**Optival Process– High Level Technical Document**

Version: 4.1

# Change History

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| --- | --- | --- | --- | --- |
| **SNO** | **Change Date** | **Changed By** | **Change Description** | **Reviewed By** |
| **1** | **Dec-28-2022** | **Suresh MP** | **Initial Creation** |  |
| **2** | **Oct-20-2023** | **Amit Malakar** | **Added Reprocess Logic & New Features as per requirement** | **Suresh MP** |
| **3** | **Nov-14-2023** | **Amit Malakar** | **Added Dedupe Logic Process under Process Flow** | **Suresh MP** |
| **4** | **Jun-28-2024** | **Nivetha Selvaraj** | **Added the process modification details for third NCD input files.** | **Amit Malakar** |
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# Introduction

This document describes the automation process flow for Optival process automation. The weekly input file extraction, data load, test file generation and test file delivery are explained here. The document covers the high-level technical details of the Optival SSIS package & its configurations.

# Automation Scope

The scope of automation is listed below

* Loading the Raw Test File into database with required transformations & applied benchmark logic and generate the final test file
* Deliver the final test file to the AVM test participants.
* Processing the AVM Test Return Files

# Process flow – Test File Generation and Delivery

* Every Monday weekly raw test file “**TTSG.ZYIAC.F0010353.F1010353.AVM\_Test\_Set\_MMDDYYYYHHMM.csv**”(Mercury)/“**TTSG.ZYIAC.F2010353.F1010353.REALVIEW\_YYYYMMDD\_-\_YYYYMMDD.DYYYYMMDD.THHMM.csv**” (RealView)/” **TTSG.ZYIAC.F2010353.F1010353.NCD\_Output\_YYYYMMDD-YYYYMMDD.DYYYYMMDD.THHMM.csv**”(NCD) for will be dropped into (S)FTP.
* Package will download the latest file from (S)FTP to shared folder “InputRawFiles” to process. If no file existing, then notify.
* Package will extract the .csv file and load the raw data into stage table. Address concatenation is done for NCD input file as the Address values are split into different address parts in source.
* As a next step data from stage table will get moved into a target table by applying the following data transformation logic.
  + Insert the stage table data into target table with transformation.
    - All the records will be sorted as per the latest [Ordered At] date column based on the [Address] column.
    - Transforming the FIPS to obtain the last 3 digit (Given the FIPS data as 5 digit)
    - Concatenating the [State] with the transformed FIPS to obtain the AlphaFIPS with 5 Chars
    - Apply dedupe logic and cleansing on address. In order handle occurrence of abbreviated address, introduced a derived column AddressAbb. The AddressAbb column value will be derived based on the Abbreviation configuration table.
    - Derived column [AddressAbb] is grouped and ordered based on Ordered Date to fetch only the Latest Address i.e. Rownum = 1.
    - Records which will be having the 0 / NULL in the ContractPrice and Appraisalvalues will be discarded.
    - Zip Code is transformed into 5 characters by applying some transformation logic
    - Using ROW\_NUMBER () function we will be getting the latest records and the duplicate address are removed.
    - Removing 'White Spaces' and retaining those records where [Address] columns with prefix between [0 - 9]
  + 2 new column such as week number and Ref ID will be defined while loading the record into the target table
  + Record will be filtered based on the Benchmark on Contract and Appraisal value. Record beyond upper and lower limit will be skipped while loading into target table.
* Package will apply data cleaning on the text value column and replacing the default date values to blanks and generate final test file as well as the benchmark file which is to be shared to AVM providers.
* Package will deliver the generated final test file to AVM providers based on the delivery type configured for each client
  + Email - Trigger email notification to the configured email id with attachment for AVM Providers
  + SFTP – Deliver the report into a configured SFTP server folder
  + Both – Deliver through email as well as SFTP
* Input raw data file as well as final test file will be archived into a shared folder
* Once the process is successfully executed the source files in the SFTP path will be deleted.

# Manual Process (Optional)

The Optival automation process will be executed every week Tuesday with two input files from SFTP (Mercury and AVM Test files) by sql server job. In case of any failure in automation process, then can use this option as a workaround to process the data for the week.

This is not a recommended process and use only is very much required. Usually this will be useful if wrong data input files are loaded by mistake.

Execution Steps:

Change the parameter “**prj\_IsCleanMaxWeekDataAndReprocess**” value to 1 from the Environment variable and Re-Trigger the **job**.

Once Re-Execution is done, parameter “ **prj\_IsCleanMaxWeekDataAndReprocess**” value needs to change to 0 (as default) and the **InsertDate** column in **Optival.AuditReprocess** table need to set to recent Tuesday date.

**Note**:Re-Execution needs to be executed before next week Tuesday.

# Optival Data Process – High level Architecture(Test File Generation &Delivery)

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# Database Objects

|  |  |  |
| --- | --- | --- |
| **S.NO** | **ObjectName** | **Description** |
| **1** | Audit.AVMBenchmarkDeletedHistory | Used to Store the Deleted records during Re-execution |
| **2** | Audit.Credential | Credential For SFTP Path |
| **3** | Audit.DeliveryConfig | Test file delivery to clients |
| **4** | Audit.DeliveryType | Delivery Type - Email/ SFTP/ Both |
| **10** | Audit.SkippedAVMBenchmark | Used to Store the Data which are not loaded into Benchmark Table |
| **12** | Optival.AdminReports | Store the Details of Mail Task's |
| **13** | Optival.AbbreviationConfig | Table to Store Fullwords& its corresponding Abbreviations |
| **14** | Optival.AuditFileProcessing | Audit the Files for Processing |
| **15** | Optival.AuditReProcess | Audit the Process for Re-Execution |
| **16** | Optival.AVMBenchmark | Target table will hold all the data processed weekly - With applied transformation & Contract and Appraisal Benchmark |
| **17** | Optival.DataSourceConfig | RealView/Mercury |
| **18** | Optival.v\_AVMBenchmark | To generate the final test file |
| **19** | Stage.Optival\_AVMBenchmark | To load the raw data as it is from file. Truncated in each execution |
| **20** | [dbo].[udf\_RemoveSpecialCharacters] | Function to Remove Special Characters |
| **21** | [Audit].[usp\_GetExternalConn] | Procedure to get the Encrypted password for SFTP |
| **22** | [Optival].[usp\_GetOptivalAVMBenchmark] | Procedure to Load the Benchmark File |
| **23** | [Optival].[usp\_OptivalAVMBenchmark] | Upsert the benchmark table |
|  |  |  |
| **24** | [Optival].[usp\_DuplicateInputFileFinder] | Identify the duplicate input files placed in SFTP during processing. |

# Source to Target Mapping



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# Technology used for Development

|  |  |  |  |
| --- | --- | --- | --- |
| **S.NO** | **Tools** | **Version** | **Purpose** |
| **1** | SSDT | 2019 | For the Development of ETL Packages |
| **2** | SQL Server DB | 2017 | ETL Packages will use the Tables from Databases for Movement of Data |
| **3** | FrameWork (C#) | 2019 | To Download the files from SFTP, To Capture File Properties,  To send SMTP mail messages. |

# Pre-Requisites for Deployment

1. SSIS package deployment server
2. SMTP server for sending emails from the Package.
3. WINSCP for SFTP file drop

**Note:** The Project file need to be rebuild in 32 bits and with Target Server version as 2017 before deployment in IS server.