

# SQL Server Analytical Service CHEAT SHEET

## SSAS Basics

### SSAS

SSAS is a technology from **Microsoft Business Intelligence stack**, which is used to develop **online Analytical Processing (OLAP)** solutions.

### Cubes

**Cubes** are the multi-dimensional data sources which has two basic constituents named dimensions and facts (measures).

- **Dimensions:** They are referred to as Master Tables
- **Facts:** These are referred to as measurable details

### Key Features of SSAS

- **Speed:** It takes less time to respond to a query due to aggregation of the facts
- **Data Analysis:** Allows multi-dimensional analysis facilitated by the cubes
- **Automatic Link and display:** It provide the facility to automatically link and display the report
- **Good data model:** For better business reporting and analysis a good data model can be created

### Multi-Dimensional Database

It is referred to as a cube which is a foundation of multi-dimensional databases and each cube typically contains more than two dimensions

### Data Source Views

**DSVs** enable to create logical view of only the tables involved in the data warehouse design

### Schema Types

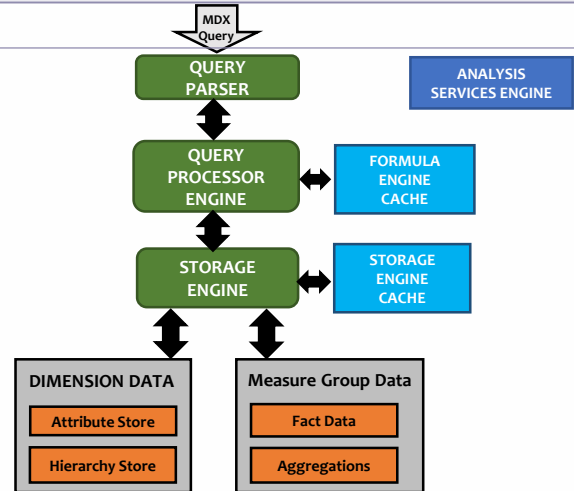
- **Star schema:** A schema where every dimension present in the **Data Source View (DSV)** is directly linked or related to fact or measurable table. It consists of a DE normalized data and can be used in small companies with small databases
- **Snowflake schema:** It is a schema where some dimensions are linked directly to a fact table and some are indirectly linked to fact tables. It consists of a normalized data and can be used in large companies with big databases
- **Star Flake:** It is a hybrid structure which contains a combination or star (DE normalized data) and snowflake (normalized data) schema

### OLAP Cube

**OLAP cube** is a technique which is used to hold the data in an optimized form and used to analyze the data with quick response

### Multi-Dimensional Expressions (MDX)

It is a query language used for retrieving data from multidimensional databases like OLAP databases



Statement	MDX Expression
To calculate Simple Gross Profit	[Measures].[Sales Amount] - [Measures].[Total Product Cost]
To calculate sales in a particular country e.g. (Canada)	([Measures].[Sales Amount], [Customer].[Country].&[United States])
To calculate year to date sales of any level of date hierarchy	AGGREGATE( PeriodsToDate( [Date].[Calendar Hierarchy].[Year], [Date].[Calendar Hierarchy].CurrentMember ), ([Measures].[Sales]))
Alternate year to date expression	AGGREGATE ( YTD ([Date Order].[Calendar].CurrentMember), Measures.[Sales Amount])
To check the product ranking	IIF (Product.Product.CurrentMember IS Product.Product.[All],NULL, IIF (Measures.[Sales Amount] = 0, NULL, RANK(Product.Product.CurrentMember, ORDER (Product.Product.Members, Measures.[Sales Amount])))
Sales from 365 days ago	(ParallelPeriod([Invoice Date].[Date Hierarchy].[Date], 365, [Invoice Date].[Date Hierarchy].CurrentMember), [Measures].[Sales Amount])
Sales done in the previous period	(Measures.[Sales Amount], [Date Order].[Calendar].CurrentMember.PrevMember)
To view top 10 selling products	TopCount (Product.Product.Product.Members,10,Measures.[Sales Amount])
To display the average sales from three years till date	Avg( {ParallelPeriod( [Date].[Date].[Year], 3, StrToMember("[Date].[Date].&[Format(now(), 'yyyyMMdd') + ']'")) : StrToMember("[Date].[Date].&[Format(now(), 'yyyyMMdd') + ']'")}, [Measures].[Sales Count])
Drillthrough Action caption	'Get Sales Details for' + [Product].[Product].CurrentMember.Member_Caption
To change SSAS Calculation text color	IIF([Measures].[Profit Percentage] < .40, 255, 0)
SSAS KPI Goal Expression	Case When IsEmpty (ParallelPeriod ([Date Order].[Fiscal].[Fiscal Year], 1,[Date Order].[Fiscal].CurrentMember)) Then [Measures].[Sales Amount] Else 1.10 * (ParallelPeriod([Date Order].[Fiscal].[Fiscal Year], 1,[Date Order].[Fiscal].CurrentMember)) End

Statement	Expression
Changing a calculation using scope statement	SCOPE ([Measures],[Scope Profit]); THIS = ([Measures].[Sales Amount] - [Measures].[Standard Product Cost]); END SCOPE;
Clear ration value when at all levels	SCOPE ([Customer],[Customer Geography].[All], Measures.RatioOverParent); THIS = NULL
SSAS KPI Value Expression	[Measures].[Sales Amount] * 1.2
SSAS KPI Status Expression	Case When KpiValue( "Sales Revenue YTD" ) / KpiGoal( "Sales RevenueYTD" ) > 1 Then 1 When KpiValue( "Sales Revenue YTD" ) / KpiGoal( "Sales Revenue YTD" ) <= 1 And KpiValue( "Sales Revenue YTD" ) / KpiGoal( "Sales Revenue YTD" ) >= .85 Then 0 Else -1 End
SSAS KPI Trend Expression	Case When IsEmpty (ParallelPeriod ([Date Order].[Fiscal].[Fiscal Year], 1,[Date Order].[Fiscal].CurrentMember)) Then 0 When VBA!Abs ((KpiValue( "Sales Revenue YTD" ) - (KpiValue( "Sales Revenue YTD" ), ParallelPeriod ([Date Order].[Fiscal].[Fiscal Year], 1, [Date Order].[Fiscal].CurrentMember))) / (KpiValue( "Sales Revenue YTD" ), ParallelPeriod ([Date Order].[Fiscal].[Fiscal Year], 1,[Date Order].[Fiscal].CurrentMember))) <= .02 Then 0 When (KpiValue( "Sales Revenue YTD" ) - (KpiValue( "Sales Revenue YTD" ), ParallelPeriod ([Date Order].[Fiscal].[Fiscal Year], 1, [Date Order].[Fiscal].CurrentMember))) / (KpiValue( "Sales Revenue YTD" ), ParallelPeriod ([Date Order].[Fiscal].[Fiscal Year], 1,[Date Order].[Fiscal].CurrentMember)) > .02 Then 1 Else -1 End

