Masterworks Online Help

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MASTERWORKS
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1. Administration

The Masterworks **Administration** module enables you to configure and manage various functionalities that apply to the entire Masterworks application.

Using the **Administration** module, you can perform security management, user management, reports management, and manage custom forms and workflows.

2. System Configurations

The **System Configurations** section enables you to configure various settings that have impacts across the application.

You can manage application-level settings for the following aspects:

- Application Settings
- Authentication and Login Settings
  Workflow Settings
- Mobile Settings
- GIS

2.1. Application Settings

Overview

The **APPLICATION SETTINGS** page enables you to perform the following tasks:

- Configure application settings: Create, store, and maintain application-level preferences in the application.
- Configure mail settings: Set up mail server name and credentials, sender email address and name, and recipient email address details.
- Customize regional options: Customize regional options such as the decimal places in dollar amounts and quantities, time and date formats, and date separators. **REGIONAL CONFIGURATIONS** lets you define application settings for dollar amount type, unit price, item quantity, date, and time formats. The following options must be set before the initial use of Masterworks:
  - Decimal settings for dollar amounts, unit prices, and quantities to define the number of digits after the decimal.
  - Time format to define a standard time format. For example, HH:MM.
  - Date format to define a standard date format. For example, DD/MM/YYYY.
  - Date separator character to demarcate the day, month, and year.
- Configure the following **MY TASKS CONFIGURATIONS** settings:
  - Define the number of days to view notifications received within that range.
  - Define the number of filter windows to view notifications for the specific date range.
  - Enable the option of viewing historical records.

Steps

1. In the module menu, click **Administration**.

   The **ADMINISTRATION** page is displayed.
2. Expand **System Configurations**, and then click **Application Settings**.

   The **APPLICATION SETTINGS** page is displayed.
3. Provide the required information in the fields as described in the following table.

Group	Field	Description
-	Application Name	Enter the name that should be displayed as the tab name of the browser when the application is opened in the browser.
	Allowed File Types	By default, a set of allowed file types are displayed. Optionally, enter file extensions of file types that can be uploaded into the application. Only files of the specified file types can be uploaded to the application in the document management system or as attachments in any form and when performing workflow transitions.
	Max allowable Document Size in Attachment (in MB)	Enter the maximum size (in MB) of a file that can be uploaded as an attachment in a form in the application.
MAIL CONFIGURATIONS	Server Name	Enter the SMTP server IP address to enable the application to send email notifications to the configured SMTP server. For example, *outlook.<company>.com*.
		Click **Send Test Mail** to verify the configured application SMTP server address. An error message is displayed if the configured SMTP server does not exist.
	Server User Name	Enter the SMTP server user name.
	Server Password	Enter the password to secure the SMTP server.
	Server Port	Enter the SMTP server port number.

Group	Field	Description
	Enable SSL	Select the check box to enable SSL.
	Sender Email ID	Enter the official email address from which notifications will be sent to users from the application. For example, *admin@<company>.com*.
	Sender Name	By default, the sender name is displayed as **Administrator**. If required, enter the name displayed as the sender's name when notifications are sent to users from the application.
	Events Recipient Email ID	The default email address is displayed as **administrator@aurigo.com**. If required, enter the email address of the application administrator who is notified of the events in the application after the scheduled event.
REGIONAL CONFIGURATIONS	Time Zone	Select the appropriate time zone applicable to the application.
	Amount Format	Select the number of digits after the application's decimal for dollar amount-related fields.
	Quantity Format	Select the number of digits after the decimal for quantity-related fields in the application.
	Unit Price Format	Select the number of digits after the decimal for price-related fields in the application.
	Date Format	Select the date format for the application. For example, dd/mm/yyyy or mm/dd/yyyy.
	Date Separator	Select the date separator character. For example, / or -.
	Time Field Format	Select the format to display time. For example, hh:mm:ss or hh:mm:ss:tt, where hh corresponds to hours, mm to minutes, ss to seconds, and tt to AM/PM in a 12-hour format.
MY TASKS CONFIGURATIONS	Filter Window Range (in Days)	Enter the number of days for which the tasks must be displayed. **Note:** You can enter any value between 1 to 30. The default value is set to 7.

Group	Field	Description
		All tasks falling within the defined number of days are displayed in the following locations: • The **My Tasks** section at the Masterworks user interface. • The **MY TASKS** page at the enterprise and project levels.
	No. Of Filter Windows	Enter the number of filter windows for the filter window range. **Note:** You can enter any value between 1 to 5. The default value is set to 5. From the **Select Period** drop-down list, you can select the specific window of the date range for which you want to view the assigned tasks. This option is available in the **MY TASKS** page at the enterprise and project levels.
	Show Historical Records	Select the check box to enable this option in the **MY TASKS** page at the enterprise and project levels. In the **MY TASKS** page, you can click this option to view all the records that do not fall under the defined filter window range.

4. Click **Save**.

2.2. Authentication and Login Settings

Overview

The **AUTHENTICATION & LOGIN SETTINGS** page enables the Administrator to define settings and configurations around logging into the system. Most of these configurations are set before the initial use of Masterworks. The settings include defining:

- Login mode and authentication method
- Timeout periods
- Password configurations
- Login attempts configurations
- Login attempt configurations

Steps

1. In the module menu, click **Administration**.

   The **ADMINISTRATION** page is displayed.
2. Expand **System Configurations**, and then click **Authentication & Login Settings**.

   The **AUTHENTICATION & LOGIN SETTINGS** page is displayed.
3. Provide the required information in the fields, as described in the following table.

Field	Description
Login Mode	Select a login mode from the drop-down list. The available options are: • **Masterworks**: Select this option to login through the user account created in Masterworks. • **External IDP**: Select this option to login using the third party IDP such as ADFS, BigF5, and so on. • **Mixed**: Select this option to use both the options – Local and External IDP logins. **Note:** The login page is launched based on the login mode you select.
Authentication Method	For **External IDP** or **Mixed** login modes, select the required authentication method.
Reset Password Timeout	Enter the time duration (in hours) after which the reset password link which is sent by email, expires.
Session Time Out notification prior (in seconds)	Enter the time in seconds. The session timeout notification is displayed after the specified time duration prior to the session expiry.

4. In the **PASSWORD CONFIGURATIONS** section, provide the required information in the fields, as described in the following table.

Field	Description
Minimum Password Length	Enter the number to define the minimum number of characters required in a password.
Must include lower case letters	Select the check box to define the characteristics of the password.

Field	Description
Must include upper case letters	
Must include numbers	
Must include special characters	
User ID or part of User ID should not be the part of password	
Default Password expiration period (in days)	Enter the number of days after which the default password that is set for user accounts created by bulk upload of user account information expires.
	By default, the **Never Expire** check box is enabled, which means the password never expires.
Send Email Notification prior to password expiry date	**Note:** This field is not available if the **Never Expire** check box is selected.
	Select the check box to send email reminders to users everyday prior to password expiration date.
User Must Change the Password at First Logon	Select the check box to notify the users to change the password at first logon.
	Alternatively, clear the check box to continue using the password as set when the account is created.
Number of Days	**Note:** This field is displayed if the **Send Email Notification Prior to Password Expiry Date** check box is selected.
	Enter how many days prior to the expiry date the reminder should be sent to the users.
Select a Template	**Note:** This field is displayed if the **Send Email Notification Prior to Password Expiry Date** check box is selected.
	Select the appropriate mail body template to send a standard automated email notification to the users with password expiration details.

Field	Description
	Available options are templates defined in the **Mail Body Templates** catalog of the Library.
Enforce Password History	By default, the **Not Defined** check box is selected.
	To enforce password history, remove the check box and enter the number of unique new passwords that must be associated with a user account before an old password can be reused.

5. In the **LOGIN ATTEMPTS CONFIGURATIONS** section, provide the required information in the fields, as described in the following table.

Field	Description
Maximum Login Attempts	Enter the value to set the maximum number of unsuccessful login attempts that will cause a user account to be locked.
Reset unsuccessful Login attempt counter (in mins)	By default, the counter is set to 60 minutes. Enter the value to define the number of minutes that must pass to reset the account that is locked due to maximum number of unsuccessful login attempts.

6. The **EXTERNAL IDP CONFIGURATIONS** section is for capturing information of AzureAD integration.

> **Note:** Do not enter information in these fields. An integration is setup with ADFS and not with AzureAD. The details of this integration are not configurable by Administrators. Please consult Aurigo to make changes to the ADFS integration.

7. Click **Save**.

2.3. Workflow Settings

Overview

The **Workflow Settings** page enables you to define the settings related to workflow transitions.

Steps

1. In the module menu, click **Administration**.

   The **ADMINISTRATION** page is displayed.
2. In the navigation pane, expand **System Configurations**, and then click **Workflow Settings**.

   The **WORKFLOW SETTINGS** page is displayed.
3. Provide the required information in the fields, as described in the following table.

Field Name	Description
Max size of Document to attach during Workflow action (in MB)	Enter the maximum size of the attachment that can be uploaded during a workflow transition. **Note:** For attachments during workflow transitions, this value takes precedence over the maximum file size defined in the **Max allowable Document Size in Attachment (in MB)** in the **Application Settings** page.
Default Mail Body Template for Workflow Notification	Select the appropriate mail body template to send a standard automated email notification to the action stakeholders of the subsequent stage whenever the workflow action is performed. Available options are templates defined for the form in the **Mail Body Templates** catalog of the library.
Default Days to Complete an Action	Enter the number of days before which an action must be performed in the current workflow stage. When you configure properties for a workflow stage, the defined number is used as a default.
Send a reminder prior to due date	Select the check box to send a reminder email to the stakeholders with the due date details.
Number Of Days	**Note:** This field is displayed if the **Send a reminder prior to due date** check box is selected. Enter the number of days prior to due date on which a reminder email is sent to the action stakeholders with the due date details. The due date is defined in the **Days to Complete** field in the stage properties pane of the **Workflow Management** page.

Field Name	Description
Select Template	**Note:** This field is displayed if the **Send a reminder prior to due date** check box is selected. Select the appropriate mail body template for the reminder email. Available options are templates defined for the form in the **Mail Body Templates** catalog of the library.
Send reminder to action stakeholders past due date	Select the check box to send a reminder email after the due date is crossed if the stakeholder does not perform a workflow action. The due date is defined in the **Days to Complete** field in the stage properties pane of the **Workflow Management** page.
Select Template	**Note:** This field is displayed if the **Send reminder to action stakeholders past due date** check box is selected. Select the appropriate mail body template for the reminder email. Available options are templates defined for the form in the **Mail Body Templates** catalog of the library.
Show Workflow History in Details Report	Select the check box to add the **Workflow History** section in the **Details Report**.

4. Click **Save**.

2.4. Mobile Settings

Overview

You can configure mobile settings to manage the cache of all mobile devices with the Masterworks mobile application installed.

The cache saves information on the structure of forms and library information. The cache must be refreshed on modifications in form structure, and addition, deletion, or modification to library information. The cache is refreshed automatically every configured number of hours. However, the cache must be manually refreshed for the modifications to take immediate effect. The latest form structure and library information is available to mobile users on the next successful device synchronization.

Steps

1. In the module menu, click **Administration**.

   The **ADMINISTRATION** page is displayed.
2. In the navigation pane, expand **System Configurations**, and then click **Mobile Settings**.

   The **MOBILE SETTINGS** page is displayed.
3. Click **Rebuild Now** for changes in the structure of forms, and for the latest library information to take immediate effect in mobile forms. On the subsequent instance of device synchronization, the information on the mobile device is updated.
4. Click **Save**.

2.5. GIS

The Geographic Information System (GIS) application is an information management system that enables us to capture, analyze and present geographical information on a map. Information about the world is captured in a collection of thematic layers based on geography. Each layer contains data about different geographical details – like streets, rivers, and so on. Data sets from the feature layers can be visualized in maps, graphs, or charts to analyze and make informed business decisions.

To enable users to utilize GIS in Masterworks, the GIS Map Control is included in forms in which geo-location data needs to be captured or viewed. Map Controls used in every form must be configured in terms of Base Maps, Feature Layers, Write Layer details, and so on.

To utilize GIS in Masterworks perform the following tasks:

- Configure GIS Settings in Masterworks

2.5.1. GIS Settings

Overview

Geographic Information System (GIS) application is an information database used to secure, store, update, analyze, manage, and display all kinds of spatial and geographical information.

The **GIS SETTINGS** page allows you to configure the map controls, such as Layers and Base Maps required to perform the following activities:

- Display the geographical information of the location
- Mark location points and boundaries on the map
- View the marked location points on the map at project and Enterprise level

The following settings are configured using **GIS Settings**:

- **GIS IN MOBILE**
  Enabling GIS in mobile allows you to enter location data about the site through GIS rather than entering locations using latitude and longitude or manually entering the location address. Also, you can capture location information (points, lines, or shapes) using Masterworks on mobile devices in offline mode.
- **GIS AUTHENTICATION**
  OAuth is an industry-standard protocol for authorization. ArcGIS (ESRI) uses OAuth to exchange ArcGIS identity with external applications safely. You can enable OAuth for the application for enhanced security while accessing ArcGIS (ESRI).
- **BASE MAPS**
  A Base Map serves as a reference map on which you overlay data from layers and visualize geographic information. The ArcGIS (ESRI) website provides several predefined base map layers for you to use in your maps.
- **LAYERS**
  A layer is a database of points used to mark a location in the map. Layers can be editable or read-only. Layers are created in the ArcGIS (ESRI) website. While creating an ArcGIS (ESRI) layer, you can specify the geometry and data fields for mapping Masterworks data fields with ESRI data fields.
  - **Geometry**
    A location can be marked in a map using different shapes - point, line, or polygon. When you use a form to capture the project location, the drawing tools displayed for an editable layer are based on the selected shape.
  - **Fields**
    The data fields defined for GIS in Masterworks must be mapped to those in ESRI. It is mandatory to map the following data fields for each layer - PID, ParentID, InstanceID, ModuleID, MapControlName, and GeometryID.

    > **Note:** These 6 fields are defined in ESRI and must be mapped for each layer used in the map control for the Save to ESRI for any location from the map control to succeed.
- **LAYER ALIASES**
  You can configure Tooltips for geometries present in each non-editable layer by creating Aliases for ArcGIS (ESRI) Outfields. The Aliases are used instead of the ArcGIS (ESRI) field names when displaying data in a tooltip in the map.
- **DEFAULT MAP LOCATION**
  You can configure the default location of the map using the geographic coordinate systems.
- **SERVICE AUTHENTICATION SETTINGS**
  You can configure the authentication of services.

- **GEOMETRY SERVICE SETTINGS**
  The Geometry Service allows you to create and modify feature geometries.
- **OFFLINE EXTENT**
  You must define the boundary or extent within which the data pertaining to the base map should be downloaded when the mobile application is offline. Defining such a rectangular extent will ensure that all Offline Base Maps imagery present within the framed area will be visible to the user.
- **OFFLINE BASE MAPS**
  You can configure the URLs of Offline Base Maps and validate if they are Valid for Offline Download.
- **ESRI SAVE SETTINGS**
  The location data created in Masterworks using map controls is saved in ArcGIS (ESRI). Sometimes Save to ESRI may fail due to various reasons such as interrupted network connection. The system will automatically retry to write the location data to ESRI based on the configured number of retries. Also, a failure notification is sent to the specified recipients. You can configure the maximum number of retries and the recipients of the failure notification in the ESRI Save Settings.

Steps

1. In the module menu, click **Administration**.

   The **ADMINISTRATION** page is displayed.
2. In the navigation pane, expand **System Configurations**.
3. Expand **GIS**, and then click **GIS Settings**.

   The **GIS SETTINGS** page is displayed.
4. To enable GIS in the Masterworks mobile application, in the **GIS IN MOBILE** section, select the **Enable GIS in Mobile** check box.

   By enabling GIS in mobile, you can view the following forms in the Masterworks mobile application:

   - Project Location form
   - Map Controls used in forms that are available offline
5. To enable OAuth authentication for GIS with ESRI, in the **GIS AUTHENTICATION**section, select the **Enable OAuth** check box.

6. To configure base maps, in the **BASE MAPS** section, perform the following steps:
   a. Click **Add**.

      The **New Base Map** dialog box is displayed.
   b. In the **Name** box, enter a unique alphanumeric name for the new base map.
   c. In the **URL** box, enter the URL of the of the new base map available in ArcGIS (ESRI).

      > **Note:** In the forms using map control, you can see a view of the Base Map, accessible at the specified URL in ArcGIS (ESRI).
   d. To set the base map as the default map, select the **Is Default** check box.

      > **Note:** Only one base map can be selected as default. The default base map is displayed in the map view across the application.
   e. Click **Save** to save the new base map details.

      All the saved base maps are available for selection in the map view.

      Every base map serves as a spatial canvas for the user to view location data.

7. To configure layers, in the **LAYERS** section, perform the following steps:
   a. In the **Transparency of Drawing tools in %** box, enter the appropriate value..

      The value can be between 0 to 100%, where 0% is fully opaque and 100% is fully transparent.

      This value defines the transparency of the geometrical shapes created by user to clearly distinguish the overlapping boundaries.
   b. To add a new layer, perform the following steps:
      i. Click **Add**.
         The **New Layer** dialog box is displayed.
      ii. In the **Name** box, enter the name of the layer.
      iii. In the **URL** box, enter the URL of the layer.

         > **Note:** Layers are created beforehand in ArcGIS (ESRI).

      iv. To indicate that the URL is a group of layers, select the **Group URL** check box.
         When a group of layers is selected in a form, the data from all the layers in the URL is visible on the map.

         > **Note:** You cannot edit a group layer after the group layer is saved.

      v. Select the **Enable Editing** check box, to set the layer as editable.
         The **Geometry** field is enabled.

         > **Note:** If **Group URL** is selected, then the **Enable Editing** check box is not available for selection.

      vi. Optionally, if the layer is marked as **Private** in the ArcGIS (ESRI) settings, enter the **User ID**, **Password**, and **ConfirmPassword** to enable user authentication to access the layer in ArcGIS (ESRI).
      vii. In the **Geometry** drop-down list, select the required geometry, if the layer is enabled for editing.
      viii. Enter the **Transparency in %** value.
         Values can be between 0 to 100%, where 0% is fully opaque and 100% is fully transparent.
         By default, transparency of the layer when placed over the Base Map is set to 50%.
      ix. Click **Save** to save the new layer details.
         The **ID** is automatically generated on saving the new layer.

c. To ensure that the added layers are available for offline download in the mobile application, click **Validate**.

The **Valid for offline Download** column displays one of the following options:

Option	
Yes	
No	
NA	

8. To configure aliases that will be displayed in the tooltips for non-editable layers, in the **LAYER ALIASES** section, perform the following steps:

> **Note:** For every Map Control being used in a form, the tooltip fields are configured in **GIS Settings** (for non-editable layers) and in Data Mappings in **Form Builder** (for editable layers).

a. From the **Layer Name** drop-down list, select the appropriate layer.

The **Layer Aliases** information of the selected layer is displayed in the table.

b. To create an outfield alias for a non-editable layer, perform the following steps:

i. Click **Add**.
The **New Alias** dialog box is displayed.

ii. Provide the following information:

Field Name	Description
Layer Name	From the drop-down list, select the layer name. Available options are the non-editable layers configured in the **LAYERS** section.
Sub Layer Name	From the drop-down list, select the sub-layer name. Available options are the sub layers contained within the selected group layer.
Outfield Name	Enter the name of the outfield attribute as defined in ArcGIS (ESRI) database.
Outfield Alias	Enter the outfield alias to be displayed in the tooltips in the map view.

   iii. Click **Save** to save the new layer alias details.
   Layer aliases enable you to easily identify the outfield attribute when displayed in the tooltips in the map view.

9. To configure the default map location, in the **DEFAULT MAP LOCATION** section, for the **Default Map Type**, select either of the following options:

Field Name	Description
Zoom Level	**a.** Enter the values for X and Y Coordinates. **b.** Enter the zoom level.
Extent	**a.** Enter the Starting X (longitude) and Y (latitude) Coordinates. **b.** Enter the End X (longitude) and Y (latitude) Coordinates.

10. To configure service authentication settings, in the **SERVICE AUTHENTICATION SETTINGS** section, provide the following details required for service authentication:
    - **Client Login Service**
      Enter the URL that is used to authenticate the application being integrated with ArcGIS (ESRI).
    - **User Login Service**
      Enter the URL that is used to authenticate a named user.
    - **Referer**
      Enter the recipient URL to which authentication response is sent.
    - **Client ID**
      Enter the client's ID that is used to authenticate the application.
    - **Client Secret**
      Enter the client's password that is used to authenticate the application.
11. To support the spatial reference other than the default spatial reference, in the **GEOMETRY SERVICE SETTINGS** section, **Geometry Service URL** box, enter the geometry service URL defined in ESRI.

12. To set a boundary or extent for the offline Base Map when displayed in the Masterworks mobile application, in the **OFFLINE EXTENT** section, perform the following steps:

    > **Note:** It is recommended to set the **Offline Extent** coordinates same as the **Default Map Location**.

    a. Enter the **Start Y Coordinate** and **End Y Coordinate**.
    b. Enter the **Start X Coordinate** and **End X Coordinate**.

13. To configure URLs of Offline Base Maps, in the **OFFLINE BASE MAPS** section, perform the following steps:

    a. Click **Add**.

       The **New Offline Base Maps** dialog box is displayed.

    b. In the **Name** box, the name of Base Map that appears for user to select in the Mobile application.
    c. In the **URL** box, enter the URL of the offline Base Map.
    d. From the **From Level** and **To Level** drop-down lists, select the probable value of levels of base map that can be downloaded to the Mobile application.
    e. Select the **Is Default** to make the map the default base map for map controls.

       > **Note:** Only one offline Base Map can be selected as default.

    f. Click **Save**.

       The new offline base maps details are saved.

    g. To validate that the base maps are available for offline download in the mobile application, click **Validate**.

       The **Valid for Offline Download** column displays any of the options described below:

       - **Yes** – Validation is successful, the layer is available for offline download.
       - **No** – Validation is unsuccessful, the layer is unavailable for offline download. You can perform any of the the following actions to enable the layer for offline download:
         - In case the Layer is not enabled for **Offline** in ESRI, enable the layer for **Offline** and validate again.
         - In case the URL provided for the Layer is incorrect, edit it and validate again.
       - **NA** – Base Map is pending validation.

14. To configure additional settings for Feature Layer writing, in the **ESRI SAVE SETTINGS** section, perform the following steps:
    a. In the **Maximum Number of Retries** box, enter the maximum number of attempts to be made by the system to write location data on to the feature layer in ArcGIS (ESRI) after the first failed attempt.
    b. In the **Failure Notification recipient Email(s)** box ,select the users to whom the notification of failure must be sent.

       Available options are user accounts available in Masterworks.
15. Click **Save** to save the changes.

2.5.2. ESRI Logs

Overview

The ESRI Log displays information on the failed activity to save the location data from Masterworks to ArcGIS (ESRI). You can view the description of the form and the error message.

Steps

1. In the module menu, click **Administration**.

   The **ADMINISTRATION** page is displayed.
2. In the navigation pane, expand **System Configurations**.
3. Expand **GIS**, and then click **ESRI Logs**.

   The **ESRI LOGS** list page is displayed.

3. Functional Configurations

The **Functional Configurations** section enables you to configure various management settings.

- Feature Settings on page 24
- Planning Management
- Budget Management
- Contract Management
- Resource Management
- Issue Log Color Configurations
- Mobile Application Settings
- Enabling Meeting Scheduler on page 30
- Important Notifications on page 31
- Report Management
- Business Units

3.1. Feature Settings

Overview

The **Feature Settings** page lists the module components configured in the Masterworks application. To activate or deactivate a component, you can turn on or turn off a specific component in the module.

For example, to display the project code and the project's name in the navigation pane, mark the **Show Project Code in Tree** component in the **Core Module** as **Active**.

Steps

1. In the module menu, click **Administration**.

   The **ADMINISTRATION** page is displayed.
2. In the navigation pane, expand **Functional Configurations** and then click **Feature Settings**.

   The **FEATURE SETTINGS** page is displayed.

3. Perform either of the following steps:
   - To deactivate the functionality of the component, select the required component that has the **Active** check box selected, and then click **Mark as Active/Inactive**.
   - To activate the functionality of the component, select the required feature that has the **Active** box cleared, and then click **Mark as Active/Inactive**.

3.2. Configuring Planning Management

Overview

In the **Planning Management** form, you can define if project dates must be updated on approval of a program containing the project.

The **Program Cycle** configurations help you define multiple fiscal years and the duration of the program. You can select the start month and the number of years for which the program is scheduled.

Steps

1. In the module menu, click **Administration**.

   The **ADMINISTRATION** page is displayed.
2. In the administration navigation pane, expand **Functional Configurations** and then click **Planning Management**.

   The **PLANNING MANAGEMENT** page is displayed.
3. In the **Update Project dates on Program approval** options section, click the appropriate option.

   In a program, a user can move projects from one year to another and then approve. If set to **Yes**, on approval of a program, the project start date and finish date are updated basis the change in project dates.

4. To configure a new program cycle, in the **PROGRAM CYCLE CONFIGURATIONS** section, perform the following steps:
   a. Click **Add**.

      The **New Program Cycle Configurations** dialog box is displayed.
   b. In the **Name** box, enter the name of the new program cycle
   c. From the **Fiscal Start** drop-down list, select the month of initiation of the program.The **Fiscal End** is calculated as the **Fiscal Start** month + 11 months.
   d. From the **Program Duration (Yearly)** drop-down list, select the number of years to define the program period.
   e. Click **Save**.

      The new program cycle is added to the **PROGRAM CYCLE CONFIGURATIONS** table.
   f. To edit a program cycle, select the program cycle, and click **Edit**.

      > **Note:**
      > You cannot edit a program cycle that has been used to create a program, funding plan, or project.

   g. To delete a program cycle, select the program cycle, and click **Delete**.

      > **Note:**
      > You cannot delete a program cycle that has been used to create a program, funding plan, or project.

5. In the **Allow Project/Phase What-If For In-Progress Projects** options, click the appropriate option.
   - If **Yes** is selected, you can modify the start and end dates of projects that are in the **Pre-Award**, **In-Progress**, **Planned**, or **Published** workflow status.
   - If **No** is selected, you can modify the start and end dates of projects that are in the **Planned** and **Published** workflow statuses only.
6. Click **Save**.

3.3. Configuring Budget Management

Overview

You can configure forecast distribution for budget estimates of all projects in the enterprise. Based on the budget management configuration, budget estimate forecast values are distributed monthly or yearly for the project's duration.

Steps

1. In the module menu, click **Administration**.

   The **ADMINISTRATION** page is displayed.

2. In the navigation pane, expand **Functional Configurations** and then click **Budget Management**.

   The **BUDGET MANAGEMENT** page is displayed.

3. From the **Budget Estimate Forecast Distribution** drop-down list, select either of the following options:

Options	Description
Yearly	Select **Yearly** to distribute budget estimate values yearly for the duration of the project.
Monthly	Select **Monthly** to distribute budget estimate values monthly for the duration of the project.

4. Click **Save**.

   All budget estimate forecasts of all the projects are distributed based on the budget management configuration.

3.4. Managing Contract Configurations

Overview

You can configure forms related to the contract management module displayed in the contract navigation pane.

Steps

1. In the module menu, click **Administration**.

   The **ADMINISTRATION** page is displayed.

2. In the navigation pane, expand **Functional Configurations**, and then click **Contract Management**.

   The **CONTRACT MANAGEMENT** page is displayed.

3. Provide the required information in the fields, as described in the following table.

Description
PAY ESTIMATE CONFIGURATIONS **Default Retention Percentage** Enter the retention percentage for pay estimates.

Description
The retention percentage of all pay estimates of all contracts that are created is set to this defined percentage value.
FINAL PAY ESTIMATE CONFIGURATIONS **Required Validation** Select the check box to enforce the corresponding validation when generating the final pay estimate of a contract. These validations are enforced for all new contracts that are created.

4. Click **Save**.

3.5. Configuring Resource Management

Overview

Resource Management configurations define the threshold percentage of the resource utilization in the application. This ensures the resources are utilized efficiently and identify the parameters as defined below:

- Over Utilization – Resources that are used more than the Optimal-Utilization Threshold percentage
- Optimal Utilization – Resources that are used within the Optimal-Utilization Threshold percentage
- Under Utilization – Resources that are used less than the Optimal-Utilization Threshold percentage

Steps

1. In the module menu, click **Administration**.

   The **ADMINISTRATION** page is displayed.
2. In the administration navigation pane, expand **Functional Configurations** and then click **Resource Management**.

   The **RESOURCE MANAGEMENT** page is displayed.
3. In the **Utilization Threshold (IN %)** section, enter the following information:

   a. **Over-Utilization** – Enter the maximum allowable utilization in % for a resource.

   b. **Under-Utilization** – Enter the minimum allowable utilization in % for a resource.

   c. **Optimal-Utilization** – Enter the optimal utilization in % for a resource.

4. Click **Save** to save the changes.

3.6. Configuring the Issue Log List Page

Overview

You can define the highlight color of issue log records that have passed the **Due Date** specified.

Steps

1. In the module menu, click **Administration**.

   The **ADMINISTRATION** page is displayed.
2. In the administration navigation pane, expand **Functional Configurations**, and then click **Issue Log Color Configuration**.

   The **ISSUE LOG COLOR CONFIGURATION** page is displayed.
3. From the **Issue's due Color** drop-down list, select the color to highlight issue log records that have passed their specified due date.

   Available options are colors defined in the **Color Grade** catalog of the library.
4. Click **Save**.

3.7. Configuring Mobile Application Settings

Overview

You can configure document management settings for the mobile application.

Steps

1. In the module menu, click **Administration**.

   The **ADMINISTRATION** page is displayed.
2. In the administration navigation pane, expand **Functional Configurations**, and then click **Mobile Application Settings**.

   The **MOBILE APPLICATION SETTINGS** page is displayed.
3. To enable data synchronization at the form level of a project, in the **SELECTIVE SYNC** section, select the **Enable Selective Sync** check box.

   On enabling selective sync, the **Sync** button is displayed in the list page of the form.

4. In the **DOCUMENT MANAGEMENT CONFIGURATIONS** section, perform the following steps:
   a. Select the **Enable Document Viewer and Annotation** check box to enable the online document viewer and the annotation features in the application.
   b. Select the **Get Inactive Projects in Outlook Plugin** check box to view in the Outlook plugin projects that are marked inactive.
5. In the **FORM SETTINGS** section, perform the following steps:
   a. In the **Last number of days plus current day Approved/Final Stage records to be maintained offline** box, enter the number of days the records will be available on the offline device. box, enter the number of days the records will be available on the offline device.

      To ignore all the Approved or Final Stage records, enter zero.
   b. To select the forms for which the form settings is applied, in the **Form Name** table, click **Add**.

      The **Forms** dialog box is displayed.
   c. Select the required forms, and then click **Select**.

      Alternatively, to select all the forms, click **Select All Records**.

      Available options are the forms marked as **Offline** in the application.
6. Click **Save**.

3.8. Enabling Meeting Scheduler

Overview

The Meeting Scheduler feature enables you to create Zoom meetings in Masterworks.

Steps

1. In the module menu, click **Administration**.

   The **ADMINISTRATION** page is displayed.
2. In the navigation pane, expand **Functional Configurations**, and then click **Meeting Settings**.

   The **MEETING SETTINGS** page is displayed.

3. By default, the **Enable Zoom Meeting Scheduler** check box is selected that indicates the Meeting Scheduler feature is enabled in the application.

   To turn off the Meeting Scheduler feature, clear the check box.

3.9. Important Notifications

Overview

You can display notification messages on the application's login page using the **Important Notifications** form. The latest published message is displayed on the login screen of the application.

Steps

1. In the module menu, click **Administration**.

   The **ADMINISTRATION** page is displayed.
2. In the navigation pane, expand **Functional Configurations**, and then click **Important Notifications**.

   The **IMPORTANT NOTIFICATIONS** list page is displayed.
3. Click **New**.

   The **IMPORTANT NOTIFICATIONS** page is displayed.
4. In the **Description** box, enter the description of the message to be displayed on the login page of the application.

   > **Note:** This information is not published on the login page of the application.
5. In the **Login Message** text box, enter the message to be displayed on the login page of the application.

   You can use the various text formatting options to format the information to be displayed.
6. In the **Requested By** field, enter the name of the user requesting the message to be displayed.

   > **Note:** This information is not published on the login page of the application.
7. From the **Requested On** drop-down list, select the date of the message request.

   > **Note:** This information is not published on the login page of the application.
8. To select the display type of the message, click either of the following options:
   - **Inline** - To display the message in the login page.
   - **PopUp** - To display the message in a dialog box.

9. Select the **Published** check box to publish the message on the application login page.
10. Click **Save**.

    The latest published message is displayed on the application login page.

3.10. Report Management

Report Management enables the user to configure report-associated settings.

- Setting Report Permissions
- Unsubscribing to Reports
- Configuring a Report

3.10.1. Configuring a Report

Overview

You can define the settings for reports and dashboards to display information if needed.

Steps

1. In the module menu, click **Administration**.

   The **ADMINISTRATION** page is displayed.
2. In the administration navigation pane, expand **Functional Configurations**.
3. Expand **Report Management** and then click **Report Configurations**.

   The **REPORT CONFIGURATIONS** page is displayed.
4. In the **Report Logo** box, click the image to change the logo in the report.

   The **Open** dialog box is displayed.
5. Select the new image and upload the new report logo.

   The new logo is displayed on all reports that are generated in the application.
6. In the **Fiscal Year Start Month** drop-down list, select the start month of the fiscal year that is displayed in reports.

7. To define the settings for the project summary dashboard, in the **PROJECT SUMMARY DASHBOARD** section, perform the following steps:
    a. To define a minimum and maximum value insights of the project schedule and budget, in the **BUDGET HEALTH** and **SCHEDULE HEALTH** sections, perform the following steps:
        i. In the **Legend** column, double-click and select the appropriate option. Available options are **Green**, **Yellow**, and **Red**.
        ii. In the **Min** column, click and enter the minimum value for the respective legend.
        iii. In the **Max** column, click and enter the maximum value for the respective legend.
    b. To define a minimum and maximum budget value of the project, in the **PORTFOLIO PROJECT DISTRIBUTION DASHBOARD** section, perform the following steps:
        i. Click **Add**.
        The **New** dialog box is displayed.
        ii. In the **Minimum Budget** box, enter the appropriate minimum budget value.
        iii. In the **Maximum Budget** box, enter the appropriate maximum budget value.
        iv. Click **Save**.

        > **Note:** You can add only three budget ranges.

8. To define the settings for the billings and payments dashboard, in the **BILLINGS AND PAYMENTS DASHBOARD** section, in the **Pay Estimates Pending Approval Days (N)** box, enter the number of days the pay estimates are pending for approval.
9. To define the settings for the risk and issues dashboard, in the **RISK AND ISSUES DASHBOARD** section, perform the following steps:
    a. In the **Due Days (N)** box, enter the number of days by when a resolution for the issues and risks is expected.
    b. In the **TOP N ISSUES** section, in the **Top High Priority Issues (N)** box, enter the number of records that should be displayed in the report. The report displays all the high priority issues in the project. The number of records displayed is based on the number defined.
    c. In the **TOP N RISKS** section, in the **Top High Priority Risks (N)** box, enter the number of records that should be displayed in the report box.

    The report displays all the high priority risks in the project. The number of records displayed is based on the number defined.

10. Click **Save**.

    The new report configurations are saved.

3.10.2. Unsubscribing to Reports

Before You Begin

- You are assigned the **Administrator** role.

Overview

You can stop the delivery of a subscribed report by unsubscribing to that report. Only a user with the Administrator role can delete report subscriptions.

Steps

1. In the module menu, click **Administration**.

   The **ADMINISTRATION** page is displayed.
2. In the navigation pane, expand **Functional Configurations**, expand **Report Management**, and then click **Report Subscriptions**.

   The **REPORT SUBSCRIPTIONS LIST** page is displayed.
3. Select a report subscription, and then click **Delete**.

   A confirmation message is displayed.
4. Click **OK**.

   The selected report subscription is deleted, and delivery of the report is stopped for the user who was subscribed to the report.

3.11. Business Units

The **Business Unit** form enables you to categorize projects and users based on the organization's operational functions. Users assigned to a particular business unit can access only projects that are associated with that business unit. You can assign multiple business units to a user and only one business unit to a project.

The **Business Unit** form enables you to perform the following tasks:

- Create a business unit
- Assign a business unit to a user
- Revoke a business unit from a user
- Deactivate a business unit

3.11.1. Creating a Business Unit

Overview

You can create business units to categorize projects and users based on the organization's operational functions.

Steps

1. In the module menu, click **Administration**.

   The **ADMINISTRATION** page is displayed.
2. In the navigation pane, expand **Functional Configurations**, and then click **Business Unit**.

   The **BUSINESS UNIT** list page is displayed.
3. Click **New**.

   The **BUSINESS UNIT** page is displayed.
4. In the **Business Unit** box, enter the name of the business unit.
5. From the **Is Root?** options, click either of the following:
   - Click **Yes** to set the business unit as a high-level option in the business unit hierarchy.
   - Click **No** to set the business unit as a sub-level option to a high-level business unit in the business unit hierarchy. If **No** is the selected option, then from the **Parent Business Unit** drop-down list, select the high-level business unit in the business unit hierarchy. Available parent business units are high-level business units that are marked as Active.
6. In the **Description** box, enter the description of the business unit.
7. Ensure the **Is Active** check box is selected.

   > **Note:** If the check box is cleared, the business unit cannot be available for selection during project creation or user account creation. Also, the business unit is made unavailable to create a sub-level business unit.
8. Click **Save**.

3.11.2. Assigning Business Units to a User

Overview

Assigning business units to users and projects enables you to limit project access to users belonging to the business unit of the project.

Steps

1. In the module menu, click **Administration**.

   The **ADMINISTRATION** page is displayed.
2. In the navigation pane, expand **User Management**, and then click **User Accounts**.

   The **USER ACCOUNTS** list page is displayed.
3. Select the required user account to add business units, and then click **Edit**.
4. From the **Business Unit** drop-down list, select the required business units.
5. Click **Save**.

3.11.3. Revoking Business Units from a User Account

Overview

On revoking a business unit assigned to a user account, the projects associated with the business unit are made inaccessible by the user.

Steps

1. In the module menu, click **Administration**.

   The **ADMINISTRATION** page is displayed.
2. In the navigation pane, expand **User Management**, and then click **User Accounts**.

   The **USER ACCOUNTS** list page is displayed.
3. Select the required user account to remove business units, and then click **Edit**.
4. From the **Business Units** drop-down list, clear the required business units.
5. Click **Save**.

3.11.4. Deactivating Business Units

Overview

You can deactivate business units to make them unavailable for selection while creating projects and user accounts. Also, a deactivated business unit is unavailable to create a sub-level business unit.

Steps

1. In the module menu, click **Administration**.

   The **ADMINISTRATION** page is displayed.
2. In the navigation pane, expand **Functional Configurations**, and then click **Business Unit**.

   The **BUSINESS UNIT** list page is displayed.
3. Select the required business unit, and then click **Edit**.

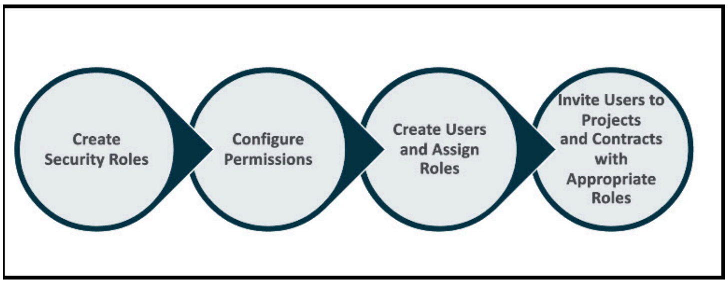
4. Clear the **Is Active** check box.
5. Click **Save**.

4. User Management

The User Management feature enables you to create and manage the Masterworks application's security roles, user accounts, and permissions.

A security role is a task-based privilege providing the same level of access to modules and application data for a specific group of user accounts. Permissions are configured on a role, and users are assigned to the role to control how these users view or edit business data in the application.

User Management Process



The User Management module enables you to manage the following:

- Manage roles
- Manage role permissions
- Manage user accounts
- Manage rules for auto-invitations to projects
- Manage online user registrations
- Manage user settings

4.1. User Accounts

You must create a user account to provide access to a user with valid login details. The system authenticates the login details when a user logs on to the application and provides the user access to the application.

Managing user accounts includes the following tasks:

- Configure User Settings
- Creating a User Account on page 39
- Create User Accounts in Bulk
- Managing Online Account Registrations
- Change the Password of a User Account
- Change the Status of a User Account
- Edit User Account Details

- [Unlocking a User Account]
- [Generate User Account Reports]

4.1.1. Creating a User Account

Overview

You can create an account for a user to log into and use the Masterworks application.

> **Note:** These instructions are for users that are not in the Active Directory. Users in the Active Directory will automatically have an account created or updated through syncing with the Active Directory.

Steps

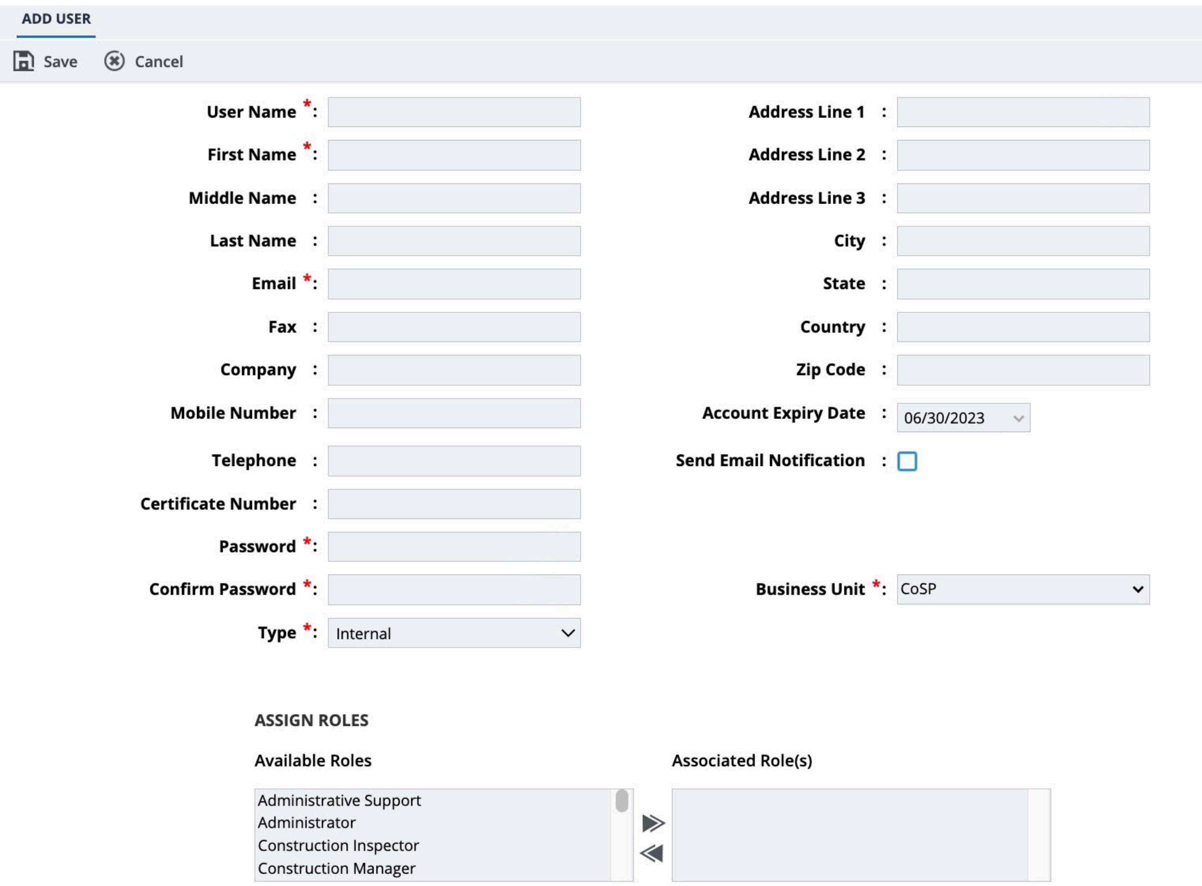
1. In the module menu, click **Administration**.

   The **ADMINISTRATION** page is displayed.
2. In the navigation pane, expand **User Management**, and then click **User Accounts**.

   The **USER ACCOUNTS** list page is displayed.
3. Click **New**.

   The **ADD USER** page is displayed.

   User Account Page



4. Provide the required information in the fields, as described in the following table:

Field Name	Description
User Name	Enter a unique identification name for the user account. The user name is used to login to the application. **Note:** Once the record is saved, you cannot edit the entered user name
First Name	Enter the first name of the user.
Middle Name	Enter the middle name of the user.
Last Name	Enter the last name of the user.
Email	Enter the email address of the user.
Fax	Enter the fax number of the user for facsimile communication.
Company	Enter the company name of the user.
Mobile Number	Enter the mobile number of the user.
Telephone	Enter the telephone number of the user.
Certificate Number	Enter the access certificate number assigned to the user.
Password	Enter a password for the user account. The password must adhere to the settings as defined in the **AUTHENTICATION & LOGIN SETTINGS** page.
Confirm Password	Retype the password to verify that the entered password is correct.
Type	Select either of the following options: • **Internal** - Select this option if the user belongs to the organization. • **External** - Select this option if the user belongs to a different organization. For example, contractors. Selecting the account type as **External** for an account ensures only specific and limited information in the application is available to the user.
Address Line 1, Address Line 2, and Address Line 3	Enter the address of the user.

Field Name	Description
City	Enter the name of the city where the user resides.
State	Enter the name of the state where the user resides.
Country	Enter the name of the country where the user resides.
Zip Code	Enter the zip code for the address where the user resides.
Account Expiry Date	Enter a date until which the account will be valid. The user will be denied access to the application after this date.
Send Email Notification	Select the check box to send an email notification with login details to the user.
Business Unit	Select the business unit to assign to the user. Available options are business units defined in the application.
Vendor	If the selected **Type** is **External**, then from the **Vendor** drop-down list, select the vendor associated with the user. Available options are contractors defined in the **Vendors** catalog of the library.

5. In the **ASSIGN ROLES** section, perform the following steps to assign roles to the user:

   a. In the **Available Roles** list, click the role to assign to the user.

      To select multiple roles, press CTRL, and then click the required roles.

   b. Click ▶.

      The selected roles are displayed in the **Associated Role(s)** box.

      The consolidated set of permissions of all roles associated with the user account are made available to the user.

6. Click **Save**.

   The user account is created.

   > **Note:** To deny application access to a user, change the status of the user to Inactive.

4.1.2. Creating Multiple User Accounts in Bulk

Overview

You can create multiple user accounts at once by importing a Microsoft Excel file that contains user details. The high-level process of bulk uploading of user account details is as follows:

1. Download the predefined Excel template from Masterworks. The Excel template contains user information required for user account creation as columns.
2. Enter user account details in the template workbook.
3. Import the workbook with user details to Masterworks.

The password for user accounts created by importing account information using an Excel file is set to **Aurigo@123**. All users with accounts created using the bulk import feature can log in to the application with their username and the default password **Aurigo@123**. Users are prompted to reset their password on the first login.

Steps

1. In the module menu, click **Administration**.

   The **ADMINISTRATION** page is displayed.
2. In the navigation pane, expand **User Management**, and then click **User Accounts**.

   The **USER ACCOUNTS** list page is displayed.
3. Click **Excel Import / Export**, and then click **Excel Template**.

   The template is saved to your local storage.
4. Open the saved Excel template workbook.
5. Enter information for each of the columns, as described in the following table.

Field Name	Description
InternalID	Do not enter information in the **InternalID** column. When you import the Excel workbook, a unique identification code for the corresponding user record is automatically generated.
UserName	Enter a unique alphanumeric name to identify the user.

Field Name	Description
FirstName	Enter the first name of the user.
MiddleName	Enter the middle name of the user.
LastName	Enter the last name of the user.
CompanyName	Enter the company name of the user.
Address1, Address2, and Address3	Enter the address of the user.
City	Enter the name of the city where the user resides.
State	Enter the name of the state where the user resides.
Country	Enter the name of the country where the user resides.
Zipcode	Enter the zip code for the address where the user resides.
Telephone	Enter the telephone number of the user.
Email	Enter the email address of the user for email communication.
Fax	Enter the fax number of the user for facsimile communication.
CertNo	Enter the access certificate number assigned to the user.
Type	Enter either of the following options: • **Internal** - Enter this option if the user belongs to the organization. • **External** - Enter this option if the user belongs to a different organization. For example, contractors.
Vendor	If the **Type** is **External**, then enter the vendor associated with the user. To view the list of vendors, refer to the **Vendors** catalog of the library.
IsActive	Enter **YES** to specify that the user is active. Enter **NO** to deny application access to the user. **Note:** To revoke application access from a user, change the status of the user to Inactive.
MobileNo	Enter the mobile number of the user.

Field Name	Description
AccountExpiryDate	Enter the date until which the account will be active. Enter the date in the format as defined in the **USER SETTINGS** page. The user is denied access to the application after this date.
SendEmail	Enter **YES** for the user to receive an email notification with login details on user account creation.
Roles	Enter the role names for the user separated by a comma. Ensure the role names entered here are as defined in the application. To view the list of role names defined in the application, in the Administration navigation pane, expand **User Management**, and then click **Security Roles**.
Business Unit	Enter the business units to which the user belongs. Enter the business unit names separated by a comma. Ensure the business unit names entered here are as defined in the application. To view the list of business unit names defined in the application, in the navigation pane, expand **Functional Configuration**, and then click **Business Units**.
IsADUser	**Note:** This column is available only if the option selected in the **Login Mode** field in the **AUTHENTICATION & LOGIN SETTINGS** page is **External IDP** or **Mixed**. Enter **YES** if the user is registered in the External Identity Provider. Else, enter **No**.

6. To import the Excel workbook with user details, click **Excel Import / Export**, and then click **Excel Import**.

   The **IMPORT DETAILS FROM EXCEL FILE** page is displayed.
7. Click **Choose File**.

   The **Open** dialog box is displayed.
8. Select the workbook with the updated information,and then click **Open.**
9. Click **Upload**.

   The information in the Excel file is displayed.

10. Click **Save**.

    The information in the Excel file is imported to Masterworks.

4.1.3. Editing User Account Details

Overview

You can modify user account details such as address, email address, telephone or FAX numbers, status, expiry date, or user roles of a user account.

For users in the Active Directory, the system administrator must edit their user account for Business Unit and assign roles.

Steps

1. In the module menu, click **Administration**.

   The **ADMINISTRATION** page is displayed.
2. In the navigation pane, expand **User Management**, and then click **User Accounts**.

   The **USER ACCOUNTS** list page is displayed.
3. Select the required user account, and then click **Edit**.

   The **EDIT USER** page is displayed.
4. Make changes in the required fields.
5. To manage the role of the user, in the **ASSIGN ROLES** section, perform the following steps:

   a. To assign roles to the user, click ⏩.

   b. To remove roles of the user, click ⏪.
6. Click **Save**.

4.1.4. Changing the Password of a User Account

Overview

You can change the password of a Masterworks user account for administrative purposes and send the new password details to the user. An email notification is sent automatically to the user with the details of the new password.

Users in the Active Directory cannot change their password as the password is maintained through syncing with the directory.

Steps

1. In the module menu, click **Administration**.

   The **ADMINISTRATION** page is displayed.

2. In the navigation pane, expand **User Management**, and then click **User Accounts**.

   The **USER ACCOUNTS** list page is displayed.
3. Select the required user account, and then click **Edit**.

   The **EDIT USER** page is displayed.
4. Corresponding to the **Password** field, click **Change Password**.

   The **CHANGE PASSWORD** page is displayed.
5. In the **Choose a new password** box, enter the new password.
6. In the **Confirm the new password** box, re-enter the password to verify the new password.
7. Click **Save**.

4.1.5. Changing the Status of a User Account

You can Deactivate a User Account to prevent a user from accessing the application. On deactivating an account, the user cannot log into the application. However, the account is not deleted, and all details of the account are retained and available.

You can Active a User Account. On activating an account, the user can log in to resume working on the application.

4.1.5.1. Activating a User Account

Before You Begin

- The check box in the **Is Active?** column of the user account is cleared.

Overview

You can activate an inactive user account to allow a user access to the application. On activating an account, the user can log in to the application.

Steps

1. In the module menu, click **Administration**.

   The **ADMINISTRATION** page is displayed.
2. In the navigation pane, expand **User Management**, and then click **User Accounts**.

   The **USER ACCOUNTS** list page is displayed.
3. Select the appropriate deactivated user account.

4. Click **Mark Active/Inactive**.

   Alternatively, perform the following steps:

   a. Select the required inactive user account, and then click **Edit**.

      The **EDIT USER** page is displayed.

   b. From the **Status** drop-down list, select **Active**.

   c. Click **Save**.

4.1.5.2. Deactivating a User Account

Before You Begin

The check box in the **Is Active?** column of the user account is selected.

Overview

You can deactivate an active user account to prevent a user from accessing the application. On deactivating an account, the user cannot log in to the application. However, the account is not deleted, and all details of the account are retained and available.

Steps

1. In the module menu, click **Administration**.

   The **ADMINISTRATION** page is displayed.

2. In the navigation pane, expand **User Management**, and then click **User Accounts**.

   The **USER ACCOUNTS** list page is displayed.

3. Select the appropriate active user accounts, and then click **Mark Active/Inactive**.

   Alternatively, perform the following steps:

   a. Select the required active user account, and then click **Edit**.

      The **EDIT USER** page is displayed.

   b. From the **Status** drop-down list, select **Inactive**.

   c. Click **Save**.

4.1.6. Unlocking a User Account

Overview

Masterworks automatically locks a user account when a user exceeds the maximum number of allowed failed log-on attempts. A user with a locked account cannot log in to the application until the account is reset. A request with account details can be sent to the Administrator to reset the account. Also, a user can initiate a request to unlock the account and reset the password from the application's login page.

The system will automatically reset the account after the time defined in **Reset unsuccessful Login attempt counter (in mins)** on the **Authentication & Login Settings** page.

Steps

1. In the module menu, click **Administration**.

   The **ADMINISTRATION** page is displayed.
2. In the navigation pane, expand **User Management**, and then click **User Accounts**.

   The **USER ACCOUNTS** page is displayed.
3. Select the required locked user account.
4. Click **Unlock**.

   A confirmation message is displayed.
5. Click **OK**.

4.1.7. Generating User Accounts Reports

Overview

You can generate various reports for information on user accounts.

Steps

1. In the module menu, click **Administration**.

   The **ADMINISTRATION** page is displayed.
2. In the navigation pane, expand **User Management**, and then click **User Accounts**.

   The **USER ACCOUNTS**
3. Click **Reports**, and then click the required report.

You can generate the following reports:

- User Details Report
- User Access Details Report
- Weekly Access Summary
- User Account - Logs
- Login - Logs

User Details Report

The **User Details Report** displays basic information of all the users of the enterprise, the number of active users, inactive users, user registrations pending approval, and the total number of users in the enterprise.

The following user information is displayed:

- Active Users - Total number of active users in the application.

- Inactive Users - Total number of inactive users in the application.
- Pending Registrations - Total number of users who have requested to get access to the application.
- Total Users - Total number of users in the application.
- Last Name - Last name of the user.
- First Name - First name of the user.
- User Name - User name of the user.
- Active - Displays **Yes** if the user is active.
- Locked - Displays **Yes** if the user account is locked. The user cannot access the application until the user account is unlocked.
- Pending For Registration - Displays **Yes** if the user is waiting to get access to the application and the administrator must grant access.
- Role - Roles of the user in the application.

User Access Details Report

This report displays the list of users with their login time and logout time.

You can filter information in this report using the following filter criteria:

- Start Date
- End Date
- Users

The following information is displayed:

- Login Date - Date of login into the application.
- User Name - Name of the user whose access details are displayed.
- Login Time - Time of login into the application.
- IP- IP Address of the logged-in user.
- Module- The module accessed.
- URL - The form accessed.
- No. of Pages Visited - The total number of pages accessed.
- First login - The time the user accessed the application first time on that day.
- Last logout - The time the user accessed the application last time on that day.
- Duration - Session duration.

Weekly Access Summary

The **Weekly Access Summary** report displays statistics of the number of pages the users of the application visited that day, the number of users who logged into the application, the number of users who did not login to the application, the time of first and last login, and the total time duration the user was logged into the application.

You can filter information in this report using the following filter criteria:

- Start Date
- User Name

The following information is displayed:

- Department - The department or business unit the user belongs to.
- User Name - Name of the user who accessed the application.
- Date - Date the user accessed the application.
- Pages Visited - Total number of pages accessed by the user.
- First Access - Time of first access by the user.
- Last Access - Time of last access by the user.
- Duration (min) - Duration of the session.

User Account - Logs

This report displays the date and time user accounts were created or modified.You can filter information in this report using the following filter criteria:

- Start Date
- End Date
- Action

The following information is displayed:

- Action - The action performed.
- User Name - User name of the user whose account details were changed.
- Full Name - Full name of the user whose account details were changed.
- Action By - User name of the user who made the changes.
- Date Time - Date and time when the change was made.
- Field Name - Name of the field that was modified.
- Previous Value - The value of the field before modification.
- Current Value - New value in the field.

Login - Logs

This report displays the success or failure of login attempts, the login attempt date and time, user name, first name and last name of the user, and information if the user account is locked and if the user is an active user. The information displayed in the report is grouped on the user's login ID; the latest login attempts are recorded in reverse chronological order. The report also displays the number of successful and unsuccessful login attempts in the selected date range.

You can filter information in this report using the following filter criteria:

- Start Date

- End Date
- Include Failed

The following information is displayed:

- Login Id - The user name of the user.
- First Name - First name of the user.
- Last Name - Last name of the user.
- Is Locked? – Displays **Yes** if the user account of the user is locked.
- Is Active? - Displays **Yes** if the user account of the user is marked as active.
- Login Date Time - The date and time the user logged in or attempted to login.
- Success? - Displays if the login attempt was successful or not.
- Total number of successful logins - Total number of successful login attempts within the specified date range.
- Total number of failed logins - Total number of failed login attempts within the specified date range.

4.2. Security Roles

A security role is an application-specific logical grouping of users, classified by user profile or job title. It is a privilege granted to a user or a group of users to access various modules and resources of the application. In Masterworks, roles are a specific grouping of user permission to access the information in the application. For example, estimators, supervisors, engineers, managers, and owners may access the application, and each of these categories is called a role. Each of these roles has varied access control on the application and can perform tasks based on the permissions provided to each of these roles.

The system administrator must create security roles that define access privileges and restrictions to application resources or modules. The Administrator must map these roles to various users based on their job profiles.

You can perform the following tasks:

- Create a security role
- Configure permissions
- Assign roles to users
- Edit role information

4.2.1. Creating Security Roles

Overview

Creating roles enables you to manage the system's security by defining permissions to a role and restricting user access to selective modules or forms in the application.

For example, a **Project Manager** role has access to all application modules and permissions to create, edit, delete, approve, or reject any project-related information. Any user or group of users assigned the Project Manager role would have access to all the privileges granted to a project manager.

Steps

1. In the module menu, click **Administration**.

   The **ADMINISTRATION** page is displayed.
2. In the navigation pane, expand **User Management**, and then click **Security Roles**.

   The **SECURITY ROLES** list page is displayed.

3. To create user roles, perform either of the following procedures:
   - To create a single role:
     a. Click **New**.
        The **SECURITY ROLES** page is displayed.
     b. In the **Role** box, enter the name of the role.
     c. In the **Description** box, enter a description for the role.
     d. Click **Save**.
   - Create multiple roles by importing role information in an Excel worksheet:
     a. Click **Excel Import / Export**, and then click **Excel Template**.
     b. Save the Excel template to your local storage.
     c. Open the saved Excel template.
     d. In the **Role** column, enter the role name.
     e. In the **Description** column, enter the description of the role.
     f. Save the Excel workbook.
     g. To import role information, click **Excel Import / Export**, and then click **Excel Import**.
        The **IMPORT DETAILS FROM EXCEL FILE** is displayed.
     h. Click **Choose File**, and select the updated Excel workbook with role information.
     i. Click **Save**.
        The roles defined in the Excel file are updated to the list of roles.

> **Note:** Once the security role is created, role permissions will need to be configured for the role.

4.2.2. Assigning a Role to Users

Overview

You can assign a role to multiple users in the application.

Steps

1. In the module menu, click **Administration**.
   The **ADMINISTRATION** page is displayed.
2. In the navigation pane, expand **User Management**, and then click **Security Roles**.
   The **SECURITY ROLES** list page is displayed.
3. Select a role.

4. Click **Manage Users**.

   The **MANAGE USERS** page is displayed.
5. In the **Available Users** list, click the required user.

   Alternatively, to select multiple users, press CTRL, and click each of the required users.
6. Click ▶.

   The selected users are added to the **Users added to this role** box.
7. Click **Save**.

4.2.3. Editing Role Information

Overview

Editing role information enables you to manage the system's security by defining permissions to a role and restricting user access to selective modules or forms in the application.

Steps

1. In the module menu, click **Administration**.

   The **ADMINISTRATION** page is displayed.
2. In the navigation pane, expand **User Management**, and then click **Security Roles**.

   The **SECURITY ROLES** list page is displayed.
3. Select the appropriate role, and then click **Edit**.

   The **SECURITY ROLES** page is displayed.
4. Update the **Role** and **Description** fields with the appropriate information.
5. Click **Save**.

If the role name is modified, ensure that the associated workflows' stakeholders are updated at every stage.For information on updating a workflow, refer to Editing a Workflow
.

4.2.4. Deleting a Security Role

Before You Begin

- No users are invited to the role.

Steps

1. In the module menu, click **Administration**.

   The **ADMINISTRATION** page is displayed.

2. In the navigation pane, expand **User Management**, and then click **Security Roles**.

   The **SECURITY ROLES** list page is displayed.
3. Select a role and click **Delete**.

   A confirmation message is displayed.
4. Click **OK**.

4.3. Permissions

You can configure permissions for various roles defined in the application. Roles are assigned permissions as a security measure to protect integrity, limit access to data, and define decision-making powers. A user in a specific role is permitted access to modules or forms relevant to the role and the tasks that the user is permitted to perform within that form.

For example, a user who logs on as a Contract Administrator is given access to the Contract Invoice form and is expected to be able to create and edit the Contract Invoice form.

Users can have multiple roles. Each role's permissions are consolidated for the user.

You can assign permissions in two ways:

- Assign permissions to a role
  You can set form permissions for a selected role. For example, once you create a role, you can then assign permissions to the role for each of the forms.
- Assign permissions to a form or report
  You can set role permissions for a selected form or report. For example, once you create a form, you can then assign permissions on the form for each of the roles.

Permission options available for selection depend on the features available in the form or module.

> **Note:** The Administrator role is permitted access to all the forms and features available in the application.

You can also configure role permissions in bulk using an Excel workbook.

4.3.1. Configuring Role Permissions

Overview

You can assign permissions to a role for each of the forms available in the application.

Steps

1. In the module menu, click **Administration**.

   The **ADMINISTRATION** page is displayed.

2. In the navigation pane, expand **User Management**, and then click **Permissions**.

   The **PERMISSIONS** page is displayed.

3. To set permissions for a role, in the **By Roles** tab, from the **Roles** drop-down list, select the required role to assign permissions.

   Available options are all roles created in the application.

   Alternatively, type the name of the role, and then select the required role.

   Available options are role names that match the entered role name.

   The permissions for the selected role are available in the **Form Permissions** tab.

   > **Note:** If you select the **Create** or **Edit** check boxes, the **View** check box is automatically selected. However, when you clear the **Create** or **Edit** check boxes, the **View** check box is not cleared automatically.

   > **Note:** The first check box row in the **Create**, **Edit**, **View**, or **Delete** columns displays:
   >
   > - ☑ - indicates that permission is granted to all the roles or forms that are available in the permission matrix
   > - ☐- indicates that permission is not granted to any of the roles or forms that are available in the permission matrix
   > - ⊟ - indicates that permission is granted to some of the roles or forms that are available in the permission matrix

4. To define permissions for forms, in the **Form Permissions** tab, perform any of the following procedures:
   - Copy permissions from an existing role, and modify required permissions:
     a. From the **Copy Permissions From** drop-down list, select the required role to copy the permissions from.
     b. Click **Copy**.
        The form permissions of the selected role are copied to the role selected in the **Roles** drop-down list.
     c. Optionally, select or clear the required permissions from the permission matrix to grant or revoke access.
   - Select all or revoke all standard permissions for all forms, and modify required permissions:
     a. In the **Create**, **Edit**, **View**, or **Delete** columns, select the check boxes in the top check box row to grant access or clear the check boxes to revoke access to the selected role.
     b. Optionally, select or clear the required permissions from the permission matrix to grant or revoke access.
   - Search for a specific form, and define permissions:
     a. In the **Module** column, in the search box, enter the name of the form, and then select the form.
     b. In the corresponding row of the selected form, select or clear the check boxes in the **Create**, **Edit**, **View**, **Delete**, and **Others** columns to set permissions.
        Alternatively, to set the same permissions for all the forms that are displayed in the permission matrix, select or clear the check boxes in the row below the **Create**, **Edit**, **View**, or **Delete** column.
   - Select all or revoke all permissions of a form or module:
     a. In the **Module** column, select or clear the check box corresponding to a module or form.
        - If the check box corresponding to a form is selected or cleared, all permissions on the form are granted or revoked.
        - If the check box corresponding to a module is selected or cleared, all permissions on all the forms in that module are granted or revoked.

> **Note:** If you are assigning permissions at the module level, the permissions are assigned to all the associated forms displayed in the permission matrix. If a form is not displayed in the permission matrix, the permissions are not assigned to the form, even though the form is associated with the module.

5. To set permissions for a report, click the **Report Permissions** tab, and perform any of the following procedures:
   - Copy permissions from an existing role, and modify required permissions:
     a. From the **Copy Permissions From** drop-down list, select the required role to copy the permissions from.
     b. Click **Copy**.
        The report permissions for the selected role in the **Copy Permissions From** drop-down list are copied to the role selected in the **Roles** drop-down list.
     c. Optionally, select or clear the required permissions from the permission matrix to grant or revoke access.
   - Select all or revoke all permissions of a report or module:
     a. In the **Module** column, select or clear the check box corresponding to a module or report.
        - If the check box corresponding to a report is selected or cleared, all permissions on the report are granted or revoked.
        - If the check box corresponding to a module is selected or cleared, permissions on all the reports in that module are granted or revoked.

     > **Note:** If you are assigning permissions at the module level, the permissions are assigned to all the associated reports displayed in the permission matrix. If a report is not displayed in the permission matrix, the permissions are not assigned to the report, even though the report is associated with the module.

   - Search for a specific report, and define permissions:
     a. In the **Module** column, in the search box, enter the name of the report, and then select the report.
6. Click **Save**.

4.3.2. Configuring Form Permissions

Overview

You can assign permissions on the form for each of the roles in the application.

Steps

1. In the module menu, click **Administration**.

   The **ADMINISTRATION** page is displayed.

2. In the navigation pane, expand **User Management**, and then click **Permissions**.

   The **PERMISSIONS** page is displayed.

3. To set permissions for a form, click the **By Forms** tab.

4. From the **Forms** drop-down list, select the required form to assign permissions. Available options are forms available in the application.

> **Note:** If you select the **Create** or **Edit** check boxes, the **View** check box is automatically selected. However, when you clear the **Create** or **Edit** check boxes, the **View** check box is not cleared automatically.

> **Note:** The first check box row in the **Create**, **Edit**, **View**, or **Delete** columns displays:
>
> - ☑ - indicates that permission is granted to all the roles or forms that are available in the permission matrix
> - ☐ - indicates that permission is not granted to any of the roles or forms that are available in the permission matrix
> - ⊟ - indicates that permission is granted to some of the roles or forms that are available in the permission matrix

- To define permissions on roles, perform any of the following steps.
  - Search for a specific role, and define permissions:
    a. In the **Roles** column, in the box, enter the name of the role.
    All role names matching the entered text are displayed.
    b. In the rows corresponding to the role name, in the **Create**, **Edit**, **View**, **Delete**, and **Others** columns, select or clear the check boxes to set permissions.
    Alternatively, to set the same permissions on all the roles that are visible in the permission matrix, select or clear the check boxes in the row below the **Create**, **Edit**, **View**, **Delete** rows.
    c. Select or clear the appropriate permissions from the permission matrix to grant or revoke access.
  - Select all or revoke all permissions of a role, in the **Roles** column, select or clear the check box corresponding to a role.
- To define permissions for a report, click the **Report Permissions** tab, and perform any of the following steps:
  a. In the **Roles** column, in the box, enter the name of the role.
  All role names matching the entered text are displayed.
  b. In the **Reports** column, select or clear the required check boxes to grant or revoke report permissions for the selected form. Alternatively, to grant permissions to all reports for a role, in the **Roles** column, select the check box for the required role.

5. Click **Save**.

4.3.3. Configuring Permissions in Bulk Using an Excel Workbook

Overview

You can configure role permissions on each form in bulk using the Excel Import/Export feature.

Steps

1. In the module menu, click **Administration**.

   The **ADMINISTRATION** page is displayed.
2. In the navigation pane, expand **User Management**, and then click **Permissions**.

   The **PERMISSIONS** page is displayed.
3. Click **Excel Import / Export**, and then click **Excel Template With Data**.

   All configured permissions are downloaded in an Excel workbook to your local storage.

   Alternatively, to download the template without any data, click **Excel Template**.

   The template as an Excel file is downloaded to your local storage.

   The Excel workbook comprises the following columns:

   - Module Name - The path and name of the module.
   - FormId - The form identification code.
   - Form Name - The name of the form.
   - Permissions - The permissions defined for the form.
   - Roles - Roles defined in the application.

   If you have exported permission configurations to an Excel workbook, a **Y** in the columns with role names signifies a granted permission and an **N** signifies a revoked permission.

   > **Note:** All permissions that have the check box cleared in the **PERMISSIONS** page are exported to the Excel workbook with the corresponding permissions set as **N**.

4. To update a permission, corresponding to the required form, permission, and role, enter **Y** to grant the permission or enter **N** to revoke the permission.

   Alternatively, enter the required information in the columns as follows:

   - Module Name - Enter the path and name of the module.
   - FormId - Enter the form identification code.
   - Form Name - Enter the name of the form.
   - Permissions - Enter the permissions defined for the form.
   - Roles - Corresponding to each role, enter **Y** to grant the permission or enter **N** to revoke the permission.
5. Save the Excel workbook.
6. In the application, click **Excel Import / Export**, and then click **Excel Import**.

   The **IMPORT DETAILS FROM EXCEL FILE** page is displayed.
7. Click **Choose File** to select the workbook with updated permission information.

   The **Open** dialog box is displayed.
8. Select the appropriate workbook, and then click **Open**.
9. Click **Upload** to import permission information from the Excel workbook.
10. On encountering errors while importing an Excel workbook, perform the following steps:

    a. In the toolbar, click **Error Log**.

       The error log workbook is downloaded to your local storage.

    b. Open the error log workbook to view the errors in the various columns.

       Error messages in the cells are highlighted in red. Tabs in the workbook are also highlighted to indicate the presence of errors.

    c. Open the Excel workbook and modify the details as specified in the error log workbook.

       Optionally, you can make relevant corrections in the error log workbook and upload it.

    d. Save and upload the Excel workbook to import the updated information.
11. Click **Save**.

    The items in the uploaded Excel workbook are uploaded to the page.

4.4. Auto Invite

The **Auto Invite** feature is used to automatically invite users assigned to specific security roles to multiple projects and contracts based on defined conditions. The users associated with the security roles that are part of an auto invite rule will be automatically invited to projects and contracts that adhere to conditions specified in the auto invite rule.

For example, if the projects use the grant funding, then at some point in the workflow, all the projects require approval from the Chief Financial Officer (CFO). In this example, the CFO needs to be invited to all such projects. Instead of manually inviting the CFO to each project, you can use the **Auto Invite** feature to invite the CFO to all the projects automatically.

You can create an auto invite rule and define filter conditions related to projects, contracts, and users. You can create multiple auto invite rules. A role can be used in multiple rules. For example, you can mark the user role Project Manager in Rule 1 and Rule 2.

When a new user account is created and saved in Masterworks, the user roles assigned to the user are compared with all the active auto invite rules. Suppose any of the assigned user roles are part of the auto invite rules. In that case, the auto invite rule is executed, and the user is automatically invited to the projects and contracts that adhere to the conditions specified in the rules.

When a new project or contract is created and saved in Masterworks, the project or contract details are compared with all the active auto invite rules. Suppose the project or contract details adhere to any of the conditions defined in the auto invite rules. In that case, these auto invite rules are executed, and the pre-defined users are automatically invited to the project or contract.

When you create a new auto invite rule or update an existing rule, you can manually run them and invite the required users to the projects and contracts. You can run an existing auto invite rule at any point in time.

4.4.1. Creating an Auto Invite Rule

Overview

You can create an auto invite rule and define filter conditions related to projects, contracts, and users.

Steps

1. In the module menu, click **Administration**.

   The **ADMINISTRATION** page is displayed.
2. In the navigation pane, expand **User Management**, and then click **Auto Invite**.

   The **AUTO INVITE** list page is displayed.
3. Click **New**.

   The **AUTO INVITE** page is displayed.
4. In the **Rule Name** box, enter the required rule name.
5. In the **Description** box, enter the description for the rule.

6. Ensure the **Active** check box is selected, to specify that the rule is active and available for use.
7. To create a project filter, in the **PROJECT FILTER** section, perform either of the following:
   - To automatically invite users of selected roles to all projects, select the **Select All Projects** check box.
   - To automatically invite users of selected roles to projects that adhere to specified conditions, create a project rule and define the conditions.

To create a project rule, perform the following steps:	To create a group of rules with a combination of multiple AND and OR conditions, perform the following steps:
a. Click **Add Rule**. A new row with a drop-down list is added. The **AND** and **OR** buttons present at the top are unavailable. **b.** From the drop-down list, select the required project field. For example, select **Program Year**. Available options are fields in the **Project Details** form. When a project field is selected, two new fields are added to the row. The second field is a drop-down list and based on the project field selected, the third field can be any of the following: ▪ Drop-down list ▪ Option list ▪ Text box ▪ Numeric text box ▪ Calendar drop-down box	**a.** Click **Add Group**. A new row with a drop-down list is added. The **AND** and **OR** buttons present at the top are available. **b.** From the drop-down list, select the required project field. For example, select **Project Value**. Available options are fields in the **Project Details** form. ▪ Drop-down list ▪ Option list ▪ Text box ▪ Numeric text box ▪ Calendar drop-down box **c.** From the second drop-down list, select the operator. For example, select greater than. The operator creates the condition between the project field you select in the first drop-

<table>
<tr><th>To create a project rule, perform the following steps:</th><th>To create a group of rules with a combination of multiple AND and OR conditions, perform the following steps:</th></tr>
<tr><td>
c. From the second drop-down list, select the operator.
For example, select equal.
The operator creates the condition between the project field you select in the first drop-down list and the value that you enter or select in the third field.
From the second drop-down list, if you select either between or not between, the third and the fourth fields appear, which can be one of the following:
Numeric text box
Calendar drop-down box
d. Based on the project field you select in the first field, enter or select a value in the third field.
For example, select 2020.
e. Optionally, to add multiple rules to the project filter, repeat steps 1 to 4.
When you add more than one rule, then the AND and OR buttons present at the top are enabled. Based on the condition to invite users to a project, click either of the following:
If all the project rules must be true to execute the auto invite rule, click AND. For example, Program Year = 2020 and Project Score = 90. The user
</td><td>
down field and the value you enter or select in the third field.
From the second drop-down list, if you select either between or not between, the third and the fourth fields appear, which can be one of the following:
Numeric text box
Calendar drop-down box
d. Based on the project field you select in the first field, enter or select a value in the third field.
For example, enter 10000.
e. Optionally, to add multiple rules to the group, repeat the above steps 1 to 4.
When you add more than one rule, then the AND and OR buttons present at the top of the group are enabled. Based on the condition to invite the user to the project, click either of the following:
If all the project rules defined in the group must be true to execute the auto invite rule, click AND. For example, Project Value > 10000 AND Status = Planning. The user is automatically invited to the project if the value entered in the field Project Value is greater than 10000 and the
</td></tr>
</table>

To create a project rule, perform the following steps:	To create a group of rules with a combination of multiple AND and OR conditions, perform the following steps:
is automatically invited to the project if the year selected in the field Program Year is 2020 and the Project Score is 90. ■ If any one of the project rules must be true to execute the auto invite rule, click **OR**. For example, Program Year = 2020 OR Project Score = 90. The user is automatically invited to the project if the year selected in the field Program Year is 2020 or the score entered in the field Project Score is 90. f. Optionally, to delete a row, click **Delete** corresponding to the appropriate row.	option selected in the field Status is Planning. ■ If any one of the project rules defined in the group must be true to execute the auto invite, click **OR**. For example, Project Value > 10000 AND Status = Planning. The user is automatically invited to the project if the value entered in the field Project Value is greater than 10000 or the option selected in the field Status is Planning. f. Optionally, to create a sub-group under a group, click **Add Group**. g. Optionally, to delete a row, click **Delete** corresponding to the appropriate row.

8. To create a contract filter, in the **CONTRACT FILTER** section, perform either of the following:
   - To automatically invite users of selected roles to all contracts of the projects selected in the **PROJECT FILTER** section, select the **Select All Contracts**.
   - To automatically invite users of a selected roles to contracts of the projects selected in the **PROJECT FILTER** that adhere to specified conditions, create a contract rule and define the conditions.

<table>
<tr><th>To create a contract rule, perform the following steps:</th><th>To create a group of rules with a combination of multiple AND and OR conditions, perform the following steps:</th></tr>
<tr><td>a. Click Add Rule. A new row with a drop-down list is added.
The AND and OR buttons present at the top are unavailable.
b. From the drop-down list, select the appropriate contract field.
For example, select Contract Name.
Available options are fields in the Contract Details form.
When a contract field is selected, two new fields are added to the row. The second field is a drop-down list and based on the project field selected, the third field can be any of the following:
■ Drop-down list
■ Option list
■ Text box
■ Numeric text box
■ Calendar drop-down box
c. From the second drop-down list, select the operator.
For example, select contains.
The operator creates the condition between the contract</td><td>a. Click Add Group. A new row with a drop-down list is added.
The AND and OR buttons present at the top are enabled.
b. From the drop-down list, select the appropriate contract field.
For example, select Measurement System.
When a contract field is selected, two new fields are added to the row. The second field is a drop-down list and based on the project field selected, the third field can be any of the following:
■ Drop-down list
■ Option list
■ Text box
■ Numeric text box
■ Calendar drop-down box
c. From the second drop-down list, select the operator.
For example, select not equal.
The operator creates the condition between the contract field you select in the first field</td></tr>
</table>

<table>
<tr><th>To create a contract rule, perform the following steps:</th><th>To create a group of rules with a combination of multiple AND and OR conditions, perform the following steps:</th></tr>
<tr><td>
field you select in the first filed and the value that you enter or select in the third field.
d. Based on the contract field you select in the first field, enter or select a value in the third field. For example, enter Design.
e. Optionally, to add multiple rules to the contract filter, repeat the above steps 1 to 4.
When you add more than one rule, then the AND and OR buttons present at the top are enabled. Based on the condition to invite users to a contract, click either of the following:
■ If all the contract rules must be true to execute the auto invite rule, click AND. For example, Contract Name = Design AND Created Date > 09/24/2020. Users are automatically invited to the contract if the name entered in the field Contract Name contains Design and the date selected in the field Created Date is after 09/24/2020.
■ If any one of the contract rules must be true to execute the auto invite rule, click OR. For example, Contract Name = Design AND Created Date
</td><td>
and the value you enter or select in the third field.
d. Based on the contract field you select in the first field, enter or select a value in the third field. For example, select IS System.
e. Optionally, to add multiple rules to the group, repeat the above steps 1 to 4.
When you add more than one rule, then the AND and OR buttons present at the top of the group are enabled. Based on the condition to invite users to a contract, click either of the following:
■ If all the contract rules defined in the group must be true to execute the auto invite rule, click AND. For example, Measurement System ≠ IS System AND Type = Design Firm. The user is automatically invited to the contract if the option selected in the field Measurement System is not equal to IS System AND the option selected in the field Type is Design Firm.
■ If any one of the contract rules defined in the group must be true to execute the auto invite, click OR.
</td></tr>
</table>

To create a contract rule, perform the following steps:	To create a group of rules with a combination of multiple AND and OR conditions, perform the following steps:
> 09/24/2020. The user is automatically invited to the contract if the name entered in the field Contract Name contains Design and the date selected in the field Created Date is greater than 09/24/2020. f. Optionally, to delete a row, click **Delete** corresponding to the appropriate row.	For example, Measurement System ≠ IS System AND Type = Design Firm. The user is automatically invited to the contract if the option selected in the field Measurement System is not equal to IS System or the option selected in the field Type is Design Firm. f. Optionally, click **Add Group** to create a sub-group under a group. **Note:** The contract filter is required only when multiple contracts are associated with a project. If only one contract is associated with a project, then a user who is invited to the project is also invited to the associated contract. g. Optionally, to delete a row, click **Delete** corresponding to the appropriate row.

9. To create a user filter, in the **USER FILTER** section, perform either of the following:
   - To automatically invite all users of selected roles to projects selected in the **PROJECT FILTER** section and contracts selected in the **CONTRACT FILTER** section, select the **Select All Users** check box.
   - To automatically invite users of a selected roles that adhere to specified conditions to projects selected in the **PROJECT FILTER** section and contracts

selected in the **CONTRACT FILTER** section, create a user rule and define the conditions.

To create a user rule, perform the following steps:	To create a group of rules with a combination of multiple AND and OR conditions, perform the following steps:
a. Click [...]. A new row with a drop-down list is added. The **AND** and **OR** buttons present at the top are unavailable. **b.** From the drop-down list box, select the appropriate user field. For example, select **Status**. Available options are fields in the **Add User** form. When a user field is selected, two new fields are added to the row. The second field is a drop-down list and based on the project field selected, the third field can be any of the following: ■ Drop-down list ■ Option list ■ Text box ■ Numeric text box ■ Calendar drop-down box **c.** From the second drop-down list, select the operator. For example, select equal. The operator creates the condition between the user field you select in the first field and the value you enter or select in the third field.	**a.** Click [...]. A new row with a drop-down list is added. The **AND** and **OR** buttons present at the top are enabled. **b.** From the drop-down list, select the appropriate user field. For example, select **Assign Roles-Role**. Available options are fields in the **Add User** form. When a user field is selected, two new fields are added in the row. The second field is a drop-down list and based on the project field selected, the third field can be any of the following: ■ Drop-down list ■ Option list ■ Text box ■ Numeric text box ■ Calendar drop-down box **c.** From the second drop-down list, select the operator.. For example, select equal The operator creates the condition between the user field you select in the first field and the value you enter or select in the third field.

To create a user rule, perform the following steps:	To create a group of rules with a combination of multiple AND and OR conditions, perform the following steps:
d. Based on the user field you select in the first field, enter or select a value in the third field. For example, select Active. **e.** Optionally, to add multiple rules to the user filter, repeat the above steps 1 to 4. When you add more than one rule, then the **AND** and **OR** buttons present at the top are enabled. Based on the conditions to invite users to projects and contracts, click either of the following: ▪ If all the user rules must be true to execute the auto invite rule, click **AND**. For example, Status = Active AND User Type = External. The user is automatically invited to the project and contract if the option selected in the field Status is Active AND the option selected in the field User Type is External. ▪ If any one of the user rules must be true to execute the auto invite rule, click **OR**. For example, Status = Active AND User Type = External. The user is automatically invited to the project and contract if the option selected in the field Status is Active or the option selected in the field User Type is External.	**d.** Based on the user field you select in the first field, enter or select a value in the third field. For example, select Project Manager. **e.** Optionally, to add multiple rules to the group, repeat the above steps 1 to 4. When you add more than one rule, then the AND and OR buttons present at the top of the group are enabled. Based on the conditions to invite users to projects and contracts, click either of the following: ▪ If all the user rules defined in the group must be true to execute the auto invite rule, click **AND**. For example, Assign Roles-Role = Project Manager AND City = Boston. The user is automatically invited to the project and contract if the role assigned to the user is Project Manager AND the value entered in the field City is Boston ▪ If any one of the user rules defined in the group must be true to execute the auto invite rule, click **OR**. For example, Assign Roles-Role = Project Manager AND City = Boston. The user is automatically

To create a user rule, perform the following steps:	To create a group of rules with a combination of multiple AND and OR conditions, perform the following steps:
f. Optionally, to delete a row, click **Delete** corresponding to the appropriate row.	invited to the project and contract if the role assigned to the user is Project Manager or the value entered in the field City is Boston. f. Optionally, click **Add Group** to create a sub-group under a group. **Note:** To create an auto invite rule, you must define a minimum one project and one user filter. g. Optionally, to delete a row, click **Delete** corresponding to the appropriate row.

10. To define the roles to be auto invited to projects selected in the **PROJECT FILTER** section and contracts selected in the **CONTRACT FILTER** section, in the **ROLES TO BE INVITED** section, perform either of the following:
    - To invite users of all roles to selected projects and contracts, select the **All Roles** check box.
    - To select roles to be automatically invited to selected projects and contracts, from the **Select Role(s)** drop-down list, select the required user roles. Available roles are based on the user's parameter selected in the **USER FILTER** drop-down list, select the required user roles.
      Available roles are based on the user's parameter selected in the **USER FILTER** section.
      The users associated with the selected roles are automatically invited to the defined projects and contracts created in Masterworks.

11. Click **Save** to save the auto invite rule.

    Alternatively, click **Save & Run** to run the newly created auto invite rule.

    Based on the conditions defined for projects, contracts, users, and roles, all appropriate users are invited to the selected projects and contracts.

    > **Note:** The auto invite feature does not invite users who are already invited to that project or contract.

    In the **AUTO INVITE** list page, the **Status** column displays the current status of an auto invite rule and the **Last Executed Time** column displays the time when the rule was last executed.
    The following are the various statuses of an auto invite rule:

Status	Description
Queued	The rule is triggered for execution and is waiting to be executed.
In Progress	The rule is currently under execution.
Completed	The rule was executed successfully.
Failed	The rule failed during execution.
Blank	The rule has never been executed.

4.4.2. Editing an Auto Invite Rule

Overview

You can edit and execute an existing auto invite rule to automatically invite users who are new and not automatically or manually invited to selected projects and contracts.

> **Note:** When an existing rule is edited, it does not revoke access of users who were automatically invited based on the rule before it was edited.

Steps

1. In the module menu, click **Administration**.

   The **ADMINISTRATION** page is displayed.
2. In the navigation pane, expand **User Management**, and then click **Auto Invite**.

   The **AUTO INVITE** list page is displayed.
3. Select the appropriate rule, and then click **Edit**.
4. Make the required changes.

5. Click **Save** to save the changes.

   Alternatively, click **Save & Run** to execute the rule.

4.4.3. Administering an Auto Invite Rule

Overview

The auto-invite rule is not triggered automatically when the details of an existing project, contract, or user are modified. In such cases, you can administer an existing auto invite rule. If you administer an existing auto-invite rule, only the following users are invited to the projects and contracts that match the rule:

- New users
- Existing users with a new roles that match the auto invite rule

Steps

1. In the module menu, click **Administration**.

   The **ADMINISTRATION** page is displayed.
2. In the navigation pane, expand **User Management**, and then click **Auto Invite**.

   The **AUTO INVITE** list page is displayed.
3. Select the appropriate auto invite rule, and then click **Run**.

   Based on the rule, the appropriate users are identified and are invited to the projects and contracts that adhere to the rule.

   > **Note:** Executing a rule ad-hoc does not revoke the access of the users who were already invited into the projects and contacts.

4.4.4. Deleting an Auto Invite Rule

Before You Begin

- The status of the rule is not **In Progress**.

Overview

You can delete an existing auto invite rule. Deleting an auto invite rule does not impact users who were automatically invited to projects and contracts using the rule.

Steps

1. In the module menu, click **Administration**.

   The **ADMINISTRATION** page is displayed.
2. In the navigation pane, expand **User Management**, and then click **Auto Invite**.

   The **AUTO INVITE** list page is displayed.

3. Select the appropriate rule, and then click **Delete**.

> **Note:** An auto invite rule with **In Progress** status cannot be deleted.

4.5. Managing Online Account Registration Requests

The **Pending Registrations** form of the User Management feature provides the list of users who have registered requests to obtain login details to use the Masterworks application. You can either approve or reject a registration request. On approving a registration request, the user is allowed access to the application. On rejecting a registration request, the user is denied access to the application.

An email notification is sent to the user on approval or rejection of a registration request.

4.5.1. Approving a Pending Registration Request

Overview

You can approve a pending user account registration for non-Active Directory users. After approving the pending account, you will need to access the user account and assign roles to the new user.

Steps

1. In the module menu, click **Administration**.

   The **ADMINISTRATION** page is displayed.
2. In the navigation pane, expand **User Management**, and then click **Pending Registrations**.

   The **PENDING REGISTRATIONS LIST** page is displayed.
3. Select the required user registration request to approve.
4. Click **Approve**.

   A confirmation message is displayed.
5. Click **OK**.

   The user is added to the application database. You can view the user account in the **USER ACCOUNTS** page.

   > **Note:** The approved user accounts require the Administrator to define the user details, roles, and business units.

4.5.2. Rejecting a Pending Registration Request

Overview

You can reject a pending user account registration for pending user requests.

Steps

1. In the module menu, click **Administration**.

   The **ADMINISTRATION** page is displayed.
2. In the navigation pane, expand **User Management**, and then click **Pending Registrations**.

   The **PENDING REGISTRATIONS LIST** page is displayed.
3. Select the required user registration request to reject.
4. Click **Reject**.

   A confirmation message is displayed.
5. Click **OK**.

4.6. External Identity Provider User

Overview

The **External Identity Provider User** page lists all the users registered through third party IDP such as ADFS.

Steps

1. In the module menu, click **Administration**.

   The **ADMINISTRATION** page is displayed.
2. In the navigation pane, expand **User Management**, and then click **External Identity Provider User**.

   The **EXTERNAL IDENTITY PROVIDER USER** list page is displayed.
3. To view the details, select a record and click **View**.

4.7. Online Users

The Online Users section enables you to view the list of user accounts that are online, and log out a user:

- Viewing the List of Online Users
- Logging Out a User

4.7.1. Viewing the List of Online Users

Overview

You can view the list of users who are currently logged in to the application.

Steps

1. In the module menu, click **Administration**.

   The **ADMINISTRATION** page is displayed.
2. In the navigation pane, expand **User Management**, and then click **Online Users**.

   The **ONLINE USERS LIST** page is displayed.

   The page lists the user names of all the currently logged in users.

4.7.2. Logging Out a User

Overview

Based on the roles assigned to you, you can also log out an online user from the application.

Steps

1. In the module menu, click **Administration**.

   The **ADMINISTRATION** page is displayed.
2. In the navigation pane expand **User Management**, and then click **Online Users**.

   The **ONLINE USERS LIST** page is displayed.

   The page lists the user names of all the currently logged in users.
3. To remotely log off a user, click the required user in the list, and then click **Log Out**.

4.8. User Settings

Overview

The User Management Settings feature enables you to define validations and restrictions on user accounts to access the application for enhanced security. You can define the default account expiry period for user accounts. The default user account expiry date is set as the default date when creating a user account in the **Account Expiry Date** field of the **ADD USER** page.

Steps

1. In the module menu, click **Administration**.

   The **ADMINISTRATION** page is displayed.
2. In the navigation pane, expand **User Management**, and then click **User Settings**.

   The **USER SETTINGS** page is displayed.
3. In the **USER ACCOUNT CONFIGURATIONS** section, from the **Account Expiration Period Type** drop-down list, select the period type to specify the validity period of a user account.

4. Based on the selection in the **Account Expiration Period Type** drop-down list, enter either of the following details:
   - If you have selected **Date**, then from the **Enter Date** calendar drop-down box, select the date on which the user account will expire.
   - If you have selected **Weeks**, then in the **Enter Weeks** box, enter the number of weeks after which the user account will expire.
5. Click **Save** to save the user account configuration details.

4.9. Delegation of Authority

When a user is unavailable or unable to perform tasks in Masterworks, you can transfer all that user's tasks to other users. The users to whom the tasks are transferred to can then perform the associated tasks and workflow actions of the transferer.

Using the **DELEGATION OF AUTHORITY** form, you can delegate tasks of one user to another user with the same role in Masterworks for specific projects.

> **Note:** Only users with the **Administrator** role can perform these activities.

You can perform the following tasks:

- Delegate authorities
- View delegated records
- Edit delegated records
- Delete delegated records
- Revoke a delegation

4.9.1. Delegating Authorities

Before You Begin

- The delegated user must have the same role as the original activity owner.
- The delegated user must not be invited to the project.

Overview

The **Delegation of Authority** form enables you to assign roles and projects of one user to another user of the same role. The process of delegating authority includes the following tasks in the order specified:

1. Select the user from whom you want to delegate activities
2. Select the role you want to delegate
3. Select the user to whom you want to delegate activities of the selected role

4. Select the dates within which the delegated user must remain invited to the projects or contracts
5. Assign projects and contracts to the delegated user
6. Save the record

Steps

1. In the module menu, click **Administration**.

   The **ADMINISTRATION** page is displayed.
2. In the navigation pane, expand **User Management**, and then click **Delegation of Authority**.

   The **DELEGATION OF AUTHORITY** list page is displayed.
3. Click **New**.

   The **DELEGATION OF AUTHORITY** page is displayed.
4. In the **Delegate From User** drop-down list, select the user from whom you want to delegate activities.

   Available options are all active users in the application.
5. To provide information of the user to whom you want to delegate authority and the role for delegation, in the **DELEGATE A ROLE** section, perform the following steps:

   a. In the **User Role** drop-down list, select the role of the user from whom you want to delegate activities.

      Available user roles are the unique roles the user selected in the **Delegate From User** field currently has in the application.

   b. In the **Delegate To User** drop-down list, select the user to whom you want to delegate activities. Alternatively, type the name of the user, and then select the required user.

      Available users are:

      - Users who have the same role as the role selected in the **User Role** field
      - All the active users not invited to the projects that the user selected in the **Delegate From User** field is part of

   c. In the **From Date** drop-down list, select the date on which the user selected in the **Delegate To User** field is to be invited to the projects or contracts.

   d. In the **To Date** drop-down list, select the date until which the delegated user must remain invited to the projects or contracts.

      The system revokes the delegated user's invitation to the project by the end of the day on the selected date.

   e. In the **Description** box, enter any notes for the delegation of authority.

6. To assign projects to the delegated user, in the **PROJECT SELECTION** section, perform the following steps:
    a. Click **Add**.

       The **Projects List** dialog box is displayed.

       Available options are the projects the transferer is part of with the role selected in the **User Role** field.
    b. Select the appropriate projects, and then click **Select**.

       The **Project Code** and the **Project Name** values are displayed.
7. To assign contracts to the delegated user, in the **CONTRACT SELECTION** section, perform the following steps:
    a. Click **Add**.

       The **Contracts List** dialog box is displayed.

       Available options are contracts based on the following:-
        - Projects selected in the **PROJECT SELECTION** section
        - Role of the user selected in the **User Role** field for the user selected in the **Delegate From User** field
    b. Click the appropriate contract, and then click **Select**.

       The **Project Code**, **Project Name**, **Contract Code**, and **Contract Name** of the associated project are displayed
8. Click **Save**.

Based on the **From Date** selected, the saved record can be in any of the following statuses:

- Awaited - The status indicates that the delegation is yet to be executed on a future date.
- Delegated - The status indicates that the delegation is executed.
- Failure - The status indicates that the delegation is failed due to discrepancies in data.

Based on the **To Date** selected, the saved record can be in any of the following statuses:

- Revoked - The status indicates that the delegation is revoked on the **To Date** selected
- Failure - The status indicates that the delegation is failed due to discrepancies in data.

4.9.2. Editing Delegation Details

Before You Begin

- The status of the record is either **Awaiting** or **Delegated**.

Overview

You can edit delegation details.

Steps

1. In the module menu, click **Administration**.

   The **ADMINISTRATION** page is displayed.
2. In the navigation pane, expand **User Management**, and then click **Delegation of Authority**.

   The **DELEGATION OF AUTHORITY** list page is displayed.
3. Select the appropriate record, and then click **Edit**.

   The **DELEGATION OF AUTHORITY** page is displayed.
4. Make the required changes.
   - If the record is in the **Awaiting** status, then you can modify all the details of the record.
   - If the record is in the **Delegated** status, then you can only modify the **To Date** and the **Description** of the record.
     The **Is Delegated** check box is selected by default for the delegated projects in the **PROJECT SELECTION** section or delegated contracts in the **CONTRACT SELECTION** section.
5. Click **Save**.

4.9.3. Viewing Delegation Details

Before You Begin

- The status of the record is either **Awaiting** or **Delegated**.

Overview

You can view delegation details.

Steps

1. In the module menu, click **Administration**.

   The **ADMINISTRATION** page is displayed.
2. In the navigation pane, expand **User Management**, and then click **Delegation of Authority**.

   The **DELEGATION OF AUTHORITY** list page is displayed.
3. Select the appropriate record, and then click **View**.

   The **DELEGATION OF AUTHORITY** page is displayed.

   The **Is Delegated** check box is selected by default for the delegated projects or contracts.

4. Click **Save**.

4.9.4. Revoking a Delegation

Before You Begin

- The record is in the **Delegated** status.

Overview

You can revoke a delegation after a user's responsibilities have been delegated to any user.

Steps

1. In the module menu, click **Administration**.

   The **ADMINISTRATION** page is displayed.
2. In the navigation pane, expand **User Management**, and then click **Delegation of Authority**.

   The **DELEGATION OF AUTHORITY** list page is displayed.
3. Select the appropriate record, and then click **Edit**.

   The **DELEGATION OF AUTHORITY**.
4. To revoke a delegation, change the **To Date** as appropriate.

   The delegated user's invitation to projects is revoked by the end of the day on the selected date. For example, if you select the current date in the **To Date** field, the system revokes the delegated user's invitation to the projects at the end of the day.

   > **Note:** You cannot select a past date.
5. Click **Save**.

4.9.5. Deleting a Delegated Record

Before You Begin

- The record is in the **Awaiting** status.

Overview

You can delete a delegated record.

Steps

1. In the module menu, click **Administration**.

   The **ADMINISTRATION** page is displayed.
2. In the navigation pane, expand **User Management**, and then click **Delegation of Authority**.

   The **DELEGATION OF AUTHORITY** list page is displayed.

3. Select the appropriate record, and then click **Delete**.

5. Configuration Toolkit

The Masterworks Configuration Toolkit enables you to build custom forms and configure workflows.

Form Builder

With the Form Builder tool, you can build a form, include validation rules or formulas, and publish your new form to the appropriate users. To build forms in Masterworks, programming knowledge is not a requirement.

Workflow Management

With the powerful workflow engine, you can configure workflows to automate any process, form, or document. To configure workflows in Masterworks, programming knowledge is not a requirement.

Error Message Configurator

With the Error Message Configurator tool, you can view and modify error messages in the UI. To modify error messages in Masterworks, programming knowledge is not a requirement.

5.1. Workflow Management

The **Workflow Management** feature enables you to perform the following:

- Automate business processes for granting approvals and clearances using pre-defined templates and configurable workflows to eliminate inconsistencies and errors. You can also change a pre-defined business process to suit your organizational needs.
- Integrate with the Form Builder or XML, allowing you to automate any business process.
- Define new workflows and modify existing workflows for custom-created XML forms and in-built forms.

User role permission is defined at two levels. The first level of permission is given at the form level, and the second level of permission is given at the workflow level.

- Workflow-level permissions are given on top of form-level permissions. For example, a user role with **Edit** permission at the form level and action stakeholder permission at the workflow level can only perform workflow action. A user role with **Edit** permission at the form level and view stakeholder permission at the workflow level cannot perform workflow action and can only view the record. A user role that does not have

Edit permission at the form level can still perform workflow action if the workflow is enabled for **Allow Workflow Action by All Stakeholders**.

> **Note:** If a role is not selected as view or action stakeholder, then that role will not be able to view any records irrespective of their form level permission.

- Workflow level permission options (action/view stakeholder) allow you to configure user role access at every workflow stage based on the business process requirement.

The Terminologies Used in Workflow Builder section describes in detail the various features of the Masterworks workflow engine.

The Creating a Workflow section describes the procedure to create a basic workflow.

Post creating a basic workflow, based on the complexity of the business process, you can use either of the following ways to create a workflow:

- Create a workflow using simple mode – The simple mode has limited functionality to create a workflow. Using simple mode, you can customize a pre-created workflow, add the required additional stages, define conditions, validations, and so on.
- Create a workflow using advanced mode – Using advanced mode, you can create a complex workflow. Advanced mode enables you to use advanced features such as expressions, condition block, morph workflow, get form data, set form data, create a new form, call form resource, set form status, set due date, set stakeholders, and so on.

Before You Begin - Terminologies Used in Workflow Management

You can easily use the Workflow Management utility to create workflows for various forms. However, before you start creating them, here are some terminologies you should be familiar with:

- **Stage**: A stage forms the building block of a workflow. A workflow can be broadly defined as a collection of stages logically associated with each other with predefined actions defined at every stage. There is no limit to the number of stages you can have in a workflow and the number of actions that can be associated with them. Stages can be broadly classified into three types: Start stage, Intermediate stage, and End stage. It is important to define stages and associate them with their respective stages in a workflow for ease of use.
- **Simple Activities** and **Dynamic Activities**: An activity enables you to plug any action into the Masterworks workflow engine. The configurable actions include flow control blocks such as **if** and **if-else**. Actions enable you to change the value of business objects, create new business objects, and so on. Masterworks enables you to configure various events or actions through activities. In the Advanced mode, you can

access these events or actions using the **Call Form Resource** Activity in the **Workflow** tab of the **NEW WORKFLOW** or **EDIT WORKFLOW**.

- **Action Stake Holders**: An action stakeholder is a user who can go and perform an action on the form. For a role to be available in the list of action stakeholders, the **Edit** permission must be enabled at the form level. Action stakeholder can be assigned at every stage of a workflow. For a role to perform an action on the form, role should have both **Edit** permission at the form level and selected as action stakeholder at the workflow stage level. Also, if a workflow is enabled for **Allow Workflow Action by All Stakeholders**, then all stakeholders with **Edit** or **View** or both permissions at the form level can perform workflow action.
- **View Stake Holders**: A view stakeholder is a user who can only view the form and cannot perform any action on the form. View stakeholders can be assigned at every stage of a workflow. If a workflow is enabled for **Allow Workflow Action by All Stakeholders**, then all stakeholders including the view stakeholders can perform workflow action.
- **Days to Complete**: This determines the number of days due for the next action to be performed by the next action stakeholder.
- **Action**: An action defined within a stage is a button that performs a set of actions, one of which can be transitioning a form from one stage to another.
- **Status**: The status is the name of the current workflow stage of the form.
- **Validation**: Workflows that are marked as **Validation** cannot be modified. You can create a copy of these workflows and then modify the copy as per your business needs.
- **Mark as Default**: In the **WORKFLOW LIST** page, you can set the selected workflow as the default workflow for a form. There could be more than one workflow defined for a single form, but only one workflow can be marked as default for a single form. When a workflow is not associated to a form, then that form will start using the workflow marked as default.
- **Pending On Role(s)**: This determines the user roles associated with the workflow that are yet to perform the next workflow action. In every stage, roles are displayed in the **Pending On Role(s)** column in the form list page, except the final stage. When the workflow is in the final stage, the **Pending On Role(s)** column is displayed as **None**.
- **Pending On User(s)**: This shows the names of the users that are assigned with the the roles associated with the workflow that are yet to perform the next workflow action. In every stage, user names are displayed in the **Pending On User(s)** column in the form

list page, except the final stage. When the workflow is in the final stage, the **Pending On User(s)** column is displayed as **None**.

> **Note:** The **Pending On User(s)** column is not displayed in the form list by default, you can click **Show Pending On User(s)** in the list page ribbon to display **Pending On User(s)** column in the form's list page.

5.1.1. Creating a Workflow

Before You Begin

- The role of the logged in user has permission to create the workflow.

Overview

The following procedure describes the steps to create a basic workflow using the Workflow Builder.

The **Project Fund Transaction** form is used for the sample workflow.

Steps

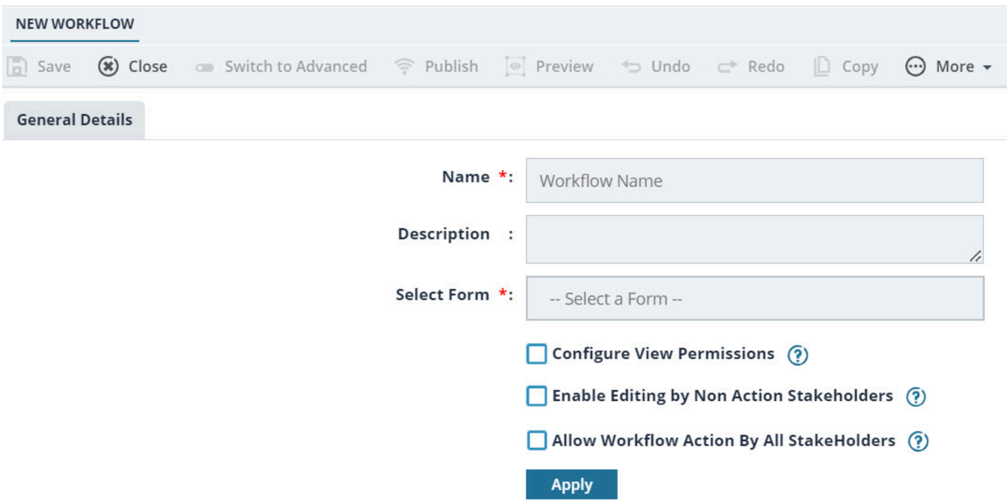
1. In the module menu, click **Administration**.

   The **ADMINISTRATIONS** page is displayed.
2. In the navigation pane, expand **Configuration Toolkit**, and then click **Workflow Management**.

   The **WORKFLOW LIST** page is displayed.
3. Click **New**.

   The **NEW WORKFLOW** page is displayed.

   New Workflow

4. To add information about the workflow, in the **General Details** tab, perform the following steps:
    a. In the **Name** box, enter the name of the workflow.
    b. In the **Description** box, enter a description of the workflow.
    c. From the **Select Form** drop-down list, select the form for which the workflow is being created.

       Alternatively, type the name of the form, and then select the required form.

       The options available are all forms available in the application. For example, to create a workflow for Project Fund Transaction, select **Project Fund Transaction** form from the **Select Form** drop-down list. To create a new business process, the first step is to create the form, and then create the workflow.

d. To select stakeholders who can view records in a stage but not perform any workflow actions, select the **Configure View Permissions** check box.

   For example, you can enable this check box when you want to specifically allow or deny view of the record to a user role at any stage of the workflow.

   > **Note:**
   >
   > - During the workflow creation, you can view the **View Stake Holders** box only if the **Configure View Permissions** check box is selected in the **General Details** tab.
   > - You cannot select or clear the **Configure View Permissions** check box after clicking **Apply** in the **General Details** tab.
   > - If the user role is not an action stakeholder and is not selected in the **View Stake Holders** box, then that user role cannot view the record on the list page of the form selected in the **Select Form** drop-down list.

e. To enable the users who have **Edit** permission on the form to edit the record, even if they are not action stakeholders, select the **Enable Editing by Non Action Stakeholders** check box.

   For example, you can select this check box when you want a non-action stakeholder with **Edit** permission at the form level to edit the record at any workflow stages.

   > **Note:**
   >
   > - You can select or clear the **Enable Editing by Non Action Stakeholders** check box at any time while creating or while editing the workflow.
   > - The non-action stakeholders with **Edit** permission at the form level can only edit the record and cannot perform workflow action.

f. To enable all the stakeholders who have edit or view or both permissions on the form to perform workflow actions, select the **Allow Workflow Action by All Stakeholders** check box.

   For example, you can enable this check box when you want a user role to only perform workflow action without editing the record.

Note:

- You can select or clear the **Allow Workflow Action by All Stakeholders** check box at any time while creating or while editing the workflow.
- Selecting **Allow Workflow Action by All Stakeholders** check box lists all the roles having edit or view or both permissions at the form level in the **Action Stake Holders** drop-down list.

g. Click **Apply**.

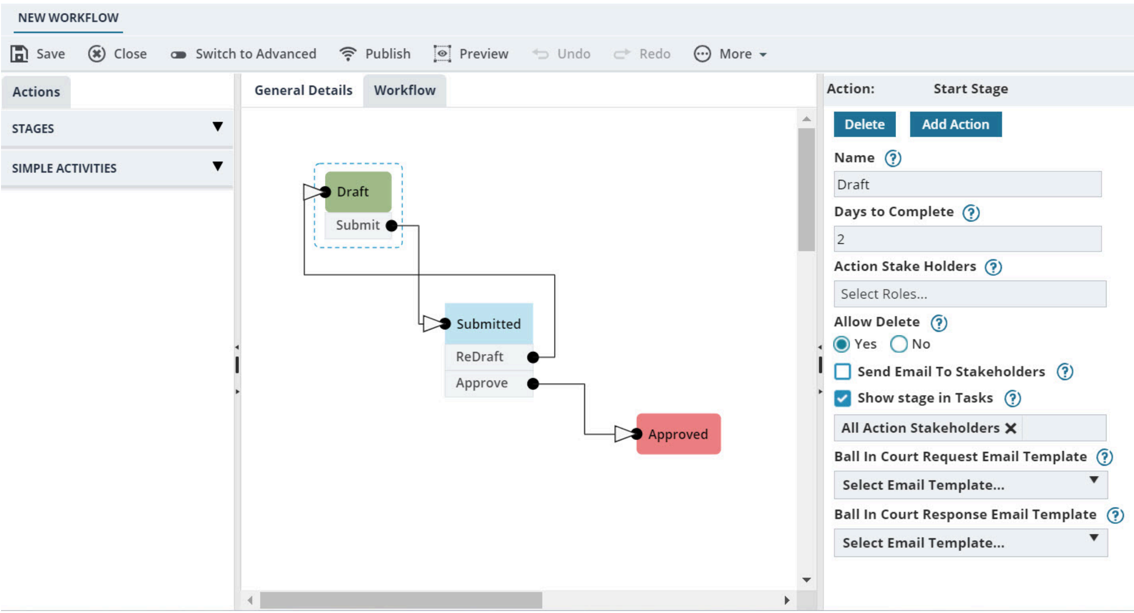
A pre-created three-stage workflow is displayed in the **Workflow** tab. By default, the workflow is created in simple mode.

5. To configure the properties for a start stage, such as the **Draft** stage, in the **Workflow** tab, perform the following steps:

a. Click the **Draft** stage.

The **Draft** stage properties are displayed in the right pane, as illustrated in the following image:

Workflow Draft



b. In the **Start Stage** properties pane, provide the required information in the fields, as described in the following table:

Field Name	Description
Name	Enter the name of the stage. the default stage name is displayed as **Draft**. If required, enter a new name for the stage.

<table>
<tr><th>Field Name</th><th>Description</th></tr>
<tr><td>Days to Complete</td><td>Enter the number of days before which an action must be performed in the current workflow stage.
If the stakeholder does not perform an action in the specified number of days, an escalation email is sent to users in the Administrator role.
By default, the number of days defined in the WORKFLOW SETTINGS page is displayed.</td></tr>
<tr><td>Action Stake Holders</td><td>Select the roles with which a user can perform the workflow action for the stage. The Action Stake Holder box lists all the roles that are assigned with the Edit permission at the form level.
Also, if Allow Workflow Action by All Stakeholders is selected in the General Details tab, then all stakeholders with the Edit or View or both permissions at the form level are listed in the Action Stake Holders drop-down list.
Note:
For a role to be available in the list of action stakeholders, the Edit permission must be enabled for the role at the form level.
Ensure that the stakeholders selected in the Action Stake Holders box are also selected in the View Stake Holders box.</td></tr>
<tr><td>View Stake Holders</td><td>Select the roles with which a user can view the records that are in the workflow stage but not perform any workflow actions. The View Stake Holders box lists all the roles that are assigned with View permission at the form level.
Note:
You can view the View Stake Holders box only if the Configure View Permissions check box is selected in the General Details tab.
If the role is not selected in the View Stake Holders box, then that role cannot view the record in the selected form list page.</td></tr>
<tr><td>Allow Delete</td><td>Click Yes, to allow the users to delete the record in this stage.</td></tr>
</table>

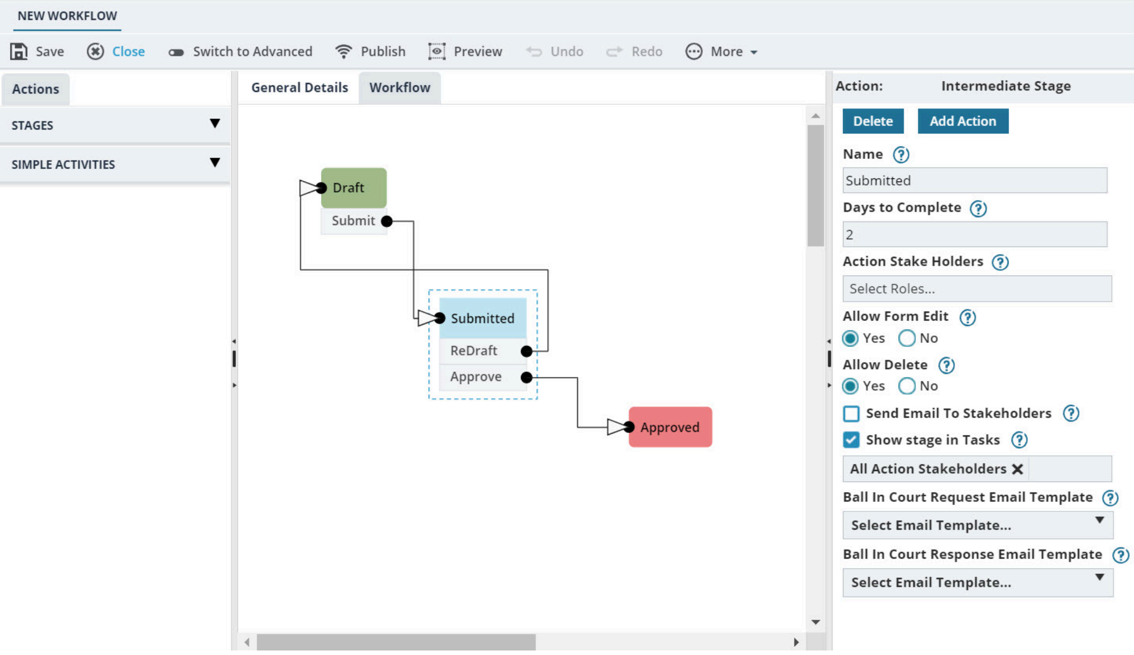
Field Name	Description
	Click **No**, to restrict the users from deleting the record in this stage.
Send Email To Stakeholders	Select the check box to send a standard automated email notification to the action stakeholders of the subsequent stage whenever the workflow action is performed. The email template is based on the default template selected in the **WORKFLOW SETTINGS** page.
Show stage in Tasks	Ensure the check box is selected, to list the subsequent workflow action in the **My Tasks** list of all stakeholders of the subsequent workflow stage.
Ball In Court Request Email Template	Select the required email template to be used to send an automated notification to the user selected to receive form information using the **Ball in Court** feature. Available templates are based on the form that is selected for the workflow. Available options are templates defined for the form in the **Mail Body Templates** catalog of the Library.
Ball In Court Response Email Template	Select the required email template to be used to send an automated response notification to the user who initiated the **Ball in Court** notification. Available templates are based on the form that is selected for the workflow. Available options are templates defined for the form in the **Mail Body Templates** catalog of the Library.

6. To configure the properties for an intermediate stage, such as **Submitted** stage, perform the following steps:

   a. In the **Workflow** tab, click the **Submitted** stage.

      The **Submitted** stage properties are displayed in the right pane, as illustrated in the following image:

      ### Workflow Submitted



   b. In the **Intermediate Stage** properties pane, provide the required information in the fields, as described in the following table:

Field Name	Description
Name	Enter the name of the stage. the default stage name is displayed as **Submitted**. If required, enter a new name for the stage.
Days to Complete	Enter the number of days before which an action must be performed in the current workflow stage. If the stakeholder does not perform an action in the specified number of days, an escalation email is sent to users in the **Administrator** role. By default, the number of days defined in the **WORKFLOW SETTINGS** page is displayed.
Action Stake Holders	Select the roles with which a user can perform the workflow action for the stage. The **Action Stake Holder** box lists all the roles that are assigned with the **Edit** permission at the form level.

Field Name	Description
	Also, if **Allow Workflow Action by All Stakeholders** is selected in the **General Details** tab, then all stakeholders with the **Edit** or **View** or both permissions at the form level are listed in the **Action Stake Holders** drop-down list. **Note:** • For a role to be available in the list of action stakeholders, the **Edit** permission must be enabled for the role at the form level. • Ensure that the stakeholders selected in the **Action Stake Holders** box are also selected in the **View Stake Holders** box.
View Stake Holders	Select the roles with which a user can view the records that are in the workflow stage but not perform any workflow actions. The **View Stake Holders** box lists all the roles that are assigned with **View** permission at the form level. **Note:** • You can view the **View Stake Holders** box only if the **Configure View Permissions** check box is selected in the **General Details** tab. • If the role is not selected in the **View Stake Holders** box, then that role cannot view the record in the selected form list page.
Allow Form Edit	Click **Yes**, to allow the user to edit the record in this stage. Click **No**, to restrict the users from editing the record in this stage.
Allow Delete	Click **Yes**, to allow the users to delete the record in this stage. Click **No**, to restrict the users from deleting the record in this stage.
Send Email To Stakeholders	Select the check box, to send a standard automated email notification to the action stakeholders of the subsequent stage whenever the workflow action is performed. The email template is based on the default template selected in the **WORKFLOW SETTINGS** page.

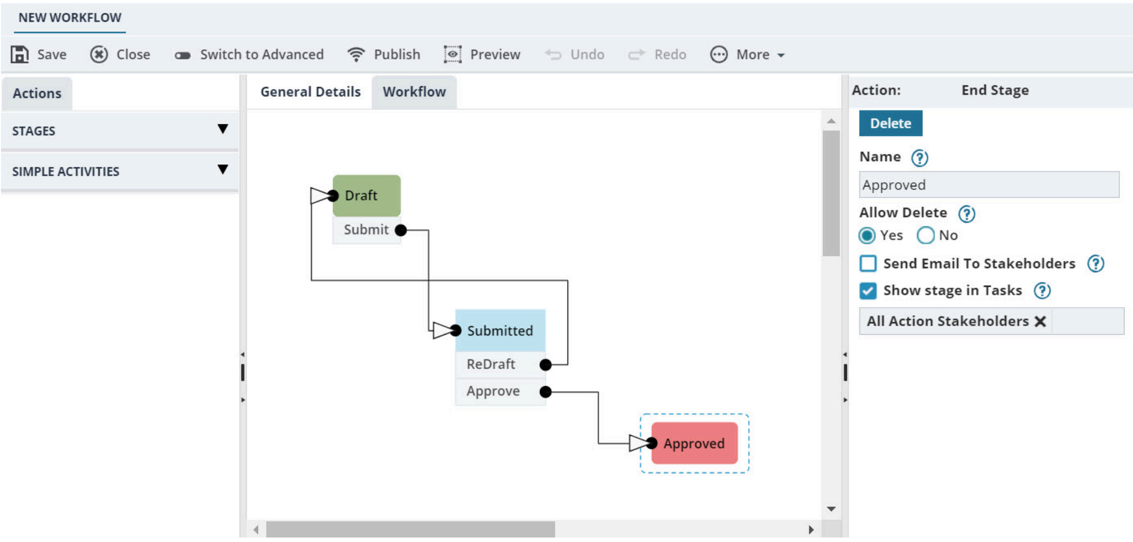
Field Name	Description
Show stage in Tasks	Ensure the check box is selected, to list the subsequent workflow action in the **My Tasks** list of all stakeholders of the subsequent workflow stage.
Ball In Court Request Email Template	Select the required email template to be used to send an automated notification to the user selected to receive form information using the **Ball in Court** feature. Available templates are based on the form that is selected for the workflow. Available options are templates defined for the form in the **Mail Body Templates** catalog of the Library.
Ball In Court Response Email Template	Select the required email template to be used to send an automated response notification to the user who initiated the **Ball in Court** notification. Available templates are based on the form that is selected for the workflow. Available options are templates defined for the form in the **Mail Body Templates** catalog of the Library.

7. To configure the properties for an end stage, such as the **Approved** stage, perform the following steps:

   a. In the **Workflow** tab, click the **Approved** stage.

   The **Approved** stage properties are displayed in the right pane, as illustrated in the following image:

   Workflow Approved



   b. In the **End Stage** properties pane, provide the required information in the fields, as described in the following table:

Field Name	Description
Name	Enter the name of the stage. the default stage name is displayed as **Approved**. If required, enter a new name for the stage.
View Stake Holders	Select the roles with which a user can view the records that are in the workflow stage but not perform any workflow actions. The **View Stake Holders** box lists all the roles that are assigned with **View** permission at the form level. **Note:** • You can view the **View Stake Holders** box only if the **Configure View Permissions** check box is selected in the **General Details** tab. • If the role is not selected in the **View Stake Holders** box, then that role cannot view the record in the selected form list page.

Field Name	Description
Allow Delete	Click **Yes**, to allow the users to delete the record in this stage. Click **No**, to restrict the users from deleting the record in this stage.
Send Email To Stakeholders	Select the check box, to send a standard automated email notification to the action stakeholders of the subsequent stage whenever the workflow action is performed. The email template is based on the default template selected in the **WORKFLOW SETTINGS** page.
Show stage in Tasks	Ensure the check box is selected, to list the subsequent workflow action in the **My Tasks** list of all stakeholders of the subsequent workflow stage.

8. Click **Save**.

   The workflow is saved and listed on the **WORKFLOW LIST** page.

You can enhance your workflow to include additional features.

- Workflow using simple mode – Using the simple mode, you can customize a pre-created workflow, and add the required additional stages, define conditions, validations, and so on.
- Workflow using advanced mode – Using the advanced mode, you can create a complex workflow. Advanced mode enables you to use advanced features, such as expressions, condition block, morph workflow, get form data, set form data, create new form, call form resource, set form status, set due date, set stake holders, and so on.

The workflow must now be published to be made available in the application.

5.1.2. Creating a Workflow Using Simple Mode

Before You Begin

- The role of the logged in user has permission to create or edit a workflow.

Overview

This procedure describes the steps to add the following controls to a workflow.

- Add a stage with two actions
- Add a condition to the workflow using the conditions block

- Configure the workflow to send a standard automated email notification to stakeholders when the associated form is transitioned from one workflow stage to the next workflow stage
- Define conditions on the users performing a workflow action

Steps

1. Create a basic workflow.

   Alternatively, edit a workflow.

2. To add a stage to the workflow, perform the following steps:
   a. In the **Actions** navigation pane, expand **STAGES**, and then drag the **Stage** action item to the **Workflow** tab.

      The new stage item is displayed on the canvas.

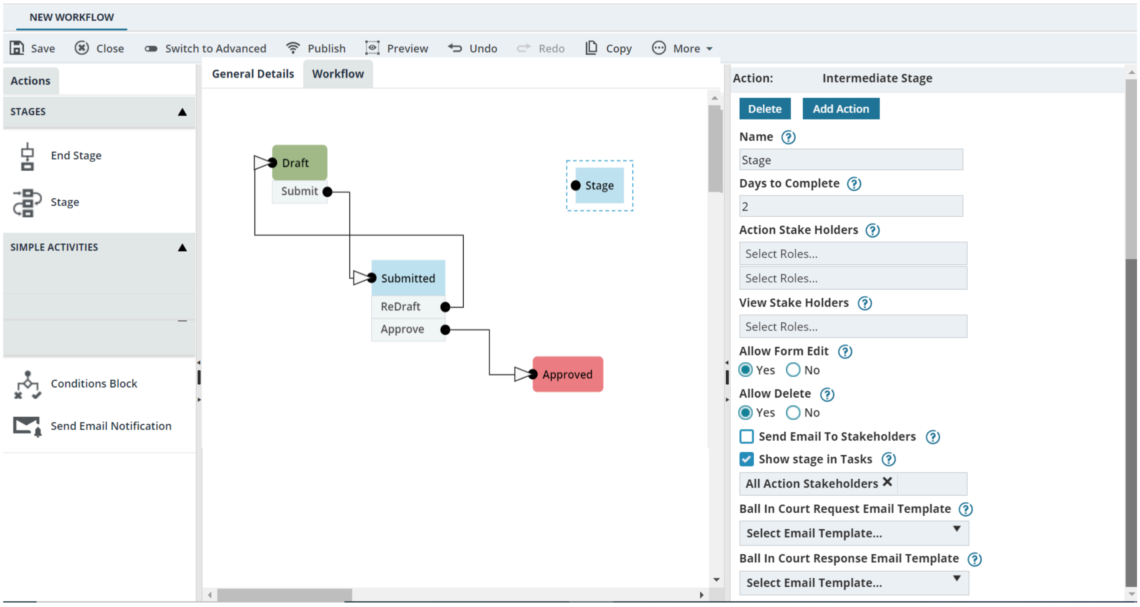
      Alternatively, to copy a stage, perform the following steps:

      i. Click the intermediate stage to be copied.
      ii. Click **Copy**.
      The selected intermediate stage is copied.
      iii. Click an action element, and in the properties pane, click **Delete**.
      Similarly, delete all the other action elements.

   b. In the **Workflow** tab, click the stage.

      The stage properties are displayed in the right pane, as illustrated in the following image:

Workflow Stage Properties



   c. In the **Intermediate Stage** properties pane, provide the required information in the fields, as described in the following table:

Field Name	Description
Name	Enter the name of the stage. For example, enter **In Review**.
Days to Complete	Enter the number of days before which an action must be performed in the current workflow stage.

<table>
<tr><th>Field Name</th><th>Description</th></tr>
<tr><td></td><td>If the stakeholder does not perform an action in the specified number of days, an escalation email is sent to users in the Administrator role.
By default, the number of days defined in the WORKFLOW SETTINGS page is displayed.</td></tr>
<tr><td>Action Stake Holders</td><td>Select the roles with which a user can perform the workflow action for the stage. The Action Stake Holder box lists all the roles that are assigned with the Edit permission at the form level.
Also, if Allow Workflow Action by All Stakeholders is selected in the General Details tab, then all stakeholders with the Edit or View or both permissions at the form level are listed in the Action Stake Holders drop-down list.
Note:
For a role to be available in the list of action stakeholders, the Edit permission must be enabled for the role at the form level.
Ensure that the stakeholders selected in the Action Stake Holders box are also selected in the View Stake Holders box.</td></tr>
<tr><td>View Stake Holders</td><td>Select the roles with which a user can view the records that are in the workflow stage but not perform any workflow actions.
The View Stake Holders box lists all the roles that are assigned with View permission at the form level.
Note:
You can view the View Stake Holders box only if the Configure View Permissions check box is selected in the General Details tab.
If the role is not selected in the View Stake Holders box, then that role cannot view the record in the selected form list page.</td></tr>
<tr><td>Allow Form Edit</td><td>Click Yes, to allow the user to edit the record in this stage.</td></tr>
</table>

Field Name	Description
	Click **No**, to restrict the users from editing the record in this stage.
Select Visibility Of Form Divisions	Sets the visibility of the various sections defined in the form. Click any of the following: • **Edit** - Enables stakeholders to edit the information in the section in the current workflow stage. • **View** - Enables stakeholders to view information in the section in the current workflow stage. • **Hide** – Hides the information in the section in the current workflow stage. Stakeholders at this workflow stage cannot view information in the section.
Allow Delete	Click either of the following options: • Click **Yes**, to allow the users to delete the record in this stage. • Click **No**, to restrict the users from deleting the record in this stage.
Send Email To Stakeholders	Select the check box, to send a standard automated email notification to the action stakeholders of the subsequent stage whenever the workflow action is performed. The email template is based on the default template selected in the **WORKFLOW SETTINGS** page.
Show stage in Tasks	Ensure the check box is selected, to list the subsequent workflow action in the **My Tasks** list of all stakeholders of the subsequent workflow stage.
Ball In Court Request Email Template	Select the required email template to be used to send an automated notification to the user selected to receive form information using the **Ball in Court** feature. Available templates are based on the form that is selected for the workflow. Available options are templates defined for the form in the **Mail Body Templates** catalog of the Library.
Ball In Court Response	Select the required email template to be used to send an automated response notification to the user who initiated the **Ball in Court** notification.

Field Name	Description
Email Template	Available templates are based on the form that is selected for the workflow. Available options are templates defined for the form in the **Mail Body Templates** catalog of the Library.

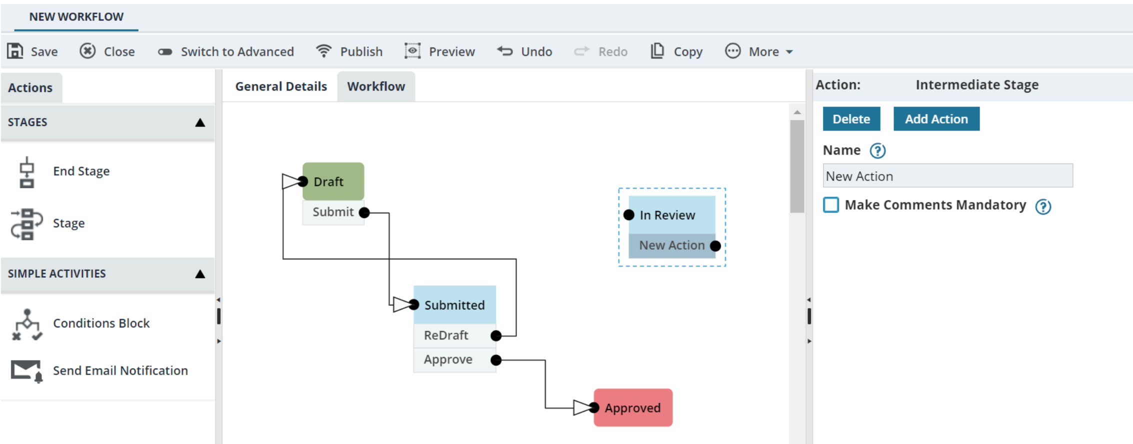
3. To add an action to the workflow stage, perform the following steps:

   a. In the right pane, click **Add Action**.

   Alternatively, right-click the new stage item in the canvas, and then click **New Action**.

   The **New Action** box is displayed below the In Review stage as illustrated in the following image:

   ### Workflow New Action



   b. In the **Workflow** tab, click the **New Action** item.

   The properties of the action item are displayed in the right pane.

   c. In the **Name** box, enter the name of the new action. For example, enter **Review Complete**.

   d. Select **Make Comments Mandatory** check box to ensure comments are provided mandatorily in the **Notes** box before performing the next workflow action.

   > **Note:** To delete an action, right-click the action item, and click **Delete Action**.

4. You can add a condition to the workflow using the conditions block. To add a **Simple Conditions Block** action item to the workflow, perform the following steps:

   a. From the **Actions** pane, expand **SIMPLE ACTIVITIES**, and then drag the **Conditions Block** action item to the **Workflow** tab.

      The **Conditions Block** item is displayed on the canvas.

   b. In the **Workflow** tab, click the **Conditions Block** item.

   c. In the right pane, click **Add Condition**.

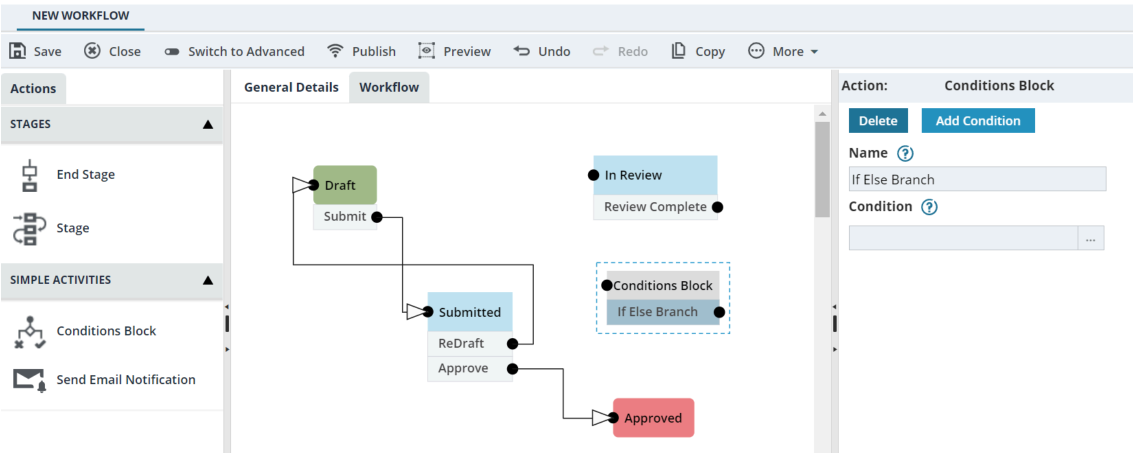
      Alternatively, right-click the **Conditions Block** item in the canvas, and then click **New If Else Branch**.

      The **If Else Branch** is displayed below the conditions block item.

   d. In the **Workflow** tab, click the **If Else Branch** item.

      The **If Else Branch** properties are displayed in the right pane, as illustrated in the following image:

      ### Workflow Conditions Block



   e. In the **Name** box, enter the name for the condition.

      For example, enter **Amount Greater than 1000**.

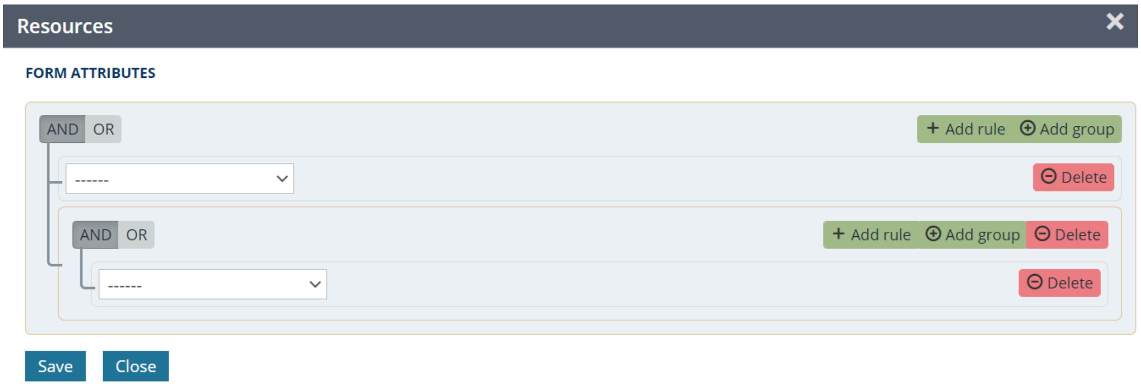
   f. In the **Conditions** field, click ... .

      The **RESOURCES** dialog box is displayed.

      In the **RESOURCES** dialog box, two sections are displayed as illustrated in the following image:

      Using the first section, you can create workflow conditions with the fields of the form selected in the **General Details** tab. Using the second section, you can create workflow conditions with the fields of the **Project Details** and **Contract Details** forms.

Form Attributes



5. To create a rule or group of rules and define conditions for the workflow, in the **RESOURCES** dialog box, perform the following steps:

   a. Click **Add rule**.

      A new row with a drop-down list is added.

      > **Note:** The **AND** and **OR** buttons present at the top are unavailable.

      Alternatively, to create a group of rules with a combination of multiple AND and OR conditions, click **Add Group**.
      A new row with a drop-down list is added.

      > **Note:** The **AND** and **OR** present at the top are enabled.

   b. From the drop-down list, select the required form field.

      For example, select **Amount in $**.

      Available fields are associated with the form selected in the **General Details** tab.

      When a form field is selected, two new fields are added to the row. The second field is a drop-down list and based on the form field selected, the third field can be any of the following.

      - Drop-down list
      - Option list
      - Text box
      - Numeric text box
      - Calendar drop-down box

   c. From the second drop-down list, select the operator.

      For example, select greater than >.

      The operator creates the condition between the form field you select in the first drop-down list and the value that you enter or select in the third field.

      From the second drop-down list, if you select either between or not between, the third and the fourth fields appear, which can be one of the following:

      - Numeric text box
      - Calendar drop-down box

   d. Based on the form field you select in the first field, enter or select a value in the third field. For example, enter **1000**.

   e. Optionally, to add multiple rules to the workflow or group, repeat the above steps 1 to 4.

      When you add more than one rule, then the **AND** and **OR** buttons present at the top are enabled. Based on the workflow condition, click either of the following:

- If all the rules must be true to execute the workflow condition, click **AND**.
  For example, **Amount in $ > 1000 AND Remaining Amount in $ < 500**.
  The subsequent workflow stage is **In Review** if the amount entered in the field **Amount in $** is greater than **1000** and the amount entered in the field **Remaining Amount in $** is less than **500**.
- If any one of the rules must be true to execute the workflow condition, click **OR**.
  For example, **Amount in $ > 1000 OR Remaining Amount in $ < 500**.
  The subsequent workflow stage is **In Review** if the amount entered in the field **Amount in $** is greater than **1000** or the amount entered in the field **Remaining Amount in $** is less than **500**.

f. Optionally, in the second row, create workflow conditions using the fields of the **Project** and **Contract Details** forms.

g. Optionally, to delete a row, click **Delete** corresponding to the appropriate row.

h. Click **Save**.

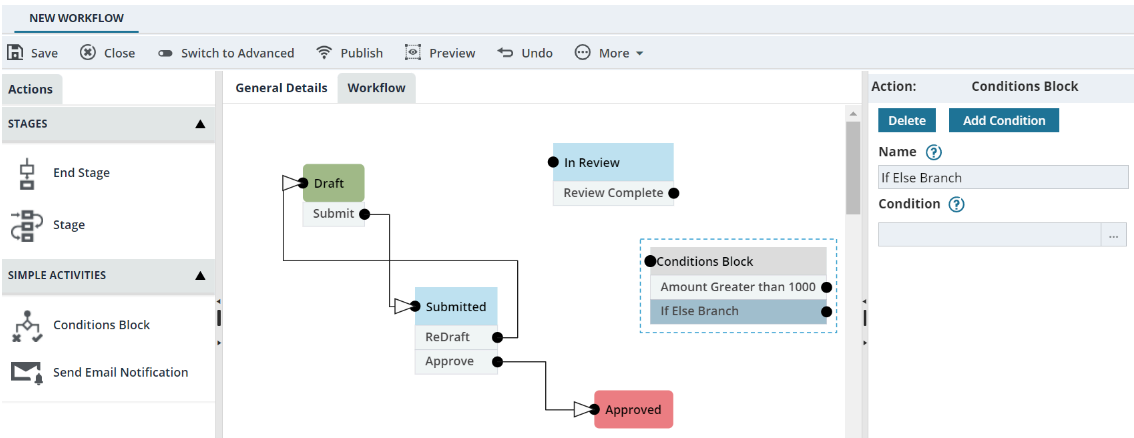
6. To add another condition, perform the following steps:

a. In the **Workflow** tab, click the **Conditions Block** item.

b. In the right pane, click **Add Condition**. Alternatively, right-click the **Conditions Block** item in the canvas, and then click **New If Else Branch**.

The **If Else Branch** is displayed below the **Amount Greater than 1000** item as illustrated in the following image:

Workflow If Else Branch



c. In the **Workflow** tab, click the **If Else Branch** item.

The **If Else Branch** properties are displayed in the right pane.

d. In the **Name** box, enter the name for the condition.

For example, enter **Else**.

7. You can send a standard automated email notification to stakeholders when the associated form is transitioned from one workflow stage to the next workflow stage. To customize workflow email notifications, perform the following steps:

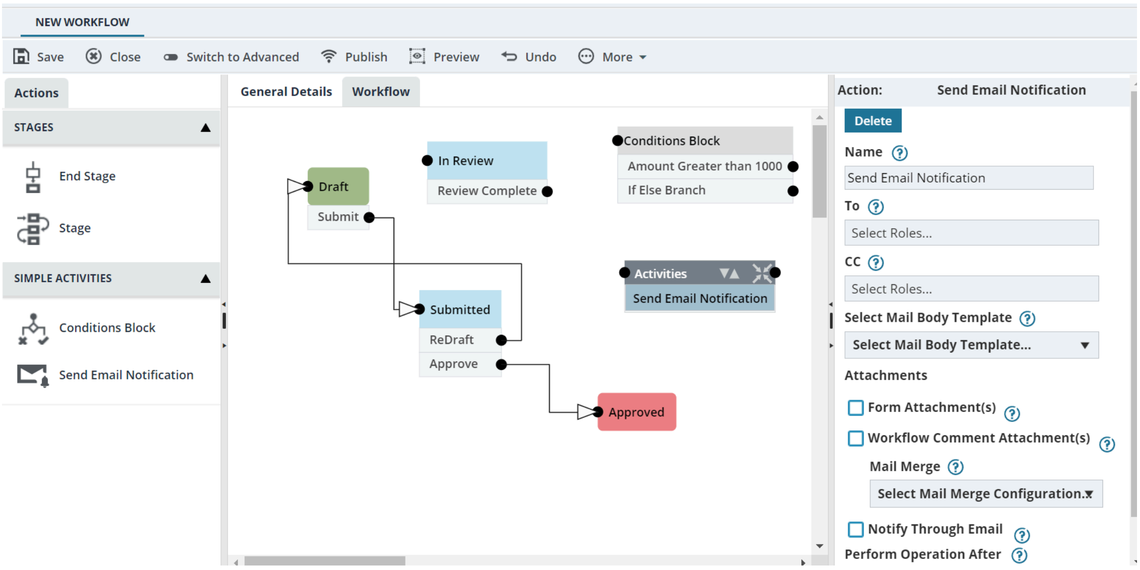
   a. In the **Actions** navigation pane, expand **SIMPLE ACTIVITIES**, and then drag the **Send Email Notification** action item to the **Workflow** tab.

      The **Send Email Notification** item is displayed on the canvas.

   b. In the **Workflow** tab, click the **Send Email Notification** item.

      The **Send Email Notification** properties are displayed in the right pane, as illustrated in the following image:

      Workflow Email Notification



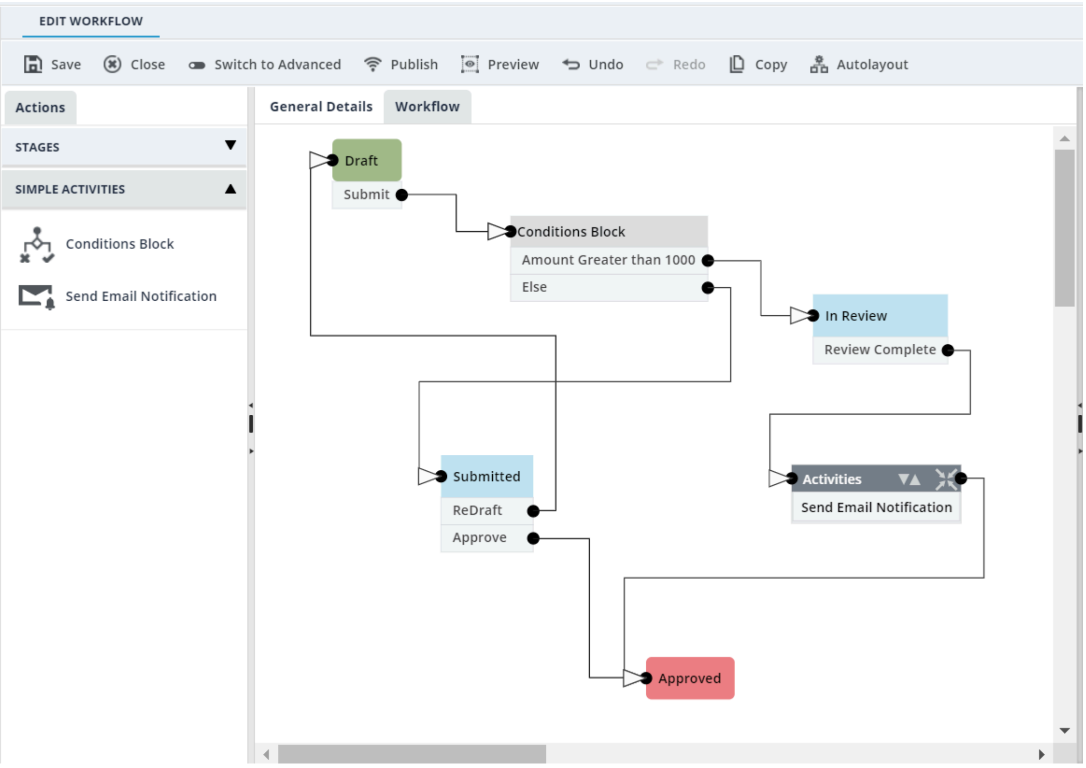
   c. In the **Send Email Notification** properties pane, provide the required information in the fields, as described in the following table:

Field Name	Description
Name	Enter the name of the stage. the default stage name is displayed as **Send Email Notification**. If required, enter a new name for the action item.
To	Select the required role the email notification will be sent to. Available options in the list are roles that are defined in the application with necessary permissions. Optionally, you can type the required email address (For example, *john@aurigo.com*).
CC	Select the required roles a copy of the email notification will be sent to.

Field Name	Description
	Available options in the list are roles that are defined in the application with necessary permissions. Optionally, you can type the required email address. For example, *john@aurigo.com*.
Select Mail Body Template	Select the required mail body template that must be sent to the stakeholders. Available templates are based on the form that is selected for the workflow. Available options are templates defined for the form in the **Mail Body Templates** catalog of the library.
Attachments	• **Form Attachment(s)** – Select the check box to send the notification with the files that are attached to the record for which the workflow action is performed. • **Workflow Comment Attachment(s)** – Select the check box to send the notification with the files that are attached to the workflow comments. • **Mail Merge** – Select the required mail merge template. Available options are mail merge templates configured for the selected form.
Notify through Email	Click the required option: • Click **Any user completes action** to specify that if any of the action stakeholders transition the record to the next workflow stage, the email notification is sent to the selected stakeholders. • Click **All user(s) complete action** to specify that all the action stakeholders must transition the record to the next workflow stage to send the email notification to the selected stakeholders.

8. To connect workflow items to complete the business process, click the port at the item, and drag the port to the port of the required item as illustrated in the following image:

Edit Workflow



> **Note:** By default, the port is located on the right of the box. To change the location of the port, right-click the new action item and select **Reverse Port**.

9. To define conditions on the users performing a workflow action, perform the following steps:
   a. Click the required port.
      The **Workflow Connection** properties are displayed on the right pane.
   b. In the **Perform Operation After** section, click the required option:
      - **Any user completes action**: To specify that if any of the action stakeholders transition the record to the next workflow stage, the record moves to the next workflow stage.
      - **All user(s) complete action**: To specify that all the action stakeholders must transition the record to the next workflow stage for the record to move to the next workflow stage.
10. Click **Save**.
    The workflow is saved and listed on the **WORKFLOW LIST** page.

The workflow must now be published to be made available in the application.

5.1.3. Creating a Workflow Using Advanced Mode

Before You Begin

- The role of the logged in user has permission to create or edit workflows.

Overview

The following procedure describes the steps to create a sample workflow using Workflow Management advanced activities. You can also use simple mode activities to create the workflow.

The example illustrates the following activities:

- **Get Form Data** – The **Get Form Data** action item enables you to associate a form and its field information to the workflow. Based on the field data of the form, the business decisions can be defined.
- **Condition Block** – The **Condition Block** action item enables you to define conditions to the workflow.
- **Set Stake Holders** – The **Set Stake Holders** action item enables you to define the stakeholders for the workflow to obtain appropriate business decisions.

Form Used

- Project Fund Transaction form

Business Scenario Used

- If the amount entered in the **Amount in $** field of the **Project Fund Transaction** form is more than $1000, then the transaction must be approved by the **Finance Administrator**.
- If the entered amount in the **Amount in $** field of the **Project Fund Transaction** form is less than $1000, then the approval of the **Finance Administrator** is not required.

Steps

1. Create a basic workflow.

   Alternatively, edit a workflow.
2. To create a workflow using advanced features, in the toolbar, click **Switch to Advanced**.

   The **ADVANCED ACTIVITIES** section is added to the **Actions** pane, and the **Expressions** tab is added to the canvas.

3. You can define a form parameter to the workflow that can be used as a condition in the **Conditions Block** action item. To add a form parameter to the workflow, perform the following steps:

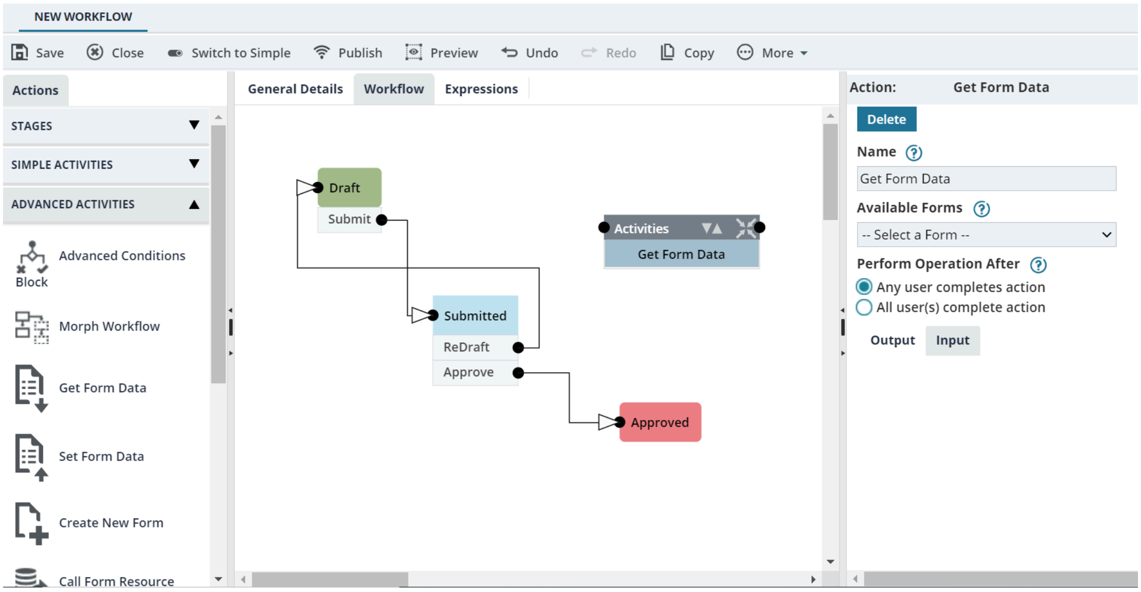
   a. In the **Actions** navigation pane, expand **ADVANCED ACTIVITIES**, and then drag the **Get Form Data** action item to the **Workflow** tab.

      The new stage item is displayed on the canvas.

   b. In the **Workflow** tab, click the **Get Form Data** item.

      The **Get Form Data** properties are displayed in the right pane, as illustrated in the following image:

Workflow Get Form Data



   c. In the **Get Form Data** properties pane, provide the required information in the fields, as described in the following table:

Field Name	Description
Name	Enter the name for the action. For example, enter **Get Fund Data**.
Available Forms	Select the required form. For example, select the **Project Fund Transaction** form. Available options are forms that are defined in the application. **Note:** Based on the selected form, the associated field information of the form is displayed in the **Output** tab.

Field Name	Description
Perform Operation After	Click the required option: • Click **Any user completes action** to specify that if any of the action stakeholders transition the record to the next workflow stage, the record moves to the next workflow stage. • Click **All user(s) complete action** to specify that all the action stakeholders must transition the record to the next workflow stage for the record to move to the next workflow stage.
Input	To select the workflow parameters, and perform the following steps: i. Click .... The **RESOURCES** dialog box is displayed. ii. Click **Workflow Data**. iii. From the drop-down list, select **Associated Form** instance, and then click **Save**. Available options are parameters used to define the workflow for a form.
Output	Select the required field information check box. The selected field information is used to create a condition for the workflow. For example, select **Amount**. Available field information are associated with the form selected in the **Available Forms** field.

4. You can define a condition for the selected form parameter using the conditions block. To add a **Condition Block** action item to the workflow, perform the following steps:

   a. In the **Actions** pane, expand **ADVANCED ACTIVITIES**, and then drag the **Advanced Conditions** action item to the **Workflow** tab.

      The **Advanced Conditions Block** item is displayed on the canvas.

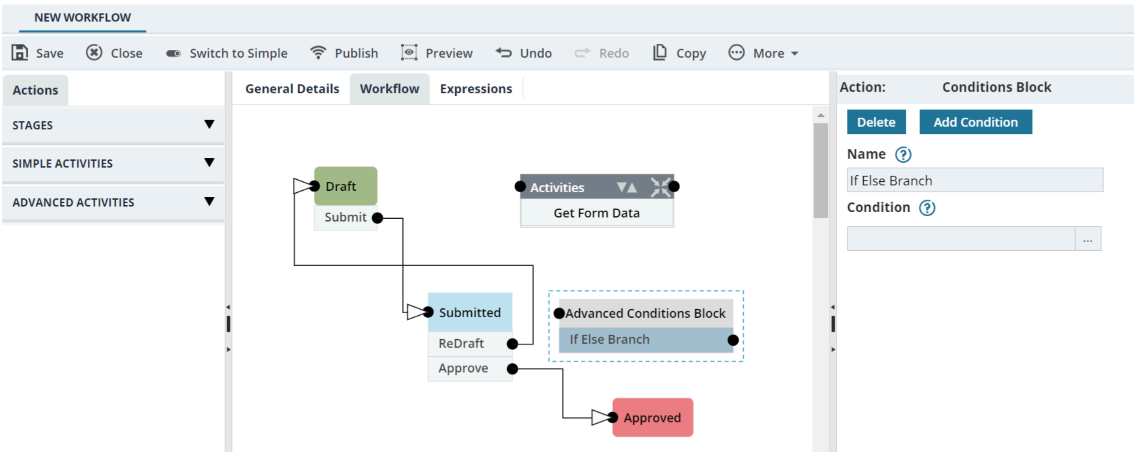
   b. In the **Workflow** tab, click **Advanced Conditions Block** item.

   c. In the right pane, click **Add Condition**.

      Alternatively, right-click the **Advanced Conditions Block** item in the canvas, and then click **New If Else Branch**.

      The **If Else Branch** is displayed below the conditions block item as illustrated in the following image:

      ### Workflow Advanced If Else Branch



> **Note:** To delete an **If Else Branch**, right-click the **If Else Branch** item, and then click **Delete**.

   d. In the **Workflow** tab, click the **If Else Branch** item.

      The **If Else Branch** properties are displayed in the right pane.

   e. In the **Name** box, enter the name for the condition.

      For example, enter **Amount Greater than 1000**.

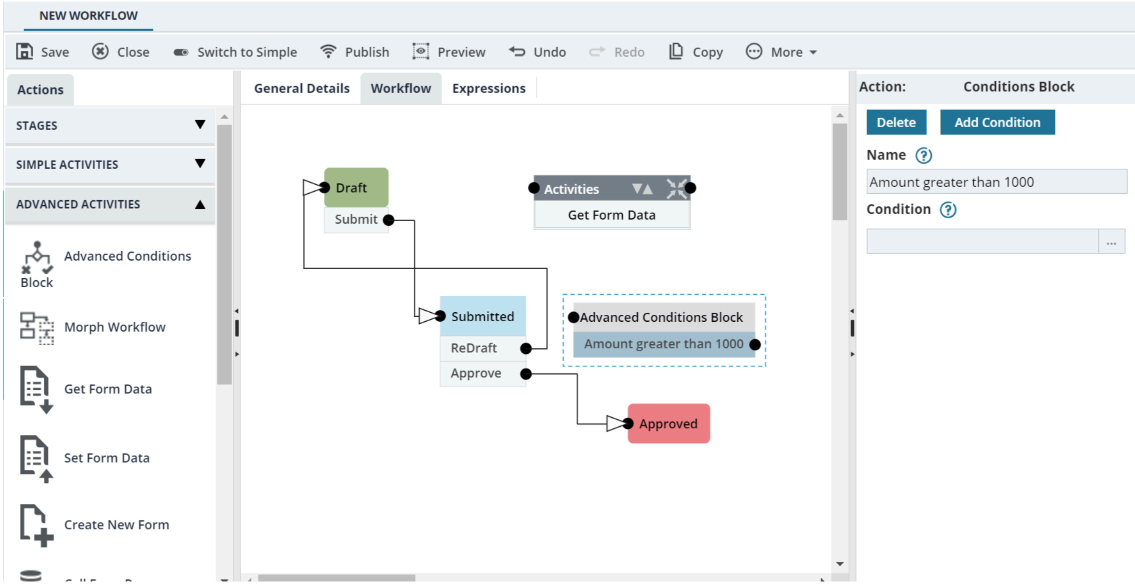
   f. In the **Workflow** tab, click the **Conditions Block** item.

   g. In the right pane, click **Add Condition**.

      Alternatively, right-click the **Conditions Block** item in the canvas, and then click **New If Else Branch**.

The **If Else Branch** is displayed below the **Amount Greater than 1000** item as illustrated in the following image:

Advanced Condition Block Example



h. In the **Workflow** tab, click the **If Else Branch** item.

The **If Else Branch** properties are displayed in the right pane.

i. In the **Name** box, enter the name for the condition.

For example, enter **Else**.

5. You can associate a stakeholder who can perform the next workflow action based on the condition defined in the condition block. To add a stakeholder to the workflow, perform the following steps:

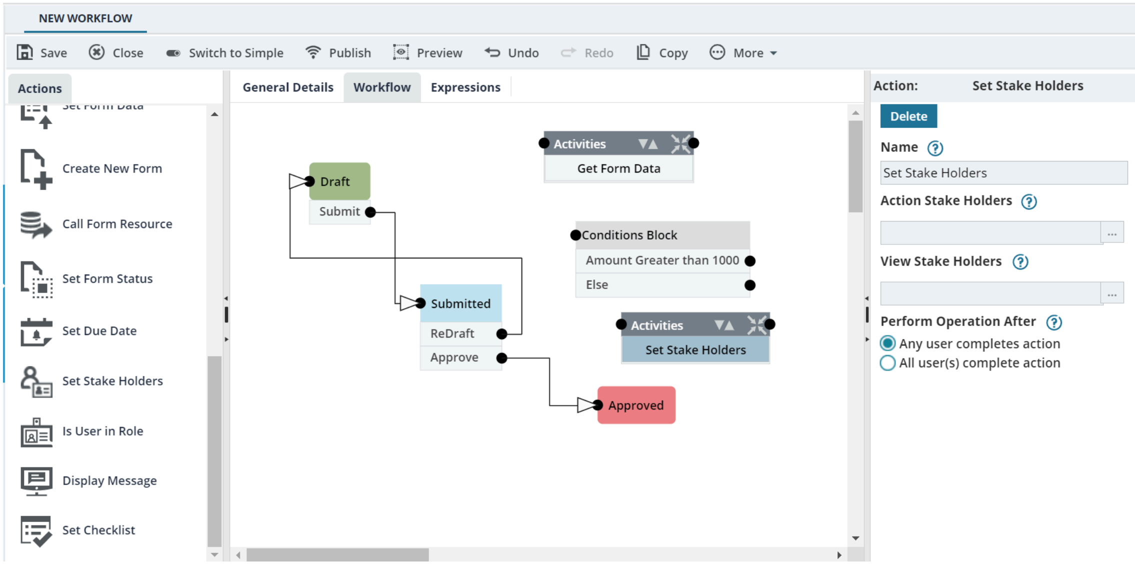
   a. In the **Actions** pane, expand **ADVANCED ACTIVITIES**, and then drag the **Set Stake Holders** action item to the **Workflow** tab.

      The **Set Stake Holders** action item is displayed on the canvas.

   b. In the **Workflow** tab, click the **Set Stake Holders** item.

      The **Set Stake Holders** properties are displayed in the right pane, as illustrated in the following image:

      Stake Holders Settings



   c. In the **Name** box, enter the name for the action.

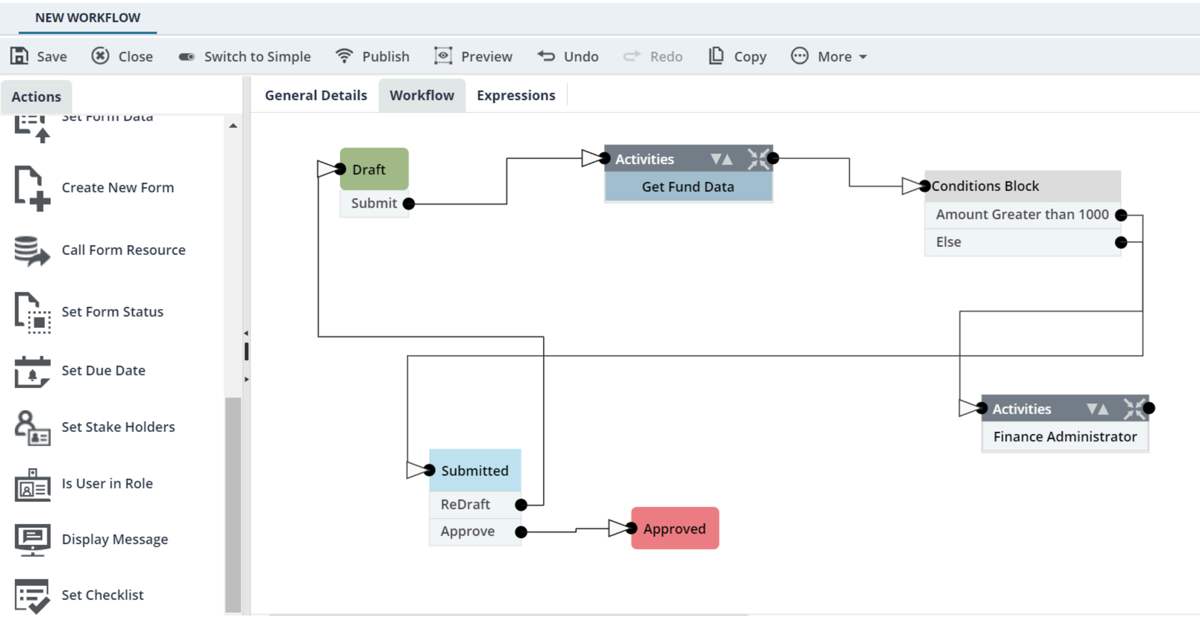
      For example, enter **Finance Administrator**.

   d. In the **Perform Operation After** section, click the required option:

      - **Any user completes action**: To specify that if any of the action stakeholders transition the record to the next workflow stage, the record moves to the next workflow stage.
      - **All user(s) complete action**: To specify that all the action stakeholders must transition the record to the next workflow stage for the record to move to the next workflow stage.

6. To connect workflow items to complete the business process, click the port at the item, and drag the port to the port of the required item as illustrated in the following image:

   ### Connecting Workflow Items

   Note: By default, the port is located on the right of the box. To change the location of the port, right-click the new action item and click **Reverse Port**.

7. To define conditions on the users performing a workflow action, perform the following steps:

   a. Click the required port.

      The **Workflow Connection** action is displayed on the right pane.

   b. In the **Perform Operation After** section, click the required option:

      - **Any user completes action**: To specify that if any of the action stakeholders transition the record to the next workflow stage, the record moves to the next workflow stage.
      - **All user(s) complete action**: To specify that all the action stakeholders must transition the record to the next workflow stage for the record to move to the next workflow stage.

8. Click the **Expressions** tab to define expressions for the workflows.

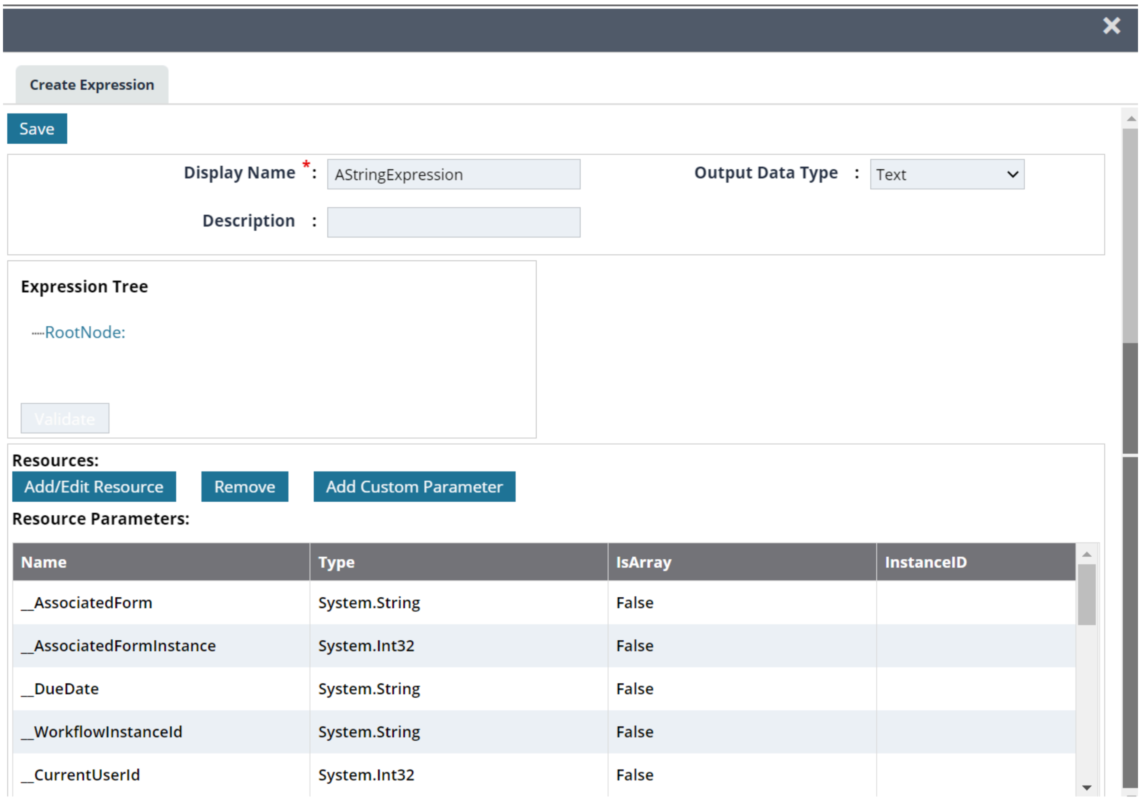
   An expression is a programming language. It is a combination of one or more constants, variables, functions, and operators that the programming language understands and computes to produce another value.

9. To create expression for the **Conditions Block** action item, in the **Expressions** tab, perform the following steps:

   a. In the **Expressions in this workflow** section, click **Add**.

      The **Create Expression** dialog box is displayed.

      Creating Expression in Workflow

   b. In the **Display Name** box, the default expression name is displayed as **AStringExpression**.

      Enter a new name for the expression being created. For example, enter **Check Amount**.

   c. From the **Output Data Type** drop-down list, select the data type for the expression.

      For example, select **Boolean**.

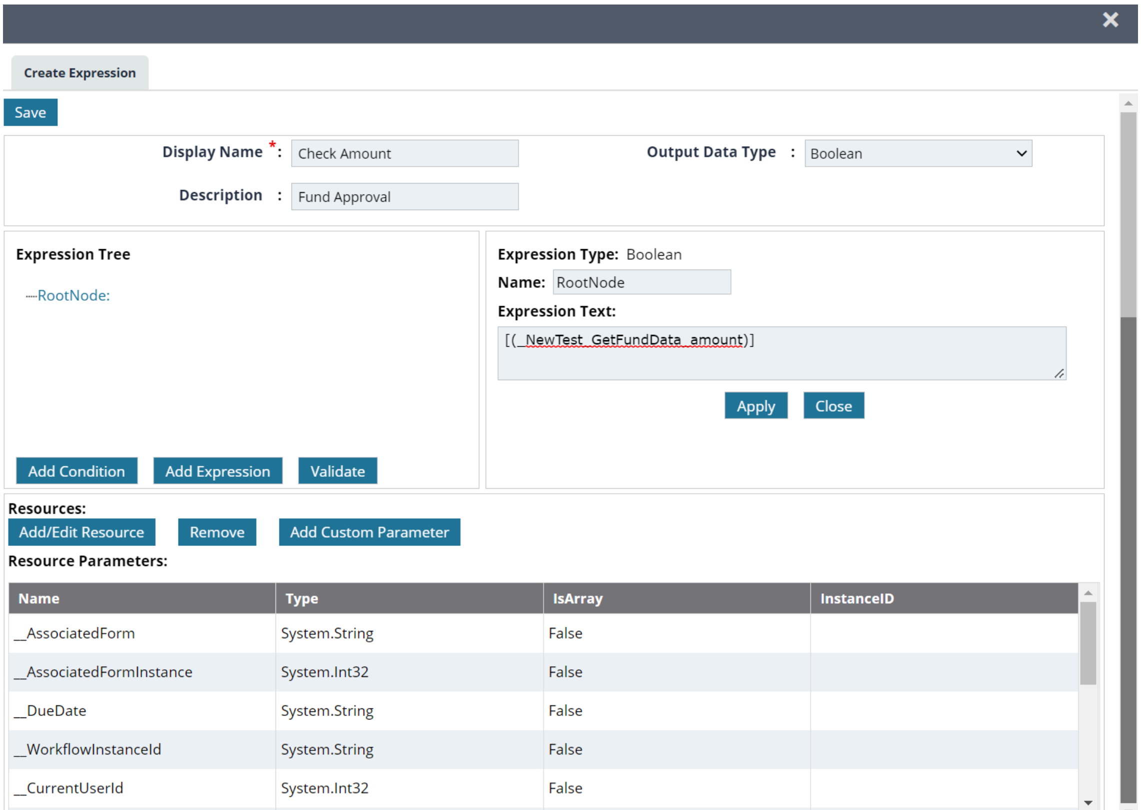
   d. In the **Description** box, enter the description for the expression.

   e. In the **Expression Tree** section, click **RootNode**.

   f. In the **Resource Parameters** section, double-click the required default expression code for the **Amount in $** field that is with the **Instance ID**.

The default expression code is displayed in the **Expression Text** box as illustrated in the following image:

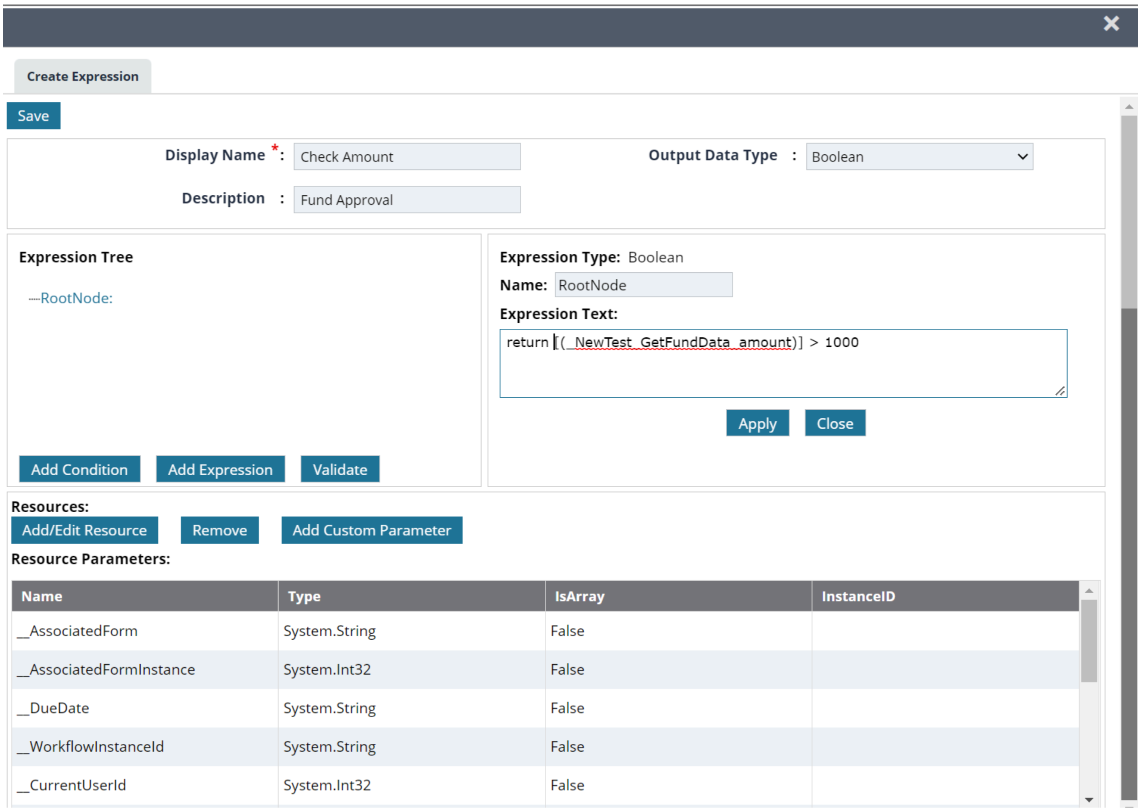
Creating Expression Text



g. In the **Expression Text** box, click and add the condition to the default expression code.

For example, edit the default expression code, according to the format illustrated in the following image:

Expression Text



h. Click **Apply**.

i. Click **Validate** to check the format and completeness of the edited expression.

On successful validation, the validation success message is displayed.

j. Click **Save**.

The **Check Amount** expression is added to the **Expressions in this workflow** section.

You can use the following example expression codes to change the condition for the workflow:

Operator	Expression	Description
==	return [(_NewTest_GetFundData_amount)] == 1000;	If the amount entered in the **Amount in $** field of the **Project Fund Transaction** form is EQUAL to $1000, then the transaction must be approved by the **Director of Finance**.

Operator	Expression	Description
!=	return [(_NewTest_GetFundData_amount)]!= 1000;	If the amount entered in the **Amount in $** field of the **Project Fund Transaction** form is NOT EQUAL to $1000, then the transaction must be approved by the **Director of Finance**.
<	return [(_NewTest_GetFundData_amount)] < 1000;	If the amount entered in the **Amount in $** field of the **Project Fund Transaction** form is LESS THAN $1000, then the transaction must be approved by the **Director of Finance**.
<=	return [(_NewTest_GetFundData_amount)] <= 1000;	If the amount entered in the **Amount in $** field of the **Project Fund Transaction** form is LESS THAN OR EQUAL to $1000, then the transaction must be approved by the **Director of Finance**.
>=	return [(_NewTest_GetFundData_amount)] >= 1000;	If the amount entered in the **Amount in $** field of the **Project Fund Transaction** form IS MORE THAN OR EQUAL to $1000, then the transaction must be approved by the **Director of Finance**.
&&	return [(_NewTest_GetFundData_amount)] >= 1000 && [(_NewTest_GetFundData_amount)] <= 10000;	If the amount entered in the **Amount in $** field of the **Project Fund Transaction** form is MORE THAN OR EQUAL to $1000 AND LESS THAN OR EQUAL to $10000, then the transaction must be approved by the **Director of Finance**.
||	return [(_NewTest_GetFundData_amount)] <= 1000 || [(_NewTest_GetFundData_amount)] >= 10000;	If the amount entered in the **Amount in $** field of the **Project Fund Transaction** form is LESS THAN OR EQUAL to $1000 OR MORE THAN OR EQUAL to $10000, then the transaction must be approved by the **Director of Finance**.

10. To create expression for the **Set Stake Holder** action item, in the **Expressions** tab, perform the following steps:

    a. In the **Expressions in this workflow** section, click **Add**.

       The **Create Expression** dialog box is displayed.

    b. In the **Display Name** box, the default expression name is displayed as **AStringExpression**.

       Enter a new name for the expression being created. For example, enter **Stakeholder Finance**.

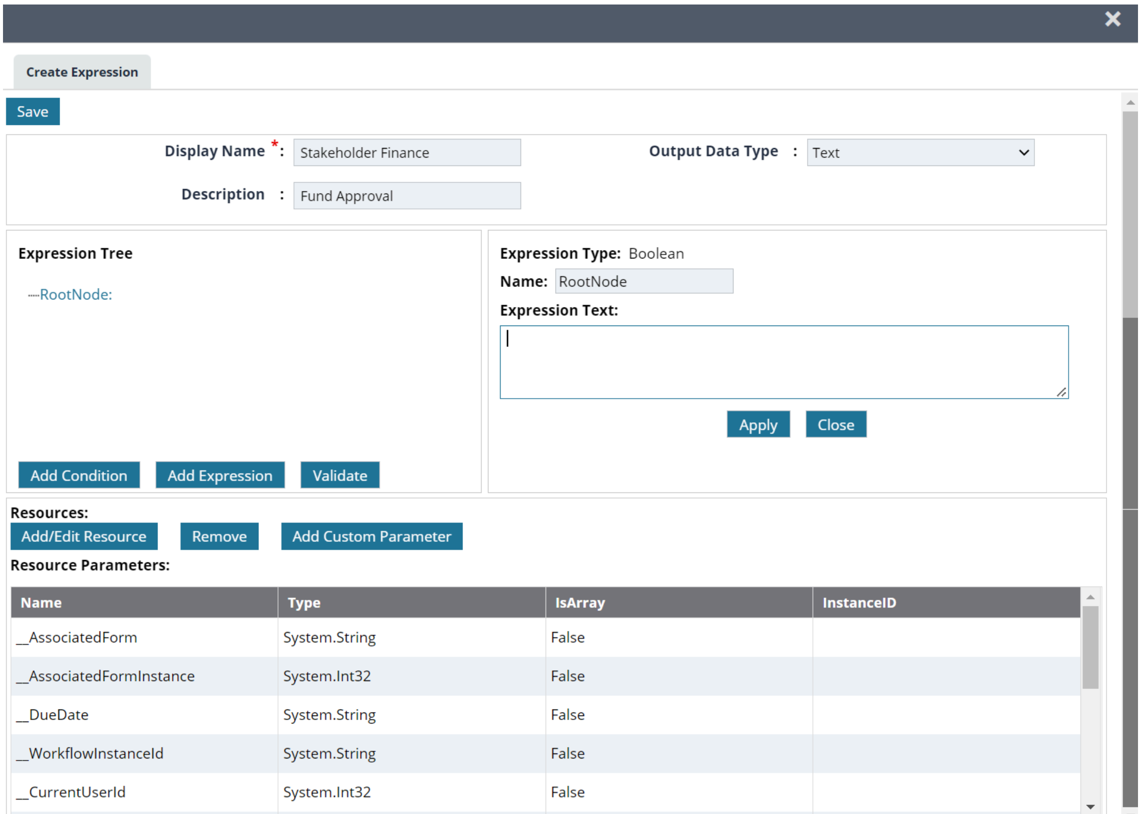
    c. From the **Output Data Type** drop-down list, select the data type for the expression output. For example, select **Text**.

    d. In the **Description** box, enter the description for the expression.

    e. In the **Expression Tree** section, click **RootNode**.

       The **Expression Text** box is displayed as illustrated in the following image:

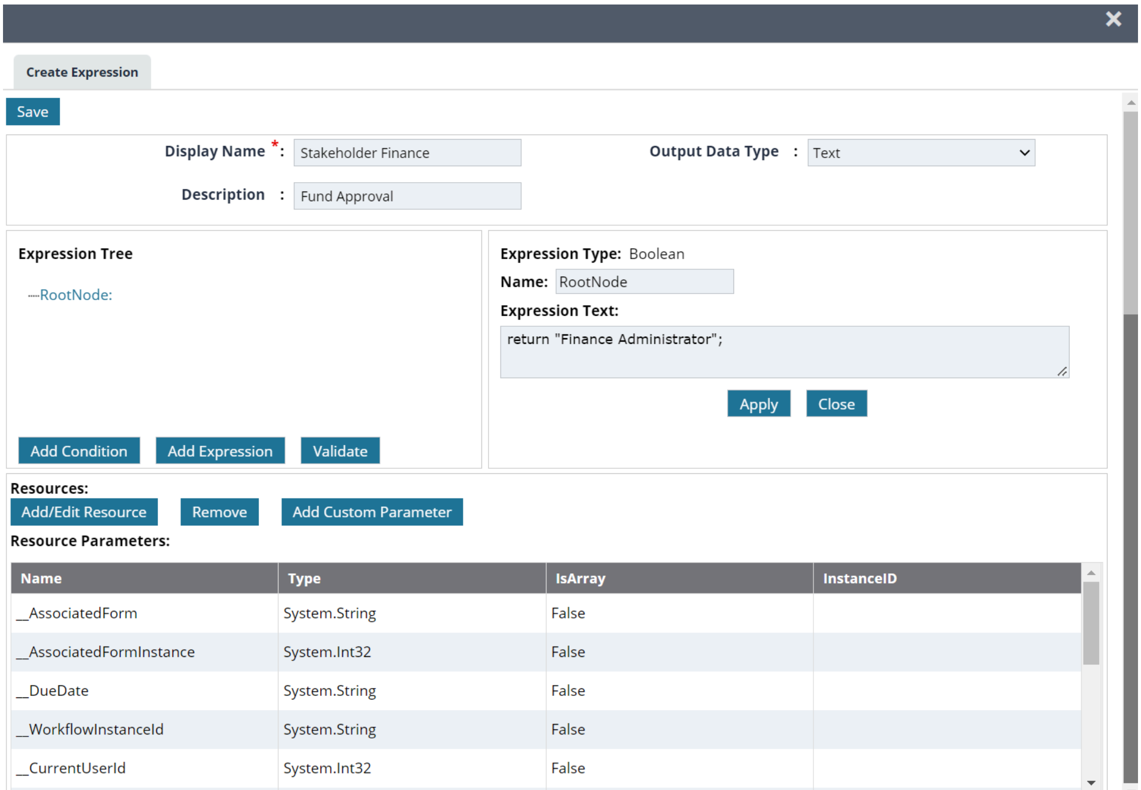
Expression Code



    f. In the **Expression Text** box, enter the expression code for the stakeholder.

For example, enter the expression code, according to the format illustrated in the following image:

Validating Expression



g. Click **Apply**.

h. Click **Validate** to check the format and completeness of the entered code. On successful validation, the validation success message is displayed.

i. Click **Save**.

The **Stakeholder Finance** expression is added to the **Expressions in this workflow** section.

j. Click the **Workflow** tab.

11. To add the **Expression** to the **Amount Greater than 1000** action item, perform the following steps:

a. In the **Workflow** tab, click the **Amount Greater than 1000** action item.

The **Amount Greater than 1000** item properties are displayed in the right pane.

b. In the **Condition** box, click ... .

The **RESOURCES** dialog box is displayed.

c. Click **Expression**.

d. From the drop-down list, select the **Check Amount**.

Available options are expressions defined in the **Expressions** tab.

e. Click **Save**.

12. To add the **Expression** to the **Finance Administrator** action item, perform the following steps:
    a. In the **Workflow** tab, click the **Finance Administrator** action item.
       The **Finance Administrator** item properties are displayed in the right pane.
    b. In the **Action Stake Holders** box, click ... .
       The **RESOURCES** dialog box is displayed.
    c. Click **Expression**.
    d. From the drop-down list, select the **Stakeholder Finance**.
       Available options are expressions defined in the **Expressions** tab.
    e. Click **Save**.
    f. In the **View Stake Holders** box, click ... .
       The **RESOURCES** dialog box is displayed.
    g. Click **Expression**.
    h. From the drop-down list, select the **Stakeholder Finance**.
       Available options are expressions defined in the **Expressions** tab.
       Optionally, you can create expressions to add a different view stakeholder.
    i. Click **Save**.
13. Click **Save**.
    The workflow is saved and listed on the **WORKFLOW LIST** page.

The workflow must now be published to be made available in the application.

5.1.4. Editing a Workflow

Before You Begin

- Workflow is not marked as a **Validation** workflow.
  To determine if a workflow is a **Validation** workflow, perform the following steps:
  1. In the module menu, click **Administration**.
  2. In the navigation pane, expand **Configuration Toolkit**, and then click **Workflow Management**.
     The **WORKFLOW LIST** page is displayed.
  3. In the **Validation** column, if the check box is selected, then the corresponding workflow is a system workflow and cannot be edited. However, you can take a copy of the workflow and then make updates to the workflow.

> **Note:** Any modifications to an existing workflow are effective to newer versions of the associated forms after the modified workflow has been published.
>
> For example, if you introduce new stages and actions to the **Daily Progress Report** form and then publish the edited workflow, only newer instances of the **Daily Progress Report** form will reflect the changes saved and not the ones created previous to the modification.

Overview

You can edit an existing workflow that is not checked in the Validation column.

Steps

1. In the module menu, click **Administration**.

   The **ADMINISTRATION** page is displayed.
2. In the navigation pane, expand **Configuration Toolkit**, and then click **Workflow Management**.

   The **WORKFLOW LIST** page is displayed.
3. Select the workflow to be edited, and then click **Edit**.

   The **EDIT WORKFLOW** page is displayed.

   > **Note:** A published workflow is unpublished.
4. Make the required changes.
5. Click **Save** to save the changes.

   The **WORKFLOW LIST** page is displayed.

The workflow must now be published to be made available in the application.

5.1.5. Publishing a Workflow

Overview

Once the workflow is created, you need to publish the workflow. Publishing a workflow makes the workflow available to the system. That is, workflow action buttons are made available in a form when a new instance of the associated form is created on the relevant list page in Masterworks.

Steps

1. In the module menu, click **Administration**.

   The **ADMINISTRATION** page is displayed.

2. In the navigation pane, expand **Configuration Toolkit** folder, and then click **Workflow Management**.

   The **WORKFLOW LIST** page is displayed.
3. To publish the workflow, perform either of the following steps:
   - From the list page:
     a. Select the newly created workflow that must be published.
     b. Click **Publish**.
   - From the details page of the workflow:
     a. Select the newly created workflow that must be published, and then click **Edit**.
     b. Click **Publish**.

> **Note:** When existing workflows are modified and published, only new instances of forms are affected. All forms created with the previous workflow continue to operate with the previous definition of the workflow. All-new forms operate with the modified workflow.
> You can also un-publish a workflow. This is used when a form already associated with an existing workflow has to be assigned with the newly created workflow. You can un-publish the earlier workflow by selecting the published workflow that has to be unpublished and then click **Un-Publish**.

5.2. Form Builder

The Masterworks Form Builder is a powerful tool, which enables you to develop customized forms and publish them to the application. Masterworks provides XML templates to create and configure new forms. This feature provides you with a free hand in adding new forms based on the evolving needs of the organization.

The Form Builder tool is integrated with Config+ that enables you to configure business logic within a form.

In addition, the Workflow Management integrated with the Form Builder enables you to automate any business process according to the business requirements.

The following sections describe in detail the various features of the Masterworks Form Builder:

- Terminologies used in Form Builder
- Lifecycle of a Form

The following sections describe the procedures to create a form, and publish a created form using Form Builder:

- Creating a Form Using Form Builder
- Publishing a Form

The following section describes the procedure to configure business logic within a form:

Before you Begin - Terminologies used in Form Builder

Form Builder is usable with ease to create a wide variety of forms based on business requirements.

However, before you start creating them, here are some terminologies that you should be familiar with:

- **Group Layout**
  A layout holds the controls that define a form. The layout is the framework on which the form is defined.
  Following are the various types of layouts available.

Layout	Description
Section	A Section is defined as the part of the form that separates the action items. Multiple sections can be added as required in a form depending on the actions and the purpose. Each section can also be made visible or hidden in the definition of the form based on the workflow requirement.
Spacer	A spacer is used to provide spaces within the form ideally in between sections or grids. It can also accommodate controls within it similar to any other container and is hence listed under containers. You cannot add a section to a spacer.
Tabs Container, Tab	A Tab Container enables you to introduce a tab control within a form. To introduce more than one tab, add the Tab control to the Tabs Container.
Section without Header, Section with Border	These options are available only when you switch to the advanced mode. You can create sections without a header and with a border using the Group Layout types Section without Header and Section with Border.
Two Column Layout, Three Column Layout	These options are available only when you switch to the advanced mode. A column layout introduces two or three sections with two or three text boxes organized in

Layout	Description
	columns. This enables you to organize with ease sections and controls within the two or three columns.
Stage	This option is available only when you switch to the advanced mode. A Stage can contain sections and controls that can be made visible or hidden based on the progress of the associated workflow. You can manage visibility and edit properties of the contents of this stage through Workflow Configuration of the form at stage-level.
Include	This option is available only when you switch to the advanced mode. Include enables embedding one form in another. This is useful when you have multiple forms that have the common fields. Improves efficiency by enabling definition of elements in a separate form and include the form in appropriate forms.

- **Simple Input Controls**
  In simple mode, only simple attributes and controls are available.
  The default mode of a form builder is simple mode.
  To change the form builder mode to advanced mode, click **Switch to Advanced**.

Control Name	Description
Autogenerated	The autogenerated field automatically increments its value every time the form is used and saved.
Single line text, Multi line text	The single line text, and multiline text allows text input.
Date, Time Input, Date Time	The **Date** and **Time Input** options allow date and time entries.
Numeric, Integer	The Numeric, and Integer options allow numeric inputs.
Drop Down, List Box, Check Box List, Check Box, Radio Button List, Label	These controls enable you to define options for a list of values from a data source.
Formatted Input, Password	The options allow formatted input by specifying the format in which you can enter alpha-numeric information.

Control Name	Description
Hidden	This option can be used as a placeholder text box and is not visible on the form.
Rich Text	This option is available only when you switch to the advanced mode. The rich text option allows you to enter text in HTML.
Drop Down Tree	This option is available only when you switch to the advanced mode. These controls enable you to define options for a list of values from a data source.

- **Advanced Controls**

  In addition to the controls listed in the **SIMPLE INPUT CONTROLS** pane, you can see an **ADVANCED CONTROLS** pane when the advanced mode is selected.

  The default mode of a form builder is simple mode. To change the form builder mode to advanced, click **Switch to Advanced**.

  To go back to the simple mode, click **Switch to Simple**.

  New Tabs

  The following tabs are available only when you switch to the advanced mode:

Tab Name	Description
FORM BUSINESS LOGIC	This tab comprises of several events and blocks that enables you to configure business logic in the form details page.
LIST PAGE BUSINESS LOGIC	This tab comprises of only one event and same blocks similar to the **FORM BUSINESS LOGIC** tab except one block. The events and blocks enable you to configure business logic in the list page.

These following options are available only when you switch to the advanced mode:

Control Name	Description
MultiSelect Drop Down	The control enables you to insert a multi-select drop-down list.
Multi Picker	The control enables you to insert a combination of two list boxes, one to show the available options and other to hold the selected options.

Control Name	Description
Link	The control enables you to insert a link.
Set	This is similar to a text box type control with left and top labels for reference and is used to place controls next to each other. Can be a text box, radio button list, drop-down list, and so on.
Picker With Textbox	The control enables you to insert a text box with a picker that opens a dialog box to select options.
Picture	The control enables you to insert a picture in the section.
Button	The control enables you to insert a button.
Formula	The control enables defining a formula for fields in the section.
Map	The control inserts a map control in the form.
GISDataMapper	When a map control is added to a form, this control enables configuration of user-friendly names for tooltips to by displayed in GIS maps.
File	The control inserts the standard attachment control to the form. You can upload files as attachments to the form.
Picker Trigger	The option inserts the picker control that opens a dialog box to select options.
Picture Taker	The option inserts a control to click a photo or upload an image.

- **Child Data Container**
  Following are the various options to create child data containers in a form:

Container Name	Description
Dynamic Grid	These are grids or tables where the number of rows is variable, but the number of columns is fixed as specified when creating the table.
Picker	This allows data configuration for all the Picker Triggers placed in the form.
Static Grid	This option is available only when you switch to the advanced mode. A static grid is defined as a grid or a table

Container Name	Description
	where the number of rows and columns are fixed and are defined at the design stage of the form.
CheckList Group	This option is available only when you switch to the advanced mode. These are collection of similar types of checklist items required for recording information while performing a certain operation. Every new checklist item group contains only similar type of controls within them. We are required to create different checklist groups for different types of controls.
Row	This option is available only when you switch to the advanced mode. A row is used to modify the rows in a static grid. The number of rows to be inserted has to be specified during design time of the form.
Check List	This option is available only when you switch to the advanced mode. Checklists define a set of actions to be performed in a specific order.
Client Dynamic Grid	This option is available only when you switch to the advanced mode. This control is a form of Dynamic Grid where number of rows are variable. However, this is a client control and hence data is stored and validated at the client instead of server.
Discussion Control	This option is available only when you switch to the advanced mode. This is used to insert a discussion control where users can record discussions between two users, a question can be raised and the respondent can respond to the question.
Task Control	This option is available only when you switch to the advanced mode. The task control is used where users can assign tasks to another user, can set due dates, respond to the task, and close the task.
LinkTo Grid Control	This option is available only when you switch to the advanced mode. This control is used to link records of one form to another.

Lifecycle of a Form

The typical lifecycle of a form is as below:

1. **Design time**
   As a form author, you can:
   - Initiate the creation of a new form from the **FORM BUILDER** page
   - Edit the form definition from the **Form Builder** editor
   - Specify form location within Masterworks
   - Associate a Workflow to automate business processes
   - Save the form definition
2. **Publishing**
   Once a form is designed and saved, the form is published to make it available in the application. On publishing a form, the form is made available in the module as defined during form design. The toolbar of the form is the predefined Masterworks standard toolbar and is automatically created by the tool.
   On publishing a form, you can define role-based permissions for the form.
3. **Runtime**
   As a user of the form, you can:
   - Initiate the creation of a new form from the form's list page
   - Enter data into the form
   - Review, save, submit, or download form data
   - View the created form in a PDF format
   - Search for a form using form data
   - Delete form data
   - Perform workflow actions on the form

5.2.1. Importing XML File or Form into Form Builder

Overview

The Import XML feature allows you to either upload an XML file or import an existing XML-based form in Form Builder.

This feature allows you to:

- Customize the existing XML-based forms in Form Builder
- Import a customized XML-based form into Form Builder

Steps

1. In the module menu, click **Administration**.

   The **ADMINISTRATION** page is displayed.

2. In the navigation pane, expand the **Configuration Toolkit** folder, and then click **Form Builder**.

   The **FORMS LIST** page is displayed.
3. Click **Import XML**.

   The **IMPORT FORM** page is displayed.
4. To import from a file, perform the following steps:
   a. Select **File Upload**.
   b. In the **Select File** box, click **Choose File**.

      The **Open** dialog box is displayed.
   c. Select the required XML file to be uploaded, and then click **Open**.
   d. Click **Import**.

      A form is created and displayed in the **FORMS LIST** page.
   e. To modify and update the imported form, select the imported form, and click **Edit**.
5. To import from an existing form, perform the following steps:
   a. Select **Form Import**.
   b. In the **Select Form** box, click and select the required form from the drop-down list.

      Available forms are the forms in Masterworks that are created using XML.
   c. Click **Import**.

      A form with the same **Form ID** and **Form Header** of the selected form is created and displayed in the **FORMS LIST** page.
   d. To modify and update the imported form, select the imported form, and click **Edit**.

5.2.2. Creating a Form Using Form Builder

Overview

The following procedure describes the steps to create a sample form for recording employee information. The example fields and options selected in the procedure are for instructional purposes.

The example illustrates the following controls:

- Section
- Automatically generated sequential numbers
- Text box
- Option buttons

- Drop-down list with options defined from a Library catalog
- Condition based form controls
- Static grid
- Set
- Picker and Picker Trigger

Steps

1. In the module menu, click **Administration**.

   The **ADMINISTRATION** page is displayed.

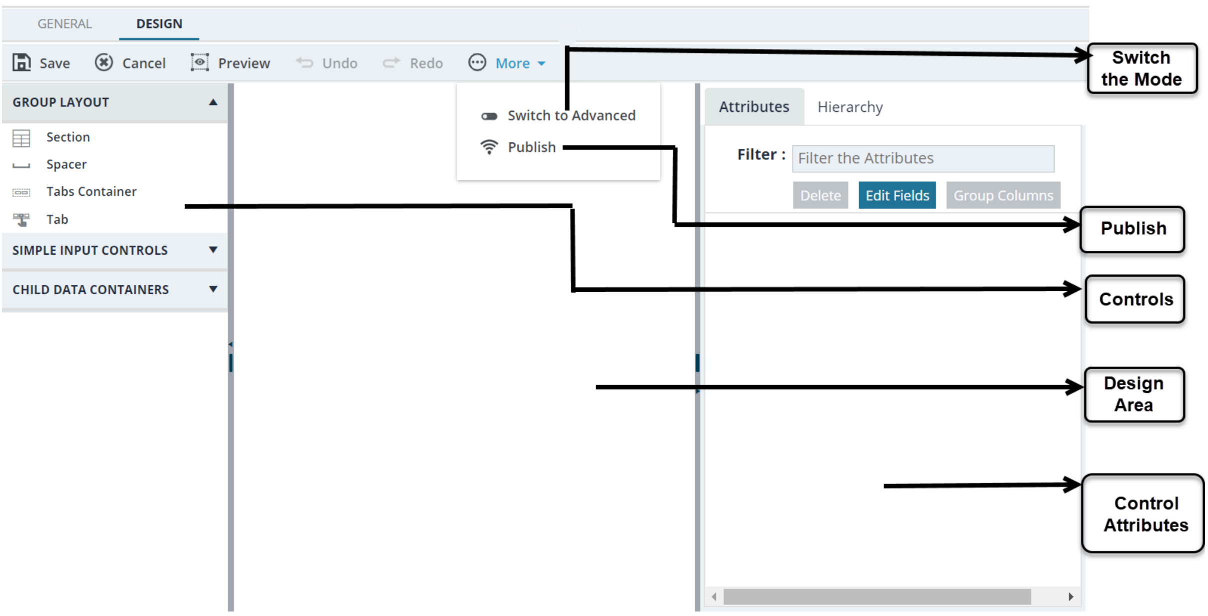
2. In the navigation pane, expand the **Configuration Toolkit** folder, and then click **Form Builder**.

   The **FORMS LIST** page is displayed.

3. Click **New**.

   Two tabs, **GENERAL** and **DESIGN** are displayed.
   The **GENERAL** tab enables you to define the form name (Header), and the module (Parent Module) where the form must be available in the application at runtime.
   The **DESIGN** tab displays the form structure. The tab is divided into 3 panes, the left pane, center pane, and the right pane. The left pane lists the controls to design the form, the center pane displays the form structure and design of the form, and the right pane displays the control attributes.

Form Builder



4. In the **GENERAL** tab specify the form details.

Field	Description
Form ID	This determines the unique ID for the form. Rename the form according to the requirements. **Note:** The **Form ID** should have seven unique alphanumeric characters.
Header	This denotes the text to be displayed as a Header to the form after being published. For example, enter **Employee Details**.
Parent Module	This determines the module in the application where the XML form will be available. For example, if the field is to be a library catalog, then select **Library** form from the **Parent Module** list.
Folder	This determines the folder location where the XML form will be available in the application. Type the complete path of the folder using the '/' separator. If the folder exists, then the form will be available under the existing folder. Otherwise, a New Folder will be created, and the form will be placed under that folder. For example, you can enter **Resources/Employees** in the **Folder** box. This creates two folders named **Resources** and **Employees**. The **Employees** folder is created in the **Resources** folder in the **Library** module.

5. Click the **DESIGN** tab.
6. In the **DESIGN** tab, click **Switch to Advanced**.
7. To view or modify the form attributes, click in the design area.

   The form attributes are displayed.

   a. In the **COMMON ATTRIBUTES** section, the form attributes are displayed as described in the following table.

Attribute	Description
Name	This specifies the form identification number/name.

Attribute	Description
PrimaryKeyName	This is a default value for the form and should not be modified in normal circumstances. The primary key for this database container. This usually is an auto increment integer. When using the SmartFormGenerator, this field is autogenerated.
AllowAttachments	This enables users to upload files to the form, if it is set to True.
Header	This is the text to be displayed as the header of the form.
ExcelFileName	Specify the name of the template Excel file for bulk import or export of form information.
ParentModuleID	This determines the module ID where the form needs to be published.
AllowExcelExport	Allows export of form information into an Excel workbook, if set to True.
ShowDetailsReport	If set to **True**, the **Detail Report** menu is added to the **Reports** menu option.
ShowListPageReport	If set to **True**, the **List Page Report** menu is added to the **Reports** menu option.
ShowGISMapView	If this is marked as **True**, then a button to show **Map View** on the list page is available. This functionality is applicable only to List pages associated to forms enabled with Map controls.
Width	The width of the form. The default is to resize the form based on its contents; however, pixel values can be used.
EnableAuditLog	If set to **True**, the audit log is enabled on a form. This is used for auditing purposes.

b. In the **ADVANCED ATTRIBUTES** section, the form attributes are displayed as described in the following table.

> **Note:** These attributes are available only when you are in the advanced mode.

Attribute	Description
TableName	Every time a form is created, a table is also created in the database. This is the name of the table that can be specified for identification. If not specified, then the system generates a unique table name.
Attributes	Define style attributes for formatting.
AttachmentsVisibility	This attribute sets the “default” visibility (collapsed / expanded) for the attachment control.
CollapsibleAttachments	Attribute to decide whether the attachments are collapsible.
MinimumNumberOfAttachments	This attribute sets the minimum number of files that must be attached to a form.
ValidateAttachmentOnAction	This attribute enables you to set an action that validates the minimum number of attachments in a form.
CaptionStyle	This attribute changes the caption style for all control containers in the form.
DropIfExists	This deletes the corresponding table in the database while publishing a form if it’s set to True.
LinkToControlViewName	Specify the name of the database to reference for the link control.
IsActive	This creates a node in the navigation pane with the Header mentioned above if it’s set to True. If set to False, the system will not display this form in the user interface, however, it will still be available for APIs.
IsSearchable	When set to True, information in the form can be searched from the **Enterprise Search** utility in the **Home** module.

Attribute	Description
IsTemplate	This attribute is marked True when creating Document metadata. For other forms, the attribute is generally marked as False. If set to True, this form will not be available in the UI. This setting is used for forms that are only utilized in APIs.
ShowInMyReports	If set to False, the form will not be accessible to the **Ad-hoc Reports** feature.
ShowInStages	ShowInStages is the basis for integrating the form into workflow. If ShowInStages is set to True then sections can be disabled based on the approval stage a form is in.
GroupBy	Based on the parameter specified here, the records in the list page will be grouped together.
DisplayNew	If the **New** icon needs to be made visible, then it should be set to True.
DisplayEdit	If the **Edit** icon needs to be made visible, then it should be set to True.
DisplayView	If the **View** icon needs to be made visible, then it should be set to True.
DisplayDelete	If the **Delete** icon needs to be made visible, then it should be set to True.
AllowExcelImport	Allows import of form information from an Excel workbook, if set to True.
AllowExcelExportTemplateWithData	Allows Export of form information into an Excel workbook template, if set to True.
ControlCaptionWidth	Defines the width of all field captions in this form. The default is 150 pixels.
FormKey	This is used to specify what needs to be shown in the details column of **My Tasks**. This will be used only if a workflow for the form is enabled.
ShowValidationSummary	If set to True, on saving a form, displays all the validation messages in an alert box, instead of showing next to the control.

Attribute	Description
AllowOffline	This attribute permits a form to go as offline. By marking the attribute True, the form can be made offline.
ShowInPermissions	Select True to enable permission settings on the form.
EnableMailMerge	Select True if mail merge should be enabled for the form.
ReportPageOrientation	This attribute sets the layout for the Details Page report.
ReportPageSize	This attribute sets page size as “A4” or “Letter” for **Details Page** report.
ListReportPageSize	Select the report size of **List Page** report.
ExportReportFileName	This attribute specifies the name of the file which is downloaded from a form page.
EnableCopyAndEdit	Select True to enable users to copy and edit the form.
HideInAuditLog	Select False to enable audit log on the form.
SingleInstance	Select True to display a single instance of this form. If False is selected, a list page is displayed for this form.

8. To design the layout of the form, first create a section. A section provides a boundary in the design area to add controls.
   a. In the controls pane, expand **GROUP LAYOUT**, and then drag and drop **Section** to the design area.
      The label **SECTION <number>** is displayed in the design area.
   b. In the design area, click **SECTION <number>**.
      The **COMMON ATTRIBUTES** pane displays the attributes for the **SECTION <number>** section control.
   c. To define the attributes of the section, enter information in the **COMMON ATTRIBUTES** section, as described in the following table.

Attribute	Description
Caption	This denotes the display name of the section.

Attribute	Description
	For example, you can enter **Employee Details** for the section name to be changed from **SECTION <number>** to **Employee Details**.
Name	This is an automatically generated name to identify the section and need not be modified. This is also the name of the column in the database, and is used to derive the name of the HTML item that is rendered. For example, you can enter **EmployeeDetails** to change the name from **Section<number>** to **EmployeeDetails**. **Note:** No spacing is allowed in the entered name.
HelpToolTip	You can enter the tool tip that should be displayed while mouse hover on the field's Help ('?') icon.
HelpDescription	You can enter the description that should be displayed when the field's Help ('?') icon is clicked.

9. Perform the following steps to add a text box.

   a. In the controls pane, click **SIMPLE INPUT CONTROLS**, and then drag and drop **Single Line Text** into the section.

   > **Note:** Drop a control within the confines of the section for the control to be displayed in the design area.

   b. Double-click the **TextBox <number>** control and enter a title for the text box. For example, enter **Employee Name**.

   The various attributes of the control are listed below:

Attribute	Description
Caption	This denotes the display name of the control. The name to render on the display surface. If the caption is not set, then the default caption is set to the Name attribute of the control. To set a control with no title, delete the caption. For example, you can enter **Employee Name**.

Attribute	Description
Name	This is a system generated name to denote the control. You need not modify this field; however, normally a form designer provides names that represent the meaning of the data in the field. Name attributes should not have spaces in them, and they must be unique throughout the form. The name field is used to create the underlying database column name and to derive the name of the rendered HTML item.
HelpToolTip	You can enter the tool tip that should be displayed on mouse hover on the field's Help (‘?’) icon.
HelpDescription	You can enter the description that should be displayed when the field's Help (‘?’) icon is clicked.
Width	This is used to set the width of a control in the user interface.
Type	This determines the options to select the type of control required in the form. For example, you can add a text box to a section and later change it to a drop-down list.
Value	You can specify a default value to be displayed in the control. Also, you can use the **Value** field to retrieve system level information during display processing. The supported format values include the following:
	{CURRENTUSER} - Displays the user name of the logged in user.
	{CURRENTUSERNAME} - Displays the first name of the logged in user.
	{CURRENTDATE} - Displays the current date.
	{CURRENTDATETIME} - Displays the current date and time.
	{CURRENTTIME} - Displays the current time.
	{PROJECTNAME} - Displays the name of the project.
	{PROJECTCODE} - Displays the project code.

Attribute	Description
	{CONTRACTNAME} - Displays the name of the contract
	{CONTRACTCODE} - Displays the contract code.
	{PRIMECONTRACTOR} - Displays the prime contractor of the contract.
	{_FORMULA: formula}
	{_REQUEST: state info field}
	{_DB: db expression}
	{_Picker: [name of the picker that is defined in this xml]}
	"any static text" - Displays the text entered here.
ReadOnly	If set to True, the data in the form is made read only and the data cannot be modified by the end user.
MaxLength	Sets the maximum number of characters that can be entered in the text box.

10. To add a Radio Button, perform the following steps:
    a. In the controls pane, click **SIMPLE INPUT CONTROLS**, and then drag and drop **Radio Button List** into the section.

       By default, two radio buttons are displayed.
    b. Click the radio button group.

       The attribute pane displays the radio button control attributes.
    c. In the **Attributes** pane, in the **Caption** attribute, enter a title for button set. For example, you might enter **Gender**.
    d. In the **Attributes** pane, in the **DataSource**, click ... .

       The **Data Source Editor** dialog box is displayed.
       i. In the **Display** column, enter title for each button option.
          For example, you might label **Option 1** and **Option 2** as **Male** and **Female** respectively.
       ii. In the **Value** column, enter value for each option. For example, you might enter **Male** and **Female** for **Option 1** and **Option 2** respectively.
       iii. Click **OK**.

11. Perform the following steps to add a text box with a large layout. For example, you might use one to allow users to type in an address.

    a. In the controls pane, click **SIMPLE INPUT CONTROLS**, and then drag and drop **Multi Line Text** into the section.

    b. Click **TextArea <number>** in the design area.

       The attribute pane displays the text area control attributes.

    c. Double-click **TextArea <number>**, and then enter a title.

    d. In the **Attributes** pane, in the **Height** attribute, enter desired height. For example, you might enter **250px** for the address.

       The text area is increased. Similarly, the width can also be specified.

12. Perform the following steps to add a drop-down list.

    You can specify the options for the drop-down list (using options) or retrieve from a data source, such as using the **Resource Types** catalog of the library.

    a. In the controls pane, click **SIMPLE INPUT CONTROLS**, and then drag and drop into the **Employee Details** section. Drop the control within the confines of the section for the control to be displayed in the design area.

    b. Click **DropDownList <number>** in the design area.

       The attribute pane displays the drop-down control attributes.

    c. Double-click **DropDownList <number>**, and enter a title for the list.

       Alternatively, in the **Attributes** pane, in the **Caption** attribute, enter a title for the list.

    d. In the **Attributes** pane, in the **Name** attribute, enter a reference title for the database.

       > **Note:** No spacing is allowed in the **Name** attribute and it must be unique for this form.

    e. In the **Attributes** pane, in the **DataSource** attribute, click .

       The **Data Source Editor** dialog box is displayed.

       i. To specify any options, update the **Display** and **Value** options in the **ListItems** section.

       ii. Optionally, click **Add** button to add rows.

       iii. To pull information from a data source, perform the following actions:

          a) From the **Select a Module** drop-down list, select the module, such as **Library**.

          b) From the **Select a Form** drop-down list, select the form, such as **Resource Types**.

          c) From the **Select Display** drop-down list, select the display, such as **ResourceType**.

          d) From the **Select Value** drop-down list, select the value, such as **Description**.
             The string, such as **LIBRARYResourceType;ResourceType;Description**, is displayed in the **Query String** box.
             In this example, data is imported from the **LIBRARYResourceType** table (data source).
             The **ResourceType** and **Description** are the display and the value columns for the table respectively.

e) Click **OK**.
The drop-down list is displayed in the form.

13. To make a field required to be completed before allowing save on the form, perform the following steps:

    a. In the design area, select the field.
    b. In the toolbar, click **Switch to Advanced** to make **Advanced Attributes** pane available.
    c. Expand the **Advanced Attributes** pane.
    d. In the **Validations** attribute, enter **Required**.

       Alternatively,
       In the **Validations** attribute, click ..., and in the **Editor** dialog box, enter **Required**, and then click **OK**.
       A '*' mark is displayed corresponding to the field indicating it is a mandatory field.

14. Perform the following steps to create a control within the form that is visible based on specific conditions. For example, wanting to record years of experience for an employee, but only if the employee is experienced.

    a. First introduce a **Radio Button List** control.

       In this example it is to specify if the employee is experienced.

       i. In the controls pane, click **Simple Input Controls**, and then drag and drop **Radio Button List** into the section.

       ii. Click **Radio Button List** in the design area.
       The attribute pane displays the radio button control attributes.

       iii. In the **Attributes** pane, in the **Name** and **Caption** attributes, enter a title. For example, enter **Experienced**.

       iv. In the **Attributes** pane, in the **DataSource** attribute, click ....
       The **Data Source Editor** dialog box is displayed.

       v. In the **Display** column, enter the appropriate options.
       For example, enter **Yes** and **No** for **Option 1** and **Option 2** respectively.

       vi. Click **OK**.

    b. Perform the following steps to create a numeric text box control. For our example, it enables the user to enter the number of years of experience.

       i. In the controls pane, click **Simple Input Controls**, and then drag and drop **Numeric** to the design area and within the confines of the section.

       ii. Click **Numeric** in the design area.
       The attribute pane displays the numeric control attributes.

       iii. In the **Attributes** pane, in the **Caption** attribute, enter a title for the field. For example, enter **Years of Experience**.

       iv. In the toolbar, click **Switch to Advanced**.

       v. In the **Advanced Attributes** pane, scroll down to **VisibleIf**, and then type $<control name>=<value>. For our example, enter **$Experienced=1**.
       This implies if the value of the Radio Button control named **Experienced** is selected as **Yes**, that is assigned a value of 1, then the control **Years of Experience** will be visible.

15. Perform the following steps to insert a **Static Grid** control:

> **Note:** In a static grid the number of rows and columns are fixed and are used in scenarios where data to be entered can be limited to the available numbers of rows and columns. For example, if you wanted two references for an employee.

   a. In the controls pane, click **CHILD DATA CONTAINERS**, and then drag and drop **Static Grid** to the design area and outside the confines of the section.

      A dialog box to specify the number of rows and columns is displayed.

   b. Enter the numbers for the number of rows and columns, and then click **OK**.

      The **Static Grid** is inserted.

   c. Click **STATICGRID <number>** in the design area.

      The attribute pane displays the static grid control attributes.

   d. Double-click **STATICGRID <number>** in the design area, and then enter a grid title. For example, enter **References**.

      Alternatively,
      In the **Attributes** pane, in the **Caption** attribute, enter a grid title.

   e. Double-click each column name in the static grid and enter column headers. For example, enter **Name**, **Company**, **Designation**, and **Contact Information** for the **Reference** example.

16. To create a picker to the form, first you must add a **Picker** and then add a **Set** and **Picker Trigger**. To add a **Picker**, perform the following steps:

    a. In the controls pane, click **CHILD DATA CONTAINERS**, and then drag and drop the **Picker** into the **Form** area (not within any section).

       The **Data Source Editor** dialog box is displayed.

    b. From the **Select a Module** drop-down list, select a module. For example, select **Library**.

    c. From the **Select a Form** drop-down list, select the form that the data will be drawn from. For example, select **Enterprise Resource Directory**.

    d. From the **Display Column**, select the column for data selection. For example, select **Name**.

    e. From the **Key Column** drop-down list, select the column for data selection. For example, select **Name**.

    f. In the **Add Column To Display** drop down list, select columns to display in picker. For example, select **ID**, **Name**, **Resource Type**, and **Working Hours**.

    g. In the **Add Columns To Sort By**, select the columns in the order they should display in the picker. For example, select **ID**, **Name**, **Resource Type**, and **Working Hours**.

       Based on the options selected, in the **Query String** field, a string is displayed.

       Based on the examples, **{Table:LIBRARYEnterpriseResourceDirectory;ID,Name,ResourceType,WorkingHours}** is displayed.

       In this example, the data is imported from the **Enterprise Resource Directory** table.

    h. Click **OK**.

       Picker reference appears in form section.

17. To add a **Set and a Picker Trigger** inside the **Set**, perform the following steps:

    a. In the controls pane, click **Advanced Controls**, then drag and drop the **Set** into a section.

    b. Double-click on **Set 000** and enter the title. For example, enter **Resource Name**.

    c. In the **Common Attributes**, click on the **SetTitlesToLeft**, and then select **True**.

    d. In the **Value** attribute, click ... .

       A **Value Editor** dialog box is displayed.

    e. In the **Select Resolver** drop-down list, select **Picker**.

    f. In the **Select Picker** field, select the previously created picker.

       For our example, select **Picker000**.

    g. In the **Select Column** field, select any of the fields added in the selected picker.

       For example, select **Picker000.Name**.

       Based on the selections, a **Resolver** string is displayed.

       In our example, **{_Picker:Picker000.Name}** is displayed.

    h. Click **OK**.

    i. To edit the **TextBox ###** information, click on the field square.

    j. In the **Common Attributes**, click **Caption** to edit the title.

    k. In the controls pane, click **Advanced Controls**, then drag and drop the **Picker Trigger** into the section below the set.

    l. In the **Common Attributes**, select **PickerName**, and then click ... .

       The **Select Picker** dialog box is displayed.

    m. In the **Select Picker** field, select the picker. For our example, select **Picker000**.

    n. In the **Select Unique Column ID** field, select a column. For our example, select **ID**.

       > **Note:** The field selected must have unique records, such as the **ID** field.

    o. Click **OK**.

       The form page is displayed.

    p. In the **PickerButtonText** attribute, enter … (three dots).

       The picker trigger should now show the same in the design area.

    q. Drag the **Picker Trigger** and place it inside the **Set**.

       The picker trigger of ... button is displayed at end of **Set** field.

18. To create an automatically generated code with a sequential number, perform the following steps:

    a. In the controls pane, click **SIMPLE INPUT CONTROLS**, and then drag and drop **Auto Generated** into the section.

    b. Double-click **AutoIncrement <number>** and enter a title. For example, enter **Record ID**.

       The **Attributes** pane displays the auto-generated attributes.

    c. To provide a format for the field entry, perform the following steps:

       i. In the **Attributes** pane, in the **NumberingLogic**, click ….
          The **Numbering Logic Editor** dialog box is displayed.

       ii. In the **Number of Digits** box, enter the number of digits for the auto-generated number.
           For example, selecting **3** will show auto-generated section numbering in three digits, such as **001**.

       iii. In the **Interval** box, enter the interval of numbers to be generated. For example, an interval of **2** generates numbers in sequence like 2, 4, 6, and so on.

       iv. To identify a column that if the value is changed should trigger a reset back to starting number, open a drop-down in the **Reset Number** field, and then select the column name. For example, if you had two **Resource Types** of

Full-time and **Part-time**, you might want each type's numbering to start at 1.

d. To provide additional elements, such as a static prefix or suffix to the auto-generated number, perform the following steps:

   for example **EMP-<<ResourceType>>-<<1>>**

   i. Click **Add**.
   ii. In the **Type** column, select the type of element. **Fixed** is a static text. Autopopulated would pull information from an identified data source. Autogenerated would be the numbering identified in this editor.
   iii. In the **Value** column, enter or select the value for type.
   This displays **EMP** as the beginning of the employee code.
   iv. In the **Separator** column, select the required separator.
   For the example above, you can fill the table as:
      - First row: Type = Fixed, Value = EMP, Separator = -
      - Second row: Type = Autopopulated, Value = ResourceType, Separator = -
      - Third row: Type = Autogenerated, Value = 1 [or alternative starting number], Separator = -
   v. Click **OK**.

19. Click **Save**.

    The **FORMS LIST** page is displayed.

20. In the list page, select the appropriate form, and then click **Publish**.

    The form is now available in the application.

21. To verify if the form is published, perform the following steps:
    a. Navigate to the module where the form is published; **Library** for the example described here.

       The form is available in the navigation pane.
    b. In the navigation pane, click the form.

       The form list page is displayed.
    c. Click **New** to display a new form.
    d. Enter the details, and then click **Save** to save the form.

       After a form is created and published:
       - You can associate a workflow to the form.
       - You will need to assign permissions to the form.

       > **Note:** If the form is located in the library, you do not need to assign permissions as all library catalogs have the same permissions.

5.2.3. Publishing a Form

Overview

You must publish a form to be made available in the application.

Steps

1. In the module menu, click **Administration**.

   The **ADMINISTRATION** page is displayed.
2. In the navigation pane, expand the **Configuration Toolkit** folder, and then click **Form Builder**.

   The **FORMS LIST** page is displayed.
3. Select the newly created form.
4. Click **Publish**.

   The form is now available in the application.
5. To verify if the form is published, perform the following steps:
   a. Navigate to the module where the form is published; Library for the example described here.

      The form is available in the navigation pane.
   b. In the navigation pane, click the form.

      The form list page is displayed.
   c. Click **New** to display a new form.
   d. Enter the details, and click **Save** to save the form.

6. Viewing the Integration Logs

Overview

In Masterworks, the project forms are updated with the most recent data through data integration. The integration log pages in the **Administration** module display information on the integration activities of various external systems.

Steps

1. In the module menu, click **Administration**.

   The **ADMINISTRATION** page is displayed.

2. In the navigation pane, expand the **Integration** folder, and then click the appropriate integration log.

   The integration log list page is displayed.

   The list page displays the details of integration logs, such as status, type, and the date the integration job is executed.

   Administrator can view the following integration logs in the **Integration** folder:

Logs	Description
Expense Logs	Project fund logs are displayed.
Fund Transaction Logs	Fund transaction logs are displayed.
Resource Logs	Resource and title logs are displayed.
Task Logs	Budget estimate logs are displayed.
Vendor Logs	Vendor logs are displayed.

3. Select the appropriate integration log, and then click **View**.

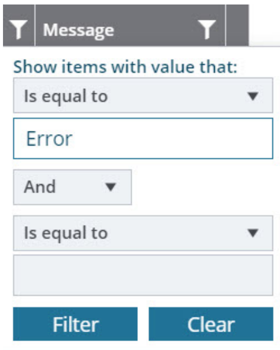
   The selected integration log details page is displayed.

   The **TRANSACTION LOG** section displays the integration record details and status.

   In case of integration failure, the **Status** column is updated as **Error**, and the error message is displayed in the **Message** column.

4. To filter the failed records, perform the following steps:
   a. In the **Status** column, click .

      A pop-up is displayed.
   b. In the first text box, enter **Error** as a filter criterion, as shown in the following image:

   c. Click **Filter**.

      The records that failed during integration are listed with the appropriate error message.