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SUMMIT 2021

Identify Poorly Performing Queries: Three Tools You Already Own

Grant Fritchey

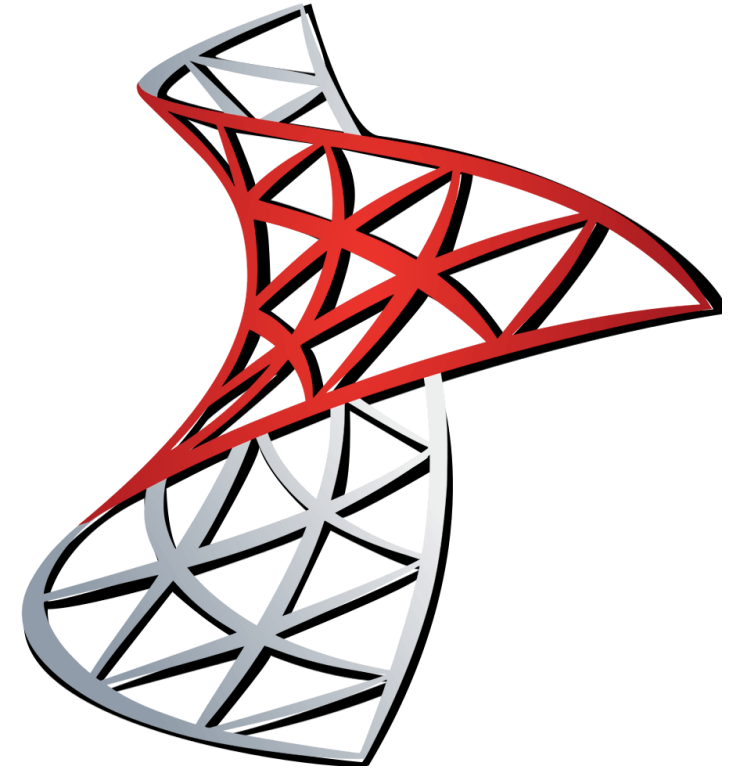
DevOps Advocate

Redgate Software



Agenda

1. Understand the query performance tuning process
2. Learn about the importance of measuring query performance
3. Discover the three tools you can use to achieve these goals



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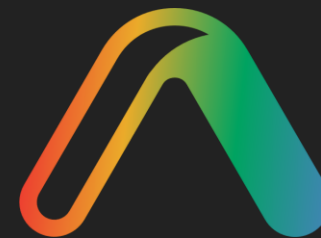
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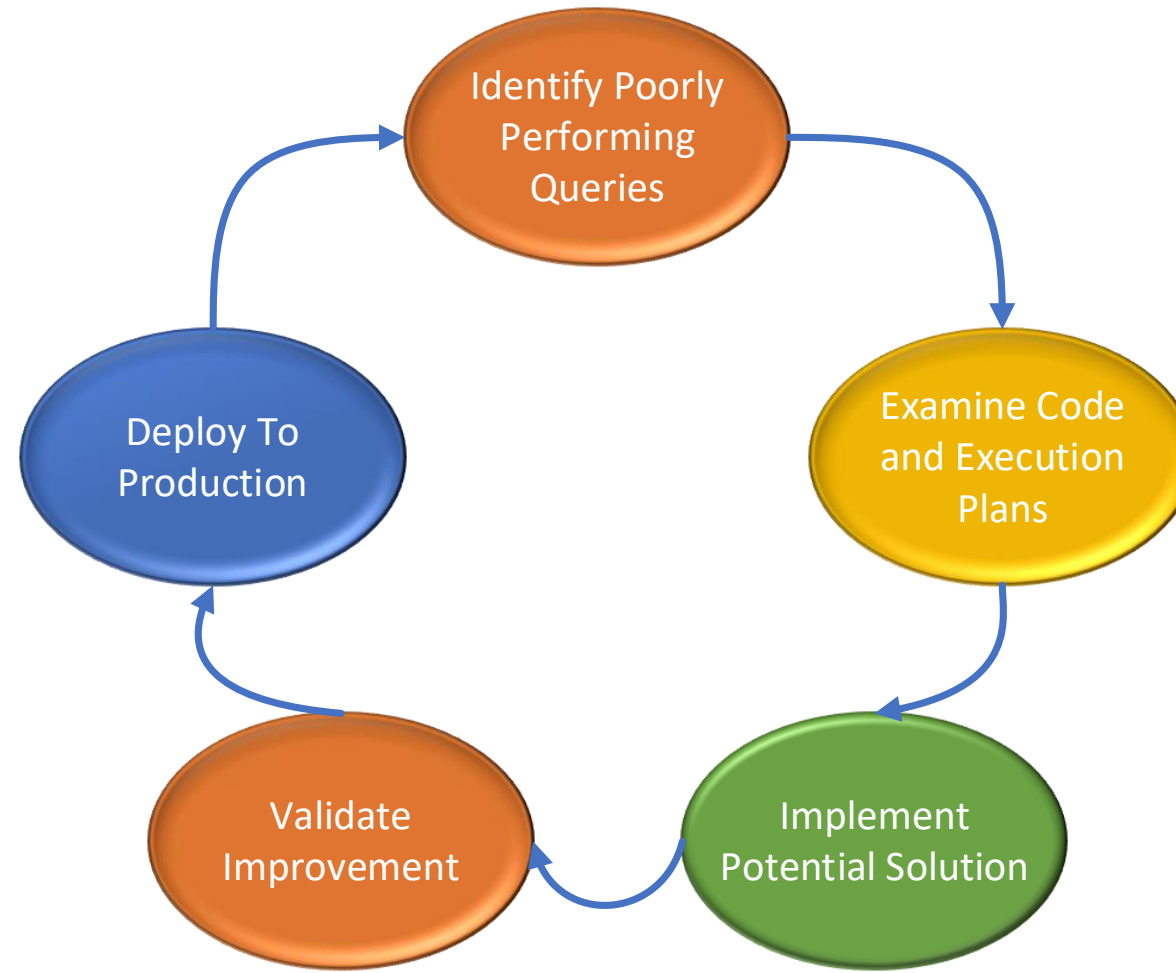


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Easy Query Tuning



Actual Query Tuning



Capturing Query Metrics

- Include Client Statistics
- Connection Properties
- SET STATISTICS TIME
- QueryTimeStats in an actual execution plan
- Query Store
- Dynamic Management Views
- Trace Events
- Extended Events

Capturing Query Metrics

- Dynamic Management Views
- Extended Events (2012+)
- Query Store (2016+)



Notes on Query Metrics

- Have two points to compare
- Use all the metrics, not just one
- Execution plans are not a measure of performance
- Don't forget execution count

Dynamic Management Views

- Ubiquitous (means they're everywhere)
- Easy
- Aggregation only
- Cache dependent
- No comparison point unless you make one

Dynamic Management Views

Live

sys.dm_exec_requests

sys.dm_exec_session_wait_stats

sys.dm_exec_sessions

Cache

sys.dm_exec_query_stats

sys.dm_exec_XXX_stats

Both

sys.dm_exec_query_plan

sys.dm_exec_sql_text

sys.dm_exec_text_query_plan

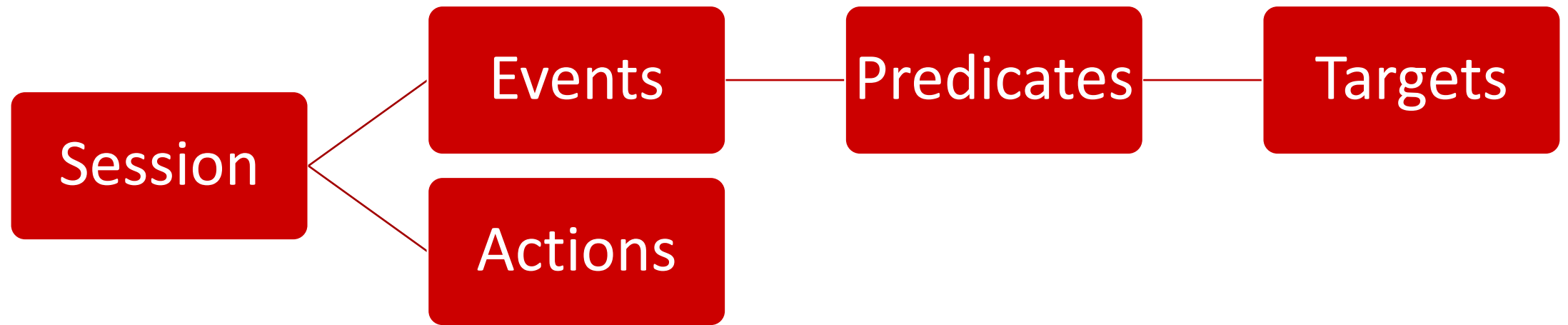
Dynamic Management Views: A Cheaters Guide

- [Sp_whoisactive](#)
- [Glenn Berry's Diagnostic Information Queries](#)
- [DBA Tools](#)

Extended Events

- 2012+
- Ubiquitous (2012+)
- Lightweight and low cost
- Superior filtering
- Stored on the server
- Functionality not available anywhere else
- The most detailed data
- Also, the costliest

Extended Events



Extended Events: Learn The Live Data Explorer

localhost - QueryPerformance: Live Data						
Displaying 79 Events. SQL server events session stopped or no longer available.						
name	timestamp	batch_text	statement	duration	cpu_time	logical_re...
sql_batch_complet...	2021-10-05 14:00...	use [AdventureWorks]	NULL	232	0	0
rpc_completed	2021-10-05 14:00...	NULL	exec sp_executesql N'SELECT (C...	34051	28000	141
rpc_completed	2021-10-05 14:00...	NULL	exec sp_executesql N'SELECT (C...	2261	0	31
sql_batch_complet...	2021-10-05 14:00...	SELECT SCHEMA_NAME(tbl.sch...	NULL	31299	27000	393
rpc_completed	2021-10-05 14:00...	NULL	exec sp_executesql N'SELECT SCHEMA_NAM...	15153	7000	185
rpc_completed	2021-10-05 14:00...	NULL	exec sp_executesql N'SELECT (C...	30787	14000	145
rpc_completed	2021-10-05 14:00...	NULL	exec sp_executesql N'SELECT ...	16124	8000	76
sql_batch_complet...	2021-10-05 14:00...	DBCC TRACEON (3604)	NULL	3143	2000	0
sql_batch_complet...	2021-10-05 14:00...	DBCC DBINFO	NULL	968	0	1
sql_batch_complet...	2021-10-05 14:00...	DBCC TRACEOFF (3604)	NULL	6971	6000	0
sql_batch_complet...	2021-10-05 14:00...	SELECT SCHEMA_NAME(obj.sc...	NULL	57769	51000	928
rpc_completed	2021-10-05 14:00...	NULL	exec sp_executesql N'SELECT SCHEMA_NAM...	104576	93000	9303
▶ rpc_completed	2021-10-05 14:00...	NULL	exec sp_executesql N'SELECT SCHEMA_NAM...	92719	88000	81195
sql_batch_complet...	2021-10-05 14:00...	SELECT SCHEMA_NAME(s.sche...	NULL	10127	4000	155
sql_batch_complet...	2021-10-05 14:00...	SELECT SCHEMA_NAME(xproc...	NULL	9541	4000	126
sql_batch_complet...	2021-10-05 14:00...	SELECT sst.name AS [Schema], s...	NULL	6905	7000	104
rpc_completed	2021-10-05 14:00...	NULL	exec sp_executesql N'SELECT st.name AS [Na...	30214	27000	171
rpc_completed	2021-10-05 14:00...	NULL	exec sp_executesql N'SELECT st.name AS [Na...	652	0	22
rpc_completed	2021-10-05 14:00...	NULL	exec sp_executesql N'SELECT st.name AS [Na...	556	0	22
rpc_completed	2021-10-05 14:00...	NULL	exec sp_executesql N'SELECT st.name AS [Na...	577	0	22
rpc_completed	2021-10-05 14:00...	NULL	exec sp_executesql N'SELECT st.name AS [Na...	547	0	22
rpc_completed	2021-10-05 14:00...	NULL	exec sp_executesql N'SELECT st.name AS [Na...	698	0	22
sql_batch_complet...	2021-10-05 14:00...	SELECT SCHEMA_NAME(tt.sche...	NULL	6939	5000	82
sql_batch_complet...	2021-10-05 14:00...	SELECT satypes.name AS [Sche...	NULL	7656	3000	236
rpc_completed	2021-10-05 14:00...	NULL	exec sp_executesql N'SELECT clms.column_id ...	90234	72000	617
rpc_completed	2021-10-05 14:00...	NULL	exec sp_executesql N'SELECT NULL AS [Text], I...	15756	10000	92
rpc_completed	2021-10-05 14:00...	NULL	exec sp_executesql N'SELECT udf.name AS [Na...	123989	109000	633
rpc_completed	2021-10-05 14:00...	NULL	exec sp_executesql N'SELECT param.parameter...	52823	53000	255
sql_batch_complet...	2021-10-05 14:00...	SELECT @@SPID;	NULL	189	0	0
rpc_completed	2021-10-05 14:00...	NULL	exec sp_executesql N'SELECT param.is_readonl...	52716	52000	310
rpc_completed	2021-10-05 14:00...	NULL	exec sp_executesql N'SELECT param.is_readonl...	1352	0	18
rpc_completed	2021-10-05 14:00...	NULL	exec sp_executesql N'SELECT param.is_readonl...	1103	0	18
rpc_completed	2021-10-05 14:00...	NULL	exec sp_executesql N'SELECT param.is_readonl...	1226	0	18
rpc_completed	2021-10-05 14:00...	NULL	exec sp_executesql N'SELECT clms.column_id ...	114068	105000	486
sql_batch_complet...	2021-10-05 14:01...	--retrieving deadlocks DECLARE ...	NULL	8243254	6622000	48

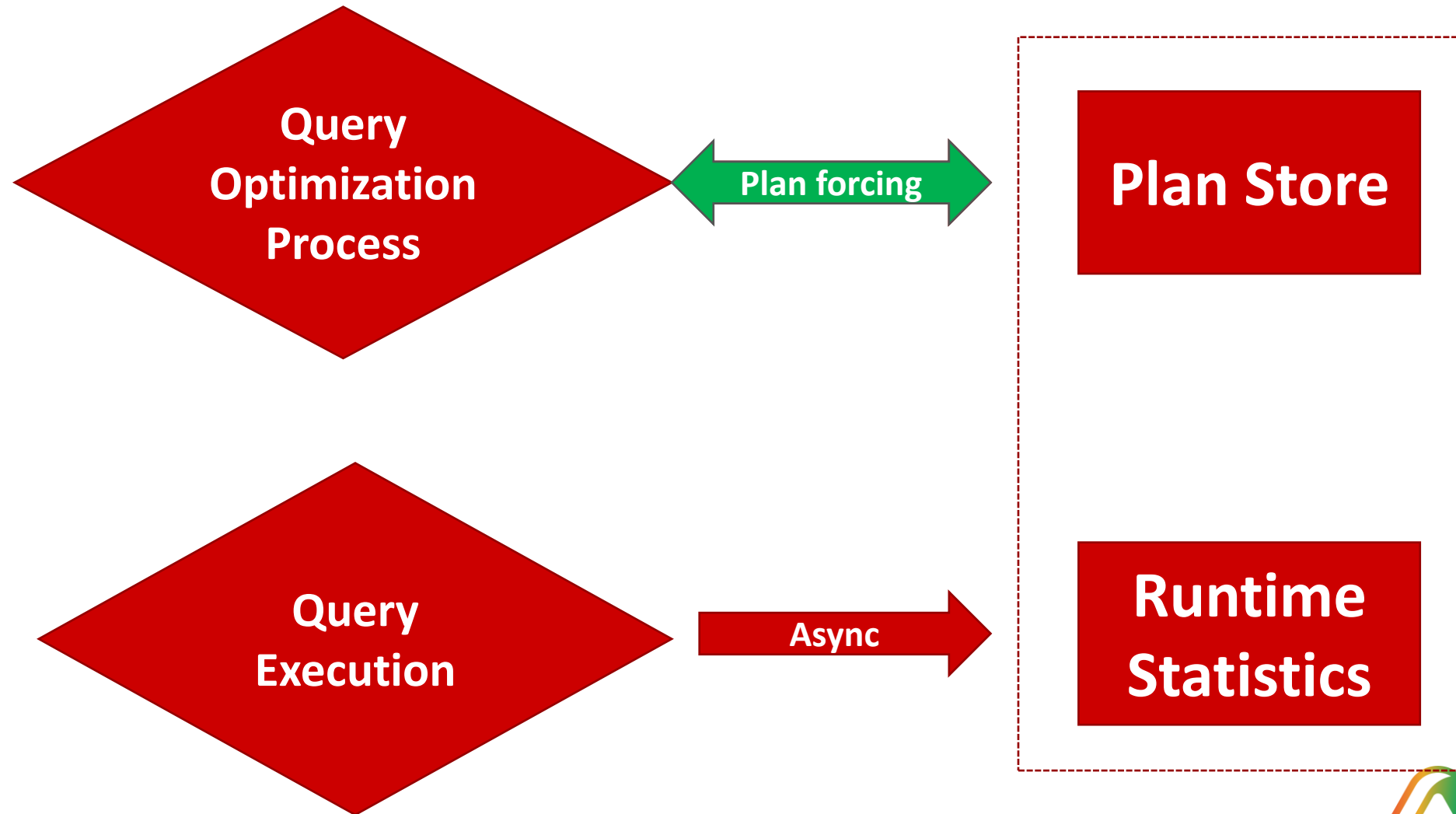
Extended Events: A Cheaters Guide

- [DBA Tools](#)
- [Workload Tools](#)

Query Store

- 2016+
- Azure SQL Database
- Fairly lightweight
- Database driven
- Thorough information provided
- Aggregation only, but broken up by time

Query Store



Demo!

Capturing Query Metrics

- Dynamic Management Views
- Extended Events (2012+)
- Query Store (2016+)



Further Knowledge

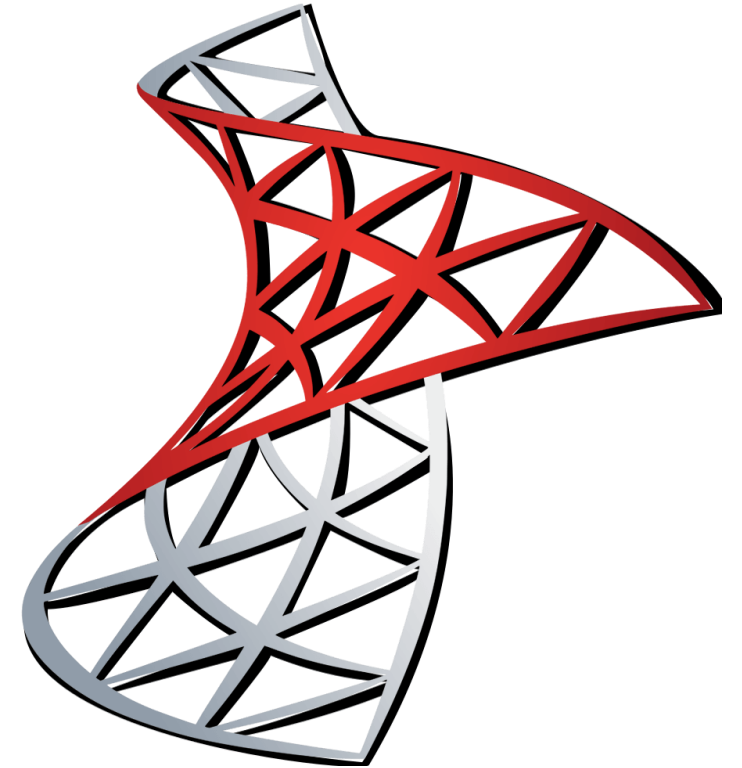
- [Dynamic Management Views](#)
- [Quick Start: Extended Events in SQL Server](#)
- [Monitoring Performance By Using the Query Store](#)
- [Query Store for SQL Server 2019](#)
- [SQL Server 2017 Query Performance Tuning](#)
- [Extended Events Live Data Window](#)

Query Tuning Learning Pathway

- [Demystifying Statistics in SQL Server](#) – Erin Stellato
- [Here's the execution plan ... now what](#) – Hugo Kornelis
- [Indexing for Performance](#) – Kimberly L. Tripp
- [Query tuning tips concerning table expressions](#) – Itzik Ben-Gan
- [Tackling Monster Stored Procs](#) – Allen White

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