Shabnam Watson

PASS SQLSATURDAY
ATLANTA - BI | SEP 22 2018

Performance Monitoring Analysis Services Tabular

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BLOG: https://shabnamwatson.wordpress.com

Work: BI Consultant

Fifteen Years of experience developing data warehouse and business intelligence solutions with focus on SQL Server Analysis Services.

Speaking

PASS Summit, SQL Saturdays, Women In Technology Virtual Chapter and Atlanta user groups.
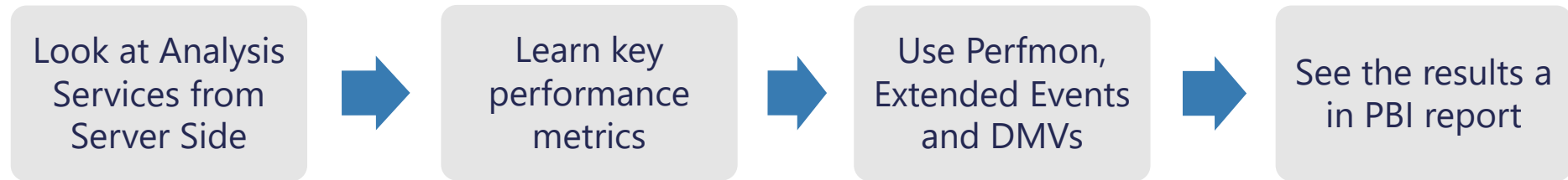
Background

Master's degree in computer science. Certified Business Intelligence Professional (CBIP) by The Data Warehouse Institute (TDWI).
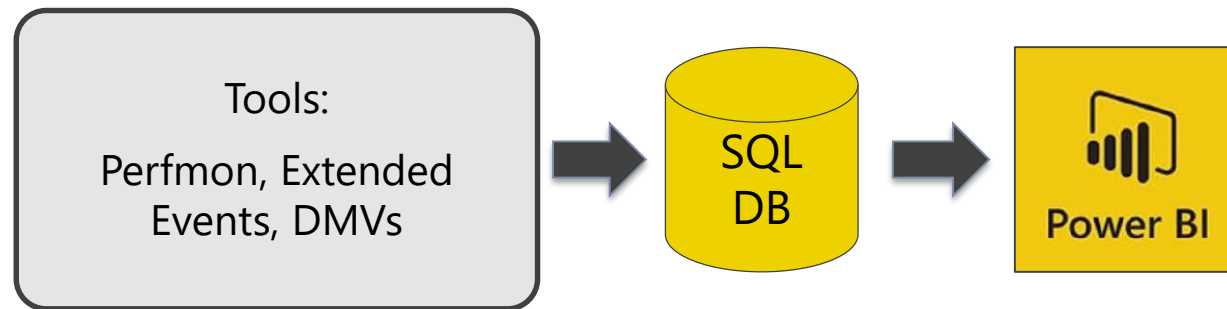
Intended Audience

Familiar with Analysis Services

Goals

Look at Analysis Services from Server Side	→	Learn key performance metrics	→	Use Perfmon, Extended Events and DMVs	→	See the results a in PBI report

What's not covered?

Analysis Services, Power BI development, data modeling

Agenda
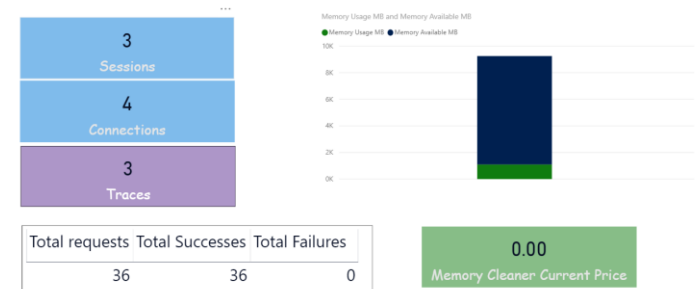
About you:

☺
BI Developer

☺
SQL Server DBA

☺
?

Why Performance Monitoring?

SSAS Server

Query Run Time
Server Resources
Applications/ commands

SSAS Process

msmdsrv → Operating System (CPU-Memory-Disk)

Monitor SSAS Service and the server.

SSAS Tabular Query Processing

Query

Formula Engine

FE Cache

Data Set 1 | Data Set 2 | Data Set 3

Frequently accessed calculations.
Materialized data sets.
Only for MDX queries.

Storage Engine

Direct Query

VertiPaq
(Compressed In-Memory)

SE Cache

Uncompressed frequently accessed data.

pagefile.sys
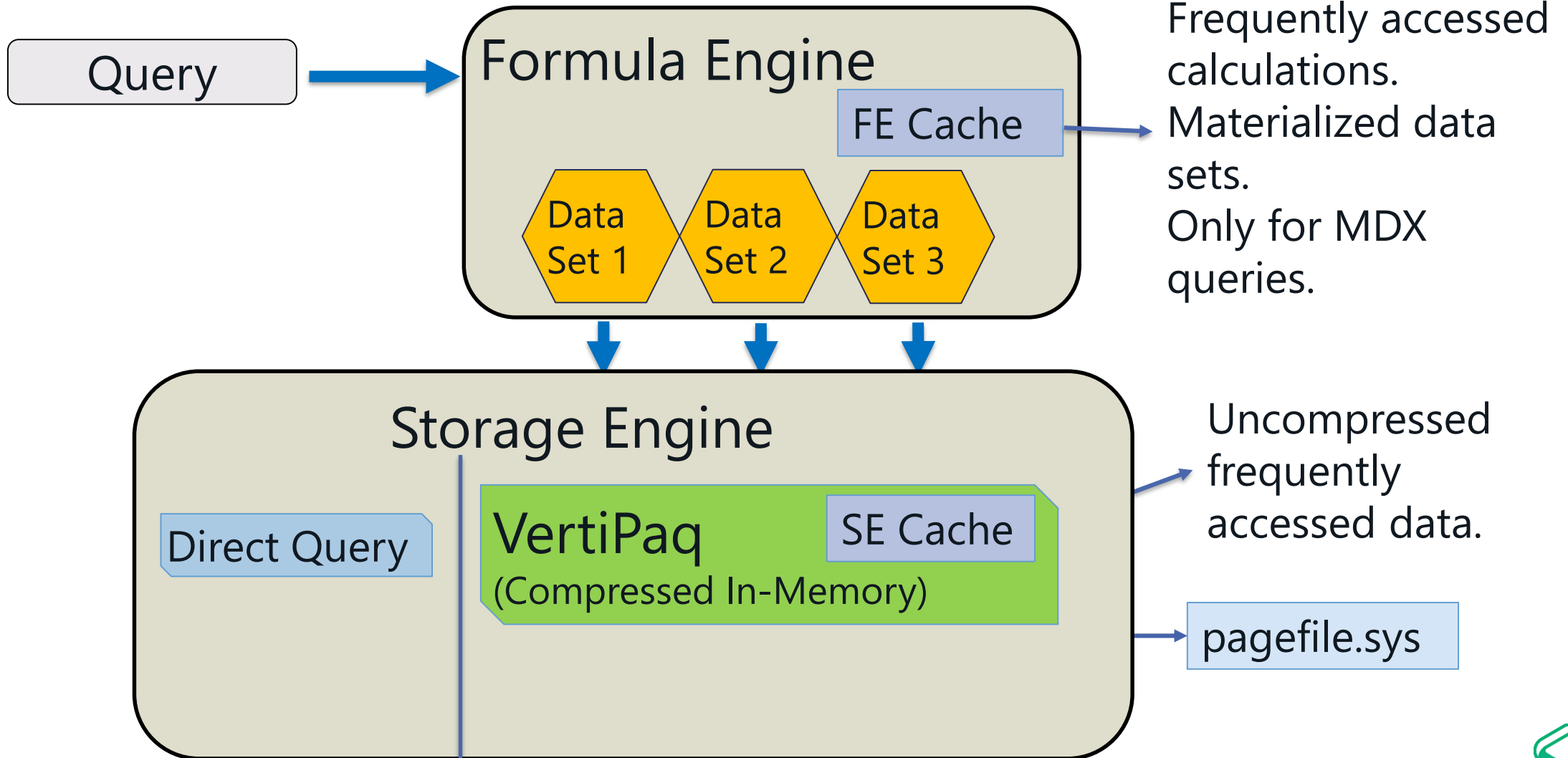
Memory Settings

SQL Server Management Studio or msmdsrv.ini

SSAS Setting	Default value
LowMemoryLimit	65
HardMemoryLimit	80
TotalMemoryLimit	0

Perfmon Counter
Memory Limit Low KB
Memory Limit High KB
Memory Limit Hard KB

Memory Usage KB

Memory Management

Physical Memory(GB)

Price/KB

HardMemoryLimit	90
TotalMemoryLimit	80
LowMemoryLimit	65
	0

100

Connections close

1000

10

Mid point

2

Cleaner thread wakes up

0

● Memory Usage/Process Memory   ● Memory Price
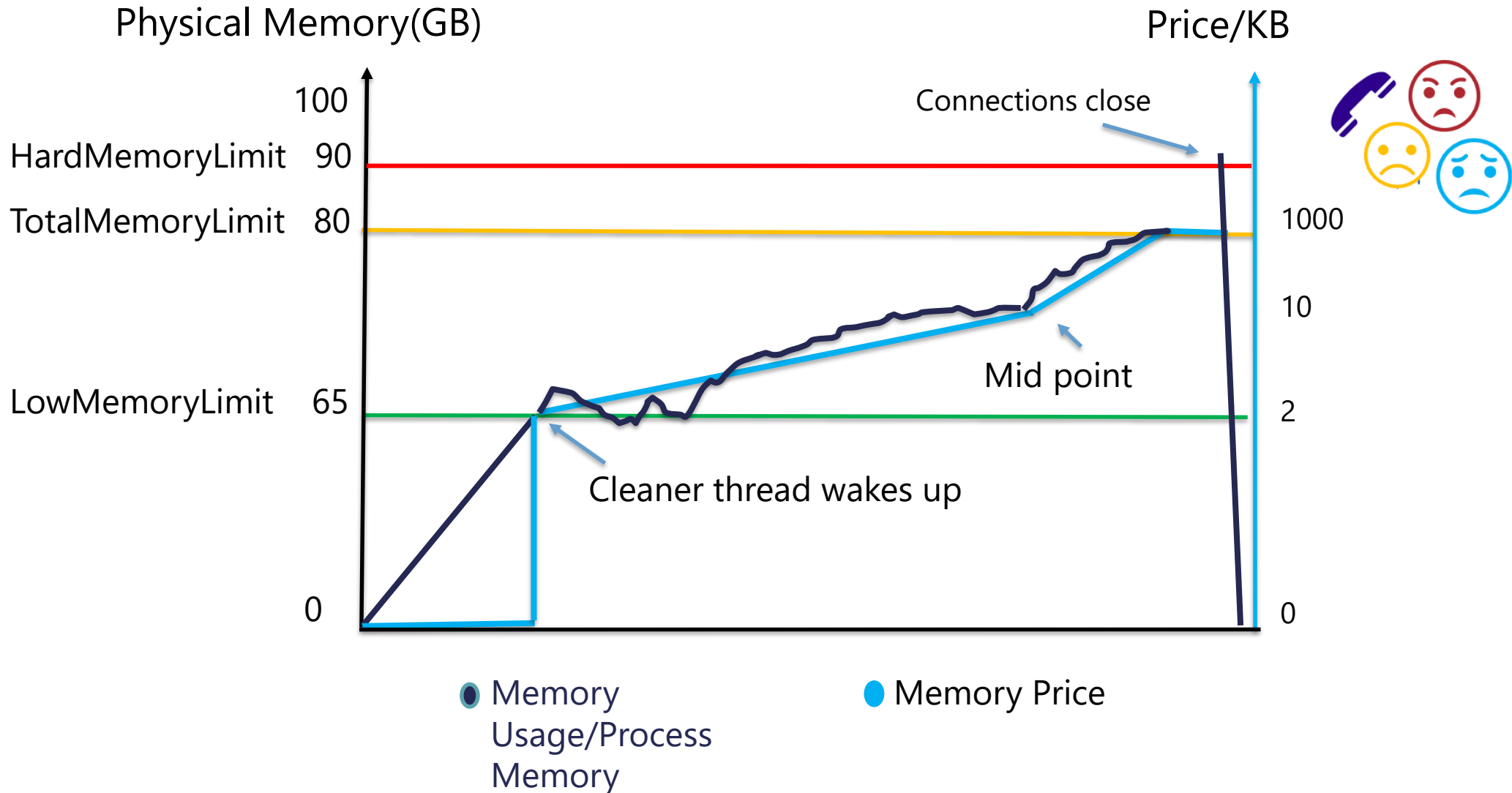
Controlling Memory - Tabular

SSAS Setting	Default value
VertiPaqPagingPolicy	1
VertiPaqMemoryLimit	60

VertiPaqPagingPolicy = 0 ➡ VertiPaqMemoryLimit: The limit

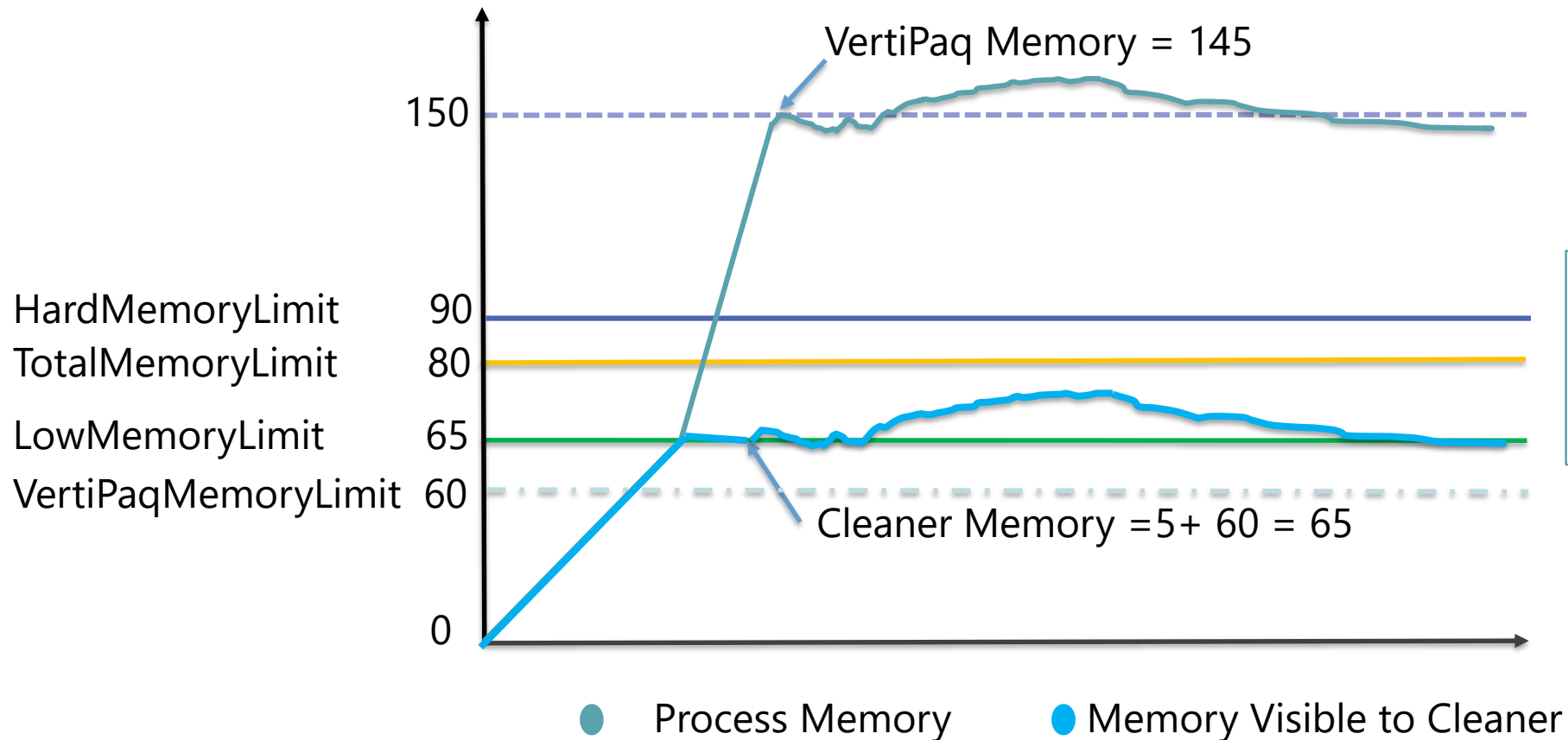VertiPaqPagingPolicy = 1 ➡ VertiPaqMemoryLimit: <u>A different limit!</u>

Memory Usage KB: Includes VertiPaq data up to VertiPaqMemoryLimit

Process(msmdsrv): Private Bytes

Memory Management – Paging allowed

Virtual Memory (GB)

VertiPaq Memory = 145

150

HardMemoryLimit   90
TotalMemoryLimit   80

Perfmon Counters

LowMemoryLimit   65

Memory Pages/Sec

VertiPaqMemoryLimit   60

Cleaner Memory =5+ 60 = 65

0

● Process Memory   ● Memory Visible to Cleaner

Perfmon Counters - Memory

Memory Limit Low KB

Memory Limit High KB

Memory Limit Hard KB

VertiPaqMemoryLimit

Memory Usage KB

VertiPaq Paged KB

Process(msmdsrv): Private Bytes

Cleaner Current Price

Memory Pages/Sec

Memory: Available Mbytes

Perfmon Counters - Others

Processor : % Processor Time

Process(msmdsrv): %Processor Time

Storage Engine: Avg time/ query

Storage Engine: Queries answered/sec

Connections: Current Connections

Connections: Current Sessions

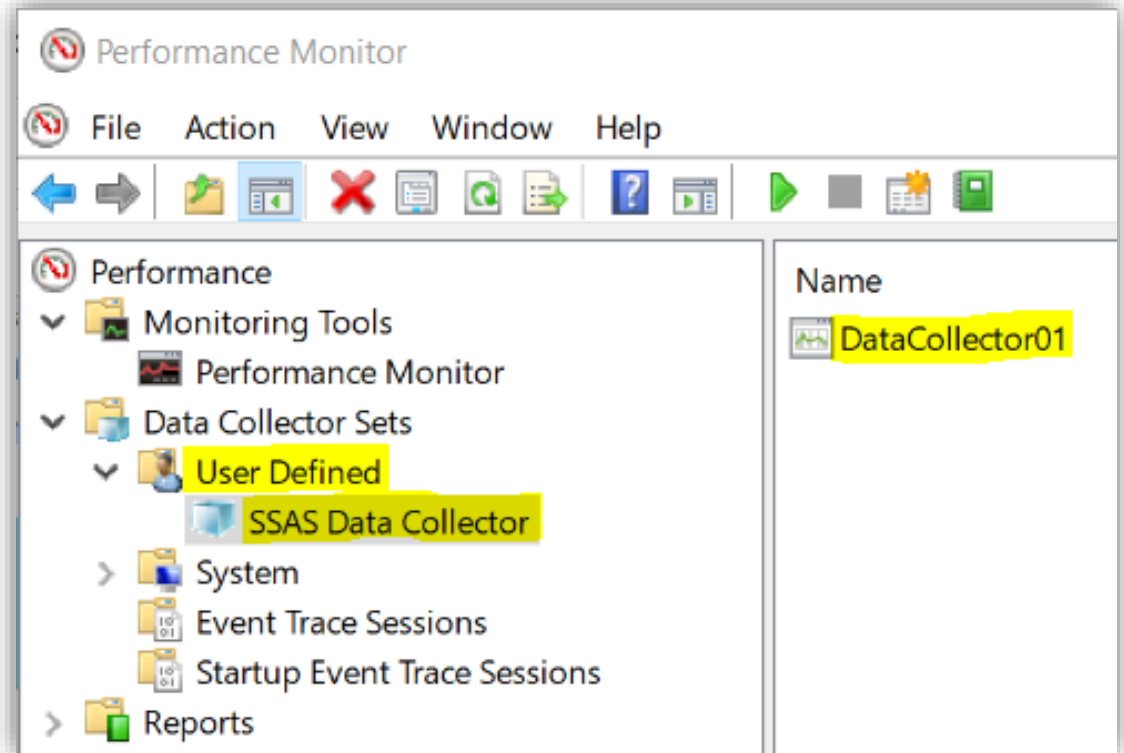Connections: Failures/Sec

Demo

Perfmon Data Collectors
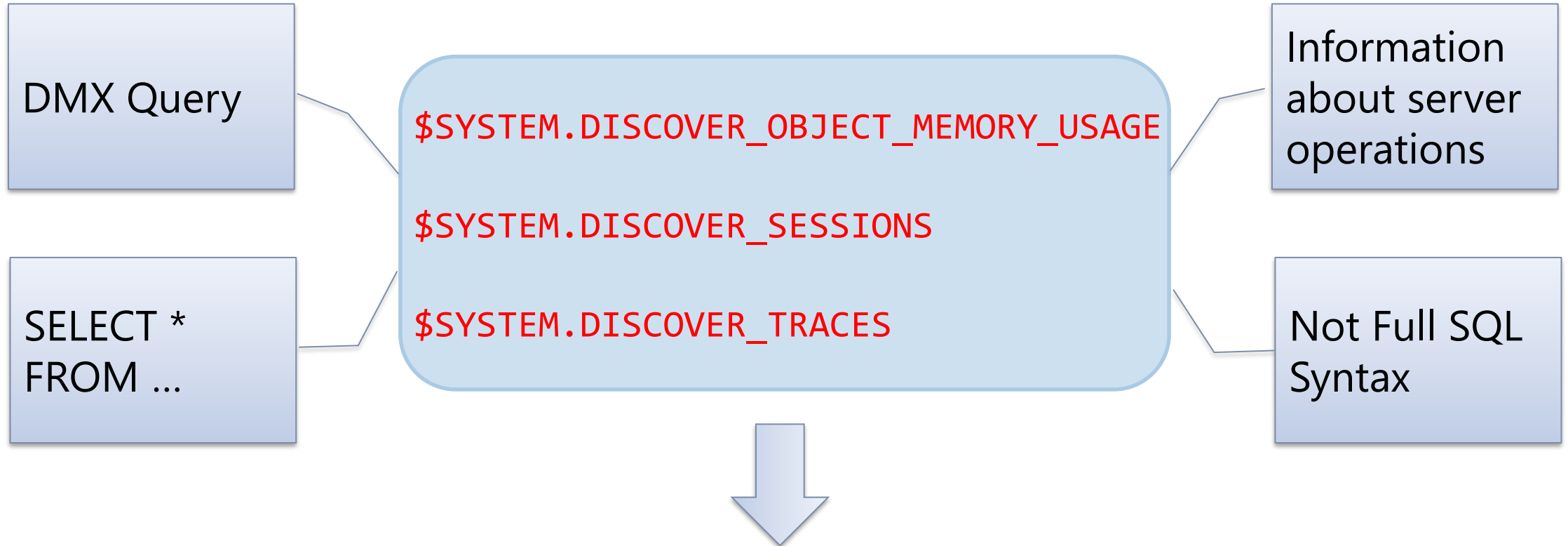
How to save to SQL Server?

ODBC Data Source: System DSN

Set Log Format to SQL

Set Data Source Name to the System DSN

Change Run As from System to a privileged account

Dynamic Management Views (*DMVs)*

DMX Query

SELECT *
FROM ...

$SYSTEM.DISCOVER_OBJECT_MEMORY_USAGE

$SYSTEM.DISCOVER_SESSIONS

$SYSTEM.DISCOVER_TRACES

Information about server operations

Not Full SQL Syntax

```
OPENQUERY(LinkServerName, 'SELECT * FROM $SYSTEM.DISCOVER_TRACES')
```

Extended Events (*xEvents*)
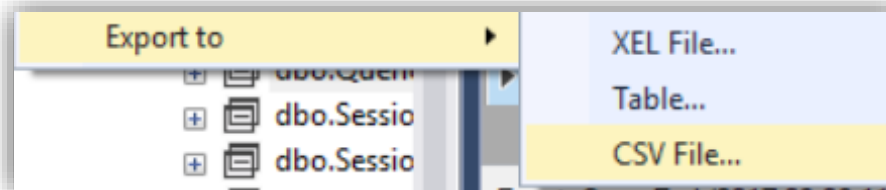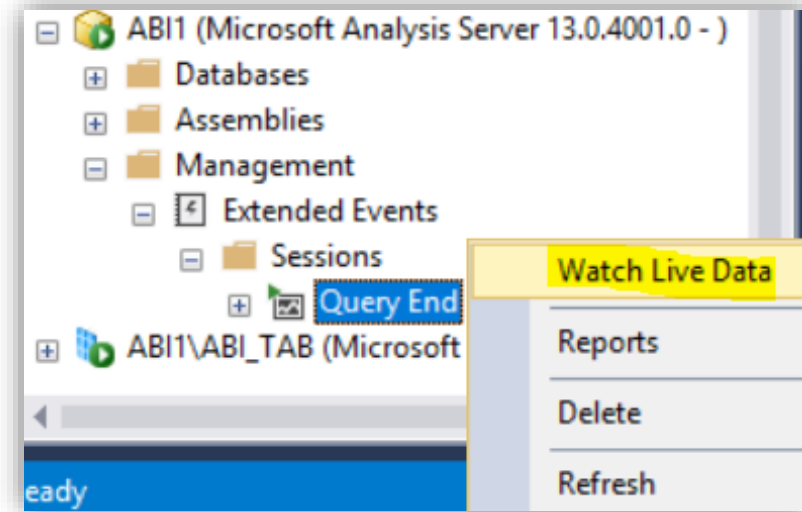
Light-weight tracing system

Ideal for monitoring Production environments

GUI starting with SQL Server 2016

Watch Live Data: Export Data

Script to XMLA to Create / Delete

Query End event

SQL Server Profiler **STOP** Not deprecated for SSAS

References

Performance Counters

OLAP Properties

Dynamic Management Views

My Blog

Reading XEL files

ExtendedEventsLogFiles

Thank you!

Questions?

Feedback!

Contact

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https://shabnamwatson.wordpress.com