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This guide describes the necessary steps to setup and use the Process Control Manager *(PCM)* Solution.

Overview of Process Control Manager

Process Control Manager (PCM) is a solution used to provide business users with an intuitive and easy to manage review and approval process of Workflow Submissions.

The included OneStream XF Workflow functionality is quite powerful and will meet the design requirements for most XF Applications. Process Control Manager expands upon this native functionality to allow additional granularity in process control and also adding the Cube, Origin dimension and detailed Workflow Channel control of Accounts, to provide focused process control in multifaceted workflow environments.

This solution provides a framework for enhanced control of Workflow data submissions by managing:

- Which Workflow users/security groups can input data or complete review steps
- Which Scenarios/Periods can be modified
- Which Origin dimension input channels can modify data
- Which Accounts can be modified based on their related phase (aka Workflow Channel)

Process Control Manager adds the concept of promotion of Workflow data to others of a higher level in the closing process routing. Based on who the user is, Process Control Manager can tell which "Process Level" the user is to determine if they have access to input/modify data based on a comparison to the current Process Level for this Workflow. When a Workflow's data for a given period or subset of related Entity data (e.g. P&L Accounts) is promoted, this Process Level is stored in PCM's provided Cube. When a user attempts to update data, data input rules will compare this user's maximum Process Level with the Process Level of the data they wish to change and either permits or denies the change.

Process Control Manager Setup

Prerequisite: Considerations for Location of PCM Development Work

There are two schools of thought for where to do buildout of your Process Control Manager solution:

1. Build in a Production OneStream XF application.
2. Build in a separate Development OneStream XF application.

Below are considerations for each approach:

When Doing PCM Build in a Production OneStream XF Application

An advantage of building your PCM solution in your Production application is that you will not have to migrate the resulting work from a Development application. However, there are intrinsic risks when making design changes to an OneStream XF application that is being used in a Production capacity and this is seldom advised. Since the PCM solution controls the ability to process Workflow activities, it is strongly recommended that this solution be implemented in the Development environment with a fresh copy of the Production application before starting work.

When Doing PCM Build in a Development OneStream XF Application

A Development OneStream XF application is the safest method for building out your PCM solution. Something to know about the relationship between Workflow Profiles, OneStream Scenarios and PCM tables is that PCM points to the underlying identifier numbers of a Workflow Profile, Workflow Channels and Scenario, not their names as seen in the user interface. These identifiers are assigned by the software when a Workflow Profile, Workflow Channel or Scenario is created, so if a Workflow Channel such as *TrialBalance* is created in a Production application by hand and then is created in a Development application manually, it might not be assigned the exact same identifier, meaning the eventual migration of PCM setup from Development to Production may require some manual steps. To avoid this, we recommend following this procedure in the creation of your OneStream XF Development application:

1. Ensure all Workflow Profiles that will import Actual data are set up in the Production application
2. Create new Workflow Channels to be used with PCM (see chapter on *Key PCM Design Decisions*).
3. At this point, a copy of the Production application can be used in Development as a basis for changes due to your PCM project.

See the chapter on *Solution Database Migration Advice* for more details.

Database Server Connections Settings

Changes need to be made to the *OneStream XF Application Server Configuration* in order for users to create and change data in the additional database tables used by this solution.

To edit these settings:

1. Start *OneStream XF Server Configuration Utility* as an Administrator.
2. Select *Open Application Server Configuration File*.
3. Select Database

Note: If other MarketPlace Solutions such as Specialty Planning are already in the application, these setting might already be in place.

If a change is necessary, Internet Information Server must be restarted.

Make the following changes:

- *Access Group for Ancillary Tables* should be *Everyone* or a group that includes those that will edit records.
- *Maintenance Group for Ancillary Tables* should include a group who will create the tables. This is typically set to Administrators or a group that contains a limited number of users.
- Other settings highlighted need to be set to *True* in order to execute table creation via the Account Reconciliations Dashboards.

| General	
Access Group For Ancillary Tables	Everyone
Allow Database Creation Via UI	True
Can Create Ancillary Tables	True
Can Edit Ancillary Table Data	True
Database Provider Type	SqlServer
Is External Database	False
Maintenance Group For Ancillary Tables	Administrators

Ensure these security group settings include the people who will be working on and setting up Process Control Manager tables.

How to Install PCM

First, check the related *Release Notes* to determine if an Uninstall of the User Interface or a Full Uninstall is necessary and then see that chapter for instructions. If the *Release Notes* say that an overinstall is allowed, then proceed with these instructions from here:

Download the Process Control Manager Solution from the XF MarketPlace. The package is a zip file named *PCM_PVxxx_SVzzz_PackageContents.zip* where xxx and zzz represent version numbers for OneStream XF and the solution. The *PVxxx* number (e.g. 430) represents the minimum XF Platform Version (e.g. 4.3.0) required in order to implement this Solution Version (i.e. *SVxxx*).

Log into OneStream XF, navigate to Application Tab | Tools | Load/Extract.
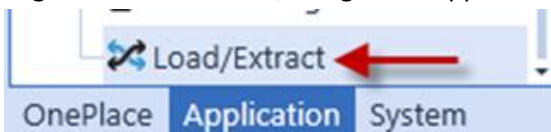
Click *Select File,* navigate to the zip file, and click *Load* .

Create Process Control Manager Tables

1.) Go to OnePlace | Dashboards and select the *Process Control Manager (PCM)* Dashboard.

The first time this solution is run, it will be directed to the Process Control Manager Setup screen.

Note: Prior to running the setup, ensure that the account being used to access SQL server has table creation rights on the SQL database to create the custom tables.
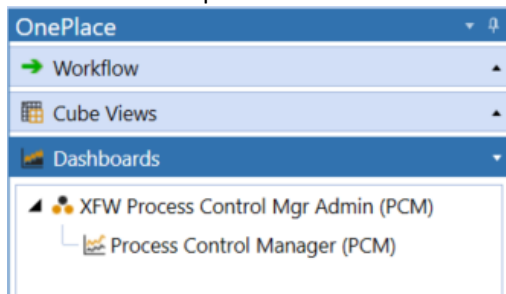
The first step of the setup creates all of the tables and Cubes required for the Process Control Manager Solution.

2.) Select Step 1: Setup Tables
This step may be necessary when upgrading even if tables are already present. Click the button if prompted. Process Control Manager will not drop any tables that already exist but will modify table structures and add any new ones if necessary.

Step 1:   Setup Tables

Note: These tables are now created in the OneStream application database:

⊞ ▦ dbo.XFW_PCM_ControlLists
⊞ ▦ dbo.XFW_PCM_WFProfileLevels
⊞ ▦ dbo.XFW_PCM_WFProfileTypeLevels

Once the setup is complete, the Process Control Manager Status screen will open upon clicking the Process Control Manager *Launch Solution* button.

Step 2:   Launch Solution

Package Contents
It is not recommended to rename any included Dashboard, dimension, member, etc. unless specified.

Dashboard Maintenance Unit
XFW Process Control Manager (PCM)
This is Dashboard Maintenance Unit that provide the user interface for the Process Control Manager solution. It includes the Dashboard Groups, Components, Data Adapters, Parameters and Files used to build the solution.

Business Rules
PCM_ConditionalInput
This is a Finance Business Rule for Process Control Manager that provides NO INPUT rules to check cell input status against the Process Control Cube Process Level values for a selected Workflow.

PCM_CVHelper
This is a Cube View Extender Business Rule that provides various helper functions for the PCM solution.

PCM_HelperQueries

This is a Dashboard Data Set Business Rule. This rule can look up lists of Cubes, Workflow Profiles, Workflow Origins and Workflow Channels associated with the current select parameters.

PCM_SolutionHelper

This is a Dashboard Extender Business Rule that provides various helper functions for the PCM solution. These helper functions include management of the solution setup, configuration settings and management of the Process Level.

PCM_ParamHelper

This is a Conditional Parameter helper functions XFBR String Business Rule. This rule is used to provide conditional parameter processing functions that allow a parameter value to be interpreted and substituted with a different string.

Cube View Groups

XFW Process Control Manager (PCM)

This Cube View Group includes the four Cube Views that are used to provide the user interface and reporting for Process Control Manager.

- ProcessLevel12PeriodEditable_PCM
- ProcessLevel12PeriodWorkspace_PCM
- ProcessLevel1PeriodEditable_PCM
- ProcessLevel1PeriodEditableWFParent_PCM

Cubes

XFW_PCM

This is the PCM solution cube where the Process Level is managed based on the Process Control Manager configuration settings. Related XFW_PCM_cubename Cubes may need to be created for OneStream XF Linked Cube application designs if entries are necessary on the Cube References tab of this Cube (depending on Entity dimension assigned and if Extensible Dimensionality is in play).   See the Settings | Global Options | *Exclusive Cubes* discussion as well as *Configure Process Control Cube* later in these instructions.

Dimensions

Accounts - XFW_PCM_Accounts

This is the PCM solution Account Dimension that includes the *PCM_ProcessLevel* account that is used to store and manage the Process Level status. No changes should be made to this Account Dimension.

UD1 - XFW_PCM_Cubes

This is the PCM solution UD1 Dimension which ships with the *PCM_AllCubes* member that is used for tracking the Process Level with the Exclusive Cubes Global Option set to No as discussed in the Global Options section later in this document. Setting this option to Yes will require additional updates to this Dimension to add members for the other Exclusive Cubes using the *PCM_Cubename* format.

UD2 - XFW_PCM_Origins

This is the PCM solution UD2 Dimension which ships with the *PCM_AllOrigins, PCM_Import, PCM_Forms* and *PCM_Adjustments* members that are used for tracking the Process Level by Origin dimension members. The PCM solution will use this UD2 dimension based on the Settings in the Global Options for the *Multiple Origins* option as discussed in the Global Options section later in this document. No changes should be made to this UD2 Dimension.

UD3 - XFW_PCM_WorkflowChannels

This is the PCM solution UD3 Dimension which ships with the *PCM_AllChannels* and *PCM_Standard* members that are used for tracking the Process Level by Workflow Channel. The PCM solution will use this UD3 dimension based on the Settings in the Global Options for the *Multiple Workflows Channels* option as discussed in the Global Options section later in this document. Setting this option to Yes will require additional updates to this UD3 Dimension to add members for the other Workflow Channels that need to be tracked using the *PCM_Workflowchannelname* format. The PCM solution only controls Accounts with Workflow Channels. The PCM solution does not control UDs with Workflow Channels in this release.

Event Snippets – Event Handler Business Rule Code

Finance Business Rule Code

This is the PCM solution Finance Business Rule Code Snippet that needs to be added to the Finance Business Rule that is associated with the Cube(s) that are using the PCM solution per the instructions later in the *Add Event Handler Business Rule Code* section of this document.

Transformation Event Handler Business Rule Code

This is the PCM solution Transformation Event Handler Business Rule Code Snippet that needs to be added to the Transformation Event Handler Business Rule per the instructions later in the *Add Event Handler Business Rule Code* section of this document.

Data Quality Event Handler Business Rule Code

This is the PCM solution Data Quality Event Handler Business Rule Code Snippet that needs to be added to the Data Quality Event Handler Business Rule per the instructions later in the *Add Event Handler Business Rule Code* section of this document.

Forms Event Handler Business Rule Code

This is the PCM solution Forms Event Handler Business Rule Code Snippet that needs to be added to the Forms Event Handler Business Rule per the instructions later in the *Add Event Handler Business Rule Code* section of this document.

Journals Event Handler Business Rule Code

This is the PCM solution Journals Event Handler Business Rule Code Snippet that needs to be added to the Journals Event Handler Business Rule per the instructions later in the *Add Event Handler Business Rule Code* section of this document.

Database Tables

XFW_PCM_ControlLists

This database table stores the Global Options settings for the Process Control Manager solution.

XFW_PCM_WFProfileLevels

This database table stores the Exception Promote Level and Reject Level for each Workflow Profile Type and Scenario Type combination.

XFW_PCM_WFProfileTypeLevels

This database table stores the Default Promote Level and Reject Level for each Workflow Profile Type and Scenario Type combination.

Framework Security Groups

XFW_PCM_1 – XFW_PCM_12

The Process Control Manager solution add 12 new user groups. There will be a user group for each of the 12 Process Control Levels. Each user will need to be added to the appropriate user group for their Process Control Level in the data submission process. The user groups are nested in the previous level user group to provide access to their level and the lower levels below them. So, adding a user to XFW_PCM_8 would provide them access to Process Control Level 8 and all levels below that as well, for example.

Key PCM Design Decisions

Designing and applying Process Control Manager to an OneStream XF Application has a prerequisite of a strong understanding of OneStream's Workflow. It is highly recommended to review the ***OneStream XF Design and Reference Guide*** *Chapter 2: Workflow Guides* and *Chapter 8: Workflow* prior to implementing the Process Control Manager (PCM). There is also advanced Workflow content on OneStream Academy. Key concepts to understand include:

- Workflow Profile structure and relationship with Cubes
- Workflow Tasks as assigned via the Workflow Name property, especially those that contain a Certify or Workspace Task
- Entity assignment to Workflow Profiles
- Relationship between Workflow Profiles and Origin members (i.e. Import, Forms, AdjInput) and how these are locked without Process Control Manager
- Workflow Channels, if being used for phased submission and promotion
- This XF Application's Cube design, which will likely have an impact on PCM design choices:
    - Single or **"Monolithic" Cube** is the simplest XF Application design. These typically have one Workflow Profile structure, though that can vary by Scenario Type.
    - **"Linked Cubes"** is possible via relationships between multiple Entity dimensions into one superset Entity dimension. The "Top" or "Parent" Cube is configured with Cube References to others. Typically, Extensible Dimensionality is deployed with other dimensions, such as Accounts, allowing the Business Unit Cubes to satisfy their

management reporting requirements. There is typically one Workflow Profile structure for all Linked Cubes, though that can vary by Scenario Type. This will require additional XFW_PCM_xxx Cubes as well as modifications to the included XFW_PCM Cube.

- o **"Exclusive Cubes"** are separate Business Unit Cubes that move their data from a Business Unit to a "Parent" Cube typically via Business Rules or the use of Data Management instead of through configured Cube References. Each separate Cube requires its own Workflow Profile structure, though that can vary by Scenario Type.
- o **"Specialty Cubes"** refers to special data collections outside of the typical Trial Balance or Planning data loads and is typically encompassed with no parent/child relationships between Cubes. Examples are for headcount or budget drivers. These figures might be referenced by other Cubes via Business Rules or Data Management. Each Specialty Cube would have separate Workflow Profile structures. Though possible, it is unlikely for PCM to be used for these types of collections.
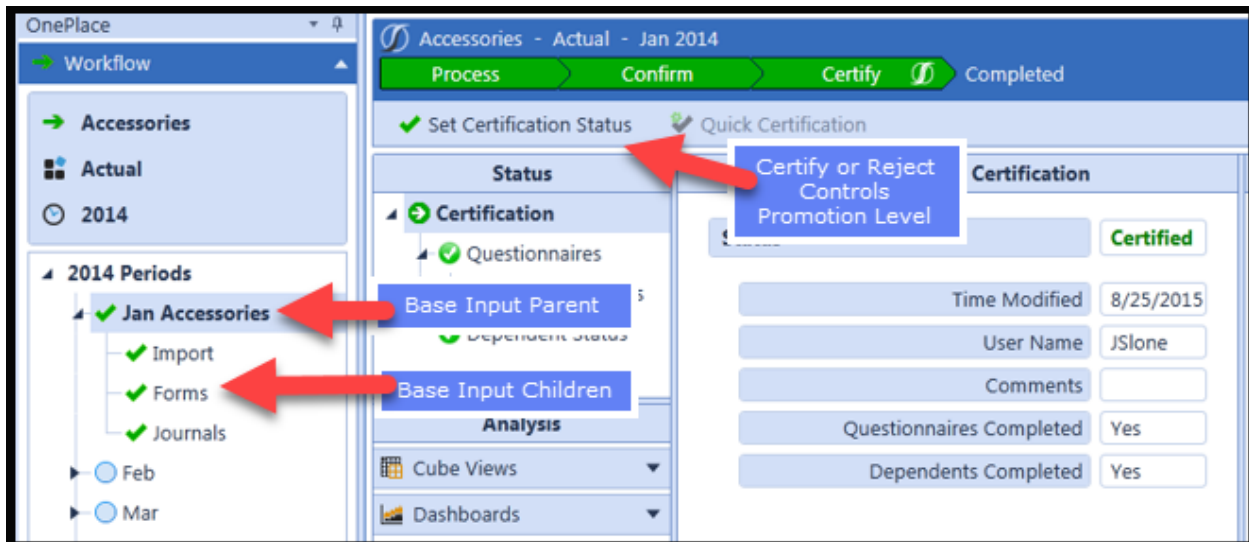
This section will cover the key PCM solution functionality and related configuration options to help the customer successfully implement PCM to meet their process control requirements. Having answers to these key process granularity questions before configuring PCM is highly recommended and will drive the implementation activities. These key decisions will guide which PCM configurations will be made and where. Some configurations at the Workflow Profile Base Input Parent, Base Input Children or Event Handler Business Rules linked to the Certify Workflow task may be necessary to meet requirements.

Simple Promotion: All Related Entities, Cubes, Origins and No Workflow Channels
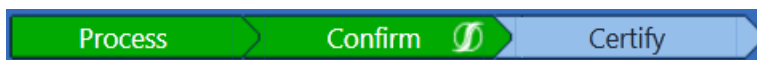
The simplest way to add Process Control Manager to an existing Workflow Profile structure or one that is being designed is to automate the promotion and demotion of the Process Level via the Workflow Certification and Rejection processes. This involves applying the provided Event Handler Rules which

control the Process Level when promoting and rejecting at either the Base Input Parent or Base Input Child level of a Workflow Profile. If using this method, a promotion or rejection would change the Process Level across all Entities related to the Workflow Profile, the Cube related to this Workflow Profile (or multiple Cubes in an Extensible Dimensionality linked Cube design), all Origin members (if at the Base Input Parent) or related single Origin member (such as Import if placed at that Base Input Child).

Requires a Workflow Name that ends with a Certify Task. The Workflow design could take advantage of the Certify task and the *Promote On Certify* PCM Global Option is set to Yes to provide a simple process for data promotion. See sections on *Global Options* and *Event Snippets* for configuration details.

Promote or Revise Data by Entity

Is it required to have control at the individual Entity dimension member? Is it desired to limit data changes to specific Entities during the close and it is difficult because multiple entities are assigned to a Workflow?

This is an important design decision because it directly impacts the Workflow structure design of the OneStream XF application. Workflows can be setup up to manage multiple entities for common Import processes based on common users doing the work or common general ledgers and data source connections. If one entity in a shared Workflow is set to a Process Level that is higher than the user's current Process Level access, by default that Import process will be blocked for <u>all</u> entities assigned to that Workflow. This is done by design to prevent those Entities that are at a higher Process Level from being updated. There are two options to handle this situation:

1. If multiple Entities are assigned to one Workflow Profile to which revisions are desired, this Workflow Profile can be uncertified or rejected in order to allow for edits to all assigned Entities at the appropriate Process Level. If it is desired for only certain Entities to be available at a certain Process Level for edit out of those potentially multiple Entities assigned, the PCM Administrator can use the Process Status Dashboard to manually adjust the Process Level by individual Entity. If this exception process is acceptable, then this is the suggested implementation and multiple Entities can remain assigned to each Workflow. See *Using Process Control Manager (PCM) Dashboard for Manual Process Level Management*.
2. To provide detailed control at the entity with little PCM Administrator intervention, there could be separate Workflow Profiles created for each entity. The Workflow design could take advantage of the Certify step and the *Promote On Certify* PCM Global Option is set to Yes to provide a simple process for data loaders. See sections on *Global Options* and *Event Snippets* for configuration details.

End-user management of the Process Control Level at the Entity level will require promoting the Process Level using a manual Workflow step or using the *Promote on Certify* option in the Global Options. The manual management step would be included in the Workflow Profile Properties by selecting a Workflow Name type that includes a Workspace step. Then set the Workspace Dashboard Name to refer to the *0_Frame_WorkspaceChild_PCM Dashboard* to allow the users to manually maintain the Process Level

for their PCM Intersections. Sample Workflow Profile Properties for manual management of the Process Level.

The *Promote on Certify* option will take advantage of the Default Promote/Reject Level configured in the Process Level Definition Page. Sample Workflow Profile Properties for an automated management of the Process Level when the *Promote on Certify* option is set to Yes in the Global Options.

The process for setting up the Process Control Manager Dashboard in the Workflow Workspace page will be discussed later in this document.

Administrators will manage the Process Control Level using the *Process Status Page* from the *Process Control Manager (PCM)* Dashboard found in the *XFW Process Control Mgr Admin (PCM)* Dashboard Profile Group. This Dashboard provides features to allow administrators to set the Process Level quickly across Entity dimensions based on the Global Options setting for Multiple Origins and Multiple Workflow Channels for multiple intersections based on the activated Global Options.

Promote by Origin Base Input Child Profile – Import, Forms or Journals

Is it required to have control of when certain data input members in the Origin dimension can be used for loading data? Common reasons for using this level of control would be applications where companies choose to limit when users can import their general ledger trial balance files, input statistical account balances in Forms/Excel, or when users can use Journals to process adjustments during the closing process.

Setting the Multiple Origins configuration property (see Global Options) to Yes will allow the Import, Forms/Excel Add-in/XF Spreadsheet functionality and Journals input Origins to be secured

independently by the Process Control Manager (PCM). Administrators will be able to manage the Process Level for these input channels independently and unlock them when necessary for individual entities without allowing other entities to access a specific input channel.

Managing Process Control Levels at the Origin level will require promoting the Process Level using a manual Workflow step or using the *Promote on Certify* option in the Global Options:

1. The manual management step would be included in the Base Input Child profile as a Workspace step that calls the *0_Frame_WorkspaceChild_PCM* Dashboard to allow the users to manually maintain the Process Level for their PCM intersections.
2. The *Promote on Certify* option will take advantage of the Default Promote/Reject Level configured in the Process Level Definition Page and included Event Handler Rules.

The process for setting up the Process Control Manager Dashboard in the Workflow Workspace page was discussed in the previous section of this document.

Promote Accounts by Workflow Channels (Phased Submission of Data)

OneStream XF has built-in support for phased data submissions at the Workflow level using Workflow Channels to bind Account dimension members to Workflow Profiles. Once again, it is best to have an understanding of Workflow Channels from the *OneStream XF Design and Reference Guide* before deciding on an approach. If using the phased data submissions concept of promoting certain Accounts by Workflow Origin members, specifically focus on the sections related to the use of Workflow Channels and their use in binding Account members to Workflow Profiles. The PCM solution only controls Accounts with Workflow Channels. The PCM solution does not control UDs with Workflow Channels in this release.

The PCM Solution includes the *PCM_AllChannels* and *PCM_Standard* UD3 dimension members. The PCM_Standard member is intended to match the Standard Workflow Channel that is included in all OneStream XF applications. The PCM_AllChannels UD3 members is used to set the Process Level for all of the UD3 members that are in the OneStream XF application when the Global Options for Multiple Workflow Channels is set to Yes. The PCM solution treats this UD3 member as a virtual parent for all UD3 members.

This functionality will likely be a more common use of the Process Control Manager (PCM) Solution. Common examples of this use case would be using a Workflow Channel to isolate the trial balance accounts, statistical accounts (not maintained in the general ledger) and other accounts maintained in other external systems (such as head counts in an HR system). Some companies might even break the general ledger trial balance accounts up into detailed Workflow Channels for Intercompany, Income Statement and Balance Sheet accounts to control the access of these accounts on different days of the close process.

It is important to remember that using this level of Workflow Channel control will require that a separate Workflow be created and maintained for each Workflow Channel that is created. If the

application requires control down to the individual entities, then separate Workflows need to be created for each Entity/Workflow Channel combination allowing for the most detailed control possible.

An important consideration when building the PCM UD3 XFW_PCM_WorkflowChannels dimension is that once PCM has managed the Process Level for that Workflow Channel, it will be considered to have data in that UD3 member. This means that if you choose not to use this Workflow Channel UD3 member later, the Workflow Channel member cannot be easily deleted as is the case with other members that are storing data. This is a core part of the OneStream XF auditability functions and data protection. So, a UD3 Workflow Channel member may still be displayed in the PCM Admin Status dashboard even though it may not actively be being used because the Accounts/Workflows that formerly used it are now assigned to a different Workflow Channel. So, the recommended design choice is to start with the minimum number of Workflow Channels that are required and add more if it becomes necessary to provide additional granularity in the PCM control.

Managing Process Control Levels at the Workflow Channel level will require promoting the Process Level using a manual Workflow step or using the *Promote on Certify* option in Global Options:

- The manual management step would be included in the Workflow Profile as a Workspace step that refers to the 0_*Frame_WorkspaceChild_PCM* Dashboard to allow the users to manually maintain the Process Level for their PCM intersections. The process for setting up the Process Control Manager Dashboard in the Workflow Workspace page will be discussed later in the *Configuring Workflow* section.
- The *Promote on Certify* option will take advantage of the Default Promote/Reject Level configured in the Process Level Definition Page. The process for setting up *Promote on Certify* will be discussed later in the *Event Snippets* section.

Promote by Exclusive Cubes

Is it required to have control across multiple Cubes because of the use of OneStream XF "Exclusive Cube" application designs? Companies using these larger applications will find PCM to be an important solution for control of the closing process across their larger organizations. This is a design choice where each Cube is independent of each other, but the "child" Cubes (e.g. individual business unit Cubes) are related to the "parent" Cube (e.g. Group Finance) via Finance Business Rules which copy data. Setting the *Exclusive Cubes* option to Yes in Global Options and building out the PCM UD1 XFW_PCM_Cubes dimension will give PCM the ability to manage the Extended Dimensionality and Exclusive Cubes.

There is a need to build out the PCM UD1 XFW_PCM_Cubes dimension to add the list of Cubes to be referred to and managed by PCM (see Package Contents Cubes in this document).

Managing Process Control Levels at the Cube level will require promoting the Process Level using a manual Workflow step or using the Promote on Certify option in the Global Options. The manual management step would be included in the Workflow Profile as a Workspace step that calls the Process Control 0_Frame_WorkspaceChild_PCM Dashboard to allow the users to manually maintain the Process

Level for their PCM intersections. The Promote on Certify option will take advantage of the Default Promote/Reject Level configured in the Process Level Definition Page.

The process for setting up the Process Control Manager Dashboard in the Workflow Workspace page will be discussed later in this document.

If using an Extensible Dimensionality or "Linked Cubes" configuration, refer to the section under *Create Reference Cubes* for more information.

Combinations

Process Control Manager can manage the Process Level using any combination of these Process Manager Intersections discussed above. Managing the Process Level will be easier when using the Workspace Workflow task for combination designs. This can be done at the Parent Level of Base Input to make the management process easier. The manual management step would be included in the Workflow Profile as a Workspace step that calls the Process Control 0_Frame_WorkspaceParent_PCM Dashboard to allow the users to manually maintain the Process Level for their PCM intersections.

The process for setting up the Process Control Manager Dashboard in the Workflow Workspace page will be discussed later in this document.

Settings ⚙

The Settings page contains a page for the *Global Options* to be applied across this XF Application, a collection of *Event Snippets*, which can be pasted into Event Handler Business Rules for an integrated experience and *Uninstall* options.

Global Options

Review the option settings below and consider your current Workflow design and your desired enhancement to your current data submission processes to determine the proper settings for your PCM solution design.

Manage PCM Access Group

Security group with access to manage PCM Settings during setup and Process Levels during use, also known in this document as the "**PCM Admin**." This security group can be managed in System | Administration | Security. A user who is an XF System Administrator (i.e. they are a member of the 'Administrators' Security group) is also considered a PCM Admin and has full access to the PCM Admin functionality to control PCM Global Options and set the Process Level for any intersections that are active in the PCM solution.

Exclusive Cubes

Yes / No flag to extend the PCM solution across Exclusive Cube Applications. See *Key PCM Design Decisions* for an overview of the different types of Cube designs within XF Applications. If set to *Yes*, see section above on *UD1 - XFW_PCM_Cubes* for additional configuration requirements.
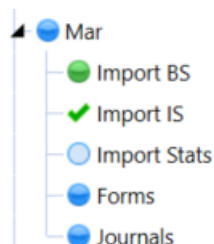
Multiple Origins

Yes / No flag to execute the solution Business Rules for using multiple Origins per Workflow in the PCM Admin and Status Dashboards. This setting uses the UD2 XFW_PCM_Origins dimension for tracking Process Level status.
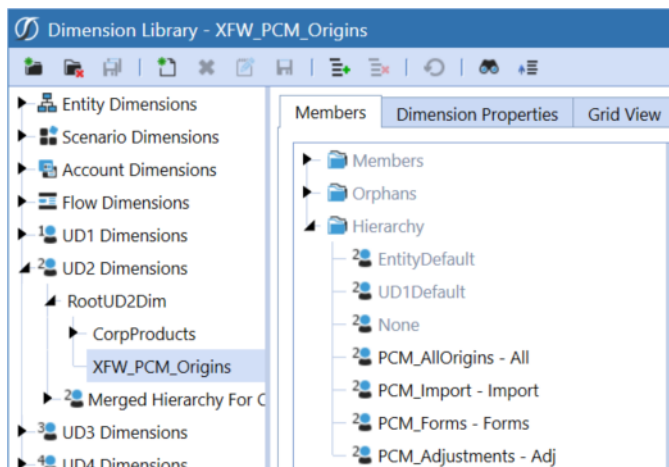
Note that the current PCM design does not support individual control of two or more Base Input Children of the same type/Origin Member in a single Workflow. The picture below shows a Workflow with three Import Base Input Children for this discussion example.


If there are **multiple Base Input Children of the same type** (i.e. Import), manually promoting one with the Workspace Dashboard or *Promote On Certify* set to Yes with a Certify task, will raise the Process Level for that Origin member in the PCM solution and block the user from continuing to complete the remaining Import tasks in this example. This would require manual intervention, by a higher level PCM user or the Administrator, to lower the Process Level so that the Workflow user could complete the other Import tasks.

If Workflow with multiple Base Input Children of the same type is required, it is recommended that only one of the Base Input Children of that type include the Workspace task (to manually promote) or the Certify Task (when *Promote On Certify* is set to Yes) to promote that Base Input Child type in the Workflow. This will help avoid the need for intervention by higher level PCM users or Administrators to allow the Workflow user to continue to complete the Workflow.

Multiple Workflow Channels
Yes / No flag to execute the solution Business Rules for displaying multiple Workflow Channels (i.e. Balance Sheet, Intercompany, Income Statement, Stats, etc.) in the Process Control Manager (PCM) Dashboard. Enabling this feature requires setting up the Workflow Channel names in the UD3 XFW_PCM_WorkflowChannel dimension using the *PCM_workflowchannelname* naming convention. The screenshot below includes example Workflow Channels added for Retail and Admin. The

PCM_AllChannels and *PCM_Standard* members are added by the PCM solution during the installation and should not be changed or removed.
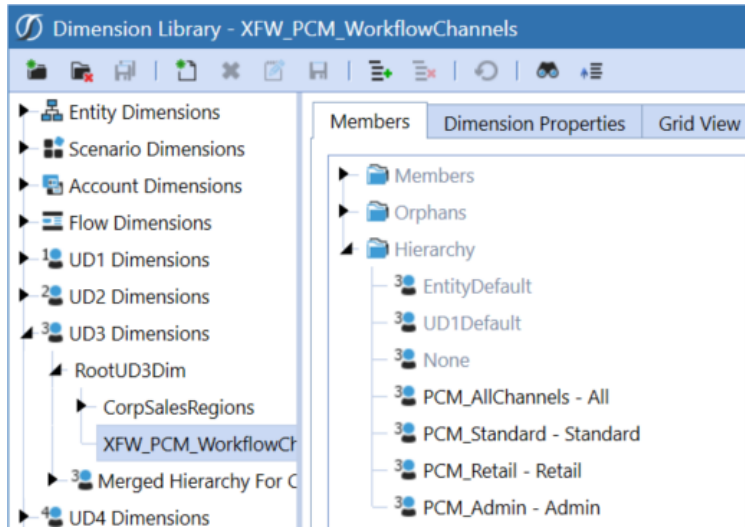
Promote on Certify

Yes / No flag to execute the Data Quality events and promote the level when the Certify Workflow Task is executed to Certify or Reject. This will build on the established OneStream XF Workflow in your application and allow users to quickly promote the Process Level when they Certify their Workflows. See the *Configure Business Rules* section later in this document for the discussion of Event Handlers and applying the Event Handler Business Rule Snippets for PCM. See the *Process Level Definition* and *Exception Level Definition* sections later in this document.

Block Import Tasks

Yes / No flag. Setting to Yes will evaluate the Process Level and fail attempts to Import/Validate/Retransform/Load if the user is not at the correct Process Level for any Entity included in Stage.

Block Process Cube Task

Yes / No flag. Setting to Yes will evaluate the Process Level and fail Process Cube step if the user is not at the correct Process Level for any Entity included in Stage.

Block Confirm Task

Yes / No flag. Setting to Yes will evaluate the Process Level and fail Confirm step if the user is not at the correct Process Level for any Entity included in Stage.

Block Certify Task

Yes / No flag. Setting to Yes will evaluate the Process Level and fail Certify step if the user is not at the correct Process Level for any Entity included in Stage.

Process Control Error Description

Error message displayed to users that attempt to complete a task that is blocked by the current Process Control Level settings.

Note: These settings apply to Forms, Spreadsheet, Excel Add-in and Journals. They will also block the bulk journal loading API process.

Event Snippets

The Settings | Event Snippets page holds the Business Rule code snippets that need to be added to the application to apply the PCM functionality. The process of adding these code snippets is covered in the *Configure Business Rules* section below.
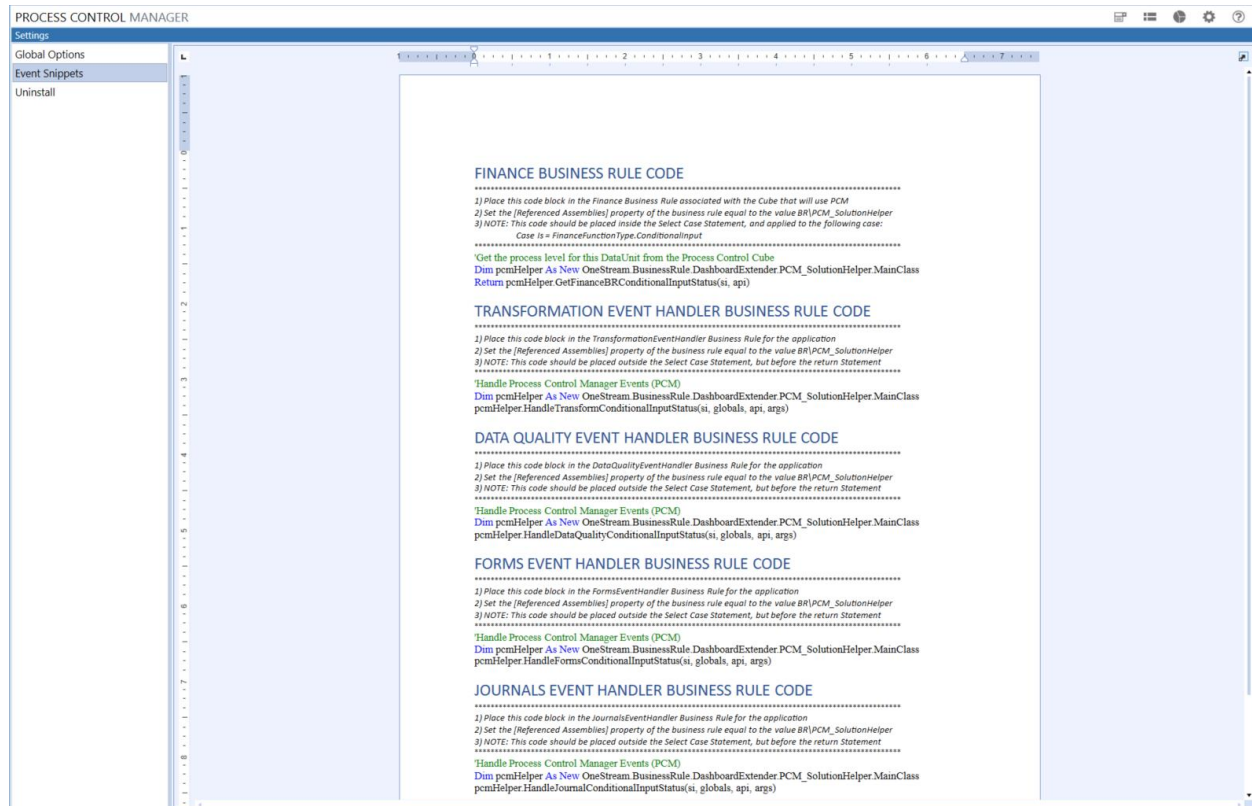
Uninstall

The uninstall screen enables the removal of the Process Control Manager application UI (user interface) and custom tables.
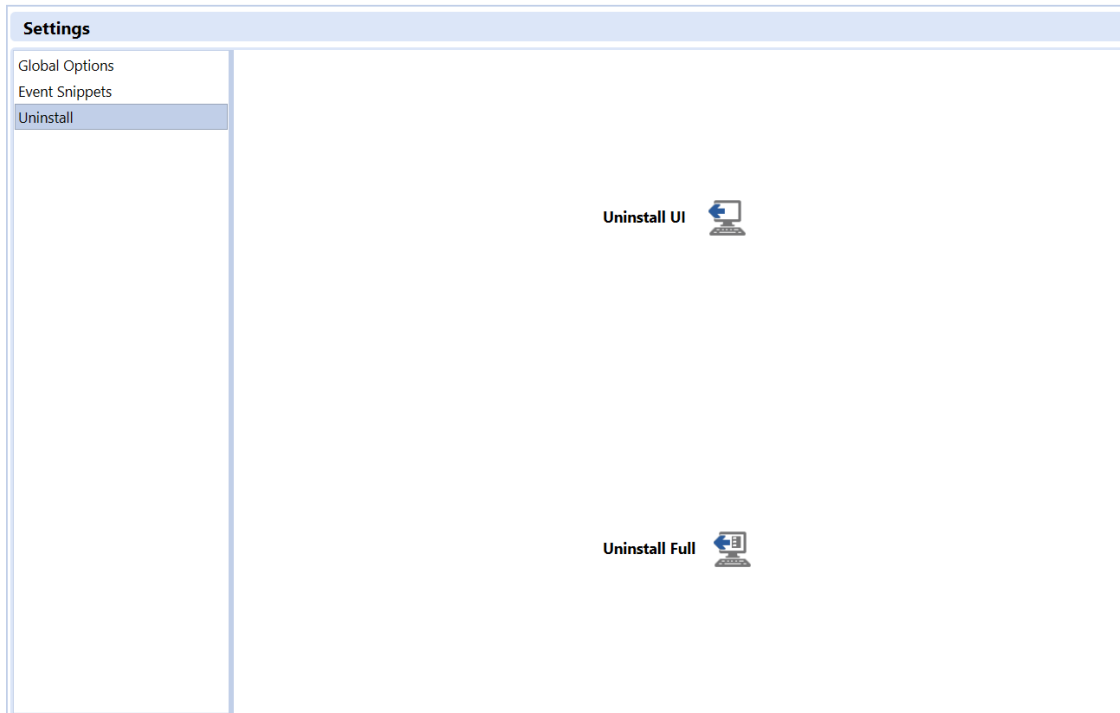
Uninstall UI

The Uninstall UI button opens a dialog to confirm removal of the Process Control Manager solution UI.

Uninstall Full

The Uninstall Full button opens a dialog to confirm removal of the Process Control Manager solution UI and deletion of all Process Control Manager custom tables. Use caution, as this action is not reversible.

Changes to Financial Model, Workflow and Security

Configure Process Control Cube

Included in the Process Control Manager is the Process Control Cube named *XFW_PCM*. This Cube must be updated with the correct dimensionality for your XF Application. Assign the existing Entity and Scenario dimensions used in your XF Application and confirm the XFW_PCM_Accounts, XFW_PCM_Cubes, XFW_PCM_Origins and XFW_PCM_WorkflowChannels dimensions are assigned as demonstrated below for the sample GolfStream Application. Go to Application | Cube | Cubes and select the XFW_PCM Cube to complete these changes.
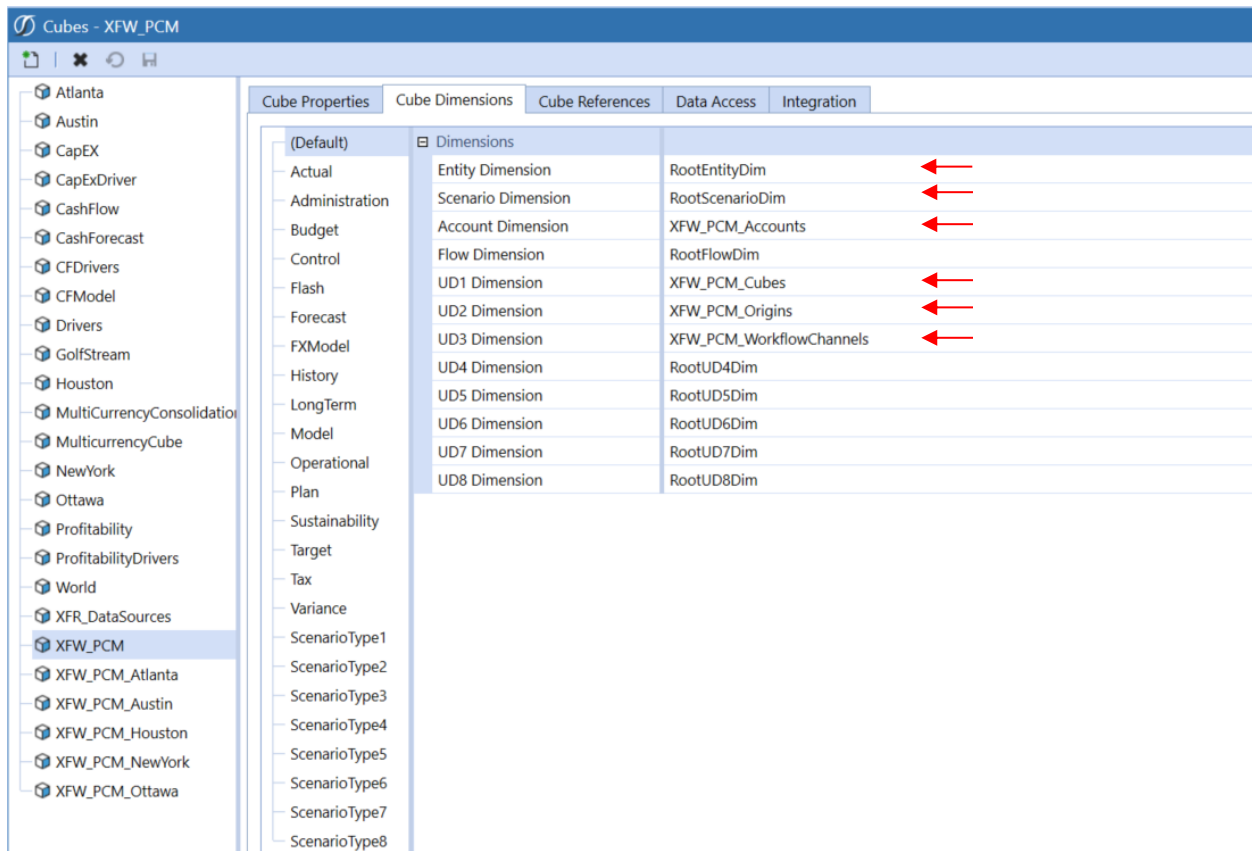
If using a **Linked Cube design** in your application, create PCM reference Cubes for each Linked Cube. See *Key PCM Design Decisions* for an overview of the different types of Cube designs within XF Applications. In the case of Linked Cubes, it is required to add the Cube names as members in the UD1 XFW_PCM_Cubes dimension using the *XFW_PCM_cubename* naming convention. A sample setup for the GolfStream demo application would use the XFW_PCM Cube installed by PCM solution as the parent Cube and the additional Cubes would be added with the XFW_PCM_cubename naming convention, such as *XFW_PCM_Atlanta* for the additional Linked Cubes. See example below:
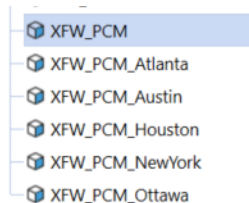
In each PCM Cube, assign the existing Entity and Scenario dimensions plus the XFW_PCM_Accounts, XFW_PCM_Cubes, XFW_PCM_Origins and XFW_PCM_WorkflowChannels dimensions as demonstrated below for the sample GolfStream Application. Go to Application | Cube | Cubes and create the necessary XFW_PCM_cubename Cubes with the related dimensionality as displayed below. Note that the Entity Dimension must match the Entity Dimension used in the matching Linked Cube.
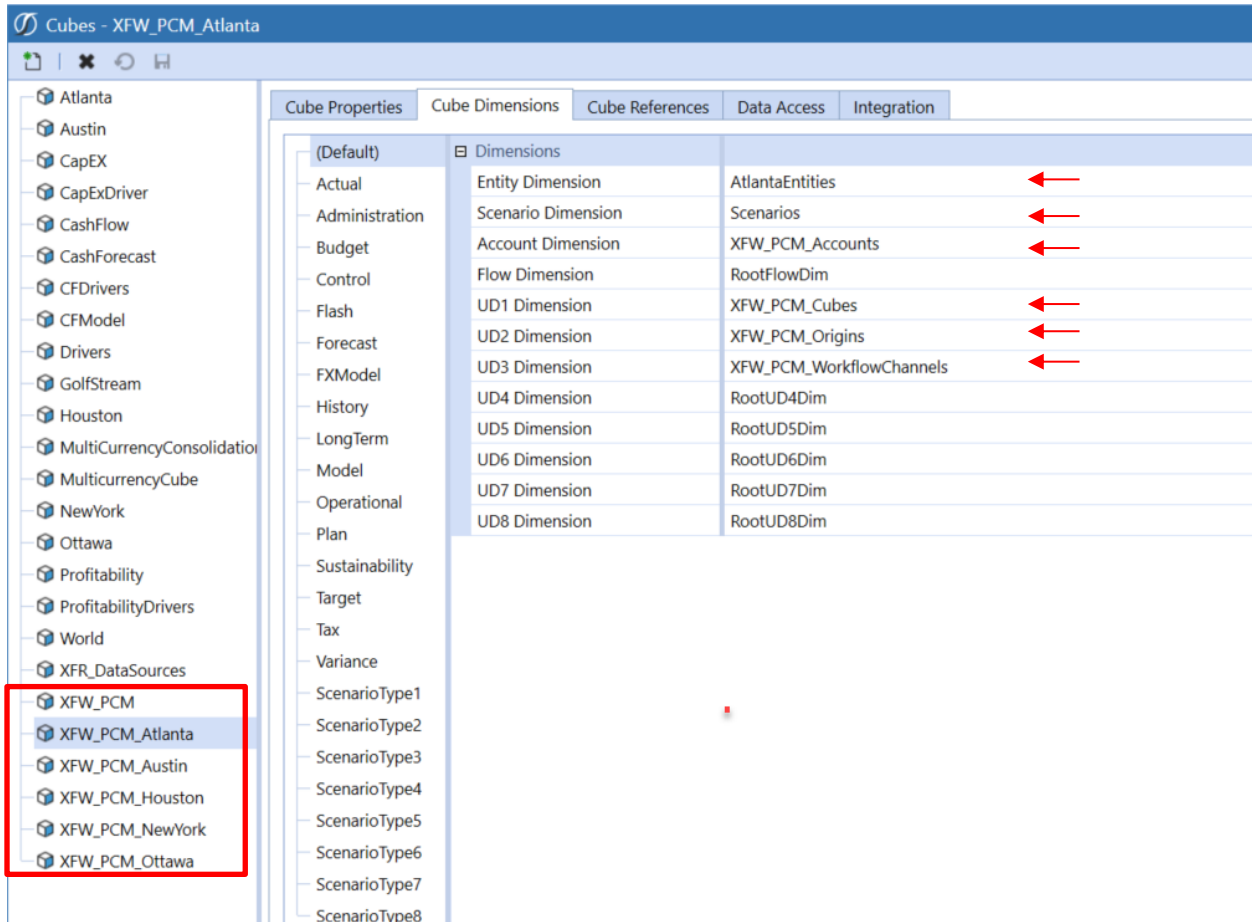
In the case of a Linked Cube design, in the XFW_PCM Cube, add references to the new Cubes in the Cube References tab.
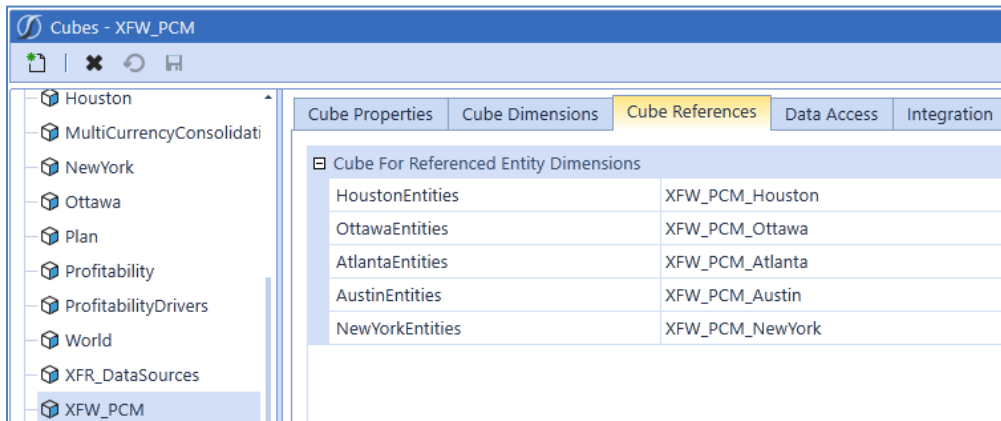

Configure Business Rules

Add NoInput Business Rule

If not already using a no-input business rule, assign the provided PCM_ConditionalInput rule to all Cubes that will be managed by PCM. Business Rule 7 or 8 will be a good location to assign the

PCM_ConditionalInput rule. The PCM_ConditionalInput rule can be assigned by selecting it from the dropdown list of rules for the Business Rule slot that is being assigned. The screen shot below shows the PCM_ConditionalInput rule being assigned to the Atlanta Cube in the GulfStream demo application.
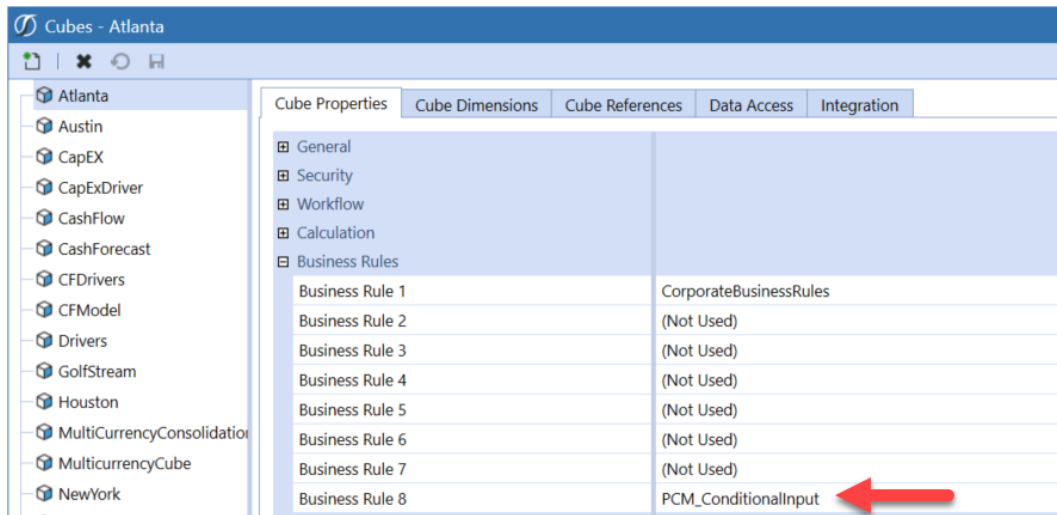
If a no-input business rule is already being used in your application, update the existing rule with the code provided on the PCM Settings | Event Snippets page. See *Event Snippets* under *Settings* earlier in this document.

Add Event Handler Business Rule Code

The Event Snippets page has additional business rule code snippets that will need to be added to the Transformation Event Handler, Data Quality Event Handler, Forms Event Handler and Journals Event Handler Business Rule Code. See *Event Snippets* under *Settings* earlier in this document. These code snippets will call the new no-input business rule code when these events are called to test the user's Process Level against the current Process Level for a given intersection of Entity, Scenario, Time and the activated combinations of Cube, Origin and Workflow Channel to determine if the user can complete the requested action.

TRANSFORMATION EVENT HANDLER BUSINESS RULE CODE
****
1) Place this code block in the TransformationEventHandler Business Rule for the application
2) Set the [Referenced Assemblies] property of the business rule equal to the value BR\PCM_SolutionHelper
3) NOTE: This code should be placed outside the Select Case Statement, but before the return Statement
****

```
'Handle Process Control Manager Events (PCM)
Dim pcmHelper As New OneStream.BusinessRule.DashboardExtender.PCM_SolutionHelper.MainClass
pcmHelper.HandleTransformConditionalInputStatus(si, globals, api, args)
```

DATA QUALITY EVENT HANDLER BUSINESS RULE CODE
****
1) Place this code block in the DataQualityEventHandler Business Rule for the application
2) Set the [Referenced Assemblies] property of the business rule equal to the value BR\PCM_SolutionHelper
3) NOTE: This code should be placed outside the Select Case Statement, but before the return Statement
****

```
'Handle Process Control Manager Events (PCM)
Dim pcmHelper As New OneStream.BusinessRule.DashboardExtender.PCM_SolutionHelper.MainClass
pcmHelper.HandleDataQualityConditionalInputStatus(si, globals, api, args)
```

FORMS EVENT HANDLER BUSINESS RULE CODE
****
1) Place this code block in the FormsEventHandler Business Rule for the application
2) Set the [Referenced Assemblies] property of the business rule equal to the value BR\PCM_SolutionHelper
3) NOTE: This code should be placed outside the Select Case Statement, but before the return Statement
****

```
'Handle Process Control Manager Events (PCM)
Dim pcmHelper As New OneStream.BusinessRule.DashboardExtender.PCM_SolutionHelper.MainClass
pcmHelper.HandleFormsConditionalInputStatus(si, globals, api, args)
```

JOURNALS EVENT HANDLER BUSINESS RULE CODE
****
1) Place this code block in the JournalsEventHandler Business Rule for the application
2) Set the [Referenced Assemblies] property of the business rule equal to the value BR\PCM_SolutionHelper
3) NOTE: This code should be placed outside the Select Case Statement, but before the return Statement
****

```
'Handle Process Control Manager Events (PCM)
Dim pcmHelper As New OneStream.BusinessRule.DashboardExtender.PCM_SolutionHelper.MainClass
pcmHelper.HandleJournalConditionalInputStatus(si, globals, api, args)
```

The Business Rules that must be modified are located in the Application/Tools/Business Rules page under the Extensibility Rules. If they do not exist in the current Application, they can be added by clicking Create Business Rule on this page.

- Extensibility Rules
  - √x CPP_DataMgmt
  - √x CSP_DataMgmt
  - √x DataQualityEventHandler
  - √x FormsEventHandler
  - √x JournalsEventHandler
  - √x PLP_DataMgmt
  - √x RCM_DataMgmtDiscover
  - √x RCM_DataMgmtProcess
  - √x TCO_DataMgmt
  - √x TLP_DataMgmt
  - √x TransformationEventHandler

The screen shot below shows the snippet for the DataQualityEventHandler Business Rule being pasted to lines 56-58 in the GolfStream demo application.

```
20   Public Class MainClass
21        '-----------------------------------------------------------------------------------------
22        'Reference Code:    DataQualityEventHandler
23        '
24        'Description:       Event handler method that provides an opertunity to supplement a normal data quality
25        '                   action with your own custom functionality.
26        '                   (Example: email after ProcessCube or publish report to sharepoint after failed Confirmation).
27        '
28        'Usage:             Executes when a Data Quality action is run and fires this business rule.  If you have written
29        '                   code in that handles the specified event operation the code will be executed.
30        '
31        'Created By:        Tom Shea
32        'Date Created:      1-30-2013
33        '-----------------------------------------------------------------------------------------
34        Public Function Main(ByVal si As SessionInfo, ByVal globals As BRGlobals, ByVal api As Object, ByVal args As DataQu
35            Try
36                'Define a switch to control event processing, since many of these are reference examples we do not want the
37                Dim processEvents as Boolean = False
38
39                'Set the default return values
40                Dim returnValue As Object = args.DefaultReturnValue
41                args.UseReturnValueFromBusinessRule = False
42                args.Cancel = False
43
44                'Evaluate the operation type in order to determine which subroutine to process
45                Select Case args.OperationName
46                    Case Is = BREventOperationType.DataQuality.ProcessCube.NoCalculate
47                        'Execute a Data Management job after process cube runs
48                        Me.XFR_HandleProcessCubeNoCalculate(si, globals, api, args)
49
50                    Case Is = BREventOperationType.DataQuality.Certify.FinalizeSetCertifyState
51                        'Send an email after a workflow profile executes its certification
52                        Me.XFR_HandleFinalizeSetCertifyState(si, globals, api, args)
53
54                End Select
55
56                'Handle Process Control Manager Events (PCM)
57                Dim pcmHelper As New OneStream.BusinessRule.DashboardExtender.PCM_SolutionHelper.MainClass
58                pcmHelper.HandleDataQualityConditionalInputStatus(si, globals, api, args)
59
60
61                Return returnValue
62
63            Catch ex As Exception
64                Throw ErrorHandler.LogWrite(si, New XFException(si, ex))
65            End Try
66        End Function
67
68   "ProcessCube.NoCalculate Helpers"
103
104  "FinalizeSetCertifyState Helpers"
237
238      End Class
```

The screen shot below shows the snippet for the FormsEventHandler Business Rule being pasted to lines 27-29 in the GolfStream demo application.

```
19  Namespace OneStream.BusinessRule.FormsEventHandler.FormsEventHandler
20      Public Class MainClass
21          Public Function Main(ByVal si As SessionInfo, ByVal globals As BRGlobals, ByVal api As Object, ByVal args As FormsE
22              Try
23                  Dim returnValue As Object = args.DefaultReturnValue
24                  args.UseReturnValueFromBusinessRule = False
25                  args.Cancel = False
26
27                  'Handle Process Control Manager Events (PCM)
28                  Dim pcmHelper As New OneStream.BusinessRule.DashboardExtender.PCM_SolutionHelper.MainClass
29                  pcmHelper.HandleFormsConditionalInputStatus(si, globals, api, args)
30
31
32                  Return returnValue
33              Catch ex As Exception
34                  Throw ErrorHandler.LogWrite(si, New XFException(si, ex))
35              End Try
36          End Function
37      End Class
38  End Namespace
```

The screen shot below shows the snippet for the JournalsEventHandler Business Rule being pasted to lines 60-62 in the GolfStream demo application.

```
34          'User tag constants (Apply these the Text1 field of a user)
35          Public const NotifyApproverJournalSubmitted as String = "#NJS" 'Apply the tag to Text1 of users that are Journal Ap
36          Private m_SendMail As Boolean = False
37
38          Public Function Main(ByVal si As SessionInfo, ByVal globals As BRGlobals, ByVal api As Object, ByVal args As Journa
39              Try
40                  Dim returnValue As Object = args.DefaultReturnValue
41                  args.UseReturnValueFromBusinessRule = False
42                  args.Cancel = False
43
44                  'Evaluate the operation type in order to determine which subroutine to process
45                  Select Case args.OperationName
46                      Case Is = BREventOperationType.Journals.FinalizeSubmitJournal
47                          'SUBMITTED - Notifiy Approver
48                          Me.XFR_HandleFinalizeSubmitJournal(si, globals, api, args)
49
50                      Case Is = BREventOperationType.Journals.FinalizeApproveJournal
51                          'APPROVED - Notify Submitter
52                          Me.XFR_HandleFinalizeApproveJournal(si, globals, api, args)
53
54                      Case Is = BREventOperationType.Journals.FinalizeRejectJournal
55                          'REJECTED - Notify Submitter
56                          Me.XFR_HandleFinalizeRejectJournal(si, globals, api, args)
57
58                  End Select
59
60                  'Handle Process Control Manager Events (PCM)
61                  Dim pcmHelper As New OneStream.BusinessRule.DashboardExtender.PCM_SolutionHelper.MainClass
62                  pcmHelper.HandleJournalConditionalInputStatus(si, globals, api, args)
63
64
65                  Return returnValue
66
67              Catch ex As Exception
68                  Throw ErrorHandler.LogWrite(si, New XFException(si, ex))
69              End Try
70          End Function
71
```

The screen shot below shows the snippet for the TransformationEventHandler Business Rule being pasted to lines 74-76 in the GolfStream demo application.

```
44              'Evaluate the operation type in order to determine which sub-event is being processed
45              Select Case args.OperationName
46                  Case Is = BREventOperationType.Transformation.ParseAndTrans.InitializeExcelRangeLayout
47                      'Call template version validation handler
48                      If processEvents Then Me.XFR_HandleExcelTemplateVersionCheck(si, globals, api, args)
49                      If processEvents Then Me.XFR_HandleExcelTemplateForceZeroSuppress(si, globals, api, args)
50
51                  Case Is = BREventOperationType.Transformation.ParseAndTrans.ParseSourceData
52                      'Call selective global data key(Scenario & Time) validation
53                      If processEvents Then Me.XFR_HandleParseSourceData(si, globals, api, args)
54
55                  Case Is = BREventOperationType.Transformation.ParseAndTrans.ProcessTransformationRules
56                      'Call mapping override (Force BalanceSheet accounts to View of YTD)
57                      If processEvents Then Me.XFR_HandleProcessTransRules_OverrideView(si, globals, api, args)
58                      If processEvents Then Me.XFR_HandleProcessTransRules_Allocate(si, globals, api, args)
59
60                  Case Is = BREventOperationType.Transformation.ValTrans.SetEventRules
61                      'Call custom validation rules
62                      If processEvents Then Me.XFR_HandleSetEventRules(si, globals, api, args)
63
64                  Case Is = BREventOperationType.Transformation.ValTrans.FinalizeValidateTransform
65                      'Send custom email message if map errors exist after transformation validation is run
66                      If processEvents Then Me.XFR_HandleAfterValidateTransform(si, globals, api, args)
67
68                  Case Is = BREventOperationType.Transformation.ParseAndTrans.EndPreserveData
69                      'Call custom cube data preserve
70                      If processEvents Then Me.XFR_HandleEndPreserveData(si, globals, api, args)
71
72              End Select
73
74              'Handle Process Control Manager Events (PCM)
75              Dim pcmHelper As New OneStream.BusinessRule.DashboardExtender.PCM_SolutionHelper.MainClass
76              pcmHelper.HandleTransformConditionalInputStatus(si, globals, api, args)
77
78
79              Return returnValue
80
81          Catch ex As Exception
82              Throw ErrorHandler.LogWrite(si, New XFException(si, ex))
83          End Try
84      End Function
```

The instructions in the Event Snippets page also state the five business rules (No-input/PCM_ConditionalInput, DataQualityEventHandler, FormsEventHandler, JournalsEventHandler and TransformationEventHandler) need to have the Reference Assemblies property set to BR/PCM_SoultionHelper. Note screen shot for the DataQualityEventHandler rule in the GolfStream.
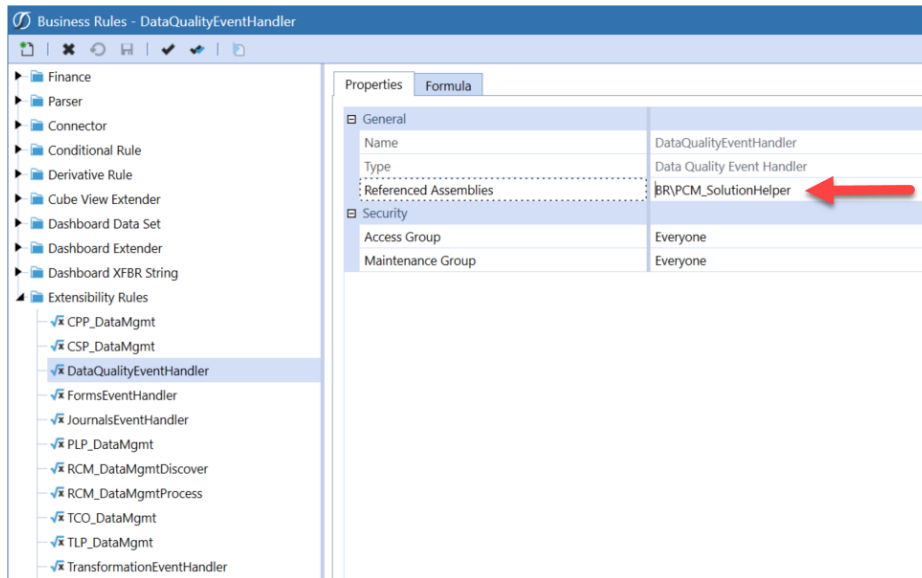
Configuring Workflow

Properly configuring Workflows for use with the PCM solution will require the addition of a Workspace task for manually setting the Process Level or the addition of a Certify task when using the Settings Global Option with Promote on Certify set to Yes. The manual process can be used for Base Input Workflows at the Child or Parent Levels. See the Global Options for discussion of the Promote on Certify option.

See the OneStream XF Design and Reference Guide: Chapter 8: Workflow for a discussion of Workflow and Workflow Settings. The Workflow Settings section will discuss configuring the Workflow Name for Workflow Tasks to incorporate Workspace or Certify steps, as needed, into your current Workflow Profiles.

Assign PCM Dashboards to Workflow Base Input Child for Manual Promotion

The following example shows how to add the 0_Frame_WorkspaceChild_PCM Dashboard to the Houston Import Input Child Workflow. Note that the Workflow Settings section uses a Workflow Name of Import, Validate, Load, Workspace and that the Workspace Dashboard Name (Custom Workflow) parameter has been set to the 0_Frame_WorkspaceChild_PCM Dashboard. This Workflow Name is an example, but any of the Workflow Names with a Workspace step can be used. This will bring up the Dashboard to manually promote the Process Level in the Workspace Task step of this WorkFlow
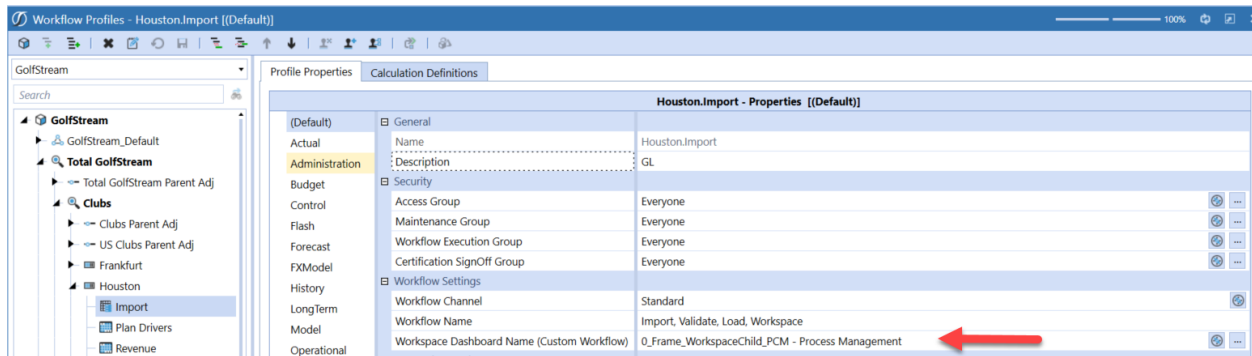
Note: This step is needed if the Global Option | *Promote On Certify* option is set to No.

Assign PCM Dashboards to Workflow Parent for Manual Promotion

The following example shows how to add the 0_Frame_WorkspaceParent_PCM Dashboard to the Houston Input Parent Workflow. Note that the Workflow Settings section uses a Workflow Name of Workspace, Certify and that the Workspace Dashboard Name (Custom Workflow) parameter has been set to the 0_Frame_WorkspaceParent_PCM Dashboard. This will bring up the Dashboard to manually promote the Process Level in the Workspace Task step of this Workflow.
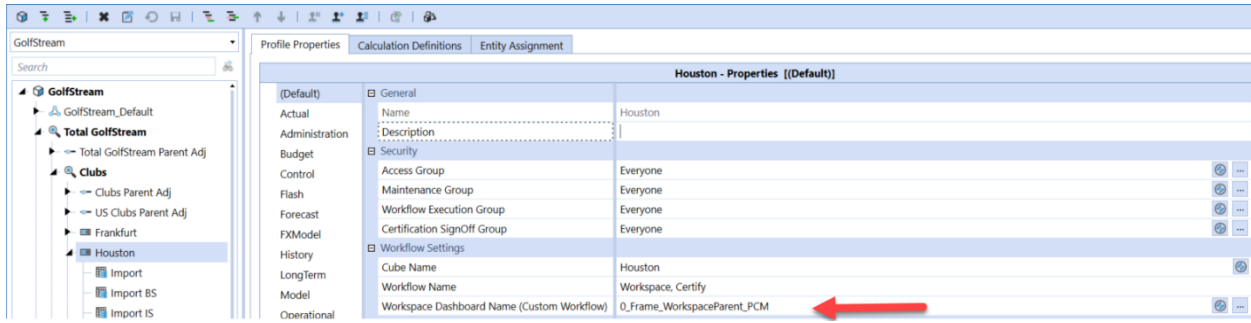
Note: This step is needed if the Global Options *Promote On Certify* option is set to No.

Configure Security - User Levels

Included in the Process Control Manager solution are twelve security groups. These twelve groups work with the process levels to determine if a user can update specific Workflows.
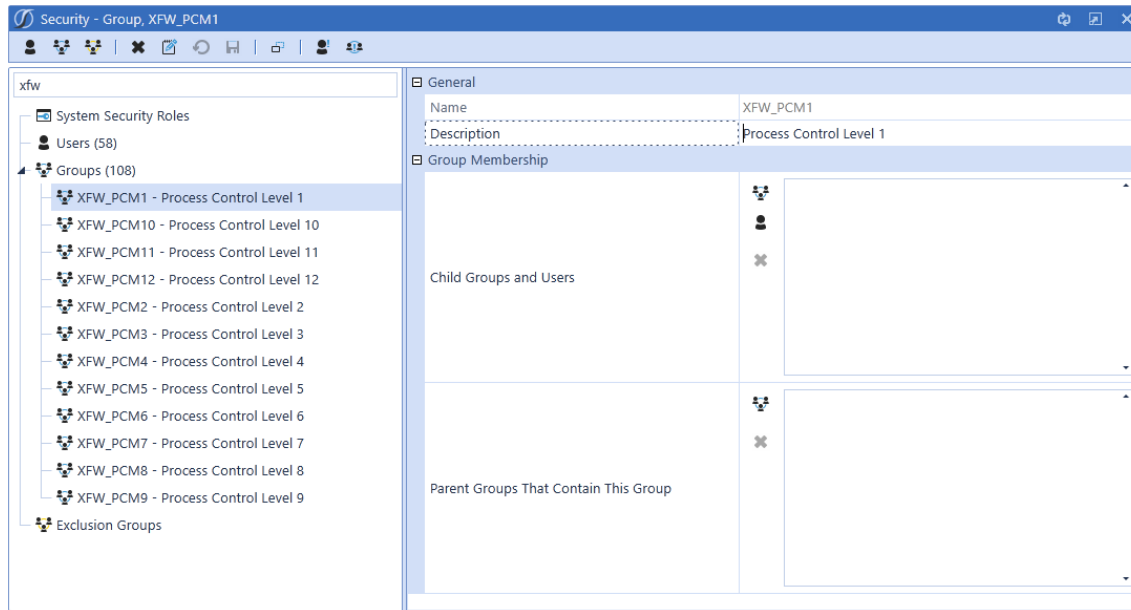
By default, all users belong to Level 0 (Started). Users must be assigned to the Process Control security level that they need access to process. Note that these groups can be nested (i.e. add level 3 to level 2) so that a user assigned to level 3 would also get level 2 access, etc.

Process Levels Definition

The Process Control Manager allows configuration of promotion and rejection levels for workflows by profile type or by individual Workflow. See *Using Promote On Certify with Event Handlers* later in this document for how these are applied.

Default Process Levels

The default Promotion & Rejection Levels are specified by Workflow Profile Types (Review, ParentInput & BaseInput) for each Scenario Type. The user will configure these default Process Levels to meet their process needs. These Default Promote/Reject Levels will then be used by the PCM solution when Global Options *Promote On Certify* option is set to Yes.

Exception Process Levels

Exception Process Level rule allows specific Workflows to be assigned a promotion & rejection level that will override the Default Process Level previously defined on Default Process Levels tab.

An Exception Process Level rule is created using the following steps:

- Select the Workflow from the list - Total GolfStream was selected in the following example using the Reference Application available on XF MarketPlace.
- Click on the Insert Row - ✚ button to add an Exception Process Level rule for the selected Workflow.
- Select the Scenario Type from the pull-down list (Default will apply to all Workflow Types for a selected Workflow) to create a rule for a specific Scenario Type.
- Set the Reject Level and set the Promote Level for the new rule.
- Then click on the Save - 💾 button to save the Exception Process Level rule.
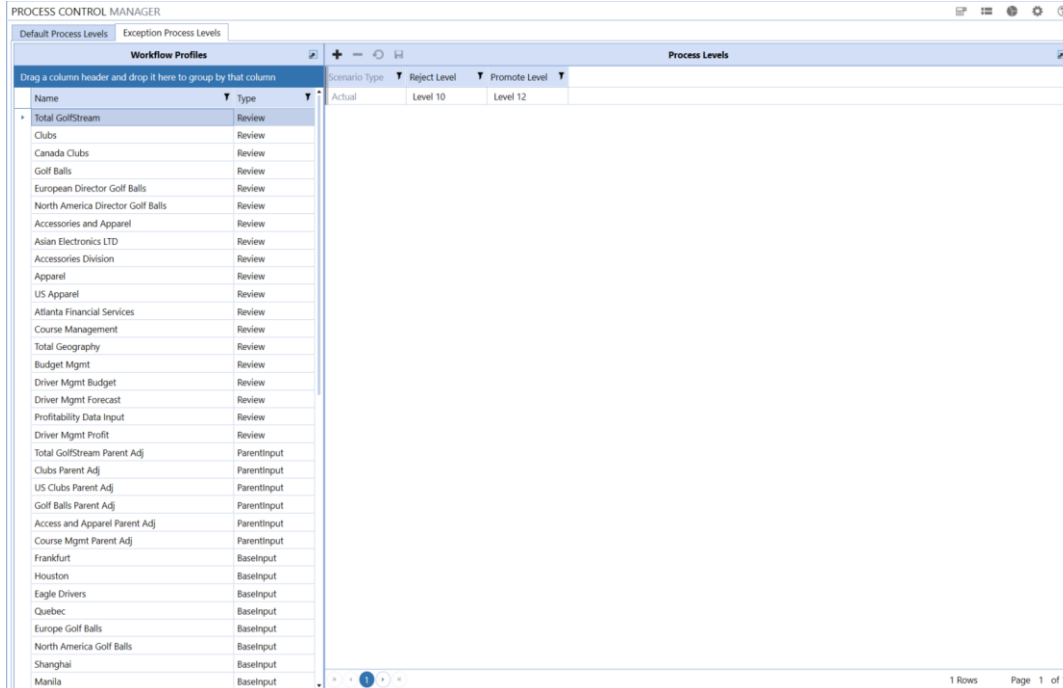
Process Control Manager Administration

Process Status 🖵

The Process Control Manager Process Status page can be accessed by clicking the Process Status Page Button 🖵 in the Administration toolbar. The Process Status page allows the administrator to control the Process Status for all Workflows. The fields displayed in the dashboard will vary with the settings used in the Global Options for the solution and the user's security. The screenshot shows the dashboard with all options enabled for the solution.
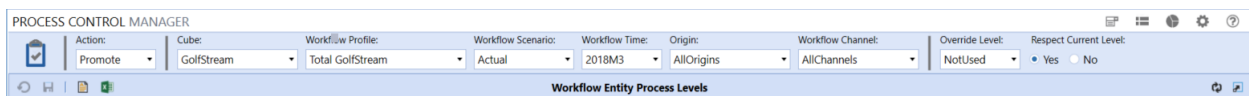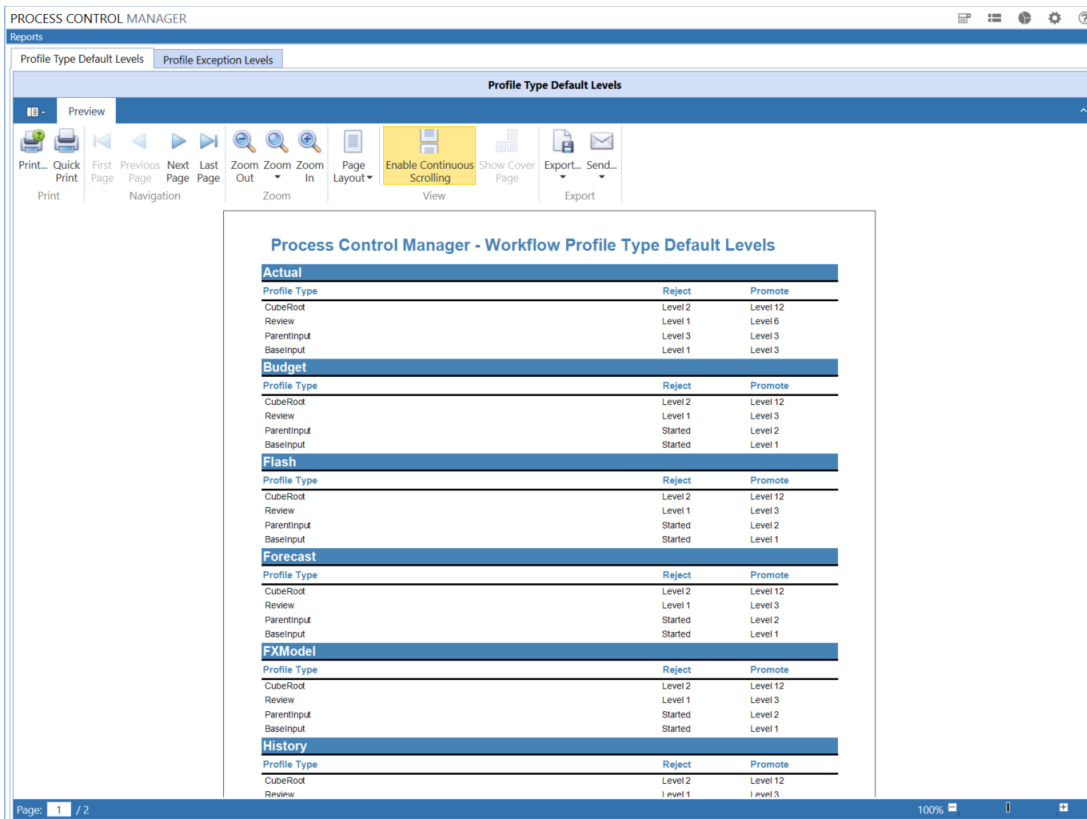
- Action Button 🔲 – This button initiates processing of the selected Action.
- Action – Drop down list of available actions (i.e. Start, Promote, Reject)
- Cube – Contains a list of available Cubes in the XF Application. The selected Cube will have its Process Level updated.
- Workflow Profile – Contains a list of all Workflow Profiles. The selected Workflow Profile will have its Process Level updated.
- Workflow Scenario – Contains a list of all Scenarios. The selected Scenario will have its Process Level updated.
- Workflow Time – Contains a list of all Time Periods. The selected time will have its Process Level updated.
- Origin – Contains a list of all Origins. The selected Origin will have its Process Level updated.

- Workflow Channel – Contains a list of Workflow Channels in the XF Application. The selected Workflow Channel will have its Process Level updated.
- Override Level – Specify the Process Level to set for the combination in the grid (Profile/Scenario/Time/Origin/Workflow Channel combination) when the Action button is selected.
- Respect Current Level –Specifies whether the Process Level can be changed by determining if the current Process Level is higher than the level promoted by the workflow. If set to Yes, the level cannot be changed. If set to No the level can be changed.

Reports Page

The Reports Page provides reports for the PCM Workflow Profile Type Default promote/reject level settings.

There is also a report for the PCM Workflow Profile Exception level settings.

Help Page ⑦

This page contains instructions documentation of the solution.

Using Process Control Manager

Below explains the end user's experience with OneStream XF Workflow when Process Control Manager is deployed. There are four forms of Workflow Task blocking options based on Process Level that are set in the Global Options.

- Block Import Tasks – Blocks all forms of data input/modify data
- Block Process Cube Task – Blocks loading data from the Stage to the Cube
- Block Confirm Task – Blocks Workflow Confirm Task changes
- Block Certify Task – Blocks Workflow Certify Task changes

Inputting Data via Workflow

When the current Process Level is lower than the user's Process Level access, Workflow activities will process in the normal fashion for OneStream XF applications. When the current Process Level is higher than the user's Process Level access, Workflow activities will be blocked based on the selected options in the PCM Global Options sections discussed earlier in this document.

PCM does not disable any of the functional buttons or icons found in the normal OneStream XF Workflow processes. It uses the provided XF Business Rules to block the resulting Workflow Tasks that would be executed to load/modify data when the Process Level is higher than the user's current Process Level access. PCM generates a message to inform the user that their activity has been blocked based on

Process Level access and the current Process Level for related data intersections where their task is being performed. See *Configure Business Rules* earlier in this document for configuration details.

We will discuss the resulting Workflow errors that will be displayed for blocked activities below.

Import - Load and Transform/Retransform

When attempting to process an Import Workflow Task, the resulting process error will be a failed Task Progress display with an error. The error will appear as an Extensible Finance Business Rule error and show the Global Options | *Process Control Error Description*.
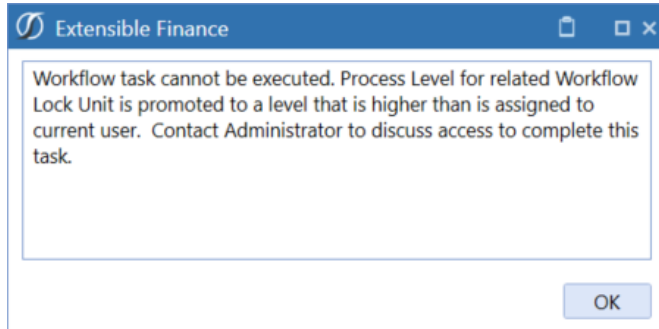
Validate/Retransform

Attempting to complete a Validate or Retransform action when the Process Level is higher than the user has access to will result in a Failed Background Task for the attempted validation/transformation in the Stage. Clicking the Error button - **Error** ⚠ will display the *Process Control Error Description* from the Global Options.
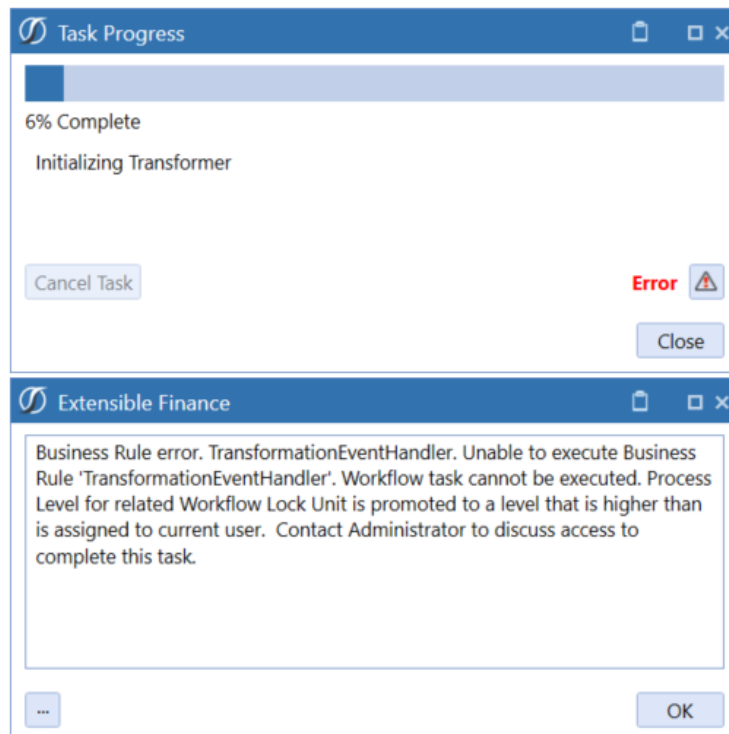
Load Cube/Process Cube

Attempting to complete a Load Cube or Process Cube action when the Process Level is higher than the user has access to will result in a Failed Background task for the attempted Load from the Stage to the Cube.


The resulting process error will be a failed Task Progress display with an error. Clicking the Error button - **Error** ⚠ will display the *Process Control Error Description* from the Global Options settings.
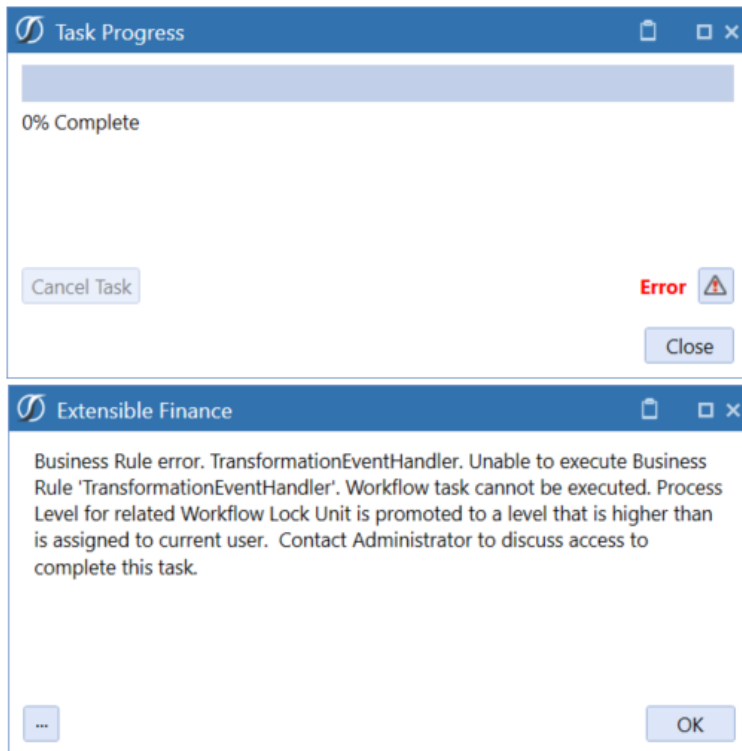
Forms

PCM can interact with Workflow Forms that are pointed to either Cube Views or Spreadsheets with an embedded Cube View and prevent changes when appropriate. If the user's Process Level is lower than the Process Level for certain data cells included in the Form, the NoInput Business Rules will set the cells as editable or not, based on the current Process Level for the cell intersections. By default, white cells are editable and green cell are not editable.

PCM_User_1's Process Level access of 1 is not high enough to edit the Headcount Entry Form in 2018M2 when the Process Level is set to 6 for Houston Heights Forms, even though the workflow is not completed in the example below.
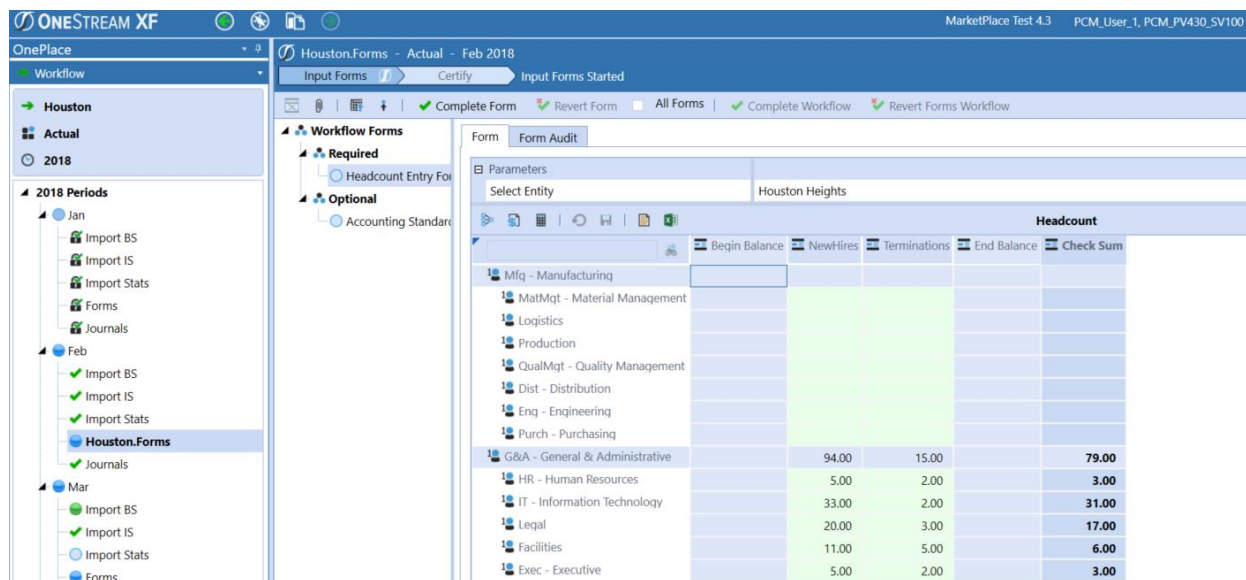
If the Global Option *Block Certify Task* option is set to No, users can manage Forms Workflows (Complete/Revert Form, Complete/Revert Workflow and Certify/Reject Workflow) according to the normal application security. The user will not be able to enter new data and Save the Form Changes unless their Process Level access is higher than the current Process Level status for the related data cell intersections.

If the Global Option *Block Certify Task* option is set to Yes, users can manage Forms Workflows (Complete/Revert Form, Complete/Revert Workflow) according to the normal application security, but they will not be able to change the Workflow Certification status unless their Process Level access is higher than the current Process Level status. They will also not be able to enter new data and Save the Form Changes unless their Process Level access is higher than the current Process Level status for the related data cell intersections.

Spreadsheet/Excel – Cube View

When the user attempts to open an Excel file with the Excel Add-in or the Spreadsheet feature with an embedded Cube View, it will be displayed with the Cube View cells rendered based on the user's Process Level access. By default, the data cells will be displayed as white for editable intersections and green for non-editable intersections where the Process Level status is higher than the user's Process Level access. The user will not be able to Submit cell changes using Excel when they are blocked by the current Process Level status naturally since the cells are rendered in a non-editable state.

Spreadsheet/Excel - XFSetCell

When to change cell data via an XFSetCell function via the Spreadsheet feature and Excel Add-in, a process will look up the Workflow Profile related to the combination of Cube, Entity and Scenario in play, check that it has an active Forms Base Input Child, determine if this user has the appropriate Form security privileges and finally check Workflow Status. Once these checks are complete, the PCM Process Level logic will also be applied.

The resulting action in Spreadsheet is that all cell changes that are blocked by the Process Level will not be submitted. Cells that are not blocked by the Process Level will be submitted. **Note**: The Spreadsheet does not currently report the data cells that have been blocked by the Process Level when the Spreadsheet is submitted.

The resulting action with the Excel Add-in is that an error report will be displayed with entries for all of the cell actions that have been blocked by the Process Level. Cells that are not blocked by the Process Level will be submitted. The screen shot below shows the result of PCM_User 1 (with Process Level 1 access) submitting data for three periods: 2018M1 when the Process Level is 12, 2018M2 when the Process Level is 6 and 2018M3 when the Process Level is 0. Note the error reports that 6 of the 9 cells that were submitted were blocked appropriately for M1 and M2 where the Process Level was higher than PCM_User_1's access level. The blocked items are identified by the red box in the screenshot.

Note the red boxes were added for clarity in the screenshot and not a result of the Spreadsheet/Excel Add-in functionality.

Journals

Attempting to Post/Unpost/Submit/Approve/Reject a journal when the Process Level is higher than the user has access to modify will result in an Extensible Finance Business Rule error and show the Global Options | *Process Control Error Description*.
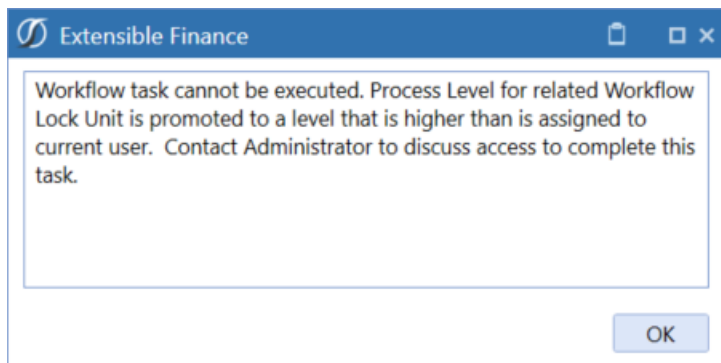
Promoting and Demoting Process Levels

Depending on requirements, deployment choices spelled out in the *Key PCM Design Decisions* section earlier in this document will determine whether Event Handlers or the Process Control Manager Dashboard is required for managing Process Levels.

### Using Promote on Certify with Event Handlers

The users will complete their Workflow process as normal. When they complete the Certify Task, the PCM solution will automatically Promote the Process Level to the Process Level Definition Page Default Promote Level setting for the Scenario Type. When this same Workflow Task is Rejected, the *Reject Level* is applied. See the *Process Levels Definition* section earlier in this document to understand which Process Levels are assigned to each Workflow Profile.

Using Process Control Manager (PCM) Dashboard for Manual Process Level Management

The Process Control Manager (PCM) Dashboard allows the users to manually manage the Process Level at the appropriate data intersections for the options that have been set in the Global Options for the Exclusive Cubes, Multiple Origins and Multiple Workflow Channels options that have been set to Yes. The PCM solution will display the Workflow Entities that the user has *Read and Write Data Group* access to and allow them to manually select the Process Level for the related active PCM intersection based on the Global Options. If the current Process Level is higher than the user's current Process Level access, they will not be able to modify the current Process Level for the given PCM intersection.

The Process Control Manager (PCM) Dashboard has a number of drop list options to allow the user to efficiently manage their PCM intersections. The Dashboard options that are displayed will depend on the Global Options Exclusive Cubes, Multiple Origins and Multiple Workflow Channels. Options that are set to Yes will be in the drop list options visible on the Dashboard.

The Dashboard options selection is set using the displayed drop list filters for Cube/UD1 (displayed when Exclusive Cubes set to Yes), Workflow Profile, Workflow Scenario, Workflow Time, Origin/UD2 (when Multiple Origins set to Yes, Workflow Channel/UD3 (when Multiple Workflow Channels set to Yes).
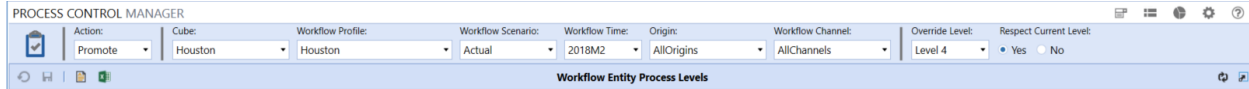
Once the user selects their desired Dashboard drop list options, the Dashboard will populate with the related PCM intersections that the user has access to. The user can choose to set individual PCM intersections by changing the Process Level for that intersection. That intersection cell will then change from a white cell to a yellow cell to note the changed Process Level. The user can then click on the Save button 🖫 to save the change.

The Override Level section allows the user to modify multiple PCM intersections for the selected Workflow Time period. The user selects the Override Level then selects the Respect Current Level Option. The Respect Current Level option set to Yes means that the PCM intersections that are currently higher than the selected Override Level will stay at the higher level. The Respect Current Level option set to No will ignore the current PCM intersection settings and set all PCM intersections to the selected Override Level.
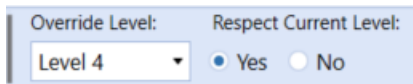
The selected Override Level options are processed by clicking on the Checkmark button ☑.

Solution Database Migration Advice

A Development OneStream XF Application is the safest method for building out a solution with custom tables such as this one. The relationship between OneStream objects such as Workflow Profiles and custom solution tables is that they point to the underlying identifier numbers and not the object names as seen in the user interface. Prior to the solution configuration and to ensure the identifiers match within the Development and Production Applications, the Development Application should be a recent copy of the Production Application. Once the Development Application is created, install the solution and begin design.

The process below will help migrate the solution tables properly:

1. In the Production OneStream XF application, install the solution and create the data tables. See the chapter on *Setup* for Database Server Connection settings and installation details.
2. Data tables were created in the OneStream XF Development Application during the solution installation. Copy the data from the tables to the Production Microsoft SQL Server Database using the Microsoft SQL Migration Utility. This utility should only be run by the Microsoft SQL Administrator.

   The Microsoft SQL Migration Utility and instructions on its use can be downloaded online from: https://sqlazuremw.codeplex.com

   Note: This process has the potential to overwrite existing table data in the Production Application database if data already exists.

Optimal Display Settings

OneStream XF and XF MarketPlace solutions frequently require the display of multiple data elements for proper data entry and analysis. Therefore, the recommended screen resolution is a minimum of 1920 x 1080 for optimal rendering of forms and reports.

Modifying MarketPlace Solutions

A few cautions and disclaimers when modifying a MarketPlace Solution:

- Major changes to Business Rules or custom tables within a MarketPlace Solution will not be supported through normal channels as the resulting solution is significantly different from the core solution.
- If changes are made to any Dashboard object or Business Rule, consider renaming it or copying it to a new object first. This is important because if there is an upgrade to the MarketPlace Solution in the future and the customer applies the upgrade, this will overlay and wipe out the changes. This also applies when updating any of the standard reports and Dashboards.
- If modifications are made to a MarketPlace Solution, upgrading to later versions will be more complex depending on the degree of customization. Simple changes such as changing a logo or colors on a Dashboard do not impact upgrades significantly. Making changes to the custom database tables and Business Rules, which should be avoided, will make an upgrade even more complicated.