

SQL Server: Introduction to Extended Events

Module 7: Event Session Management

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Introduction

- **Programmatic creation of event sessions can be accomplished using DDL for Extended Events**
 - May make fine tuning predicate definitions easier for complex predicates
 - Can be used to deploy an event session to multiple servers using a central management server
- **Event sessions have specific requirements for being created and modified**
- **In this module we'll cover:**
 - Management DDL
 - Working with event sessions
 - Session catalog views
 - Active session DMVs

Management DDL

■ CREATE EVENT SESSION

- Creates a new event session based on the events, actions, predicates, targets, and session options provided
- All event sessions are created in a stopped state

■ ALTER EVENT SESSION

- Add or remove events and targets from an event session
- Change session configuration options for a stopped event session
- Alter the state of an event session to start or stop

■ DROP EVENT SESSION

- Removes an event session from the system entirely
- Memory-resident targets are not available after an event session is dropped

Creating an Event Session

```
CREATE EVENT SESSION [statement_exceeds_duration]
ON SERVER
ADD EVENT [sqlserver].[sql_statement_completed]
( ACTION ( [sqlserver].[tsql_stack], [sqlserver].[query_hash],
           [sqlserver].[query_plan_hash], [sqlserver].[plan_handle] )
WHERE ( [duration] > 5000000
        AND [sqlserver].[is_system] = 0))
ADD TARGET [package0].[ring_buffer]
(SET MAX_MEMORY = 1024)
WITH (STARTUP_STATE = ON);
```

Modifying an Event Session

```
ALTER EVENT SESSION [statement_exceeds_duration]  
ON SERVER  
STATE=START | STOP;
```

```
ALTER EVENT SESSION [statement_exceeds_duration]  
ON SERVER  
ADD EVENT [sqlserver].[sql_statement_starting]  
ADD TARGET [package0].[event_file]  
( SET filename = N'C:\Pluralsight\long_duration_statements.xel');
```

Event Session Management

- **Event sessions must be explicitly started after creation**
- **Active event sessions can be modified with immediate effect (except for session options)**
- **Started event sessions can be dropped without being stopped**
- **Changing the configuration of an event/target requires that the event/target be dropped and added back to the event session with the new configuration**
- **Dropping all events from an active session can stop event data collection to allow for data analysis when using in-memory targets**

Session Definition Catalog Views

- **sys.server_event_sessions**
 - Contains the name and session options for each event session that exist inside of the Extended Events Engine
- **sys.server_event_session_events**
 - Contains information about the events and predicates that are part of an event session
- **sys.server_event_session_actions**
 - Contains one row for each action for each event in an event session
- **sys.server_event_session_targets**
 - Contains one row for each of the configured targets that are defined for an event session
- **sys.server_event_session_fields**
 - Contains one row for each of the configured options for each target defined for an event session

Active Session DMVs

- **sys.dm_xe_sessions**
 - Contains the event session name, memory buffer configuration, event loss information, and date/time the event session was started for each active event session (STATE=START) in the SQL Server Instance
- **sys.dm_xe_session_events**
 - Contains information about each of the events and the event predicates for events defined in an active event session
- **sys.dm_xe_session_event_actions**
 - Contains one row for each action that is defined on an event in an active event session

Active Session DMVs (2)

- **sys.dm_xe_session_targets**
 - Contains the name, type of target, execution statistics, and an XML column for each target that exists for an active event session
 - The data for memory-resident targets is in the xml column, and for persisted targets this will contain execution statistics
- **sys.dm_xe_session_object_columns**
 - Contains information about the configuration options of each of the targets, as well as information about the customizable columns for events in the event session

Summary

- Using DDL to manage Extended Events can simplify deploying sessions to multiple servers and tweaking session configuration manually
- Changing the definition of an event or target requires dropping the event and adding it back to an event session
- Session options can only be changed for a stopped event session
- Event session definitions are maintained in the session catalog views in the instance and active event sessions can be tracked in the active session DMVs
- The next module will look at:
 - Basic targets