

# Baseline FTA Operations and Configuration

The Field Test Automation (FTA) system tests the flow of data from the transactional (TX) to BI Aeos components, and attempts to reconcile any mismatches. It is a version of the PM-internal Autobat tool that is modified to help PIT during client Aeos installations. There are two parts to this system: FTA and Recon.

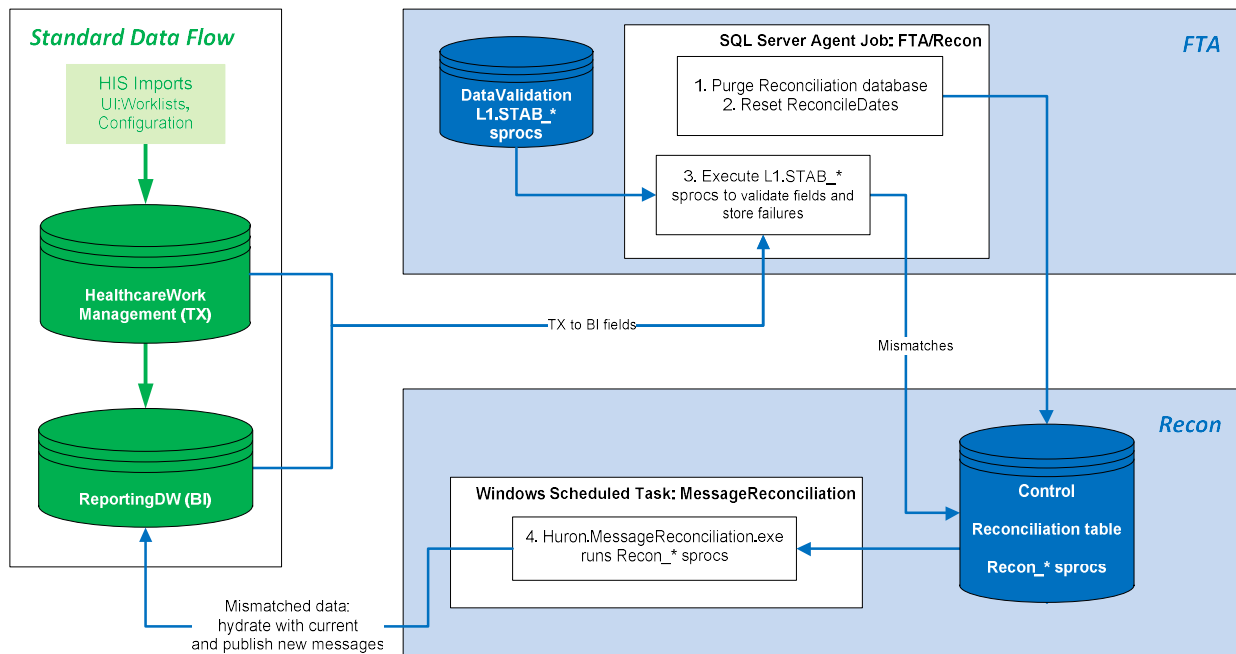
The FTA component finds mismatches between the BI and TX databases by:

- Comparing BI fields to their counterparts in the HealthcareWorkManagement (TX) database
- Validating computed fields in the ReportingDW (BI) database

The Recon (Message Reconciliation) component corrects these mismatches by:

- Identifying the reconcileable incidents based on the FTA stored results
- Publishing new messages with latest information for the mismatches to BI.

## System/Data Flow Diagram



## Process and Components Detail

The FTA and Reconciliation processes are controlled by a SQL Server Agent job and Windows scheduled task are scheduled at the end of the day after imports, purge, and other Aeos processes.

The system's daily process consists of the following steps (Default Settings)

1. The FTA/Recon job runs at 6:30 PM and does the following:
  - a. Purges records (FTA snapshot data) older than 7 days from the Reconciliation table.
  - b. Resets Reconciliation.ReconcileDate.
  - c. Runs the DataValidation.L1.STAB\_CompareFields sprocs to compare fields in TX and BI databases and populate the Reconciliation table with any mismatches found.

- d. Runs the DataValidation.L1.STAB\_ComputedFields sprocs to compare logic validation to actual computed column fields in the BI database and populate the Reconciliation table with mismatches.
2. The MessageReconciliation task runs at 10:00 PM and runs the MessageReconciliation tool which does the following:
  - a. Runs the three reconciliation scripts (Control.dbo.Recon\_\*) that get the item IDs for the mismatched field records from the Reconciliation table.
  - b. Updates Control.dbo.Reconciliation.ReconcileDate.
  - c. Publishes new message data associated with the item IDs from TX to BizTalk by loading the Control.dbo.IncidentsForEvaluation table for BizTalk to resend the complete message associated with the mismatched item depending on the item type (activity, incident, or transaction).

## Reconciliation Table

The Control.dbo.Reconciliation table contains the mismatched data found and inserted by STAB sprocs. It has the following columns: [SnapshotDate], [ItemID], [ItemIDType], [FTATestName], [MismatchType], [TRX\_Value], [BI\_Value], [ReconcileDate], [CanReconcile].

For example:

Snapshot Date	ItemID	ItemIDType	FTATestName	Mismatch Type	TRX_Value	BI_Value	Reconcile Date	Can Reconcile
2013-10-11 05:48:26.243	252	FactActivityID	STAB_FactActivity_Score	Score	9	30	NULL	1
2013-10-11 05:48:26.243	239	FactActivityID	STAB_FactActivity_Score	Score	9	30	NULL	1
2013-10-11 05:48:26.243	268	FactActivityID	STAB_FactActivity_Score	Score	72	91	NULL	1
2013-10-11 05:48:26.243	316	FactActivityID	STAB_FactActivity_Score	Score	18	30	NULL	1
2013-10-11 05:48:26.243	331	FactActivityID	STAB_FactActivity_Score	Score	18	30	NULL	1
...								

The MessageReconciliation tool uses this table to reconcile the mismatched fields in BI based on the following key fields. Only records that meet the following criteria are processed by Recon:

- CanReconcile = 1
- ReconcileDate = null
- SnapshotDate = <today>

These field values are set by the STAB sprocs. The ReconcileDate is set from NULL to today by the MessageReconciliation tool (the Recon sprocs) when an item is processed during reconciliation. A week later, the Purge removes the record based on the snapshot date.

## Configuring FTA

- You can change the purge age of records in the Recon table from 7 days in Step 1 of the SQL agent job
- You can edit the stored procedures to include or exclude the objects and routines that they call. In most cases, you should make your changes easily reversible by renaming or commenting out rather than deleting.

For example, you can remove a specific L1.STAB stored procedure from Recon by opening either the DataValidation.L1.STAB\_CompareFields or DataValidation.L1.STAB\_ComputedFields and commenting out its EXEC statement.

**Note:** in some cases, PIT has altered the configuration of stored procedures from the baseline sprocs into a database table. Each stored procedure is associated with a record in this table that has a flag that indicates whether it is included in the FTA process.

## Configuring MessageReconciliation

The default location of the Huron.MessageReconciliation.exe application and configuration files is on the Aeos database server: C:\Program Files (x86)\Huron Consulting Group\Tools\Reconciliation.

### To configure application settings, edit Huron.MessageReconciliation.exe.config.

The configuration settings can be found in appSettings:

```
<appSettings>
  <add key="FileOutDirectory" value="OUT" />
  <add key="BusinessEventPublisherPath" value="C:\HuronTemp\" />
  <!-- Pause will keep the command window open at end of execution. -->
  <add key="Pause" value="false" />
  <add key="PublishToQueue" value="true" />
  <add key="SaveBusinessEvent" value="false" />
</appSettings>
```

- FileOutDirectory: {string} the relative path that "SaveBusinessEvent" uses when writing a file
- BusinessEventPublisherPath: {string} If a message fails to publish it is written to this folder (default C:\HuronTemp)
- Pause: {true, false} set to "true" to leave the command prompt open after execution. It is used for testing and troubleshooting, and should otherwise be set to "false".
- PublishToQueue: {true, false} determines if the message is published to BI
- SaveBusinessEvent: {true, false} determines if the BusinessEvent is saved to the "FileOutDirectory"

### Reconciliation Scripts and Stored Procedures

**Note:** only the DevOps team is likely to edit these scripts and stored procedures.

There are three subfolders of C:\Program Files (x86)\Huron Consulting Group\Tools\Reconciliation\ that contain the Reconciliation (Recon) scripts executed by the MessageReconciliation tool. These scripts call stored procedures (Control.dbo.Recon\_\*) that identify the items that are associated with mismatched data and published by the MessageReconciliation tool from the Reconciliation table to BizTalk. They also update the ReconcileDate for the resubmitted items.

- In the C:\Program Files (x86)\Huron Consulting Group\Tools\Reconciliation\BusinessEvent\_Activity folder, Control.dbo.Recon\_GetActivityIDs.sql expects the ItemID column to contain values from HealthcareWorkManagement.dbo.Activity[ActivityID]
- In the C:\Program Files (x86)\Huron Consulting Group\Tools\Reconciliation\BusinessEvent\_AccountTransaction folder, Control.dbo.Recon\_GetTransactionIDs.sql expects the ItemID column to contain values from HealthcareWorkManagement.dbo.AccountTransaction[AccountTransactionID]

- In the C:\Program Files (x86)\Huron Consulting Group\Tools\Reconciliation\BusinessEvent\_WorkManagementAccountPackage folder, Control.dbo.Recon\_GetIncidentIDs.sql expects the ItemID column to contain values from HealthcareWorkManagement.dbo.Incident[IncidentID]

### To set the number of records processed by Reconciliation

You can configure the number of records from the Reconciliation table that are published when it runs. There is a best practice limitation of 20,000 to avoid overburdening the system

In the Control database, the Recon stored procedures have the following sections (respectively) where you can edit the number for the SELECT TOP statement:

dbo.Recon\_GetActivityIDs

```
SELECT TOP 20000 ActivityID, ItemID, ItemIDType
INTO #Temp_ActivitiesForRecon
FROM #Temp_Activities
```

dbo.Recon\_GetIncidentIDs

```
SELECT TOP 20000 IncidentID, ItemID, ItemIDType
INTO #Temp_IncidentsForRecon
FROM #Temp_Incidents
```

dbo.Recon\_GetTransactionIDs

```
SELECT TOP 20000 TransactionID, AccountID, ItemID, ItemIDType
INTO #Temp_TransactionForRecon
FROM #Temp_Transaction
```

## Reporting

In addition to writing the field mismatches and validation errors from the STAB sprocs into the Reconciliation table, FTA can be modified to write them into an HTML report.

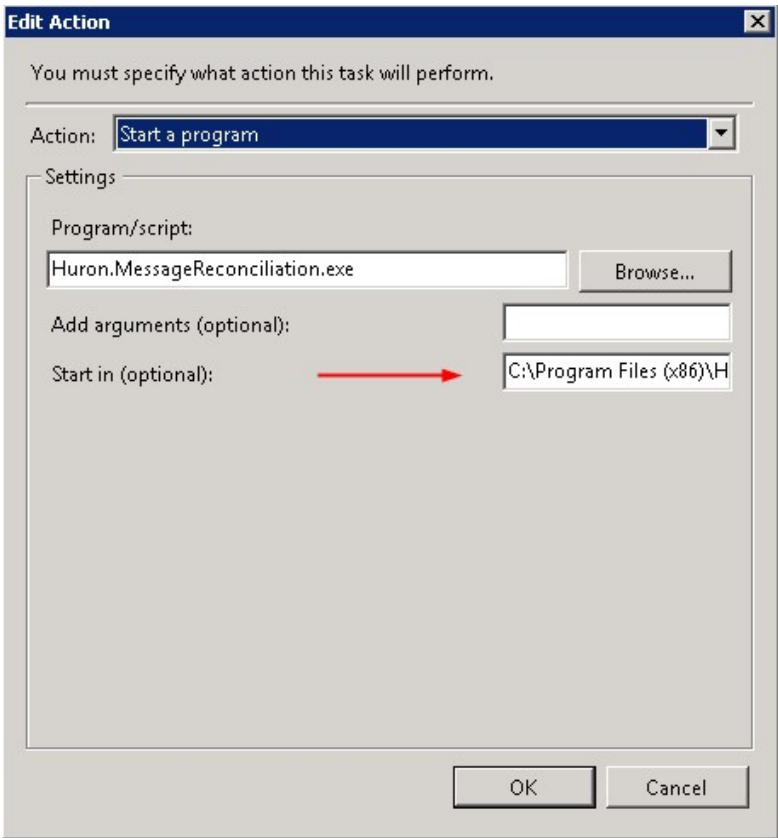
**Note:** PIT generally does not use this report.

## Troubleshooting

### Implementation Issues

The following implementation issues may be encountered when running FTA.

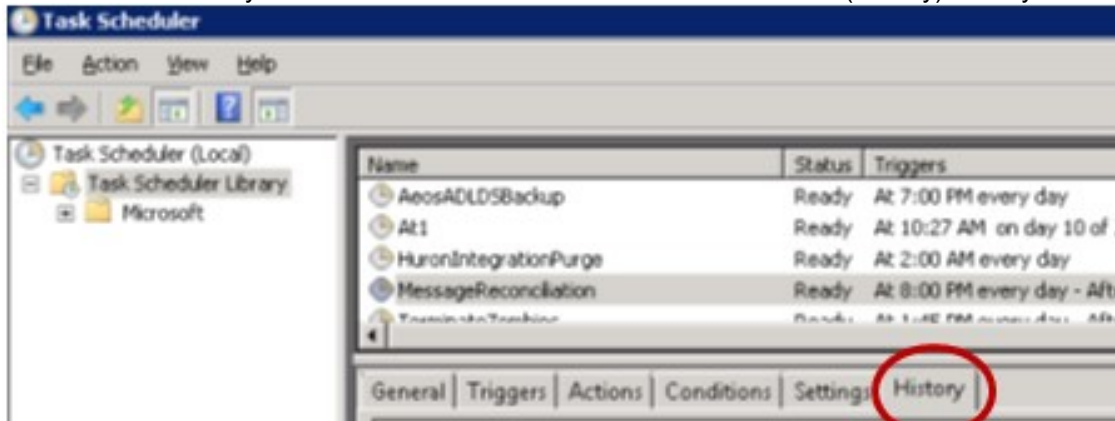
Problem	Solution
"Validation queries take too long to complete" PASS/FAIL processing due to large data set	Work with QA to optimize query for use with larger data sets e.g. filtering by date, add necessary indexes both to internal test temp tables and source tables.
mastertest_SQL CreatConnectionSQL ERROR: Exception calling "Open" with "0" argument(s): "Login failed for user 'autobat_app'."	Double-check thru Microsoft SQL Server Management Studio that the autobat_app user exists on SQL server where TestPortal exists and on the server where autobat.ps1 script is being run on.  Also make sure that the autobat_app password is "aut0bat" (0 is zero).

Problem	Solution
<p>&gt;&gt;&gt; &lt;&lt;&lt; SQL Execute Error: Exception calling "Fill" with "1" argument(s): "Cannot insert the value NULL into column 'EnvironmentID', table 'TestPortal.dbo.RunResult'; column does not allow nulls. INSERT fails.</p> <p>The statement has been terminated."</p> <p>&gt;&gt;&gt; &lt;&lt;&lt; SQL Execute Error: Exception calling "Fill" with "1" argument(s): "Conversion failed when converting the varchar value 'Unable to locate active RunResult log for @RunResultID = ' to data type int."</p>	<p>Make sure the TargetEnvironmentName specified when launching autobat.ps1 matches TestPortal.dbo.Environment record. Default is "SYSDEFAULT".</p>
<p>Windows task scheduler is not correctly starting the Reconciliation Tool</p>	<p>The "Program/script" field should only contain the file name without the full file path and the "Start in (optional)" field should contain the file folder location.</p> 

## MessageReconciliation Error Handling

The MessageReconciliation tool has some high-level exception handling and logging.

- If the application encounters an error, there is an exit or result code that is logged in the scheduled task execution history. You can find these codes in the Task Scheduler (Library) History tab.



- Errors are also logged to the ESB Fault table (EsbExceptionDb.dbo.Fault). Because "Huron.MessageReconciliation.exe" is executed as a scheduled task, users cannot see the output in an Aeos application UI. Find these errors by running the following query:

```
SELECT TOP 100 * FROM Fault F
WHERE F.FaultDescription = 'Error running Reconciliation'
```

## IntegrationPurge published messages and failed messages location

The purge process may delete messages/files that you are troubleshooting.

For more details see *Appendix D: Purging the Transactional/BI Published Message Tables* in the [Aeos Configuration Guide](#).

### Control: Windows scheduled task: HuronIntegrationPurge

- runs the program Huron.Tools.IntegrationPurge.exe at 2:00 am
- Control.dbo.SystemHealth stores purge results
- Report: purge results displayed on SSRS report: "TXtoBIErrorMessages"

### Configuration:

**C:\Program Files (x86)\Huron Consulting**

**Group\Tools\IntegrationPurge\Huron.Tools.IntegrationPurge.exe.config**

- CanPurgeFileSystem: Determines if files in the "BusinessEventPublisherPath" are being purged
- CanPurgePublishedMessages: Determines if the Control.dbo.PublishedMessages, Control.dbo.PublishedMessageDetail, and Control.dbo.PublishedMessageConsumeLog tables can be purged
- BusinessEventPublisherPath: Drive/path where the failed messages are saved on the local server file system. Default value = "C:\HuronTemp"
- BusinessEventFileAgeDays: Files in the "BusinessEventPublisherPath" folder are deleted after this many days
- BusinessEventPublishedMessageSuccessAgeDays: Any records that have PublishedMessages.SuccessfullyCompletedDateTime populated are deleted after this many days

- BusinessEventPublishedMessageFailAgeDays: Any records that have null PublishedMessages.SucessfullyCompletedDateTime are deleted after this many days

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