

An Introduction to Profiler and SQL Trace

References and Resources Trevor Barkhouse

References

Topics from SQL Server Books Online that will be referenced with great frequency... you'll probably want to bookmark these pages:

- A comprehensive list of all of the event classes can be found at "[SQL Server Event Class Reference](#)." Keep in mind that additional event classes are introduced with new releases of the product, so not all of them will be available for previous versions of SQL Server.
 - Similar information, for SQL Server 2000, can be found at "[Monitoring with SQL Profiler Event Categories](#)."
- The definition of the columns (properties) of events is detailed at "[Describing Events by Using Data Columns](#)." The column names that are followed by a superscript "1" apply to all event classes. The rest of the columns depend on the event class. To determine which columns are relevant to a specific event class, see the event class documentation (referenced above) or query the [\[sys\].\[trace_event_bindings\]](#) catalog view.
 - Similar information, for SQL Server 2000, can be found at "[SQL Profiler Data Columns](#)."
- Creating a server-side trace:
 1. Create the trace definition: [\[sys\].\[sp_trace_create\]](#)
 2. Specify the desired event classes and columns: [\[sys\].\[sp_trace_setevent\]](#)
 3. Restrict the events that will be captured: [\[sys\].\[sp_trace_setfilter\]](#)
 4. Start, stop, and destroy the trace: [\[sys\].\[sp_trace_setstatus\]](#)
- Analyzing a trace file with T-SQL:
 - [\[sys\].\[fn_trace_gettable\]](#)

Concepts

Information about SQL Trace concepts and design

- Wikipedia articles on "[Instrumentation \(computer programming\)](#)" and "[Tracing \(software\)](#)"
- From SQL Server Books Online:
 - "[SQL Trace Terminology](#)"
 - "[SQL Server Profiler Terminology](#)"
 - "[SQL Trace Architecture](#)"
- "[Performance Monitoring Tools: An Introduction to SQL Profiler](#)" by Buck Woody
- "[Trace and Replay Objects: A New API for SQL Server Tracing and Replay](#)"

Books on SQL Trace and Profiler

The following books, written by many of the leaders in the field, each have a substantial amount of information on SQL Trace and Profiler

- *Inside SQL Server 2000* by Kalen Delaney (ISBN-13: 9780735609983)
 - Chapter 17, "Configuration and Performance Monitoring," pages 961 - 975
- *Inside Microsoft SQL Server 2005: T-SQL Querying* by Itzik Ben-Gan, et al. (ISBN-13: 9780735623132)
 - Chapter 2, "Physical Query Processing," pages 55 - 57, "Capturing Showplan with SQL Trace"
 - Chapter 3, "Query Tuning"
 - Pages 85 - 89, "Trace Performance Workload"
 - Pages 90 - 103, "Analyze Trace Data"
- *Inside Microsoft SQL Server 2005: T-SQL Programming* by Itzik Ben-Gan, et al. (ISBN-13: 9780735621978)
 - Chapter 9, "Transactions"
 - Pages 383 - 390, "Deadlocks"
 - Pages 386 - 387, "Deadlock Caused by Missing Indexes"
 - This covers using SQL Trace for troubleshooting deadlocks
- *Inside Microsoft SQL Server 2005: The Storage Engine* by Kalen Delaney, et al. (ISBN-13: 9780735621053)
 - Chapter 3, "SQL Server 2005 Configuration," pages 83 - 84, "The Default Trace"
- *Inside Microsoft SQL Server 2005: Query Tuning and Optimization* by Kalen Delaney, et al. (ISBN-13: 9780735621961)
 - Chapter 2, "Tracing and Profiling," pages 57 - 102
- *Microsoft SQL Server 2008 Internals* by Kalen Delaney, et al. (ISBN-13: 9780735626249)
 - Chapter 2, "Change Tracking, Tracing, and Extended Events," pages 86 - 108
- *SQL Server 2008 Query Performance Tuning Distilled* by Grant Fritchey and Sajal Dam (ISBN-13: 9781430219026)
 - Many chapters include trace analysis to illustrate the topics under discussion
- *Mastering SQL Server Profiler* by Brad M. McGehee (ISBN-13: 9781906434151)
 - The entire book is devoted to Profiler and SQL Trace
 - The eBook version can be downloaded, for free, in return for evaluating one of Red Gate Software's tools: "[Free eBook and 14-day trial for faster SQL Server troubleshooting.](#)"
- *Inside Microsoft SQL Server 2008: T-SQL Querying* by Itzik Ben-Gan, et al. (ISBN-13: 9780735626034)
 - Chapter 4, "Query Tuning," pages 148 - 167, 186
- *SQL Server 2008 Administration in Action* by Rod Colledge (ISBN-13: 9781933988726)
 - Chapter 14, "Monitoring and automation," pages 334 - 347
- *Professional SQL Server 2008 Internals and Troubleshooting* by Christian Bolton, et al. (ISBN-13: 9780470484289)
 - Chapter 9, "Viewing Server Performance with Perfmon and the PAL Tool," page 364
 - Chapter 10, "Tracing SQL Server with SQL Trace and Profiler," pages 369 - 436
 - Chapter 12, "Introducing RML Utilities for Stress Testing and Trace File Analysis," pages 459 - 479

Minimizing the Overhead of a Trace

Guidance on reducing the amount of toll that the trace takes on the target system

- From SQL Server Books Online:
 - ["Optimizing SQL Trace"](#)
 - ["Filtering a Trace"](#)
 - ["Limiting Trace File and Table Sizes"](#)
- ["Performance Impact: Profiler Tracing vs. Server Side SQL Tracing"](#)

Analyzing Trace Data

Tools and methods that can be used to analyze the data captured by a trace

- ["Correlating a Trace with Windows Performance Log Data"](#)
- ["Description of the Replay Markup Language \(RML\) Utilities for SQL Server"](#)
- ["Perfmon and Profiler for SQL Server"](#)
- [SQL Nexus Tool](#)
- ["SQL Server profiler trace parsing tool – Build performance reports based on profiler traces only"](#)

Applications of SQL Trace functionality

- ["How to Track Down Deadlocks Using SQL Server 2005 Profiler"](#) by [SQL Server MVP Brad McGehee](#)
- [JumpStartTV.com](#) ["SQL Server Profiler"](#) category
- [MSSQLTips.com](#) ["Profiler / Trace"](#) category
- ["Precision Performance for Microsoft SQL Server using RML Utilities 9.0"](#)
- Security:
 - ["SQL Server 2000 C2 Administrator's and User's Security Guide"](#)
 - ["SQL Server 2000 Auditing"](#)
 - ["SQL Server Tracing: An Automated and Centralized Solution"](#)
- ["SQL Server Profiler Tutorial Video"](#)
- ["Tracing Trigger Execution \(and code path\) using SQL Profiler"](#)

Other Diagnostics

Information on other sources of diagnostic data, to use with or instead of tracing

- [Dynamic Management Views \(DMVs\) and Functions \(DMFs\)](#)
 - ["Monitoring - SQL Server 2005 Dynamic Views and Functions"](#) by Buck Woody
 - [MSSQLTips.com](#) ["Dynamic Management Views/Functions"](#) category
 - ["Recap of April 2010 DMV a Day Series"](#) of blog posts from SQL Server MVP [Glenn Berry](#)
 - ["Troubleshooting with Dynamic Management Views"](#) by Eric Brown
 - ["Uncover Hidden Data to Optimize Application Performance"](#) by [Ian Stirk](#)

- [Event Tracing for Windows](#)
 - ["Data Access Tracing in SQL Server 2008"](#) white paper
 - MSDN forum FAQ: ["FAQ: Common Questions for ETW and Windows Event Log"](#)
 - MSDN Magazine articles:
 - ["Event Tracing: Improve Debugging And Performance Tuning With ETW"](#)
 - ["Core OS Events in Windows 7, Part 1"](#)
 - ["Core Instrumentation Events in Windows 7, Part 2"](#)
 - Series from the Advanced Windows Debugging and Troubleshooting blog:
 - ["Part 1 - ETW Introduction and Overview"](#)
 - ["Part 2 - Exploring and Decoding ETW Providers using Event Log Channels"](#)
 - ["Part 3 - ETW Methods of Tracing"](#)
 - ["Tools for Software Tracing"](#)
 - [Windows Performance Tool Kit](#)/XPerf
 - ["Xperf, a new tool in the Windows SDK"](#)
 - ["Two Minute Drill: Introduction to XPerf"](#)
 - ["Examining Xperf"](#)
- [Extended Events](#) (XE)
 - White paper by SQL Server MVP [Jonathan Kehayias](#): ["Using SQL Server 2008 Extended Events"](#)
 - Endorsement by [Bob Ward](#), a Principal Escalation Engineer in Microsoft [Customer Service and Support \(CSS\)](#): ["Why Should I Use Extended Events in SQL Server 2008?..."](#)
 - Blog post series from SQL Server MVP : ["SQL Server 2008 Extended Events - high performance eventing system"](#)
- [Performance Counter](#) data
 - ["Monitoring Resource Usage \(System Monitor\)"](#)
 - ["Using SQL Server Objects"](#)
 - [Performance Analysis of Logs \(PAL\) Tool](#)
 - ["Performance Monitoring Tools: Windows System Monitor"](#) by Buck Woody
 - ["SQL Server Perfmon \(Performance Monitor\) Best Practices"](#) by [Brent Ozar](#)
 - ["Taking Your Server's Pulse: Use PerfMon to Diagnose Common Server Performance Problems"](#) article in TechNet Magazine
 - ["Vital Signs"](#) Workshop from Microsoft
- [SQLDiag](#), a built-in tool that collects trace, performance counter data, and more... simultaneously

General Performance and Troubleshooting Guides

Comprehensive Microsoft white papers on tuning and troubleshooting the operating system and SQL Server

- ["Performance Tuning Guidelines for Windows Server 2003"](#) (Microsoft Word document)
- ["Performance Tuning Guidelines for Windows Server 2008"](#)
- ["Performance Tuning Guidelines for Windows Server 2008 R2"](#)
- ["Troubleshooting Performance Problems in SQL Server 2005"](#)
- ["Troubleshooting Performance Problems in SQL Server 2008"](#)