BI360 – Data Warehouse Manager

User Guide 4.6

Published: May 6, 2016
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Introduction

The BI360 *Data Warehouse Manager* is a configurable data warehouse solution. The database is fully integrated with BI360 Reporting and Planning, which enables immediate access to advanced Excel based reporting capabilities. The Warehouse is packaged within a simple to use desktop interface to configure and maintain the Data Warehouse database.

Who Should Read this Manual

This manual is designed for BI360 administrators and power users who are responsible for tasks such as modules and dimensions setup, maintenance, currency, dimension hierarchies, business processes and data imports. The Warehouse may also be used to review data loaded from external sources as well as those entered using the BI360 Planning add-in.

What's included in this Manual

This manual is designed to give an in-depth understanding of how to use the features of the BI360 Data Warehouse Manager. The manual is divided into the following parts:

1. **Overview**:
    - Introduction to the BI360 Data Warehouse manager
2. **Configuration**:
    - Explains how to setup and configure the Data Warehouse, such as
        i. Setting up fiscal periods
        ii. Setting up integrations
        iii. Configuring dimensions and modules.
3. **Managing the Warehouse**:
    - Explains how to maintain dimensions, currency, data, trees, business rules as well as other functions within the Data Warehouse

Symbols and Conventions

This manual uses the following symbols to make specific types of information stand out.

Symbol	Description
	The sunlight symbol indicates helpful tips, shortcuts, and suggestions.
	The warning symbol indicates situations we recommend to be aware of when completing tasks. Typically, this includes cautions about completing steps in their proper order or important reminders about how other information in BI360 may be affected.

Installation

Please consult the BI360 Installation Guide for details on installing the *Data Warehouse Manager* and Database. The *Installation Guide* may be found at http://support.solverusa.com/. Once logged into the Solver support site, click on the Downloads from the Solver Support site header. Under Current Versions will be a link to the installation documentation.

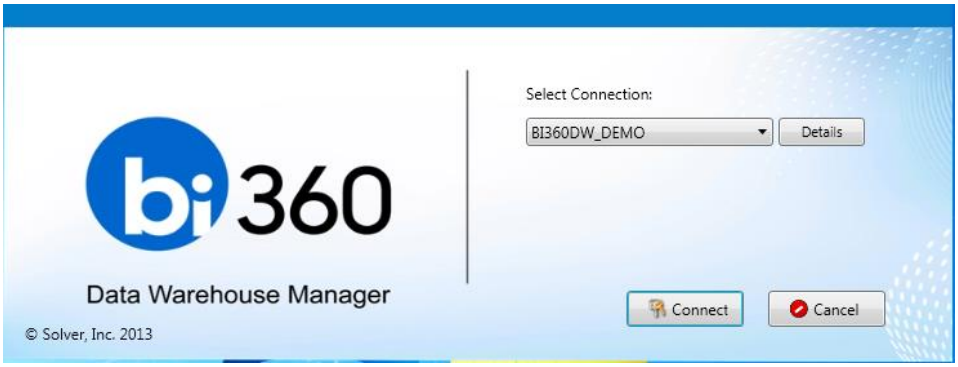
Data Warehouse Manager Overview

The *Data Warehouse Manager* has been designed with the latest Microsoft technologies and follows Microsoft's best practices for interface design and usability. The interface is designed to maintain a similar look and feel to the Microsoft Office product line, including the use of a ribbon and Outlook menu bar as the main navigation component.

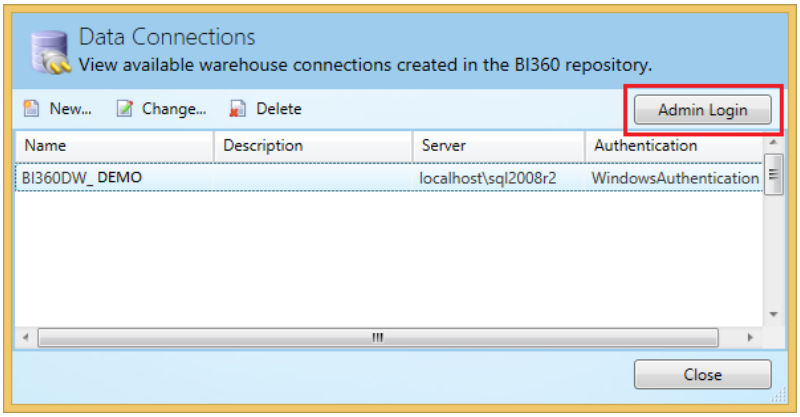
Many of the features described in this guide are available only if the user has been granted "Admin" privileges to a menu option. The details of each Menu Access are described in the Roles section.

Logging into the Data Warehouse Manager

Upon launching the Data Warehouse Manager, the user is prompted with a connection screen. The application will display the BI360 Data Warehouse Connections that have been assigned to the user in the BI360 Administration.

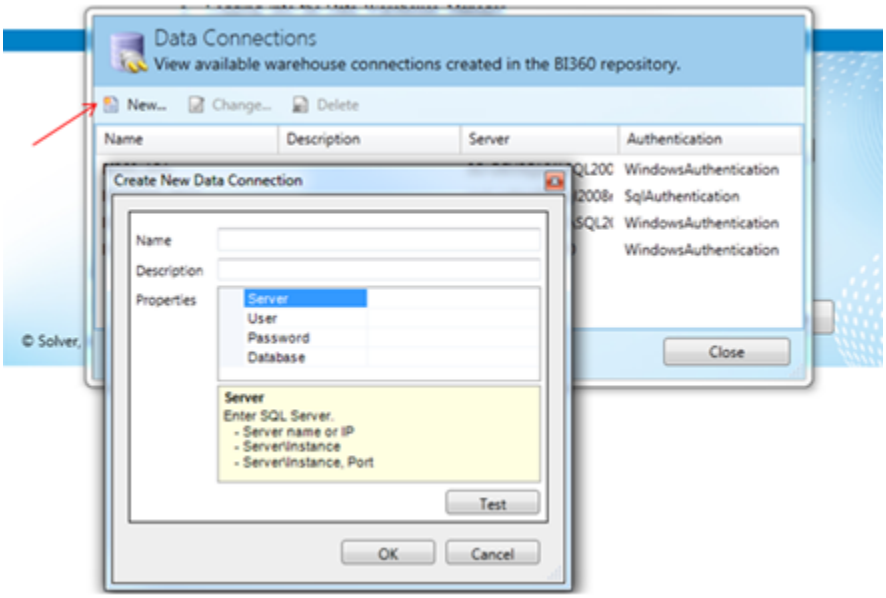


Moreover, more details on the connections may be viewed by clicking the **Details** button. The listed information includes the Name, Description, Server and the Authentication method used to connect to the database.



After selecting the desired connection in the connection dropdown box or in the Details window, press **Connect** to launch the Data Warehouse Manager.

Users may also add a new connection through the Data Warehouse Manager. Typically this is only necessary when a database is restored to the SQL server since the BI360 installer adds the information to be displayed in the dropdown upon install. By selecting **New** from within the Details window, users can create a connection.

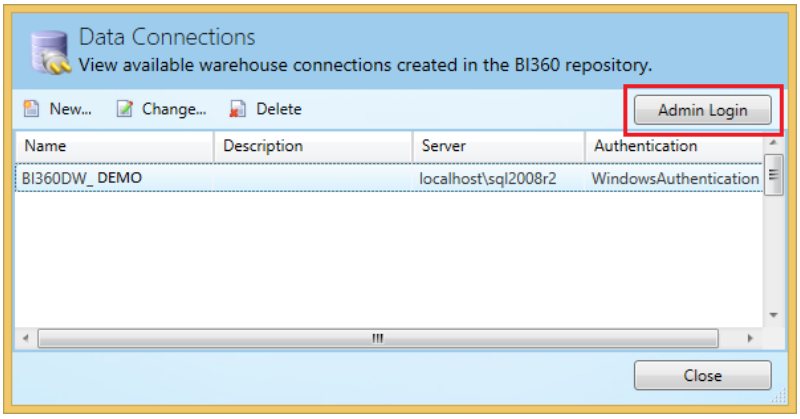


The window has the following information to be filled out.

Field	Description
Name	User friendly name given for the connection
Description (optional)	Add a description if desired.
Server	The SQL Server name where the database is located.
User	If using windows authentication, this field may be left blank. If using SQL authentication, type in the SQL login name.
Password	If using windows authentication, this field may be left blank. If using SQL authentication, type in the SQL login password.
Database	The database name as it appears on the SQL Server. Remember to take into account case sensitivity if applicable.
Test	Test the connection to make sure that the application can find the database.

Data Warehouse Admin User

Data Warehouse Manager also has an Admin user login in case the organization gets locked out. Upon clicking the Details button on the login screen, a list of connections will appear. Select the data connection and click the **Admin Login** button in the upper right hand corner.

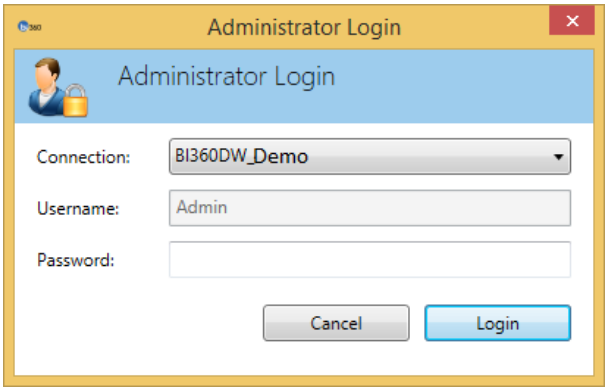


The credentials for the Admin login are

Username: Admin

Password: BI360@dmin

The admin username is hard coded and cannot be changed. Type in the above password to gain access into the application. A user is able to view all the data connections from this dropdown menu because an Administrator will be able to access any database.

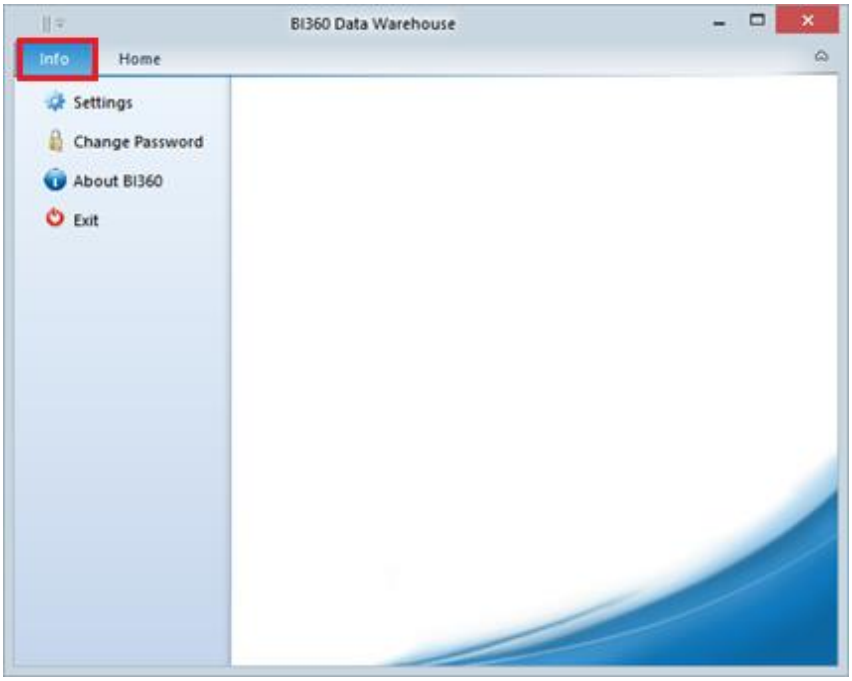


If the proper credentials have been provided, upon clicking **Login**, Data Warehouse Manager should successfully open.

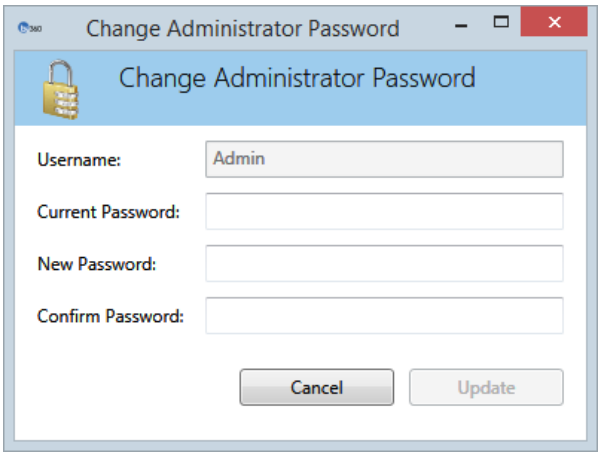
The BI360 Admin user has full permissions to the application and the data inside the selected BI360 Database.

Changing the BI360 Admin Password

It is strongly recommended to change the BI360 Admin user's password. To do so, upon logging in as the BI360 Admin user, click the **Info** button in the top left hand corner.



In the menu that is shown above, click **Change Password**. A popup will appear asking the user to provide the current BI360 Data Warehouse Admin password and to type in the new password. If the password has not been changed, the default password is BI360@dmin. Type in the new password in the *New Password* text box and then type the password in again to confirm the password in the *Confirm Password* text box.



Click **Update** to save the changes. The new password will take effect upon closing and reopening Data Warehouse Manager.

If the organization has forgotten the Data Warehouse Admin password, please contact Solver Support to have the password reset.

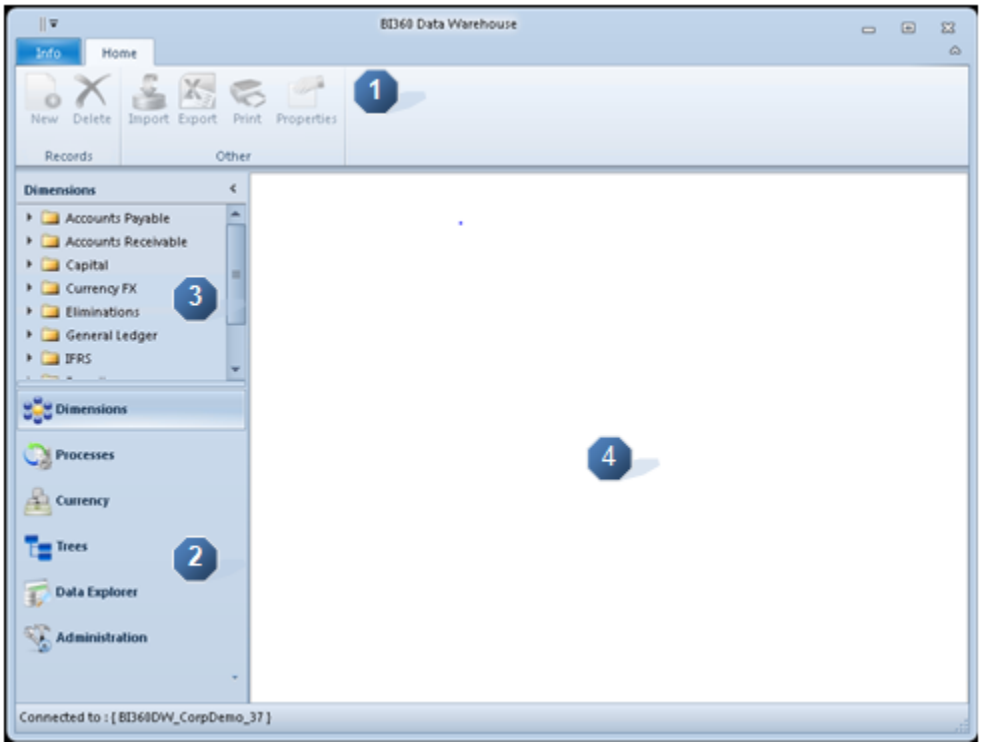
Data Warehouse Manager User Interface

The BI360 *Data Warehouse Manager* enables administrators and business power users to easily configure and maintain the Data Warehouse. The interface and function has been built with the business user in mind so it is easy to learn and navigate.

The application has two main menus. The first is the general application menus which are visible upon opening the application. These various menus allow the user to configure and maintain the Data Warehouse database.

The second screen is the Administration menus which can be found by clicking the Administration button found in the bottom left hand corner of the Data Warehouse Manager. Here, users can configure the periods, application security and integrations to their cloud based enterprise resource planning (ERP).

Below is a brief summary of the Bi360 *Data Warehouse Manager* interface.



1. *Data Warehouse Manager* Ribbon:
    a. Info: This ribbon displays information pertaining to the version and build number.
    b. Home: Contains action icons such as Add/Delete and Import/Export.
2. Menu items (each feature will be explained more in detail later in this manual):
    a. Dimension: Configure and maintain dimensions inside the *Data Warehouse Manager*.
    b. Processes: Users can create or import rules to be ran within Data Warehouse Manager. . Users may also schedule times to run these rules using the Jobs feature. A sample of how to create a rule is provided later on in this user guide.

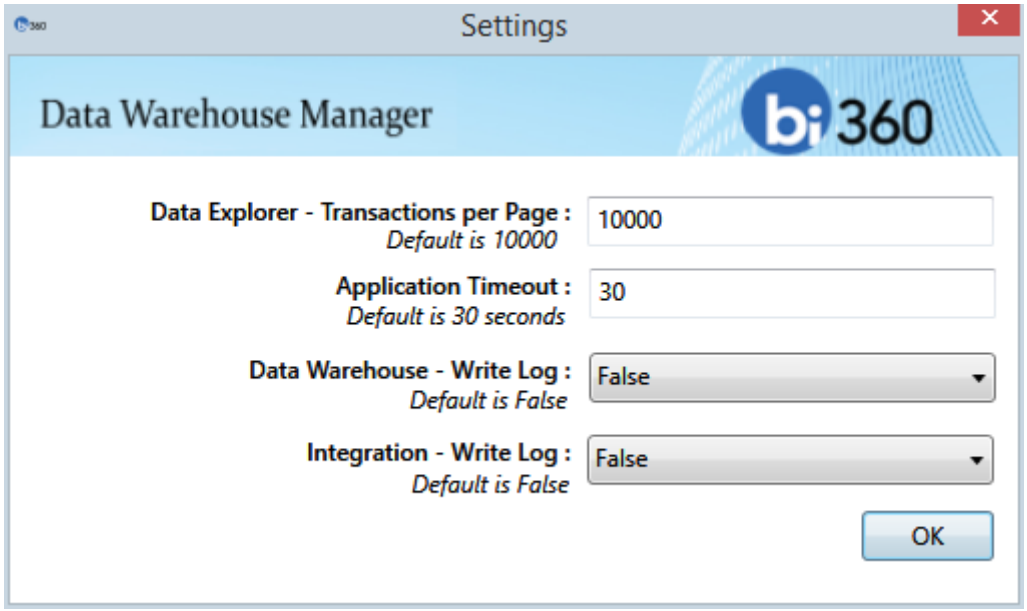
c. Currency: Configure and maintain the currency used by various entities within the organization. Setup monthly exchange rates that are used for currency translations. The currency menu becomes available once the Currency dimension has been enabled and is added to a module from the Administration page.
d. Trees: Configure trees for dimensional hierarchies across entities. This allows for eliminations to be performed.
e. Data Explorer: Allows the user to view data stored in the modules and to import/export data.
f. Administration: Configure the Data Warehouse database for use. This includes setting up periods, application security, dimensions, modules and integrations.

3. Sub-Menu/Item Selections: Shows the list of sub-menu items that are available. The details of each submenu are displayed within the Main Window.
4. Main Window: The details of the menu/sub-menu items will be displayed. Depending on the menu item, users will be able to perform different tasks.

Info

Click the Info button found in the upper right hand corner to find information about the application currently installed and also to exit out of the application.

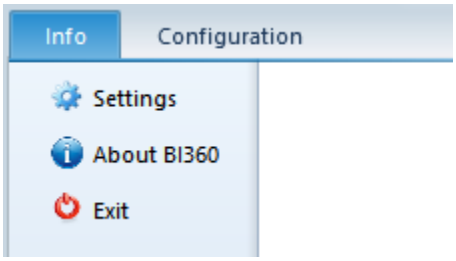
- Settings: Click this option to change the transaction count displayed per page, application timeout and enable logging for Integration and Data Warehouse.



a) Transaction per Page: Defines the number of transactions to display per page in Data Explorer.
b) Application Timeout: Defines how long an application runs a query before ending it.
c) Data Warehouse – Write log: Enables the application to write to the log file which is located at C:\ProgramData\Solver BI360\Warehouse Console\BI360DWMLog.txt.

d) Integration – Write log: Enables the application to write to the log file which is located at C:\ProgramData\Solver BI360\Integrations\CommandLine.Log.

- About BI360: Click this option to open a splash screen that will display the BI360 version number.
- Exit: Click this option to close out of BI360 Data Warehouse Manager.



Configuration

The *Data Warehouse Manager* is preconfigured to accommodate the most common ERP modules. The application comes with 8 preconfigured modules and users have the ability to add an additional 50 modules. The modules, dimensions and attributes associated to each module may be labelled according to the business' structure and may be used for financial or non-financial data from virtually any data source.

Steps to Configure the Data Warehouse for the First Time

After the *Data Warehouse Manager* has been installed, there are a few steps required to tailor it to the organization's specific needs. The configuration may be done through the Administration menu.

Upon opening the *Data Warehouse Manager* for the first time, users will receive a prompt informing them that no users exist in the application. Click **Ok** on the prompt.

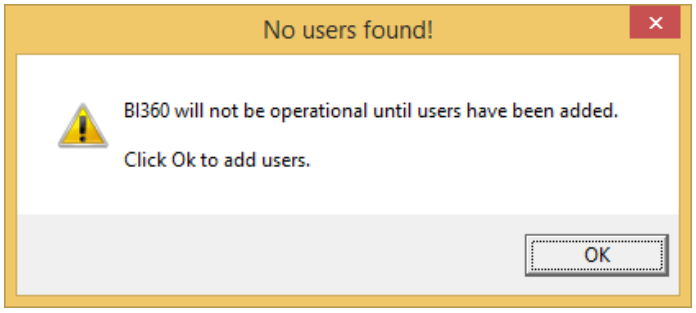
Adding Users

Data Warehouse Manager includes advanced security to restrict users from accessing the application, its menus and data. The application has two types of security:

1. User Management: restrict users from accessing the application, seeing various menus and seeing data within Data Warehouse Manager.
2. Storage Management: define specific values that ALL users can store data back to while using the Planning application.

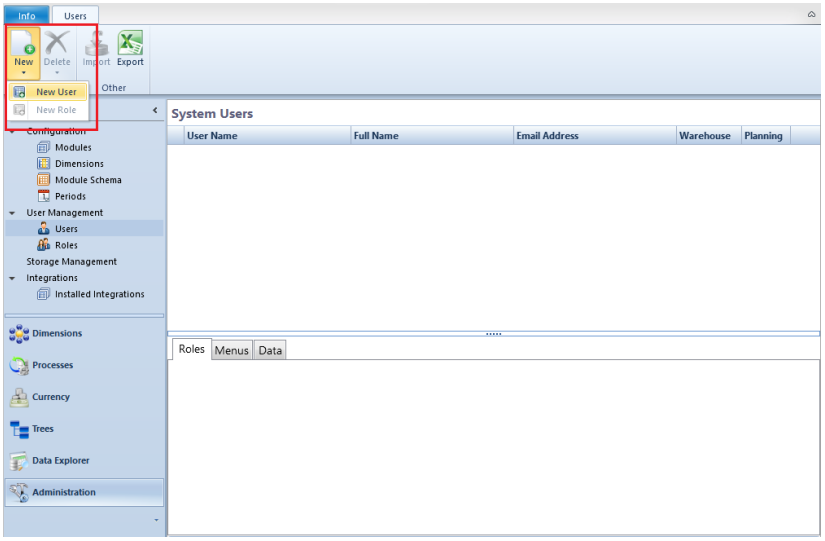
This security is related to ONLY the *Data Warehouse Manager* and Planning storage. Additional security must be setup in the BI360 Administration to limit the data users can see from the Reporting application.

The first step in setting up *Data Warehouse Manager* is to add users to the application. To do so, click **Administration -> User Management -> Users**. In the main window, a list of all users will appear. If no user exist, users will receive the following message upon opening BI360 Data Warehouse Manager.

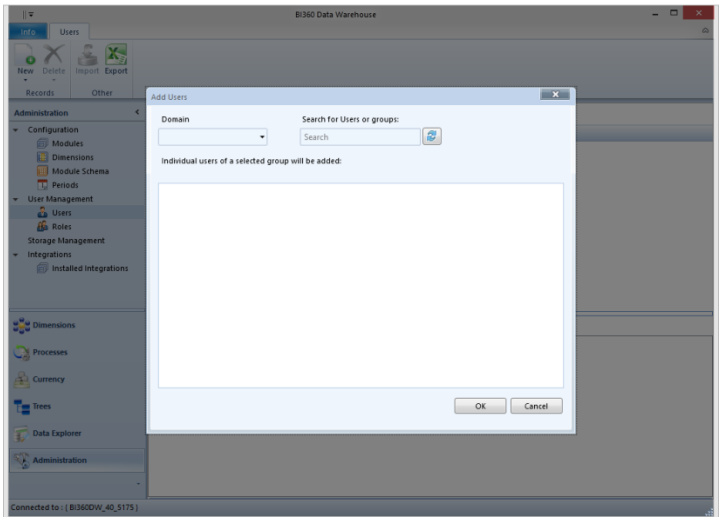


3. Click **Ok** on the prompt to close it and a new popup will appear to add users to the application. If the popup does not appear, click **New -> New User** in the upper left hand corner in order to add

users. The above popup will only appear if there are no users that have been added to the application.



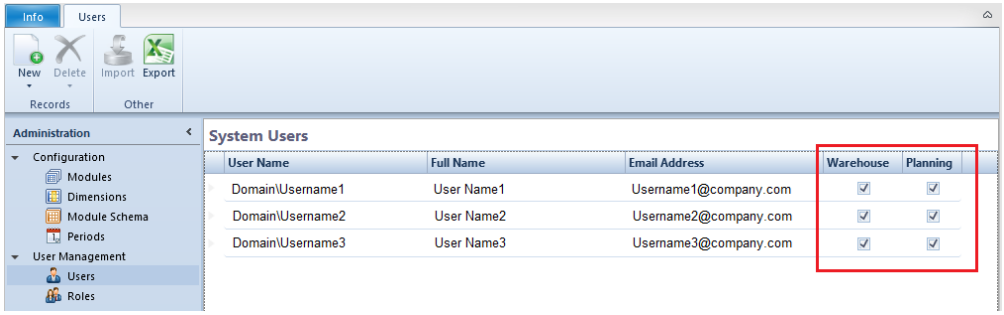
4. Upon clicking **New User**, a window will appear that will allow user to search the company's Active Directory. Click the dropdown under Domain to view the domains that are available. Select the domain.



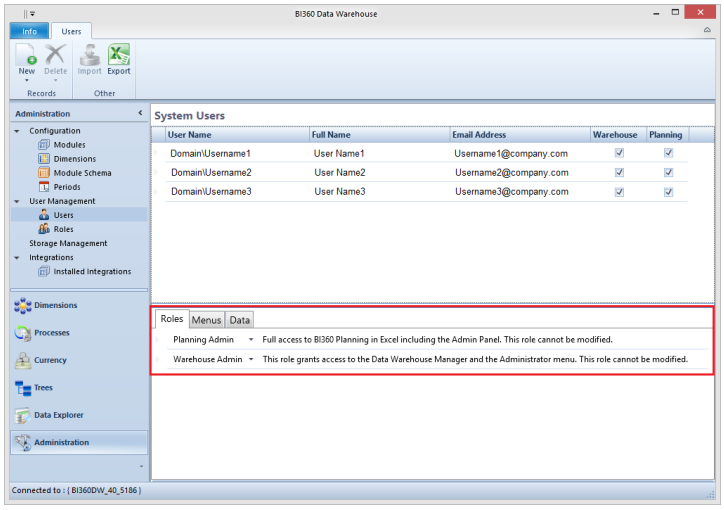
5. In the Search textbox, type in the username or the Active Directory group that should be added to the application.
    a. When adding an Active Directory group, the application will parse out the users that belong to that active directory group.

If the domain does not appear, the user can type the domain into the textbox. The application will pick up all domains that are trusted with the domain the current machine is logged into.

6. Once all users have been added, clicking **Ok** to return to the main window; the users are now listed in the main menu.
7. Assign each user to the application they should have access to by clicking the checkbox to the right of their name.



8. Upon selecting “Warehouse” and/or “Planning”, the user will be added as a Warehouse User and/or Planning User respectively in the Roles section below.
    a. The First user added to the Data Warehouse will automatically be added as a Data Warehouse admin.



Click the dropdown next to change the user from a Planning and/or DWM user to an Admin if desired.

- Planning User have access to all of the features of Planning except the ability to open the Admin Panel.
- Warehouse User have access to all menus (with full permissions to add/edit/delete) except the Administration menu.
- Planning Admin have access to all features of Planning including the Admin Panel.
- Warehouse Admin have access to all menus (with full permissions to add/edit/delete) including the Administration menu.

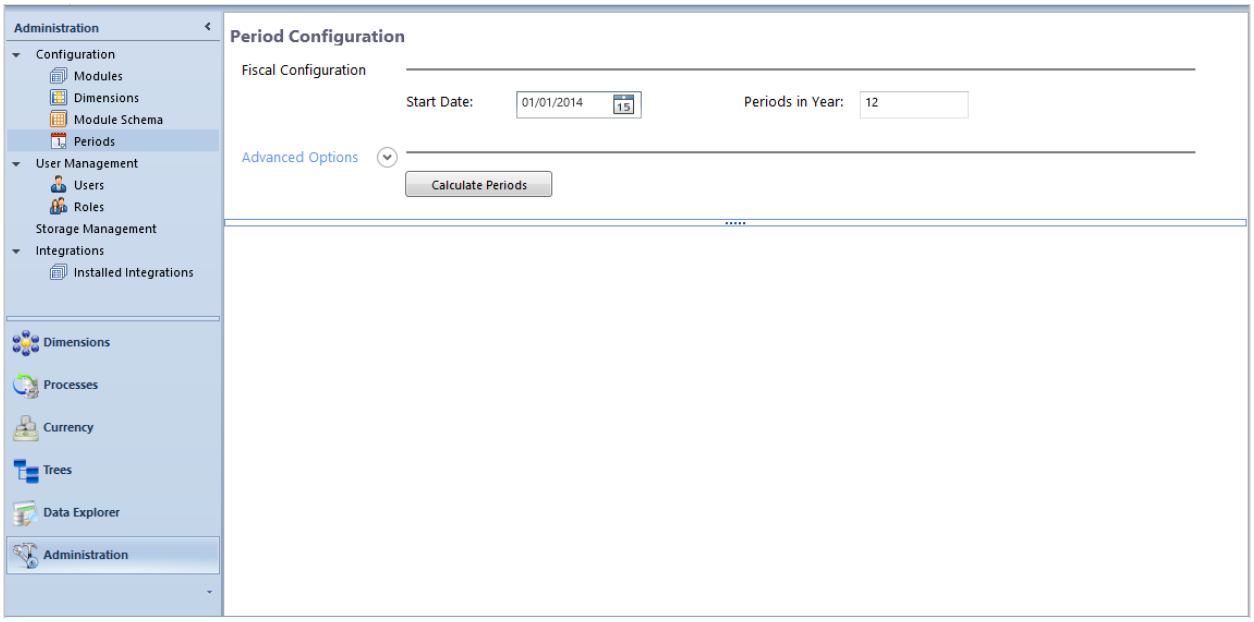
At least one user must be assigned as a Warehouse Admin.

Changes to application menu security are applied after the user exits and restarts the application.

Additional information on Creating Roles and Storage Security will be discussed later on in this User guide.

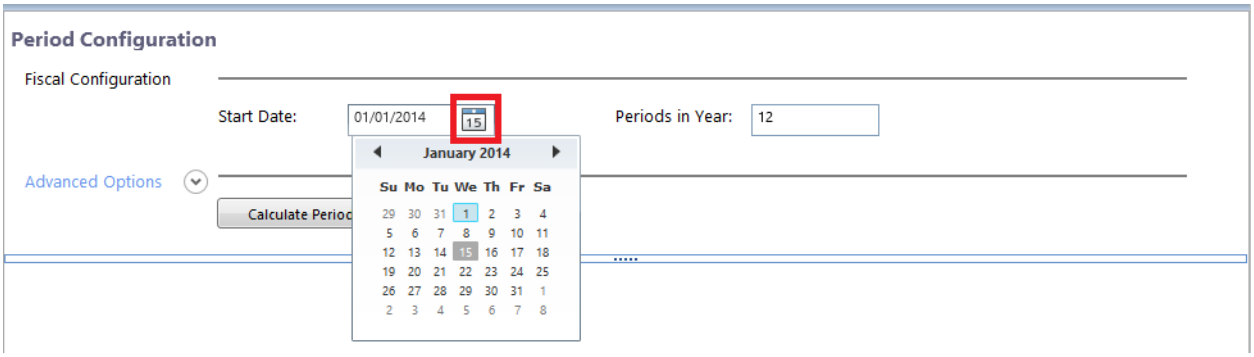
Configure Periods

Configuring the Periods is the next step in setting up your Data Warehouse. From within the Administration menu, select **Periods**. A wizard will appear in the main window.

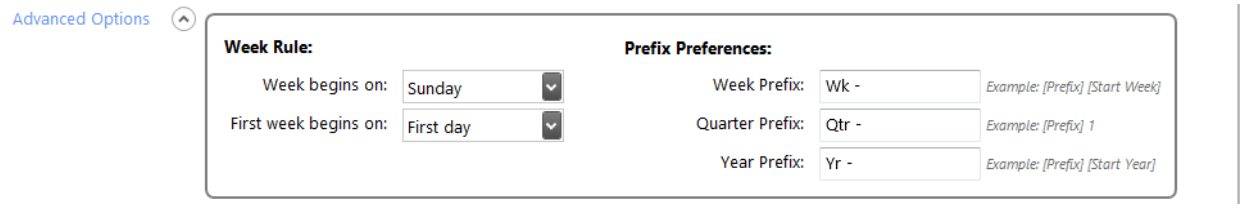


The wizard guides users through configuring the periods. The application has defined default values to accommodate a standard calendar that starts on the first of the year and will have 12 periods of reporting ("standard calendar") but it may be configured to accommodate many custom calendar configurations. The maximum Periods in Year has been set to 53.

To configure periods, users must select the start date and the number of periods for that year. By default, the application has selected January 1st of the current year, but by clicking the calendar icon next to the Start Date, users can change the date to accommodate any fiscal calendar.



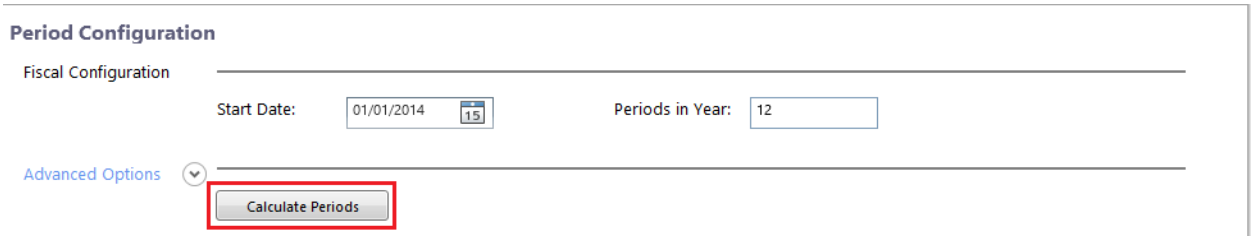
If desired, expand the Advanced Option by clicking on the arrow. From within the Advanced Options dropdown, users can select the Week Rules and the Prefix options. These options have been configured with the most common configuration already defined.



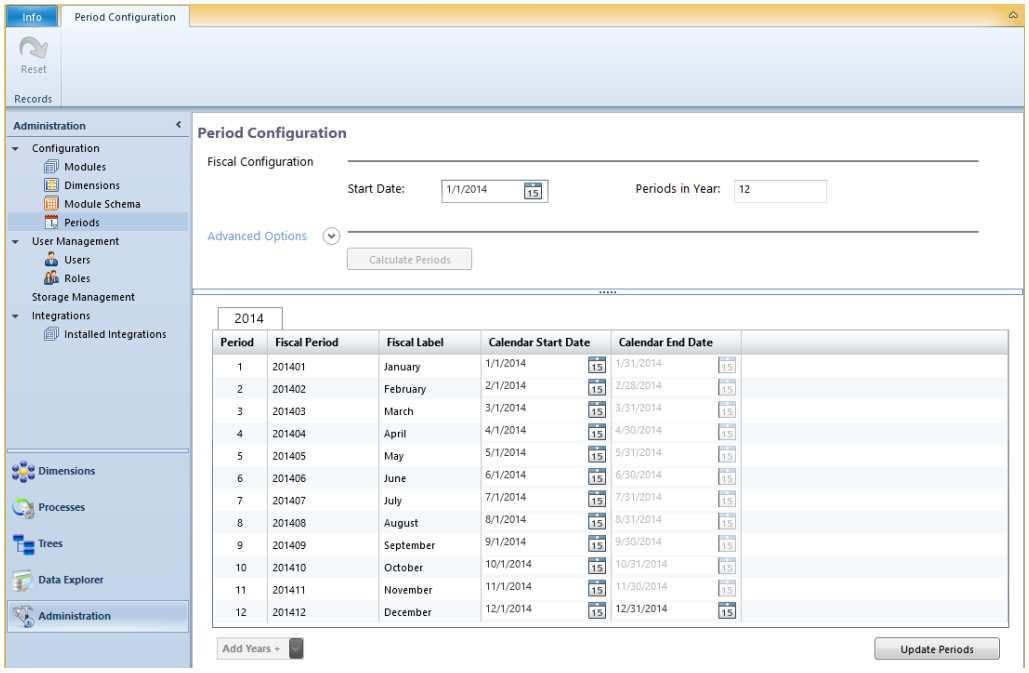
Option	Description
Weeks begin on	Choose the day that each week will begin on. By default this has been set to Sunday.
First Week begins on	Choose when the fiscal year begins. By default this has been set to "First day" but users may also select "First full week".
Prefix Options	Declare the labeling of the Periods within the BI360 database. By default this has been set to • Week = Wk • Quarter = Qtr • Year = Yr

It is important to note that selecting *First full week* in the **Week Rule** option does not mean the calendar will start on the first day of that month. A warning message will be displayed.

After the start date and number of periods have been entered click **Calculate Periods**.



In the bottom half of the screen, the application will display a preview of the periods. The "Fiscal Label" and "Calendar Start Date" fields may be edited to meet the company's desired setup. Simply click into each textbox to change the value.



If the organization is on a fiscal calendar, change the Calendar Start Date to match the appropriate fiscal year configuration. As you configure the Start of each fiscal period, users will notice that the Calendar end date of the previous fiscal period will be updated properly.

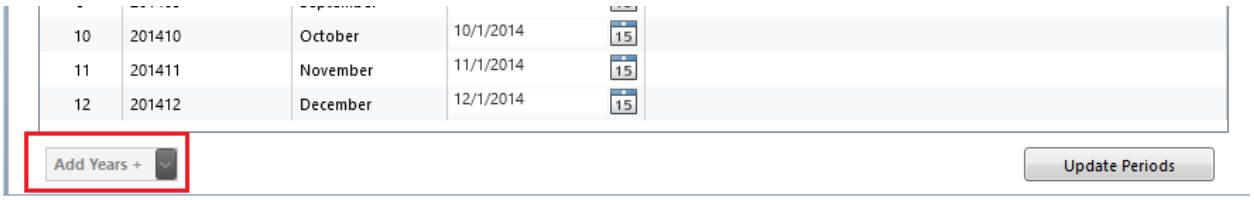
Be sure to check the Calendar End Date to make sure the end of the Fiscal Year will be calculated correctly

Once the first fiscal year has been configured click **Update Periods**. Users will receive a prompt informing them that the periods have been successfully created.

Users must click Generate Periods in order to successfully update/save the Periods table within the BI360 Data Warehouse database.

Adding Periods

After the first year is created, click **Add Years** to add more years to the database. Users have the option to add up to 10 years in one session but the database may be configured to have as many years as necessary.



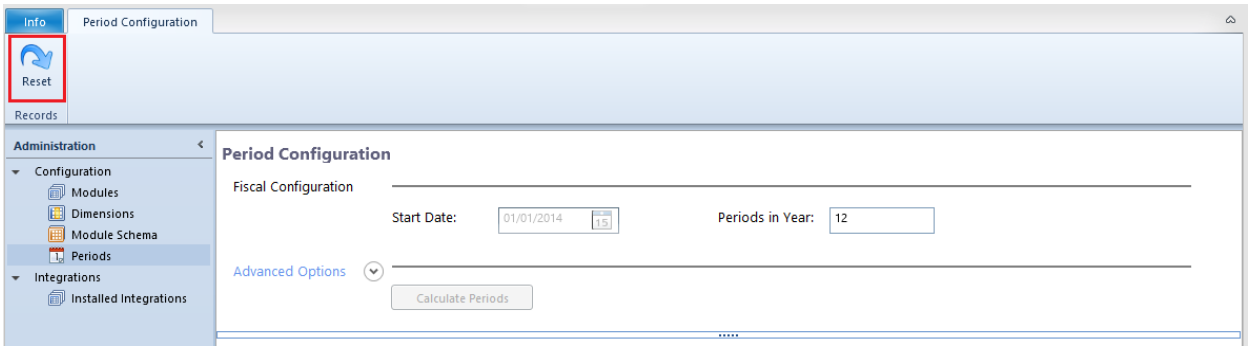
By clicking **Add Years**, the application will pick up the previous year's configuration. If there are changes to be made to start date of any fiscal year that has been created, click the corresponding tab and change the start date by clicking the calendar icon to the right of each start date.

Click **Update Periods** to successfully update the periods table with the additional years.

After Periods have been updated, if additional changes are made, click **Update Periods** to save the changes.

Resetting Periods

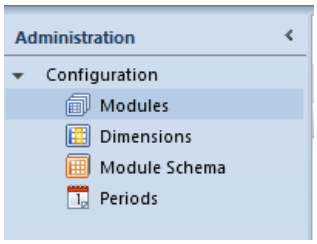
Periods can be reset by clicking the **Reset** button found in the *Data Warehouse Manager* Ribbon. This option is only available if there are no transactions in the database. If one transactions exist in any module, this button will be greyed out and the periods cannot be changed.



Configuring the Modules

The BI360 *Data Warehouse Manager* is installed with seven pre-defined modules and the ability to add another 50 "Other Modules". Each module has a separate transaction table in the Data Warehouse and each module may have a customized display name that is displayed within the Data Warehouse Manager, Reporting and Planning applications.

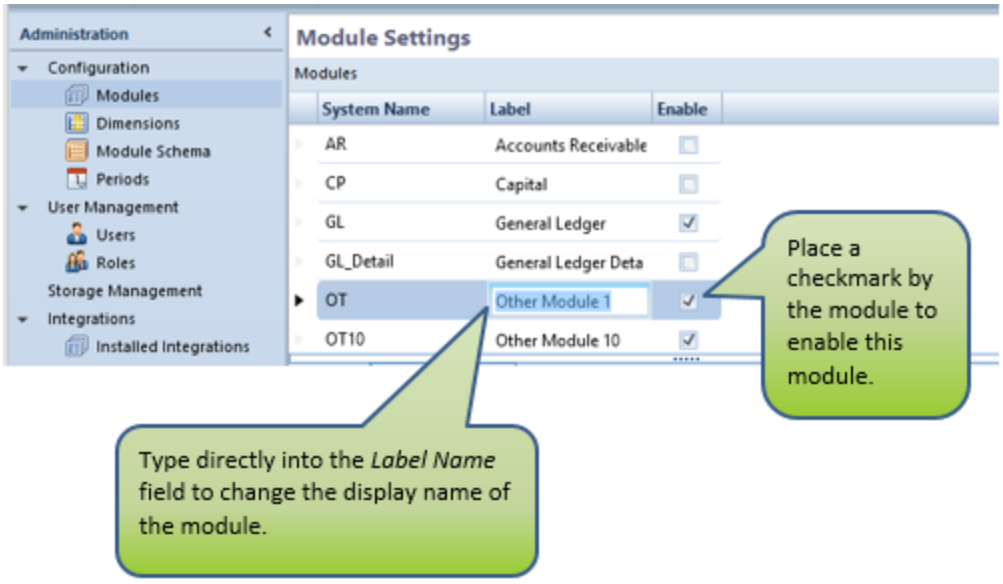
To begin configuring the modules, click **Modules** from within the Administration menu.



The default install of BI360 Data Warehouse database will only have the General Ledger module enabled. However, additional modules may be made visible by checking/unchecking the **Enable** box next to each module. Once a module is enabled, it will be displayed in the Module Schema menu and users may add enabled dimensions to this module. . The pre-configured modules are:

1. General Ledger
2. Accounts Payable
3. Accounts Receivable
4. Capital
5. Payroll
6. Projects
7. Revenues

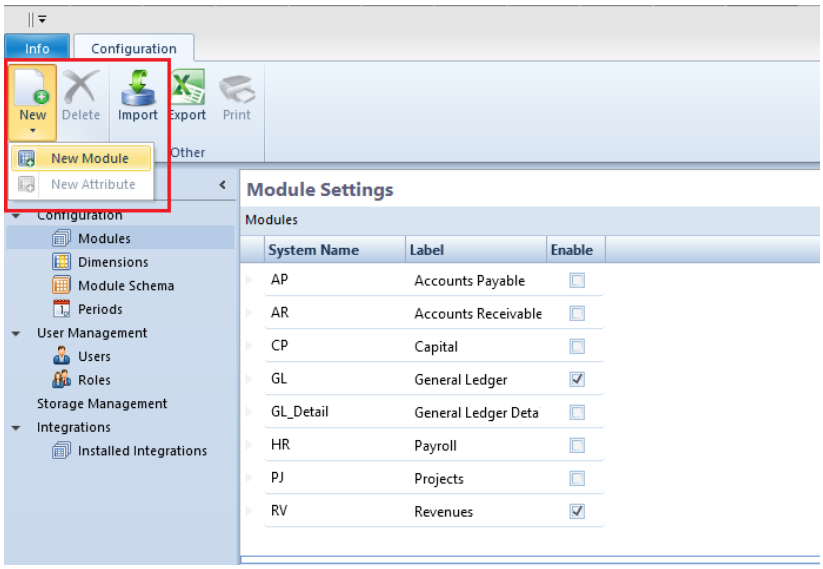
To customize the name of any module, click on the **Label** for that module. The pre-defined name will become highlighted and users will be able to type in a user friendly name.



Adding Additional Modules

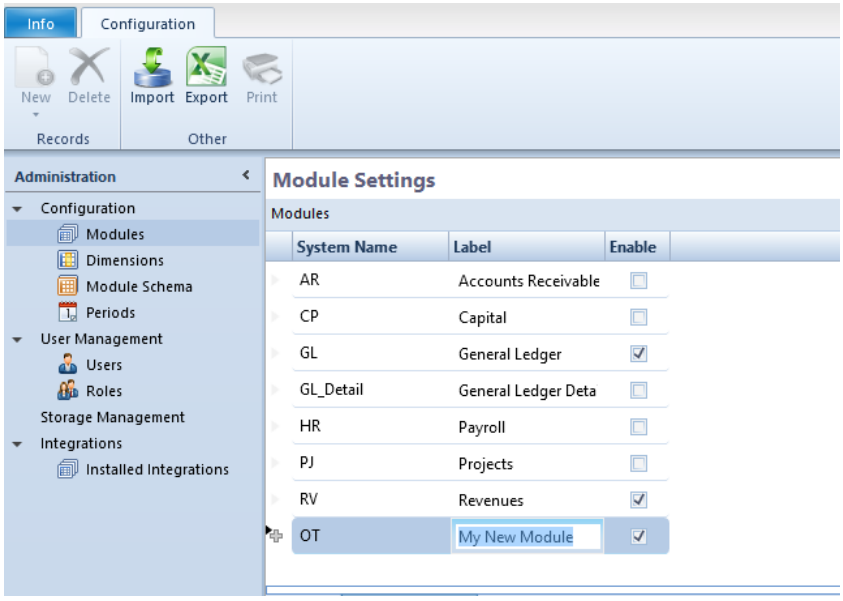
To add additional modules, follow the steps below:

1. From the Administration -> Modules click New -> New Module



2. The user will now enter into a “module creation session” where they can add multiple modules simply by typing in the desired label and hitting **Enter**.
3. Once all modules have been entered for this session, simply hit **Esc** on your keyboard to exit the “module creation session”.

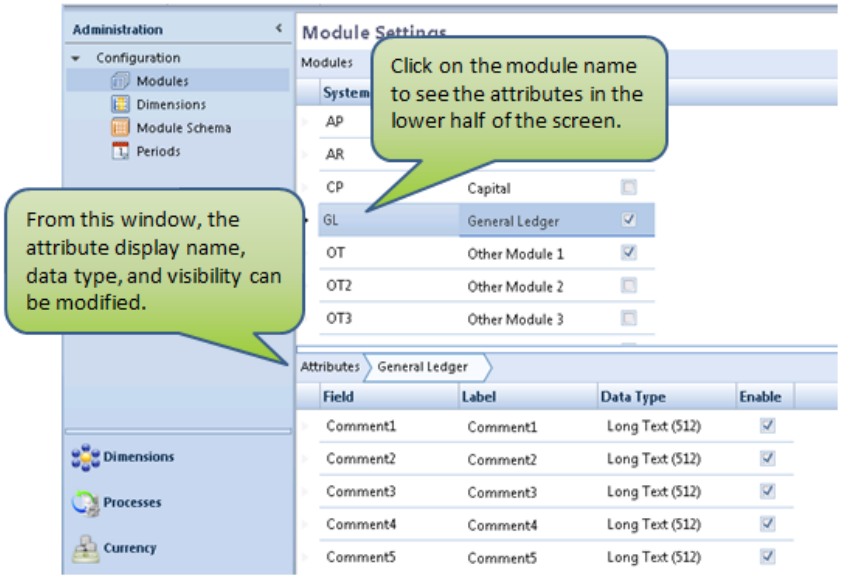
As mentioned above, users may add up to 50 “Other Modules”.



Customizing Module Attributes

Module (transaction table) attributes may be created and/or modified in the *Data Warehouse Manager*. The installation includes pre-configured attributes for each module which includes “Comment” and “Value”. Additionally, users may create additional module attributes called User-Defined Fields (UDFs). These fields and the pre-configured fields are all customizable and may be edited. The label names are updated immediately and displayed throughout the BI360 Suite.

To access the module attributes interface, click on the module for which the attribute should be created and/or modified.



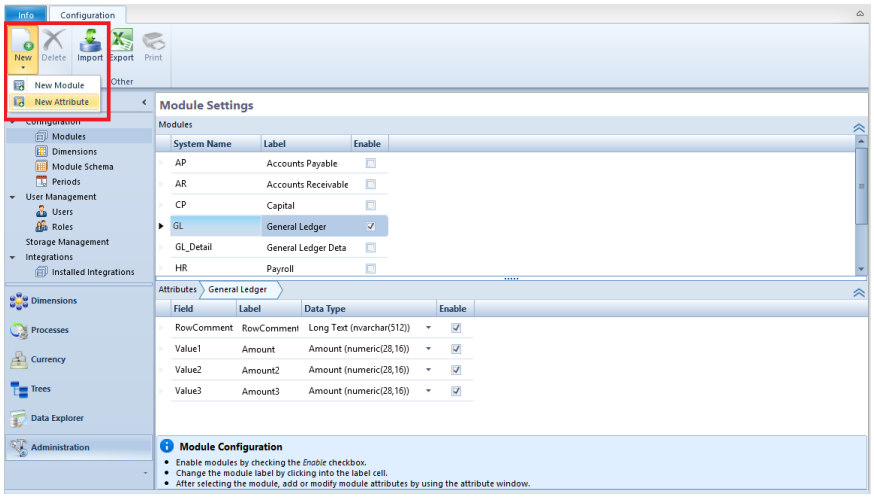
Customizing Existing Module Attributes

1. After selecting the desired module in the Module menu, existing attributes will be populated in the Attribute grid in the lower half of the screen.
2. To modify the attribute label, click **Label** to change (i.e. Comment1 or Amount) and type in a new display name. The label is automatically updated and is immediately reflected throughout the BI360 Suite.
3. To enable/disable the attribute, check/uncheck the box. If the attribute is enabled, then it will be visible throughout the BI360 Suite and users will be able to map the attribute as a storage field in BI360 Planning.

The Data Type of an existing attributes is not editable.

Add New Module Attributes:

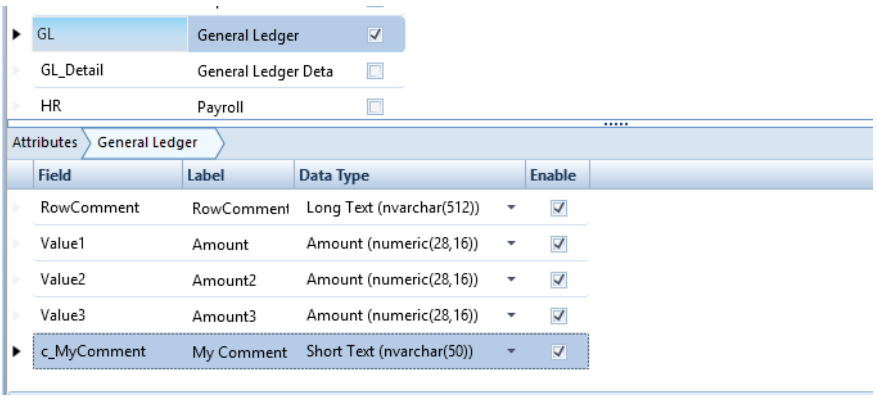
1. After selecting the desired module in the Module menu, existing attributes will be populated in the Attribute window in the lower half of the screen.
2. Select **New -> New Attribute** from the *Data Warehouse Manager* ribbon. This will create a new attribute at the bottom of the attribute list.



3. Enter the desired name for the new attribute in the **Label** field.
    a. When creating attributes, the only special characters that are allowed are "_" and a space. Upon hitting Enter, the application will remove all spaces from the label to create a "system field" using a c_nomenclature
    b. Attributes are limited to 100 characters
    c. Attribute data types are
        i. Short Text – 50 characters max
        ii. Long Text – 100 characters max
        iii. Integers – whole positive and negative numbers
        iv. Amount – a numeric value that is 28 digits before the decimal and 16 digits after the decimal
        v. Comment – 4000 characters max
        vi. Description – 4000 characters with a 2GB storage size.
        vii. DateTime – date/time format

When creating attributes, the only special characters allowed are "_" and a space. Upon hitting Enter, the application will remove all spaces from the label to create a "system field" using a c_nomenclature.

Attribute label names can be a max of 100 characters



As you can see in the screenshot above “My Comment” has been converted to “c_MyComment” for the field.

4. Select the Data type you prefer from the Data Type drop down.
5. To enable the new attribute, place a checkmark in the enabled box.

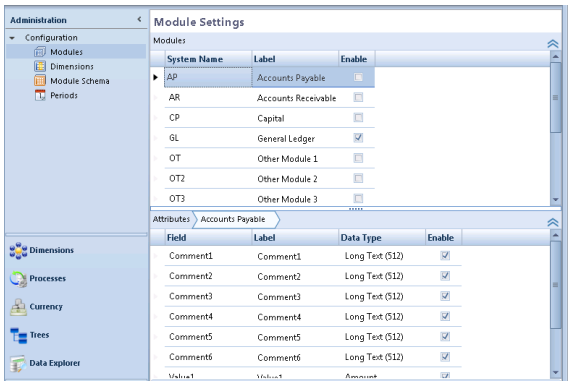
Once all module attributes have been added, hit **Esc** on your keyboard (or click “Cancel New Record”) to close out of the Add New Module Attribute session. An unlimited number of attribute may be created for each module in the BI360 *Data Warehouse Manager*. Attributes added as Amount will show as a measure while all other types will be added as characters.

Attributes may be deleted from the system by highlighting the attribute and clicking **Delete** from the Configuration ribbon. However, if data exists in the transaction table for the attribute, the attribute cannot be deleted until the data has been removed from the transaction table.

Import/Export Module Attributes

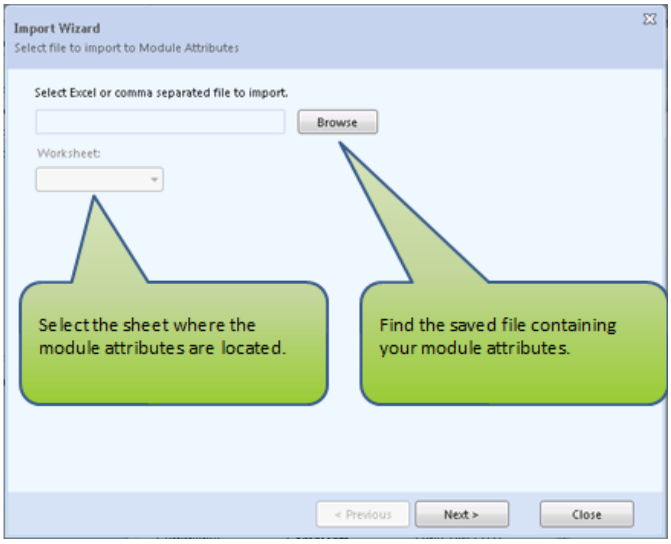
Module attributes may be imported and exported as an Excel file. This is especially beneficial for organizations with many attributes per module. When importing a Module Attribute, the Module must exist in the *Data Warehouse Manager* prior to running the import wizard. The format of the Excel file is as follows:

	A	B	C	D
1	Module	Label	Data Type	Enable
2	AP	Comment1	Long Text (512)	Checked
3	AP	Comment2	Long Text (512)	Checked
4	AP	Comment3	Long Text (512)	Checked
5	AP	Comment4	Long Text (512)	Checked
6	AP	Comment5	Long Text (512)	Checked
7	AP	Comment6	Long Text (512)	Checked
8	AP	Value1	Amount	Checked



1. Module: inputs into this column determine which module the attributes are to be associated with.
2. Label: user defined name for the attribute name.
3. DataType: User defined field for the attribute data type. Typically Amount, Short Text, Long text and ‘DateTime’ are used here.
4. Enabled: Defines whether or not the attribute is enabled (checked). If the attribute should not be enabled after import, leave this field blank.

Once the file is saved and closed, users may open the *Data Warehouse Manager* and select the Module sub-menu from the Administration menu. From the *Data Warehouse Manager* ribbon, select **Import.** The import wizard window will appear asking for users to select the file and worksheet to be imported.



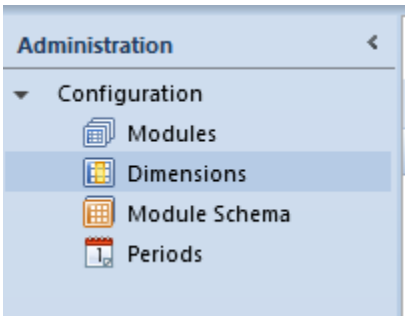
Note that the steps to import dimension attributes (discussed below) are exactly the same except for a difference in the import/export file layout. An example will be provided.

After selecting the file and sheet, click **Next**. On the next window, a summary of the attributes to be imported will be displayed. After verifying that the data is correct, click **Import** to import that data into the Data Warehouse Manager. After import, users will receive a prompt notifying them of a successful import. If the import fails, an error log will be created providing information for any incorrect, missing or duplicate values. Users may go back into the Excel file, make changes and then try the import again.

Configuring Dimensions

Dimensions may be created and/or modified in the *Data Warehouse Manager*. These dimensions are shared across modules within the *Data Warehouse Manager* (e.g. creating new dimensions label 'Location' may be used across all modules within the *Data Warehouse Manager*. This is commonly referred to as conforming dimensions).

To begin configuring dimension, click on the **Dimensions** sub-menu from the Administration menu.

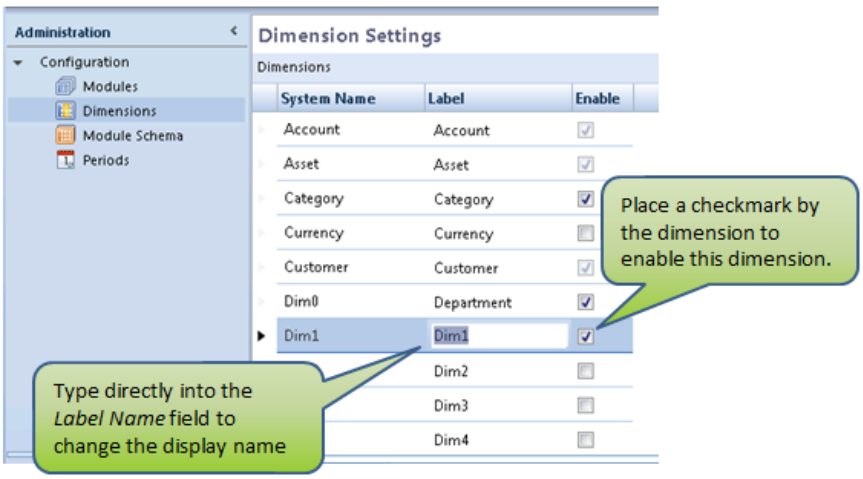


The Main Window will list all dimensions in the *Data Warehouse Manager*. From this window users may enable/disable dimensions as needed to meet the business requirement. If a dimension is **Enabled**, then it will be displayed in the Module Schema page so that it may be added and made visible for the desired module(s). For instance, if a user enables the *SalesPerson* dimension, it does not automatically become visible in all modules. Rather, users must go to the Module Schema menu to set the visibility of the dimensions to the desired module(s)

Moreover, the dimension display label may be changed within the *Data Warehouse Manager*. Any change will be reflected throughout the entire BI360 Suite. To customize the label of any of the dimensions, click on the **Label Name** text box. This will allow users to edit the name. The change will automatically be saved back to the database and reflected throughout the entire BI360 Suite.

Since the dimension is shared across all modules, changing a dimension name will be reflected in all modules that the dimension is associated with.

For details on the dimension labels, please see the Technical Specifications section at the end of this document.

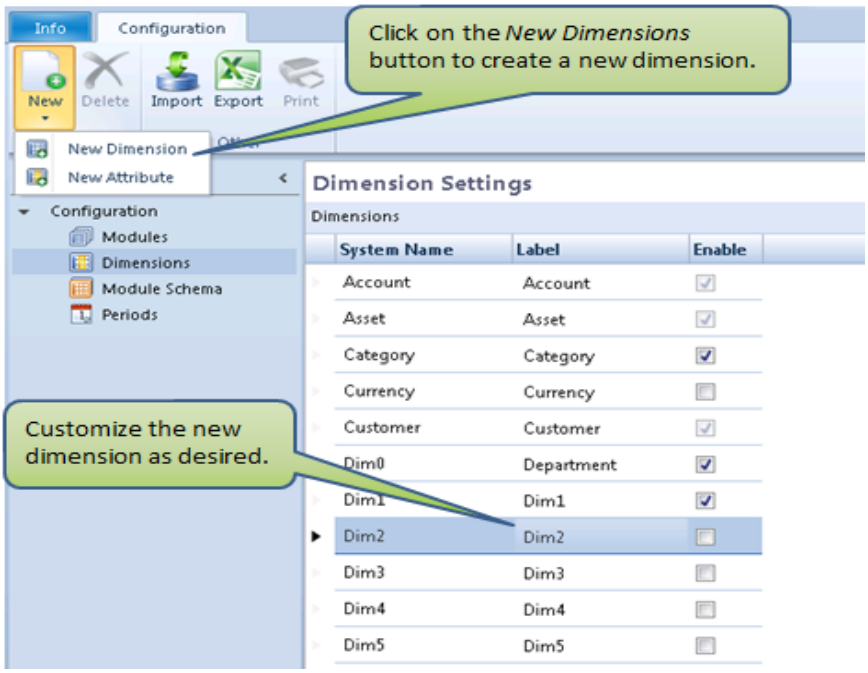


Dimensions may not be disabled if it is associated with a module in the Module Schema sub-menu. Before disabling a dimension, remove its association to all modules in the Module Schema.

The *Data Warehouse Manager* has 14 predefined dimensions which are:

1. Account
2. Asset
3. Category
4. Currency
5. Customer
6. Dim0 (“Department”)
7. Employee
8. Entity
9. Item
10. Product
11. Project
12. Sales Person
13. Scenario
14. Vendor

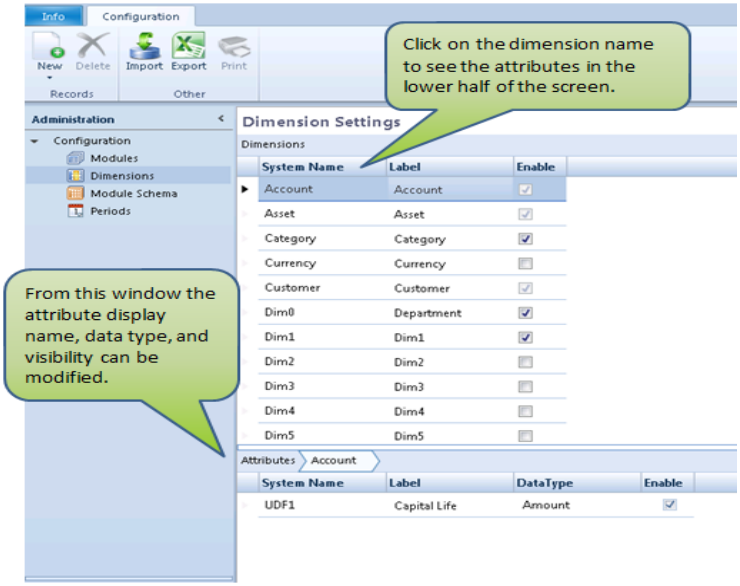
In addition, if more dimensions are required, users may add more dimensions by clicking the **New** button in the *Data Warehouse Manager* ribbon. A total of 40 user-defined dimensions (Dim0-Dim39) may be created in the Data Warehouse Manager. From the dropdown, select **New Dimension** and a new dimension will be added to the bottom of the dimensions list. Users may customize the dimension Label as well as enable/disabling the dimension.



Customizing Dimension Attributes

Much like the Module attributes, dimension attributes may be created and/or modified. Users may manually enter attributes from the *Data Warehouse Manager* or they can choose to import them using Excel or CSV file. Each of the preconfigured dimensions have common attributes added to them but these attributes may be deleted or modified. Additionally, users may add an unlimited number of dimension attributes to each dimension.

To access the dimension attribute interface, click on the dimension for which the attribute should be created and/or modified.



Customizing an Existing Dimension Attribute:

1. After selecting the desired dimension in the Dimension window, existing attributes will be populated in the Attribute window in the lower half of the screen.
2. To modify the attribute label, click the **Label Name** and type in the new name. The label is automatically updated and once enabled, it is immediately reflected throughout the BI360 suite.

Add New Dimension Attributes:

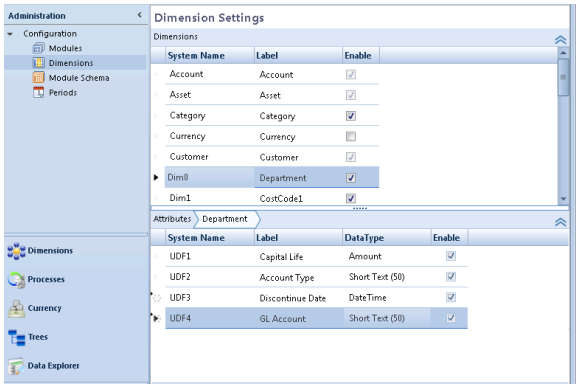
1. After selecting the desired dimension in the *Dimension* window of the Administration menu, existing attributes will be populated in the *Attribute* window in the lower half of the screen.
2. Select the **New** button from the *Configuration* ribbon. From the dropdown box, select ***New Attribute***. This will create a new attribute at the bottom of the attribute list.
3. Enter the 'Label' name for the new attribute and select the **Data Type**.
    a. Dimension attributes in the Data Warehouse Manage use a "c_" nomenclature. This means that every attributes you create will have c_ appended to the front of every attribute you create.
    b. Special characters are not allowed.
    c. All spaces will be removed when creating the field.
4. To enable the new attribute, place a checkmark in the enable box.

Attributes may be deleted from the system by highlighting the *attribute* and clicking the **Delete** button in the *Configuration* ribbon. However, if data exists in the table for the attribute, then the attribute cannot be deleted until the data has been removed.

Import/Export Dimension Attributes

Users may also import/export dimension attributes. As previously mentioned, the steps to import/export dimension and module attributes are the same. Below is the format of an Excel file to be imported/exported.

	A	B	C	D
1	Dimension	Label	Data Type	Enable
2	Dim0	Capital Life	Amount	Checked
3	Dim0	Account Type	Short Text (50)	Checked
4	Dim0	Discontinue Date	DateTime	Checked
5	Dim0	GL Account	Short Text (50)	Checked

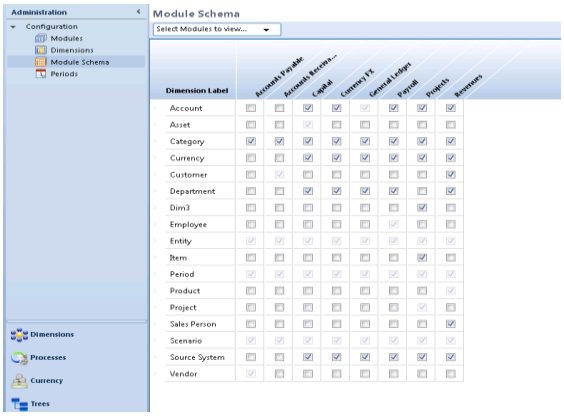


1. Dimension: Inputs into this column determine which dimension the attributes are associated with.
2. Label: User defined field for the attribute name.
3. DataType: User defined field for the kind of information entered. Amount, Short Text, Long Text and DateTime are just a few of the examples.

4. Enabled: Defines whether or not the attribute is enabled (checked). As with Module attributes, leave the cell blank if you wish to have it not enabled after import.

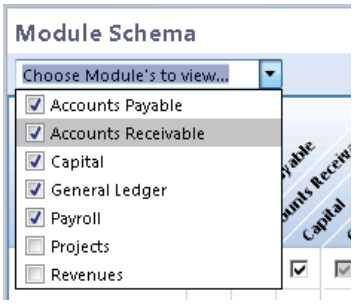
Configuring Module Schema

The final step to configuring the *Data Warehouse Manager* is to associate dimensions with modules. In the earlier steps, modules and dimensions were created and enabled. As a result of these steps, enabled modules and dimensions will be populated in the Main Window when selecting Modules Schema. From the Main Window, users will be able to use the *Module Schema* matrix to associate desired dimensions to modules.



In the image above, the *Account* dimension is not visible in the *Accounts Payable* and *Accounts Receivable* modules (specified by the empty box). Moreover, for the *Capital*, *Payroll*, *Projects* and *Revenues* modules, the *Account dimension* is set to visible (specified by the checkmarked box). Finally, for the *General Ledger* module, the *Account* dimension is a system mandatory dimension (specified by the grayed-out checkmarked box).

Check the box of the dimension to be added to a module. Uncheck the dimension to remove it from the module. Additionally, users can choose to see the *Module Schema* of selected modules by using the dropdown box. Modules that are enabled in the *Module Configuration* page will only be displayed in this dropdown box.



Clicking “Modules” selects/unselects all modules. Check the modules to be viewed and click out of the dropdown to refresh the interface.

User Management

As mentioned in the Adding Users section, users must be added to the application in order to have access. Previously, this user guide discussed how to add users and assign them to the pre-configured roles. This section will explain how to create roles, add data filters and create Storage Management.

Roles

Roles may be configured from **User Management -> Roles** found on the left hand pane of Data Warehouse Manager

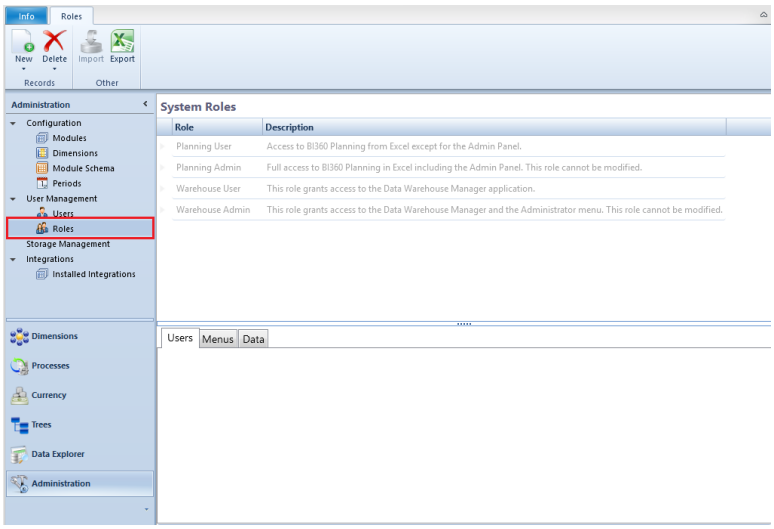
The top half displays roles that have been created. In the bottom half of the screen, users will see three tabs labeled Roles, Menus and data.

1. Users: A list of users that have been added to the role selected above.
2. Menus: Define the menus that the user or role will have access to. Users can be restricted from seeing:
    a. Dimensions
    b. Processes
    c. Currency
    d. Trees
    e. Data Explorer
    f. Administration
        i. Configuration
        ii. Integration
        iii. User management
        iv. Storage Management
        v. Licensing

To restrict a user or role from seeing a specific menu, clicking the drop down on Access Type. Here, there are three types of restrictions that may be applied:

Access Type	Description
No Access	Restrict the user from seeing the menu and its submenus.
Read	Users can see the menu and its data but cannot add, delete, import, export or modify the data.
Admin	User is granted full access to add, delete, import, export and modify the data.

3. Data: restrict the user from seeing data within Data Explorer and the dimensions menu. Drag and drop the module or dimension from the left hand side to the right hand side. Click the lookup icon to display a popup with the available modules or dimensions to apply restrictions too.



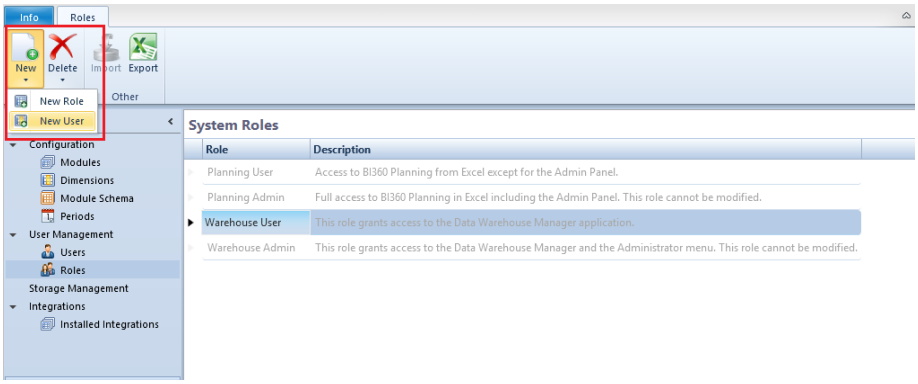
Data Warehouse Manager comes with four pre-configured roles. These roles are standard for the application and may not be deleted. It is recommended to not edit these roles but to create new Roles based on the business' needs.

1. Planning User: Can use all of the features of the Planning ribbon except for accessing the Admin Panel.
2. Planning Admin: Full access to all of the features of the Planning ribbon including the Admin Panel.
3. Warehouse User: Full access to *Data Warehouse Manager* except for the Administration menu.
4. Warehouse Admin: Full access to *Data Warehouse Manager* including the Administration menu.

Creating a Role

To create a Role:

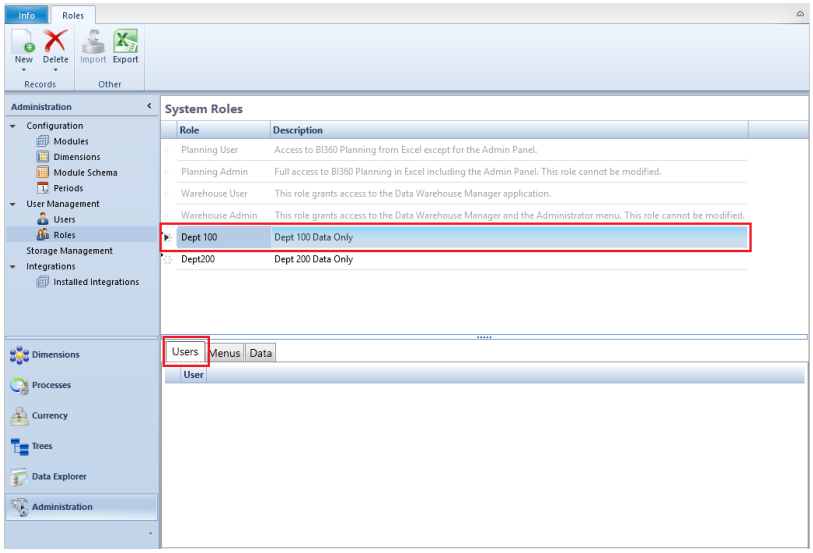
1. From the Administration menu, click **User Management -> Roles**.
2. In the upper left hand corner, click **New -> New Role** to enter a "Role creation session".



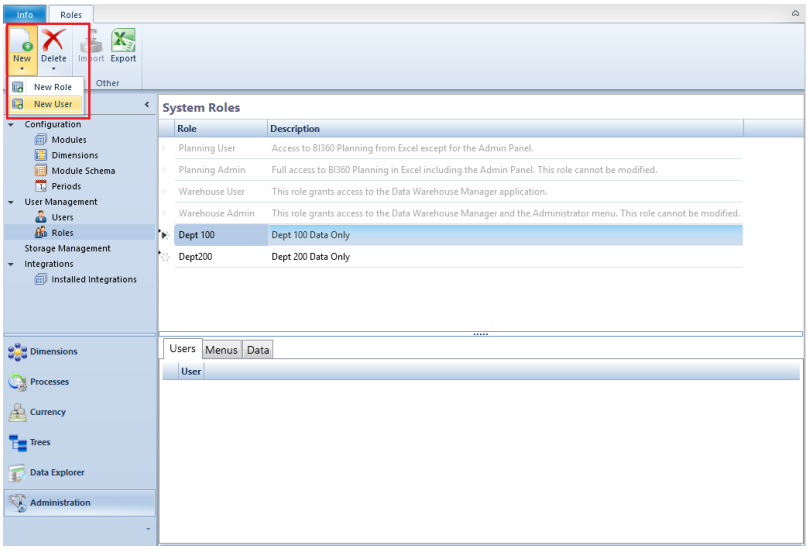
3. Provide a Role name. A description is optional; hit **Enter** on your keyboard to create the role.

By default, all roles that are created have no access to any menu within the application. Menu access must be configured for users assigned to this role to have access within the application.

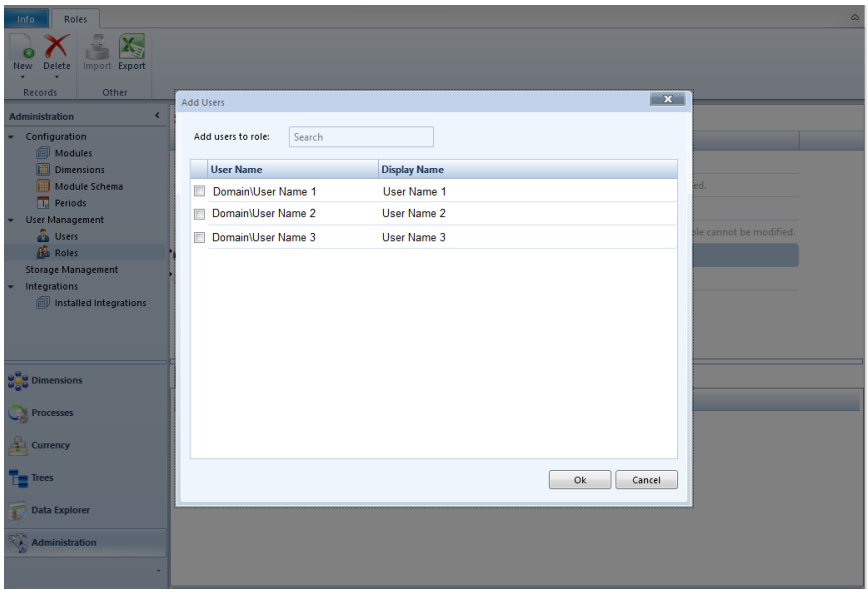
4. Repeat the above until all roles have been created. Once all Roles have been created, hit **Esc** on your keyboard to exit the “Role creation session”.
5. Return back to a role that was just created by clicking on it. In the bottom half of the main grid, the application has selected the “Users” tab.



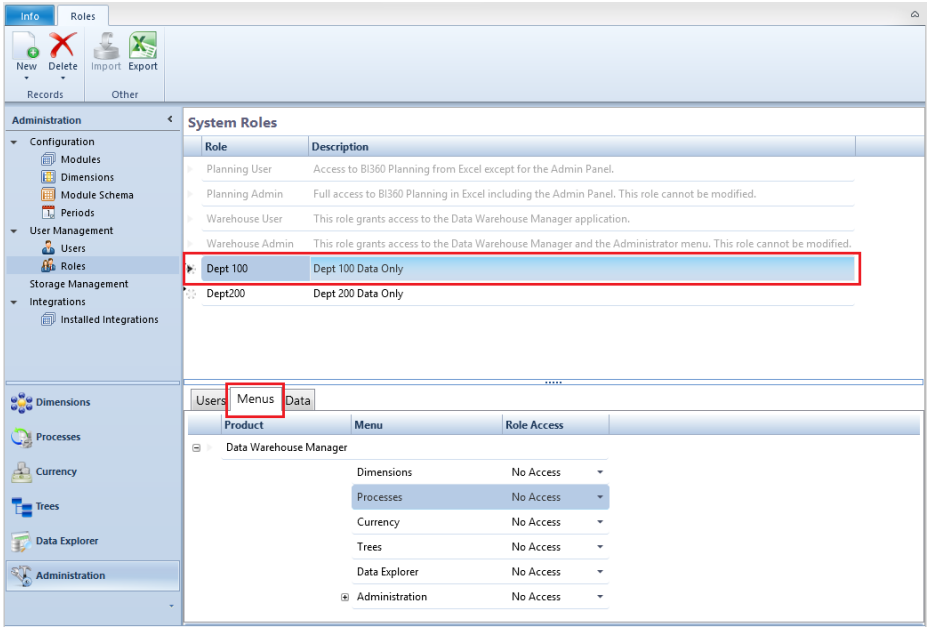
6. From the BI360 ribbon, select New -> Add Users.



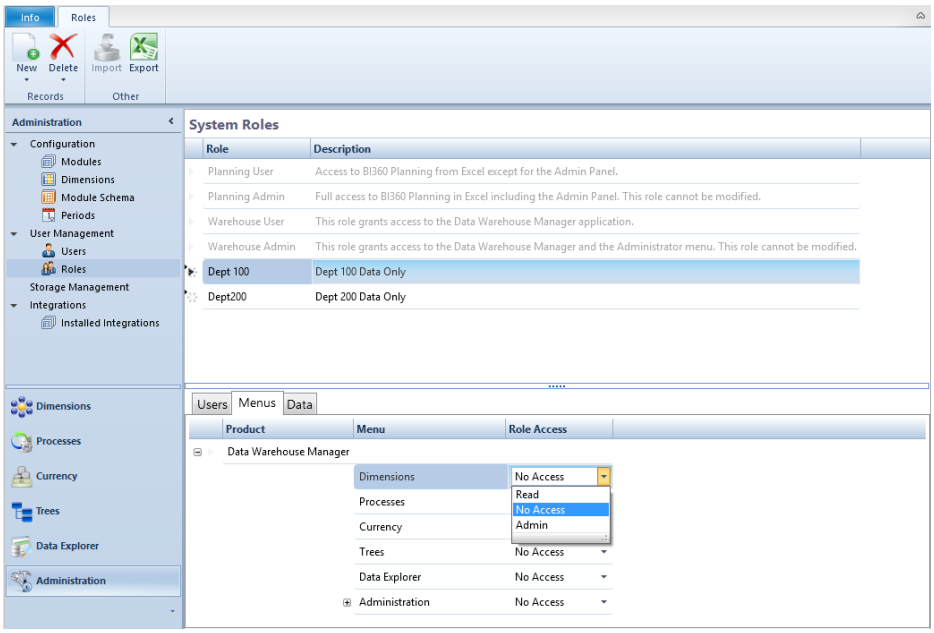
7. A popup window will appear displaying all users that have been added to the application that are not already part of the selected Role. Add the Users that should be part of this role.



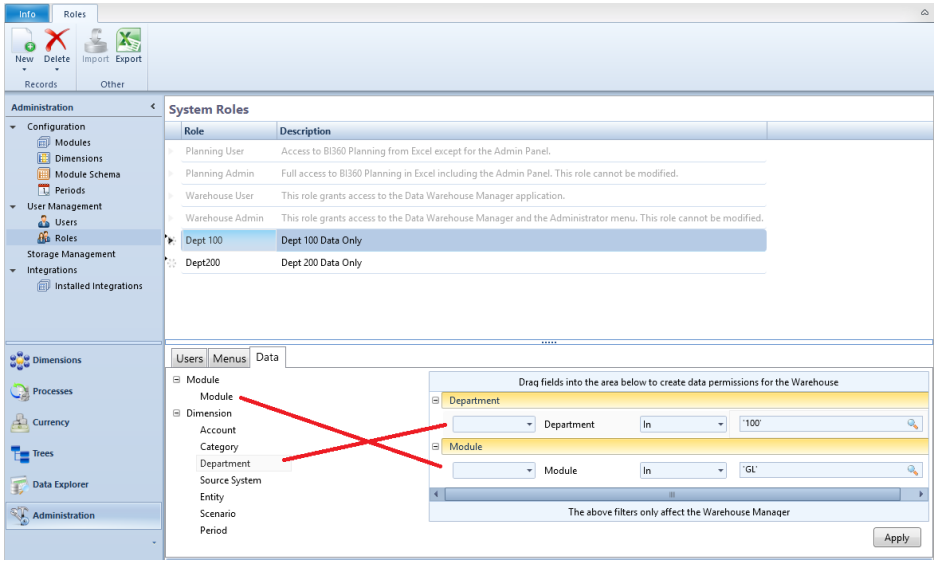
8. Once all users have been selected, click **OK** to add them to the Role
9. Menu permissions for this role will be created next. Click on the “Menus” tab.



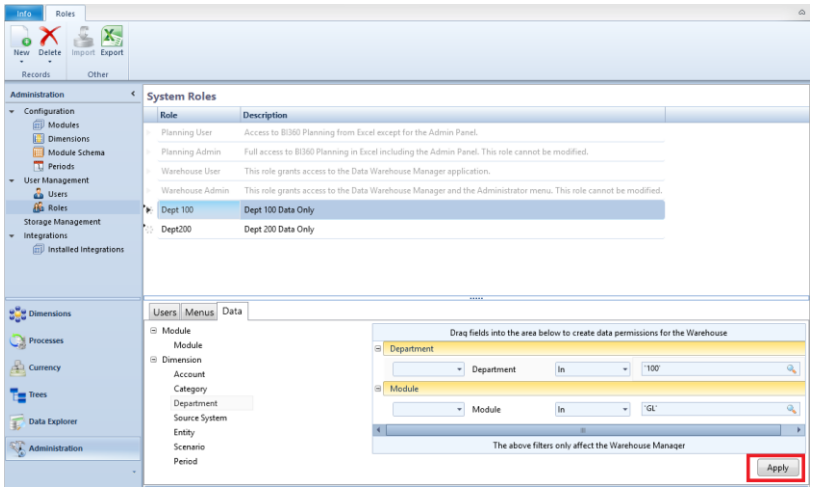
10. As mentioned before, you will see that this newly created role has “No Access” to any menu. Define the menu permissions this user should have by clicking the drop down in the Role Access column.



11. Once menu permissions have been configured for the Role, the next step is to setup Data Security for the role. Click the “Data” tab.
12. A list of all modules and dimensions that have been enabled will appear. Drag in the module AND dimension combination that the Role will have access to.
    a. The data security configured here applies to the entire Data Warehouse application.



13. Once data security has been configured for the role, click **Apply** to save the settings.



14. Repeat the above steps (6-13) for each role that has been configured.

Storage Management

Storage management “locks down” and prevents data storage from the Planning application. This can be very useful when a company has closed their budgeting for a certain scenario or year and would like to ensure that users do not store data to these years and/or scenarios.

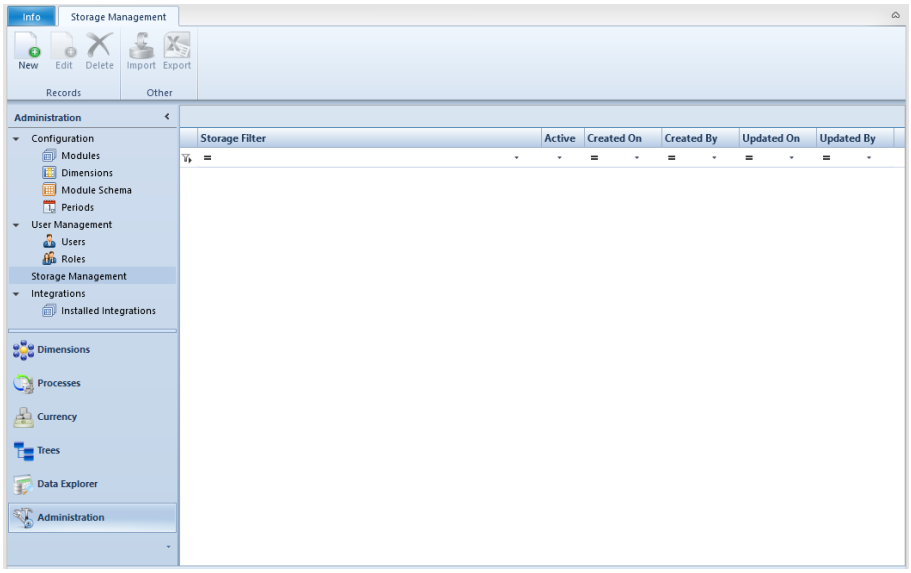
Storage management is based on dimensions (scenario and period only) and cannot be restricted per module.

- Storage Security applies to all users of the Planning application and is separate from Assignment security.
- Users can only limit storage security on Period and Scenario.
- If no storage security is set as “Active” then users of the Planning application may store data to any parameter combination. To lock down the Data Warehouse, one Storage Management setting must be set to Active.

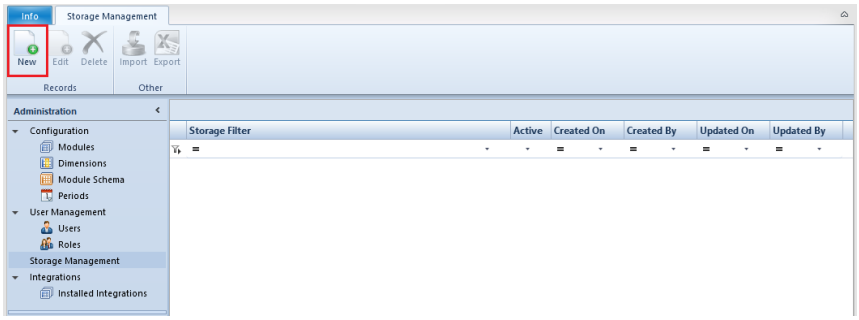
Security works by defining the dimension values that users CAN store data back to. If no security is setup in Storage Management, then all users can store data back to any dimension value.

Setup Storage Management

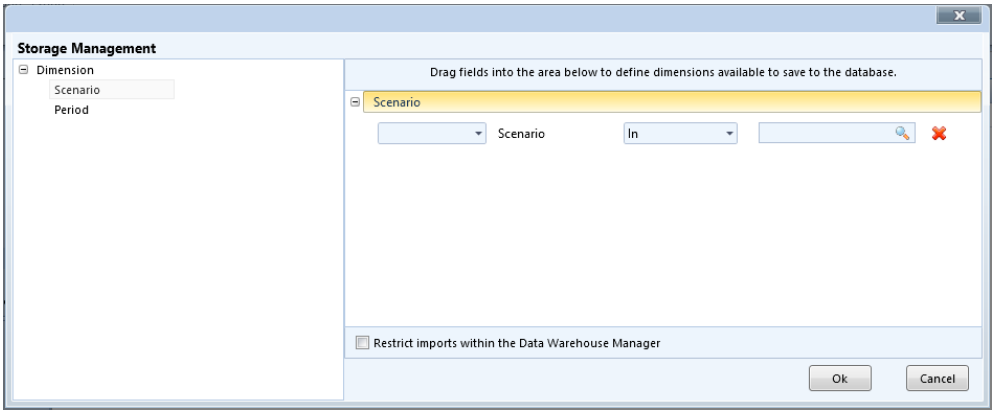
1. Click Administration -> Storage Management. A list of all previously configured storage permissions is listed in the Main Window.



2. To add a new storage permission, click **New** in the *Data Warehouse Manager* ribbon.

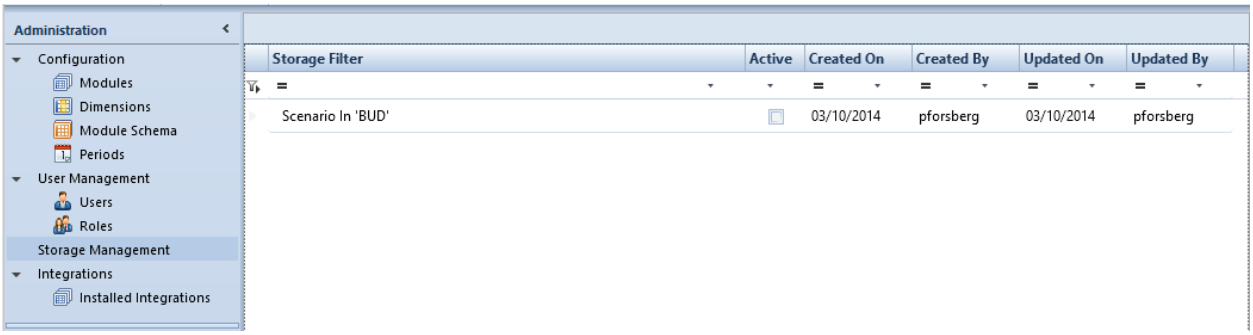


3. In the popup, define the dimensions (data storage security cannot be applied at the Module level) that users can store data back to. For example, if it is desired that users can store data only to Scenario 'BUD' for Fiscal Year '201401': '201412', drag Scenario and Period from the left hand side to the right hand side. Use the lookup icons to select the desired values for storage and click **Ok**.



The security that has just been created now appears in the main window. Additionally, the window displays a "Created Time", "Created By" and an "Active" checkbox. Click the Active checkbox to enable or disable the specific security permission.

By unchecking the Active checkbox, users will NOT be able to store to the values defined in the security permissions from the Planning application. .



From the Planning application, when a user attempts to store to periods and/or scenarios that are not part of the active storage filters, a message will appear indicating that transactions were not stored. A text file of the transactions will also be created for the user of the BI360 Administrator to review.

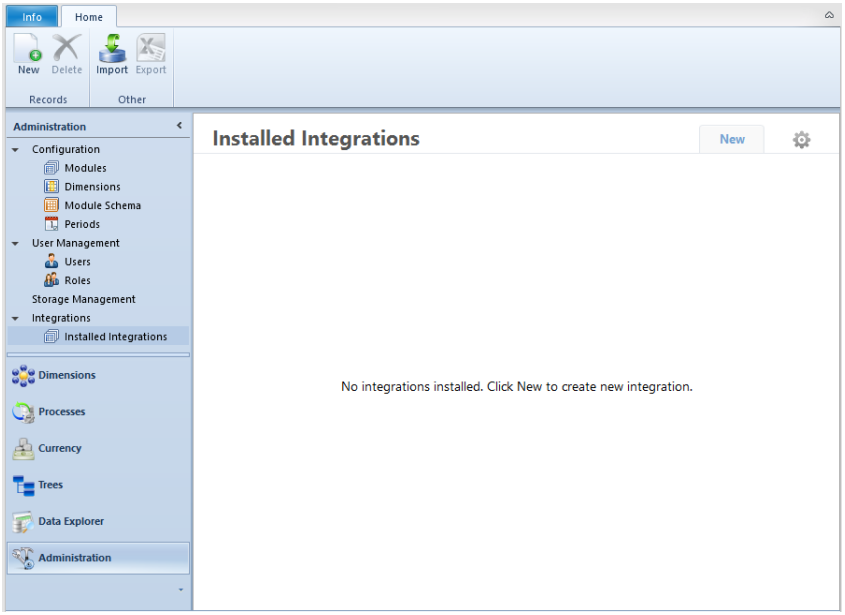
Integrations

The Data Warehouse Manager allows the user to connect and integrate to a cloud based ERP such as Salesforce, Intacct, Netsuite and Acumatica. Once the data has been integrated into the BI360 Data Warehouse, users can use BI360 Reporting to create detailed reports using features and formulas found in the report writer that are not available in the native Salesforce reporting tool or in many 3rd party solutions.

This section will detail how to integrate into Acumatica, however the steps to integrate into the other integrations are the same, with slightly different menu options.

Integrations Home Page

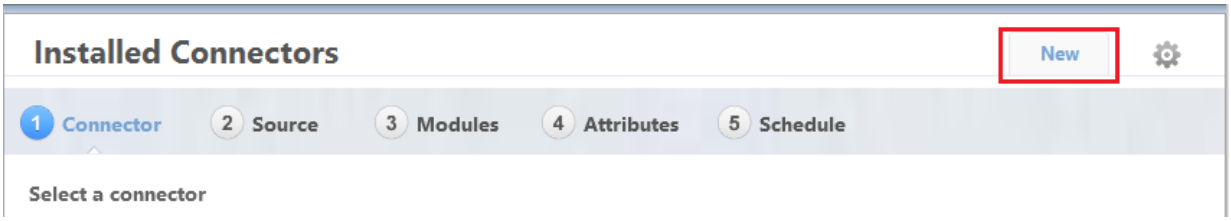
From the Data Warehouse Manager -> Administration tab, select Integrations in the upper left hand corner. A list of configured integrations will appear. If nothing appears, the user must install and configure a connector. To download the connector package, please visit the Solver Support Site (support.solverusa.com).



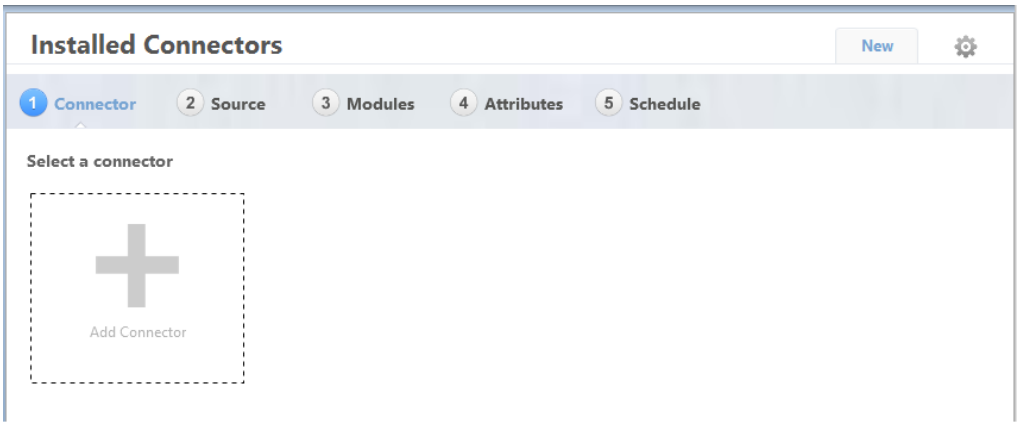
Installing a Connector

1. Users can install an integration by clicking **New** in the upper right hand corner.

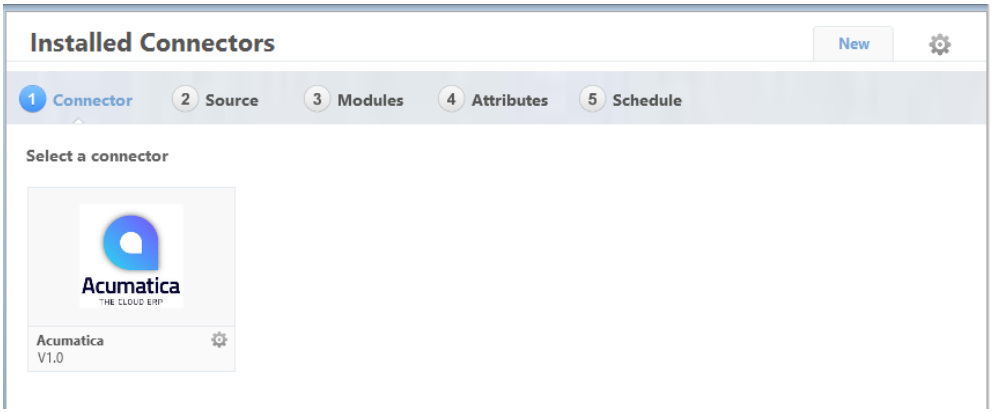
If an integration is to be used by multiple people, it is recommended to keep the integration on one computer that users can access.



2. Users will be taken to a new page where a list of all installed integrations will appear.



3. Click on the Add Connector button to add a connection.
4. A Windows file browser will appear. Select the Acumatica connector file (.zip file)
5. Upon selecting the .zip file and clicking Ok on the file browser to close the window. Users will receive a popup dialog confirming the successful import of the connector. It will also appear in the list of Installed connectors.

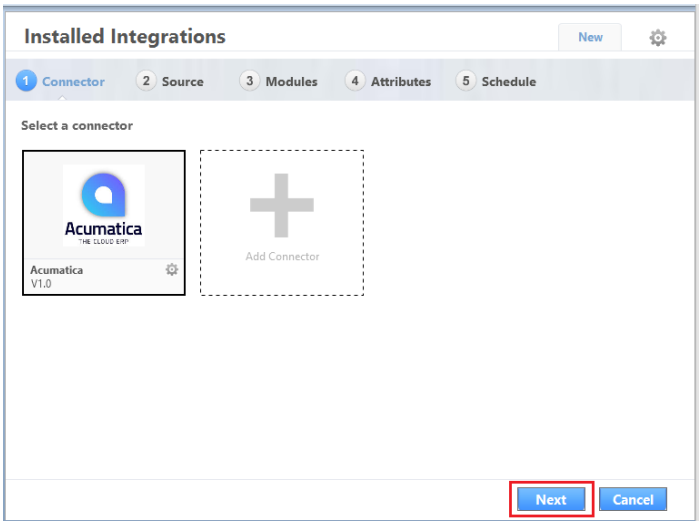


This completes installing a connector. The next section will detail how to configure the connector.

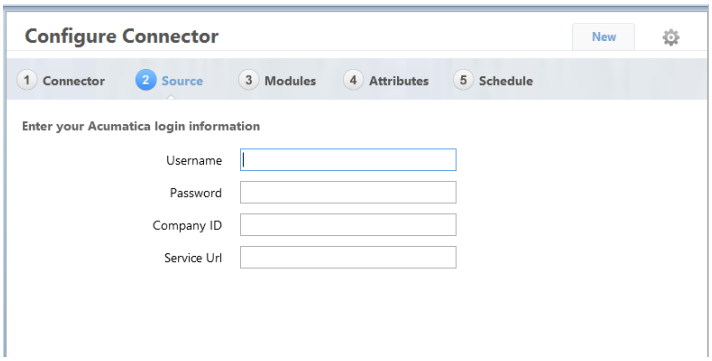
Configuring an Integration

The next step in integrating the BI360 Data Warehouse to configure the integration package.

1. Select the Acumatica integration and click **Next** in the bottom right hand corner. A black border will appear around the integration once it has been selected.



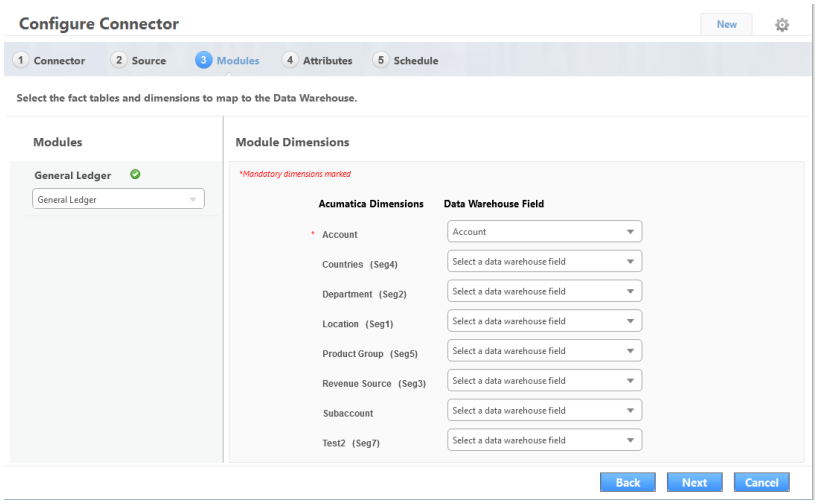
2. The first page of the integration prompts the user for the Acumatica credentials.



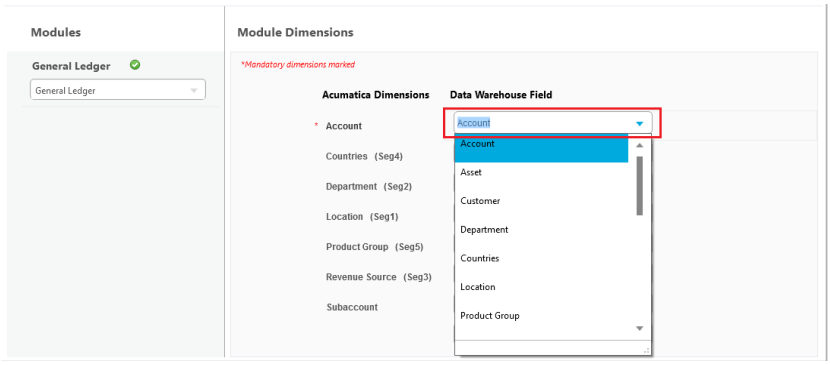
Field	Description
Username	The username used to log into Acumatica
Password	The username's password (case sensitive)
Company ID	The company ID associated to the Acumatica account (case sensitive)
Service URL	The Acumatica URL once logged in. (must be https://<sitename>)

Type in the credentials and hit **Next** at the bottom of the screen to proceed to the next page of the Connector wizard.

3. On the next page of the Connector wizard users see a list of the available dimensions as configured in their cloud ERP system. A list of the modules the users can map dimensions to is displayed on the left hand side.

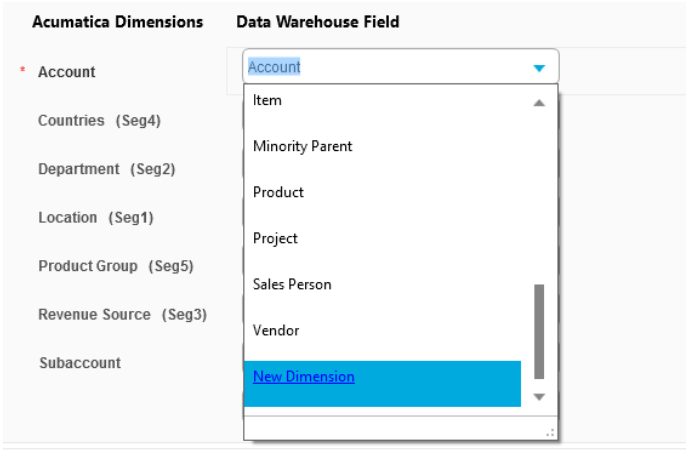


4. Click on the drop down in the Data Warehouse Field and select a dimension to associate the ERP dimension to.



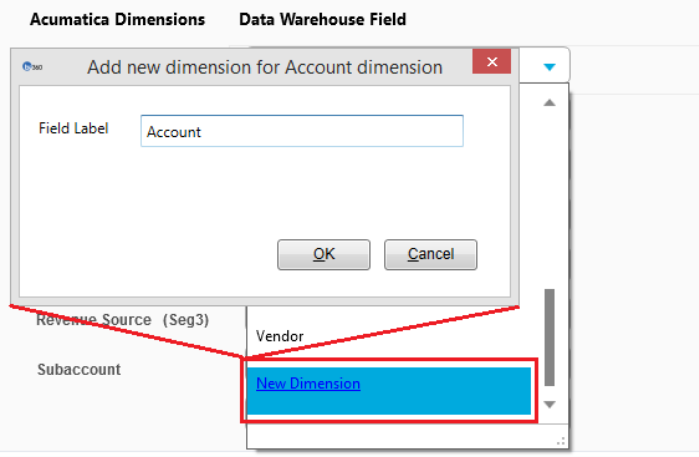
The list of dimensions shown are based on those that exist in the Data Warehouse Manager database. Select the Data Warehouse dimensions to associate to the ERP dimension.

5. If none of these dimensions fit the name of the dimension in the ERP system, scroll to the bottom of the list where the option to select "**New Dimension**" is available. Select **New Dimension**.

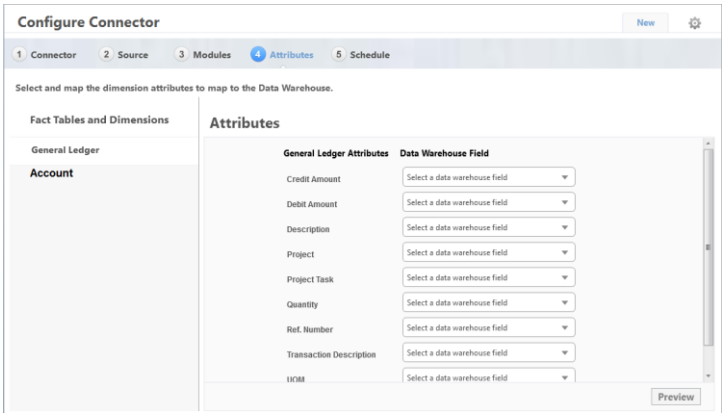


Upon clicking **New Dimension**, a dialog box will appear where the user can type in the name of the dimension. Click **OK** once you have typed in the dimension name.

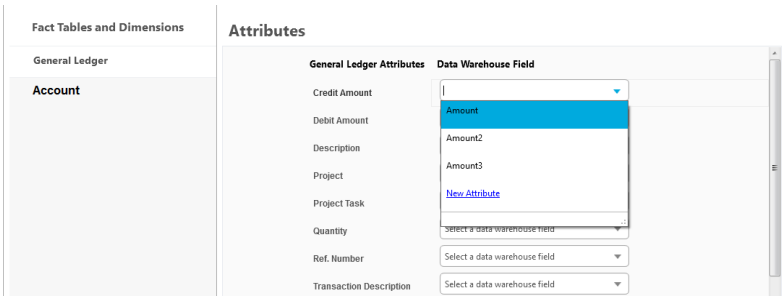
Dimension names should not contain any special characters.



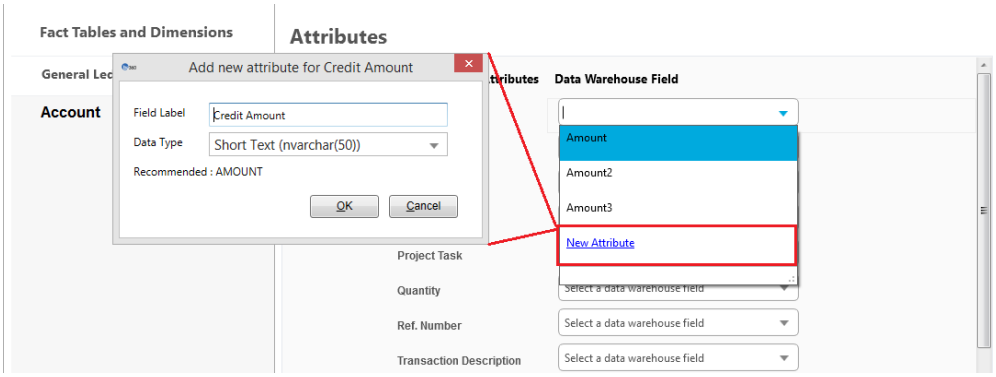
6. Once all dimension have been mapped (not all dimensions need to be mapped), click Next at the bottom of the page.
7. On the next page of the Connector wizard, users will see a list of the Modules and the Dimensions on the left hand side. A list of the attributes associated to each Module or Dimension will appear on the right hand side.



8. Select the module or dimension on the left hand side and create the attributes for that module that are to be brought in from your ERP on the right hand side. Similar to adding dimensions, click the dropdown next to the attribute and select an attribute that exists in the BI360 database.



9. If a new attribute is to be created, click New Attribute. A dialog box will appear where the user can type in the attribute name and select the attribute data type.

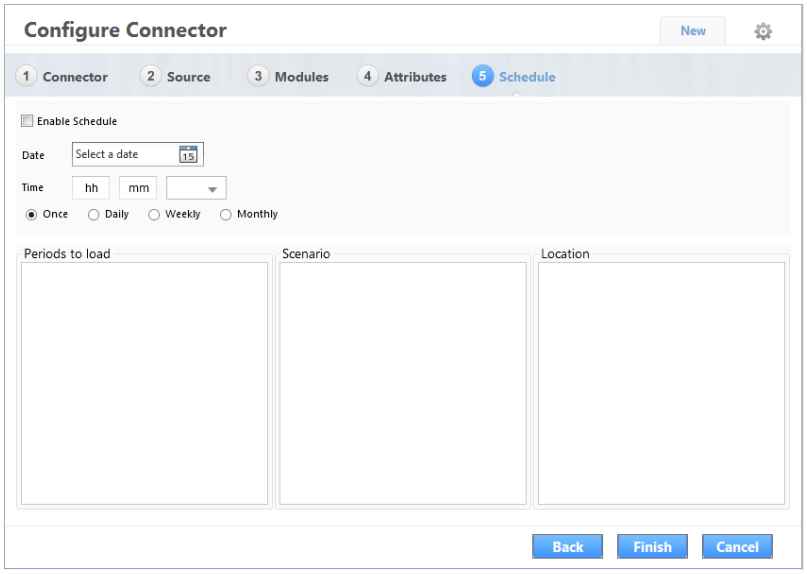


Dimension names should not contain any special characters.

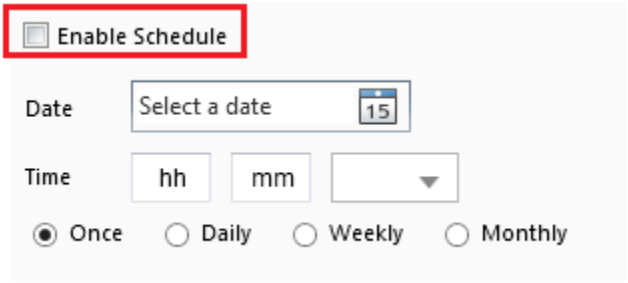
Below the Data Type dropdown is the "Recommended" data type. This is the data type that is used in the ERP system. It is strongly recommended that the data type selected is equivalent to the "Recommended" suggestion.

Recommended	Suggested Data Type
Comment (##)	Short Text/Long Text (Nvarchar(##))
Amount	Amount (numeric (28,16))
Currency	Amount (numeric (28,16))
Date	Date (DateTime)

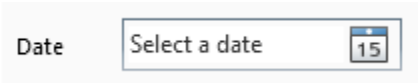
10. Click on the next dimension in the left hand side to configure the attributes of that dimension. Note that only the attributes that are mapped get brought into Data Warehouse Manager.
11. Once all attributes have been mapped, click **Next** to move to the next page of the Connector wizard.
12. The next page of the Connect wizard allows the user to select whether or not to schedule the integration. If the integration is to be ran manually, simply click **Finish** to save the connector.



13. If the integration is to be scheduled, click Enable Schedule.



a. Select the date the when the Connector should start.

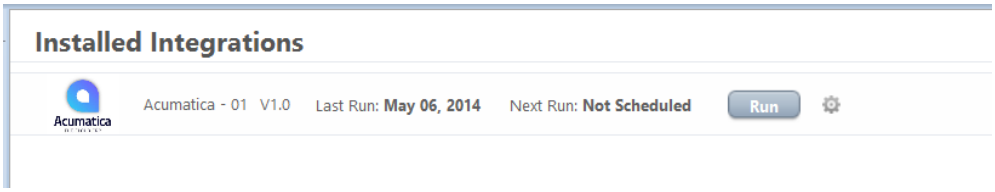


b. Select the time that the connector should run at.
    i. If the connector is to be ran daily, it is recommended to schedule the connector to run during non-business hours.

c. Select the frequency that the connector should run.

14. In the bottom half of the scheduler, users can select the dimensions to load. The dimensions listed are the mandatory dimensions that the connector needs. Any transaction associated to these dimensions will load when the scheduled integration is ran.
15. Select the dimension code(s) and click **Finish**.

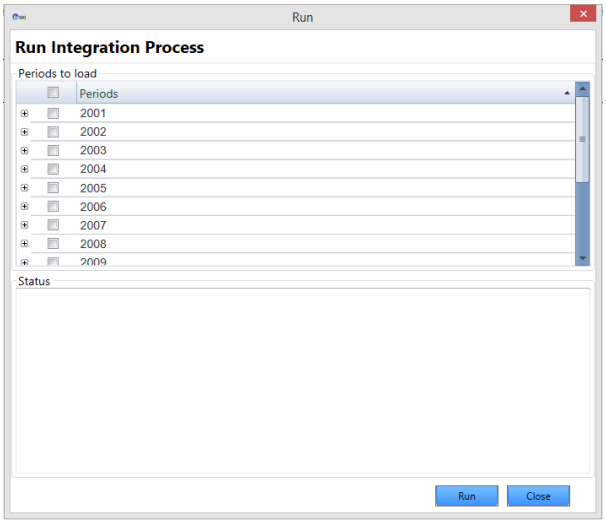
16. The user will be prompted with a Windows credentials dialog. This is necessary to save the scheduled Connector to Windows Task Scheduler. Enter the Windows login name and password and click **Ok**.
17. This successfully saves the connector. The connector will now appear on the Installed Integrations page.



Executing an Integration

To run an integration:

1. From the Installed Integrations page, click **Run**.
2. A dialogue box will appear where the users can select the dimension values to be loaded into Data Warehouse Manager.



3. Select the periods to be added and click **Run**.
4. Upon clicking run, the Status will display information on the Integration, such as how many transactions were imported. This is dependent on the amount of data being imported.

Editing an Integration

To edit the integration, from the Installed Integration menu, double-click the integration to be edited.

Deleting an Integration

To delete an integration, simply select the integration and click Deleting in the Data Warehouse ribbon.

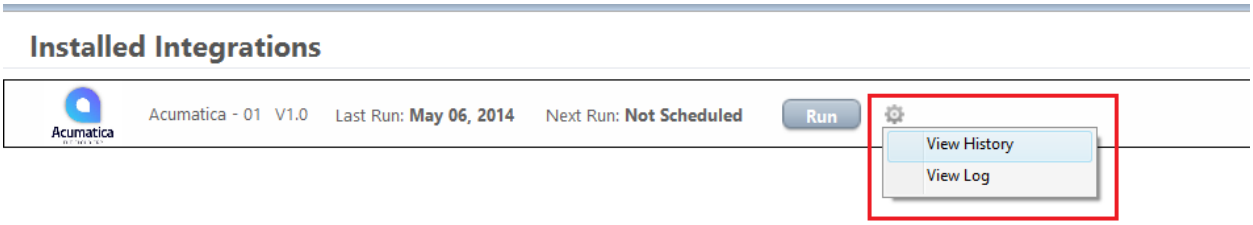
Exporting and Importing an Integration

Users may export and import a configured integration by clicking the **Export** button from the Installed Integrations page or clicking the **Import** button in the Data Warehouse Manager ribbon to import the

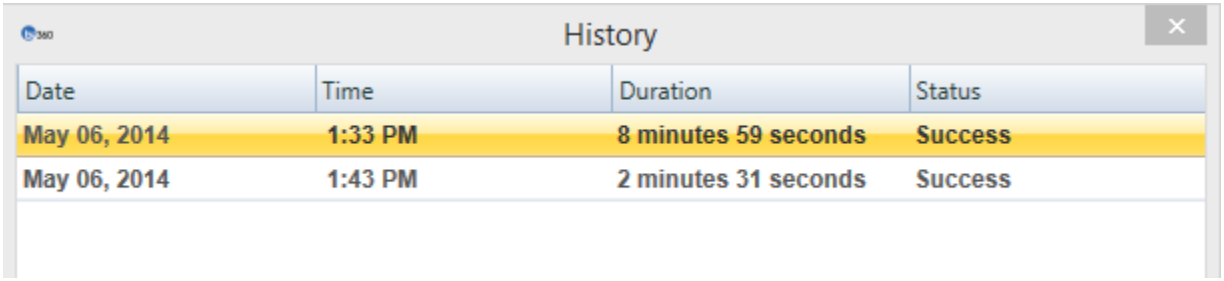
configured rule. This is useful when a user would like to move an integration from one database to another, such as a development database to a production database. The dimensions, attributes and mappings will be brought over into the new database for a quick migration of the integration to a new environment.

Additional Options

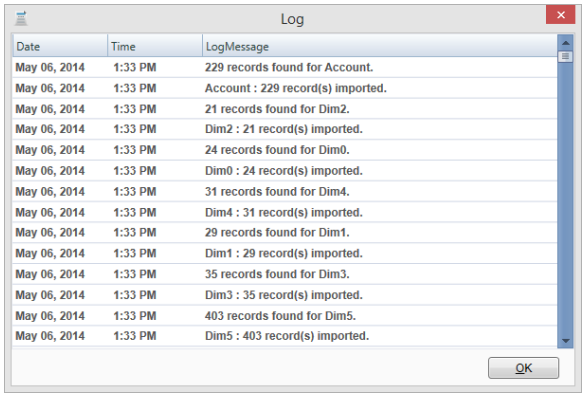
Users can also view the history and log of the Integration. To view either, click the gear icon next to the run button of the selected integration.



Click **View History** to open a dialogue which shows when an integration was ran and the duration.

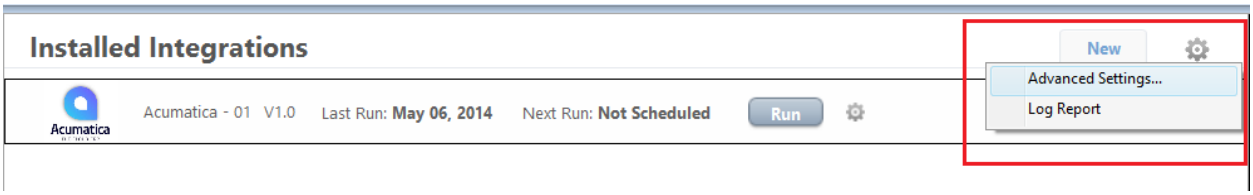


Click **View Log** to view the information the application captured from the last time the integration was ran.



Advanced Options

In the upper right hand corner of the Installed Integrations page, next to the **New** button is a gear icon where users can access the Advanced Settings and the Log Report.



The *Advanced Settings* allows the user to select whether the integration should load the data automatically into the Warehouse. If the user does not select this option, then they will receive a prompt when running the integration to add the data to the Data Warehouse.

The other option is the *Created files with dimensions and data*. Selecting this option will create Excel files of the data that has been imported into the data warehouse. These files are found in the following folder location:

C:\ProgramData\Solver BI360\Integrations\Installed

Inside this folder is a list of connectors. Open the folder for the connector in which the data was exported to view the Excel files.

This completes setting up the *Data Warehouse Manager*. The following sections will go over managing the data that is added to the *Data Warehouse Manager*.

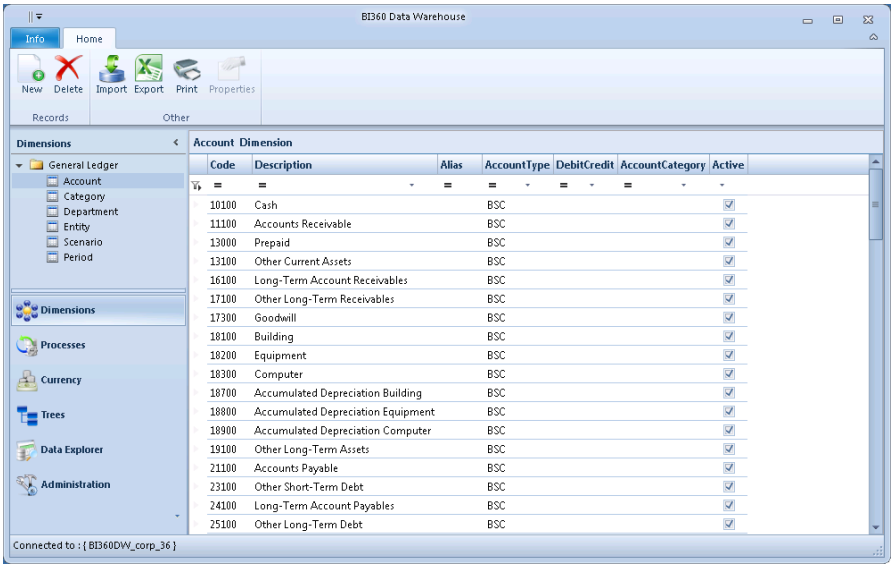
Managing the Data Warehouse

The following sections will walk users through managing the various features within Data Warehouse Manager. This will include manually adding and deleting dimensions from the *Data Warehouse Manager* interface along with using import files, creating rules and processes, currency setup and Data Explorer. Users may use a test database they have created or they may follow along using the BI360 Corporate Demo database.

Dimension Maintenance

In some cases, dimensions (as well as transactions) may be automatically imported from an ERP system or other source (i.e. CRM). However, for budgeting, modeling purposes or to clean out old dimension members that are not in use, dimension maintenance can be performed through the BI360 *Data Warehouse Manager*.

1. The dimensions in the warehouse are maintained through the *Dimension* menu. To access the dimensions, click the *Dimension* menu item in the *Task* pane on the left of the console.
2. Click on the module to display the dimensions associated to the module.
3. Click on the specific dimension within the *General Ledger* menu where changes need to be done. Please note that even though changes are being made to one dimension in a specific module, the changes are reflected in all modules that the dimension is associated with.



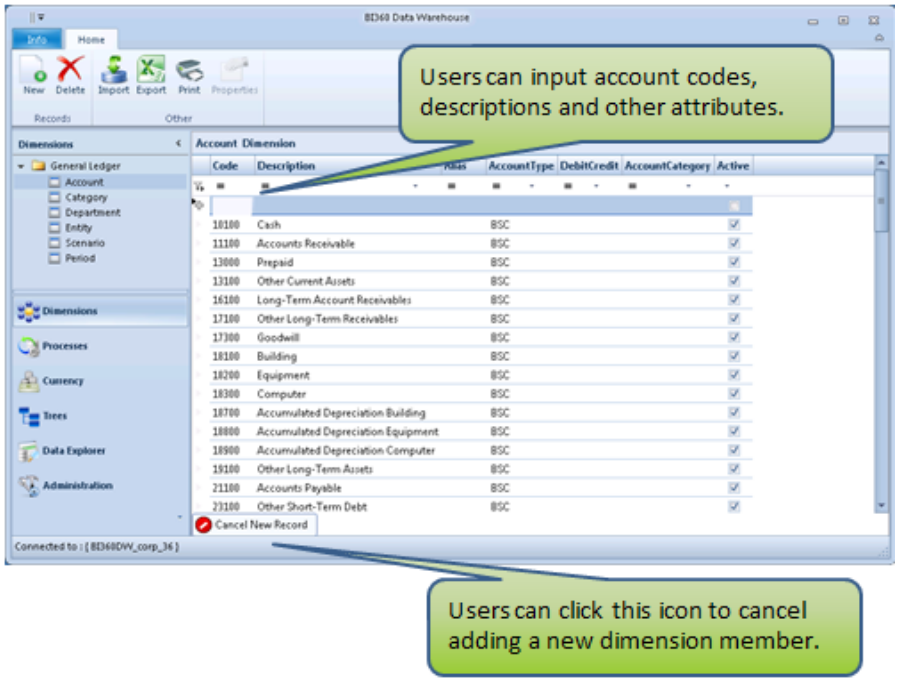
4. The menu bar (ribbon) contains six buttons. They are as follows:

    a) **New**: Manually add a new dimension.
    b) **Delete**: Manually delete dimension members.
    c) **Import**: Import new dimension members from a comma separated file (.CSV) or an Excel file.
    d) **Export**: Export dimension member list to an Excel file.
    e) **Print**: Print the dimension members in a dimension list.
    f) **Properties**: Change properties for a dimension {*reserved for future use*}.

Creating New Dimensions Codes

Below is an example of adding an account manually:

1. Click the **New** button on the ribbon and an empty row is inserted on the top of the dimension list.

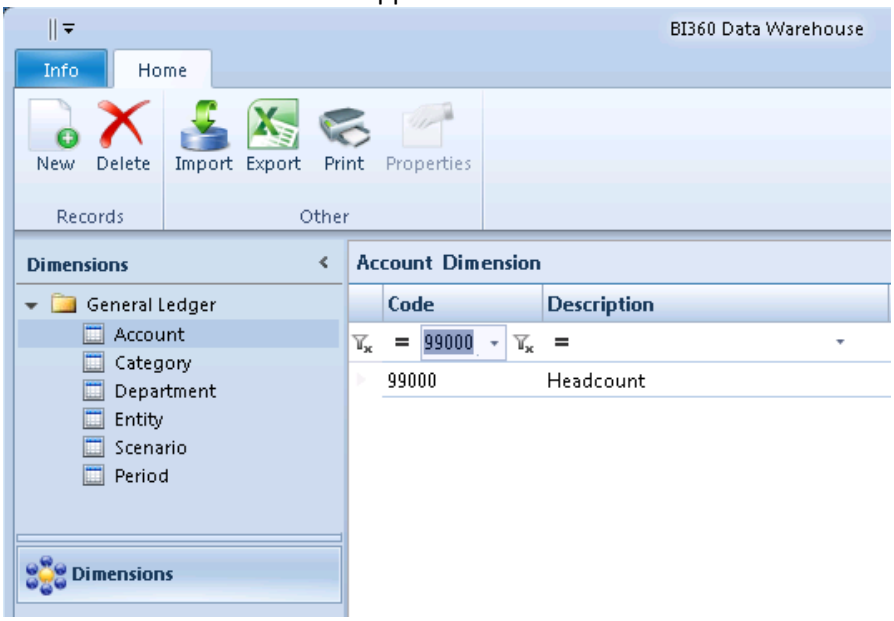


2. Enter **99000** in the *Code* column and **Headcount** in the *Description* column (see image on the next page).
3. To save press **Enter** and another new row appears.
4. Press **Escape** or **Cancel New Record** if no other accounts are to be added.
5. Exit the account dimension by clicking on any other dimension in the *GL* module (menu on the left side of your screen). Note that the accounts will be sorted by the account code (alphanumeric sort), so the new accounts added will appear in the sorted order and not at the top of the table as the print screen shows above.

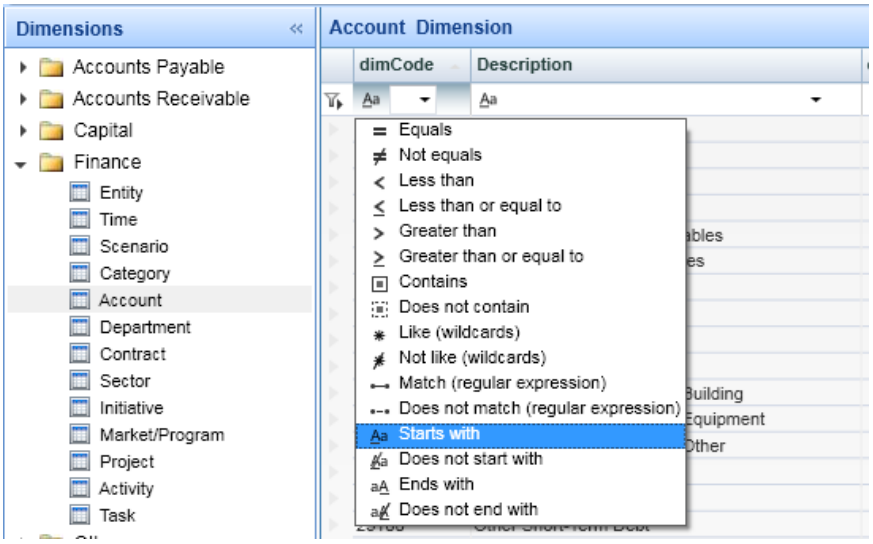
Deleting Dimensions Codes

To delete a code in a dimension list, select the dimension and hit the **Delete** button on your keyboard. Users may also click the **Delete** button found in the *Data Warehouse Manager* ribbon. The example below uses the account dimension in the *GL* menu.

1. Click on the **Account** dimension in the **General Ledger** module.
2. Find account "99000" by scrolling to the account or by using the filter for the account code. This can be done by clicking to the right of the "Aa" symbol in the column header and entering the number 9 (resize the column if it is not wide enough to see the number you enter). Those accounts that start with nine will now appear.



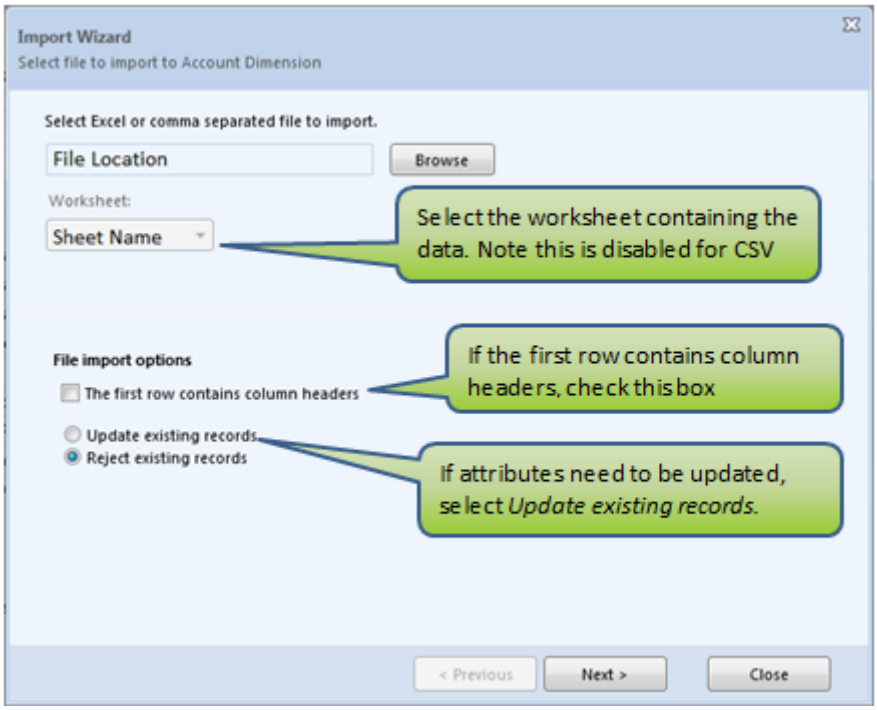
Alternatively, sort the list by ascending or descending order or use the advanced filtering and choose the appropriate filter option.



Import Dimension Wizard

The import wizard is a quick and easy method for loading dimension codes into the *Data Warehouse*. The wizard can read both Excel based files as well as comma separated files (.CSV). The steps to import dimension codes are mentioned below:

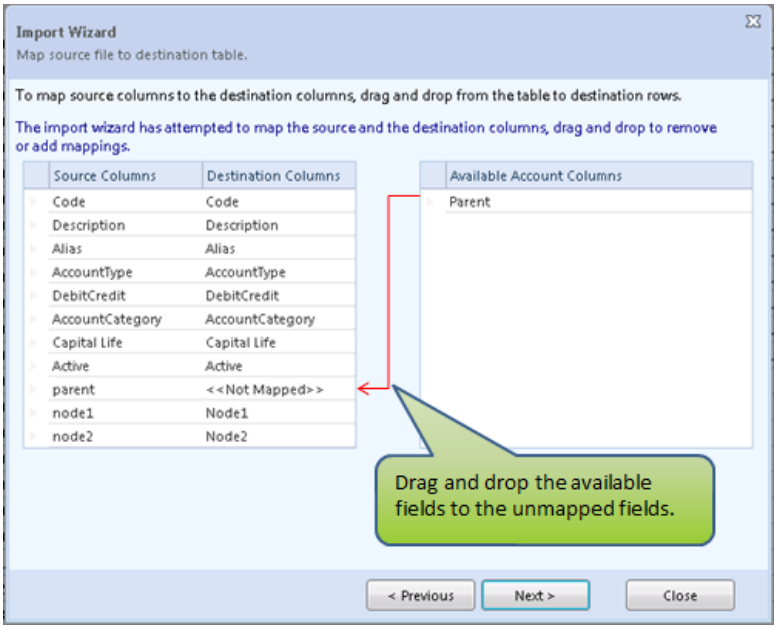
1. From the *Dimension* menu, click **Import** from the ribbon menu.
2. Select a file by clicking the **Browse** button. The file format may be .CSV for Excel.
3. Select the worksheet to import (note this dropdown will be disabled when a .CSV file is selected).
4. If the first row contains headers, select the checkbox. Selecting this option will enable automated mapping on the next wizard screen.
5. If the dimension member attributes, such as description or any UDF field needs to be updated, select the option to **Update existing rows**. Otherwise, leave the default option to **Reject existing rows**.



Mapping

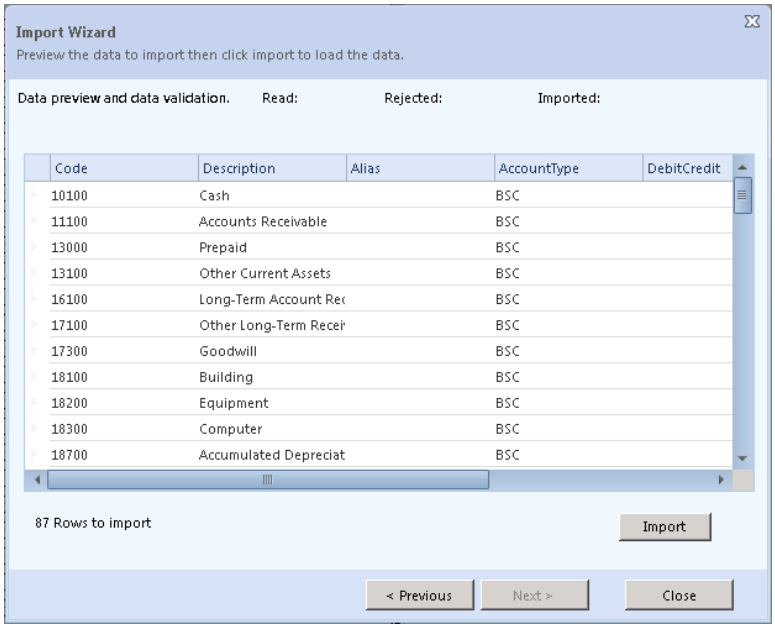
The mapping page will attempt to automatically map each field from the source file to the destination dimension. This action will only occur if the flag ***First row contains column headers*** was checked on the previous screen.

The screenshot example below shows that most fields mapped automatically. However, the source file has a header labeled “Parent”, which is different from the column title “parent”. To map “Parent” to the proper destination column, simply drag Parent to the <<Not Mapped>> field in the Destination column. If a field is not mapped from the accounts columns to the destination columns, then the data in the column will not be imported.

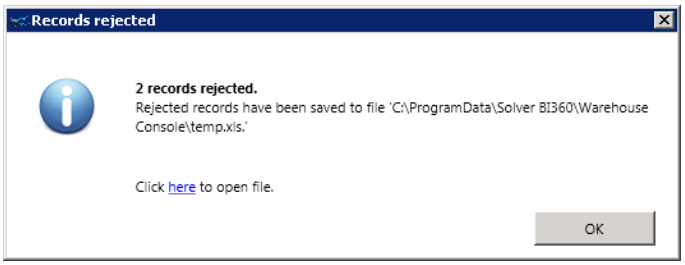


Import

The final screen within the import wizard will show the data to be imported. Scan the data to confirm the fields have been mapped correctly before importing.



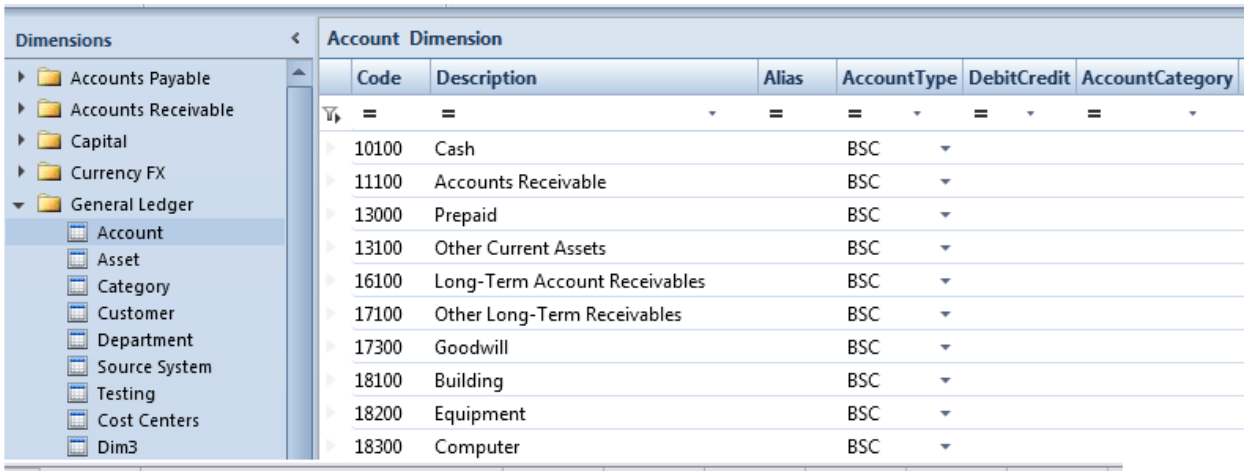
To start the import process, click the **Import** button. The data has been imported! If errors were encountered, then the rejected records will show with a related error message. More details on the rejected records are available in a separate file. The rejects can be investigated and imported again.



For Windows TS 2003 or Windows XP OS, the error file can be found in C:\Documents and Setting\All Users\Application Data\Solver BI360.

For Windows TS 2008 or Windows Vista/7, the error file can be found in C:\ProgramData\Solver BI360.

The following is an example of an import file and also how it will appear in the *Data Warehouse Manager*. In the example, *Account* codes were imported.



	A	B	C	D	E	F	G	H
1	Code	Description	Alias	AccountTy	DebitCredi	AccountCa	RollUpDiv	Active
2	10100	Cash		BSC				TRUE
3	11100	Accounts Receivable		BSC				TRUE
4	13000	Prepaid		BSC				TRUE
5	13100	Other Current Assets		BSC				TRUE
6	16100	Long-Term Account Receivables		BSC				TRUE
7	17100	Other Long-Term Receivables		BSC				TRUE
8	17300	Goodwill		BSC				TRUE
9	18100	Building		BSC				TRUE
10	18200	Equipment		BSC				TRUE
11	18300	Computer		BSC				TRUE

Export Dimension Members

The codes contained within the dimension tables are referred to as dimension members. These can easily be exported to Excel using the **Export** button located on the ribbon menu. There are two options when exporting dimension members:

1. Export and open Excel without saving the file first.
2. Export and save to an Excel file. With this option, the file can either be saved or saved and opened. When saving the file first, there are three available formats to save as:
    a. .XLSX (Excel 2007 and above).
    b. .XLS (Excel 2003).
    c. .XLSM (Excel 2007 and above with macro enabled).

The exported data is based on the filtering at the time of export. For instance, if the account dimension is limited to only showing accounts that start with “1”, then an export saved with this filter set, will result in only those accounts appearing in the exported Excel file.

Processes

The BI360 *Data Warehouse Manager* comes with a **Processes** feature that allows for the creation, maintenance and running of business rules. Business Rules can only be created to alter the data within the BI360 database. By creating an xml file, more information can be found in the Anatomy of a Business Rule section, users can perform tasks such as currency translation, copying budgets to actuals and other processes needed to alter and move data.

Users can also create **Jobs**, which are scheduled Rules using *SQL Server Agent*. An example of how to use Jobs could be that nightly, SSIS brings in new data from an ERP system and then a Job is scheduled to perform currency translation on this new data. Jobs can only be run on the BI360 Rules and cannot be used with any other automation.

A Rule must have one parameter defined in order to kick off a Job.

To run a Job, SQL Server Agent must be started on the SQL server where the BI360 Database is located.

Accessing Rules and Jobs

To access Rules and Jobs the following permissions are required.

Users with sysadmin (SA) rights on the SQL server will be able to view all rules and jobs without any special permissions.

Note: the following must be given to all users (for windows authentication) or to the SQL user as defined in you system connection to the Warehouse.

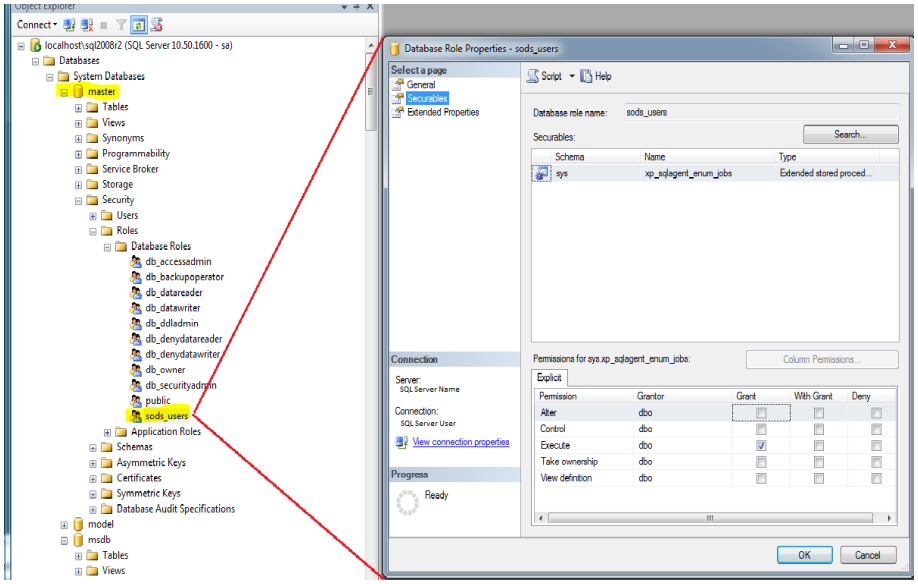
Mapping users to the BI360_user role on the master and msdb databases:

Please consult your IT department before granting the following permissions to certain Tables, Views and stored procedures.

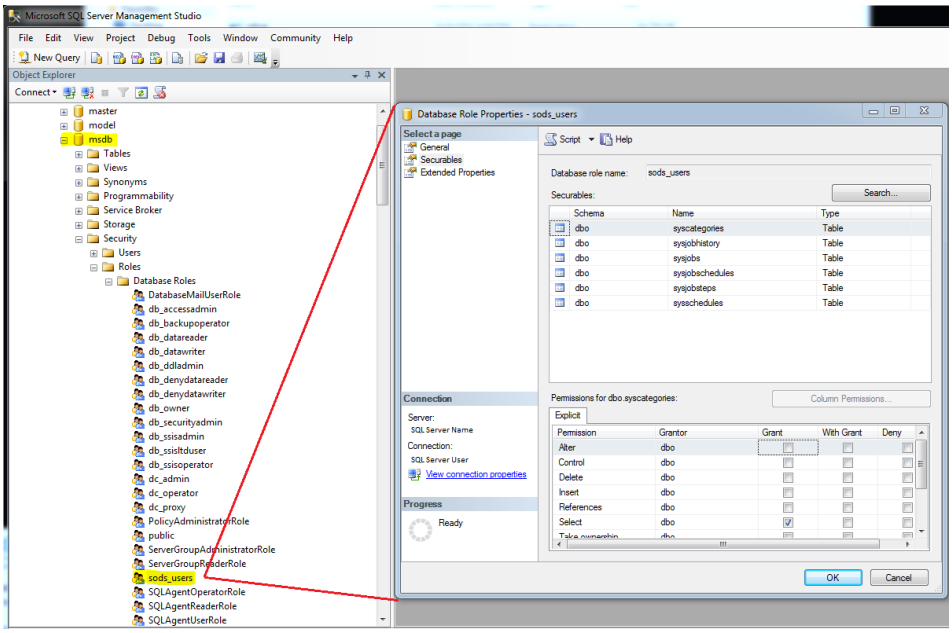
If the upgrade was performed by a user with sysadmin rights on the SQL server, a BI360_user role was created on the master and msdb databases. This role has the following permissions preconfigured:

To grant permission to only the Rules features, users only need to be mapped to the BI360_user role on the msdb database.

1. On the Master database, select “Execute” to the stored procedure xp_sqlagent_enum Jobs



2. On the msdb database, grant “Select” to the following tables
    a. Syscategories
    b. Sysjobhistory
    c. Sysjobs
    d. Sysjobschedules
    e. Sysjobsteps
    f. Sysschedules



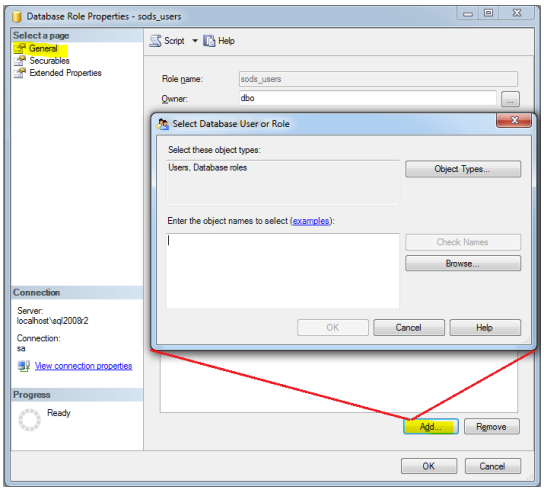
The following must also be configured for the user:

1. Grant “Execute” to the BI360_user role on the msdb.
    a. This is pre-configured if the upgrade is ran by a sysadmin.
2. Select “Grant” to “View Server State”. The server state is set to public by doing the following:
    a. Right click the server name and select **Properties.**
    b. Select **Permissions.**

c. Select a user in the Logins or roles grid.
d. Under the Explicit Permissions, scroll down to the bottom and check **Grant** on "View server state".

3. Map the user to the master and msdb databases

An administrator or IT department member may map a user or a SQL user to these roles through the General page.



On the General Page, click **Add** to open a new window and browse for users. Once all the users that will have access to Rules and Jobs have been added, click **OK** to return back to the General Page and apply the changes. Users will now have access to Rules and/or Jobs

Manually Configuring Access to Jobs via BI360_user

In order to configure access to Rules and Jobs, a sysadmin must create the BI360_user role on the msdb and master database. The following will guide users through creating this role on the msdb database. Users may follow the exact same steps to create the BI360_user role on the master database.

1. Within SQL Server Management Studio, right click on **Database Roles** found in the System Databases ->MSDB -> Security -> Roles and select **New Database Role…**
2. A new window will appear where users may type in a Role Name (BI360_user) on the General page. This role does not need any Owned Schemas.
3. Select the Securable page where users may grant "Execute" permissions to the following tables
    a. Syscategories
    b. Sysjobhistory
    c. Sysjobs
    d. Sysjobschedules
    e. Sysschedules

4. Lastly, add role member and users will have access to jobs

Remember to do the following:

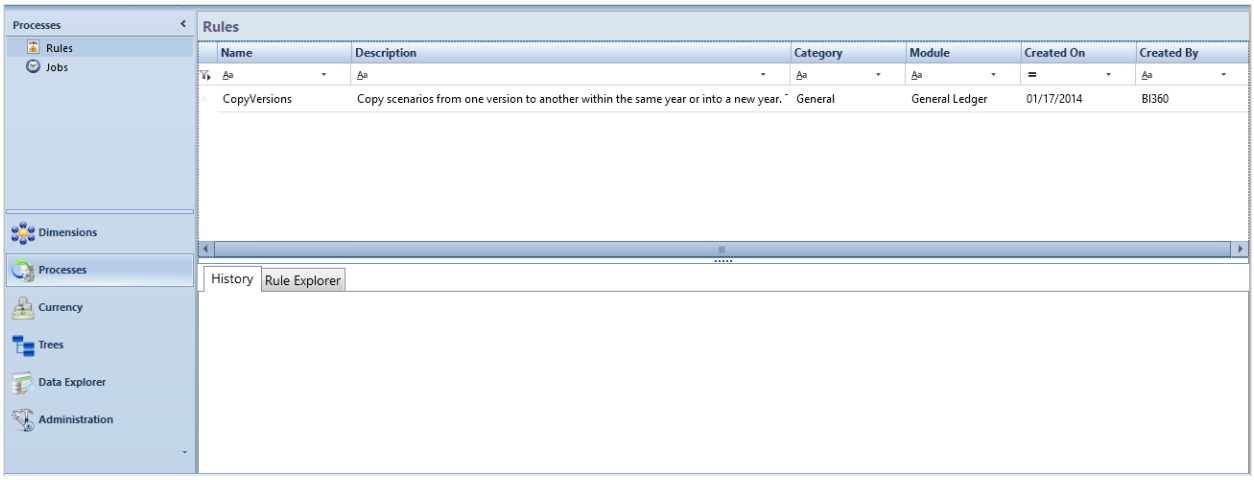
1. Grant “Execute” to the BI360_user role on the msdb.
2. Select “Grant” to “View Server State”.
3. Map the user to the master and msdb databases.

Rules

Rules in the BI360 *Data Warehouse Manager* are used to run processes across the *Data Warehouse* and can be found in the **Processes** menu item. These processes can include copying data from one year to another or applying currency translation.

In order for users to view Rules, they must be mapped to the BI360_user role on the MSDB database.

BI360 *Data Warehouse Manager* comes with one preloaded rule. Additional rules may be found on the support site, including the currency translation.



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Copy Version Rule

The *CopyVersion* rule is a configured rule that is available upon installation of the software. This rule allows the user to transfer data for one year to another year and from one scenario to another. In the lower grid (image above), users can see a history of when the rule was last ran. Additionally, by clicking the **Rule Explorer** tab users can view the rule syntax.

CopyVersion cannot be edited.

Additional rules may be downloaded from [BI360 Business Rules] (must have a log in to the Solver Support site)

Creating a New Rule:

Users may also create their own rules. New rules can be imported via a formatted XML file (see Anatomy of a Business Rule). Once the rule is generated it is saved as a procedure within the Warehouse database. The XML rule is made up of:

1. *Header Section*: This section defines the rule name, description, module, and whether or not the rule can be deleted.
2. *Parameters Section*: This section will define the lookup parameters available to the end user when processing the rules. The parameters are defined by specifying:
    a. *Table Name*: e.g. account dimension.
    b. *Label of Parameter*: The parameter name presented to the end user.
    c. *Variable Name*: Variable specified within the SQL procedure.
    d. *Parameter Type*: Specified as single or multi lookup. This will control the number of dimension members a user can select within the lookup box.

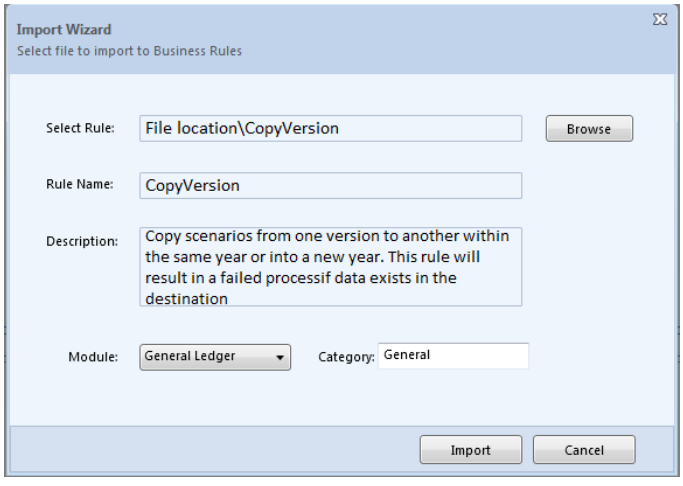
    Additionally, users may customize the look of their parameter window. The available features are to filter the parameter and define the columns that are visible in to lookup windows. An example is provided below.

    *<param table="d_Scenario" label="Source Scenario" variableName="SourceScenario" **columns** = "Code, Description" **filter**="Where code like 'A%'" lookupFieldName="" type="SingleLookup" />*

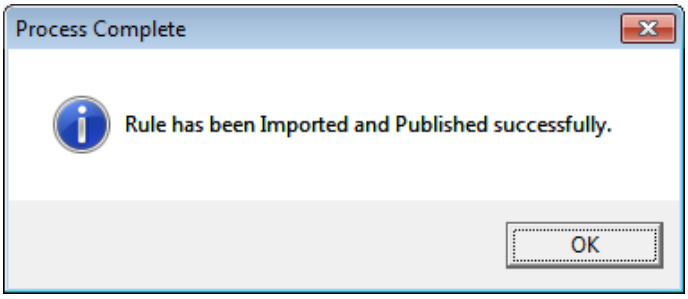
    In the above sample syntax, the user has decided to filter the Scenario dimension for all codes that start with an A (noted by *filter*). The user has also decided to show only the code and description in the lookup window (noted by *columns*) for this parameter.
3. *Rule Text*: contains the SQL script to be used as the *Stored Procedure*.

Import a New Rule:

1. Click on the **Processes** menu item.
2. There are two menu options, Rules and Jobs. Select **Rules**.
3. After selecting Rules, click the **Import** button from the *Home* ribbon.
4. Click on the **Browse** button to search for the XML rule file and click open to load the rule.
5. The rule header information will load into the import wizard.
6. Select the folder to store the rule and click **OK**.



7. A message will appear once the rule finishes loading.



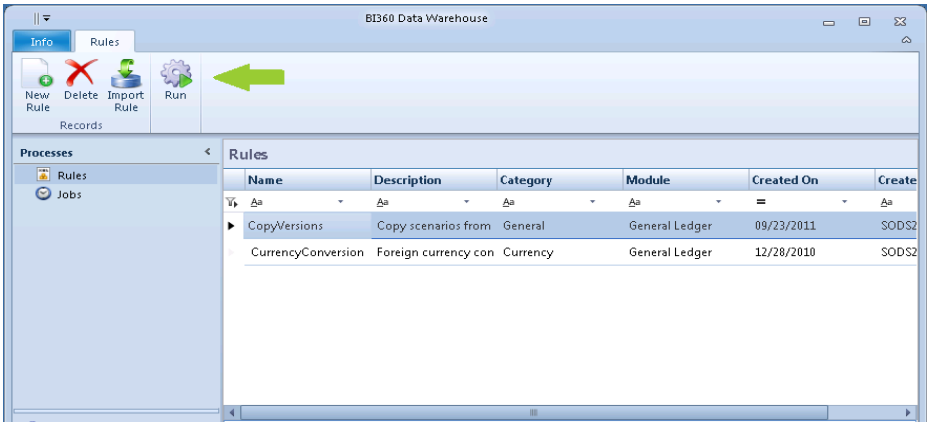
8. The rule will now be visible from within the Rules menu.

Executing Rules:

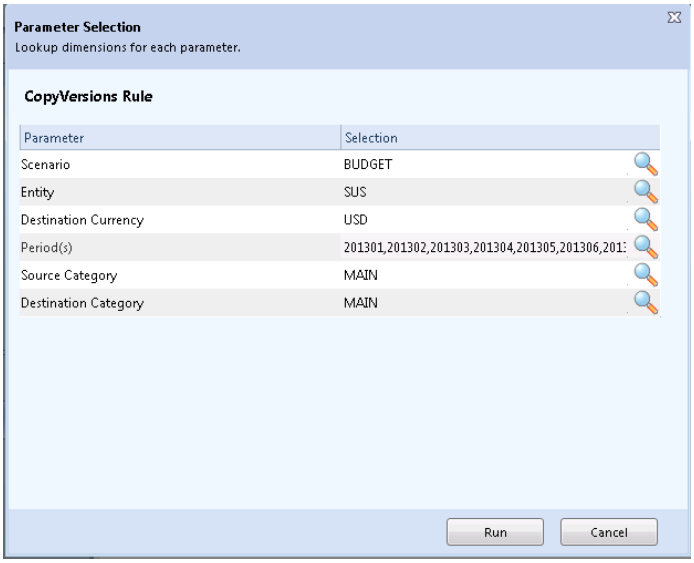
Once the rule has been created, it is ready to be executed. There are two methods to execute a rule:

Manual Run Option

1. From the **Processes** menu, select **Rules.**
2. Click on the rule to be executed and select **Run** in the *Rules* ribbon.



Type in or look up the selections for each parameter and click **Run**.

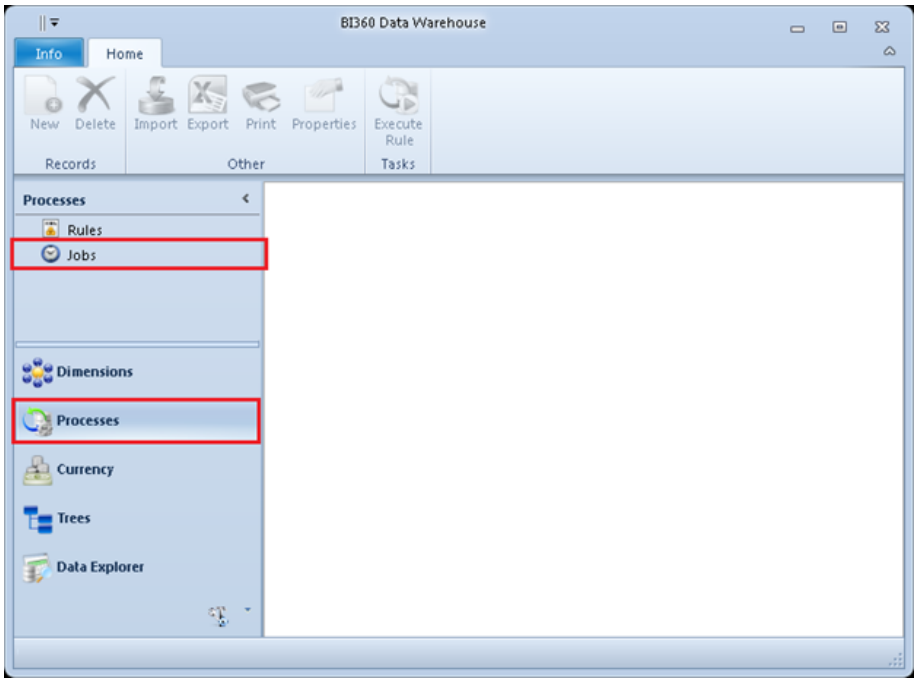


3. Once complete, a message dialog will confirm successful execution of the rule. While the rule is in progress, if there is an error, the data will be rolled back and a message will notify the user of the error.

Please see the *Technical Specifications* below for details on the anatomy of a business rule as well as a sample XML rule.

Jobs

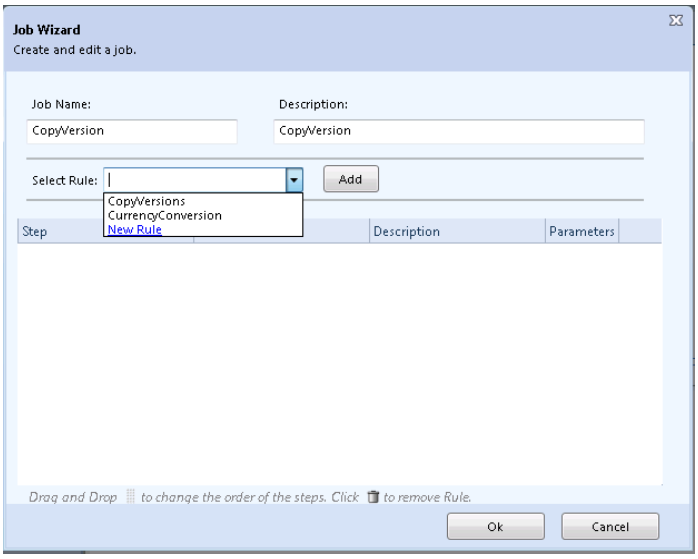
Jobs option allows for the creation of scheduled rules from the *SQL Server Agent*. Using a rule that has already been imported or created from the Rules menu, the user can choose to schedule when a business rule will run. It is important to note that the *SQL Server Agent* must be running. This is started through the *SQL Server Management Studio*.



With the previously mentioned SQL Server access rights, users will have access to the Jobs menu. The following will guide users through setting up Jobs.

Upon opening the **Jobs** sub-menu, select **New Job** in the upper left hand corner. A new window will appear on the screen requesting the following information:

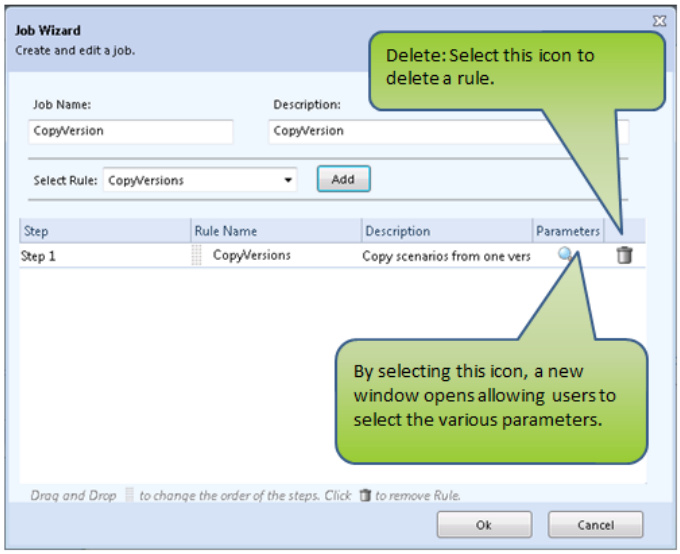
1. Job Name: User defined name for the job.
2. Description: User defined description for the job.
3. Select rule: Drop down box containing all rules found the *Rules* sub-menu.
4. Add: Adds the selected rule as a new step in the grid below.



Note that all fields must be completed in order to save and exit the window. This includes filing out the Parameters after adding a rule.

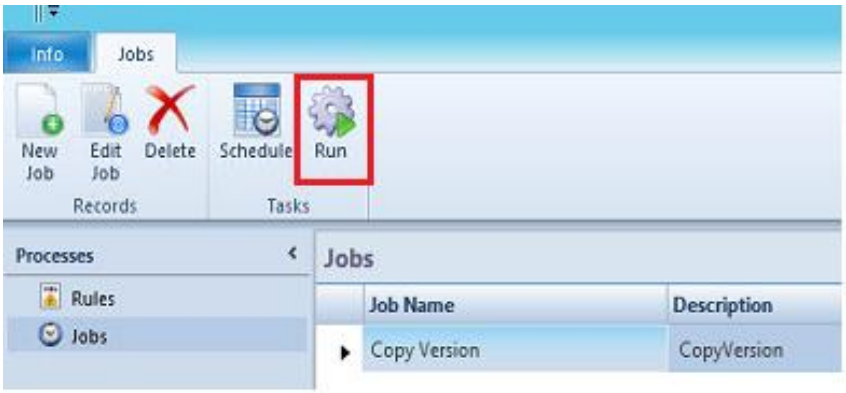
After the new rule has been added, the grid below will show the new rule. Users may then choose to edit parameters and delete the new rule.

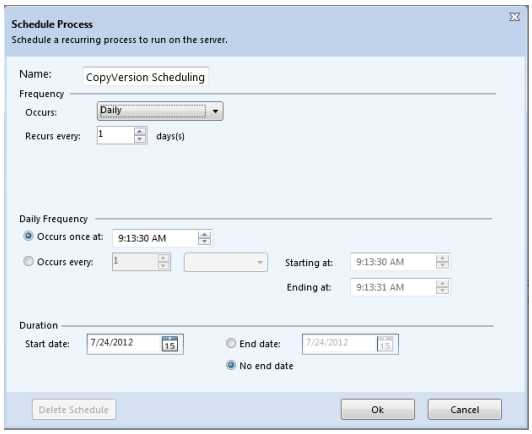
1. **Parameters**: Designated with the magnifying glass, select this option to define the parameters for which the job will run for.
2. **Delete**: Users can delete a rule.



After the job is formatted, the options to 'Schedule' and 'Run' are available in the **Jobs** ribbon.

1. Schedule: users can create, update or change the scheduled run time of a Job. The schedule is created in Windows Task Scheduler.
2. Run: Similar to the *Run* icon in **Rules**, users can manually run a job using this icon.





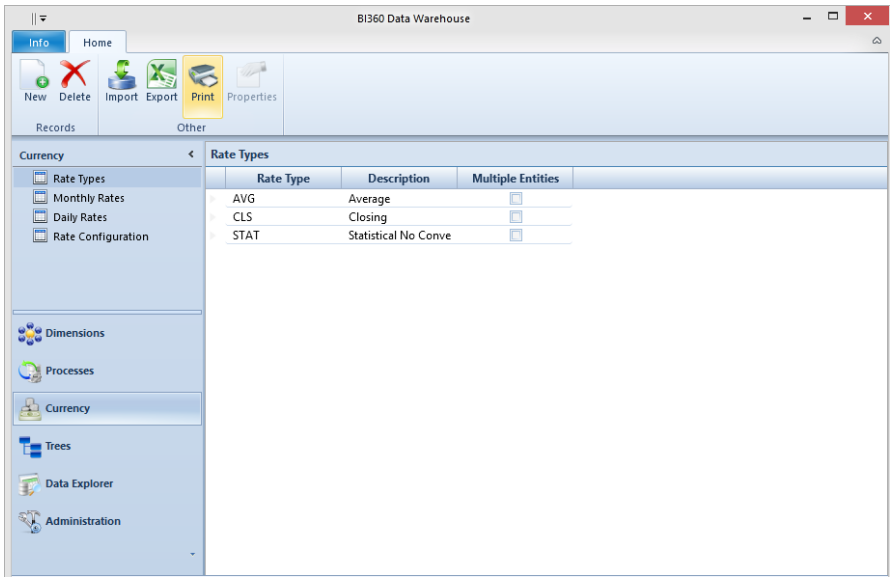
Within the *Schedule Process*, users can give the scheduled *Job* a user defined name, select its frequency, daily frequency, and the availability of the job. Once filled out, simply select **OK** and your scheduled job has been created.

Currency

The BI360 *Data Warehouse Manager* contains advanced currency features which work with the **Rules** inside the BI360 *Data Warehouse Manager* to calculate foreign currency exchange. For more information on Currency translation, please read the BI360 White Paper - Financial Consolidation found on the Solver Support site. It is required to first configure the currency in order to properly load the transactions and utilize the Currency features.

To start off, enable the Currency dimension from **Administration -> Dimensions**. Next, Currency must be mapped to the specific Modules that it will be used for. This is performed through the Module Schema in the Administration menu.

The currency menu on the left hand side will not appear until the currency dimension has been enabled in Administration -> Dimensions.



The currency tables can accommodate the following.

- *Daily rates*: can be loaded from a source system via SSIS integration or imported as an Excel file. Daily rates cannot be added from the *Data Warehouse Manager* Interface.
- *Monthly rates*: Monthly rate may be directly entered from the *Data Warehouse Manager* interface, imported through SSIS, added through an import file or may be calculated from within the application based on an average of the daily rates for that calendar month.

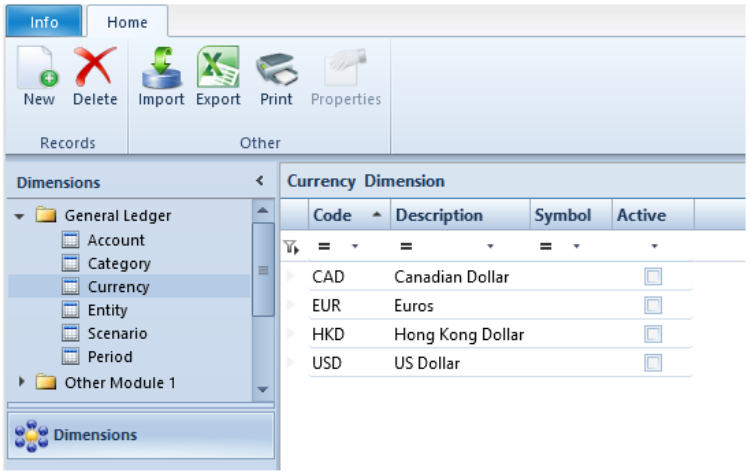
By combining several embedded features in application, the end user experience is very simple yet advanced. The currency conversion process has several elements which are described in the next sections.

Currency Code

Currency Code can be manually entered, imported from a file (CSV or Excel files), or imported via SQL Server Integration Services (SSIS) integration. The currency codes will then be available in the entity dimension as a currency field.

The format for an import file is as follows:

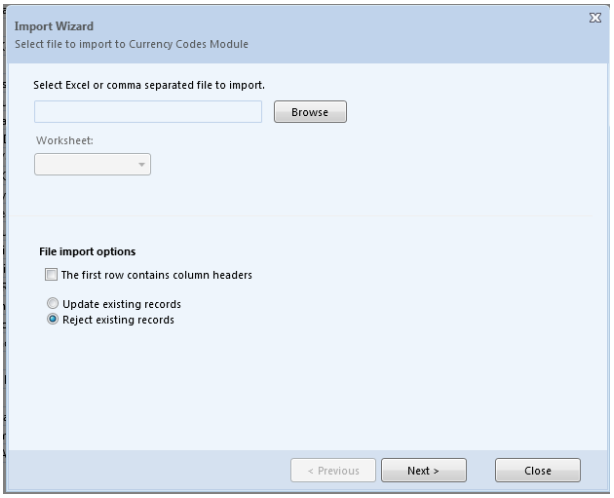
	A	B	C
1	Code	Description	
2	USD	US Dollar	
3	HKD	Hong Kong Dollar	
4	EUR	Euros	
5	CAD	Canadian Dollar	
6			
7			



As with all imported files, there is a column header which must have the following:

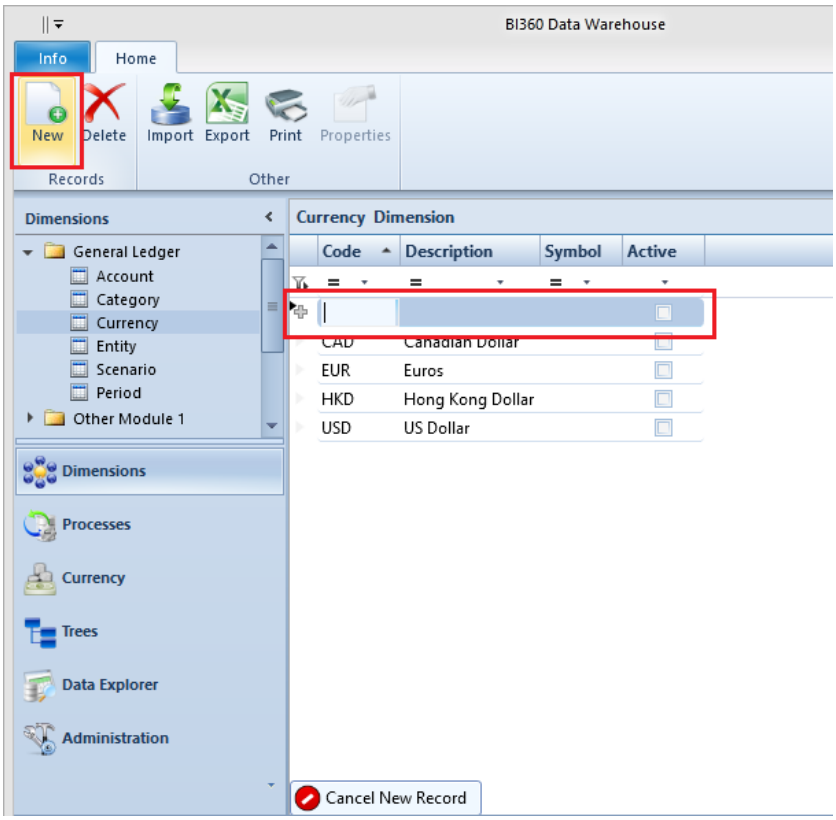
1. **Code**: User defined abbreviation for a currency
2. **Description**: User defined description of the currency code

After the Excel sheet is formatted, click **Import** inside the **Currency** ribbon. An import wizard similar to the ones shown in the previously mentioned section on Importing Dimensions will appear.



Simply add a file, select a worksheet and choose the File import options. After completing these fields, click next. On the next page, you can view the file being imported and choose to Import the file. The currency codes are now added to the database.

Users may also manually add a currency by selecting **New** from the Home ribbon.



A blank box will appear under Code. Add the desired currency code and description and hit enter. The currency has now been added to the database. Repeat the steps as many times as desired.

When all currency codes have been entered, click **Cancel New Record** at the bottom of the screen or simply hit the **Esc** key on your keyboard to exit the Currency code entry session.

This completes adding the currency codes to the Data Warehouse Manager. The following steps to configure currency are managed by clicking on the Currency menu on the left hand side.

Rate Type

Rate Types can be manually entered, directly imported from a file (CSV or Excel files), or imported via SSIS integration. Rate types can be defined as required, however, the most common rate types are:

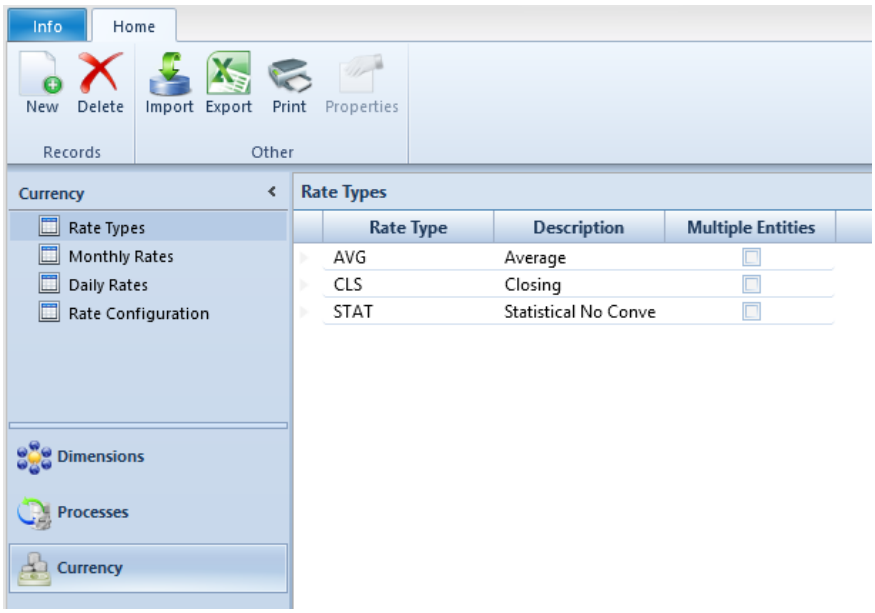
a. *Average (AVG)*: typically used for the income statement accounts.
b. *Closing (CLS)*: typically used for the balance sheet accounts.
c. *Budget (BUD)*: typically used for financials specific to Budgets.
d. *Historic (HIST)*: typically used for rates specific to an entity.
e. *Statistical (STAT)*: typically used for numbers not posted to the general ledger (such as percentages).

The format of the import file is as follows.

	A	B	C
1	Rate Type	Description	Multiple Entities
2	AVG	Average	FALSE
3	CLS	Closing	FALSE
4	STAT	Statistical No Conv	FALSE
5	BUD	Budget	FALSE

The column headers are as follows:

1. Rate Type: An abbreviated form of the rate type. Max 10 characters
2. Description: A description of the rate type
3. Multiple Entities: Designate the rate type for use with Multiple Entities.
    a. True = Enabled
    b. False = Disabled.



Moreover, each rate type can be customized for each entity available in the entity dimension. To enable this feature, place a checkmark in the *Multiple Entities* column for the rate type. To customize the *Monthly Rates* for each currency code per entity, choose the appropriate rate type and entity in the drop down box.

Monthly Rates

As previously mentioned, there are 4 ways to add monthly rates to the Data Warehouse Manager.

1. Manually entered into Data Warehouse Manager.
2. Imported via SSIS.
3. Imported via an import file.
4. Added by running a "Task" to calculate the monthly rate based on an average of daily rates for that calendar month.

Currency values are imported to the fiscal year period.

Currency codes must be added to the Currency dimension before adding monthly rates.

Importing Monthly Rates

To import *Monthly Rates* from a CSV file, click the *Import* button in the *Currency* ribbon to start the import wizard. The headers must match the specific format and case sensitivity shown in the below sample import file. Note that when using *RateTypes* that have *Multiple Entities* enabled, the *Entity* column should reference the desired entity code and not Default like the sample given below.

Month	Entity	RateType	CurCode	Rate
200901	DEFAULT	AVG	CAD	0.82
200902	DEFAULT	AVG	CAD	0.81
200903	DEFAULT	AVG	CAD	0.8

Within the Monthly Rates menu, there are also *Tasks*. Found in the Currency ribbon, 'Tasks' add versatility to the BI360 *Data Warehouse Manager* and provide users with more customization options. Below is a description of each 'Task'.

Calculate Rates

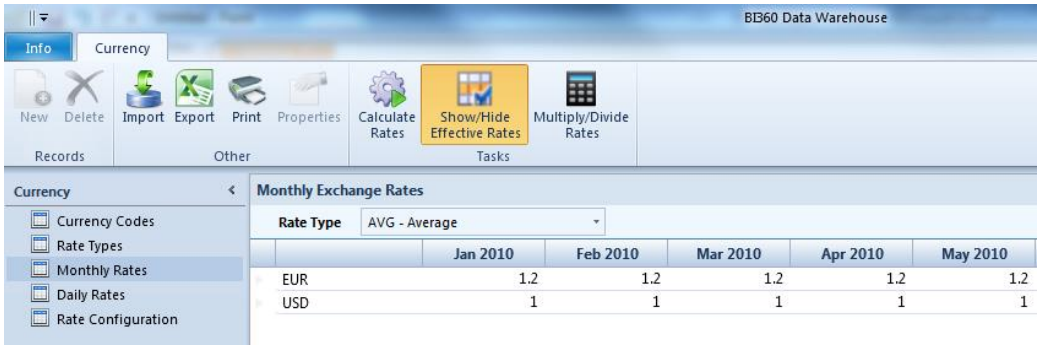
The *Calculate Rates* option converts daily rates uploaded from SSIS into a monthly rate. Users can choose to update only empty months, all periods, or specific periods. Simply match the FY Period with the calendar Month, check the Update box and click process. A warning message will appear if the Daily Rates table is incomplete for a month. Also If Exchange rates already exist in the selected periods, a message will ask if they should be overwritten. Otherwise, a *Monthly Rates Successfully Updated* window will appear.

When using calculate rates, the calculation does the following:

1. Takes the average for the period and adds it as an AVG rate type to the monthly rates.
2. Takes the last rate of the period and adds it as a CLS (closing) rate for to the monthly rates.

Show/Hide Effective Rates

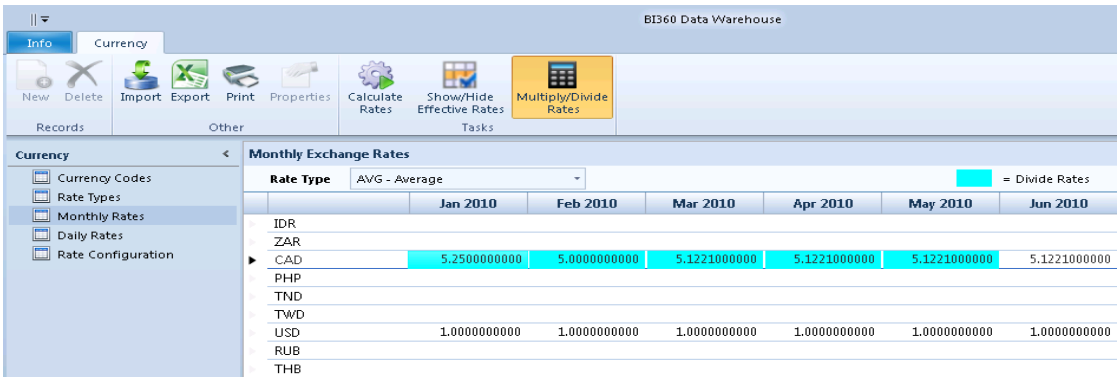
The **Show/Hide Effective Rates** allows the user to spread a single currency rate across the whole database calendar or to the next monthly rate entry. For example, United States Dollar (USD) is chosen as the base rate in the figure below. By selecting **Show/Hide Effective Rates**, the base (1.00) rate is spread across the whole database calendar after inputting the number once. In the figure below, originally only 1 and 1.2 were entered for USD and EUR respectively. After selecting **Show/Hide Effective Rates** (indicated by the highlighted box) the values are spread across the whole database.



Users cannot make changes in the *Show/Hide Effective Rates* mode; all changes must be made when the *Show/Hide Effect Rates* is turned off. Simply toggle the Show/Hide Effective Rates to switch back to the monthly view.

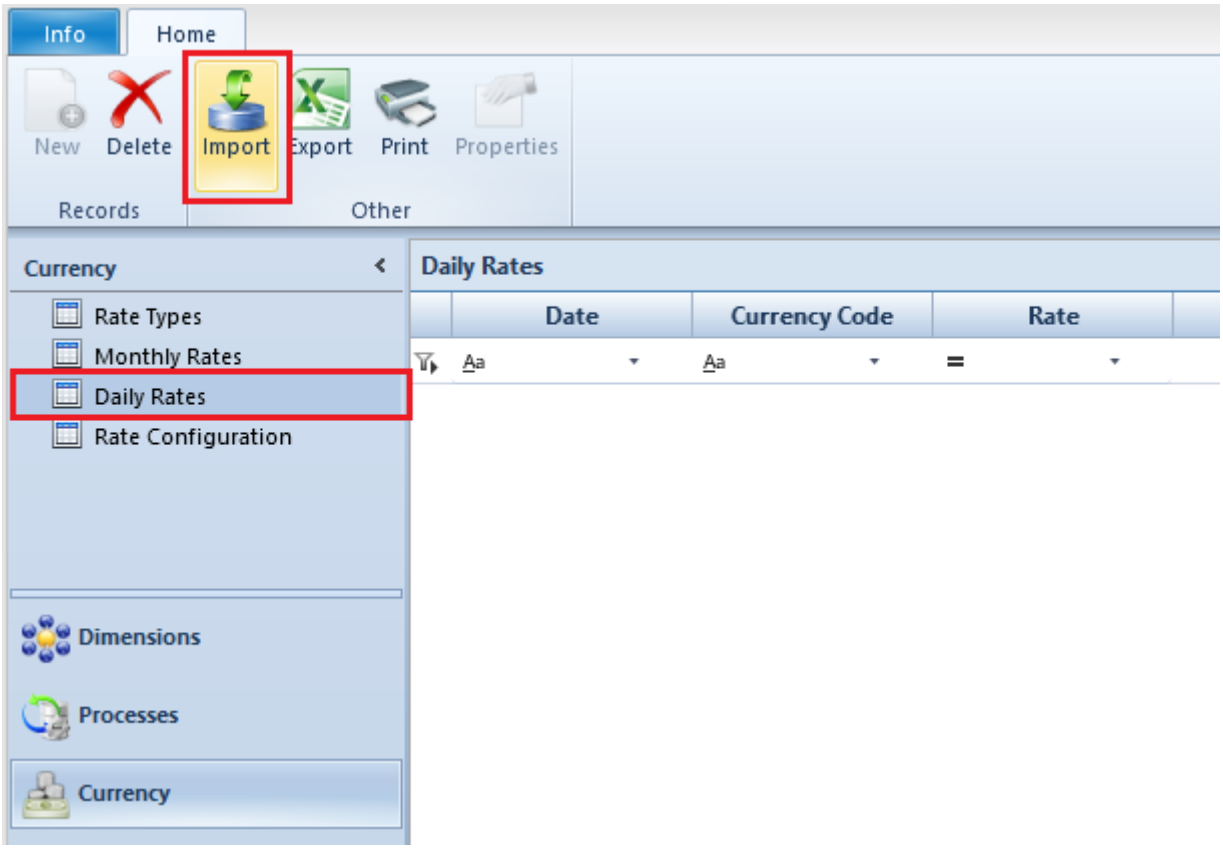
Multiply/Divide Rates

The **Multiply/Divide Rates** icon gives the user to the option to choose whether to multiply or divide the entered amount for another currency by the base rate. The conversion is done through a rule (CurrencyConversion), previously mentioned. The base rate is the currency that is set to 1.00. The default setting for the program is to multiply any currency by the base rate. However, if a currency is used that has a higher value than the base rate, the user can select various periods and divide by an entered conversion figure.



Daily Rates

Daily spot rates can be imported into the Warehouse. The source for the daily rates is typically the ERP or other external database. Daily rates can be directly imported with a .CSV file or imported via SSIS integration. Daily rates can be manually entered or adjusted.



To import *Daily Rates* from a *.CSV* file, click the *Import* ribbon button to start the import wizard. The headers must match a specific format shown in the below sample import file.

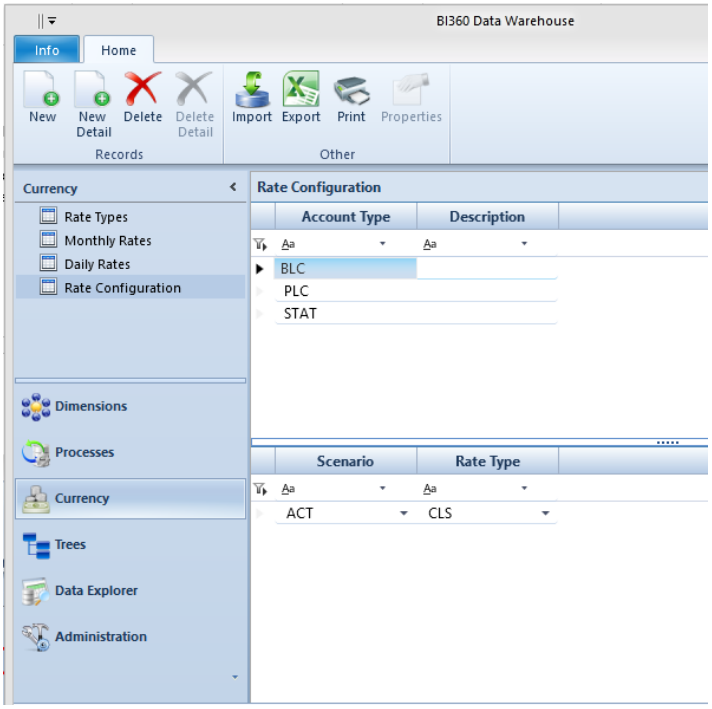
	A	B	C
1	Date (YYYYMMDD)	Currency Code	Rate
2	20120101	EUR	1.0482813445724700
3	20120102	EUR	1.2857407511243900
4	20120103	EUR	1.4540686816315100
5	20120104	EUR	1.6525719168497000
6	20120105	EUR	1.1322372416610300
7	20120106	EUR	1.9306558952751200
8	20120107	EUR	1.8090235724915700
9	20120108	EUR	1.7731662273101500
10	20120109	EUR	1.3260016747513500
11	20120110	EUR	1.5652543371595900

Note that the *Date (YYYYMMDD)* is an integer in the *YYYYMMDD* format.

Rate Configuration

Rate Configuration allows mapping for the fields **Account Type** (i.e. Balance Sheet), **Scenario** (i.e. actual or budget), and **Rate Type** (i.e. average). The purpose of this table is to help automate the currency calculations. The scenario and rate type are lookups on the *Scenario* dimension and *Currency Rate Type* tables; therefore, the members must be loaded before the *Rate Configuration* can be completed.

When running the currency translation rule, the rule will look at the *Account Type* field for the transaction based on the *Account Code*. It will then reference the *Rate Configuration* table to determine the rate type to use based on the combination of account type and scenario.



Configuring a Rate Type

If another Rate Type needs to be configured, the following should be performed.

1. Click Currency -> Rate Configuration -> New.
2. In the main window of Data Warehouse Manager, the user will enter an Account Type entry sessions. Type in the new Account Type and hit **Enter**.
3. The user will now be taken to the bottom half of the screen where the user must select a scenario and define the Rate Type. The available rate types are those that have been entered in the Currency -> Rate Types menu. Select the Rate Type and hit **Enter**.
4. Add additional Scenarios and Rate types to meet the business need.
5. Once all Scenarios and Rate Types have been configured, click **Cancel New Record** or simply hit **Esc** on your key board.

In order to save the Account Type, a Scenario and Rate Type must be added.

Trees

The tree builder is used to manually create dimension hierarchies. Hierarchies may be built on any visible dimension and can contain an unlimited number of trees for each dimension.

Trees may be used for many purposes such as reporting and for business rules within the processes menu. Currently, the primary function of the trees is to maintain entity hierarchies for posting eliminations. Other uses of the trees include, but not limited to, calculating and storing aggregated data within the Warehouse.

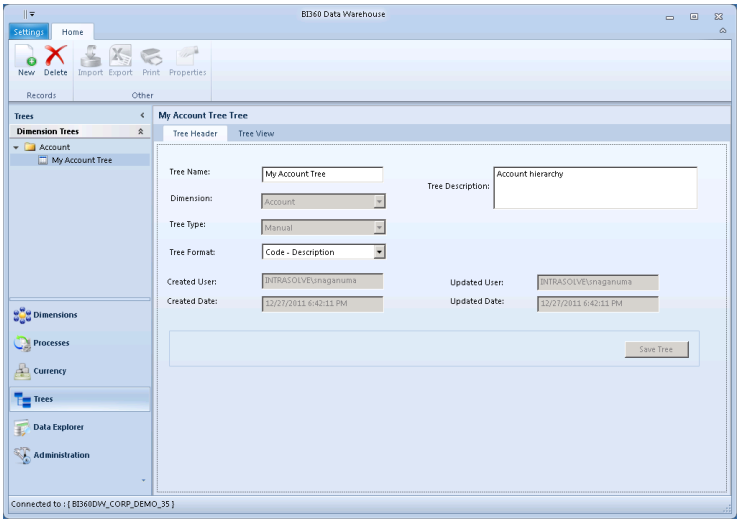
Trees can be created manually or imported as an Excel file. The following will describe how to create *Trees* using either method.

Before proceeding, please reference the BI360 Data Warehouse Trees article found on the Solver Support site for more information on building and reporting of Data Warehouse trees. This article includes useful information such as what dimensions trees may be built off of along with an explanation of implementing security when using Data Warehouse trees.

Creating and Maintaining a Dimension Tree

To create or maintain a dimension tree, follow these steps:

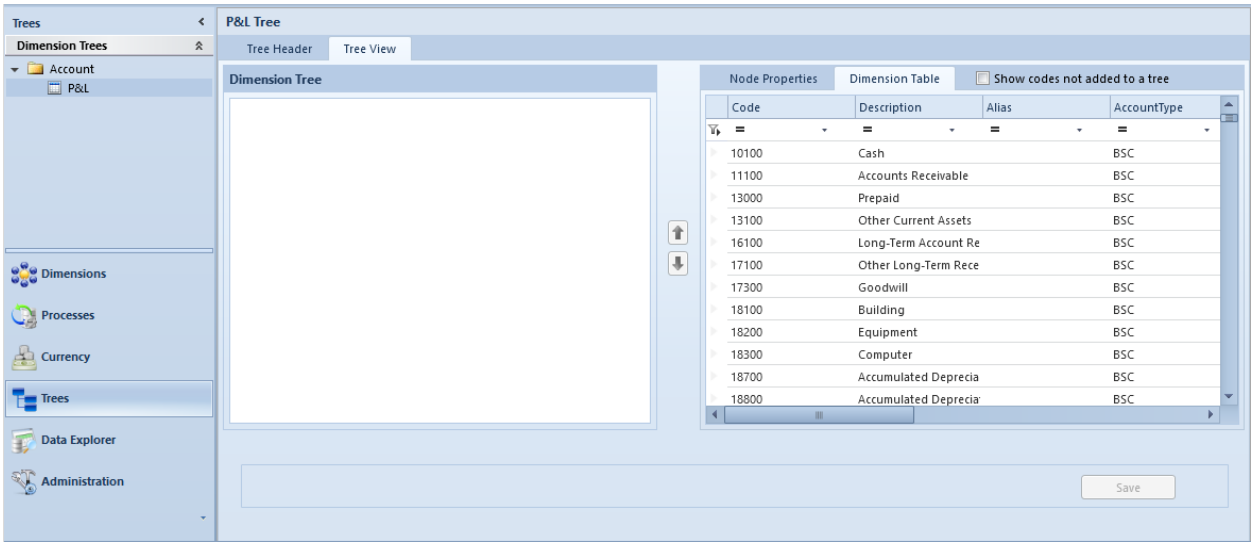
1. Configure a new Tree Header:
    a. Click on the tree menu then click the **New** icon from the ribbon menu.
    b. Enter a tree name.
    c. Select a dimension from the dropdown (note only dimensions flagged as visible will be available).
    d. Select the **Tree Type** (currently only **Manual** is available).
    e. Select a **Tree Format** (this is only for presentation purposes).
    f. Enter a **Tree Description** (optional).
    g. Click **Create Tree** to save the tree header information.



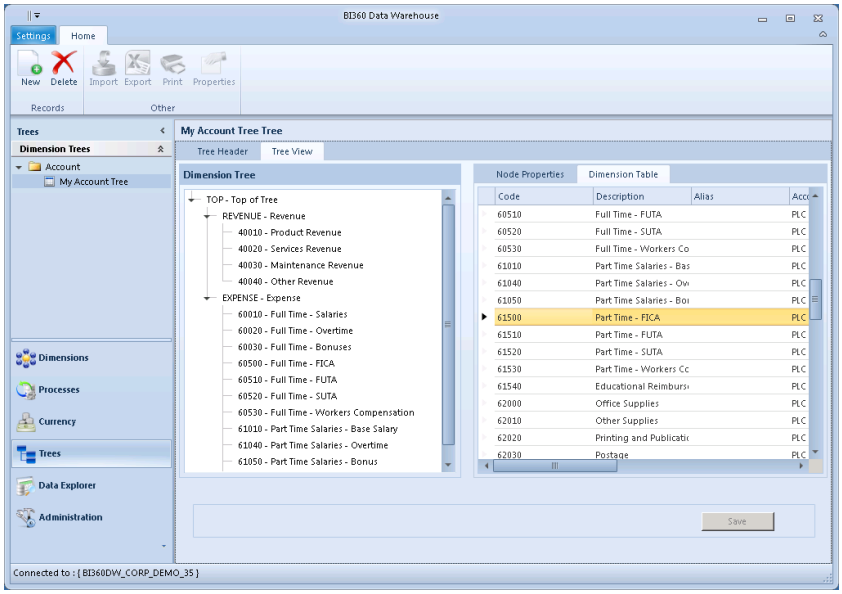
The *Dimension* and *Tree Type* cannot be changed after the tree is created.

Moreover, a **New Dimension Tree** folder will be added when a new unique dimension is used.

2. Build the tree structure:
    a. After clicking save above, the Data Warehouse Manager will load the tree configuration. You will notice that in the main grid, on the left hand side you on the **Tree View** tab and on the right hand side, you are on the **Dimension Table** tab.



    b. The dimension table will list all available dimension members for the selected dimension.
    c. To add a dimension to the tree, simply drag and drop members from the **Dimension Table** to the **Dimension Tree** section. (Hint: it is a good idea to create a "dummy" dimension member to use as the top of the tree).
        i. Users may use hold shift + click to select multiple dimensions to move over at once.
        ii. Click **Show codes not added to a tree** to filter the dimension table and filter out the codes that have already been added to the selected tree.
    d. Save the tree to store to the Warehouse by clicking **Save**.

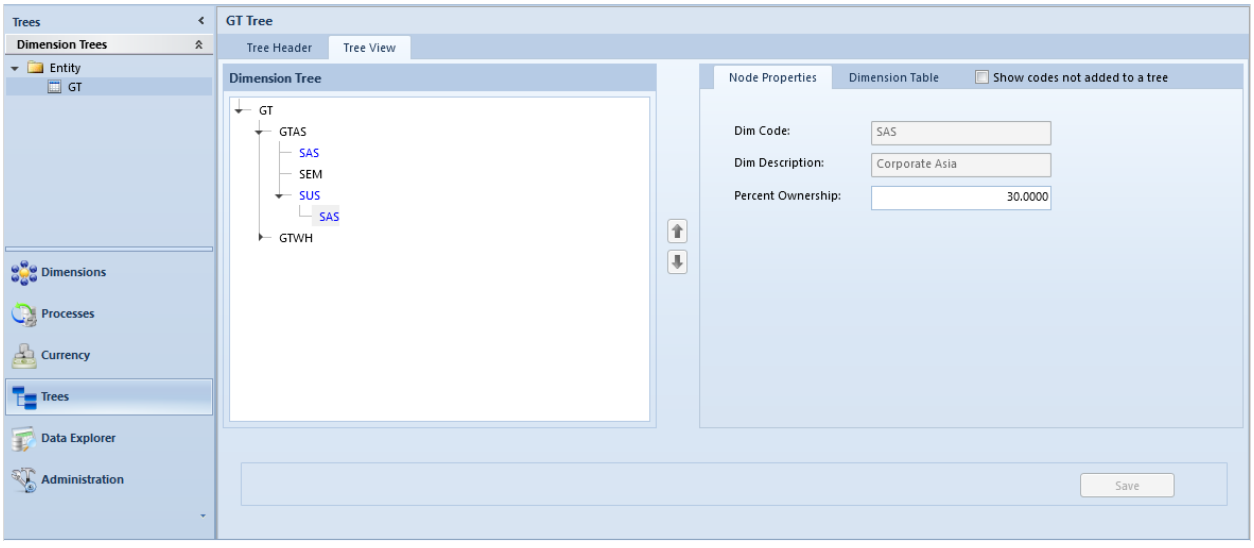


Node Properties/Percent Ownership

The *Node Properties* tab, found on the right hand side of the tree configuration menu, allows the user to define the percent ownership of a particular dimension member to the "parent" member. This is used primarily for minority interests and intercompany eliminations.

To define a percent ownership,

4. Select a dimension member from a saved tree from the **Tree View** tab.
5. Click on **Node Properties** on the right hand side.
6. There are 3 fields, two of which are inactive.
7. Change the Percent Ownership value based on the company's structure.
8. Click **Save**.



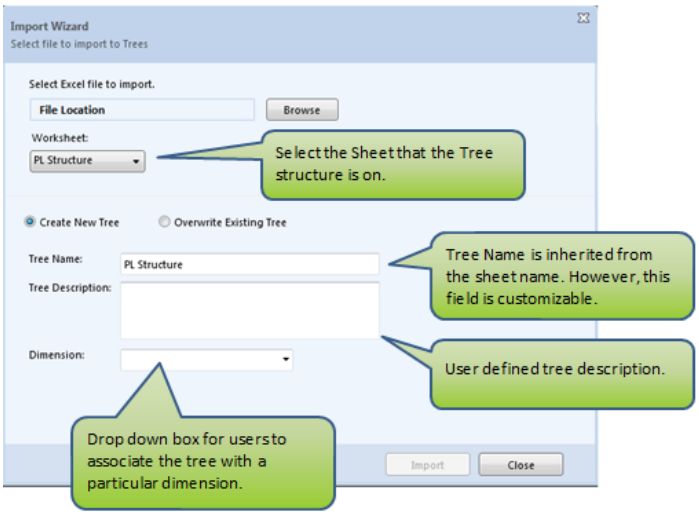
Importing and Exporting Trees

Users may also import and export trees using an Excel file. The steps to import a tree are as follows:

1. Create an Excel file with column headers titles “Level1, Level 2,…,Level N, Ownership”.
   a. Each “level” signifies a branch level in the tree.
   b. Ownership must be defined if the same code is referenced multiple times in the tree import file.
2. Following the screenshot below, create the desired hierarchy and save the file.
   a. It is important to note that all entries must be in the Data Warehouse. In the example below, Geographical Tree (GT) was added to the Entity Dimensions list. The importer reads off the “Code” name.

	A	B	C	D	E	F	G
1	Level1	Level2	Level3	Level4	Ownership		
2	GT				100		
3		GTAS			50		
4			SAS		10		
5			SEM		100		
6			SUS		60		
7				SAS	30		
8		GTWH			100		
9			SUS		40		
10				SAS	30		
11			SCA		10		
12							

3. Save the file and close out of the file.
4. Open BI360 *Data Warehouse Manager* and click **Trees**.
5. In the Warehouse ribbon, click **Import**.



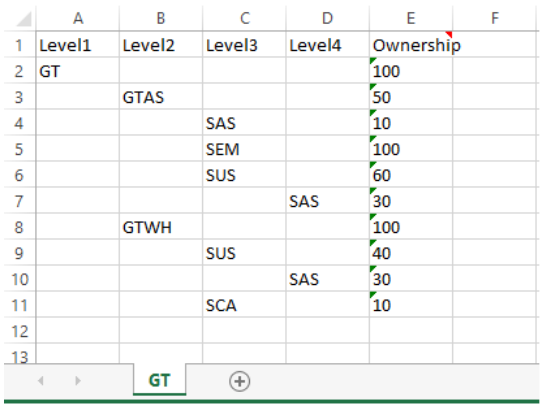
6. In the above screenshot, users select the file to upload, the Excel sheet where the tree structure is saved to, whether they are creating a new tree or updating an existing one, give a tree name and

description, and associating the tree with a dimension. Once all of these fields are filled, users can import the file.

   a. The Tree Name is inherited from the sheet name but can be customized.

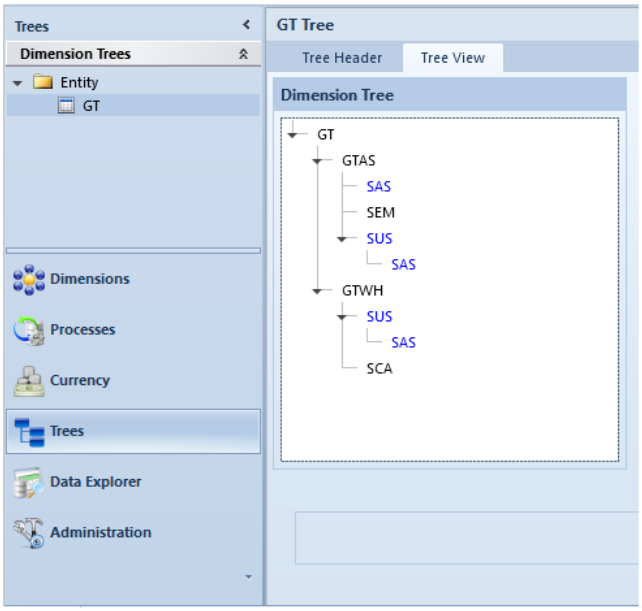
7. A confirmation window will confirm the successful import of the tree.

The below screen shot shows how the Excel file is translated to a BI360 *Data Warehouse Tree*



	A	B	C	D	E	F
1	Level1	Level2	Level3	Level4	Ownership	
2	GT				100	
3		GTAS			50	
4			SAS		10	
5			SEM		100	
6			SUS		60	
7				SAS	30	
8		GTWH			100	
9			SUS		40	
10				SAS	30	
11			SCA		10	
12						
13						

GT

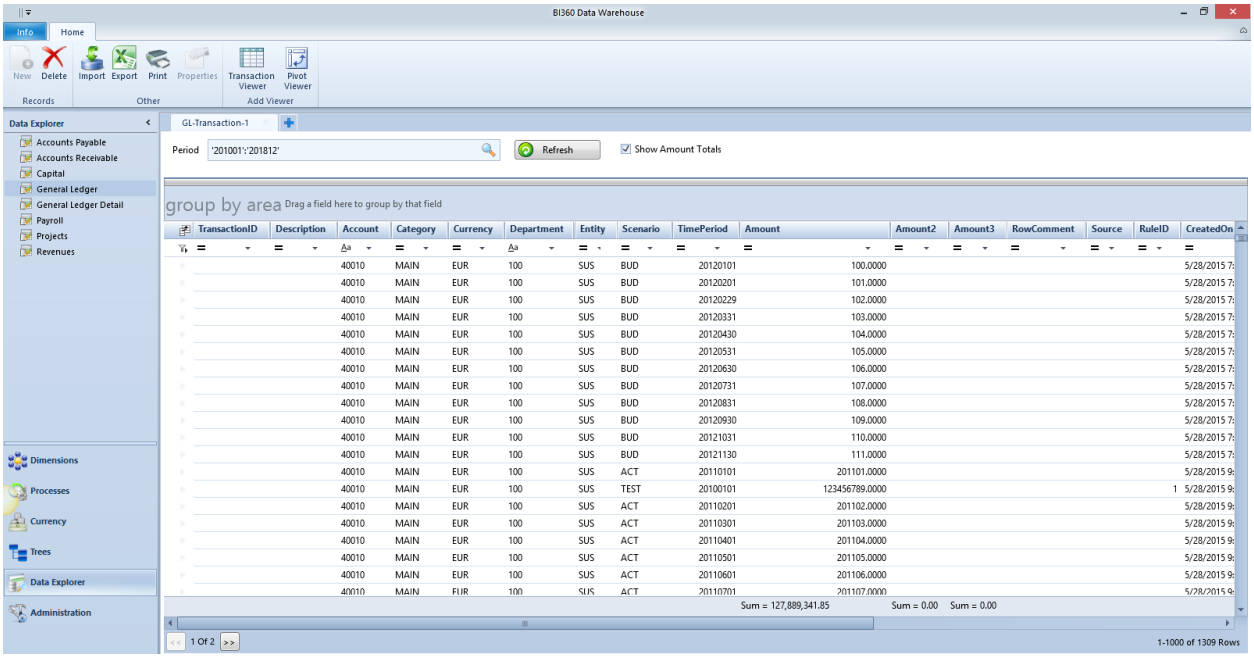


When creating a tree structure in Excel, be sure to leave no empty rows or columns within the tree data. The importer will see an empty cell and stop reading the file or return an error message.

Data Explorer

The **Data Explorer** menu item located at the bottom of the left navigation pane of the *Data Warehouse Manager* contains two core functions:

1. **View module data:** For quick ad-hoc viewing of data loaded into each module, users can use the *Data Warehouse Manager* or alternatively can use the *Report Composer*. There are two methods to view data:
    a. Transaction Viewer



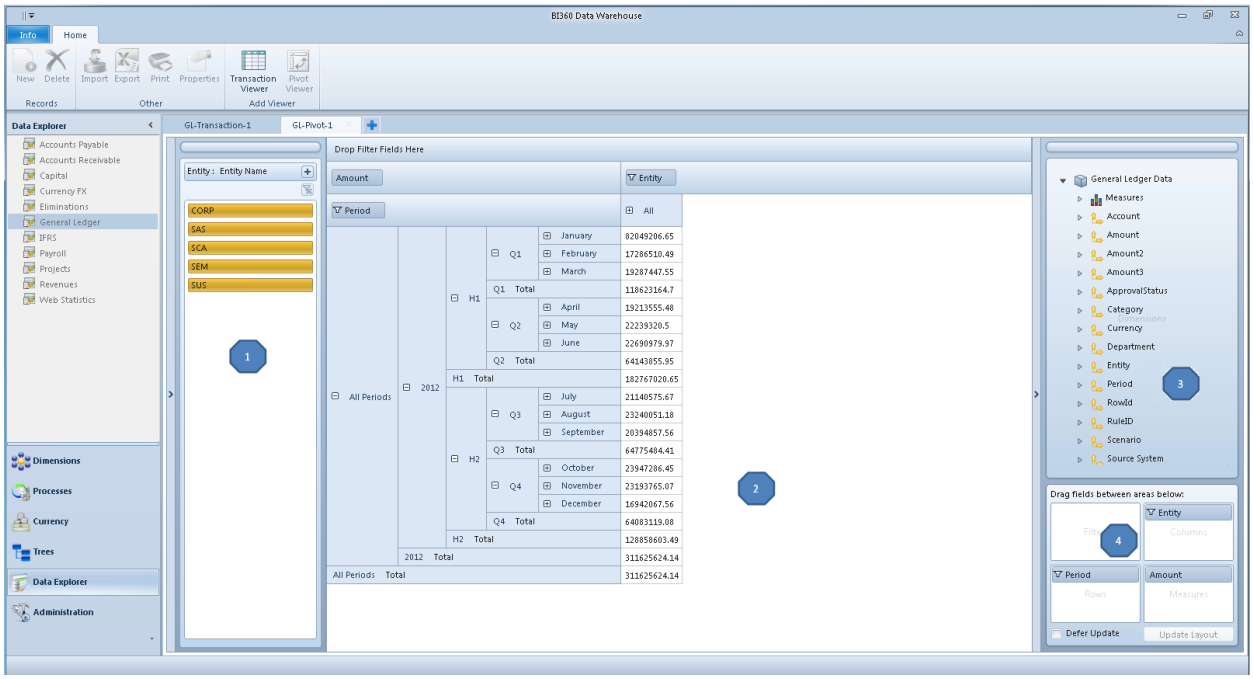
To access the Transaction viewer:

I. Click on the **Data Explorer** menu item within the *Warehouse Manager*. By default, Data Explorer opens a *Transaction Viewer* grid that is pointed to the first module on the list.
II. Select the periods to display by typing them in *YYYYMM:YYYYMM* format or clicking the lookup button to select available periods.
III. Click the **Refresh** button to view the data.
IV. The data is paginated meaning each page shows 10,000 records and the number of pages is shown in the bottom left of the data explorer screen. The total amount of data is shown in the bottom right of the data explorer screen.

Users may also group by a specific field by dragging the field into the grey box labeled “Group by area”. Columns may be move around to get the desired view by grabbing a column header and moving it to its desired location.

Users may also view multiple years of data by using the tab browsing feature. By either selecting “add” icon or the Transaction Viewer icon in the Data Explorer ribbon, users will open another tab to view additional data.

b. Pivot Viewer: Pivot viewer offers a second way for users to view the data in the Data Warehouse. Upon clicking the **Pivot Viewer** icon in the Data Explorer ribbon, a new tab will populate the data based on the filters applied in the currently selected Transaction Viewer.



1. *Data slicer*: This box allows users to choose “filters” for the various dimensions they select.
2. *Main grid*: Within the box, data is populated based on the dimensions selected.
3. *Module data*: A list of the various dimensions available for the selected module.
4. *Layout editor*: User friendly drag and drop box where dimensions can be added. Dimensions can be added here or in the Main grid

To access the pivot viewer

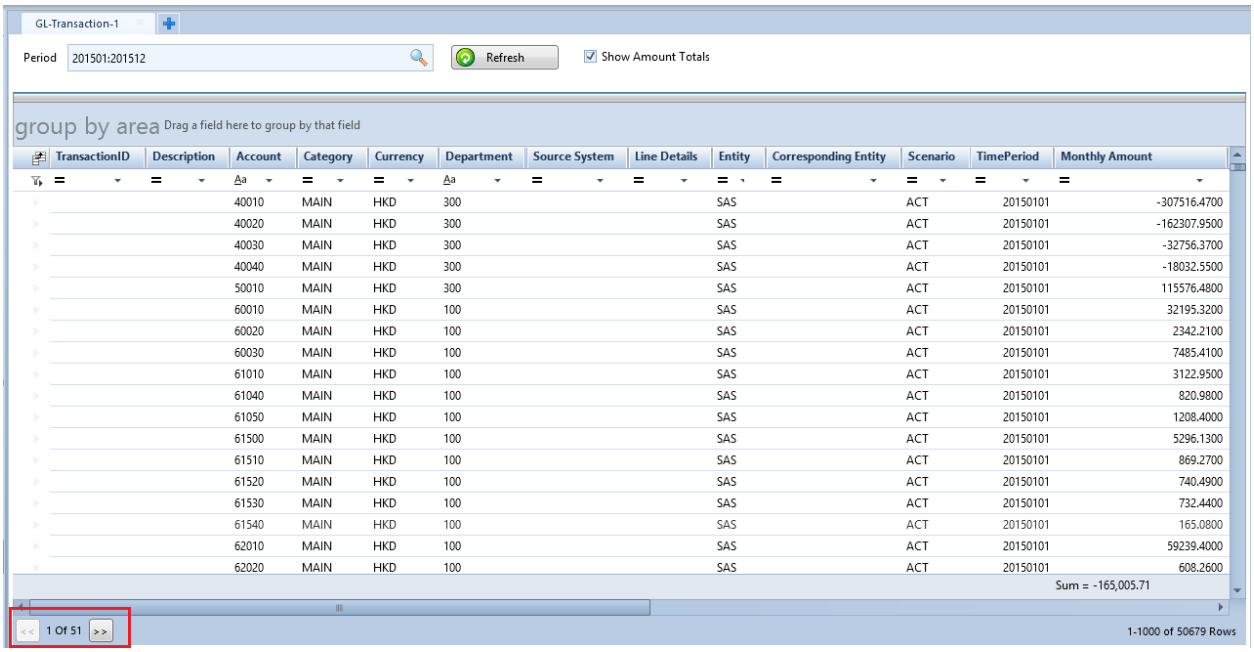
i. Click on the Data Explore menu with the *Data Warehouse Manager.*
ii. Select the desired module and filter for the desired periods.
iii. After the data has populated, the Pivot Viewer icon will be enabled and users can select this option to view the data in a pivot viewer
iv. Filters can be applied and removed from within the pivot viewer grid in order to view the desired information.

2. **Export/Import data**: Data may be imported and exported as well. Exports will be loaded into Excel format, while imports may be formatted as CSV or Excel files and then imported.

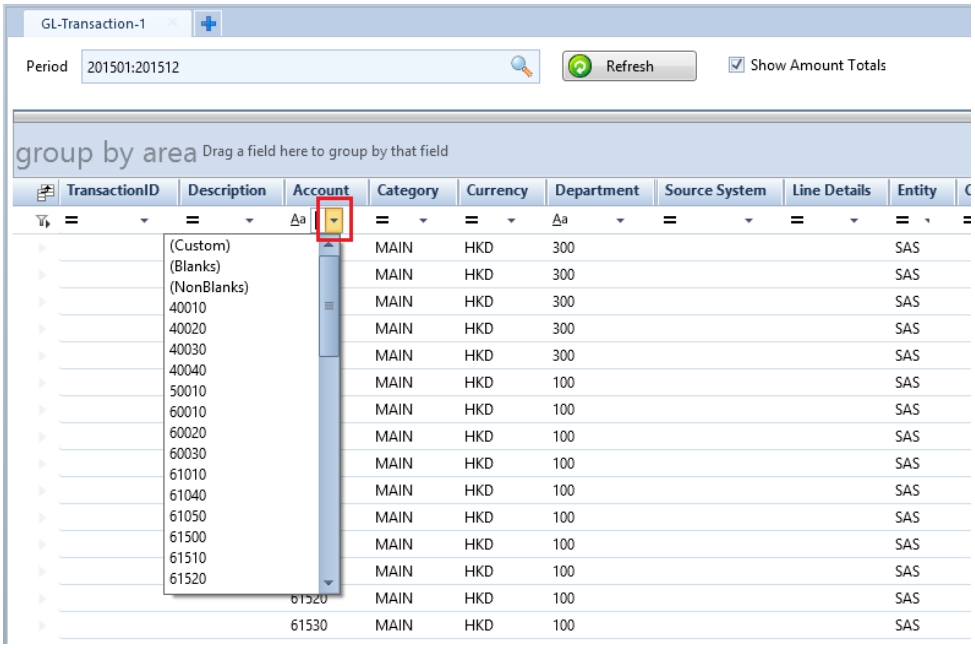
a. Exporting Data: To export data, simply click the **Excel Export** icon on the home ribbon. Only the current filtered data will be exported. The grouping will also be retained when loaded into Excel.
b. Import Data: Data imports can be performed for any module. To import data from an Excel or comma separated file, select the module from the left menu then select the **Import** button from the ribbon menu.
    i. **Note:** When importing data with Line Item Details, make sure that the format is in the correct format. The correct format is the parent category preceding the line item detail transactions. This is also the default format when the Line Item Detail data is exported.

TransactionID	Description	Account	Category	Currency	Department
		62010	MAIN	HKD	100
LID_001	Marketing Commer	62010	LID	HKD	100
LID_002	Marketing Commer	62010	LID	HKD	100
LID_003	Marketing Commer	62010	LID	HKD	100

This feature allows the user to easily see their financial data without knowing SQL syntax. When querying for data, the data explorer has been set to display the top 10,000 results. Click on the arrow at the bottom of the screen to move to the next page or results.

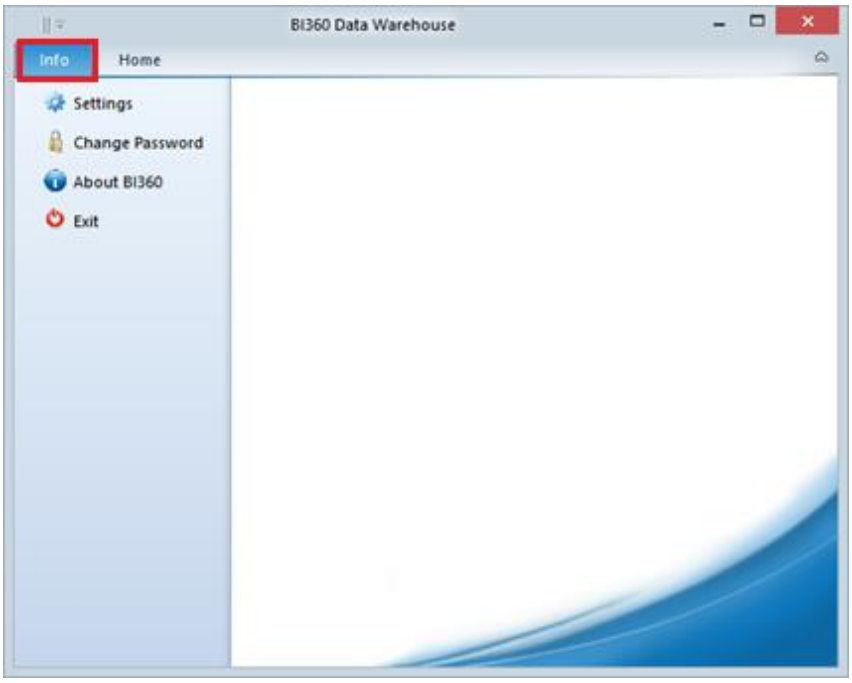


Filter on your results by clicking on the drop down arrow.



If you do not see the code you are looking for, remember that the Data Warehouse Manager is displaying the top 10,000 results and the codes found in these 10,000 results. Move to the next page to find your data or you can type in the code you are looking for and click **Refresh** to pull in data specifically for that data.

If it is desired to increase the number or results returned, the user may do so by clicking on the Info ribbon at the top left corner and then Settings.



After clicking OK, restart Data Warehouse Manager to display the changes.

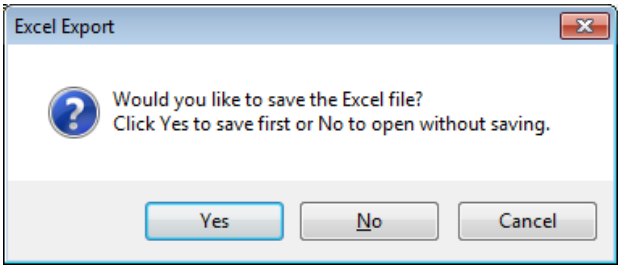
Export Transaction Data

Transaction data may be easily exported to Excel using the **Export** button located on the ribbon menu. There are two options when exporting dimension members:

1. Export and open Excel directly, without saving the file first.
2. Export and save as an Excel file. With this option, the file can simply be saved or saved and opened. When saving the file first, there are three available formats to save as:
    a. .XLSX
    b. .XLS
    c. .XLSM

To Export transaction:

1. Click on the **Data Explorer** menu item.
2. Select a module and periods to review.
3. Click the **Refresh** button to load data and apply filters as requisite.
4. Select the **Export** button from the ribbon menu.



The exported data is based on the filtering at the time of Export. For instance, if the account dimension is limited to only showing accounts that start with "1", then it will result in only those accounts showing in the exported Excel file.

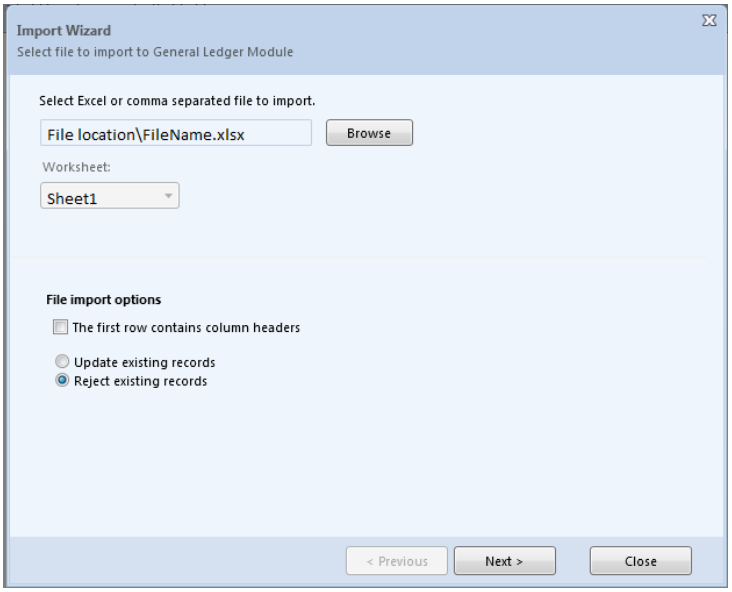
If you have filtered your Data Explorer results, it is suggested to hit refresh to make sure Data Explorer and the Excel output resemble one another.

Import Transaction Wizard

Importing transaction data is a quick and easy method of loading the Data Warehouse with transactional data. It is important to note that the periods and dimension members should all be configured and loaded prior to importing transactional data. Refer to the *Import Dimension Wizard* section above for more details on loading dimension members.

To access the Import Wizard:

1. Click the **Data Explorer** menu item.
2. Select a module to import data into.
3. Select the **Import** button from the ribbon menu.
4. The *Import Wizard* for the *Data Explorer* operates in the same manner as the *Import Wizard* for the *Dimension* menu item.



Import transaction configurations

In order to import transaction data into the *Data Warehouse*, specific configurations must be made so that data is imported properly.

1. The Period data must be configured using the format *yyyymmdd* or *yyyymm* in Excel. For the latter case, *Data Warehouse Manager* will automatically append the date *that is associated with the start of that period.*
   a. For example, if Fiscal Period 201401 begins on 9/4/2014, in the import file a transaction is added with Period = '201401'. Then it will be added to the database with a calendar data of 9/4/2012 which is associated to Fiscal Period 20141.
   b. Now in the same example, if the user were associate a transaction to 20140101, then it will be added to the database with that Calendar year and reference the Fiscal Period that the calendar year corresponds to.
2. If all dimensions have the same value, the transaction will import all entries, but will only store the last entry with the same dimensions. In order to avoid this, it is recommended to utilize the *Transaction ID* to import entries with the same dimension values.
3. Import files may be in *.xls, *.xlsx, and *.csv formats.

4. Dependent on the organization, the fiscal year may not start in January of every year. The fiscal year start period can be set to a month other than January when a database is first created in *Data Warehouse Manager*. Moreover, when using the import function to store data associated with a specific period, special configurations must be made so that the data is stored properly.

When reimporting data, if an attribute with datatype “datetime” is used, users must reimport data on the same regional settings as it was exported.

Managing Data

Data may be loaded into the *Data Warehouse Manager* with either of these two methods:

1. ***Manual Load***: See *Data Explorer* section above.
2. ***Automated Load***: The most common data automation is using *SQL Server Integration Services* (SSIS). Utilizing the capabilities of SSIS as a process can be created to load data from an ERP or other data source into the transaction table(s). SSIS packages for the Dynamics ERP have already been created by *Solver* for the *General Ledger* and several of the sub-ledgers. More connectors will continue to be built, please contact a BI360 partner or *Solver* for more information. Future releases of the BI360 *Warehouse* will include pre-built connectors to the dynamics products.

Please see the technical section at the end of this document for more details on the module transaction tables.

Deleting Data

Users may delete data from the *Data Warehouse Manager* interface. After using Data Explorer to find the desired transactions, select the transaction(s) and click the **Delete** button found in the *Data Warehouse Manager* ribbon. A popup will appear asking the user to confirm the deletion of the transaction(s). Click **OK** to delete the transactions.

When deleting transaction data, it is important to consider the data being deleted; remembering that data could be referenced on multiple transaction tables.
For example: detail information may exist on one table while a summary transaction may exist on another table. Deleting transactions from the detail table will cause the transactions on the summary table to not equal one another.

Technical Specifications

The BI360 *Data Warehouse* is a relational database design based on Star Schema architecture. This denormalized dimensional structure, popularized by Ralph Kimball, is designed specifically for reporting/budgeting performance and scalability.

Default Installation Settings

Module Schema				
Module	System Code	Label	Visible	System Required
GL	Account	Account	X	X
CP	Asset	Asset	X	X
All	Category	Category	x	
All	Currency	Currency		
AR	Customer	Customer	X	X
PJ, RV	Customer	Customer	x	
GL	Dim0	Department	x	
All	Dim1	Dim1		
All	Dim2	Dim2		
All	Dim3	Dim3		
All	Dim4	Dim4		
All	Dim5	Dim5		
All	Dim6	Dim6		
All	Dim7	Dim7		
All	Dim8	Dim8		
All	Dim9	Dim9		
HR	Employee	Employee	X	X
All	Entity	Entity	X	X
PJ	Item	Item	x	
All	TimePeriod	Period	X	X
RV	Product	Product	X	X
PJ	Project	Project	X	X
AR,RV	SalesPerson	Sales Person	x	
All	Scenario	Scenario	X	X
AP	Vendor	Vendor	X	X

Meta Data Tables

The BI360 *Reporting* is able to view the meta-data tables inside of the BI360 *Data Warehouse* to dynamically translate the structure of the warehouse. The label and label lookup tables define the visibility of a module and dimensions as well as provide the user defined label. The attribute tables define the visibility of the module and dimension attributes as well as provide the user defined label.

ModuleLabel	Transaction table visibility and label.
ModuleAttribute	Transaction table attributes visibility, data type, and label.
DimLabel	Dimension and transaction table relationship
DimLabelLookup	Dimension table visibility and label.
DimAttribute	Dimension table attributes visibility, data type, and label.

Terminology

Term	Definition
Dimension	A table defining a group of unique codes. E.g. *Account* or *Department*.
Dimension Member	Members (codes) related to the dimension.
Fact Table (Module)	The central tables containing the data with a foreign key connecting the dimensions, which help define the data. BI360 *Data Warehouse* refers the fact tables as modules. e.g. *General Ledger* or *Accounts Payable*.
Measure	Value fields within the fact table. These are typically additive values.
Attribute	An information field in the dimension or fact table. Typically non-additive information.
ETL	Extract - transform - load. Analogous with SSIS which is used to automatically load dimension members and transactions into the warehouse.
SSIS	SQL Server Integration Services: solution used to develop complex ETL processes to extract, cleanse/modify, and load data into the warehouse.

Additional Information

Solver Support Center

The Solver Support Center (support.solverusa.com) is the centralized location for users to learn more about the BI360 Suite. From opening and managing your support tickets to reading knowledgebase articles about the product, the Solver Support Center has everything a user will need.

Users may contact Solver Support if they have questions about the BI360 Suite. One of our technical support consultants will gladly assist you.

Users can access the Solver Knowledgebase for more information about the entire BI360 Suite. From user guides, white papers, training manuals and much more, the Solver Support Center has everything a user will need to get started with the application.

Solver Forum

The Solver Forum (solverusa.com/forum) is a great resource for users to ask questions about the software. Other users or one of the many Solver employees frequently check the boards and can quickly answer your questions.

Solver Feedback

Solver invites customers to participate in providing feature requests for future versions of BI360 on a site just for user feedback, feedback.solverusa.com. On the Solver Feedback site, users may suggest features for updates and upgrades to BI360 – and/or vote on existing feature submissions from fellow customers to really push for feature(s) that would make BI360 even more powerful, dynamic, and intuitive.

Anatomy of a Business Rule

The business rules are made up of three primary sections:

1. Header information.
2. Rule parameters.
3. Rule logic – T-SQL Procedure (created as a stored procedure in the Data Warehouse).

```
<?xml version="1.0" encoding="utf-8" ?>
<Rule xmlns="http://schemas.solverusa.com/CalculationDefinition">
  <Name>Sample Rule</Name>
  <Description>This is a sample rule</Description>
  <Module>GL</Module>
  <CanDelete>Yes</CanDelete>
```

Name: Rule Name
Description: Description of rule
Module: Module rule will be applied to.
CanDelete: Flag to indicate if the rule can be deleted.

```
<Parameters>
  <param table="d_scenario" label="Scenario" variableName="vScenario" lookupFieldName="" type="SingleLookup" />
  <param table="d_entity" label="Entity" variableName="vEntity" lookupFieldName="" type="MultiLookup" />
  <param table="d_time" label="Period(s)" variableName="vPeriod" lookupFieldName="Month" type="MultiLookup" />
</Parameters>
```

Parameters available when executing the rule:
Table: Data Warehouse dimension table name.
Label: Parameter label visible to end user.
VariableName: Variable name used in Stored Procedure section.
LookupFieldName: Dimension table column used for parameter lookup.
Type: SingleLookup or MultiLookup

```
<RuleText xml:space="preserve">/* Sample description of rule here */
IF EXISTS (SELECT * FROM sys.objects WHERE object_id = OBJECT_ID(N'[dbo].[myRule]')
 AND type in (N'P', N'PC')) DROP PROCEDURE [dbo].[myRule]
GO
CREATE PROC [dbo].[myRule]
@vScenario varchar(50), @vEntity varchar(50),  @vPeriod varchar(50)
 AS
 SELECT * FROM f_Trans_GL
 WHERE Scenario = @vScenario AND Entity = @vEntity AND LEFT(intDate, 6) = @vPeriod
</RuleText>
 </Rule>
```

T-SQL Procedure used within rule. The procedure will be loaded into the Stored Procedure section of the Warehouse and can also be scheduled to be executed using the SQL Server Agent.

Business Rule XML Sample (Processes Menu)

The example business rule will create a rule with three parameters:

1. Scenario (Single selection lookup from the Scenario table)
2. Entity (Multiple selection lookup from the Entity table)
3. Time (Multiple selection lookup from the time(Period) table)

This rule will not do anything other than query the data based on the parameters below.

```
<?xml version="1.0" encoding="utf-8" ?>
<Rule xmlns="http://schemas.solverusa.com/CalculationDefinition">
  <Name>Sample Rule</Name>
  <Description>This is a sample rule</Description>
  <Module>GL</Module>   <CanDelete>Yes</CanDelete>

<Parameters>
  <param table="d_scenario" label="Scenario" variableName="vScenario" lookupFieldName="" type="SingleLookup" />
  <param table="d_entity" label="Entity" variableName="vEntity" lookupFieldName="" type="MultiLookup" />
  <param table="d_time" label="Period(s)" variableName="vPeriod" lookupFieldName="Month" type="MultiLookup" />
</Parameters>

  <RuleText xml:space="preserve">/* Sample description of rule here */
IF EXISTS (SELECT * FROM sys.objects WHERE object_id = OBJECT_ID(N'[dbo].[myRule]') AND type in (N'P', N'PC')) DROP PROCEDURE
[dbo].[myRule]
GO
CREATE PROC [dbo].[myRule]
@vScenario varchar(50), @vEntity varchar(50),  @vPeriod varchar(50)
 AS
 SELECT * FROM f_Trans_GL
 WHERE Scenario = @vScenario AND Entity = @vEntity AND LEFT(intDate, 6) = @vPeriod
</RuleText>
  </Rule>
```