

SQL Server: Introduction to Extended Events

Module 1: Introduction

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Introduction

- **This course applies to all versions from SQL Server 2008 onwards**
 - Some features only apply to SQL Server 2012 and will be pointed out
- **Extended Events was introduced in SQL Server 2008 as a new method of collecting diagnostic data from SQL Server**
- **SQL Trace is a deprecated feature in SQL Server 2012**
 - Deprecated means that it will be removed from a future release of SQL Server but it is still available in the current release
 - This makes understanding Extended Events crucial to supporting SQL Server in the future

What are Extended Events?

- **Advanced event-collection infrastructure introduced in SQL Server 2008**
- **Highly-flexible implementation allows complex configurations for event collection that simplify problem identification**
- **Able to perform performance troubleshooting that's not possible any other way:**
 - Capture stored procedures that exceed previous max duration, CPU, or I/O values
 - Identify statement timeouts/attention events
 - Capturing the first N executions of an event
 - Using the plan_handle and tsql_stack to capture execution plans and statement text
 - Capture session-level wait statistics
 - Examine details of the proportional-fill algorithm
 - Watch page splits occurring

Why Replace SQL Trace?

- **The implementation of SQL Trace limited its flexibility and had negative impacts on performance during event collection**
 - All events share a fixed set of data columns requiring some columns to be overloaded, providing different meanings for different events
 - Events generate all of the data columns, even when the trace doesn't require all of the data columns to be collected
 - Events fire if they are turned on in the bitmap in the trace controller filtering is applied, but filtering is only applied after the event has fired completely
- **Trace I/O providers only allow for post-collection analysis of trace data**

The Extended Events Solution

- **Each event provides minimum schema of data that is specific to the event being fired**
- **Events are filtered early in the firing lifecycle, based on the predicates defined in the sessions that are actually collecting the event**
 - Events only collect the basic data and columns need for predicate evaluation
 - Events only fire if predicate evaluation succeeds
 - Any additional data required to complete the event firing is collected after predicate evaluation succeeds
- **New targets (methods of consuming events) provide specialized aggregation of data for complex analysis**

Course Structure

- **Module 2: Extended Events Architecture**
- **Module 3: Extended Events Objects**
- **Module 4: SQL Server 2012 UI Integration**
- **Module 5: SQL Server 2008 SSMS Add-in**
- **Module 6: Defining Event Sessions**
- **Module 7: Event Session Management**
- **Module 8: Basic Targets**
- **Module 9: Basic Troubleshooting Scenarios**