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Shanthi Bhaskar

December 6, 2019 | 4 minute read

All about CDS Annotations

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This blog would give insights about the Annotations used in the S4HANA CDS DDL views.

Like

If you are begineer then you will be puzzeled what are the available Annotations which we can use while creating a CDS view. SAP doesn't allow any customer specific annotations so you have to use what ever SAP delivered.

n RSS Feed

Below is the whole list available in English and sorted by Annotation group. Intentionally added in code format so that it would easy to copy?

AbapCatalog.buffering.numberOfKeyFields

AbapCatalog.buffering.status

AbapCatalog.buffering.type

```
AbapCatalog.compiler.compareFilter
AbapCatalog.dbHints[].dbSystem
AbapCatalog.dbHints[ ].hint
AbapCatalog.preserveKey
AbapCatalog.sqlViewAppendName
AbapCatalog.sqlViewName
AbapCatalog.viewEnhancementCategory[ ]
AccessControl.authorizationCheck
ClientDependent
ClientHandling.algorithm
ClientHandling.type
Consumption.defaultValue
Consumption.derivation.binding[ ].targetElement
Consumption.derivation.binding[ ].targetParameter
Consumption.derivation.binding[ ].type
Consumption.derivation.binding[].value
Consumption.derivation.derivationFilter
Consumption.derivation.lookupEntity
Consumption.derivation.procedure
Consumption.derivation.resultElement
Consumption.filter.defaultValue
Consumption.filter.hidden
Consumption.filter.hierarchyBinding[ ].type
Consumption.filter.hierarchyBinding[].value
Consumption.filter.hierarchyBinding[ ].variableSequence
Consumption.filter.mandatory
Consumption.filter.multipleSelections
Consumption.filter.selectionType
Consumption.groupWithElement
Consumption.hidden
Consumption.labelElement
Consumption.quickInfoElement
Consumption.semanticObject
Consumption.valueHelp
DataAging.noAgingRestriction
```

```
EndUserText.label
EndUserText.quickInfo
Environment.sql.passValue
Environment.systemField
MappingRole
Metadata.allowExtensions
Metadata.ignorePropagatedAnnotations
Metadata.layer
OData.publish
ObjectModel.association.type[ ]
ObjectModel.compositionRoot
ObjectModel.createEnabled
ObjectModel.dataCategory
ObjectModel.deleteEnabled
ObjectModel.foreignKey.association
ObjectModel.mandatory
ObjectModel.modelCategory
ObjectModel.readOnly
ObjectModel.representativeKey
ObjectModel.semanticKey[]
ObjectModel.text.association
ObjectModel.text.element[ ]
ObjectModel.updateEnabled
ObjectModel.writeActivePersistence
ObjectModel.writeDraftPersistence
ObjectModel.writeEnabled
Semantics.address.city
Semantics.address.country
Semantics.address.label
Semantics.address.postBox
Semantics.address.region
Semantics.address.street
Semantics.address.subRegion
Semantics.address.type[ ]
Semantics.address.zipCode
```

Semantics.amount.currencyCode

Semantics.businessDate.at

Semantics.businessDate.createdAt

Semantics.businessDate.from

Semantics.businessDate.lastChangedAt

Semantics.businessDate.to

Semantics.calendar.dayOfMonth

Semantics.calendar.dayOfYear

Semantics.calendar.month

Semantics.calendar.quarter

Semantics.calendar.week

Semantics.calendar.year

Semantics.calendar.yearMonth

Semantics.calendar.yearQuarter

Semantics.calendar.yearWeek

Semantics.calendarItem.categories

Semantics.calendarItem.class

Semantics.calendarItem.completed

Semantics.calendarItem.contact

Semantics.calendarItem.description

Semantics.calendarItem.dtEnd

Semantics.calendarItem.dtStart

Semantics.calendarItem.due

Semantics.calendarItem.duration

Semantics.calendarItem.fbType

Semantics.calendarItem.location

Semantics.calendarItem.percentComplete

Semantics.calendarItem.priority

Semantics.calendarItem.status

Semantics.calendarItem.summary

Semantics.calendarItem.transparent

Semantics.calendarItem.wholeDay

Semantics.contact.birthDate

Semantics.contact.note

Semantics.contact.photo

Semantics.contact.type Semantics.currencyCode Semantics.eMail.address Semantics.eMail.bcc Semantics.eMail.body Semantics.eMail.cc Semantics.eMail.from Semantics.eMail.keywords Semantics.eMail.received Semantics.eMail.sender Semantics.eMail.subject Semantics.eMail.to Semantics.eMail.type[] Semantics.fiscal.period Semantics.fiscal.year Semantics.fiscal.yearPeriod Semantics.fiscal.yearVariant Semantics.geoLocation.cartoId Semantics.geoLocation.latitude Semantics.geoLocation.longitude Semantics.geoLocation.normalizedName Semantics.language Semantics.mimeType Semantics.name.additionalName Semantics.name.familyName Semantics.name.fullName Semantics.name.givenName Semantics.name.jobTitle Semantics.name.nickName Semantics.name.prefix Semantics.name.suffix

Semantics.organization.name Semantics.organization.role Semantics.organization.unit

Semantics.quantity.unitOfMeasure

```
Semantics.systemDate.createdAt
Semantics.systemDate.lastChangedAt
Semantics.telephone.type[]
Semantics.text
Semantics.time
Semantics.unitOfMeasure
Semantics.url.mimeType
Semantics.user.createdBy
Semantics.user.id
Semantics.user.lastChangedBy
Semantics.user.responsible
```

Next question is how we to get this list. It's pretty simple, every information in SAP stored in SAP tables itself? in this case ABDOC_CDS_ANNOS

```
SELECT * FROM ABDOC_CDS_ANNOS where SPRAS = 'E'
```

You can check SAP help on these Annotations using the below link

https://help.sap.com/doc/saphelp_nw751abap/7.51.0/en-US/63/0ce9b386b84e80bfade96779fbaeec/content.htm? no_cache=true

Framework-Specific Annotations

CDS annotations that (as a rule) are evaluated during runtime by specific frameworks such as SADL, BOPF, Analytics, or Enterprise Search:

- Analytics Annotations
- AnalyticsDetails Annotations
- Consumption Annotations
- DefaultAggregation Annotations
- · EnterpriseSearch Annotations
- Hierarchy Annotations
- ObjectModel Annotations
- OData Annotations
- Search Annotations
- Semantics Annotations
- UI Annotations
- VDM Annotations



To access help for an framework-specific annotation, position the cursor on relevant annotation in the DDL source editor and choose [F1].

For more information, look here Framework-Specific Annotations

Now I want to explain how to get the list of Annotations used in a given CDS view. Recently I saw few questions in SDN about how to CDS views where Odata extraction is enabled, What are all Query CDS views which are available etc...You can play with SQL for answering questions about CDS meta data.

There were two SAP delivered CDS views one for header information and one for the field information.

Header level Annotations of a CDS view

```
//This is select statement
Select
 * from
CDSVIEWANNOPOS

//But I want see Annotations of one CDS view so I added where clause as shown below
Select
 * from
CDSVIEWANNOPOS
where cdsname = 'I_MATERIAL'
```

This is how **I_MATERIAL** CDS was defined.

```
16 @AbapCatalog.sqlViewName: 'IMaterial'
 2 @Analytics: { dataCategory: #DIMENSION, dataExtraction.enabled: true }
 3 @VDM.viewType: #BASIC
 4 @EndUserText.label: 'Material'
                                                                                   Header Annotations
 5 @ObjectModel.representativeKey: 'Material'
 6 @AccessControl.authorizationCheck: #NOT REQUIRED
 7 @Search.searchable: true
   @ObjectModel.usageType.serviceQuality: #A
10 @ObjectModel.usageType.sizeCategory : #M
11 @ObjectModel.usageType.dataClass: #MASTER
12
13 define view I Material as select from mara
14 association [0..*] to I MaterialText as Text
                                                             on $projection.Material
                                                                                          = Text.Material
15 association [0..1] to I MaterialType as MaterialType on $projection.MaterialType = MaterialType.MaterialType
16 association [0..1] to I_MaterialGroup as _MaterialGroup on $projection.MaterialGroup = _MaterialGroup.MaterialGroup
17 association [0..1] to I UnitOfMeasure as BaseUnit on $projection.MaterialBaseUnit = BaseUnit.UnitOfMeasure
18 association [0..1] to I UnitOfMeasure as WeightUnit on $projection.MaterialWeightUnit = WeightUnit.UnitOfMeasure
   association [0..*] to I MaterialPlant as MaterialPlant on $projection.Material = MaterialPlant.Material
20
219
                 -Wendoserrext.label: material
                @Search.defaultSearchElement: true
22
                @Search.fuzzinessThreshold: 0.8
23
24
                @ObjectModel.text.association: ' Text'
25
                key mara.matnr as Material, Text,
26
                 --@EndUserText.label: 'Material Type'
27
28
                 mara.mtart as MaterialType, MaterialType,
29
                 --@EndUserText.label: 'Material Group'
30
                 mara.matkl as MaterialGroup, MaterialGroup,
31
32
                                                                                             Field Annotations
                 --@EndUserText.label: 'Base Unit of Measure'
33⊕
34
                 @Semantics.unitOfMeasure: true
35
                 @ObjectModel.foreignKey.association: ' BaseUnit'
                 mara.meins as MaterialBaseUnit, BaseUnit,
36
37
38⊕
                 -- @EndUserText.label: 'Gross Weight'
39
                 @Semantics.quantity.unitOfMeasure: 'MaterialWeightUnit'
40
                 @DefaultAggregation: #NONE
                 mara.brgew as MaterialGrossWeight,
41
42
43⊕
                 --@EndUserText.label: 'Net Weight'
                 @Semantics.quantity.unitOfMeasure: 'MaterialWeightUnit'
44
45
                 @DefaultAggregation: #NONE
                 mara.ntgew as MaterialNetWeight,
46
47
48<sub>9</sub>
                 --@EndUserText.label: 'Weight Unit'
49
                 @Semantics.unitOfMeasure: true
50
                 @ObjectModel.foreignKey.association: 'WeightUnit'
                 mara.gewei as MaterialWeightUnit, WeightUnit,
51
52
53
                 mara.mfrnr as MaterialManufacturerNumber,
                 mara.mfrpn as MaterialManufacturerPartNumber,
54
```

```
56 __MaterialPlant
57
58 }
```

This is the output of the select statement if we exexute the 2nd SQL shown above code sample

Filter pattern 2 21 rows retrieved - 2 ms					
AB CDSNAME	AB ANNOTATIONNAME	AB ANNOTATIONVALUE	12 ACTUALPOSITION	12 CHANGEDPOSITION	
I_MATERIAL	ABAPCATALOG		1	0	
I_MATERIAL	ABAPCATALOG.SQLVIEWNAME	'IMaterial'	2	1	
I_MATERIAL	ANALYTICS		3	2	
I_MATERIAL	ANALYTICS.DATACATEGORY	#DIMENSION	4	3	
I_MATERIAL	ANALYTICS.DATAEXTRACTION		5	4	
I_MATERIAL	ANALYTICS.DATAEXTRACTION.ENA	true	6	5	
I_MATERIAL	VDM		7	6	
I_MATERIAL	VDM.VIEWTYPE	#BASIC	8	7	
I_MATERIAL	ENDUSERTEXT		9	8	
I_MATERIAL	ENDUSERTEXT.LABEL	'Material'	10	9	
I_MATERIAL	OBJECTMODEL		11	10	
I_MATERIAL	OBJECTMODEL.REPRESENTATIVEKEY	'Material'	12	11	
I_MATERIAL	ACCESSCONTROL		13	12	
I_MATERIAL	ACCESSCONTROL.AUTHORIZATION	#NOT_REQUIRED	14	13	
I_MATERIAL	SEARCH		15	14	
I_MATERIAL	SEARCH.SEARCHABLE	true	16	15	
I_MATERIAL	OBJECTMODEL		17	16	
I_MATERIAL	OBJECTMODEL.USAGETYPE		18	17	
I_MATERIAL	OBJECTMODEL.USAGETYPE.SERVICE	#A	19	18	
I_MATERIAL	OBJECTMODEL.USAGETYPE.SIZECAT	#M	20	19	
I_MATERIAL	OBJECTMODEL.USAGETYPE.DATACL	#MASTER	21	20	

We can notice highlighted Annotations which doesn't exist in the CDS, these are the Annotation groups related to the Annotations defined in the CDS.

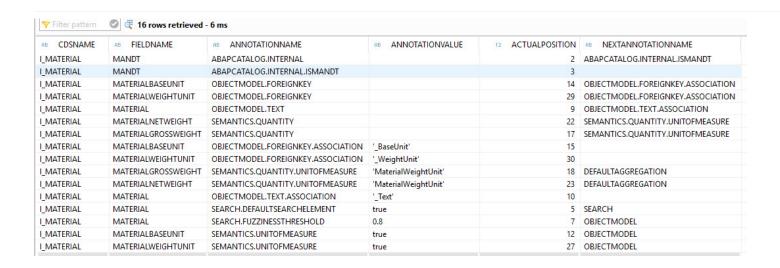
So I had modified the SQL statement so that output shows only Annotations available in CDS

```
Select
 * from
  CDSVIEWANNOPOS
 where cdsname = 'I_MATERIAL'
  AND ANNOTATIONNAME LIKE '%.%'
```

AB CDSNAME	AB ANNOTATIONNAME	AB ANNOTATIONVALUE	12 ACTUALPOSITION	12 CHANGEDPOSITION
I_MATERIAL	ABAPCATALOG.SQLVIEWNAME	'IMaterial'	2	1
I_MATERIAL	ANALYTICS.DATACATEGORY	#DIMENSION	4	3
I_MATERIAL	ANALYTICS.DATAEXTRACTION		5	4
I_MATERIAL	ANALYTICS.DATAEXTRACTION.ENABLED	true	6	5
I_MATERIAL	VDM.VIEWTYPE	#BASIC	8	7
I_MATERIAL	ENDUSERTEXT.LABEL	'Material'	10	9
I_MATERIAL	OBJECTMODEL.REPRESENTATIVEKEY	'Material'	12	11
I_MATERIAL	ACCESSCONTROL.AUTHORIZATIONCHECK	#NOT_REQUIRED	14	13
I_MATERIAL	SEARCH.SEARCHABLE	true	16	15
I_MATERIAL	OBJECTMODEL.USAGETYPE		18	17
I_MATERIAL	OBJECTMODEL.USAGETYPE.SERVICEQUALITY	#A	19	18
I_MATERIAL	OBJECTMODEL.USAGETYPE.SIZECATEGORY	#M	20	19
I_MATERIAL	OBJECTMODEL.USAGETYPE.DATACLASS	#MASTER	21	20

Field level Annotation of a CDS view

```
select * from
CDS_FIELD_ANNOTATION
WHERE CDSNAME = 'I_MATERIAL'
and ANNOTATIONNAME LIKE '%.%'
```



Hope this blog will give kick start on the annotations.

Please leave your comments and suggetions so that I can add if anything missing or wrong.

Thanks,

Shanthi

Assigned tags

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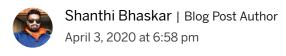


Ahmed khan

March 28, 2020 at 1:39 pm

What an awesome blog....bro just one thing is missing, which annotation i have to use on which scenario. if you can guide me for it would be really helpful.

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Please use below in for the documentation

https://help.sap.com/doc/abapdocu_750_index_htm/7.50/en-US/abencds_annotations_sap.htm

Like 0 | Share



Andre Fischer
April 30, 2020 at 5:53 pm

Very informative!

Like 1 | Share



Sunny G

July 18, 2020 at 6:28 am

Hello Andre - The author (Shanti Bhaskar) has copied the content from the below link and posted it here as his blog post. This author is a plagiarism king and all he does is to copy the contents from other sites and post it here as his own post. The entire post has been copied and pasted here blindly. Following is the link from which he has copied:

http://sapabapcentral.blogspot.com/2019/12/all-about-cds-annotations.html

Kindly review the same and request you to take the strictest of action against such people who are destroying this wonderful forum.

PS: The other blog posts of this user are also copied content from the web. One such example is the CDS view finder which he copied from SAPYARD (https://blogs.sap.com/2020/05/31/abap-cds-view-finder/). After I posted my comment on plagiarism, looks like this blog has

now been deleted.

Thanks

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Jerry Janda July 18, 2020 at 1:21 pm

That other community post is currently off the site, as we are currently working with Shanthi on how to resolve. In this case, Shanthi's post was published on December 6. The other was published on December 7 (http://sapabapcentral.blogspot.com/2019/12/all-about-cds-annotations.html). Considering that the time stamps are also dependent on time zones, we'd have to investigate further to see whether, in fact, this post actually came first (in which case someone else plagiarized this, and not the other way around).

One thing missing from the other is that Shanthi includes references to SAP Help and has also been knowledgeable enough to point people to that content in comments:

You can check SAP help on these Annotations using the below link

https://help.sap.com/doc/saphelp_nw751abap/7.51.0/en-US/63/0ce9b386b84e80bfade96779fbaeec/content.htm? no_cache=true

--Jerry

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Shanthi Bhaskar | Blog Post Author February 23, 2021 at 1:35 am

Hi Jerry,

Thanks for your support.

Sorry for commenting so late here, Was very busy with Group reporting implementation.

Previously I had wrote a blog ABAP CDS View(s) Finder where I had referenced their blog and clearly I had mentioned source. But it was deleted as requested by SDN Moderator. Now they are doing revenge drama on me ...

Not sure what are they doing these kind of actions. After seeing a year like 2020 still people try to defame people unnecessary with Negative thoughts:(.

I am vivid learner and passionate SAP guy and always try to share the things. I had learnt so much and been learning here (SAP SCN), So will be keep posting the stuff as I learn.

Please refer the below screen cam where email time and date can be seen. I always keep track of my learnings in emails.

Tue. Aug 13, 2019, 3:41 PM



Thanks,

Shanthi.

Like 0 | Share



Please check this thread - The original reason why I had published this blog.

https://answers.sap.com/questions/12729039/how-to-identify-cds-views-which-are-enabled-for-da.html?childToView=12841087#answer-12841087



Sunny G

July 18, 2020 at 6:30 am

Shame on you Shanti Bhaskar for copying the content from other sites and posting it here as your own post.

Like 1 | Share



Shanthi Bhaskar | Blog Post Author

February 23, 2021 at 1:44 am

Like 0 | Share



Shilpa R

May 19, 2021 at 4:09 am

Hi Shanthi Bhaskar, this blog is really helpful, But I had one doubt can we implement variant using CDS annotations?

Like 0 | Share



Shanthi Bhaskar | Blog Post Author

May 26, 2021 at 1:05 pm

I am not sure we have that option Shilpa.

Like 1 | Share



Shilpa R

May 27, 2021 at 4:49 pm

Ok thank you for your reply

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