Ad-hoc analysis of Case Analyzer User Defined Fields using dynamic drill-down

Case Analyzer User Defined Data representation in Cognos RTM Drill down Dashboards

IBM Case Analyzer Publishing Service provides out-of-the-box dashboards as IBM Case Monitor. In order to view custom user data in the dashboards, it is required to configure User Defined data fields (UDFs) as measures or dimensions and expose them to IBM Cognos Real Time Monitoring (RTM) dashboards. This article details a technique to configure a relationship between Case Analyzer UDF dimensions and fact data to allow users to create RTM dashboards with drill-down functionality on custom user defined data.

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Introduction

IBM Case Analyzer Service is an integral component of IBM Content Platform Engine (CPE). Other components that are included in CPE are IBM FileNet Content Manager and IBM FileNet Process Engine and IBM Case History Engine. Case Analyzer Service (in CPE) processes the audit events of IBM Case Manager (ICM) Cases, Tasks and Workflows generated in Content Engine & Process Engine. The processed information is used to create a statistical data-mart. IBM Case Monitor leverages this data-mart to display live IBM Cognos RTM Dashboards.

ICM cases contain custom properties holding business specific data which are exposed as User Defined Fields (UDFs) in Case Analyzer Service. While the case progresses, audit events are generated in both Content engine and Process engine audit logs. Case Analyzer service, processes these audit events and populates the UDFs data into fact and dimension tables to form a data-mart.

IBM Cognos RTM leverages the Case Analyzer Service data-mart to display business statistical information in dashboards. Customers and Business partners often have requirement to perform ad-hoc analysis using drill-down* functionality of Cognos RTM dashboards on UDF data. This article details a technique to configure a relationship between Case Analyzer UDF dimensions and fact data that allows users to create IBM Cognos RTM dashboards with drill-down functionality. This article is divided into the following major discrete sections for simplicity:

- Prerequisites
- Use case
- Dashboard designing
- Conclusion
- Resources

*Viewing data at a level of increased details as we drill-down and decreased details as we roll-up gives better perspective (same statistical information in different perspectives) to compare and contrast. Also it allows users to focus starting from summarized data to the most detailed data.

Prerequisites

The system used to build drill-down dashboards, should have complete installation of IBM Content Platform Engine v5.2, IBM Case Manager v5.1.1 and IBM Cognos Real Time Monitor v10.2. The following prerequisites should be met by the user who is using this article.

- Hands on experience in creating and deploying solutions in IBM Case Manager
- Hands on experience in using IBM Case Client
- Hands on experience in setting the ICM case custom property as an audit field in Content Engine
Hands on experience in configuring & importing IBM Case Monitor Dashboards in IBM Cognos RTM

Use case

A leading automobile manufacturer sells luxury passenger vehicles of varied segments across the globe. To plan their inventory management across their warehouses, executives at the production plant are interested to see how the sale orders are flowing in. For example, they need to know the number of cars booked per region in the world to handle varied levels of inventory.

Consider the following parameters for this use case

- Regions: America, EMEA and AP
- Countries: USA, Dubai, India
- States: FL (Florida), CA (California), Dubai and TN (Tamil Nadu)
- Vehicle Segments: Sedan, SUV

It is clear that the above data is hierarchical in nature having parent child relationship i.e., the geographic location relationship between states, countries and regions. The challenge of displaying data at multiple levels of aggregated reports could be addressed by drill-down and roll-up operations. Business demands are to be met as per the varied number of orders per location. Hence, this ad-hoc analysis is required to distribute the stock as per the orders.

Use IBM Case Builder to create an ICM Case Solution and deploy it for this use case and generate the required amount of data to view the RTM dashboards

Viewing data at a level of increased details as we drill-down and decreased details as we roll-up gives better perspective (same sales information in different perspectives) to compare and contrast between incoming orders.
Dashboard Designing

Setting up ICM Case environment

- Create Case Solution using ICM Case Builder
- Define the required properties as described in the use case
- Deploy the solution and create a Case instance in Case Client
- Configure the required solution properties to be audited (Refer “Procedure to explore User Defined Fields in Content Platform Engine” listed under Resources Section for more detailed steps)

Configuring custom Case properties in IBM Case Manager (ICM)

- Following are the ICM Case properties used in this use-case and are exposed to Content Engine (CE) audit logs.
  - SalesRegion is an enumeration holding all the regions of sales orders
  - SalesCountry is an enumeration holding all countries per region
  - SalesStates is an enumeration holding all states per country
  - SalesSegment is an enumeration holding types of vehicle segments
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**Figure 2. Case Custom properties in ICM**

![Car Sales Order](image)

*Configuring User Defined Fields in Case Analyzer*

- Use Case Analyzer to expose all custom properties created in ICM. Refer to the resources section for more information.

**Figure 3. Case Analyzer exposed UDF Fields**

![Case Analyzer Dashboard](image)

- Create a new database view (F_DMCaseWIP_Drill_Down_View) in Case Analyzer Database, to hold the relationship between fact and dimension data.
CREATE View [dbo].[F_DMCaseWIP_Drill_Down_View] AS
Select DMCase_key, CAST(b.Region As Varchar(64)) AS Region,
CAST(c.Country As Varchar(64)) AS Country,
CAST(d.States As Varchar(64)) AS State,
CAST(e.Segment As Varchar(64)) AS Segment,
CAST(b.Region_key As Varchar(64)) + CAST('*' As Varchar(64)) +
CAST(c.Country_key As Varchar(64)) + CAST('*' As Varchar(64)) +
CAST(d.States_key As Varchar(64)) + CAST('*' As Varchar(64)) +
CAST(e.Segment_key As Varchar(64)) AS UDF_Fact_Keys
From F_DMCaseWIP a,
D_DMDataField_Region b,
D_DMDataField_Country c,
D_DMDataField_States d,
D_DMDataField_Segment e
Where a.VMAE_Country_key = c.Country_key AND a.VMAE_Region_key = b.Region_key AND
a.VMAE_States_key = d.States_key AND a.VMAE_Segment_key = e.Segment_key and
b.Region!='' and c.Country!='' and d.States != '' and e.Segment != ''

Creating Cognos Real Time Monitoring (RTM) Workbench Objects

- Steps to create Cognos RTM Objects for drill down functionality.
  - Open the Cognos RTM Workbench in a browser by navigating to the following URL: http://<hostname:port>/cognos/realtime/workbench
  - Default credentials to login into RTM Workbench Console
    - User Name: rtmadmin
    - Password: manager
  - Select the Workbench tab
  - Under Workbench Objects, select Public Folder
  - On the right hand pane, select Activities>> Create New>> Folder
  - Provide a new folder name. Example “Car Sales Order”

Figure 4. Cognos RTM new Folder Creation

- Create JDBC Agent
  - Select “Car Sales Order” folder, Click Activities drop-down list, select Create New >> Agent
Select **Agent Type** as **JDBC** and fill the properties. (for the purpose of this article/use case we are using the following)

- **Name**: CSO_JDBC_Agent
- **Database**: MS SQL Server
- **Connection Type**: Datasource-based
- **JDBC Source**: JDBC Source as created in Application Server for CADB

**Figure 5. Cognos RTM JDBC Agent configuration**
• Create Data Steam
  1. Select “Care Sales Order” folder, Click Activities drop-down list, select Create New >> Data Stream
  2. Use the following query in JDBC text area

|-----------------10-----------------20-----------------30-----------------40-----------------50-----------------60-----------------70-----------------80-----------------|
Select Count(*) as count, UDF_Fact_Key From F_DMCaseWip_Drill_Down_View
Group By UDF_Fact_Key

• Follow the below screen shot to fill up other attributes

Figure 6. Cognos RTM Data Stream configuration

• Create Look-up table
  1. Select “Care Sales Order” folder, Click Activities drop-down list, select Create New >> Lookup Table
  2. Use the following query in JDBC text area

|-----------------10-----------------20-----------------30-----------------40-----------------50-----------------60-----------------70-----------------80-----------------|
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SELECT DISTINCT UDF_Fact_Key, Region, Country, States, Segment FROM F_DMCaseWip_Drill_Down_View

- Follow the below screen shot to fill up other attributes

Figure 7. Cognos RTM Data Stream Configuration

- Create View
  1. Select “Care Sales Order” folder, Click Activities drop-down list, select Create New >> View
  2. For creating view from existing Data Stream, select CSO Data Stream (created earlier)
• Create Dimension
  1. Select “Care Sales Order” folder, Click Activities drop-down list, select Create New >> Dimension
  2. Find the Lookup Table that was created earlier (CSO LookupTable) by selecting the Browse button
  3. Select the fields for creating the hierarchy i.e. Region, Country, States and Segment (arrange the hierarchy by arranging the fields in sequence using Up & Down buttons)
  4. Select the Dimension key as the Key Field. i.e. Under Select Key Fields section, select the Key Field check-box for UDF_Fact_Key and give alias name as Dimension_key
  5. Click Save button to save the Dimension
Create Cube

1. Select “Care Sales Order” folder, Click Activities drop-down list, select Create New >> Cube
2. Find the View that was created earlier (CSO View) by selecting the Browse button
3. Click Add Measure Column button and enter the following values
   - Measure Name: Number of Cars Ordered
   - Expression: SUM ("Car Sales Order".CSO View."Count")
4. Click Add Dimension and select the following values:
   - Dimension: CSO Dimension
   - Dimension Primary Key: Dimension_Key
   - Fact Foreign Key: Fact_Key
5. Click Save button to save the Cube
Figure 10. Cognos RTM Cube configuration

Creating Cognos RTM Dashboard objects

1. Open the Cognos RTM Workbench URL (http://<hostname> : <port>/cognos/realtime/dashboard) in a browser and use the following default credentials
   Username: rtmadmin, Password: manager
2. Select Dashboard Objects under Navigation Tree drop-down
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Figure 11. Cognos RTM Navigation Tree Menu

1. On the right side pane, click **Create Object** drop-down and select **Create Dashboard Object**
2. Select **Choose Folder** (right top) button and select “Car Sales Order” folder
3. Select CSO Cube (that was created before) under **Datasource Name** and click **Continue** button.
4. Choose the Display Type from the following options to configure the chart type
   a. **Display Type**: Chart
   b. **Display Sub-type**: Vertical Combination Chart
5. In the next page, select the measure **Count** under the section **Select one or more items for your chart value (Y-Axis)**
6. Select the **Chart Type** as **Column**
7. Under the section **Select a single item for chart category (X-Axis)**, select "CSO Dimension" and click **Continue** button
8. Name the dashboard object as "Cars Ordered" and save. This completes the creation of Dashboard objects

Configure the Dashboard to view in Cognos RTM
1. Select **Dashboard** under **Navigation Tree** drop-down
2. Click **Create Object**, and choose **Create Dashboard**.
3. Click **Choose Folder**, and select “Car Sales Order”
4. Check the check-box next to "Cars Ordered" and click **Continue**
5. Name the dashboard as "Car Sales Order" and use all defaults values.
6. Click **Save**. This completes the Dashboard creation.
7. Your Dashboard will look like the following:
Figure 12. Number of cars ordered per region

Select America region to drill down and view car orders for all counters in that region. In this use case we have USA as the country under America region.

Figure 13. Number of cars ordered in all countries under region

Select USA Country to drill down and view car orders for all states in that country. In this use case we have FL and CA as the states under USA.
Figure 14. Number of cars ordered in all states under country

Select any state to drill down and view car orders for all segments in that state. In this use case we have selected CA state to drill down and view car sales per segments

Figure 15. Number of cars ordered in all segments per state
Conclusion

Live dashboards on User Defined Fields is often a requirement for executive management, who are involved in capacity / inventory / work planning, because drill-down functionality of dashboards / reports provides increased level of information while drilling down and consolidated information while rolling up. This dynamic information is required to perform ad-hoc analysis by comparing reporting information at various hierarchical levels.

This article used auto sales order processing business as an example to provide the technique of delivering drill-down dashboards with User Defined data in IBM Case Manager Cases by leveraging customized IBM Case Analyzer Database Schema.

Resources
Following are the list of resources that are helpful for this article:

- Procedure to expose User Defined Fields in Content Platform Engine
- Configuring Case Analyzer Service
- IBM Case Manager Redbook
- Configuring External Data Service (EDS) to populate data from a repository or data source into ICM Case Custom properties. External Data Service (EDS)
- DeveloperWorks article on External Data Service (EDS) example