AA - EI Write-Back Pattern

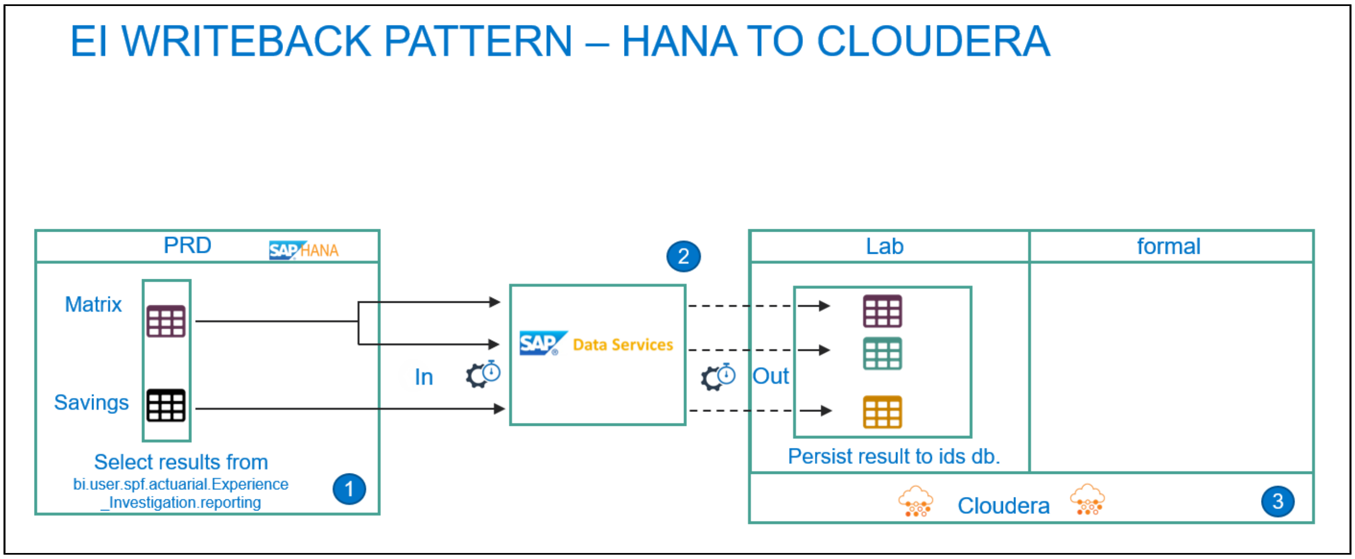
Background

With the Emphasis on using Advanced Analytics and Business Intelligence in the domain of improving client persistency having the movement related information for a client across their policy duration is essential. As such the Experience Investigation (EI) workload provides the enablement of viewing this information in a central data asset within the SAP HANA environment. This information encompasses the experience for both Risk and Savings products. However given that this data asset resides within the SAP HANA Production environment, there are limits in terms of memory and the wide-spread of data sources that one could amalgamate this information with. Given that majority of the organization's data resides within the Cloudera lake and it would make sense to house the Experience Investigation data within the Cloudera environment.

This would effectively allow for more efficient and memory ease data management processes and allow for users within both the Product Management team and Advanced Analytics team to enrich this data further, so as to generate widened business insights. As such the SBI Operations team have created a write-back pattern that allows for the seamless movement of data from the SAP HANA Environment to the Cloudera Environment which is orchestrated via Data Services.

Write-Back Purpose & Technical Detail

For this specific write-back build, the focus was moving data from EI related calculation views within the SAP HANA PROD environment to hive tables within the Cloudera LAB environment. For detailed insight into Data services back-end components of the general write-back pattern please see link to the SBI documentation: How to%3A Write back data from a source table to a target table using the Audit Control Framework. The Figure below provides a diagrammatic illustration of the process specifically tailored to the EI write-back.



Component 1 - SAP HANA

The desired SAP HANA views required as input reside within the PRD environment and are listed below:

- "_SYS_BIC"."bi.user.spf.actuarial.Experience_Investigation.reporting/MATRIX"
- "_SYS_BIC"."bi.user.spf.actuarial.Experience_Investigation.reporting/SAVINGS"

NB:

Each of these views house specific runs which are identified by a column called **ID**. As such an input parameter for the DS job will be required in order to allow us to write a desired ID from either one of these views. In order to Obtain the latest officialized results IDs, please contact the Product Management team listed in the Write-back Support section.

NB:

Another note is that the Matrix view is split into 2 Investigations; Lapse and Risk and both have unique associated ID's

Component 2 - Data Services

This refers to the data services job, which takes the input from the SAP HANA PROD environment and writes this information into the underlying Cloudera LAB tables. For End users this will be executed via the Data Services Management console and the technical support will be facilitated by the SBI Operations team. This job will be run on an on-demand" basis, hence the frequency would potentially be 2-3 times per year.

NB:

This Job as an input parameter as ID for each investigation, to ensure that the correct data is passed through into the correct underlying table.

Component 3 - Cloudera

Cloudera is effectively the landing ground environment and more specifically the Cloudera lab environment, All data is written to the **groupbi_ids_shared_spflab** schema as it is a central ground for members of the Advanced Analytics team. Each Investigation has it's own corresponding

- *groupbi_ids_shared_spflab.ei_matrix_lapse_reporting_staging_prd*
- *groupbi_ids_shared_spflab.ei_matrix_risk_reporting_staging_prd*
- *groupbi_ids_shared_spflab.ei_savings_lapse_reporting_staging_prd*

NB:

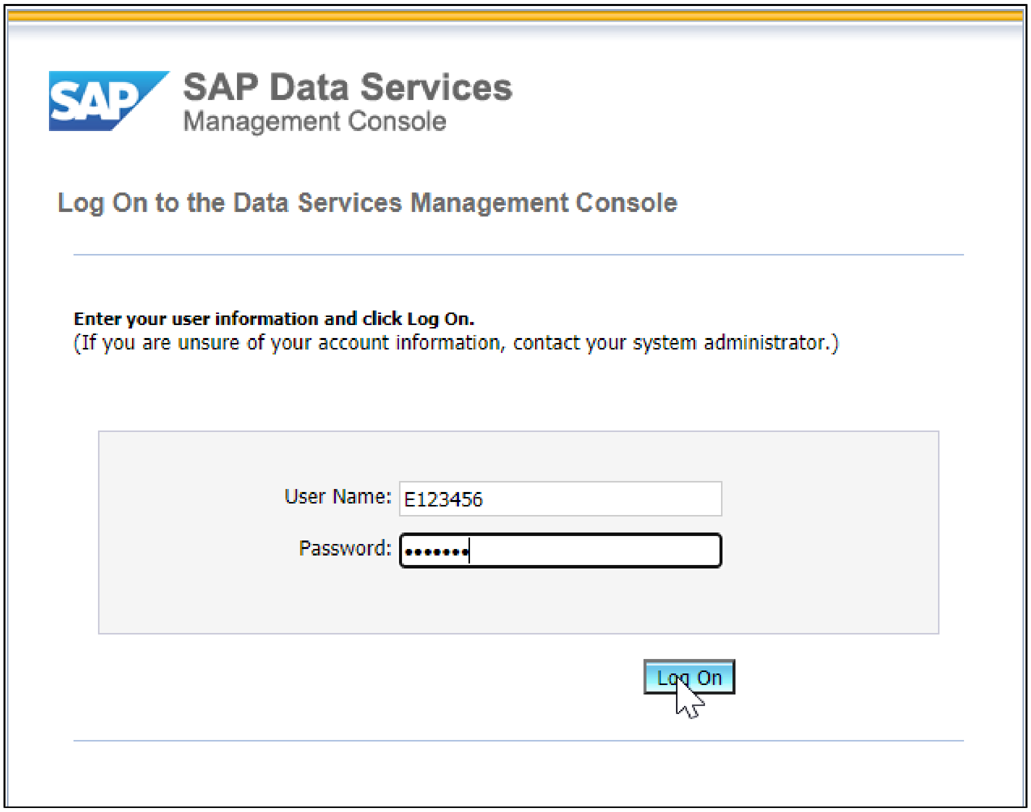
Each of these staging tables were created manually based on the structure of the EI views. As such if there are any changes in the underlying SAP HANA calculation views, the structure of these tables will also need to change or else the job will fail. Please see *Write Back Support* section.

Write-Back Job Execution

The execution of the write-back process will be done via the Data Services Production Management Console: http://sapdsbi.sanlam.co.za:8080/DataServices/launch/logon.action. Listed below are various steps required for successful execution of the write-back job.

Step 1 - Login Into the Management Console

The user will need to log into the Data Services Management console :http://sapdsbi.sanlam.co.za:8080/DataServices/launch/logon.action



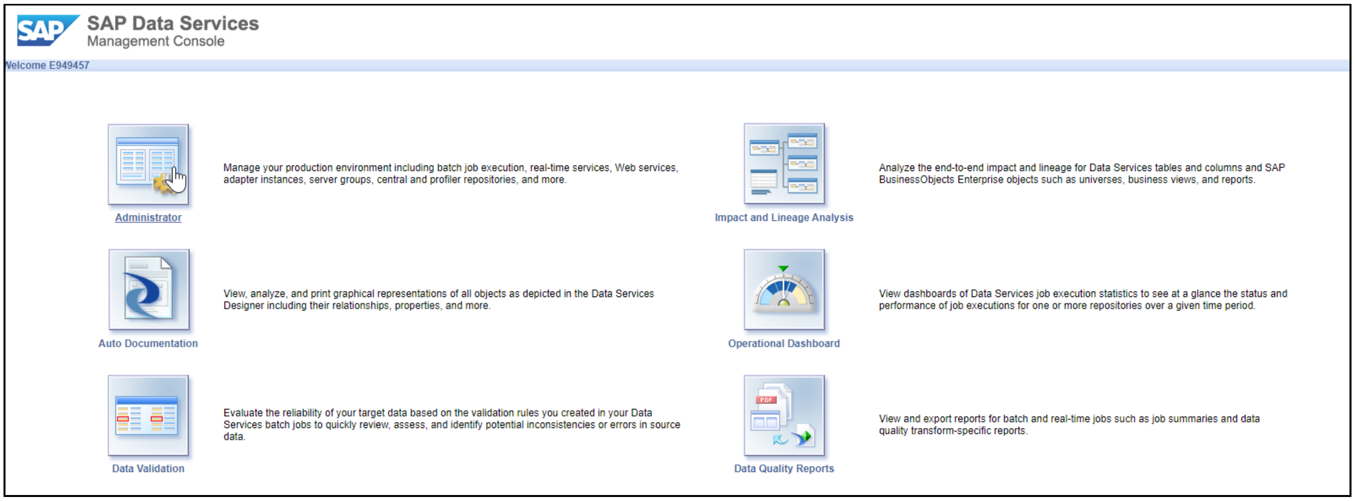
SAP Data Services
Management Console

Log On to the Data Services Management Console

Enter your user information and click Log On.
(If you are unsure of your account information, contact your system administrator.)

User Name: E123456
Password: •••••••

Upon successful log in , select the *Administration* tab:



Administrator: Manage your production environment including batch job execution, real-time services, Web services, adapter instances, server groups, central and profiler repositories, and more.

Impact and Lineage Analysis: Analyze the end-to-end impact and lineage for Data Services tables and columns and SAP BusinessObjects Enterprise objects such as universes, business views, and reports.

Auto Documentation: View, analyze, and print graphical representations of all objects as depicted in the Data Services Designer including their relationships, properties, and more.

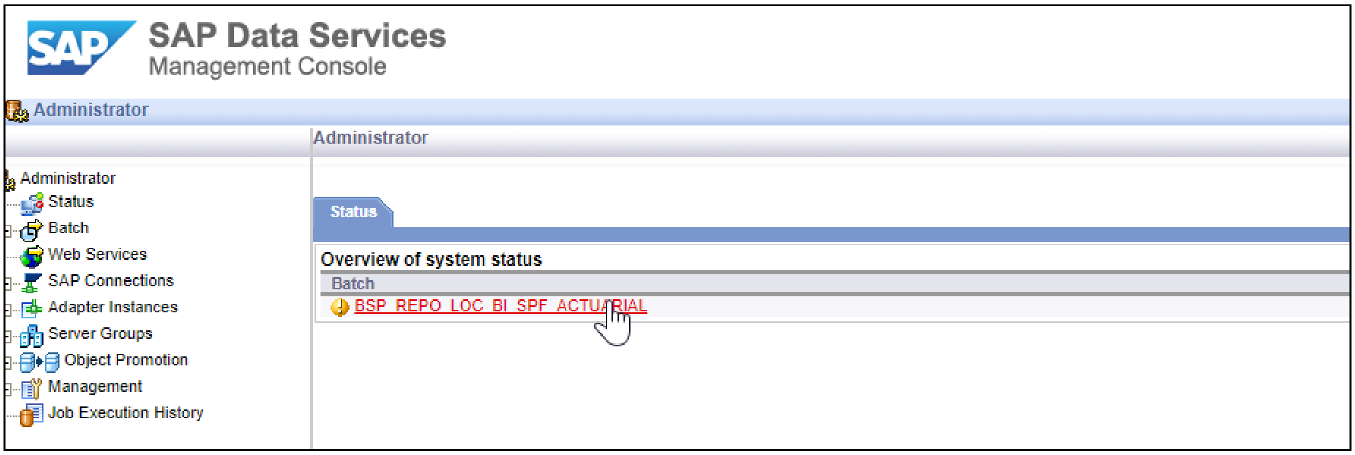
Operational Dashboard: View dashboards of Data Services job execution statistics to see at a glance the status and performance of job executions for one or more repositories over a given time period.

Data Validation: Evaluate the reliability of your target data based on the validation rules you created in your Data Services batch jobs to quickly review, assess, and identify potential inconsistencies or errors in source data.

Data Quality Reports: View and export reports for batch and real-time jobs such as job summaries and data quality transform-specific reports.

Step 2 - Access the Desired Repository

You would need to ensure that you are able to view the ***BSP_REPO_LOC_BI_SPF_ACTUARIAL*** repository. Select this repository so as to have access to the underlying Write-back job.



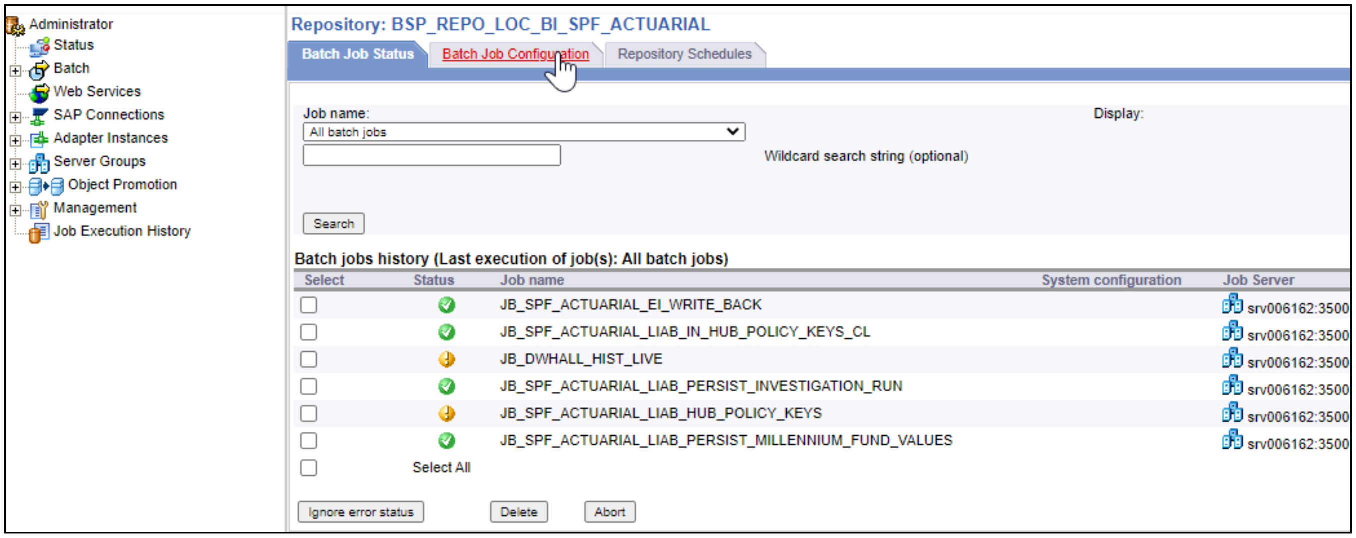
Overview of system status

Batch

BSP_REPO_LOC_BI_SPF_ACTUARIAL

Step 3 - Navigate to the write-back job

Select on the Batch Job configuration tab to navigate to the job listing pane.



Repository: BSP_REPO_LOC_BI_SPF_ACTUARIAL

Job name: All batch jobs

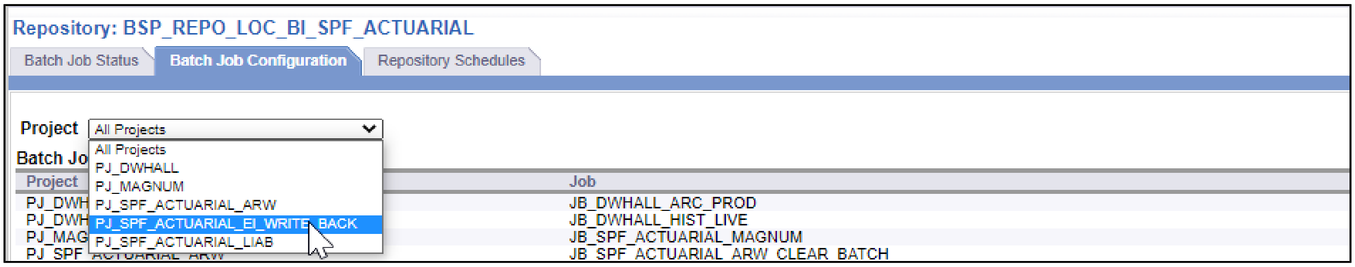
Display:

Wildcard search string (optional)

Batch jobs history (Last execution of job(s): All batch jobs)

Select	Status	Job name	System configuration	Job Server
□	✓	JB_SPF_ACTUARIAL_EI_WRITE_BACK		srv006162:3500
□	✓	JB_SPF_ACTUARIAL_LIAB_IN_HUB_POLICY_KEYS_CL		srv006162:3500
□	!	JB_DWHALL_HIST_LIVE		srv006162:3500
□	✓	JB_SPF_ACTUARIAL_LIAB_PERSIST_INVESTIGATION_RUN		srv006162:3500
□	!	JB_SPF_ACTUARIAL_LIAB_HUB_POLICY_KEYS		srv006162:3500
□	✓	JB_SPF_ACTUARIAL_LIAB_PERSIST_MILLENNIUM_FUND_VALUES		srv006162:3500

Filter on the write-back job specifically i.e. *PJ_SPF_ACTUARIAL_EI_WRITE_BACK*



Project: All Projects

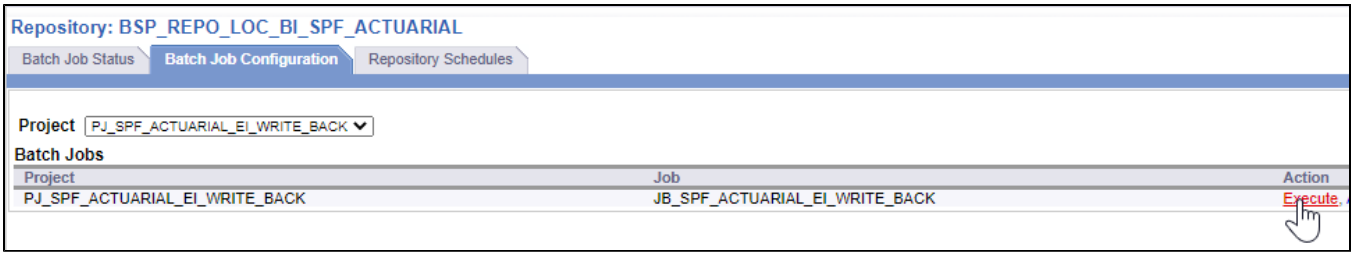
- All Projects
- PJ_DWHALL
- PJ_MAGNUM
- PJ_SPF_ACTUARIAL_ARW
- PJ_SPF_ACTUARIAL_EI_WRITE_BACK
- PJ_SPF_ACTUARIAL_LIAB

Batch Jo

Project	Job
PJ_DWH	JB_DWHALL_ARC_PROD
PJ_DWH	JB_DWHALL_HIST_LIVE
PJ_MAG	JB_SPF_ACTUARIAL_MAGNUM
PJ_SPF_ACTUARIAL_ARW	JB_SPF_ACTUARIAL_ARW_CLEAR_BATCH

Step 4 - Execute the write-back job

Once you have found the desired job, click the Execute button (Don't worry it's safe). This does not execute the job but takes you to the Execution window:

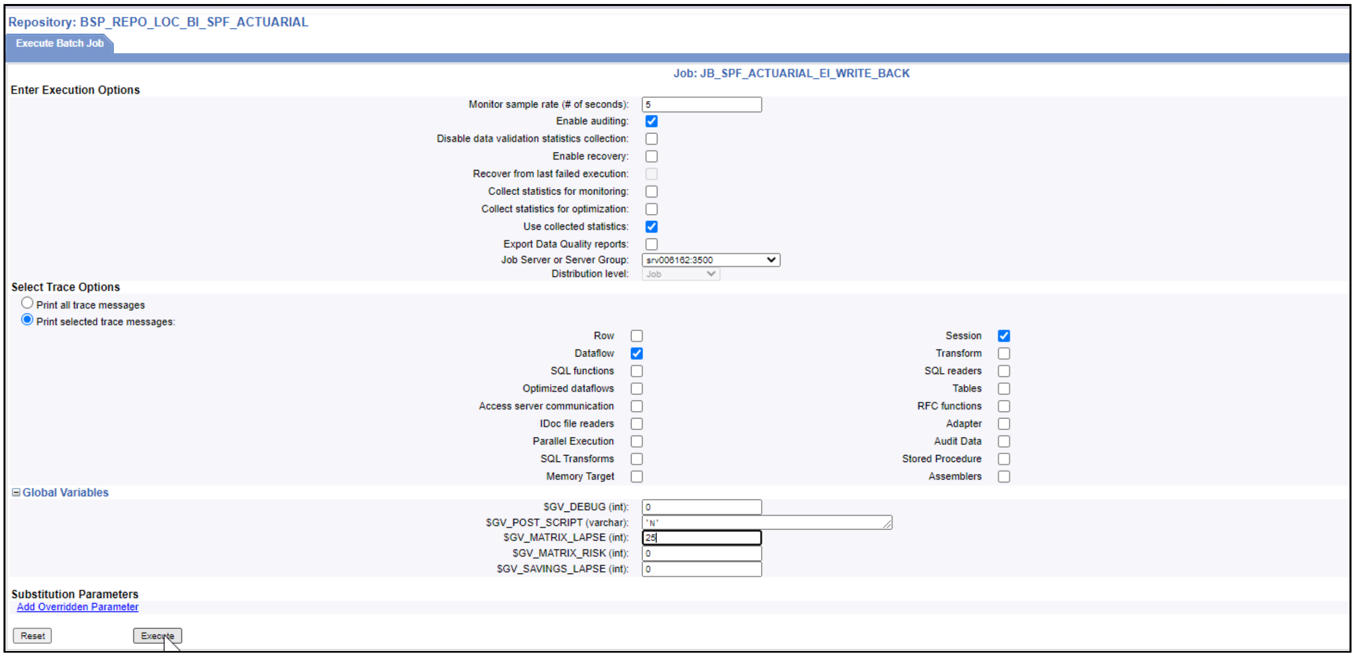


Project: PJ_SPF_ACTUARIAL_EI_WRITE_BACK

Batch Jobs

Project	Job	Action
PJ_SPF_ACTUARIAL_EI_WRITE_BACK	JB_SPF_ACTUARIAL_EI_WRITE_BACK	Execute,

Within the Execution pane you should expand the *Global Variables* drop down:



Job: JB_SPF_ACTUARIAL_EI_WRITE_BACK

Enter Execution Options

Monitor sample rate (# of seconds): 5
Enable auditing: ☑
Disable data validation statistics collection: □
Enable recovery: □
Recover from last failed execution: □
Collect statistics for monitoring: □
Collect statistics for optimization: □
Use collected statistics: ☑
Export Data Quality reports: □
Job Server or Server Group: srv006162:3500
Distribution level: Job

Select Trace Options

○ Print all trace messages
● Print selected trace messages:

Row	□	Session	☑
Dataflow	☑	Transform	□
SQL functions	□	SQL readers	□
Optimized dataflows	□	Tables	□
Access server communication	□	RFC functions	□
IDoc file readers	□	Adapter	□
Parallel Execution	□	Audit Data	□
SQL Transforms	□	Stored Procedure	□
Memory Target	□	Assemblers	□

⊟ Global Variables

$GV_DEBUG (int): 0
$GV_POST_SCRIPT (varchar): 'N'
$GV_MATRIX_LAPSE (int): 25
$GV_MATRIX_RISK (int): 0
$GV_SAVINGS_LAPSE (int): 0

Substitution Parameters

Add Overridden Parameter

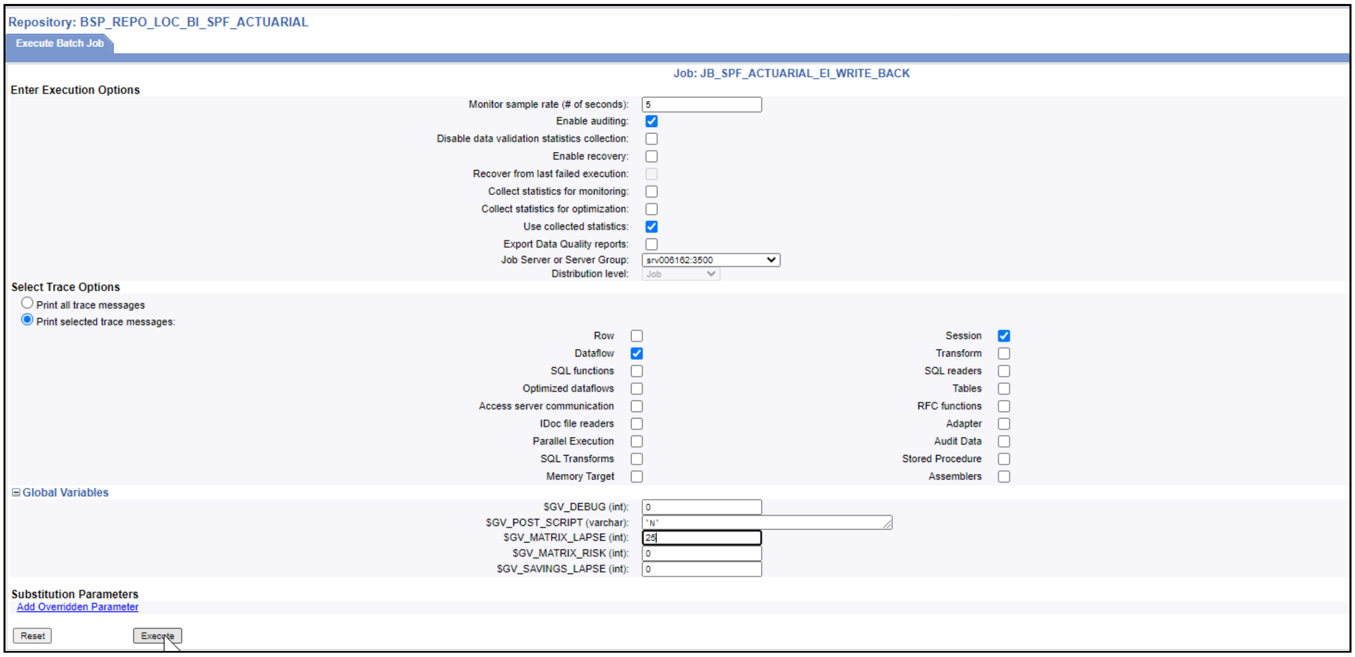
Fill in the *Global parameters* i.e. the ID corresponding to desired investigations that you want to run. The input required is an **integer input.**

This is essentially split into 3 Global parameters which correlates to a respective Experience Investigation. Please see table mapping below:

Global variable name	Description
$GV_Matrix_Lapse	Requests the ID corresponding to the Matrix Lapse Experience Investigation.
$GV_Matrix_Risk	Requests the ID corresponding to the Matrix Risk Experience Investigation.
$GV_Savings_Lapse	Requests the ID corresponding to the Savings Lapse Experience Investigation.

> **NB:**
>
> The Default Value is 0. So if you don't want an investigation to run, you can keep the default value at 0.

Once the ID's have been filled in,. Click on the *Execute* button:



Repository: BSP_REPO_LOC_BI_SPF_ACTUARIAL

Execute Batch Job

Job: JB_SPF_ACTUARIAL_EI_WRITE_BACK

Enter Execution Options

Monitor sample rate (# of seconds): 5
Enable auditing: ☑
Disable data validation statistics collection: □
Enable recovery: □
Recover from last failed execution: □
Collect statistics for monitoring: □
Collect statistics for optimization: □
Use collected statistics: ☑
Export Data Quality reports: □
Job Server or Server Group: srv006162:3500
Distribution level: Job

Select Trace Options

○ Print all trace messages
● Print selected trace messages:

Row	□	Session	☑
Dataflow	☑	Transform	□
SQL functions	□	SQL readers	□
Optimized dataflows	□	Tables	□
Access server communication	□	RFC functions	□
IDoc file readers	□	Adapter	□
Parallel Execution	□	Audit Data	□
SQL Transforms	□	Stored Procedure	□
Memory Target	□	Assemblers	□

⊟ Global Variables

$GV_DEBUG (int): 0
$GV_POST_SCRIPT (varchar): 'N'
$GV_MATRIX_LAPSE (int): 25
$GV_MATRIX_RISK (int): 0
$GV_SAVINGS_LAPSE (int): 0

Substitution Parameters

Add Overridden Parameter

Component 4 - Cloudera Archive Process

This is an important step for the historical archiving of various runs of the experience investigation within Cloudera. For more details relating to the components of this please see: Experience Investigation - Archived Data

In order to ensure a successful archive process the following points need to be considered and implemented:

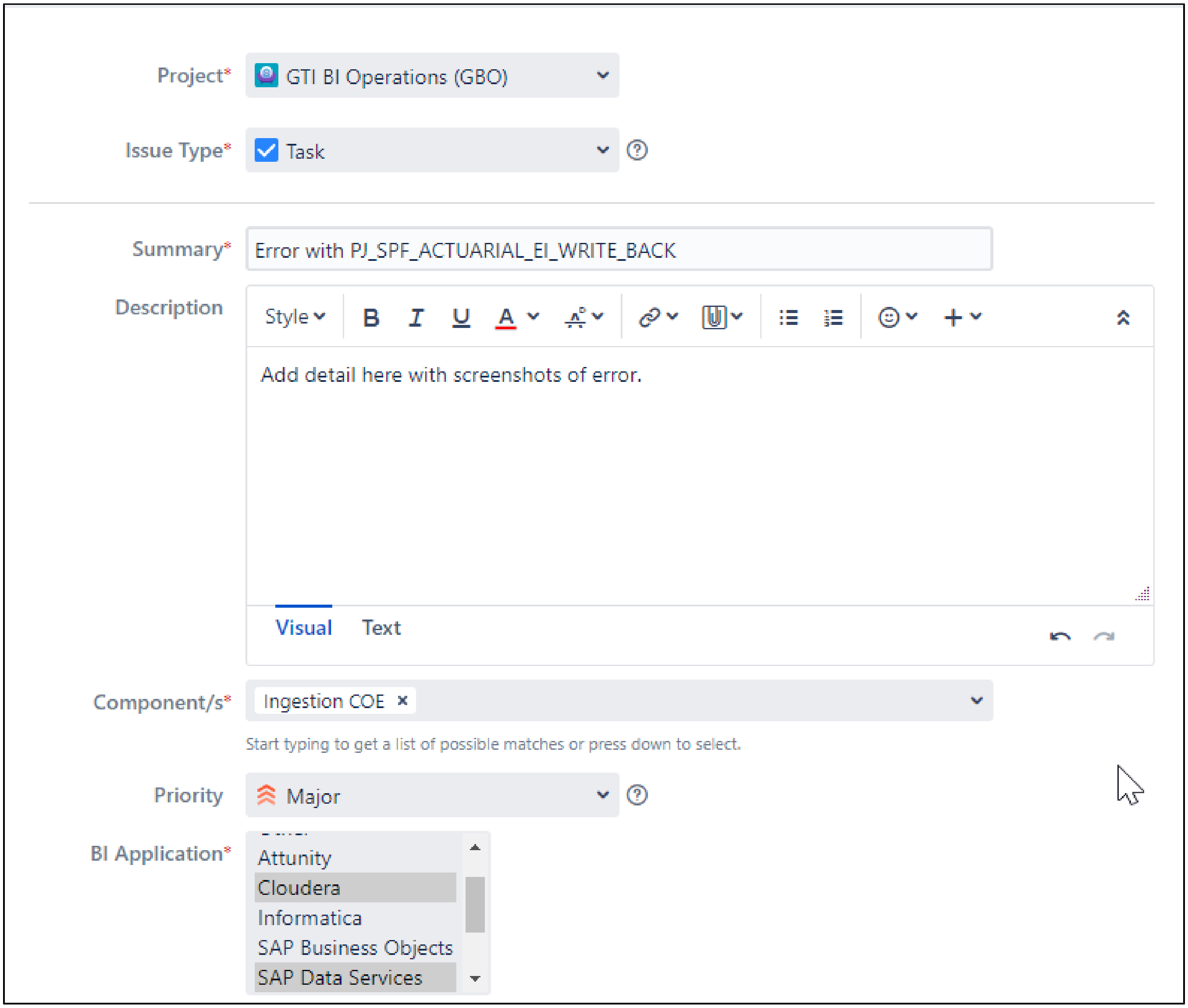
- Ensure that the underlying experience investigation run/ID is not already present within the archive tables. - This prevents duplication and double counting.
- Execute the Oozie archive job : *EI - Formal Data Archive.* - This is a basic job which ensures that all required data from the production tables is moved to the corresponding archive tables.
- Once archived, the user can proceed to refresh the production tables with the latest experience investigation runs.

Write-Back Support

This section serves as a platform for the necessary contacts should there be any failures with the job.

Data Services

Should there be any failures on the Data Services front, a Jira would need to be logged to the SBI Ingestion Team as follows:



Project* GTI BI Operations (GBO)

Issue Type* Task

Summary* Error with PJ_SPF_ACTUARIAL_EI_WRITE_BACK

Description

Add detail here with screenshots of error.

Component/s* Ingestion COE ×

Start typing to get a list of possible matches or press down to select.

Priority Major

BI Application*

Attunity

Cloudera

Informatica

SAP Business Objects

SAP Data Services

Experience Investigation ID and metadata changes

Officialized ID's

For understanding which are the latest officialized Experience results i.e. the correct ID's to persist the following members of the Product Management would be key in answering that:

Contact Person	Email
Lindsey Mansfield	Lindsey.Mansfield@sanlam.co.za
Kalind Ramnarayan	Kalind.Ramnarayan@sanlam.co.za

Metadata changes

Should there be any structural changes i.e field name changes, data type changes etc. to the underlying SAP HANA views, this change needs to be notified to the Advanced Analytics team to re-create the output table structures so and re-persist the results.

Please see below for the direct contacts within the Advanced Analytics team :

Contact Person	Email

Vedanth Baiju	Vedanth.Baiju@sanlam.co.za
Shabbeer Omar	Shabbeer.Omar@sanlam.co.za