Technical Articles

Abhimanyu Sharma

February 6, 2020 | 2 minute read

CDS view performance Annotation for CDS view performance

3 16 8,220

Just want to share few interesting points on the **CDS view performance Annotation for CDS view performance**. SAP has released some guidelines to improve the performance of CDS views.

The best way to learn these guidelines is to learn from standard CDS views and apply in our custom views.

In most of the standard CDS views, we have seen below 3 annotations being used by SAP in order to improve performance. But I have seen we are not using it in our custom views which might impact performance while fetching data. Hence it would be good practice to use these annotations properly and benefit with performance.

1. **@ObjectModel.usageType.serviceQuality**
2. **@ObjectModel.usageType.sizeCategory**
3. **@ObjectModel.usageType.dataClass**

(Note : In case where we want to see list of CDS view doesn't have these annotations, SAP has provided a standard table : DDHEADANNO. This table will have information of all the annotations being used in CDS views present in the system. So you can create a report program on this table where we can find out CDS views which doesn't have above annotations with %usagetype% keyword.)

Valid values for serviceQuality: #A, #B, #C, #D, #X, #P

Valid values for sizeCategory: #S, #M, #L, #XL, #XXL

Valid values for dataClass: #TRANSACTIONAL, #MASTER, #ORGANIZATIONAL, #CUSTOMIZING, #META, #MIXED

Now will see below charts where we will see in what cases we should use these annotations :

A	B	C	D	X	P
View shall not consist of more than 3 table	View shall not consist of more than 5 tables	View shall not consist of more than 15 tables	View shall not consist of more than 100 tables	The view is built to push down application code to HANA, and / or is used for special purposes only, like data migration/ test cases demanded.	.
View shall not contain functions	View shall only contain functions which can be applied on the result set (conversions)	View shall not aggregate a huge number of table rows	A test case with customer-like data (or at least with data corresponding to the size seen at customer side) must exist		May not be consumed within application logic or from the UI. The serviceQuality 'P' must not be used for general purpose reuse views.
View shall not aggregate a huge number of table rows for direct access	View shall not aggregate a huge number of table rows for direct access	View may not be consumed within application logic			No need to maintain annotations for sizeCategory and dataClass
View shall not contain tables of different data classes	View shall not contain tables of different data classes	Runtime of SELECT SINGLE with minimal field transport shall be < 10 ms			The CDS view has been built to structure the SQL view model. I. It shall only be re-used in other views
Runtime for a SELECT SINGLE with minimal field transport shall be < 1 ms	Runtime for SELECT SINGLE with minimal field transport shall be < 2 ms	Runtime of SELECT SINGLE * shall be < 20 ms			
Runtime for SELECT SINGLE * shall be < 2 ms	Runtime for SELECT SINGLE * shall be < 5 ms				

Size Category :

sizeCategory	Rule
S	expected number of rows is < 1.000
M	expected number of rows is < 100.000
L	expected number of rows is < 10.000.000
XL	expected number of rows is < 100.000.000
XXL	expected number of rows is >= 100.000.000

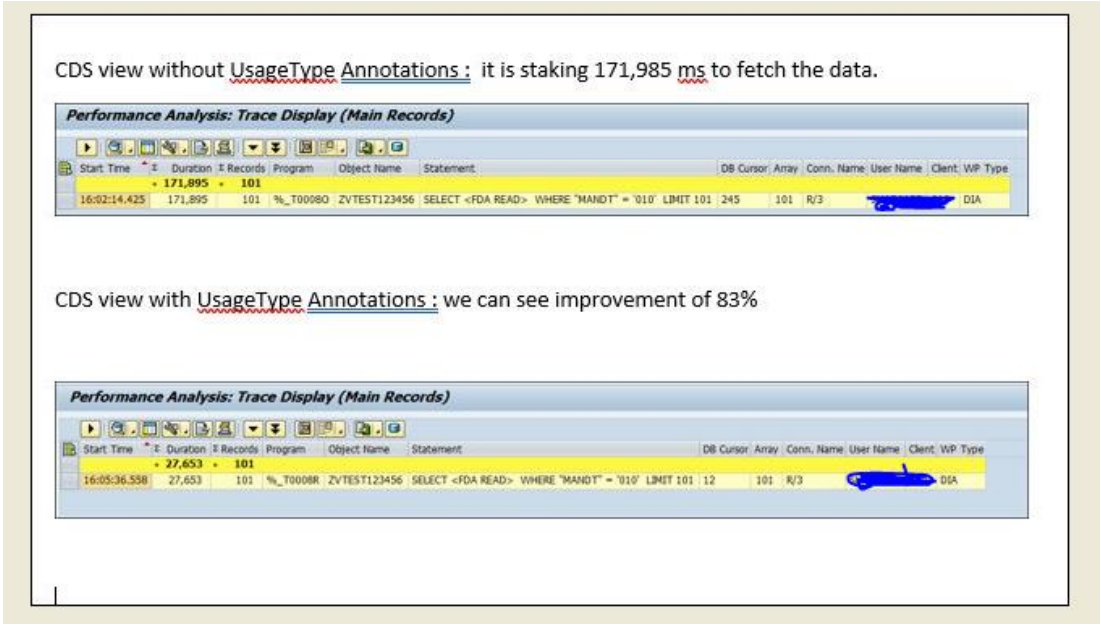
DataClass :

dataClass	Rule
TRANSACTIONAL	The view contains data which is written or changed in high volume transactions (also for background processing). Examples are header and items for Sales Order processing or Financial Postings.
MASTER	Master data is read but not written or changed in high volume transactions (also for background processing). It typically drives the business process decisions when business logic is executed. It is also shown to the user as context information and to enable user decisions when these transactions are executed manually. Examples are material, business partner or account.

Combination of Characteristics to be used for annotations in CDS views

Service Quality	Where to be used	Size Category	DataClass	Number of tables	Conatins functions	Aggregation on huge number of records	KPI 1 : Select single (1stKeyfld) from CDS VIEW where full key	KPI 2 : Select single * from CDS VIEW where full key
A	Withing buusiness logic for high volume transactions or background processing	S – XXL	Transactional, master, Customizing, Organizational, Meta but not Mixed	<= 3	No	No	<1 ms	< 2ms
B	Withing buusiness logic for high volume transactions or background processing	S- XXL	Transactional, master, Customizing, Organizational, Meta but not Mixed	< = 5	No	No	< 2 Ms	< 5 Ms
C	From the UI in transaction for single object retrieval	S- XXL	Mixed Expected	< = 15	Can	No	<10 ms	<20Ms
D	For analytical reporting	XL-XXL Expected	Mixed Expected	< = 100	Can	Can	<500 Ms	
X	Is built to push down application code to SAP HANA	XL – XXl Expected	Mixed Expected	<=15	Can	Can	< 500 Ms	
P	Only to structure the SQL View model, CDS view may not be consume outised view hierarchy	Hierarchy CDS view	Mixed Expected	< = 5	Can	Can		

Test Results :



Conclusion :

1. Keep CDS views simple (in particular service-Quality A and B = #BASIC views)
2. Amount of data persisted in S4 CDS views should not exceed 20% of the overall data volume of the system.
3. In transactional processing, only use simple CDS views accessed via CDS key
4. Expose only required fields –define associations to reach additional fields when requested

Alert Moderator

Assigned tags

SAP S/4HANA

BW (SAP Business Warehouse)

SAP S/4HANA embedded analytics

Similar Blog Posts

Optimize CDS views using dbHints annotation

By Todd Witter Dec 12, 2019

Performance Optimization for ABAP CDS view

By Prosenjit Das Neogi Jul 03, 2018

Easy way to prepare dataset for performance test of ABAP-CDS-views in S/4

By Sergey Shablykin Oct 03, 2017

Related Questions

Does annotation @ VDm.viewtype has any effect

By Bodhisattwa Pal Apr 11, 2020

Prompt list of values in webi from CDS view

By Former Member Apr 08, 2018

How to reference analytical CDS query view to a SEGW OData project data model ?

By Momen Allouh Aug 16, 2021

3 Comments

You must be Logged on to comment or reply to a post.

ASHOK KUMAR
February 7, 2020 at 6:40 am

Excellent article, keep up the good work!!

Like 1 | Share

Abhilash Pradhan
May 23, 2020 at 12:36 pm

Excellent blog , helped me understand the concepts of these 3 .

Like 1 | Share

Heiko Gerwens
December 28, 2020 at 8:19 am

No doubts that these annotations are useful also during custom development. They are meant to describe some characteristics of the CDS view with respect to their performance behavior in CDS queries. However, they should not have any impact on CDS query performance, because annotations are not even "known" by HANA. In your example you have probably observed another effect unrelated to these annotations. Would be great if you can share some more details of your example to figure out the root cause of the observed performance differences.

Like 2 | Share