An introduction to Extended Events

Are you ready to dive into the awesome world of MSSQL Extended Events! In this presentation, we'll explore this great feature in Microsoft SQL Server that helps you monitor and troubleshoot database performance.

We'll start by understanding what Extended Events are and when they come to the rescue. You'll learn how to set them up step-by-step, customizing them to capture the data you need and show you how to look into the results.

But wait, there's more! We'll also compare Extended Events with the traditional SQL Server Profiler, so you'll know which one to pick for different situations. Plus, we'll share some nifty scripts to start with them right away.

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Extended Events

2008

- Introduction
- 253 Events

2008 R2

- 262 Events

2012

- GUI
- 617 Events

2014

- Memory buffers
- Packages
- 887 Events

2016

- Query store, TempDB and Memory usage
- DMV's
- 1326 Events

2017

- New features as Adaptive Query Processing/Graph
- 1517 Events

2019

- New features as Intelligent Query Processing
- 1846 Events

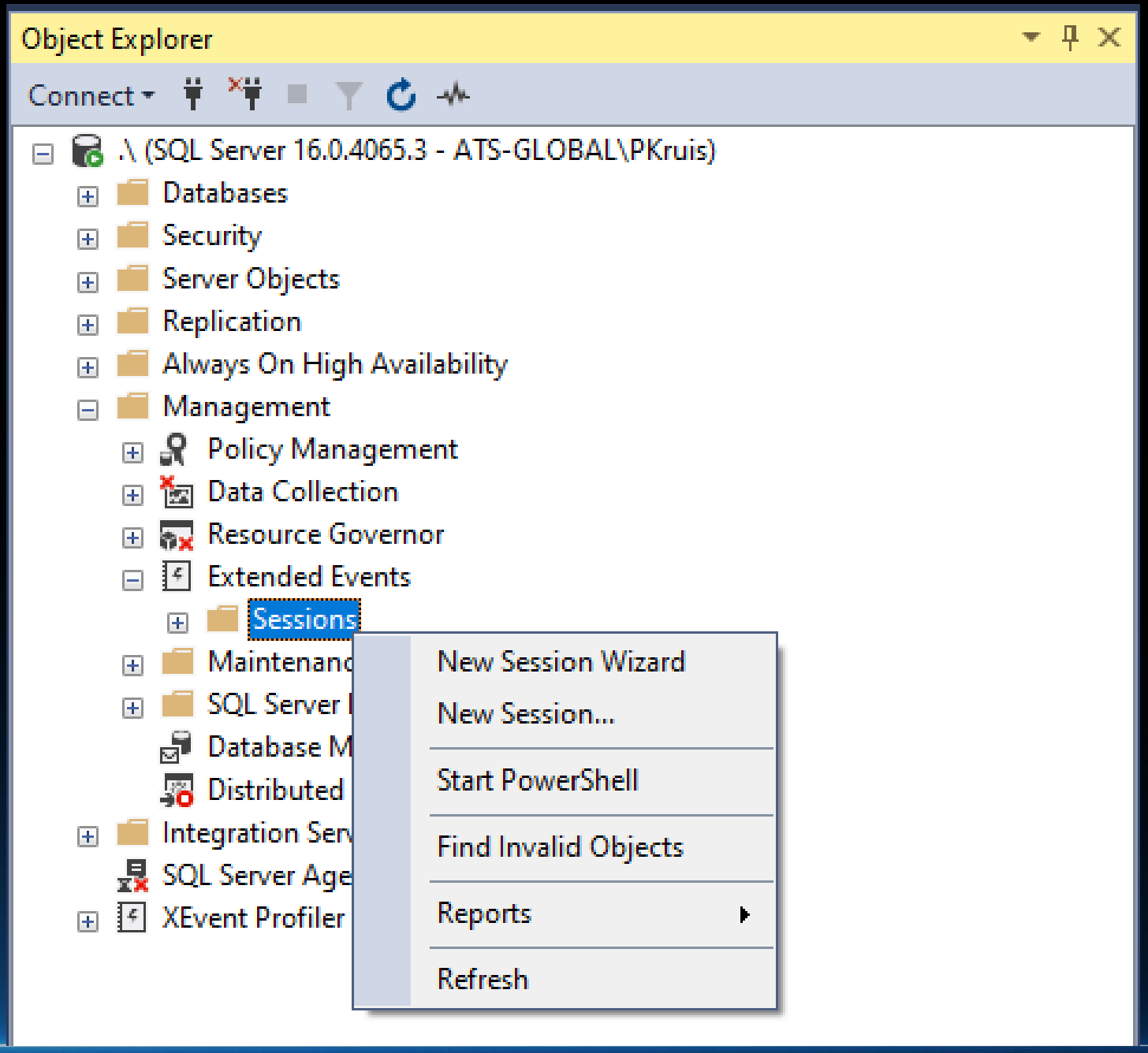
2022

- New features as automatic tuning, query store additions
- 2498 Events

XE vs Profiler

Item	SQL Server Trace	SQL Server Extended Events
GUI Pre-2012	Classic GUI	No GUI, Query should be done through XML
GUI	Classic GUI	GUI with options as Grouping, Filtering, Differences between grid and details
Overhead	Synchronous capture Much more overhead	Asynchronous capture Less overhead
Server/Client	Only for you	Everybody can see and use your trace
Events	No new ones since 2012, so stuck at 180 events	Added each version of SQL (SQL Server 2022 has almost 2500 events!) Azure
Causality Tracking	No ☹	Yes! ☺
Configure by SQL	More complex syntax	Better granular control
Built-in Replay	Capture and replay	You need to use other tools
Combine with perfmon	Available	Not available

Set up an Extended Event


Object Explorer
Connect
.\ (SQL Server 16.0.4065.3 - ATS-GLOBAL\PKruis)
Databases
Security
Server Objects
Replication
Always On High Availability
Management
Policy Management
Data Collection
Resource Governor
Extended Events
Sessions
Maintenanc
SQL Server
Database M
Distributed
Integration Serv
SQL Server Age
XEvent Profiler
New Session Wizard
New Session...
Start PowerShell
Find Invalid Objects
Reports
Refresh

New Session

Session name can not be empty

Select a page
- General
- Events
- Data Storage
- Advanced

Script | Help

Session name:

Template: <Blank>

Schedule:

Start the event session at server startup.

Start the event session immediately after session creation.

Watch live data on screen as it is captured.

Causality tracking:

Track how events are related to one another.

Connection

.\ [ATS-GLOBAL\PKruis]

View connection properties

Progress

Ready

OK Cancel Help

New Session

Cannot create a session without any events.

Select a page

- General
- Events
- Data Storage
- Advanced

Script | Help

Select | Select the events you want to capture from the event library. | Configure

Event library:

rpc_co in Event names only

Name	Category	Channel	Package
rpc_completed	execution	Analytic	sqlserver

Selected events:

Name

rpc_completed

Occurs when a remote procedure call has completed.

Event Fields	Description
collect_data_stream	When set to 1, collect_...
collect_output_paramet...	When set to 1, collect_...
collect_statement	When set to 0, collect_...
connection_reset_option	The option that was us...
cpu_time	The CPU time (in micro...
data_stream	The remote procedure ...
duration	The time (in microsecon...
logical_reads	The number of logical p...

Connection

.\ [ATS-GLOBAL\PKruis]

View connection properties

Progress

Ready

OK | Cancel | Help

New Session

Ready

Select a page
- General
- Events
- Data Storage
- Advanced

Script | Help

Select

Configure the events to collect additional fields and specify filters.

Configure

Selected events:

Name		
rpc_completed	0	
sql_batch_completed	0	

rpc_completed

Occurs when a remote procedure call has completed.

Event configuration options:

Global Fields (Actions) | Filter (Predicate) | Event Fields

	Name	Description
☐	AppName	application_name without the full app uri
☐	AppTypeName	Application type name
☐	callstack	Collect the current call stack as raw binary data
☐	callstack_rva	Collect the current call stack as a module+relati...
☐	client_app_na...	Collect client application name
☐	client_connec...	Collects the optional identifier provided at conne...
☐	client_hostna...	Collect client hostname
☐	client_pid	Collect client process ID
☐	collect_cpu_c...	Collect the current CPU's cycle count
☐	collect_curren...	Collect the current Windows thread ID
☐	collect_syste...	Collect the current system time with 100 microse...
☐	compile_plan...	Collect compiled plan guid. Use this to uniquely i...
☐	context_info	Collect the same value as the CONTEXT_INFO(...
☐	cpu_id	Collect current CPU ID
☐	create_dump...	Create mini dump including all threads
☐	create_dump...	Create mini dump for the current thread
☐	database_id	Collect database ID
☐	database_name	Collect current database name
☐	datapool_ddl_...	Collect guid datapool DDL query
☐	debug_break	Break the process in the default debugger
☐	distributed_pl...	Collect distributed plan step
☐	distributed_qu...	Collect distributed query hash
☐	distributed_qu...	Collect distributed query id
☐	distributed_re...	Collect distributed query processor id
☐	distributed_st...	Collect distributed statement id

Connection

.\ [ATS-GLOBAL\PKruis]

View connection properties

Progress

Ready

OK | Cancel | Help

New Session

Ready

Select a page
- General
- Events
- Data Storage
- Advanced

Script | Help

Select

Configure the events to collect additional fields and specify filters.

Configure

Selected events:

Name		
rpc_completed	1	✓
sql_batch_completed	1	✓

Event configuration options:

Global Fields (Actions) | Filter (Predicate) | Event Fields

Filter on event name (deselect to filter on id).

	And/Or	Field	Operator	Value
		duration	>=	3000000
Click here to add a clause				

duration (package0.uint64)

The time (in microseconds) that the remote procedure call took to be completed.

Connection

.\ [ATS-GLOBAL\PKruis]

View connection properties

Progress

Ready

OK | Cancel | Help

New Session

Ready

Select a page
- General
- Events
- Data Storage
- Advanced

Script | Help

Select

Configure the events to collect additional fields and specify filters.

Configure

Selected events:

Name		
rpc_completed	1	✓
sql_batch_completed	1	✓

rpc_completed

Occurs when a remote procedure call has completed.

Event configuration options:

Global Fields (Actions) | Filter (Predicate) | Event Fields

	Name	Description	Data Type
	connection_reset_option	The option that was use...	connection_reset_option
	cpu_time	The CPU time (in micros...	uint64
☐	data_stream	The remote procedure c...	binary_data
	duration	The time (in microsecon...	uint64
	logical_reads	The number of logical pa...	uint64
	object_name	The name of the object t...	unicode_string
☐	output_parameters	The output parameters t...	xml
	page_server_reads	The number of remote p...	uint64
	physical_reads	The number of physical ...	uint64
	result	The return value from th...	rpc_return_result
	row_count	The number of rows that...	uint64
☑	statement	The text of the statemen...	unicode_string
	writes	The number of page writ...	uint64

Connection

.\ [ATS-GLOBAL\PKruis]

View connection properties

Progress

Ready

OK | Cancel | Help

New Session

Ready

Select a page

- General
- Events
- Data Storage
- Advanced

Script | Help

SQL Server Extended Events targets store event data. Targets can perform actions such as writing to a file and aggregating event data.

Targets:

Type	Description
ring_buffer	Asynchronous ring buffer target.
Click here to add a target	

Add Remove

Properties:

Number of events to keep (0 means unlimited): 1000

Maximum buffer memory size (0 means unlimited): 0 MB

☐ Keep a specified number of events (per type) when the buffer is full.

Number of events to keep (per type): 0

Connection

.\ [ATS-GLOBAL\PKruis]

View connection properties

Progress

Ready

OK Cancel Help

Session Properties

Begin event of pair matching target cannot be empty.

Select a page

- General
- Events
- Data Storage
- Advanced

Script | Help

Event retention mode:
- (•) Single event loss
- ( ) Multiple event loss
- ( ) No event loss (not recommended)

Maximum dispatch latency:
- (•) In seconds 30
- ( ) Unlimited

Max memory size: 4 MB

Max event size: 0 MB

Memory partition mode:
- (•) None
- ( ) Per node
- ( ) Per CPU

Restore Defaults

Connection

.\ [ATS-GLOBAL\PKruis]

View connection properties

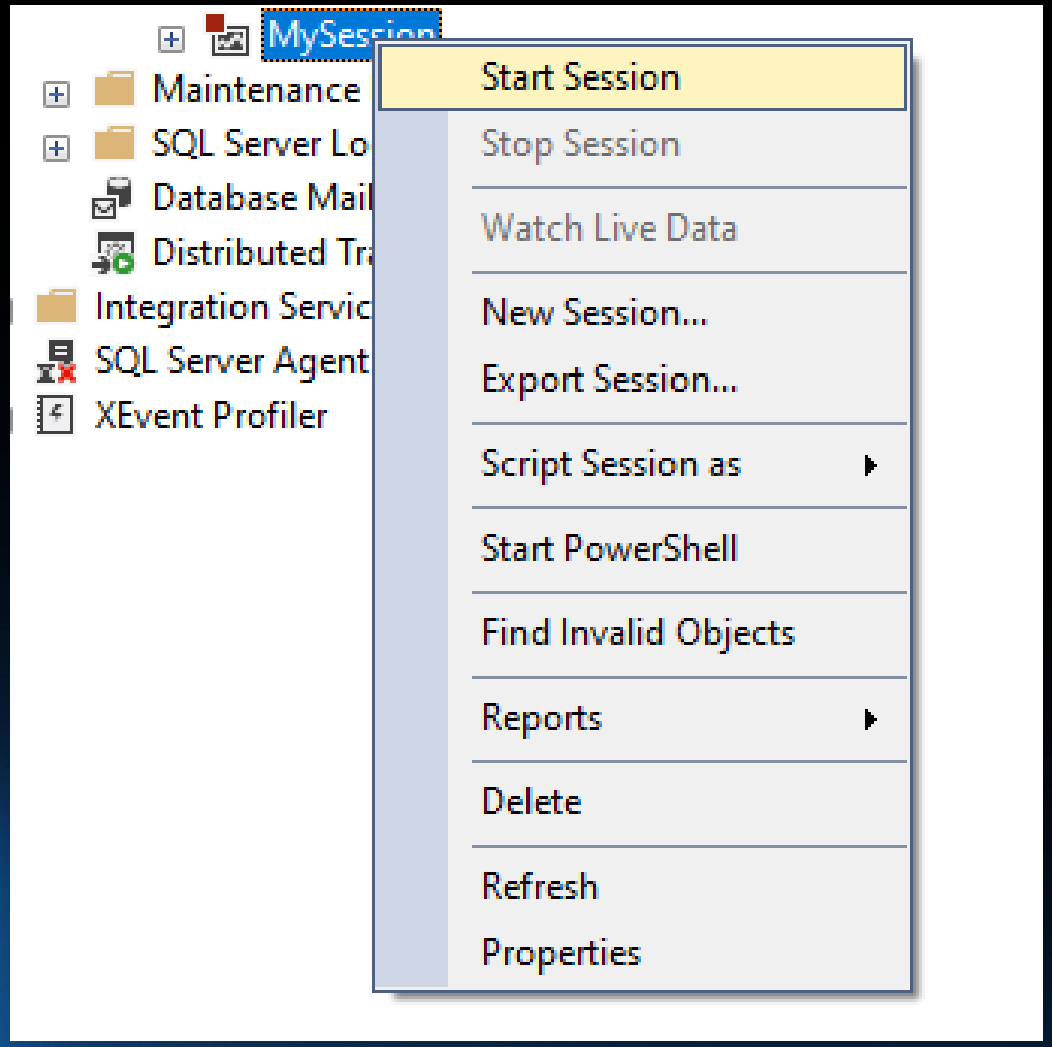
Progress

Ready

OK | Cancel | Help

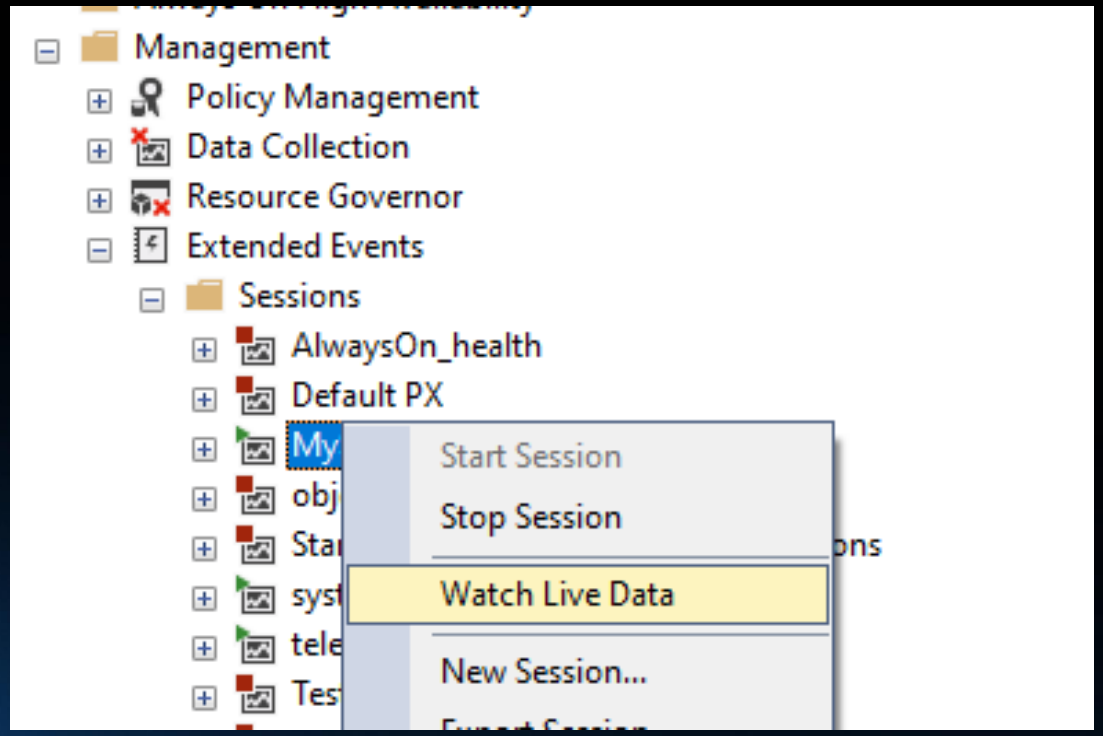
```
CREATE EVENT SESSION [MySession]
   ON SERVER
   ADD EVENT sqlserver.rpc_completed
   (SET collect_statement = (1)
    ACTION (
               sqlserver.session_id
           )
    WHERE ([Duration] >= (3000000))
   ),
   ADD EVENT sqlserver.sql_batch_completed
   (ACTION (
               sqlserver.session_id
           )
    WHERE ([Duration] >= (3000000))
   )
   ADD TARGET package0.event_file
   (SET filename = N'MySession'),
   ADD TARGET package0.ring_buffer
   WITH (
           MAX_MEMORY = 4096KB,
           EVENT_RETENTION_MODE = ALLOW_SINGLE_EVENT_LOSS,
           MAX_DISPATCH_LATENCY = 30 SECONDS,
           MAX_EVENT_SIZE = 0KB,
           MEMORY_PARTITION_MODE = NONE,
           TRACK_CAUSALITY = ON,
           STARTUP_STATE = OFF
         );
GO
```

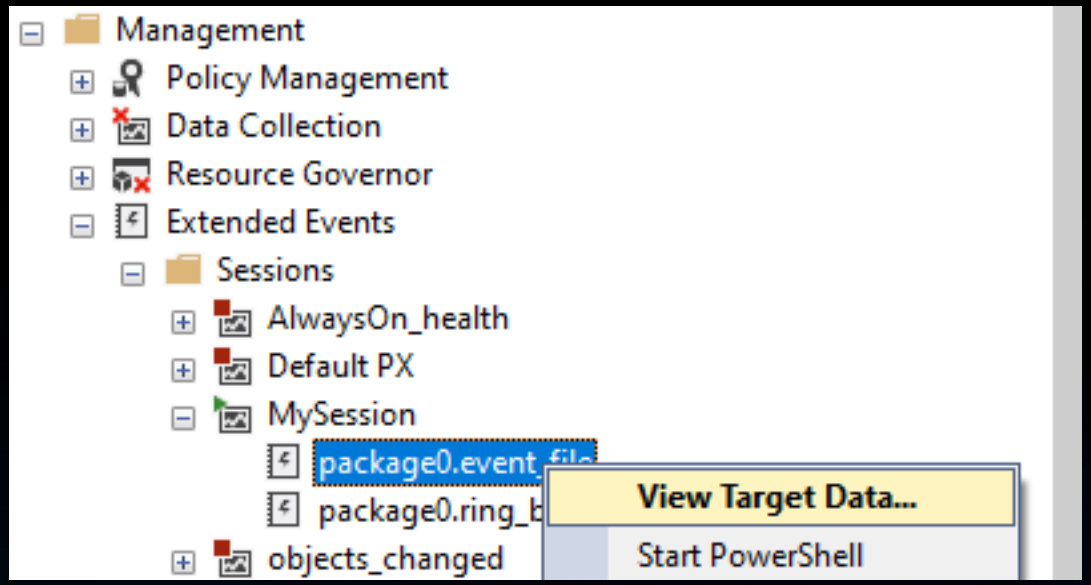
```
CREATE EVENT SESSION [MySession]
   ON SERVER
   ADD EVENT sqlserver.rpc_completed
   (SET collect_statement = (1)
    ACTION (
              sqlserver.session_id
            )
    WHERE ([Duration] >= (3000000))
   ),

   ADD EVENT sqlserver.sql_batch_completed
   (ACTION (
              sqlserver.session_id
            )
    WHERE ([Duration] >= (3000000))
   )

   ADD TARGET package0.event_file
   (SET filename = N'MySession'),

   ADD TARGET package0.ring_buffer

   WITH (
           MAX_MEMORY = 4096KB,
           EVENT_RETENTION_MODE = ALLOW_SINGLE_EVENT_LOSS,
           MAX_DISPATCH_LATENCY = 30 SECONDS,
           MAX_EVENT_SIZE = 0KB,
           MEMORY_PARTITION_MODE = NONE,
           TRACK_CAUSALITY = ON,
           STARTUP_STATE = OFF
         );
GO
```

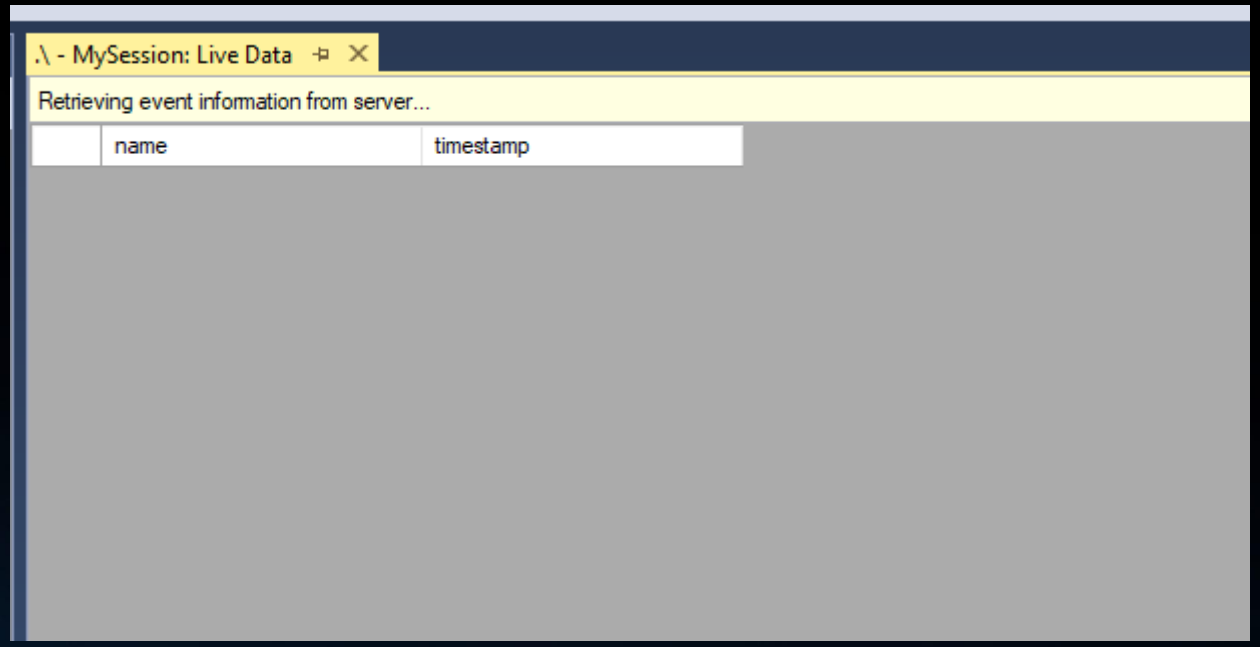


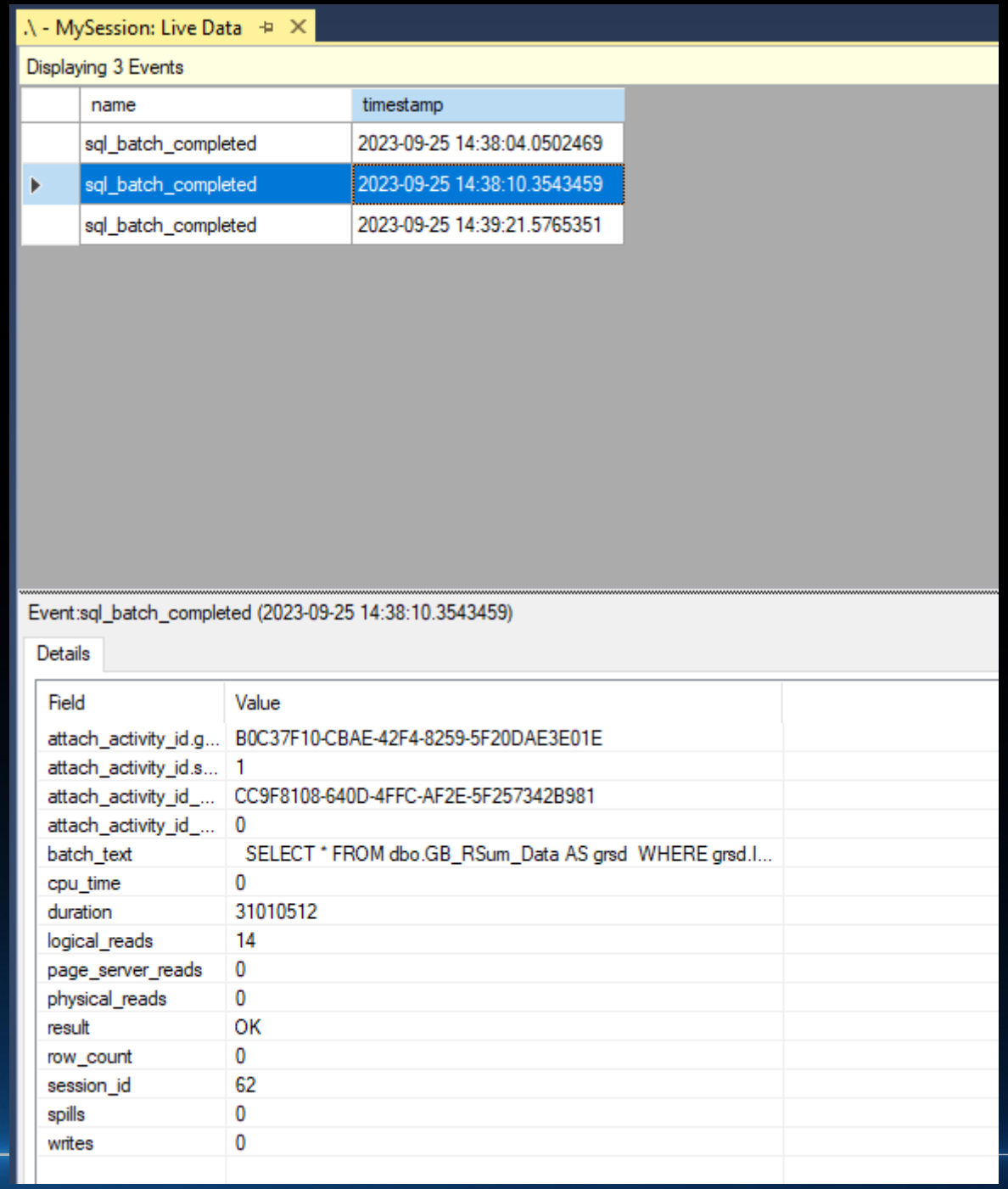

```
ALTER EVENT SESSION [MySession]
    ON SERVER STATE = START;
```

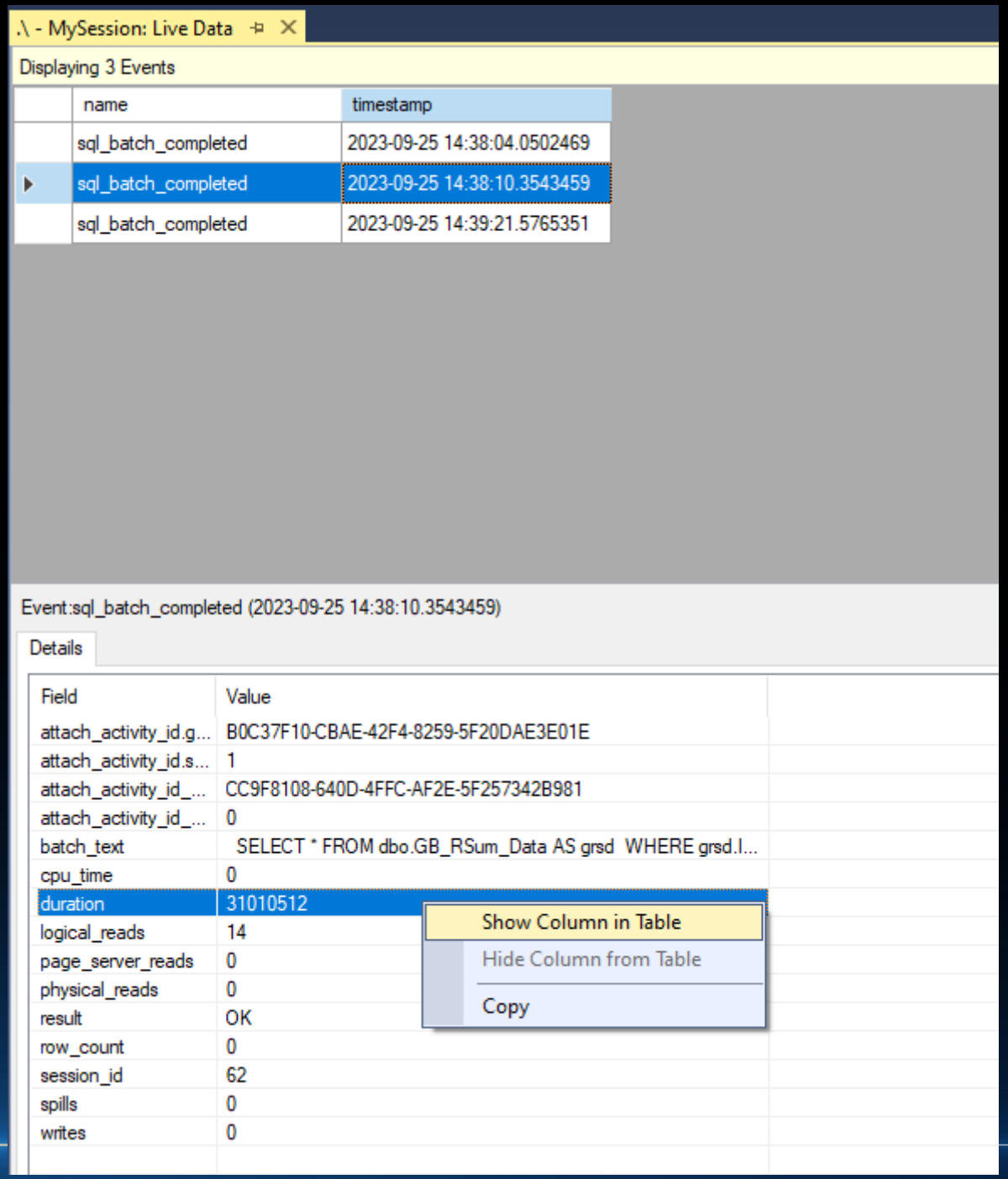
Show output (GUI)

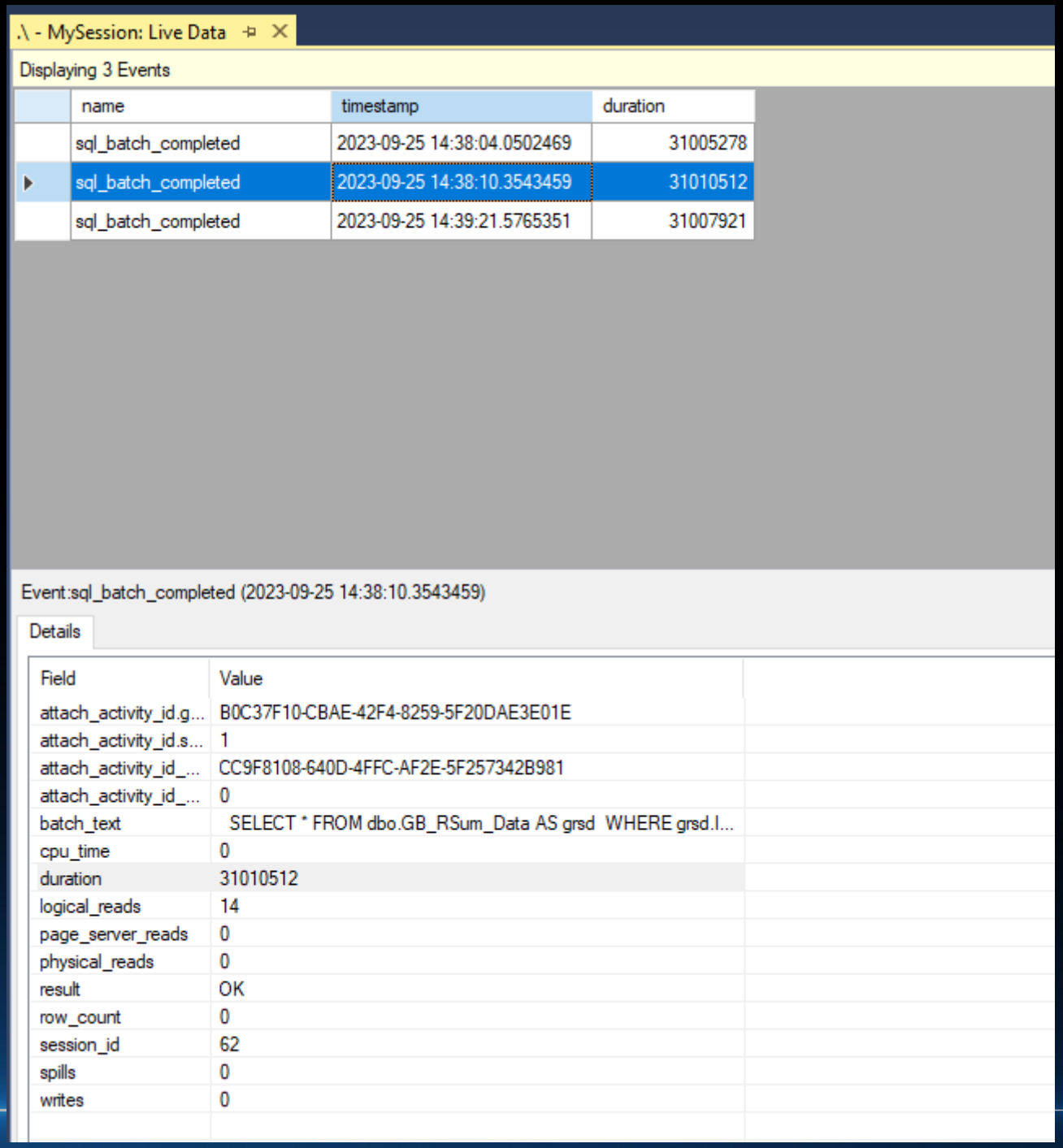

Management
Policy Management
Data Collection
Resource Governor
Extended Events
Sessions
AlwaysOn_health
Default PX
My
obj
Sta
syst
tele
Tes
Start Session
Stop Session
Watch Live Data
New Session...

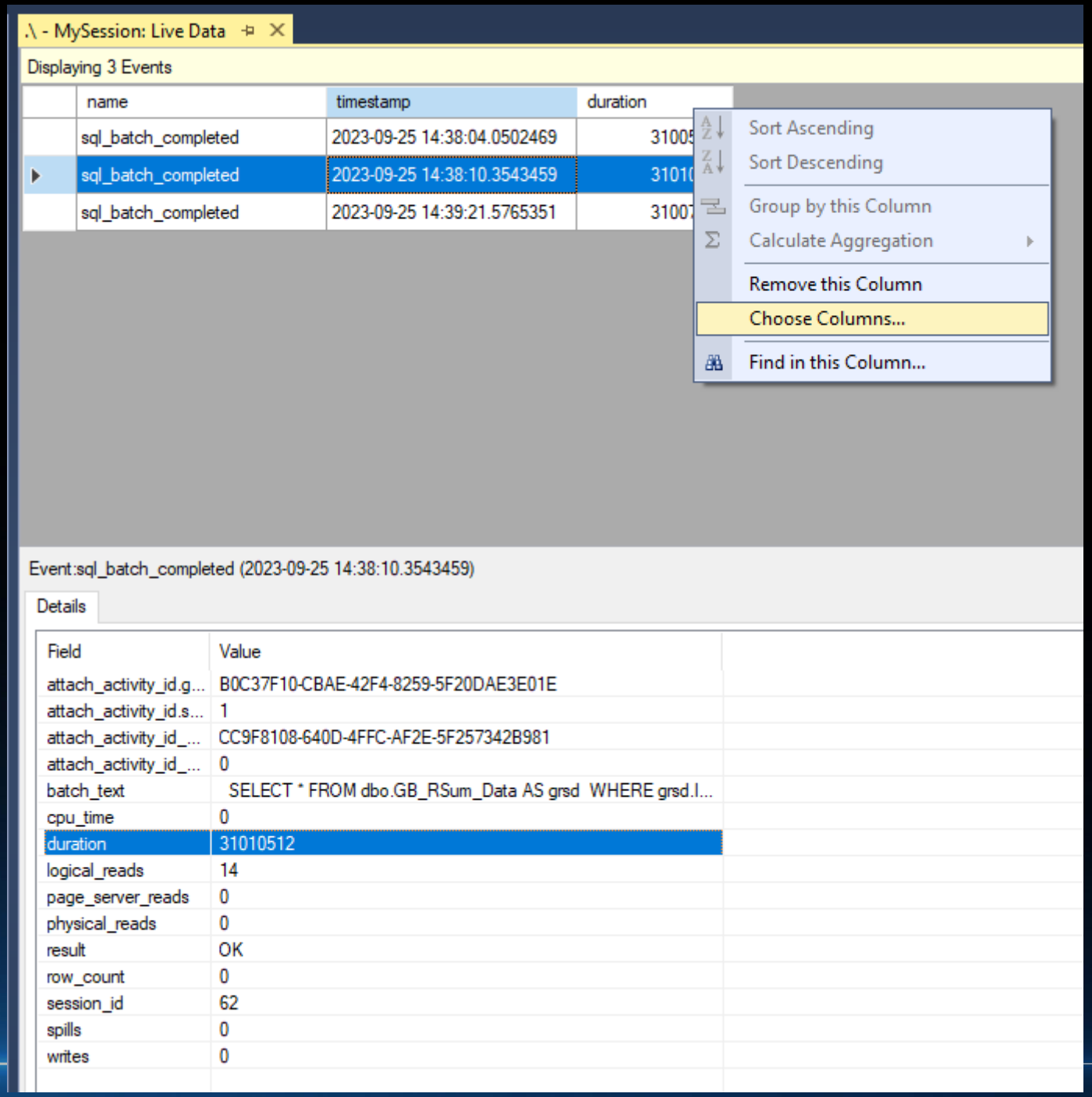

Management
Policy Management
Data Collection
Resource Governor
Extended Events
Sessions
AlwaysOn_health
Default PX
MySession
package0.event_file
package0.ring_b
objects_changed
View Target Data...
Start PowerShell

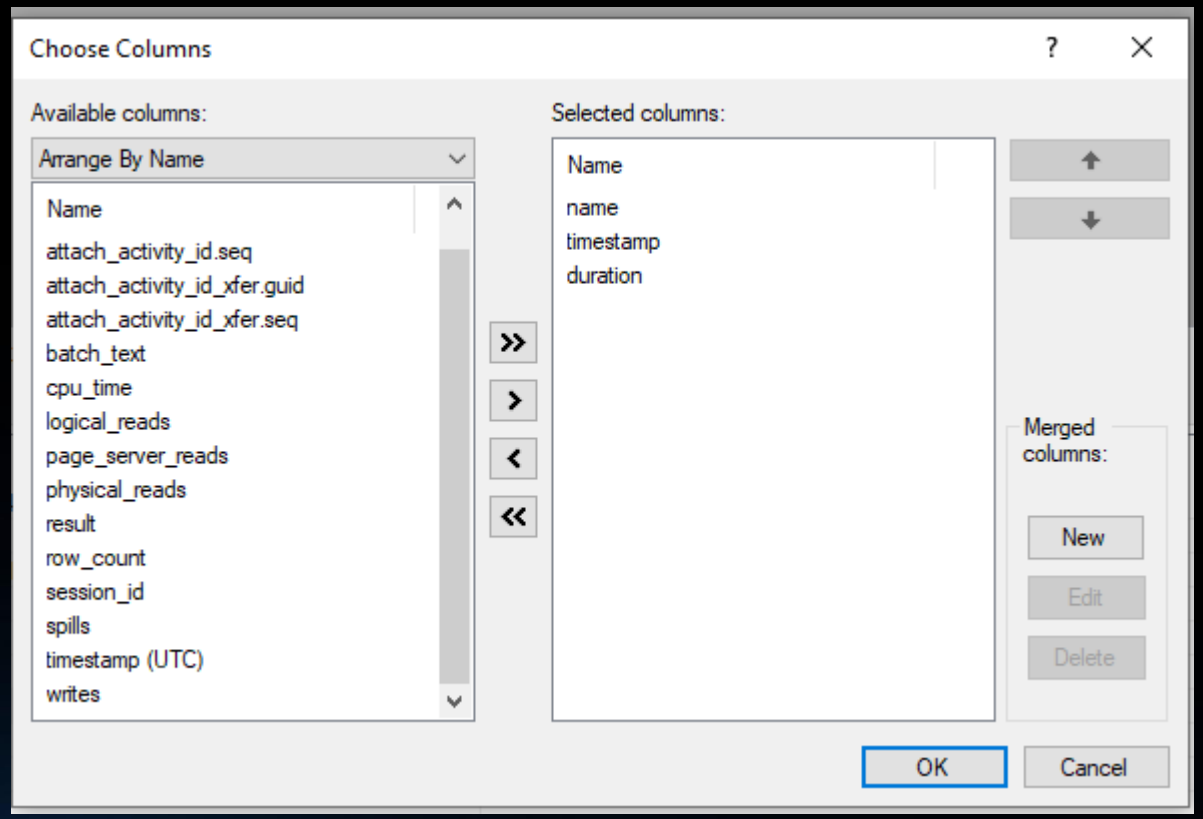

.\ - MySession: Live Data
Retrieving event information from server...
name
timestamp

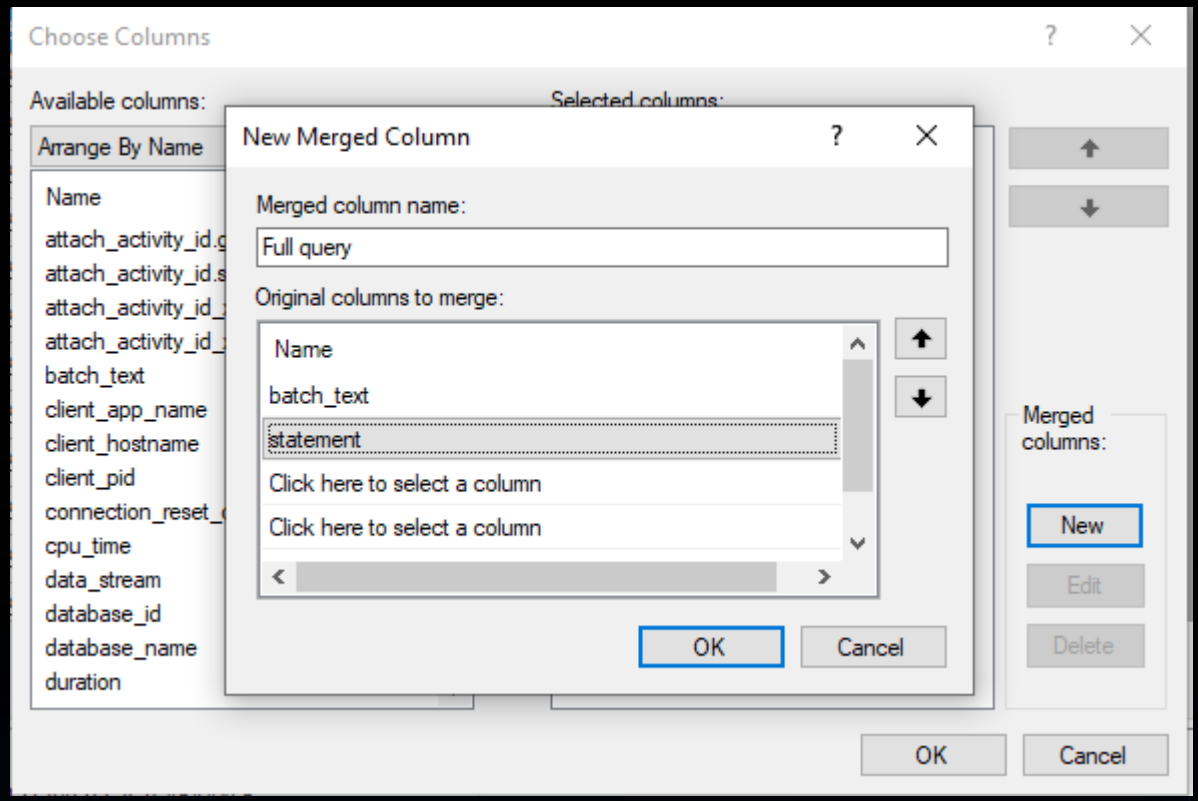

.\ - MySession: Live Data
Displaying 3 Events
name
timestamp
sql_batch_completed
2023-09-25 14:38:04.0502469
sql_batch_completed
2023-09-25 14:38:10.3543459
sql_batch_completed
2023-09-25 14:39:21.5765351
Event:sql_batch_completed (2023-09-25 14:38:10.3543459)
Details
Field
Value
attach_activity_id.g...
B0C37F10-CBAE-42F4-8259-5F20DAE3E01E
attach_activity_id.s...
1
attach_activity_id_...
CC9F8108-640D-4FFC-AF2E-5F257342B981
attach_activity_id_...
0
batch_text
SELECT * FROM dbo.GB_RSum_Data AS grsd WHERE grsd.I...
cpu_time
0
duration
31010512
logical_reads
14
page_server_reads
0
physical_reads
0
result
OK
row_count
0
session_id
62
spills
0
writes
0


.\ - MySession: Live Data
Displaying 3 Events
name
timestamp
sql_batch_completed
2023-09-25 14:38:04.0502469
sql_batch_completed
2023-09-25 14:38:10.3543459
sql_batch_completed
2023-09-25 14:39:21.5765351
Event:sql_batch_completed (2023-09-25 14:38:10.3543459)
Details
Field
Value
attach_activity_id.g...
B0C37F10-CBAE-42F4-8259-5F20DAE3E01E
attach_activity_id.s...
1
attach_activity_id_...
CC9F8108-640D-4FFC-AF2E-5F257342B981
attach_activity_id_...
0
batch_text
SELECT * FROM dbo.GB_RSum_Data AS grsd WHERE grsd.I...
cpu_time
0
duration
31010512
logical_reads
14
page_server_reads
0
physical_reads
0
result
OK
row_count
0
session_id
62
spills
0
writes
0
Show Column in Table
Hide Column from Table
Copy

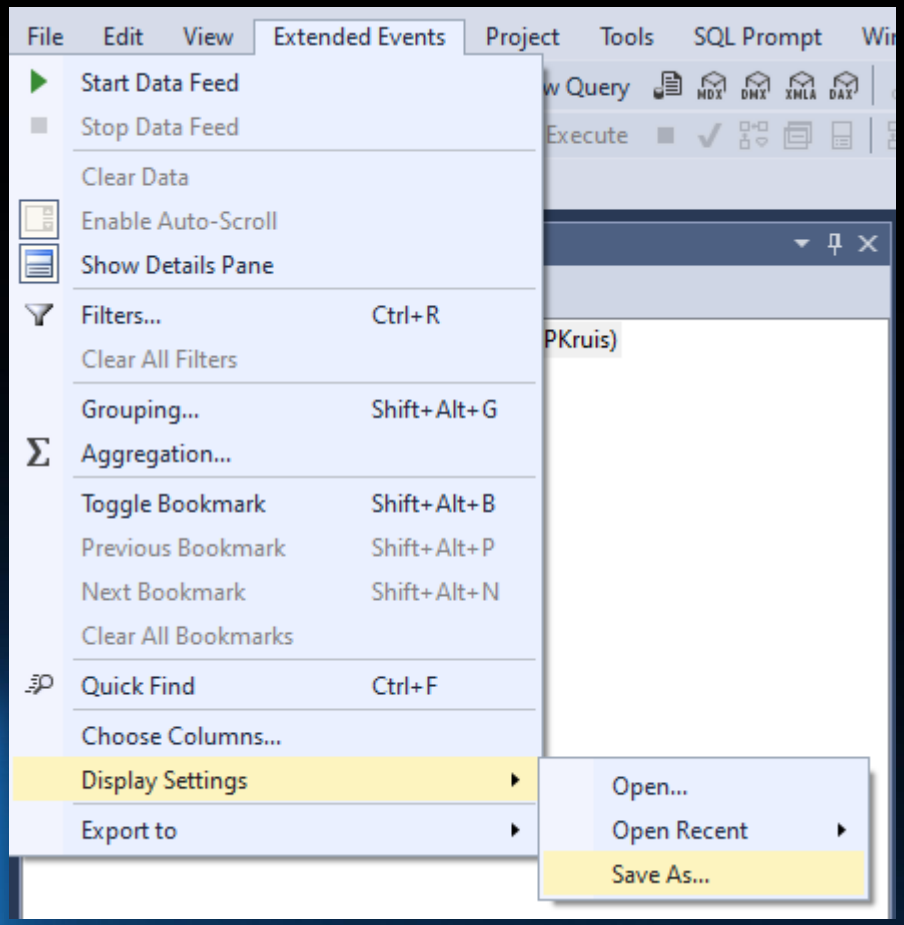

.\ - MySession: Live Data
Displaying 3 Events
name
timestamp
duration
sql_batch_completed
2023-09-25 14:38:04.0502469
31005278
sql_batch_completed
2023-09-25 14:38:10.3543459
31010512
sql_batch_completed
2023-09-25 14:39:21.5765351
31007921
Event:sql_batch_completed (2023-09-25 14:38:10.3543459)
Details
Field
Value
attach_activity_id.g...
B0C37F10-CBAE-42F4-8259-5F20DAE3E01E
attach_activity_id.s...
1
attach_activity_id_...
CC9F8108-640D-4FFC-AF2E-5F257342B981
attach_activity_id_...
0
batch_text
SELECT * FROM dbo.GB_RSum_Data AS grsd WHERE grsd.I...
cpu_time
0
duration
31010512
logical_reads
14
page_server_reads
0
physical_reads
0
result
OK
row_count
0
session_id
62
spills
0
writes
0

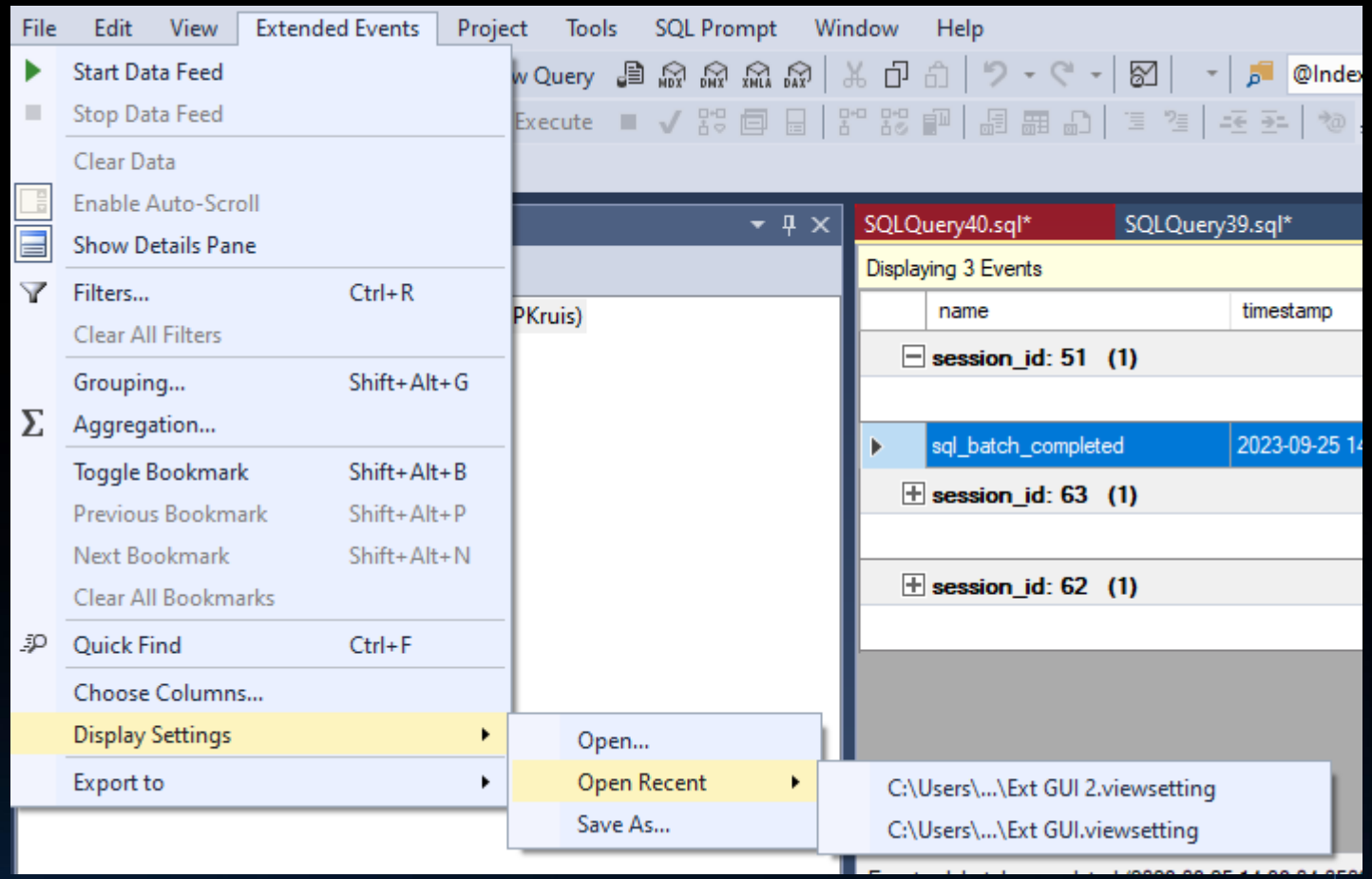

.\ - MySession: Live Data
Displaying 3 Events
name
timestamp
duration
sql_batch_completed
2023-09-25 14:38:04.0502469
sql_batch_completed
2023-09-25 14:38:10.3543459
sql_batch_completed
2023-09-25 14:39:21.5765351
Sort Ascending
Sort Descending
Group by this Column
Calculate Aggregation
Remove this Column
Choose Columns...
Find in this Column...
Event:sql_batch_completed (2023-09-25 14:38:10.3543459)
Details
Field
Value
attach_activity_id.g...
B0C37F10-CBAE-42F4-8259-5F20DAE3E01E
attach_activity_id.s...
1
attach_activity_id_...
CC9F8108-640D-4FFC-AF2E-5F257342B981
attach_activity_id_...
0
batch_text
SELECT * FROM dbo.GB_RSum_Data AS grsd WHERE grsd.I...
cpu_time
0
duration
31010512
logical_reads
14
page_server_reads
0
physical_reads
0
result
OK
row_count
0
session_id
62
spills
0
writes
0

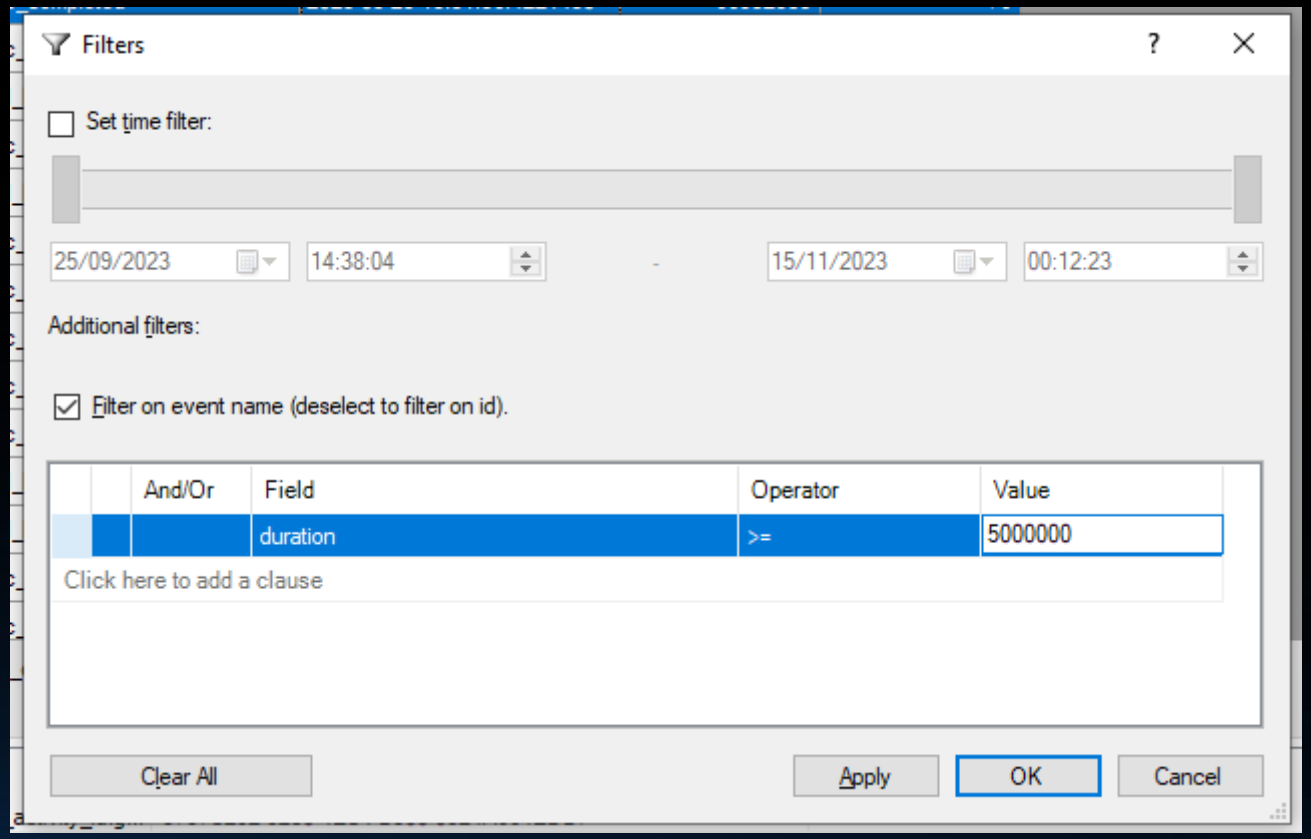


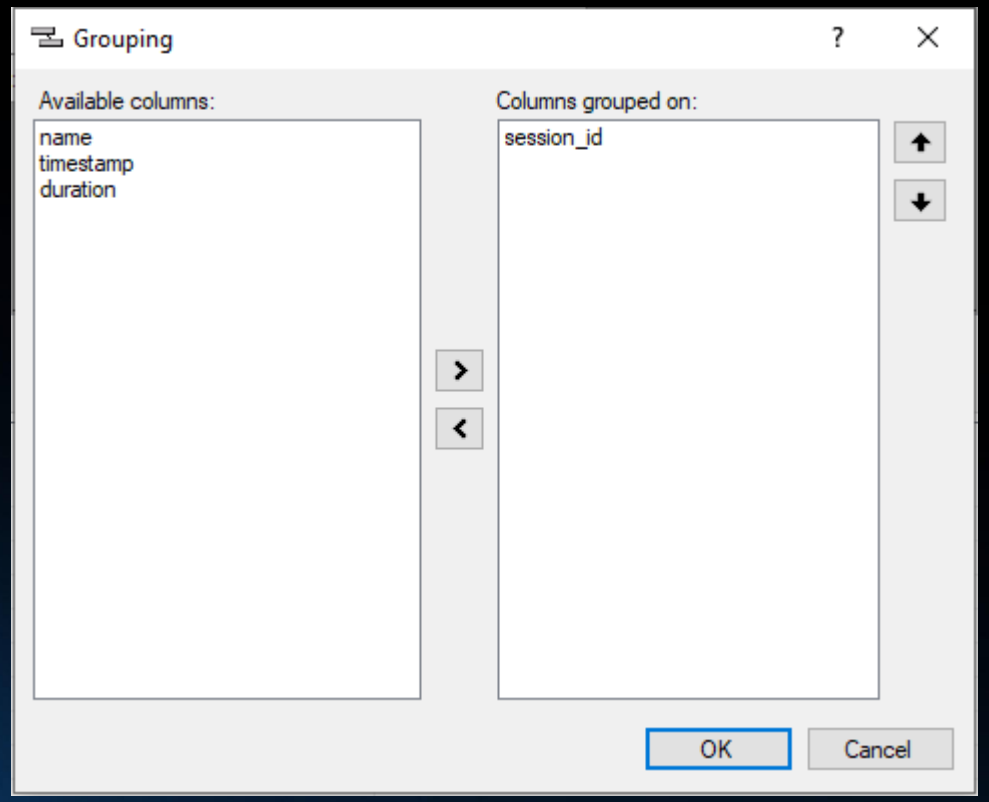


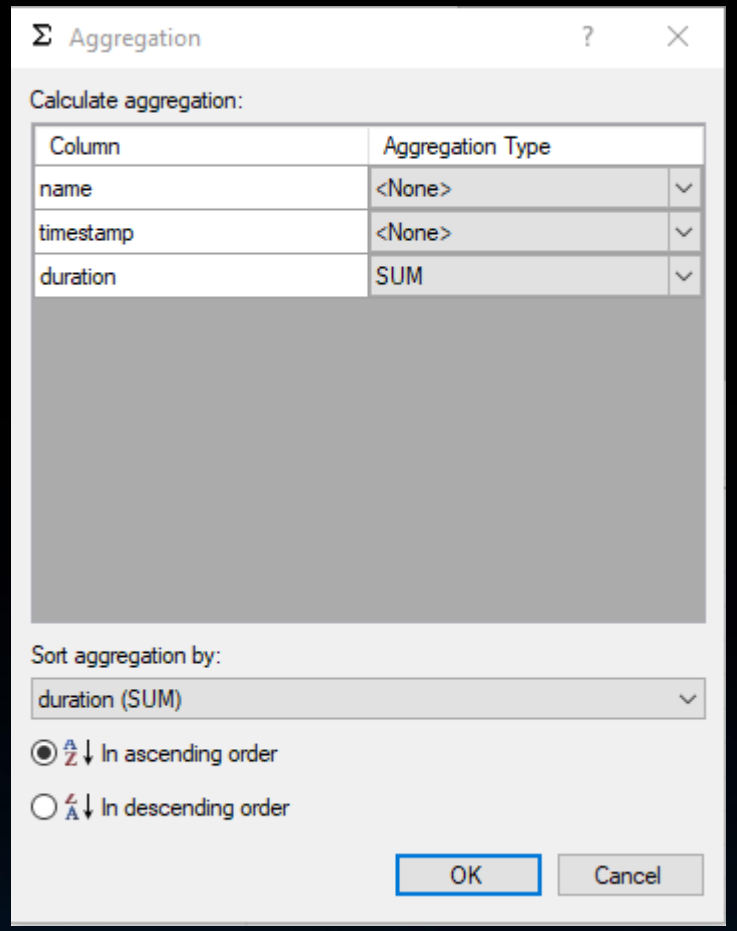
	name	timestamp	duration	[Full query]


File
Edit
View
Extended Events
Project
Tools
SQL Prompt
Start Data Feed
Stop Data Feed
Clear Data
Enable Auto-Scroll
Show Details Pane
Filters... Ctrl+R
Clear All Filters
Grouping... Shift+Alt+G
Aggregation...
Toggle Bookmark Shift+Alt+B
Previous Bookmark Shift+Alt+P
Next Bookmark Shift+Alt+N
Clear All Bookmarks
Quick Find Ctrl+F
Choose Columns...
Display Settings
Export to
Open...
Open Recent
Save As...


File
Edit
View
Extended Events
Project
Tools
SQL Prompt
Window
Help
Start Data Feed
Stop Data Feed
Clear Data
Enable Auto-Scroll
Show Details Pane
Filters... Ctrl+R
Clear All Filters
Grouping... Shift+Alt+G
Aggregation...
Toggle Bookmark Shift+Alt+B
Previous Bookmark Shift+Alt+P
Next Bookmark Shift+Alt+N
Clear All Bookmarks
Quick Find Ctrl+F
Choose Columns...
Display Settings
Export to
Open...
Open Recent
Save As...
C:\Users\...\Ext GUI 2.viewsetting
C:\Users\...\Ext GUI.viewsetting
SQLQuery40.sql*
SQLQuery39.sql*
Displaying 3 Events
name
timestamp
session_id: 51 (1)
sql_batch_completed
session_id: 63 (1)
session_id: 62 (1)


Filters
Set time filter:
25/09/2023
14:38:04
15/11/2023
00:12:23
Additional filters:
Filter on event name (deselect to filter on id).
And/Or
Field
Operator
Value
duration
>=
5000000
Click here to add a clause
Clear All
Apply
OK
Cancel


Grouping
Available columns:
name
timestamp
duration
Columns grouped on:
session_id
OK
Cancel


Aggregation
Calculate aggregation:
Column
Aggregation Type
name
<None>
timestamp
<None>
duration
SUM
Sort aggregation by:
duration (SUM)
In ascending order
In descending order
OK
Cancel

Displaying 3 Events

	name	timestamp	duration	session_id
⊟	**session_id: 51 (1)**			
			SUM: 31005278	
	sql_batch_completed	2023-09-25 14:38:04.0502469	31005278	51
⊞	**session_id: 63 (1)**			
			SUM: 31007921	
⊞	**session_id: 62 (1)**			
			SUM: 31010512	

Output (Script)

```sql
SELECT
      event_data = CONVERT(XML, event_data),
      object_name,
      file_name,          /*for use in the 3th parameter*/
      file_offset,        /*for use in the 4th parameter*/
      timestamp_utc
FROM sys.fn_xe_file_target_read_file(N'MySession*.xel', NULL, NULL, NULL);
```

	event_data	object_name	file_name	file_offset	timestamp_utc
1	<event name="sql_batch_completed" package="sqlse...	sql_batch_completed	C:\Program Files\Microsoft SQL Server\MSSQL15.MSS...	10240	2023-09-25 12:38:04.0500000
2	<event name="sql_batch_completed" package="sqlse...	sql_batch_completed	C:\Program Files\Microsoft SQL Server\MSSQL15.MSS...	10752	2023-09-25 12:38:10.3540000
3	<event name="sql_batch_completed" package="sqlse...	sql_batch_completed	C:\Program Files\Microsoft SQL Server\MSSQL15.MSS...	11264	2023-09-25 12:39:21.5760000
4	<event name="rpc_completed" package="sqlserver" ti...	rpc_completed	C:\Program Files\Microsoft SQL Server\MSSQL15.MSS...	12288	2023-09-25 13:30:12.6840000
5	<event name="rpc_completed" package="sqlserver" ti...	rpc_completed	C:\Program Files\Microsoft SQL Server\MSSQL15.MSS...	13312	2023-09-25 13:31:56.4220000
6	<event name="rpc_completed" package="sqlserver" ti...	rpc_completed	C:\Program Files\Microsoft SQL Server\MSSQL15.MSS...	14336	2023-09-25 22:52:35.3100000
7	<event name="rpc_completed" package="sqlserver" ti...	rpc_completed	C:\Program Files\Microsoft SQL Server\MSSQL15.MSS...	10240	2023-09-25 13:30:12.6840000
8	<event name="rpc_completed" package="sqlserver" ti...	rpc_completed	C:\Program Files\Microsoft SQL Server\MSSQL15.MSS...	11264	2023-09-25 13:31:56.4220000
9	<event name="rpc_completed" package="sqlserver" ti...	rpc_completed	C:\Program Files\Microsoft SQL Server\MSSQL15.MSS...	12288	2023-09-25 22:52:35.3100000
10	<event name="rpc_completed" package="sqlserver" ti...	rpc_completed	C:\Program Files\Microsoft SQL Server\MSSQL15.MSS...	10240	2023-09-26 06:50:49.3950000
11	<event name="rpc_completed" package="sqlserver" ti...	rpc_completed	C:\Program Files\Microsoft SQL Server\MSSQL15.MSS...	11264	2023-09-26 07:08:48.4460000
12	<event name="sql_batch_completed" package="sqlse...	sql_batch_completed	C:\Program Files\Microsoft SQL Server\MSSQL15.MSS...	12288	2023-09-28 06:03:08.7650000
13	<event name="sql_batch_completed" package="sqlse...	sql_batch_completed	C:\Program Files\Microsoft SQL Server\MSSQL15.MSS...	12288	2023-09-28 06:03:08.8180000
14	<event name="sql_batch_completed" package="sqlse...	sql_batch_completed	C:\Program Files\Microsoft SQL Server\MSSQL15.MSS...	15872	2023-09-28 10:52:56.6750000
15	<event name="sql_batch_completed" package="sqlse...	sql_batch_completed	C:\Program Files\Microsoft SQL Server\MSSQL15.MSS...	15872	2023-09-28 10:53:02.1290000
16	<event name="sql_batch_completed" package="sqlse...	sql_batch_completed	C:\Program Files\Microsoft SQL Server\MSSQL15.MSS...	20480	2023-09-28 10:53:29.9540000
17	<event name="sql_batch_completed" package="sqlse...	sql_batch_completed	C:\Program Files\Microsoft SQL Server\MSSQL15.MSS...	20480	2023-09-28 10:53:36.8900000
18	<event name="sql_batch_completed" package="sqlse...	sql_batch_completed	C:\Program Files\Microsoft SQL Server\MSSQL15.MSS...	23040	2023-10-02 07:46:16.9730000
19	<event name="sql_batch_completed" package="sqlse...	sql_batch_completed	C:\Program Files\Microsoft SQL Server\MSSQL15.MSS...	23040	2023-10-02 07:46:25.5610000
20	<event name="sql_batch_completed" package="sqlse...	sql_batch_completed	C:\Program Files\Microsoft SQL Server\MSSQL15.MSS...	27648	2023-10-02 07:47:04.8350000
21	<event name="sql_batch_completed" package="sqlse...	sql_batch_completed	C:\Program Files\Microsoft SQL Server\MSSQL15.MSS...	29184	2023-10-02 07:47:14.8520000
22	<event name="sql_batch_completed" package="sqlse...	sql_batch_completed	C:\Program Files\Microsoft SQL Server\MSSQL15.MSS...	10240	2023-10-19 17:40:45.3880000
23	<event name="rpc_completed" package="sqlserver" ti...	rpc_completed	C:\Program Files\Microsoft SQL Server\MSSQL15.MSS...	10752	2023-10-19 17:45:34.6190000

```
SELECT
      module_guid,
      event_data = CONVERT(XML, event_data),
      file_name,
      file_offset,
      timestamp_utc
INTO #RetrievedData
FROM sys.fn_xe_file_target_read_file(N'MySession*.xel', NULL, NULL, NULL);
```

```
SELECT
      ts = rd.event_data.value(N'(event/@timestamp)[1]', N'datetime'),
      batch_text = rd.event_data.value(
                                        N'(event/data[@name="batch_text"]/value)[1]',
                                        N'nvarchar(max)'
                                      ),
      statement = rd.event_data.value(
                                        N'(event/data[@name="statement"]/value)[1]',
                                        N'nvarchar(max)'
                                      ),
      spid = rd.event_data.value(
                                    N'(event/action[@name="session_id"]/value)[1]',
                                    N'int'
                                  ),
      duration = rd.event_data.value(
                                        N'(event/data[@name="duration"]/value)[1]',
                                        N'bigint'
                                      ),
      dxoc.description AS duration_description /*some might contain other duration units*/
FROM #RetrievedData AS rd
      LEFT JOIN sys.dm_xe_object_columns AS dxoc ON dxoc.name = 'duration'
                                                    AND dxoc.object_name = rd.object_name;
```

	ts	batch_text	statement	spid	duration	duration_description
1	2023-09-25 12:38:04.050	SELECT * FROM dbo.GB_RSum_Data AS grsd WAITFOR ...	NULL	51	31005278	The amount of time (in microseconds) that the bat...
2	2023-09-25 12:38:10.353	SELECT * FROM dbo.GB_RSum_Data AS grsd WHERE gr...	NULL	62	31010512	The amount of time (in microseconds) that the bat...
3	2023-09-25 12:39:21.577	SELECT SUM(grsd.RSum_ID), grsd.Var_Id FRO...	NULL	63	31007921	The amount of time (in microseconds) that the bat...
4	2023-09-25 13:30:12.683	NULL	exec sp_executesql N'SELECT type, data FROM sys....	76	9957200	The time (in microseconds) that the remote proce...
5	2023-09-25 13:31:56.423	NULL	exec sp_executesql N'SELECT type, data FROM sys....	76	66932985	The time (in microseconds) that the remote proce...
6	2023-09-25 22:52:35.310	NULL	exec sp_executesql N'SELECT type, data FROM sys....	67	37052956761	The time (in microseconds) that the remote proce...
7	2023-09-25 13:30:12.683	NULL	exec sp_executesql N'SELECT type, data FROM sys....	76	9957200	The time (in microseconds) that the remote proce...
8	2023-09-25 13:31:56.423	NULL	exec sp_executesql N'SELECT type, data FROM sys....	76	66932985	The time (in microseconds) that the remote proce...
9	2023-09-25 22:52:35.310	NULL	exec sp_executesql N'SELECT type, data FROM sys....	67	37052956761	The time (in microseconds) that the remote proce...
10	2023-09-26 06:50:49.397	NULL	exec sp_executesql N'SELECT type, data FROM sys....	56	100127685	The time (in microseconds) that the remote proce...
11	2023-09-26 07:08:48.447	NULL	exec sp_executesql N'SELECT type, data FROM sys....	56	1022221435	The time (in microseconds) that the remote proce...
12	2023-09-28 06:03:08.767	WITH txt (id, text) AS (SELECT o.id, o.text FROM (S...	NULL	64	3692932	The amount of time (in microseconds) that the bat...
13	2023-09-28 06:03:08.817	WITH txt (id, text) AS (SELECT o.id, o.text FROM (S...	NULL	67	3742235	The amount of time (in microseconds) that the bat...
14	2023-09-28 10:52:56.677	SELECT db_id() AS database_id, c.system_type...	NULL	51	5487505	The amount of time (in microseconds) that the bat...
15	2023-09-28 10:53:02.130	SELECT db_id() AS database_id, c.system_type...	NULL	51	5452264	The amount of time (in microseconds) that the bat...
16	2023-09-28 10:53:29.953	WITH CTE AS (SELECT DISTINCT i.object_id oid, ...	NULL	51	6794044	The amount of time (in microseconds) that the bat...
17	2023-09-28 10:53:36.890	WITH CTE AS (SELECT DISTINCT i.object_id oid, ...	NULL	51	6935059	The amount of time (in microseconds) that the bat...
18	2023-10-02 07:46:16.973	SELECT db_id() AS database_id, c.system_type...	NULL	52	10029260	The amount of time (in microseconds) that the bat...
19	2023-10-02 07:46:25.560	SELECT db_id() AS database_id, c.system_type...	NULL	52	8586950	The amount of time (in microseconds) that the bat...
20	2023-10-02 07:47:04.837	WITH CTE AS (SELECT DISTINCT i.object_id oid, ...	NULL	52	10001400	The amount of time (in microseconds) that the bat...
21	2023-10-02 07:47:14.853	WITH CTE AS (SELECT DISTINCT i.object_id oid, ...	NULL	52	10014423	The amount of time (in microseconds) that the bat...
22	2023-10-19 17:40:45.387	SELECT * FROM dbo.MyTable AS mt WAITFOR DELAY '00...	NULL	58	4015926	The amount of time (in microseconds) that the bat...
23	2023-10-19 17:45:34.620	NULL	exec sp_executesql N'SELECT type, data FROM sys....	52	3737950	The time (in microseconds) that the remote proce...

```sql
WITH cte
AS (SELECT ed = CONVERT(XML, target_data)
    FROM   sys.dm_xe_session_targets xet
           INNER JOIN sys.dm_xe_sessions xe ON xe.[address] = xet.event_session_address
    WHERE  xe.name = N'MySession'
           AND xet.target_name = N'ring_buffer')
SELECT event_data = x.ed.query('.')
FROM   cte
       CROSS APPLY cte.ed.nodes(N'RingBufferTarget/event') AS x(ed);
```

```sql
WITH cte
AS (SELECT ed = CONVERT(XML, target_data)
    FROM   sys.dm_xe_session_targets xet
           INNER JOIN sys.dm_xe_sessions xe ON xe.[address] = xet.event_session_address
    WHERE  xe.name = N'MySession'
           AND xet.target_name = N'ring_buffer')
SELECT event_data = x.ed.query('.')
FROM   cte
       CROSS APPLY cte.ed.nodes(N'RingBufferTarget/event') AS x(ed);
```

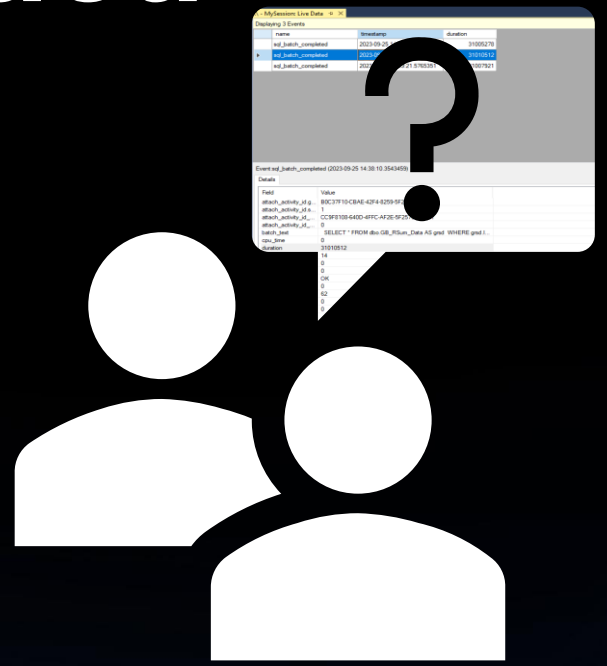
	event_data
1	<event name="sql_batch_completed" package="sqlserver" timestamp="2023-10-19T17:40:45.388Z"><data name="cpu_time"><type name="uint64" package="package0" /><value>0</value></data><data name="duration"><type name="...
2	<event name="rpc_completed" package="sqlserver" timestamp="2023-10-19T17:45:34.619Z"><data name="cpu_time"><type name="uint64" package="package0" /><value>0</value></data><data name="duration"><type name="uint64"...

Scripts

Github.com/peterkruis

An introduction to Extended Events

Any questions?



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