

Avoiding Performance Issues with Extended Events



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What This Module Covers



**The most important items to think about,
as they relate to performance, when
creating an event session**



Performance must still be
considered with Extended
Events



Performance Considerations

Specific events are *still*
expensive

Write your predicates
carefully

Adding actions adds overhead

Even with a lot of memory on
a server, you need to set limits



Expensive Events

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Event library:

performance overhead in Event names and descriptions

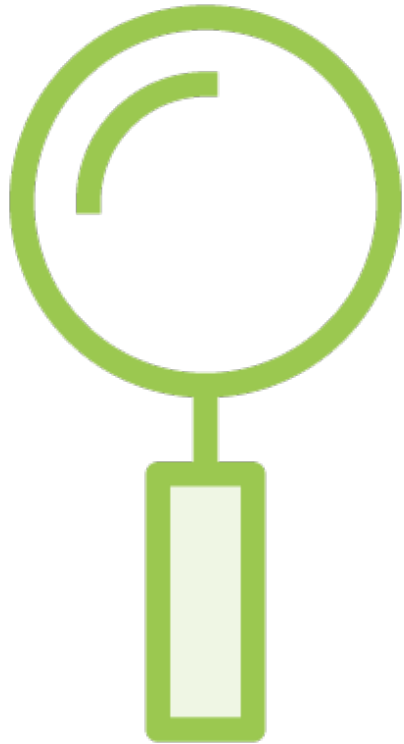
| Name | Category | Channel |
|---------------------------------|-----------|----------|
| query_post_compilation_showplan | execution | Analytic |
| query_post_execution_showplan | execution | Analytic |
| query_pre_execution_showplan | execution | Analytic |

Occurs after a SQL statement is executed. This event returns an XML representation of the actual query plan. Using this event can have a significant performance overhead so it should only be used when troubleshooting or monitoring specific problems for brief periods of time.

| Event Fields | Description |
|--------------------|---------------------------|
| nest_level | |
| object_id | The id of the object t... |
| object_name | The name of the obj... |
| object_type | The type of the obje... |
| showplan_xml | The XML representat... |
| source_database_id | The ID of the databa... |

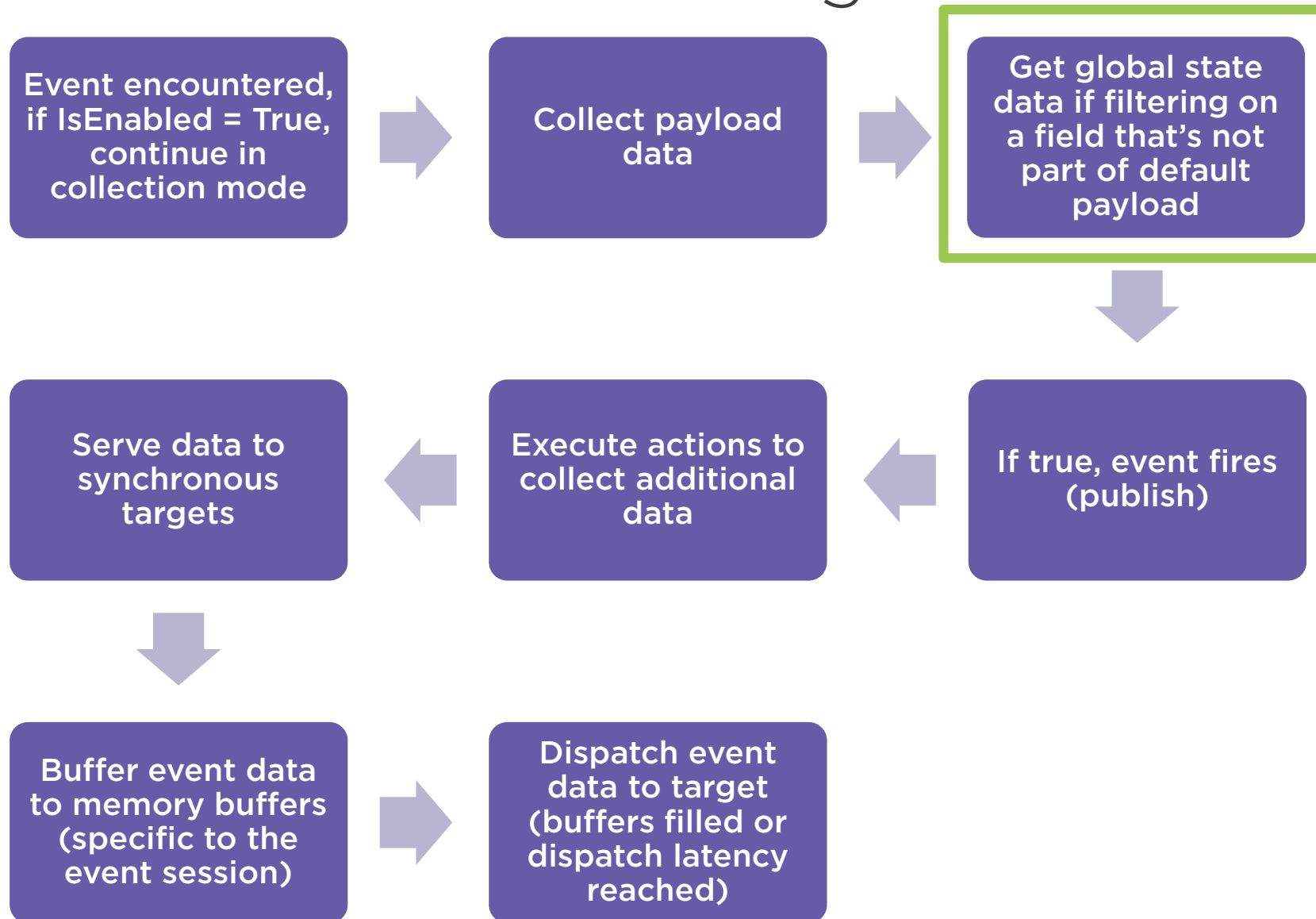


Create Good Predicates

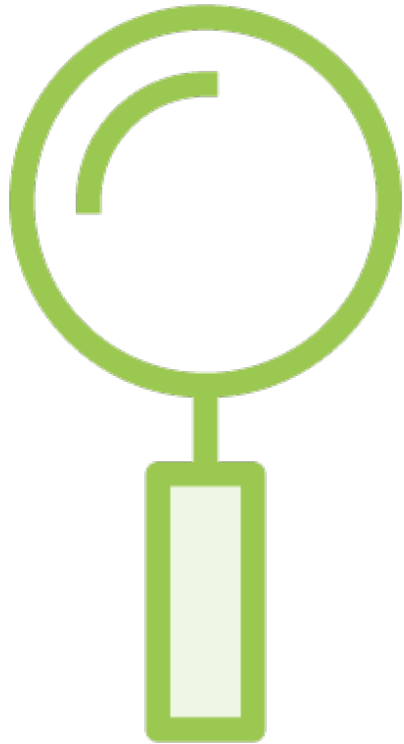


If you filter on an element that is not part of the default payload, the Engine has to first collect that information *before* it can perform predicate evaluation

Remember the Big Picture



Create Good Predicates



If you filter on an element that is not part of the default payload, the Engine has to first collect that information *before* it can perform predicate evaluation

The first false evaluation of a logical block in a predicate prevents further evaluation

(is_system = 0) AND

((duration > 30000 AND wait_type = 10)

OR

(duration > 5000 AND (wait_type = 99 OR wait_type < 30))

)



(is_system = 0) AND

((duration > 30000 AND wait_type = 10)

OR

(duration > 5000 AND (wait_type = 99 OR wait_type < 30))

)

(is_system = 0) AND

((duration > 5000 AND (wait_type = 99 OR wait_type < 30))

OR

(duration > 30000 AND wait_type = 10)

)



Overhead with Actions



Actions execute synchronously on the firing thread

Actions can cause side effects to occur when an event fires

Large actions (e.g. `sql_text`, `sql_context`) may require additional consideration for event sizing

Set Limits



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



Demo



Ignoring the Warnings



What This Module Covered



**Considerations related to performance
when creating an event session,
including:**

- Event selection
- Predicate construction
- Use of actions
- Ring_buffer target configuration

What You're Going to Grumble About



You cannot integrate PerfMon data with Extended Events data

With the histogram target you can only bucket on one field at a time

Distributed Replay requires .trc files

It's just not the same as Trace/Profiler

My Favorite Things About XE



You can create multiple sessions and start and stop them as needed

You have search capability in the list of events

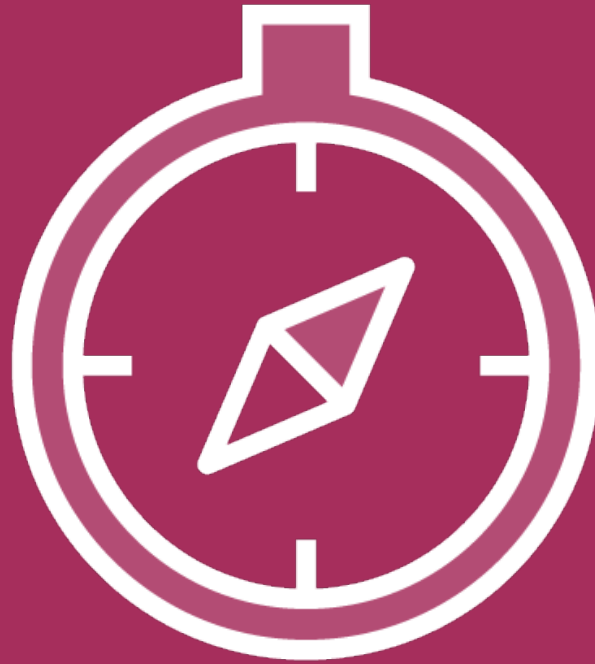
Track causality

Write to multiple targets

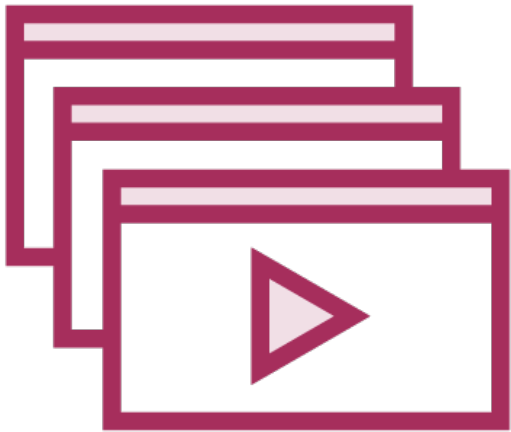
You can now work with data in the UI



Where to Go Next?



You Have Lots of Options!



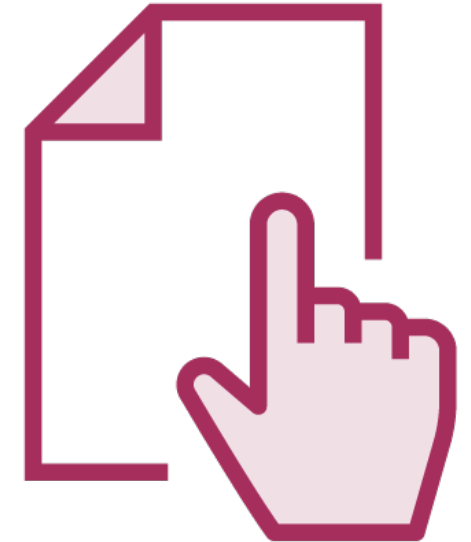
Two Pluralsight
courses by
Jonathan
Kehayias



My blog, my
Extended
Events
“Stairway” on
SQL Server
Central,
Jonathan’s blog



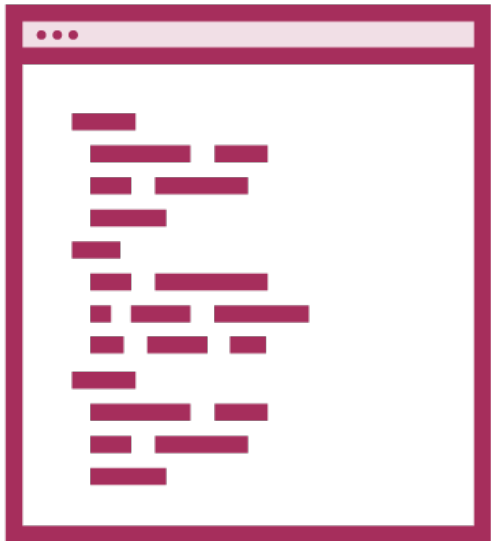
Take scripts from
this course and
try Extended
Events



Next time you
have an issue,
spend 15 minutes
trying Extended
Events first!



Course Summary



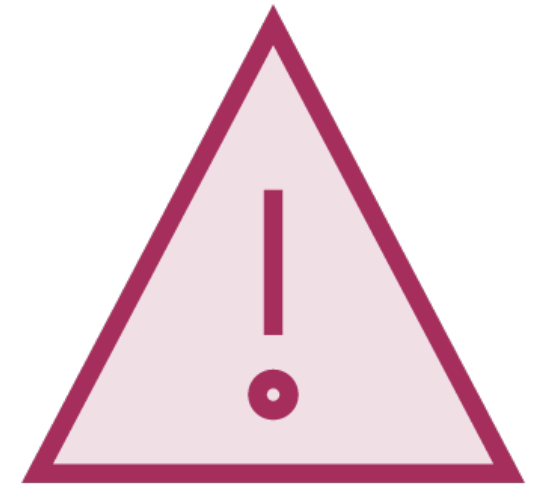
Use Jonathan's stored procedure to migrate existing traces you run frequently



Take advantage of the UI for initial session creation, and for analysis



Different targets exist for a variety of troubleshooting options



Performance is still a consideration, be thoughtful when creating sessions

