

SQL Server: Troubleshooting Query Plan Quality Issues

Module 3: Identifying Query Plan Quality Issues

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Module Introduction

- **Once you've captured a query execution plan, how can you tell if you have potential query plan quality issues?**
- **This module will cover the main methods for identifying cardinality estimate issues**
- **We'll also cover additional information that is now provided in SQL Server 2012 that can further assist with problem identification**

Estimated Query Execution Plan

- **Estimated plan**

- Plan represents how the statements would be executed
- Without actual rows, we don't know if there is a cardinality estimate issue
- Pulling plan from cache shows estimated not actual!

Actual Query Execution Plan

- **Actual plan**

- Includes estimated AND actual number of rows by operator and executions by operators
- This comparison is critical for identifying cardinality estimate issues which may impact query plan quality

Capturing an Actual Plan

- **SET STATISTICS XML**
- **SET STATISTICS PROFILE (deprecated, but still available)**
- **Graphical Showplan**
 - “Include Actual Execution Plan”
 - Parsed and executed
 - Estimated vs. Actual rows?
 - F4 properties for each operator
 - Or the ToolTips

SQL Sentry Plan Explorer

- Free tool
- Compact plan representation
- Efficient cardinality estimate issue identification
 - Plan Tree tab

Operation	Object	Est Cost	Est Subtree Cost	Actual Rows	Est Rows
[-] SELECT		100.0%	100.0%	15,554	1
[-] Nested Loops (Inner Join)		0.0%	100.0%	15,554	1
Table Scan	[Credit].[dbo].[payment].(Heap)	25.1%	33.4%	15,554	1
Clustered Index Seek	[Credit].[dbo].[member].[member_iden...]	74.9%	99.5%	15,554	3

SQL Server 2012 Supplemental Info

- New “inaccurate_cardinality_estimate” event (beware overhead)

```
CREATE EVENT SESSION [CE] ON SERVER
ADD EVENT sqlserver.inaccurate_cardinality_estimate
WITH
    (MAX_MEMORY=4096 KB,
    EVENT_RETENTION_MODE=ALLOW_SINGLE_EVENT_LOSS,
    MAX_DISPATCH_LATENCY=30 SECONDS,
    MAX_EVENT_SIZE=0 KB,
    MEMORY_PARTITION_MODE=NONE,
    TRACK_CAUSALITY=OFF,
    STARTUP_STATE=OFF);
GO
```

- ConvertIssue plan attribute
- Additional row count statistics in sys.dm_exec_query_stats