



IBM Cognos 8 BI Application Performance Tuning

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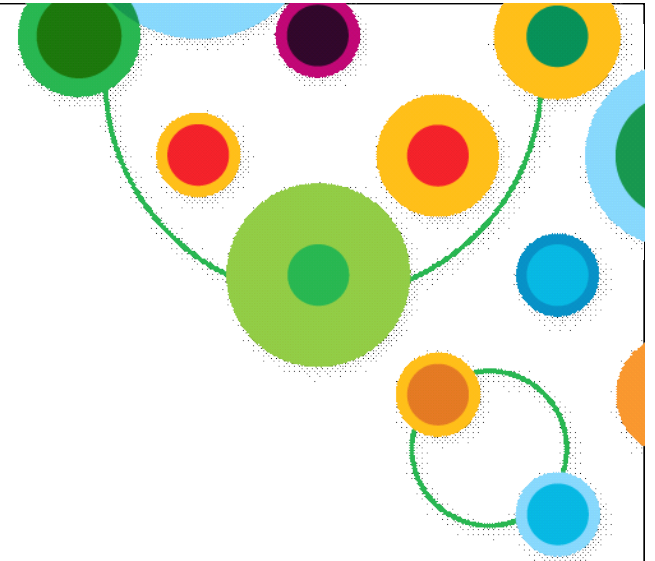
Agenda

Welcome

Proven Practices for Application Tuning

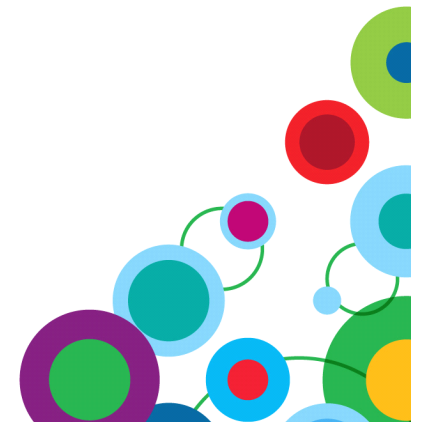
- Local Processing
- Minimized SQL
- Parameter Maps
- Prompt Performance

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IBM Cognos 8 BI Application Performance Tuning Workshop Overview

- This workshop will provide guidelines & suggested areas to review when evaluating the performance of your Cognos 8 BI application.
- This session will not address specific infrastructure related topics such as:
 - component and service architecture
 - the process request flow
 - tuning parameters for
 - OS
 - RDBMS
 - web servers
 - application servers



Identify Local Processing

- Is local processing required?
 - Set processing to “Database Only” and test query
- What is being processed locally and what is processed on the database?
 - Compare Cognos SQL to Native SQL in Report Studio or FM
- How much data is brought to process in the app tier?
 - Monitor the C8 temp directory when running reports
 - Watch for files with “uda” prefix – these are temp. files
 - Everything above 8Mb (UDA temp memory buffer) is written to a temp file



Example viewing generated SQL

The 'Test Results' window displays the 'Query Information' tab. It contains two sections of SQL code:

Cognos SQL

```
select
  FACT.ID as ID,
  FACT.CRN as CRN
from
  "Generic Database"."C:\COGNOS\DATABASES\Generic Data
```

Native SQL

```
select `FACT`.`ID` as [ID] , `FACT`.`CRN` as [CRN] from
`C:\COGNOS\DATABASES\Generic Database.accdb`.`FACT` `FACT`
```

At the bottom of the window, there are buttons for 'Test Sample', 'Total Rows', and 'Options', along with 'Close' and 'Help' buttons.

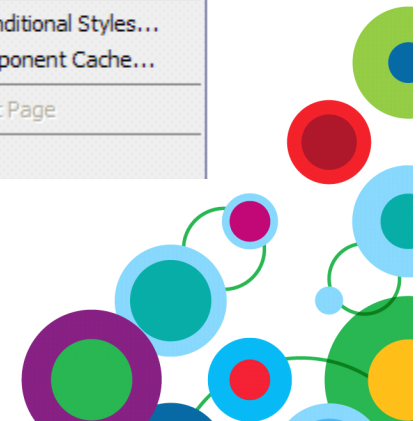
The 'Properties - Query' dialog box shows the following settings:

Data	
Auto Group & Summarize	Yes
Generated SQL	
Override Dimension Info	No
Define Member Sets	No

Query Hints	
Auto-Sort	
Processing	
Avoid Division by Zero	
Rollup Processing	

The 'Tools' menu is open, showing the following options:

- Validate Report
- Validate Options...
- Auto Correct...
- Show Generated SQL/MDX**
- Show Specification
- Show Specification (Selection)
- Open Report from Clipboard
- Copy Report to Clipboard
- Manage Conditional Styles...
- Layout Component Cache...
- Build Prompt Page
- Options...



Example Settings for Processing

File Edit View Structure Table Data Run Tools Help

Font Size A B I U

Insertable Objects

- Query
- Join
- Union
- Intersect
- Except
- SQL
- MDX

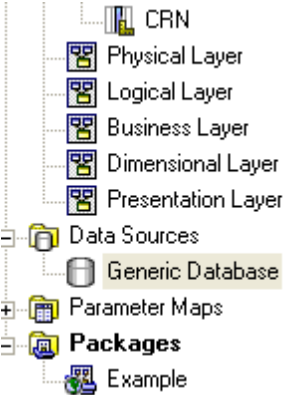
Page Explorer

- Query1

Properties - Query

Define Member Sets	No
Query Hints	
Auto-Sort	
Processing	
Avoid Division by Zero	(Default)
Rollup Processing	Database only
Execution Optimization	Limited Local
Maximum Rows Retrieved	
Maximum Tables	

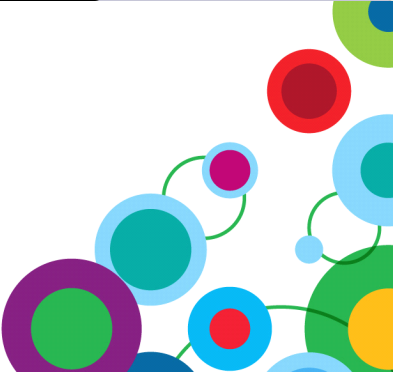
Processing
Specifies whether the query engine will pick up a minimal amount of processing. Local processing only occurs if the database cannot handle the load.



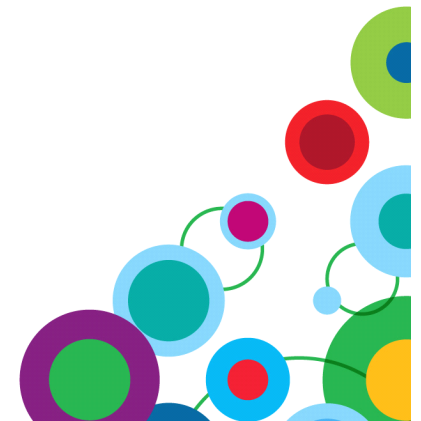
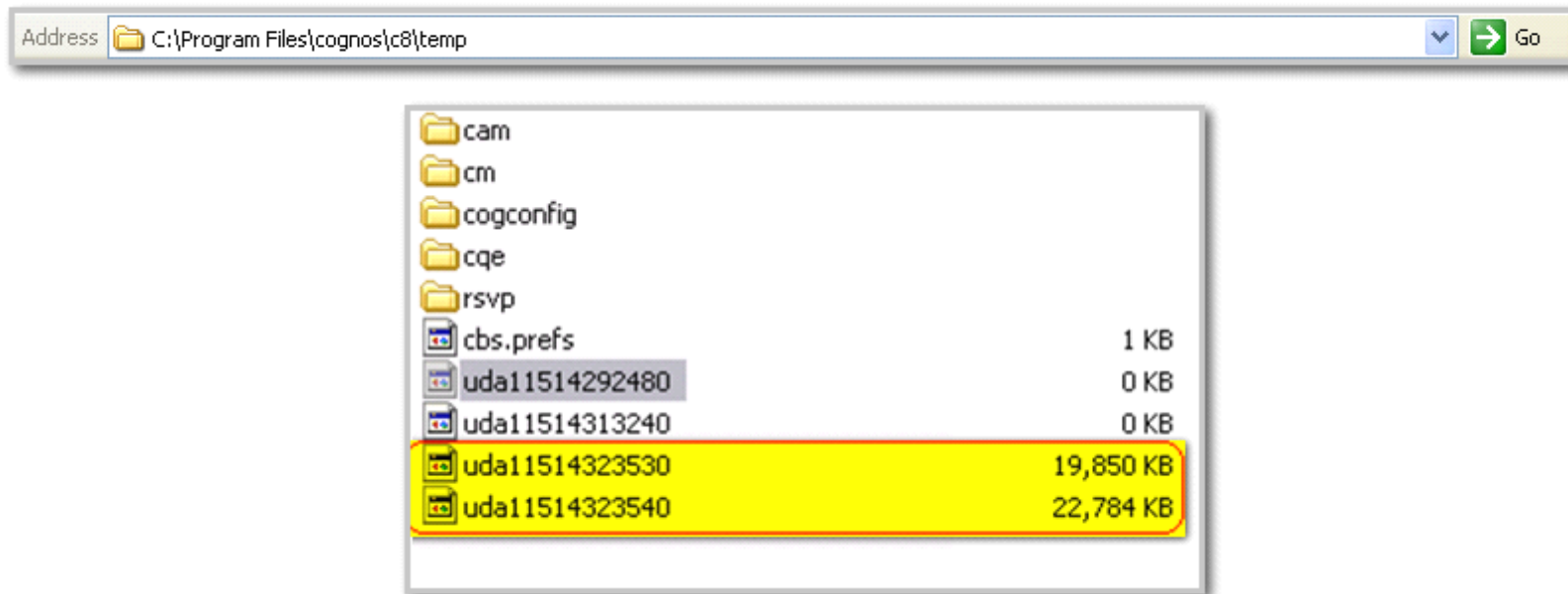
Properties

Properties Language

Name	Generic Database
Query Processing	Limited Local
Rollup Processing	unspecified
Content Manager Data Source	Generic Database
Catalog	C:\COGNOS\DATABAS...
Cube	
Schema	
Type	



Example – UDA Temp Files



When C8 Minimizes SQL?

- Minimized by definition
 - Data source query subject are the lowest level SQL building blocks
- Eligible for Minimization
 - Model query subjects with no relationships or determinants
 - Model regular and measure dimensions
- Not Eligible for Minimization
 - Model query subjects with relationships and/or determinants
 - Hand-written SQL will not be minimized
 - Embedded prompts are evaluated at run-time and not minimized

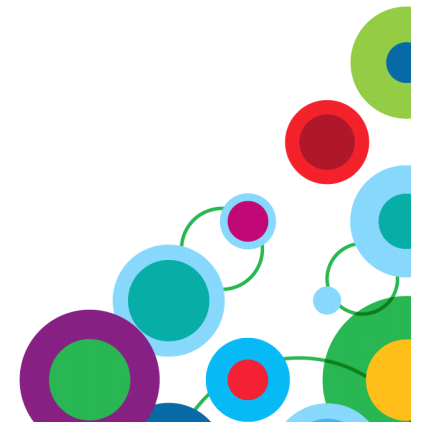


Example – Eligible for Minimization

- Generated SQL in FM

```
select PRODUCT_LOOKUPS.PRODUCT_NAME as PRODUCT_NAME  
from go_data_warehouse.gosldw_c8.dbo.PRODUCT_LOOKUP  
    PRODUCT_LOOKUPS  
where (PRODUCT_LOOKUPS."LANGUAGE" = N'EN')
```

- Product Line, Product Type and Product Dimension are not in this query



Example – Not Eligible for Minimization

Select *,

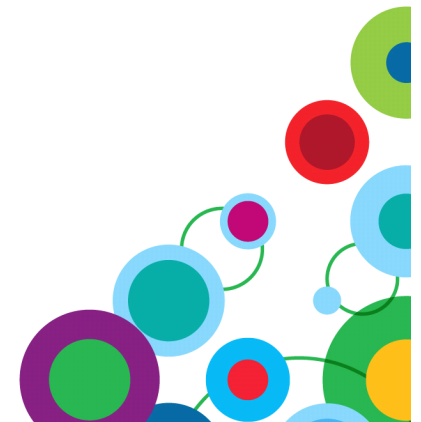
Case PRODUCT_LINE.PRODUCT_LINE_CODE

When #prompt('Target Product Line Code', 'integer', '1')# then 1

Else 0

End as "Target Product Line"

from [go_data_warehouse].PRODUCT_LINE PRODUCT_LINE



Parameter Maps

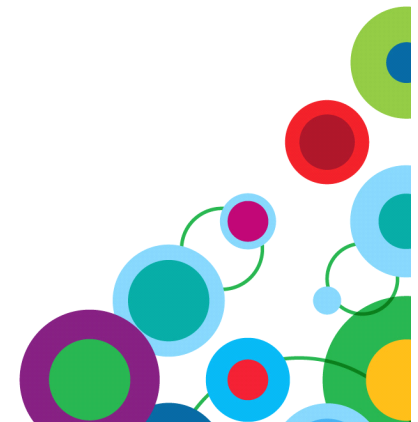
- Allow incorporating session information, user locale and prompt selections logic to augment model behavior
- When using parameter maps be aware that:
 - Parameter map entries are strings rather than object references
 - Cannot validate all parameter map entries with a single test
 - Very large, nested parameter maps need to be parsed at runtime and increase SQL prepare cost
 - Using parameter maps prevents SQL minimization and metadata caching



Parameter Maps Recommendations

- Leave data source query subjects unmodified whenever possible
- Build model calculations and filters on data source query subjects (not embedded)
- Embed model calculations and filters in model query subjects and/or dimensions
- Avoid large, nested parameter maps whenever possible
- Evaluate whether a prompt or parameter map is appropriate in the model rather than in a report design technique

Key	Value	
en	EN	Select PRODUCT_LINE.PRODUCT_LINE_CODE, #PRODUCT_LINE.PRODUCT_LINE_' + \$Language_lookup{\$runLocale}# as Product_Line
fr	FR	From [gosales].PRODUCT_LINE PRODUCT_LINE



Prompt Performance – General Considerations

- Look at the overall report spec, not just the prompt
 - Report spec needs to be parsed, SQL generated in order to determine what prompts to present to the user
- Do you have too many queries on a prompt page?
 - Split prompts across multiple pages
- How much data do your prompt queries return?
 - Cost of sending thousands of rows to the browser and rendering is often overlooked
- Can a user skip optional prompts?
 - Position optional prompts towards the end of the wizard, so users have an option to hit “Finish” and go directly to the report
- Do you have too many prompts?
 - e.g. drill-through report designed to handle any possible context in a cube
- Cache Prompts or not?
 - Prompt pages only will be cached – prompts on report pages will not
 - Remember to create the job to update the prompt cache

