



UP CLOSE AND PERSONAL WITH THE TABULAR SSAS DMVS

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WHAT IS A DMV?



NOT THIS DMV



THIS DMV

```
12 |  
13 | select * from sys.dm_os_windows_info  
14 |
```

windows_release	windows_service_pack_level	windows_sku	os_language_version
6.3		101	1033

DYNAMIC MANAGEMENT VIEWS

- DMV queries return server and database state information used to monitor the health of a server instance, diagnose problems, and tune performance.
- Some of this data is not available through other means.
- Things we can learn about an SSAS Tabular model from DMVs:
 - Database name
 - Compatibility level
 - Security roles and permissions
 - Tables
 - Columns
 - Measures
 - Relationships
 - Last Schema Update
 - Last Data Update
 - Much more!

QUERYING DMVS – OLD SCHOOL

Relational DB

- Use T-SQL
- Views located in the sys schema
- Permissions: required
 - SELECT on the object
 - VIEW SERVER STATE
 - VIEW DATABASE STATE

```
SELECT wait_type, wait_time_ms FROM  
sys.dm_os_wait_stats;
```

Use any tool that supports T-SQL queries (SSMS, SSRS, etc.)

Pre-2016 SSAS DB

- Use DMX
- Views located in the \$System schema
- Permissions: required
 - Administrator

```
SELECT * FROM  
$System.DISCOVER_CALC_DEPENDENCY WHERE  
OBJECT_TYPE = 'ACTIVE_RELATIONSHIP'
```

Or

```
Select * from SYSTEMRESTRICTSCHEMA  
($System.Discover_cSDL_metadata,  
[CATALOG_NAME] = 'Adventure Works DW')
```

Use any tool that supports MDX or DMX queries (SSMS, SSRS, etc.)

JOIN, GROUP BY,
LIKE, CAST, and
CONVERT are not
supported.

DBSCHEMA AND DISCOVER DMVS (STILL WORK)

- DBSCHEMA_CATALOGS - list of databases
- DBSCHEMA_COLUMNS - list of columns in the current database
- DBSCHEMA_TABLES - list of tables in the current database
- DISCOVER_CALC_DEPENDENCIES - list of the columns and tables used in a model that have dependencies on other columns and tables
- DISCOVER_COMMANDS - provides resource usage and activity information about currently executing command
- DISCOVER_SESSIONS – reports on active sessions, including session user and duration
- DISCOVER_INSTANCES – describes instances on the server

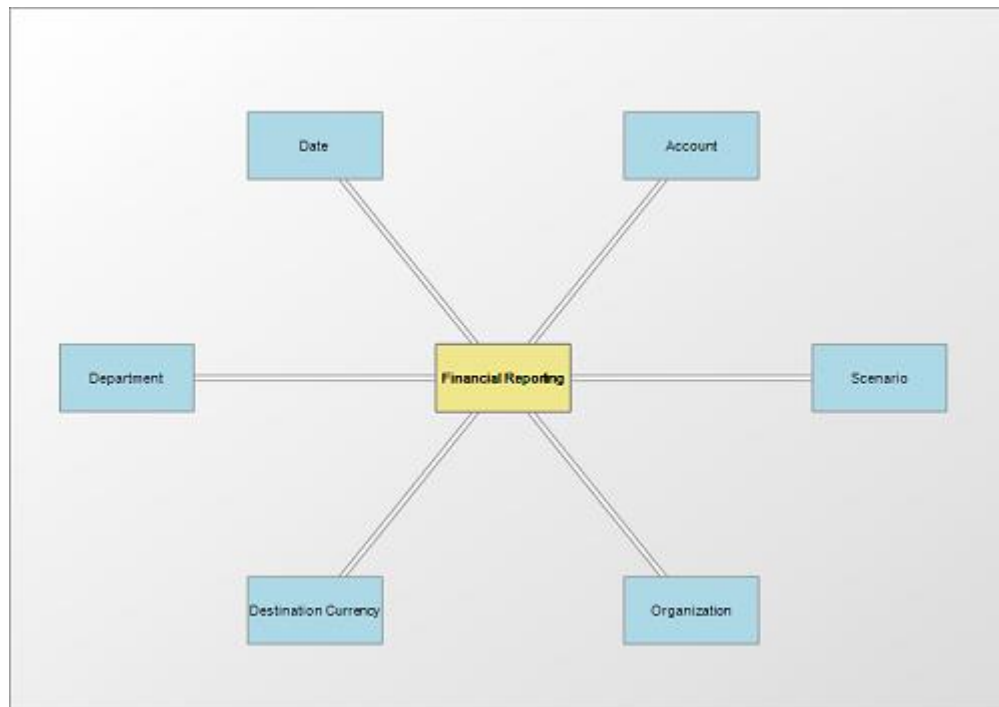
**This is not the full list. Please see: <https://msdn.microsoft.com/en-us/library/hh230820.aspx>

MDSHEMA DMVS (ORIGINALLY FOR SSAS MD)

- MDSHEMA_CUBES
- MDSHEMA_DIMENSIONS
- MDSHEMA_HIERARCHIES
- MDSHEMA_INPUT_DATASOURCES (Doesn't work for Tabular)
- MDSHEMA_KPIS (Not useful for Level 1200+ Tabular)
- MDSHEMA_MEASUREGROUP_DIMENSIONS (Not useful for Level 1200+ Tabular)
- MDSHEMA_MEASUREGROUPS (Not useful for Level 1200+ Tabular)
- MDSHEMA_MEASURES
- MDSHEMA_MEMBERS
- MDSHEMA_PROPERTIES (Only useful for level 1200+ Tabular if querying with MDX)
- MDSHEMA_SETS (Doesn't work for Tabular)

DOCUMENTING YOUR SSAS MD MODEL

- You can use the MDSHEMA DMVs to create a bus matrix and star schema
- Learn how from Alex Whittles: <https://www.purplefrogssystems.com/blog/2010/09/olap-cube-documentation-in-ssrs-part-1/>



Dimensions/Measure BUS Matrix

		No Relationship	Relationship	Many to Many	Fact (1 to 1)							
Dimension		Exchange Rates	Financial Reporting	Internet Customers	Internet Orders	Internet Sales	Reseller Orders	Reseller Sales	Sales Orders	Sales Reasons	Sales Summary	Sales Targets
Account	Account		X									
Customer	Customer			X	X	X						
Date	Date	X	X	X	X	X	X	X	X		X	X
	Delivery Date			X	X	X	X	X	X		X	
	Ship Date			X	X	X	X	X	X		X	
Department	Department		X									
Destination Currency	Destination Currency	X	X			M		M			M	
Employee	Employee						X	X				X
Geography	Geography						X	X				
Internet Sales Order Details	Internet Sales Order Details			X	X	X					X	
Organization	Organization		X									
Product	Product			X	X	X	X	X	X		X	
Promotion	Promotion			X	X	X	X	X	X		X	
Reseller	Reseller						X	X				
Reseller Sales Order Details	Reseller Sales Order Details						X	X				
Sales Channel	Sales Channel								X			X
Sales Reason	Sales Reason			M	M	M				X		
Sales Summary Order Details	Sales Summary Order Details								X			X
Sales Territory	Sales Territory			X	X	X	X	X	X		X	X
Scenario	Scenario		X									
Source Currency	Source Currency			X	X	X	X	X	X		X	

CHANGES WITH SSAS 2016

XMLA

TMSL

```
1 <Create xmlns="http://schemas.microsoft.com/analysiservices/2003/engine">
2   <ObjectDefinition>
3     <Database xmlns:xsd="http://www.w3.org/2003/
4       <ID>AdventureWorksTab</ID>
5       <Name>AdventureWorksTab</Name>
6       <Annotations>
7         <Annotation>
8           <Name>ClientCompatibilityLevel</Name>
9           <Value>300</Value>
10        </Annotation>
11      </Annotations>
12      <ddl200:CompatibilityLevel>1103</ddl200:CompatibilityLevel>
13      <ddl200_200:StorageEngineUsed>InMemory</ddl200_200:StorageEngineUsed>
14      <Language>1033</Language>
15      <DataSourceImpersonationInfo>
16        <ImpersonationMode>Default</ImpersonationMode>
17      </DataSourceImpersonationInfo>
18      <Dimensions>
19        <Dimension>
20          <ID>Currency_dd3bc081-2c2c-4980-a725-5c481e0f6354</ID>
21          <Name>Currency</Name>
22          <Annotations>
23            <Annotation>
24              <Name>IsQueryEditorUsed</Name>
25              <Value>False</Value>
26            </Annotation>
27          </Annotations>
28        </Dimension>
29      </Dimensions>
30    </Database>
31  </ObjectDefinition>
32 </Create>
```

```
1 {
2   "create": {
3     "database": {
4       "name": "WWITabular",
5       "compatibilityLevel": 1200,
6       "model": {
7         "culture": "en-US",
8         "dataSources": [
9           {
10            "name": "SqlServer .SQL2016 WideWorldImportersDW",
11            "connectionString": "Provider=SQLNCLI11;Integrated Security=SSPI;Persist Security Info=fals
12            "impersonationMode": "impersonateAccount",
13            "account": "mlongoria",
14            "annotations": [
15              {
16                "name": "ConnectionEditUISource",
17                "value": "SqlServer"
18              }
19            ]
20          }
21        ],
22        "tables": [
23          {
24            "name": "City",
25            "columns": [
26              {
27                "name": "City Key",
28                "dataType": "int64",
29                "isHidden": true,
30                "sourceColumn": "City Key",
31                "sourceProviderType": "Integer"
32              }
33            ]
34          }
35        ]
36      }
37    }
38  }
39 }
```

TMSCHEMA DMVS

- The good news:
 - 36 new DMVs
 - Find them with this query:


```
Select * from $SYSTEM.DBSCHEMA_TABLES where table_type = 'Schema'
```
 - See my gist: <https://gist.github.com/mlongoria/a9a0bff0f51a5e9c200b9c8b378d79da>
 - TMSHEMA DMVs work for Power BI models, too!
 - DAX Studio has good intellisense, better query experience
- The bad news:
 - They aren't documented anywhere on MSDN of Microsoft Docs


17 votes

Voted!

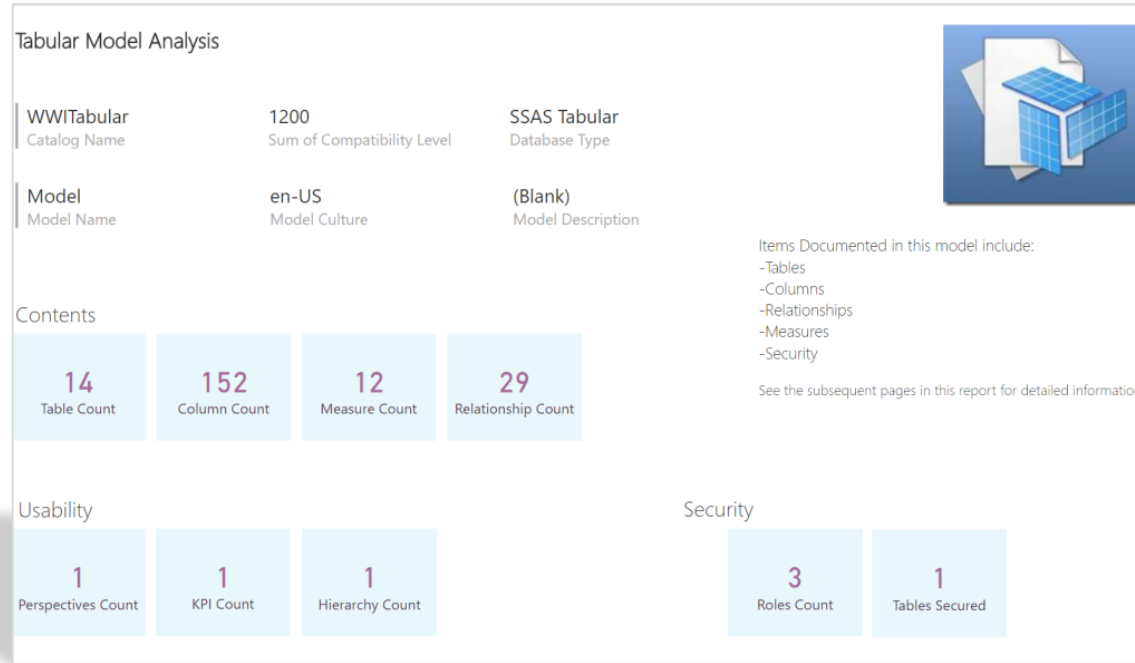
Document TMSHEMA DMVs

The DMVs for SSAS Tabular (Azure and SQL 2016) are not documented anywhere. While the meaning of many of the fields is obvious, there are a few that are just IDs for which it would be nice to see all possible values and descriptions. It would make sense to add the definitions here: <https://msdn.microsoft.com/en-us/library/hh230820.aspx>

 **Meagan Longoria** shared this idea · Nov 6, 2016 · [Delete...](#)

 **ADMIN** UNDER REVIEW · **Azure AS PM Team** (Admin, Microsoft Azure) responded · Nov 9, 2016

Thanks for the feedback Meagan. I have raised it with the docs team and will get back to you.



THE TABULAR MODEL DOCUMENTER

FOR SSAS TABULAR 1200+ AND POWER BI

DOWNLOADS AND MORE INFO

- Blog with file downloads and explanation:
 - <https://datasavvy.me/2016/10/04/documenting-your-tabular-or-power-bi-model/>
- Blog with file downloads and video
 - <https://www.blue-granite.com/blog/demo-day-document-your-tabular-model-with-excel-or-power-bi>

THANKS!

- Meagan Longoria
- @Mmarie
- <http://datasavvy.me>
- <http://blue-granite.com>



That's all Folks!



“That’s all Folks!”

Meagan Longoria

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