

Performance Troubleshooting Made Easier

New Features in Management Studio

Taib Ali

Work

- 11 years as DBA
- MCSE Data Management and Analytics
- 10 years in Merchant Marine

Outside Work

- Running—One 26.2 and Many 13.1
- Shuttling 3 kids

Giving Back

- Co-organizer NESQL User Group
- Frequent speaker local user groups, SQL Saturdays & Virtual groups
- Answering questions at #sqlhelp & dba.stackexchange
- Blog at sqlworldwide.com

Agenda



SSMS Release Cycle



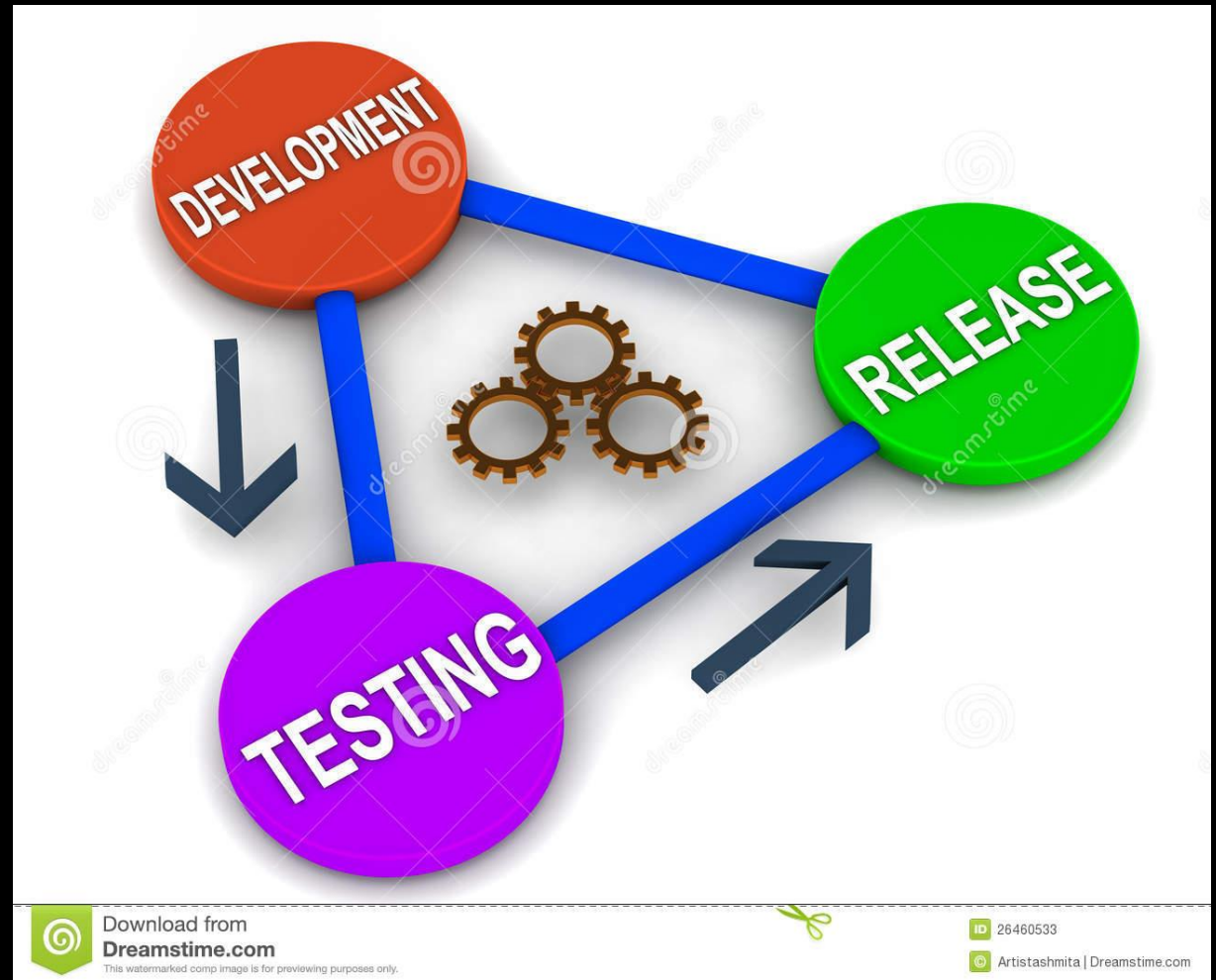
Demo



Additional Slides

SSMS Release Cycle

- Standalone product
- No license
- Release cycle-
about 2 months
- Keep multiple
version side by side



Feature	Earliest SQL Version	New SSMS Required
Data Discovery & Classification	SQL2008	YES
SQL Server Performance Dashboard	SQL2012	YES
Active Expensive Queries	SQL2012	YES
SSMS XEvent Profiler	SQL2012	YES
Vulnerability Assessment	SQL2008	YES
EstimateRowsWithoutRowGoal	SQL2016 SP2	YES
QueryTimeStats	SQL2012 SP4	YES
WaitStats	SQL2012 SP4	YES
Trace Flag	SQL2012 SP4	YES
Actual I/O Statistics	SQL2016 RC0, SQL2014SP2	YES
Actual Time Statistics	SQL2016 RC0, SQL2014SP2	YES
Actual Number of Rows Read	SQL2016	YES
Estimated Number of Rows Read	SQL2016 SP1	YES

Feature	Earliest SQL Version	New SSMS Required
CXCONSUMER Wait Type	SQL2017 CU3, SQL2016 SP2	NO
New Set of Icons		YES
Compare Showplan Improvement		YES
Single Plan Analysis	SQL2008	YES
Spill Information	SQL2012 SP3	NO
MaxQueryMemory under MemoryGrantInfo	SQL2016 SP1, SQL2014 SP2	YES
MaxCompileMemory under OptimizerHardwareDependentProperties	SQL2016 SP1, SQL2014 SP2	YES
Statistics Used	SQL2016 SP2	YES
Query_thread_profile	SQL2014 SP2, SQL2016	NO
Search Graphical Showplan	SQL2008	YES
AUTOGROW_ALL_FILES via GUI	SQL 2016	YES



Resource

- [SQL Server Management Studio - Changelog \(SSMS\)](#)
- [SQL Client Tools update for SQL Server 2016](#)
- [All articles with Showplan tag](#)
- [Extended Events Profiler \(XE Profiler\) in SSMS by Dennes Torres](#)
- [SQL Vulnerability Assessment](#)
- [New in SSMS – Always On Availability Group Latency Reports by Sourabh Agarwal](#)
- [2017 Schema](#)



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Additional Slide



southfloridabounce.com

7/27/2018

www.sqlworldwide.com

@sqlworldwide

Data Discovery and Classification

Discover

Classify

Label

Report

SQL Data Classification Report



Server name: TAALI2-BOS-VSQL2017

Report generated on: 3/3/2018 4:17:02 PM

Database name: AdventureWorks

Classified columns

40 / 514

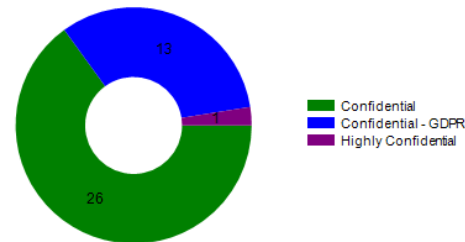
Tables containing sensitive data

19 / 73

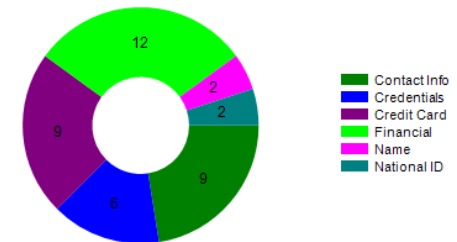
Unique information types

6

Label distribution



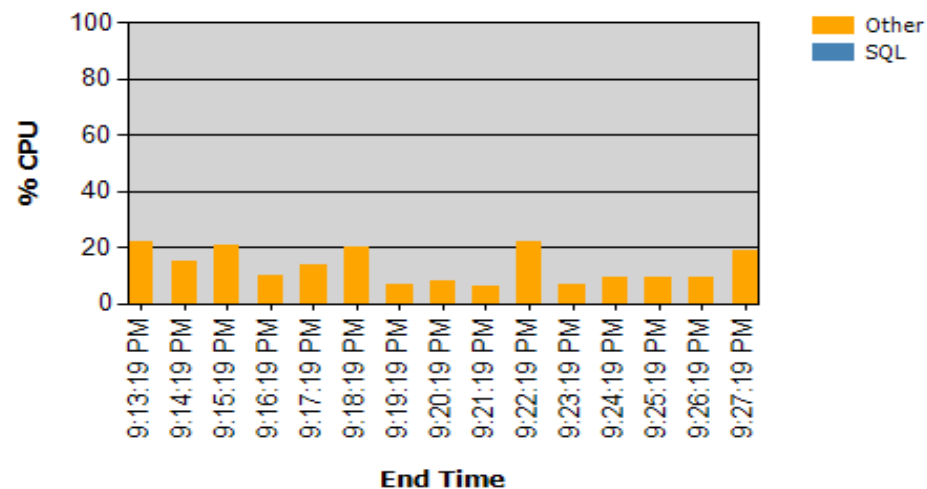
Information Type distribution



Schema	Table	Column	Information Type	Sensitivity Label
dbo	ErrorLog	UserName	Credentials	Confidential
HumanResources	Employee	NationalIDNumber	National ID	Confidential - GDPR
Person	Password	PasswordHash	Credentials	Confidential
Production	ProductReview	EmailAddress	Contact Info	Confidential - GDPR
Purchasing	Vendor	AccountNumber	Credentials	Confidential
Sales	SalesTaxRate	SalesTaxRateID	National ID	Confidential - GDPR

Performance Dashboard

System CPU Utilization



Current Waiting Requests

There are currently no user requests waiting for a resource.

Current Activity

	User Requests	User Sessions
Count	1	13
Elapsed Time (ms)	12	133219
CPU Time (ms)	12(100.00%)	143577(107.78%)
Wait Time (ms)	0(0.00%)	0(0.00%)
Cache Hit Ratio	100.000%	99.946%

Historical Information

[Waits](#)

[IO Statistics](#)

[Latches](#)

Expensive Queries

[By CPU](#)

[By Duration](#)

[By Logical Reads](#)

[By Physical Reads](#)

[By Logical Writes](#)

[By CLR Time](#)

Miscellaneous Information

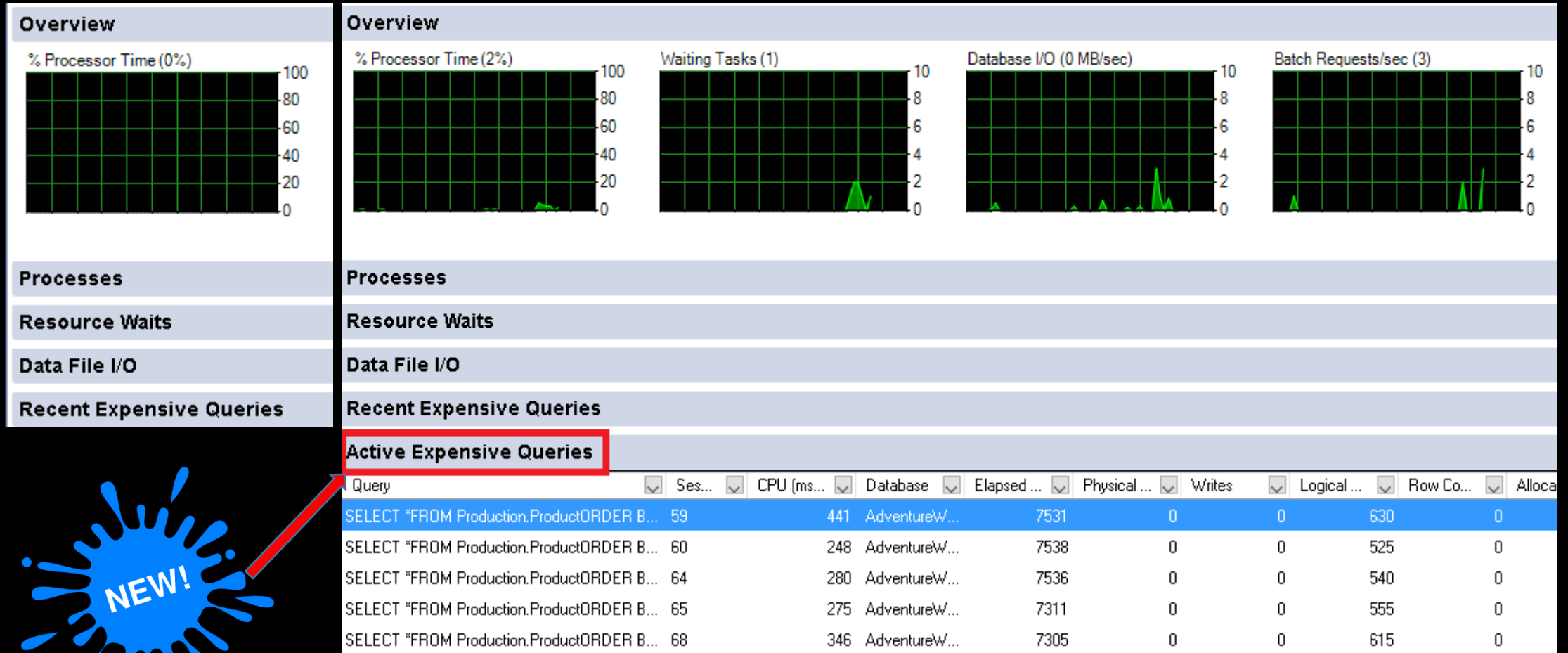
[Active Traces](#)

1

[Active Xevent Sessions](#)

4

Active Expensive Queries



Vulnerability Assessment

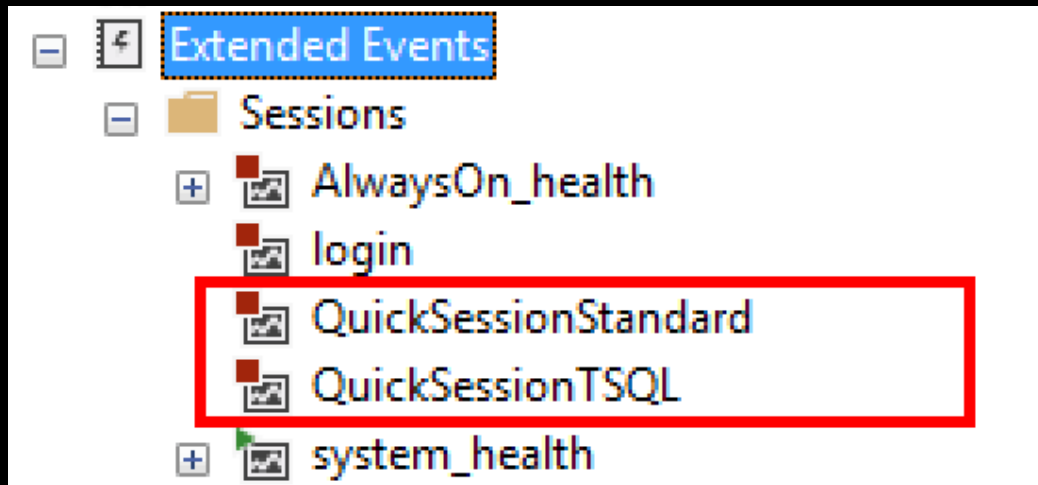
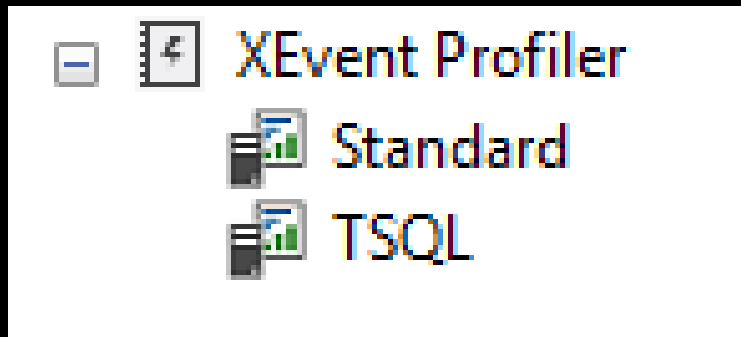
- SQL 2012+, Azure SQL Database
- Check against knowledge base rules
- Requirements from various regulatory bodies



<http://www.sacelitepatrol.com/wp-content/uploads/2014/08/Security-Vulnerability.png>

XEvent Profiler

www.red-gate.com/simple-talk/sql/database-administration/extended-events-xe-profiler-ssms



Standard	TSQL
Attention	
existing_connection	existing_connection
login	login
logout	logout
rpc_completed	rpc_starting
sql_batch_completed	
sql_batch_starting	sql_batch_starting

CPU and Elapsed Time

Total CPU and Elapsed Time

QueryTimeStats	
CpuTime	2824
ElapsedTime	8973


Sort
Cost: 46 %

Per Operator (Only for Sort operation)

Actual Time Statistics	
Actual Elapsed CPU Time (ms)	549
Actual Elapsed Time (ms)	438

Why Elapsed time is 3x of Cpu time?

Row Goal

Exposed in XML 2017 CU3

Showplan SSMS 17.5

Hint `DISABLE_OPTIMIZER_ROWGOAL`

Properties	
Clustered Index Scan (Clustered)	
Misc	
Actual Execution Mode	Row
Actual I/O Statistics	
Actual Number of Batches	0
Actual Number of Rows	2
Actual Rebinds	0
Actual Rewinds	0
Actual Time Statistics	
Defined Values	[AdventureWorks].[S
Description	Scanning a clustered
Estimated CPU Cost	0.0347685
Estimated Execution Mode	Row
Estimated I/O Cost	0.509792
Estimated Number of Executions	1
Estimated Number of Rows	3.3717
Estimated Number of Rows to be Read	31465
Estimated Operator Cost	0.003392 (19%)
Estimated Rebinds	0
Estimated Rewinds	0
Estimated Row Size	305 B
Estimated Subtree Cost	0.003392
EstimateRowsWithoutRowGoal	14476.9
Forced Index	False

Top 10 Waits

Total CPU and Elapsed Time

QueryTimeStats

CpuTime	2824
ElapsedTime	8973

Why Elapsed
time is 3x of
Cpu time?

WaitStats	
[1]	
WaitCount	17
WaitTimeMs	8
WaitType	SOS_SCHEDULER_YIELD
[2]	
WaitCount	52
WaitTimeMs	13
WaitType	IO_COMPLETION
[3]	
WaitCount	5986
WaitTimeMs	6560
WaitType	ASYNC_NETWORK_IO
[4]	
WaitCount	5461
WaitTimeMs	15909
WaitType	CXPACKET

Top 10 Waits

- sys.dm_exec_session_wait_stats

	session_id	wait_type	waiting_tasks_count	wait_time_ms	max_wait_time_ms	signal_wait_time_ms
1	56	CXPACKET	5327	17882	3249	1462
2	56	ASYNC_NETWORK_IO	5751	6932	222	155
3	56	SLEEP_TASK	6268	338	33	336
4	56	SOS_SCHEDULER_YIELD	35	213	169	213
5	56	CXCONSUMER	40	82	23	66
6	56	IO_COMPLETION	25	8	1	0
7	56	PAGELATCH_UP	1	0	0	0
8	56	MEMORY_ALLOCATION_EXT	87	0	0	0
9	56	RESERVED_MEMORY_ALLOCATION_EXT	24	0	0	0

Insights Per Node

Properties	
Index Seek (NonClustered)	
[-] Misc	
Actual Execution Mode	Row
[-] Actual I/O Statistics	
Actual Lob Logical Reads	0
Actual Lob Physical Reads	0
Actual Lob Read Aheads	0
Actual Logical Reads	56723
Actual Physical Reads	0
Actual Read Aheads	0
Actual Scans	7334
Actual Number of Batches	0
Actual Number of Rows	4743807
Actual Repinds	0
Actual Rewinds	0
[-] Actual Time Statistics	
Actual Elapsed CPL Time (ms)	1112
Actual Elapsed Time (ms)	783

IO Statistics

Per thread insight

Time Statistics

Properties	
Index Seek (NonClustered)	
[-] Misc	
Actual Execution Mode	Row
[-] Actual I/O Statistics	
Actual Lob Logical Reads	0
Thread 0	0
Thread 1	0
Thread 2	0
Actual Lob Physical Reads	0
Actual Lob Read Aheads	0
Actual Logical Reads	18995154
Thread 0	0
Thread 1	9681308
Thread 2	9313846
Actual Physical Reads	0
Actual Read Aheads	0
Actual Scans	4743807
Thread 0	0
Thread 1	2417796
Thread 2	2326011

Trace Flag

TraceFlags	
IsCompileTime	True
TraceFlag	
[1]	
Scope	Session
Value	9481
[2]	
Scope	Session
Value	1236

Scope

- Query
- Session
- Global

Active during
compilation &
influenced compilation

Active during
compilation

Actually influence
compilation

TraceFlags	
[1]	
IsCompileTime	True
TraceFlag	
[1]	
Scope	Global
Value	2371
[2]	
Scope	Global
Value	7412
[3]	
Scope	Session
Value	9481
[2]	
IsCompileTime	False
TraceFlag	
[1]	
Scope	Global
Value	2371
[2]	
Scope	Global
Value	7412

<https://msdnshared.blob.core.windows.net/media/2017/11/image122.png>

Rows Read

Clustered Index Scan (Clustered)	
Scanning a clustered index, entirely or only a range.	
Physical Operation	Clustered Index Scan
Logical Operation	Clustered Index Scan
Actual Execution Mode	Row
Estimated Execution Mode	Row
Storage	RowStore
Actual Number of Rows	100000
Actual Number of Batches	0
Estimated I/O Cost	5.2972
Estimated Operator Cost	5.40736 (41%)
Estimated CPU Cost	0.110157
Estimated Subtree Cost	5.40736
Number of Executions	1
Estimated Number of Executions	1
Estimated Number of Rows	100000
Estimated Row Size	511 B
Actual Rebinds	0
Actual Rewinds	0
Ordered	False
Node ID	1

SQL2014

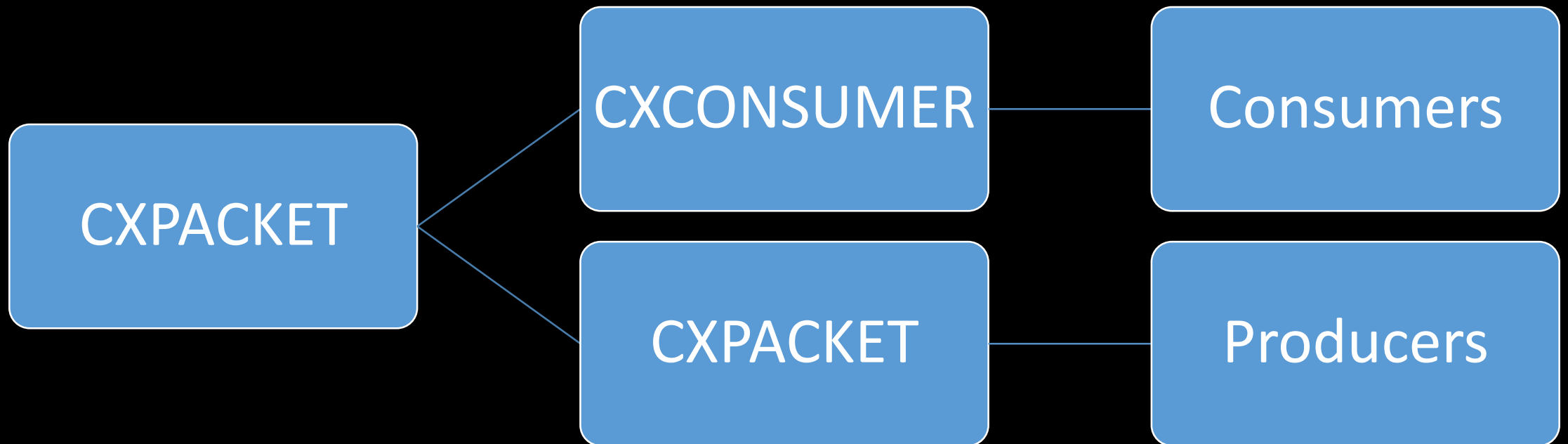
Clustered Index Scan (Clustered)	
Scanning a clustered index, entirely or only a range.	
Physical Operation	Clustered Index Scan
Logical Operation	Clustered Index Scan
Actual Execution Mode	Row
Estimated Execution Mode	Row
Storage	RowStore
Number of Rows Read	100000
Actual Number of Rows	100000
Actual Number of Batches	0
Estimated I/O Cost	4.94312
Estimated Operator Cost	5.05328 (40%)
Estimated Subtree Cost	5.05328
Estimated CPU Cost	0.110157
Number of Executions	1
Estimated Number of Executions	1
Estimated Number of Rows	100000
Estimated Row Size	511 B
Actual Rebinds	0
Actual Rewinds	0
Ordered	False
Node ID	1

SQL2016

Clustered Index Scan (Clustered)	
Scanning a clustered index, entirely or only a range.	
Physical Operation	Clustered Index Scan
Logical Operation	Clustered Index Scan
Actual Execution Mode	Row
Estimated Execution Mode	Row
Storage	RowStore
Number of Rows Read	100000
Actual Number of Rows	100000
Actual Number of Batches	0
Estimated Operator Cost	5.0555 (40%)
Estimated I/O Cost	4.94535
Estimated CPU Cost	0.110157
Estimated Subtree Cost	5.0555
Number of Executions	1
Estimated Number of Executions	1
Estimated Number of Rows to be Read	100000
Estimated Number of Rows	100000
Estimated Row Size	511 B
Actual Rebinds	0
Actual Rewinds	0
Ordered	False
Node ID	1

SQL2016 SP1

“infamous” CXPACKET



Compare Showplan Improvement

Execution plan

SELECT * FROM Sales.SalesOrderHeader AS h INNER JOIN Sales.SalesOrderDetail A

SELECT Cost:...

Merge... (Inner... Cost:...

Compute S... Cost: 1 %

Compute S... Cost: 0 %

Clustered Index Scan [SalesOrderHeader].[PK... Cost: 29 %

Compute S... Cost: 1 %

Clustered Index Scan [SalesOrderDetail].[PK... Cost: 55 %

C:\Users\TaAli\Desktop\firstplan.sqlplan

SELECT * FROM Sales.SalesOrderHeader AS h INNER JOIN Sales.SalesOrderDetail A

SELECT Cost:...

Merge... (Inner... Cost:...

Compute S... Cost: 1 %

Compute S... Cost: 0 %

Clustered Index Scan [SalesOrderHeader].[PK... Cost: 29 %

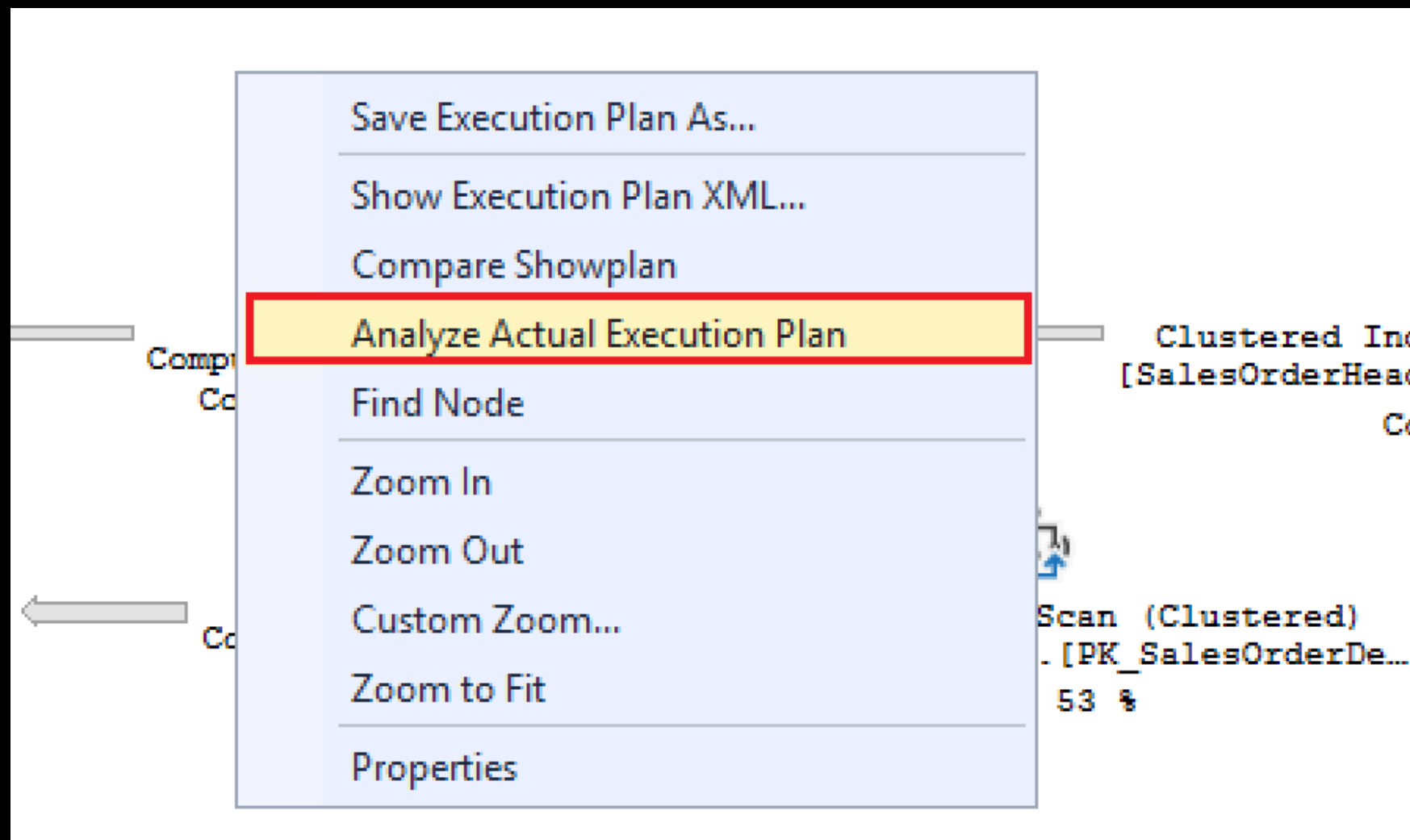
Compute S... Cost: 1 %

Clustered Index Scan [SalesOrderDetail].[PK... Cost: 55 %

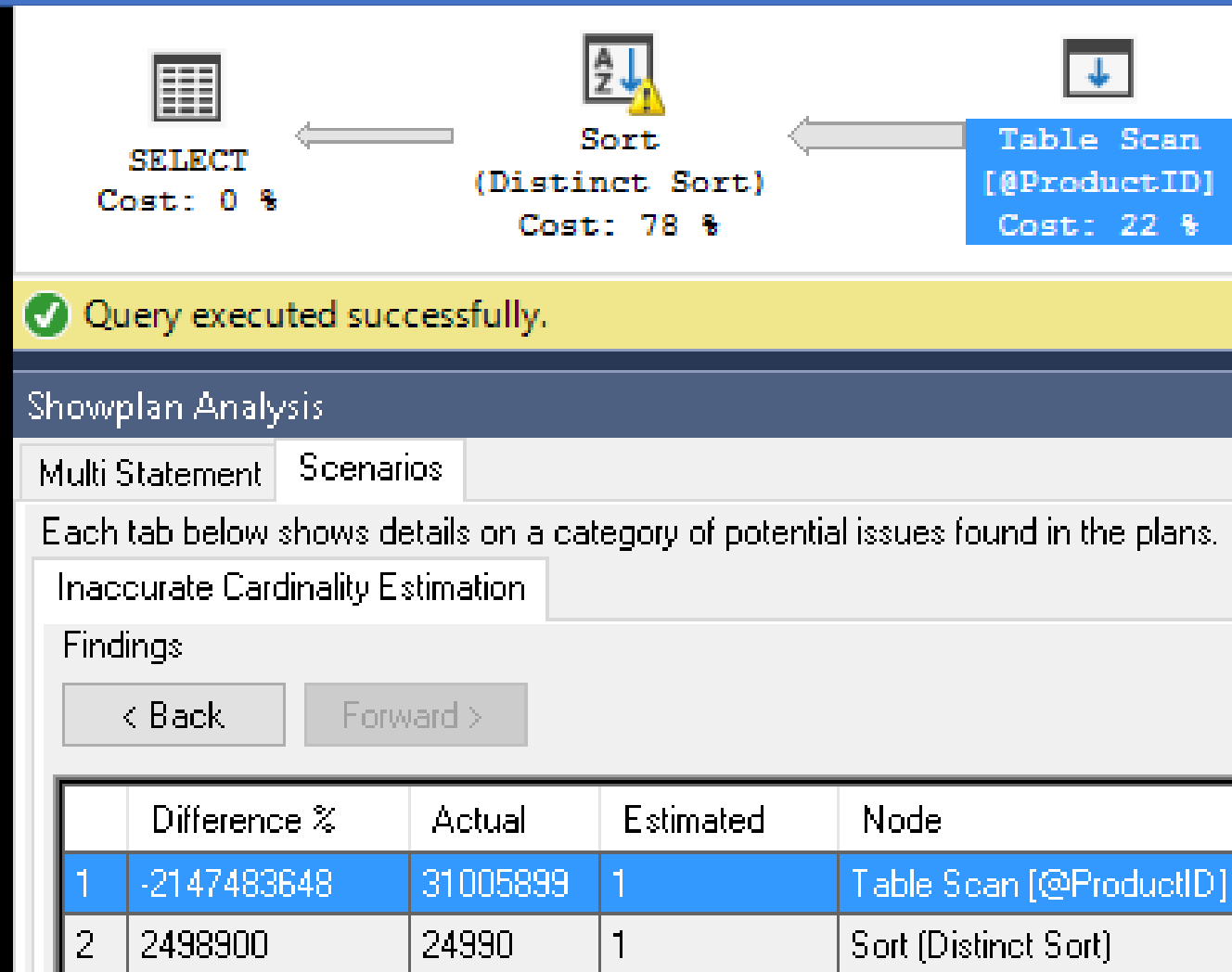
Top Plan	
Merge Join	
Actual Execution Mod	Row
> Actual I/O Statistics	
> Actual Number of Bat	0
> Actual Number of Row	113035
> Actual Rebinds	0
> Actual Rewinds	0
> Actual Time Statistics	
Description	Match rows from two suitably sorted
Estimated CPU Cost	0.261664
Estimated Execution M	Row
Estimated I/O Cost	0
Estimated Number of I	1
Estimated Number of I	2014.56
Estimated Operator Co	0.261668 (14%)
Estimated Rebinds	0
Estimated Rewinds	0
Estimated Row Size	444 B
Estimated Subtree Co	1.90256
Logical Operation	Inner Join
Many to Many	False
Node ID	0
Number of Executions	1
> Output List	[AdventureWorks].[Sales].[SalesOrd
Parallel	False
Physical Operation	Merge Join

Bottom Plan	
Merge Join	
Actual Execution	Row
> Actual I/O Statisti	
> Actual Number of	0
> Actual Number of	1173
> Actual Rebinds	0
> Actual Rewinds	0
> Actual Time Statis	
Description	Match rows from two suitably sort
Estimated CPU Co	0.261664
Estimated Executi	Row
Estimated I/O Cos	0
Estimated Number	1
Estimated Number	2014.56
Estimated Operatc	0.261668 (14%)
Estimated Rebind	0
Estimated Rewind	0
Estimated Row Si	444 B
Estimated Subtree	1.90256
Logical Operation	Inner Join
Many to Many	False
Node ID	0
Number of Execut	1
> Output List	[AdventureWorks].[Sales].[Sales
Parallel	False
Physical Operation	Merge Join

Single Plan Analysis



Single Plan Analysis



Single Plan Analysis

Finding Details

[Click here for more information about this scenario](#)

- 1) The predicate for this operator depends on parameter @StartOrderdate. The compile-time value was unknown or different from the runtime value, so the estimate may not be accurate for the run-time value. Refer to [here](#) for more details.
- 2) One of the common reasons for estimation differences is the use of different statistics. Check if statistics for table [SalesOrderHeader] are different or stale. Refer to [here](#) for more information.

Hyperlink to get more information

Hash Spill Warning

Hash Match

Use each row from the top input to build a hash table, and each row from the bottom input to probe into the hash table, outputting all matching rows.

Physical Operation	Hash Match
Logical Operation	Inner Join
Actual Execution Mode	Row
Estimated Execution Mode	Row
Actual Number of Rows	19620
Actual Number of Batches	0
Estimated I/O Cost	0
Estimated Operator Cost	0.1200468 (20%)
Estimated Subtree Cost	0.591696
Estimated CPU Cost	0.11053
Estimated Number of Executions	1
Number of Executions	1
Estimated Number of Rows	200
Estimated Row Size	11 B
Actual Rebinds	0
Actual Rewinds	0
Node ID	0

Output List

[AdventureWorks].[Sales].[Customer].CustomerID

Warnings

Operator used tempdb to spill data during execution with spill level 1

Hash Match

Use each row from the top input to build a hash table, and each row from the bottom input to probe into the hash table, outputting all matching rows.

Physical Operation	Hash Match
Logical Operation	Inner Join
Actual Execution Mode	Row
Estimated Execution Mode	Row
Actual Number of Rows	19620
Actual Number of Batches	0
Estimated Operator Cost	0.1200468 (20%)
Estimated I/O Cost	0
Estimated CPU Cost	0.11053
Estimated Subtree Cost	0.591696
Number of Executions	1
Estimated Number of Executions	1
Estimated Number of Rows	200
Estimated Row Size	11 B
Actual Rebinds	0
Actual Rewinds	0
Node ID	0

Output List

[AdventureWorks].[Sales].[Customer].CustomerID

Warnings

Operator used tempdb to spill data during execution with spill level 1 and 1 spilled thread(s), Hash wrote 32 pages to and read 32 pages from tempdb with granted memory 1152KB and used memory 992KB

TempDB Spill Warning

Sort	
Sort the input.	
	Sort
Physical Operation	Sort
Logical Operation	Distinct Sort
Actual Execution Mode	Row
Estimated Execution Mode	Row
Actual Number of Rows	24990
Actual Number of Batches	0
Estimated Operator Cost	0.0113618 (78%)
Estimated I/O Cost	0.0112613
Estimated CPU Cost	0.0001
Estimated Subtree Cost	0.0146449
Number of Executions	1
Estimated Number of Executions	1
Estimated Number of Rows	1
Estimated Row Size	11 B
Actual Rebinds	1
Actual Rewinds	0
Node ID	0
Output List	
ProductID	
Warnings	
Operator used tempdb to spill data during execution with spill level 2	
Order By	
ProductID Ascending	

Sort	
Sort the input.	
	Sort
Physical Operation	Sort
Logical Operation	Distinct Sort
Actual Execution Mode	Row
Estimated Execution Mode	Row
Actual Number of Rows	24990
Actual Number of Batches	0
Estimated Operator Cost	0.0113618 (78%)
Estimated I/O Cost	0.0112613
Estimated CPU Cost	0.0001
Estimated Subtree Cost	0.0146449
Number of Executions	1
Estimated Number of Executions	1
Estimated Number of Rows	1
Estimated Row Size	11 B
Actual Rebinds	1
Actual Rewinds	0
Node ID	0
Output List	
ProductID	
Warnings	
Operator used tempdb to spill data during execution with spill level 2 and 1 spilled thread(s), Sort wrote 2451 pages to and read 2451 pages from tempdb with granted memory 1024KB and used memory 1024KB	
Order By	
ProductID Ascending	

Memory Grants

Cached plan size	168 KB
CardinalityEstimationModelVersion	70
CompileCPU	13
CompileMemory	904
CompileTime	36
Degree of Parallelism	2
Estimated Number of Rows	97447.5
Estimated Operator Cost	0 (0%)
Estimated Subtree Cost	8.59169
Memory Grant	48592
MemoryGrantInfo	
DesiredMemory	48592
GrantedMemory	48592
GrantWaitTime	0
MaxQueryMemory	416496
MaxUsedMemory	44960
RequestedMemory	48592
RequiredMemory	3424
SerialDesiredMemory	46704
SerialRequiredMemory	1536
MissingIndexes	
Optimization Level	FULL
OptimizerHardwareDependentProperties	
EstimatedAvailableDegreeOfParallelism	2
EstimatedAvailableMemoryGrant	209715
EstimatedPagesCached	14416
MaxCompileMemory	1509600

Per Thread

Total Memory Grant

Per Node

Memory Usage	
Input Memory	22648
Thread 0	0
Thread 1	22648
Thread 2	22648
Output Memory	22712
Thread 0	0
Thread 1	22712
Thread 2	22712
Used Memory	43408
Thread 0	0
Thread 1	20760
Thread 2	22648
Node ID	2

Memory Grants

Sort	Sort
Cost: 43	
Sort the input.	
Physical Operation	Sort
Logical Operation	Sort
Actual Execution Mode	Row
Estimated Execution Mode	Row
Actual Number of Rows	121307
Actual Number of Batches	0
Estimated Operator Cost	3.71196 (43%)
Estimated I/O Cost	0.0056306
Estimated CPU Cost	3.70632
Estimated Subtree Cost	6.08181
Number of Executions	2
Estimated Number of Executions	1
Estimated Number of Rows	97447.5
Estimated Row Size	332 B
Actual Rebinds	2
Actual Rewinds	0
Node ID	2
Warnings	
Operator used tempdb to spill data during execution with spill level 1 and 2 spilled thread(s). Sort wrote 4420 pages to and read 4420 pages from tempdb with granted memory 45296KB and used memory 43408KB	

Enough
information to
fix spill

Memory Usage	
Input Memory	22648
Thread 0	0
Thread 1	22648
Thread 2	22648
Output Memory	22712
Thread 0	0
Thread 1	22712
Thread 2	22712
Used Memory	43408
Thread 0	0
Thread 1	20760
Thread 2	22648
Node ID	2

Statistics

OptimizerStatsUsage	
Database	[AdventureWorks]
LastUpdate	1/30/2018 3:05 PM
ModificationCount	19873
SamplingPercent	100
Schema	[dbo]
Statistics	[IX_CustomersStatus]
Table	[CustomersStatus]
QueryHash	0xD0BF2E09A820AC00
QueryPlanHash	0x1E2598A7DC0137BD

Update
Statistics

OptimizerStatsUsage	
Database	[AdventureWorks]
LastUpdate	1/30/2018 3:14 PM
ModificationCount	0
SamplingPercent	100
Schema	[dbo]
Statistics	[IX_CustomersStatus]
Table	[CustomersStatus]
QueryHash	0xD0BF2E09A820AC00
QueryPlanHash	0x1E2598A7DC0137BD

- Statistics being used
- Sampling percent
- Modification count
- Actionable insight

Searching in Showplan

Search criteria: **NodeId** Contains **3**

Search results (left):

- Hash Match (Right Anti Semi Join) Cost: 0 %

Search results (right):

- Index Seek (NonClustered Index on [...]) Cost: 0 %

Searchable properties (center):

- NodeId
- NoExpandHint
- NUMERIC_ROUNDABORT
- Operation
- Optimized
- Ordered
- Output
- OutputMemoryGrant
- Parallel
- ParameterDataType
- ParameterRuntimeValue
- PartitioningType
- PhysicalOp
- QueryHash
- QueryPlanHash
- QUOTED_IDENTIFIER
- RequestedMemory
- RequiredMemory
- ReservedThreads
- RetrievedFromCache

Residual Predicate

Index Seek (NonClustered)

Scan a particular range of rows from a nonclustered index.

Physical Operation	Index Seek
Logical Operation	Index Seek
Actual Execution Mode	Row
Estimated Execution Mode	Row
Storage	RowStore
Actual Number of Rows	32
Actual Number of Batches	0

Predicate

[AdventureWorks2012].[Production].
[TransactionHistory].[Quantity]>(10)

Object

[AdventureWorks2012].[Production].
[TransactionHistory].
[NCI_TransactionHistory_ProductID_included]

Output List

[AdventureWorks2012].[Production].
[TransactionHistory].ProductID, [AdventureWorks2012].
[Production].[TransactionHistory].Quantity

Seek Predicates

Seek Keys[1]: Prefix: [AdventureWorks2012].
[Production].[TransactionHistory].ProductID = Scalar
Operator((880))

Index Seek (NonClustered)

Scan a particular range of rows from a nonclustered index.

Physical Operation	Index Seek
Logical Operation	Index Seek
Actual Execution Mode	Row
Estimated Execution Mode	Row
Storage	RowStore
Number of Rows Read	920
Actual Number of Rows	32
Actual Number of Batches	0
Estimated Operator Cost	0.006605 (100%)

Predicate

[AdventureWorks].[Production].[TransactionHistory].[Quantity]
>(10)

Object

[AdventureWorks].[Production].[TransactionHistory].
[NCI_TransactionHistory_ProductID_included]

Output List

[AdventureWorks].[Production].[TransactionHistory].ProductID,
[AdventureWorks].[Production].[TransactionHistory].Quantity

Seek Predicates

Seek Keys[1]: Prefix: [AdventureWorks].[Production].
[TransactionHistory].ProductID = Scalar Operator((880))

Index Seek (NonClustered)

Scan a particular range of rows from a nonclustered index.

Physical Operation	Index Seek
Logical Operation	Index Seek
Actual Execution Mode	Row
Estimated Execution Mode	Row
Storage	RowStore
Number of Rows Read	32
Actual Number of Rows	32
Actual Number of Batches	0
Estimated I/O Cost	0.003125
Estimated Operator Cost	0.0036447 (100%)
Estimated CPU Cost	0.0005197
Estimated Subtree Cost	0.0036447
Estimated Number of Executions	1
Number of Executions	1
Estimated Number of Rows	329.753
Estimated Number of Rows to be Read	329.753
Estimated Row Size	15 B
Actual Rebinds	0
Actual Rewinds	0
Ordered	True
Node ID	0

Autogrow_All_Files

Database Properties - AdventureWorks

Select a page

- General
- Files
- Filegroups
- Options
- Change Tracking
- Permissions
- Extended Properties
- Mirroring
- Transaction Log Shipping
- Query Store

Script ? Help

Rows

Name	Files	Read-Only	Default	Autogrow All Files
PRIMARY	1		☒	☒

Add Filegroup Remove

Autogrow_All_Files

```
USE [AdventureWorks]
GO
declare @autogrow bit
SELECT @autogrow=convert(bit, is_autogrow_all_files) FROM sys.filegroups WHERE name=N'PRIMARY'
if(@autogrow=0)
    ALTER DATABASE [AdventureWorks] MODIFY FILEGROUP [PRIMARY] AUTOGROW_ALL_FILES
GO
USE [master]
GO
declare @autogrow bit
SELECT @autogrow=convert(bit, is_autogrow_all_files) FROM sys.filegroups WHERE name=N'PRIMARY'
if(@autogrow=0)
    ALTER DATABASE [AdventureWorks] MODIFY FILEGROUP [PRIMARY] AUTOGROW_ALL_FILES
GO
```

BUG

