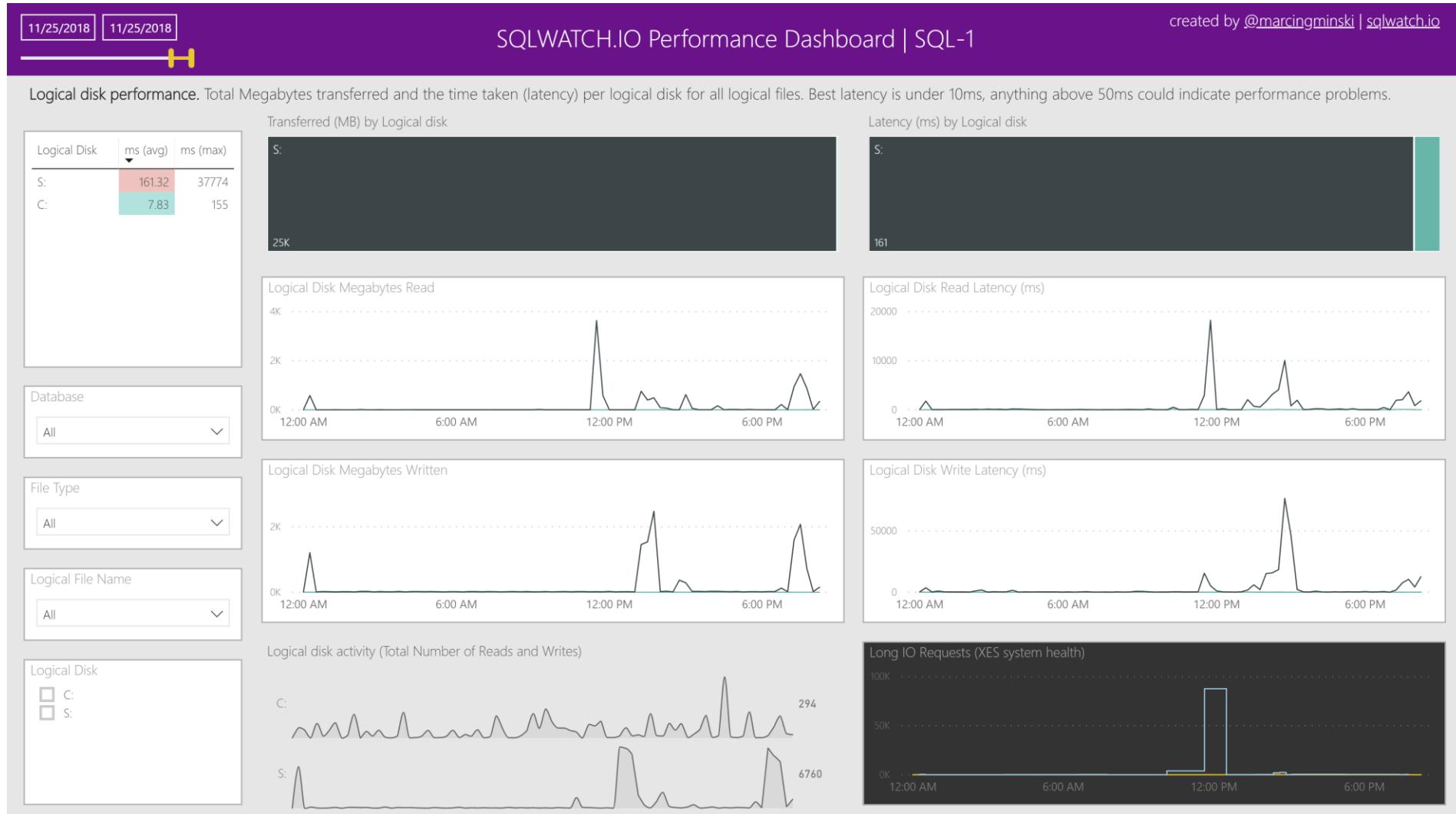
SQLWatch.IO



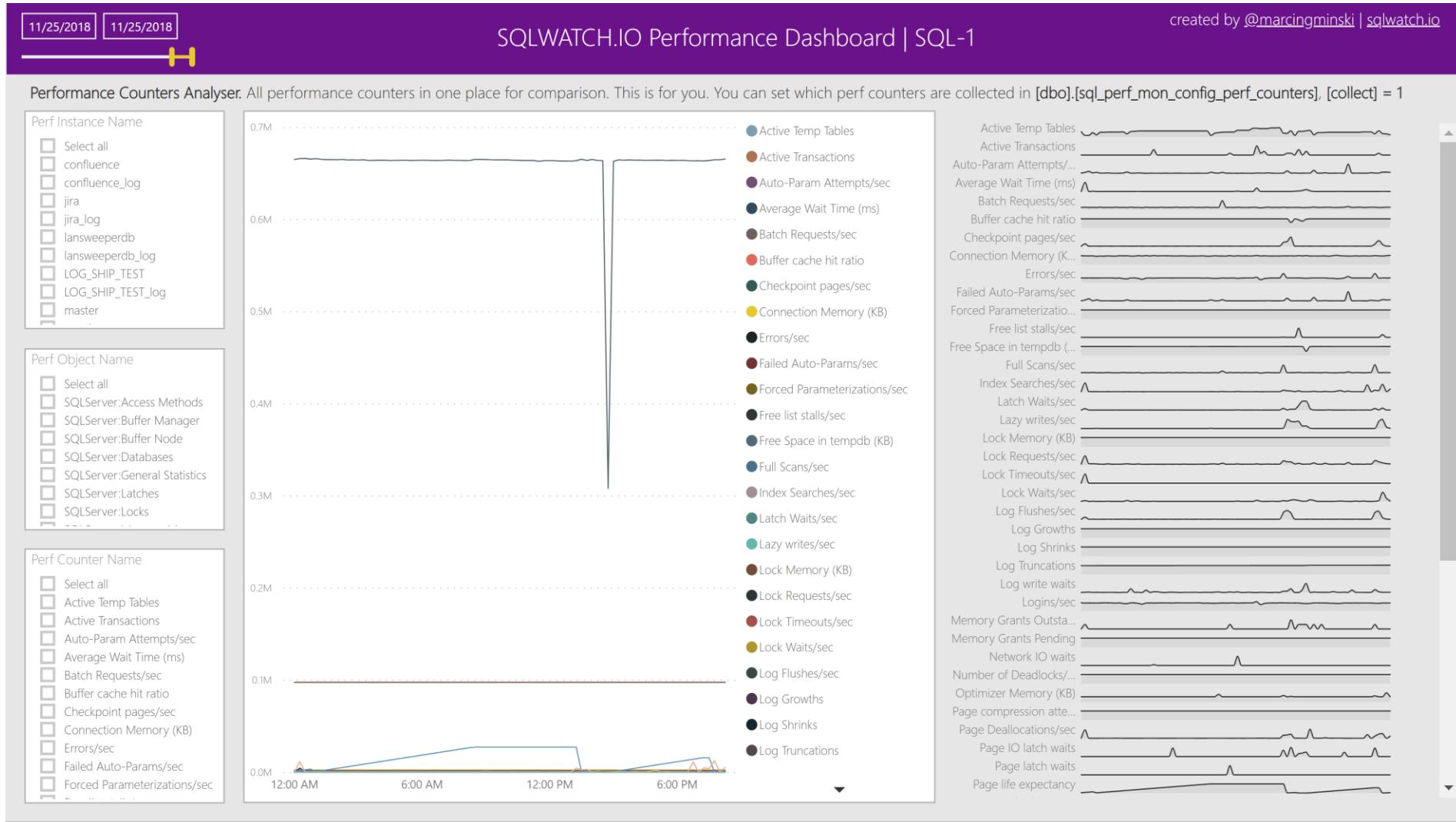
SQLWatch.IO



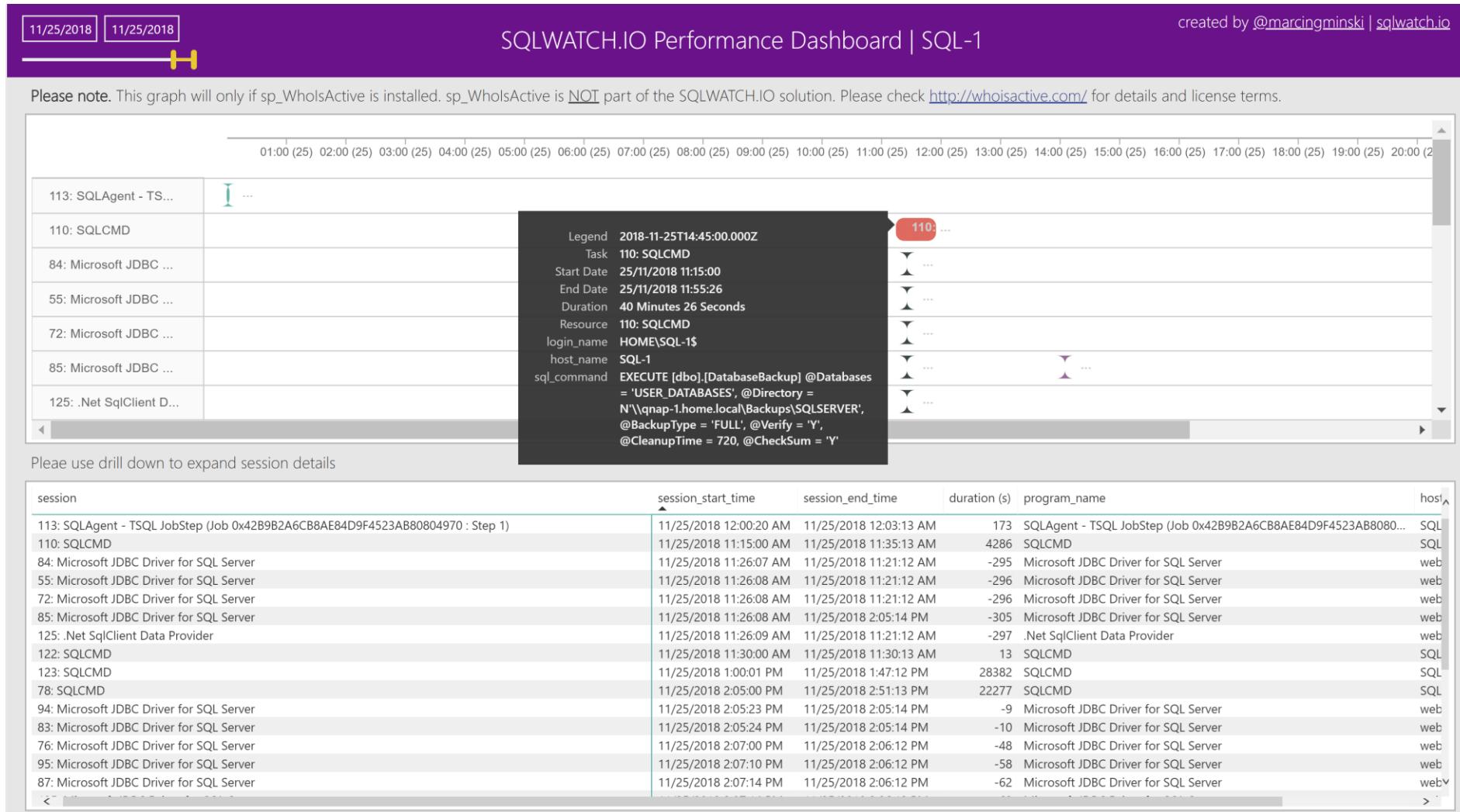
SQLWatch.IO



SQLWatch.IO



SQLWatch.IO



Redgate SQL Monitor

The screenshot displays the Redgate SQL Monitor web application interface. At the top, a navigation bar includes links for Overviews, Alerts, Analysis, Reports, Estate, Configuration, and a user profile. A 'What's new' button is also present. The main content area features a grid of nine performance dashboards for different database instances, each showing metrics like CPU usage, disk I/O, and wait times. To the right, a sidebar titled 'LATEST ALERTS' lists recent monitoring events with their severity levels and counts.

LATEST ALERTS
Alerts raised or updated in the last:

Category	Description	Count
Machine unreachable	0 active alerts	2
Instance unreachable	1 active alert	16
AG database unhealthy	0 active alerts	1
Monitoring error (host)	0 active alerts	8
Monitoring error (SQL)	1 active alert	19
Job failing	2 active alerts	22
Error log entry	0 active alerts	1
Deadlock (extended event)	389 active alerts	7832
AG replica falling behind	0 active alerts	33

Redgate SQL Monitor

Overviews Alerts Analysis Reports Estate Configuration [Logout](#) [What's new](#)

Job duration unusual: Accrual Move Disking to Acct
Raised at 08:09 (Active for 0 minutes)

CPU MEMORY DISK I/O WAITS BASELINE CPU Mon, 2 Mar 20 - 08:09 Last 3 days

The main dashboard displays real-time monitoring for a SQL Server instance (ova-de-sql01\local). It includes a timeline chart from 29 Feb to 08:00 on 2 Mar showing CPU, Memory, Disk I/O, and Waits metrics. Below the chart are four smaller time-series charts: CPU usage, Memory usage, Disk I/O, and Waits. A prominent alert box highlights a 'Job duration unusual' event for a job named 'Accrual Move Disking to Acct' that was raised at 08:09 and is still active. The alert details show it was raised at 08:09 and is active for 0 minutes. The alert list on the right shows multiple other alerts, mostly related to job durations, that have either ended or are still active.

ALERTS
Alerts raised or updated in the selected period:
 Cleared Ended

FROM 06:09 TO 08:09

- Job duration unusual
Ended at 06:21
- Job duration unusual
Ended at 06:41
- Job duration unusual
Ended at 06:39
- Job duration unusual
Ended at 06:39
- Job duration unusual
Ended at 06:41
- Error log entry
Raised at 06:40
- Blocking process
Ended at 06:42
- Job duration unusual
Ended at 06:46
- Job duration unusual
Ended at 06:46

Redgate SQL Monitor

The screenshot displays the Redgate SQL Monitor application interface. The top navigation bar includes links for Overviews, Alerts, Analysis, Reports, Estate, Configuration, and a user profile. The main dashboard features a timeline chart showing CPU, Memory, Disk I/O, and Wait metrics from 02:45 to 08:09 on Monday, 2 Mar 2020. A prominent alert for a Deadlock (extended event) is shown, raised at 08:10 and active for 5 minutes. The left sidebar contains icons for Overview, Metrics, Hosts, Databases, and Alerts. The right sidebar lists alerts raised or updated in the selected period, including job duration unusual events, long-running queries, and a deadlock.

ALERTS
Alerts raised or updated in the selected period:

- Cleared
- Ended

FROM 02:45 TO 08:09

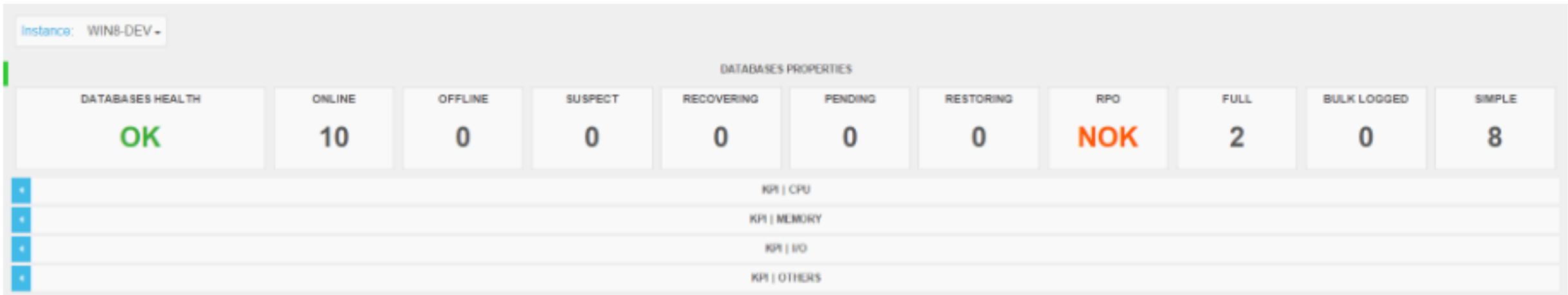
- Job duration unusual
Ended at 06:02
- Job duration unusual
Ended at 05:02
- Long-running query
Ended at 04:27
- Long-running query
Ended at 04:17
- Job duration unusual
Raised at 04:30
- Job duration unusual
Ended at 04:51
- Deadlock (extended event)**
Raised at 04:58
- Job duration unusual
Ended at 05:05

SERVER/HOST METRICS FROM 02:45 TO 08:09

TOP 10 QUERIES **TOP 10 WAITS** Show as: Avg. per execution Totals

Query Text	Execution count	Duration (ms)	CPU time (ms)	Physical reads	Logical reads	Logical writes	Database
> INSERT INTO Interlink... [REDACTED]	1	423,981	414,696	0	224,034,1...	39	Interlink...
> SELECT ... INTO Interlink... [REDACTED]	1	383,925	371,937	18,693	398,280,2...	29,622	Interlink...
> INSERT INTO Interlink_Temp90.dbo.PowerBI...	1	248,804	247,116	0	8,950,519	56,392	Interlink...
> SELECT VG.Vessel_Id, VG.Vessel_Name, VG...	2	211,781	205,776	10,823	79,751,654	131,694	Interlink...
> INSERT INTO Interlink_Temp90.dbo.Z_RPT_D...	3	140,083	138,441	1,638	61,549,154	21	Interlink...

Influxdb / telegraf – Grafana (Open Source)



Influxdb / telegraf – Grafana (Open Source)



Influxdb / telegraf – Grafana (Open Source)



<https://github.com/zensqlmonitor/influxdb-sqlserver>

<https://portal.influxdata.com/>

References

<https://www.sqlskills.com/blogs/glenn/category/dmv-queries/>

<https://www.brentozar.com/first-aid/>

<https://github.com/microsoft/tigertoolbox>

<http://whoisactive.com>

<https://sqlwatch.io/>

<https://dbatools.io/>

Questions ?



javier_vill



javiervillegas



<http://sql-javier-villegas.blogspot.com.ar>



javier.ignacio.villegas@gmail.com

**Performance
monitoring and troubleshooting
using community tools (Free)**

Thank you!!

Gracias !!

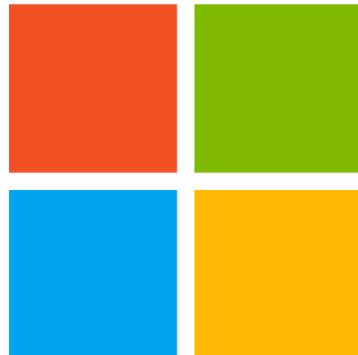


@javier_vill



javiervillegas

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