Primavera Unifier

Visualizations Administration Guide

G37303-05
April 2026

Primavera Unifier Visualizations Administration Guide,

G37303-05

Primary Author: Oracle Corporation

Contents

1 Administer Visualizations From the Company Workspace

2 Administer Visualizations in Projects/Shells

3 Appendix

1

Administer Visualizations From the Company Workspace

Video: Setup Unifier Visualizations in Admin Mode

Visualizations are an approach to render data in a graphical or pictorial format to help identify and understand underlying trends and nuances of the data in an intuitive manner. In Unifier, you can use visualizations to represent and identify trends in business processes (BPs), cash flows, and cost breakdown structure (CBS) cost sheets to develop actionable insights that enable you to drive business decisions for your organization. Visualizations provide pictorial representations of the underlying data from specific BPs, cash flows, CBS cost sheets, and data views such as KPIs, metrics, and charts.

Company Administrators manage visualizations at two levels:

- Manage data sources for visualizations
  The data source selected for creating visualizations determines the information that can be presented and published. Each data source can cater to specific needs of an organization. Administrators assigned to manage data sources are responsible for determining the information to be included in each data source.
- Manage visualization content
  After data sources are created, administrators are responsible for determining the content that can be made available from one or more data sources to users and groups for creating, modifying, or viewing visualizations.

Company Administrators can:

- Set up individual users and groups with specific roles and permissions to access and manage different aspects of rendering visualizations.
- Manage data sources and published data views to identify and select the BP, cash flow, and CBS cost sheet data that can be used for creating visualizations at the company level, in project/shell templates, and in projects/shells. See:
  - Manage Data Sources
  - Manage Visualizations in Project/Shell Templates
- Manage Visualization Content you provide to other administration users for creating, modifying, or viewing visualizations

About This Content

This guide explains how to use Unifier to administer visualizations in the Company Workspace tab, project/shell templates, and projects/shells.

Audience

Company Administrators, Project/Shell Administrators, and administrators in similar capacities should review this information.

Supported Sources for Visualizations

The following types of data sources can be used for visualizations:

- Standard data sources
  - Line item business processes (BPs) (Generic)
  - Cash Flow
  - CBS Cost Sheet
  - Cost BPs (Line item with CBS Codes)
    - Generic
    - Base Commit
    - Transfer (CBS Cost Codes)
    - Change Commit
    - General Spends
    - Payment Applications
    - Shell level Simple BPs
    - Shell information if you want to select single record BPs
- Custom data sources
  These include published data views (shell level). For more information, see Creating Data Views.

Manage Data Sources

All data sources for visualizations are created and managed from the Data Sources log. The Data Sources log is the central repository for all data sources and published data views which can be used for visualizations.

As a Company Administrator, you can:

- Set up permissions for users and groups to administer or view data sources. See Enable Permissions to Administer or View Data Sources in the Company Workspace
- Enable View Permission For Visualizations in User Mode
- Create Data Sources
- Modify Data Sources
- Duplicate Data Sources
- Publish Data Sources
- Delete Data Sources
- View and Export the Data Source Audit Log

Types of Data Source Users

Company Administrators can create two types of users and groups that can access data sources:

- Data Source Administrators
- Data Source Viewers

Data Source Administrators

Users designated as Data Source Administrators are assigned the Configure permission to configure one or more data sources they have been given access to. These users can perform tasks such as:

- Create Data Sources
- View and Export the Data Source Audit Log
- Duplicate Data Sources
- Publish Data Sources
- Delete Data Sources
- Restore Data Sources to the Last Published Version
- View and Export the Data Source Audit Log

Data Source Viewers

Users designated as Data Source Viewers are assigned the View permission to one or more data sources they have been given access to. These users can:

- Access the Data Sources Log in the Company Workspace to only view the data sources they have access to
- View and Export the Data Source Audit Log

For more information on how to set up these permissions for each user and group category described above, see:

- Enable Permissions to Administer or View Data Sources in the Company Workspace
- Enable View Permission For Visualizations in User Mode

Enable Permissions to Administer or View Data Sources in the Company Workspace

To administer visualizations, Company Administrators must be able to access the Visualizations node in the left Navigator from the Company Workspace tab in the Admin mode. Completing this task displays the Visualizations sub-node under the Setup node in the left Navigator. As a Company Administrator, you can set up this permission for yourself as well as for any other users/groups you select as additional Company Administrators.

To set permissions that will enable access to the Visualizations node in the left Navigator in the Company Workspace tab:

1. Sign in to Unifier with company administration credentials.
2. Go to the **Company Workspace** tab, and switch to **Admin** mode.
3. In the left Navigator, select **User Administration**, and then select **Access Control**.

4. In the **Access Control** log (right pane), expand **Administration Mode Access**, select the **Visualizations** node, and then select the **Data Sources** sub-node.
5. In the **Permissions Settings for: Data Sources** dialog box, select **Add**.
   a. In the **Select User/Groups** block, (upper block), select **Add Users/Group**.
      i. In the **User/Group Picker** window, select yourself and any other users/groups you want to add as Data Source Administrators or Data Source Viewers for visualizations.
      ii. Select **Add**, and then select **OK**.
   b. In the **Permission Settings** block (lower block), select the following permissions for each user/group selected in the upper block (step 5a):
      - **Configure**: Select this permission to give users/groups to administer data sources from the **Visualizations** node in left Navigator in the **Admin** mode.
      - **View**: Select this permission to give users/groups view-only access to data sources from the **Visualizations** node in left Navigator in the **Admin** mode.
   c. Select **OK**.
6. Select **OK**.

Enable View Permission For Visualizations in User Mode

Company Administrators can set up view permission to access visualizations for users and groups in the User mode.

To set view permissions to access visualizations in the User mode:

1. Sign in to Unifier with company administration credentials.
2. Go to the **Company Workspace** tab, and switch to **Admin** mode.
3. In the left Navigator, select **User Administration**, and then select **Access Control**.
4. In the **Access Control** log (right pane), expand **User Mode Access** and select the **Visualizations** node.
5. In the **Permissions Settings for: Visualizations** dialog box, select **Add**.
   a. In the **Select User/Groups** block, (upper block), select **Add Users/Group**.
      i. In the **User/Group Picker** window, select users and groups to give view permission for visualizations.
      ii. Select **Add**, and then select **OK**.
   b. In the **Permission Settings** block, (lower block), select the **View** permission for each user/group selected in the upper block (step 5a), and select **OK**.
6. Select **OK**.

Access the Data Sources Log in the Company Workspace

The Data Sources log can be regarded as the Home page for managing all data sources created for data visualizations in Unifier. It displays a list of data sources with the metadata of each data source.

You must have either Configure or View permissions for Data Source node in the Company Workspace.

To access the Data Sources log in the Company Workspace:

1. Sign in to Unifier with company administration credentials.
2. Go to the **Company Workspace** tab, and switch to **Admin** mode.
3. In the left Navigator, select **Visualizations**, and then select **Data Sources**.
   - **Status**: Current status of the data source. Valid statuses include: **Draft**, **Published**, and **Published and edited**.
   - **Name**: Name of the data source.
   - **Description**: Optional description of the data source.
   - **Data Type**: Data type of the data source. Valid choices include Supported Sources for Visualizations.
   - **Last Modified**: The recent date that the data source was modified.
   - **Modified By**: The name of the user who modified the data source.
   - **Last Published**: The recent date that the data source was published
   - **Usage**: Indicates whether the data source is **Used** or **Not Used** for data visualizations.
   - **Audit Log**: Select **Audit Log** () to view the actions taken in each data source. See View and Export the Data Source Audit Log.
4. (Optional) To focus on a subset of data sources displayed in the log (step 3), select any of the following filters:
   - **Status**: Select this filter to focus on data sources with the following statuses:
     - **Draft**: Indicates the data source has not been made available for data visualizations.
     - **Published**: Indicates the data source is available for data visualizations.
     - **Published and edited**: Indicates the data source was previously published and subsequently updated.
   - **Data Type**: Select this filter to focus on data sources with a specific data type such as a business process (BP), cash flow, CBS cost sheet, meeting minutes, action items, contract.
   - **Data Source**: Select this filter to focus on a specific data source such as an RFI data source.
   - **Last Modified**: Select this filter and enter a date range to select only those data sources that were last modified in the selected dates.
   - **Last Published**: Select this filter and enter a date range to select only those data sources that were last published in the selected dates.
   - **Usage**: Select this filter to focus only those data sources whose **Usage** status indicates **Used** or **Not Used** in the content library.

In the **Data Sources** log, Company Administrators can perform the following tasks:

- Create Data Sources
- Modify Data Sources
- Duplicate Data Sources

- Publish Data Sources
- Delete Data Sources
- Restore Data Sources to the Last Published Version

Keyboard Navigation

You can use your computer keyboard to navigate through the application. Use the following keyboard shortcuts to access frequently used or important functionality. Note that keyboard shortcuts may change depending on your selected browser, and disabled buttons/fields are skipped.

Guided Process Overview Page

Action	Windows Shortcut Key	Mac Shortcut Key
Move through elements on the page	Press **Tab**	Press **Tab**
Select a current focus element	Press **Enter**	Press **Enter**

Guided Process Step Page

Action	Windows Shortcut Key	Mac Shortcut
Move through elements on the page	**Tab**	**Tab**
Select a current focus element on the Step page	**Enter**	**Enter**
Move the focus between the elements in the footer toolbar (left)	<	<
Move the focus between the elements in the footer toolbar (right)	>	>
Move up	^	^
Move down	v	v

Create Data Sources

Company administrators are the first group of users who determine the data sources that can be made available to users for creating visualizations. You must have Configure permission to create data sources for visualizations.

To create data sources for data visualizations:

1. Sign into Unifier with Administration credentials.
2. Go to the **Company Workspace** tab, and switch to **Admin** mode.
3. In the left Navigator, select **Visualizations**, and then select **Data Sources**.
4. In the **Data Sources** log (right pane), select **Create**.
5. Complete the Data Source Creation Guided Process.

> **Note**
>
> - Required fields are indicated in the user interface.
> - If a data source is removed from a BP design or data view, update the data source before you create, view, or update the content based on that data source.

Data Source Creation Guided Process

The Data Source Creation guided process provides a step-sequence for you to create data sources for data visualizations.

It includes the following sequence:

1. Properties: Specify Metadata for the Data Source
2. Data Elements: Select Data Elements for the Data Source
3. Calculated Elements: (Optional) Include Calculated Elements in the Data Source
4. Filters: (Optional) Create Filters for Data Elements
5. Preview: Created Data Source

You must have Configure permission for visualization data sources to complete this task.

Properties: Specify Metadata for the Data Source

When you select Create in the Data Sources log, the Properties step of the Data Source Creation guided process displays.

Enter the following information about the data source being created:

1. In the **Name** field, enter a user-friendly name for the data source with a maximum length of 64 characters.
2. In the **Description** field, specify the purpose of the data source with a maximum length of 4000 characters.
3. From the **Data Type** list, select **Cash Flow** or **CBS Cost Sheet**, or the following business processes (BP) from the list .
   - Line Item BPs (workflow and non-workflow)
   - Cash Flow
   - CBS Cost Sheet
     For Cash Flow *and* CBS Cost Sheet, the following sources are available:
     - CBS Cost Sheet
     - CBS Cost Sheet in Default Currency
     - CBS Cost Sheet in Base Currency
     - CBS Cost Sheet in Default Currency/CBS Attributes
     - CBS Attributes
     - Shell
     - Shell/CBS Cost Summary in Base Currency

  - Shell/CBS Cost Summary in Default Currency
  - Snapshots
  - Snapshots/CBS Cost Sheet in Base Currency
  - Snapshots/CBS Cost Sheet in Default Currency
  - Snapshots/Shell CBS Cost Sheet in Default Currency/CBS Attributes
  - Snapshots/CBS attributes
  - Shell
  - Shell/[shell type]
  - Shell/All single record BPs
  - Shell/All single record BPs/All pickers in Single Record BPs (such as User Picker, User Data Picker, Shell Data Picker, BP Picker, BP Data Picker, and so on)
- Cost BPs (Line items with CBS Codes) with the following classifications:
  - Generic
  - Base Commit
  - Transfer (CBS Cost Codes)
  - Change Commit
  - General Spends
  - Payment Applications
- Shell level Simple BPs
- Shell Information if you want to select a Single Record BPs
- Shell-level published data views
  See Creating Data Views.

When Cost BPs are selected as the data type, sources such as Upper Forms, line items, CBS Attributes, Shell, Company, Attachments, CBS Code related sources like Cost Sheet in Shell currency, and CBS code-related sources like Cost Sheet in Base currency display in the list.

4. Select the **Enable Caching** toggle to disable or enable caching for performance improvement.

   Caching can only be enabled if you selected a **Line Item Business Process**, **Simple Business Process (Shell)**, **Shell Information**, **Cash Flow**, or **CBS Cost Sheet** in the previous step. See How Data Caching Works in Unifier.

5. From the **Save** menu, select any of the following options:
   - Select **Save** to save the entered information.
   - Select **Save and Close** to return to the **Data Sources** log.
6. Select **Continue** to proceed to Data Elements: Select Data Elements for the Data Source.
   - You can click **Cancel** in any step of the guided process to discontinue and return to the **Data Sources** log.
   - It is recommended to click **Save** in each step to avoid losing any unsaved information or selections made in that step.
   - You may receive an error message during Data Structure setup when you enter a valid Data Structure and a valid Data View. You can disregard the error and proceed with editing and saving the Data Structure.

- If a data source is removed from a BP design or data view, update the data source before you create, view, or update the content based on that data source.

Data Elements: Select Data Elements for the Data Source

In the Data Elements step of the Data Source Creation guided process, you can finalize the list of data elements being included in this data source. For a detailed list of sources used to elicit a list of data elements, see Supported Data Element Sources for Business Processes.

You can:

- Add Data Elements From Other Data Sources
- Remove current data elements (see below)
- Rename labels of data elements (see below)

To remove or rename current data elements:

1. In the **Search** bar, enter any of the following information to look up a data element:
   - **Name**: Enter the name of the data element. For example, enter **uuu_creation_date**.
   - **Label**: Enter the display label used for the data element in Unifier. For example, enter **Creation Date**.
   - **Type**: Enter the data type of the data element. For example, enter **Integer**, **String**.
2. In the displayed **Search Results**, select the checkbox for a data element and then select any of the following actions:
   - **Edit** ( ): Select to rename the label of a data element. All data elements must have unique labels in a data source. Rename any duplicate labels for data elements.
   - **Remove** to remove selected data elements from the data source.
3. From the **Save** menu, select any of the following options:
   - **Save**: Select to save the entered information.
   - **Save and Close**: Select to return to the **Data Sources** log.
   - **Properties**: Select to revert to the previous step.
4. Select **Continue** to proceed to the next task, Calculated Elements: (Optional) Include Calculated Elements in the Data Source.

> **Note**
>
> - You can click **Cancel** in any step of the guided process to discontinue and return to the **Data Sources** log.
> - It is recommended to click **Save** in each step to avoid losing any unsaved information or selections made in that step.
> - You may receive an error message during Data Structure setup when you enter a valid Data Structure and a valid Data View. You can disregard the error and proceed with editing and saving the Data Structure.
> - If a data source is removed from a BP design or data view, update the data source before you create, view, or update the content based on that data source.

Add Data Elements From Other Data Sources

You can add data elements from one or more data sources.

To add data elements from other data sources:

1. Select **Add** in the **Data Elements** step of the **Data Source Creation** guided process.
2. In the **Add Data Element** drawer, enter the following information:
   a. From the **Source** list, select a data source to locate the data element to be included. The Source list includes all the sources available for the selected data type. For example, select **Document Approval / Upper Form**.
   b. In the **Type to Filter Search** bar, enter the first few letters of the data element you want to add. It will further filter the data elements displayed from the data source selected in the previous step.
   c. From the filtered **Search Results** list, select the checkbox corresponding to each data element for inclusion in the data source.
   d. From the **Add** menu, select any of the following options:
      - **Add and Add More**: Select to repeat step 2 and continue adding data elements in this drawer.
      - **Add and Close**: Select to add the data elements and return to the **Data Elements** step of the guided process.
3. In the **Data Elements** step of the guided process, perform the following actions:
   a. From the **Save** menu, select any of the following options to save the selected data elements:
      - **Save**: Select to save the selected information displayed in the **Data Elements** step.
      - **Save and Close**: Select to return to the **Data Sources** log.
   b. Select **Continue** to proceed to the Calculated Elements: (Optional) Include Calculated Elements in the Data Source.

> **Note**
>
> - You can click **Cancel** in any step of the guided process to discontinue and return to the **Data Sources** log.
> - It is recommended to click **Save** in each step to avoid losing any unsaved information or selections made in that step.
> - You may receive an error message during Data Structure setup when you enter a valid Data Structure and a valid Data View. You can disregard the error and proceed with editing and saving the Data Structure.
> - If a data source is removed from a BP design or data view, update the data source before you create, view, or update the content based on that data source.

Calculated Elements: (Optional) Include Calculated Elements in the Data Source

In the Calculated Elements step of the Data Source Creation guided process, finalize the calculated elements to include in the data source being created.

You can:

- Select **Create** to Create Calculated Elements.
- Select **Delete** to delete calculated elements as outlined below.

To delete a calculated element currently included in *this* data source:

1. In the **Search** bar, enter any of the following information:
   - **Name**: Enter the name of the calculated element. For example, enter **ue_ibu_DocID**.
   - **Label**: Enter the display label used for the calculated element. For example, enter **Document ID**.
   - **Type**: Enter the data type of the calculated element. For example, enter **Integer**, **String**.
2. In the **Search Results** list, select the checkbox for a calculated element, and select **Delete**.

   To select *all* calculated elements displayed in the search results, select the checkbox for the total number of items displayed in the search results. For example, if 9 items are displayed in the search results, then select the checkbox for **9 items**.
3. From the **Save** menu, select any of the following options:
   - **Save**: Select to save the entered information.
   - **Save and Close**: Select to return to the **Data Sources** log.
   - **Properties** or **Data Elements**: Select either to revert to the previous steps of the guided process
4. Select **Continue** to proceed to Filters: (Optional) Create Filters for Data Elements step of the guided process.

> **Note**
>
> - You can click **Cancel** in any step of the guided process to discontinue and return to the **Data Sources** log.
> - It is recommended to click **Save** in each step to avoid losing any unsaved information or selections made in that step.
> - You may receive an error message during Data Structure setup when you enter a valid Data Structure and a valid Data View. You can disregard the error and proceed with editing and saving the Data Structure.
> - If a data source is removed from a BP design or data view, update the data source before you create, view, or update the content based on that data source.
> - Resolve any errors displayed for calculated elements.

Create Calculated Elements

To add calculated elements to the data source being created:

1. Select **Create** in the **Calculated Elements** step of the **Data Source Creation** guided process.
2. In the **Create Calculated Element** drawer, enter the following information:
   a. In the **Label** field, enter a name for the calculated data element; maximum length 60 characters. It must be unique for the entire data source, including the data elements added in the previous step. For example, enter **Vendor Document ID**.
   b. In the **Name** field, enter an actual name for the calculated data element; maximum length 60 characters. For example, enter **ue_ibu_DocID**.
   c. From the **Type** list, select the data type of the data element. Choices include: **String**, **Integer**, **Double**, **Date**, and **Boolean**. For example, select **Integer**.
   d. In the **Formula** field, enter the formula to be used for the data element. You can use current calculated data elements and supported functions.

      As you begin to enter the formula, you can:

      - Select a function from the list that displays based on the entered formula.
      - Hover over a function to view a description and an example of the function.

   e. Select the **Learn more about functions** link to view the syntax and functions supported for creating your formula. See Supported Functions for Calculated Elements.
   f. Select any of the options to create, test, or discard the created formula:

      - **Available Elements** (⊕): Select to include a current data element in the formula being created.
      - **Supported Functions** (f_x): Select to include a function in the formula being created.
      - **Test Expression**: Select to resolve any displayed errors such as circular references.
      - When all errors are resolved, the anticipated value of the formula displays in the **Preview Data** field.
      - **Remove Expression** (🗑): Select to discard the entered formula.

   g. After finalizing the formula for the calculated element, select any of the following options from the **Create** menu:

      - **Create and Create Another**: Select if you want to repeat step 2 to continue creating calculated elements in this drawer.
      - **Create and Close**: Select to close this pane and return to the Calculated Elements: (Optional) Include Calculated Elements in the Data Source.
3. In the **Calculated Elements** step of the guided process, perform the following actions:
   a. From the **Save** menu, select any of the following options to save the selected data elements:

      - **Save**: Select to save the selected information displayed in the **Data Elements** step.

- **Save and Close**: Select to return to the **Data Sources** log.

b. Select **Continue** to proceed to the Filters: (Optional) Create Filters for Data Elements step of the guided process.

Delete Calculated Elements

In the Calculated Elements step of the Data Source Creation guided process, you can also delete any current or previously added calculated element in *this* data source.

To delete a current or previously-added calculated element in *this* data source:

1. In the **Search** bar, enter any of the following information:
   - **Name**: Enter the name of the calculated element. For example, enter **ue_ibu_DocID**.
   - **Label**: Enter the display label used for the calculated element. For example, enter **Document ID**.
   - **Type**: Enter the data type of the calculated element. For example, enter **Integer**, **String**.
2. In the **Search Results** list, select the checkbox for a calculated element, and select **Delete**.

   To select *all* calculated elements displayed in the search results, select the checkbox for the total number of items displayed in the search results. For example, if 9 items are displayed in the search results, then select checkbox for **9 items**.
3. From the **Save** menu, select any of the following options:
   - **Save**: Select to save the entered information.
   - **Save and Close**: Select to return to the **Data Sources** log.
   - **Properties** or **Data Elements**: Select to revert to the previous steps of the guided process.
4. Select **Continue** to proceed to Filters: (Optional) Create Filters for Data Elements of the guided process.

> **Note**
>
> - You can click **Cancel** in any step of the guided process to discontinue and return to the **Data Sources** log.
> - It is recommended to click **Save** in each step to avoid losing any unsaved information or selections made in that step.
> - You may receive an error message during Data Structure setup when you enter a valid Data Structure and a valid Data View. You can disregard the error and proceed with editing and saving the Data Structure.
> - If a data source is removed from a BP design or data view, update the data source before you create, view, or update the content based on that data source.
> - Resolve any errors displayed for calculated elements.

Filters: (Optional) Create Filters for Data Elements

You can set up filters to display only those data elements that meet the filter criteria in the data source being created. For example, you can create a filter to display only those records with an Open Issue Status.

> **Note**
>
> This step is optional. You can select **Skip** to move to Preview: Created Data Source of the guided process.

To create a filter on a data element:

1. Select **Add Condition** (+) in the **Filters** step of the **Data Source Creation** guided process.
2. From the **Condition** list, select one of the following:
   - **All**: Select this option to specify an AND condition to ensure all filter conditions are met for the filter being defined.
   - **Any**: Select this option to specify an OR condition to ensure any one condition is met for the filter being defined.
3. For each condition, select a **Data Element**, **Condition**, and **Value** as follows:
   a. From the **Data Element** list, select a data element that was added to this data source in Data Elements: Select Data Elements for the Data Source. For example, select **Creation Date** from the list.
   b. In the **Condition** field, enter a condition or select a condition from the **Condition** list that the data element (selected in the previous step) must satisfy. For example, **Creation Date**, selected in the previous step, is of **Date** data type.

      For more information on the list of conditions supported for each data type, see Supported Conditions for Data Types.
   c. In the **Value** field, enter a value or a range of values the condition must satisfy.

      > **Note**
      >
      > The format of the **Value** fields depends on the type of values that can be entered or selected. It can be a text field, a list, or a combination of text and list fields.
4. (Optional) Select any of the following actions:
   - **Add Condition** (+): Select to specify more than one condition for the filter. Repeat step 3.
   - **Remove Conditions** (🗑): Select to delete each condition.
5. From the **Save** menu, select any of the following options to save the defined filters:
   - **Save**: Select to save the selected information displayed in the **Data Elements** step.
   - **Save and Close**: Select to return to the **Data Sources** log.
6. Select **Continue** to proceed to Preview: Created Data Source of the guided process.

> **Note**
>
> - You can click **Cancel** in any step of the guided process to discontinue and return to the **Data Sources** log.
> - It is recommended to click **Save** in each step to avoid losing any unsaved information or selections made in that step.
> - You may receive an error message during Data Structure setup when you enter a valid Data Structure and a valid Data View. You can disregard the error and proceed with editing and saving the Data Structure.
> - If a data source is removed from a BP design or data view, update the data source before you create, view, or update the content based on that data source.
> - The file size of blank files display as zero (0), but in the database it is a null. Therefore, filtering on fields such as File Size won't retrieve any records as the database does not store the zero value.

Preview: Created Data Source

The Preview step is the last step of the guided process. You can preview all the data elements and calculated elements selections made in the previous steps of the guided process.

To preview the selections made in the data source being created:

1. From the **Preview Project** list, select your project, and then select **Preview Data** to view the first 100 rows of the data source.
2. Select any of the following actions:
3. From the **Save** menu, select any of the following options:
   - Select **Save** to save the selected information in this step.
   - Select **Save and Close** to save the data source in a **Draft** status; return to the **Data Sources** log.
4. Select **Publish** to save the data source in a **Published** status; return to the **Data Sources** log.

> **Note**
>
> - You can click **Cancel** in any step of the guided process to discontinue and return to the **Data Sources** log.
> - It is recommended to click **Save** in each step to avoid losing any unsaved information or selections made in that step.
> - You may receive an error message during Data Structure setup when you enter a valid Data Structure and a valid Data View. You can disregard the error and proceed with editing and saving the Data Structure.
> - If a data source is removed from a BP design or data view, update the data source before you create, view, or update the content based on that data source.

Modify Data Sources

To modify data sources for data visualizations:

1. Sign in to Unifier with company administration credentials.
2. Go to the **Company Workspace** tab, and switch to **Admin** mode.
3. In the left Navigator, select **Visualizations**, and then select **Data Sources**.
4. In the **Name** column of the **Data Sources** log (right pane), select a data source.
5. Navigate through the guided process and update the data source as required.

   See the Data Source Creation Guided Process.

The status of data source is updated to reflect the current status as either **Draft**, **Published**, or **Published and edited**.

Duplicate Data Sources

You must have Configure permission for visualization data sources to complete this task.

To duplicate data sources for visualizations:

1. Sign in to Unifier with company administration credentials.
2. Go to the **Company Workspace** tab, and switch to **Admin** mode.
3. In the left Navigator, select **Visualizations**, and then select **Data Sources**.
4. In the **Data Sources** log (right pane), select the checkbox corresponding to one or more data sources, and then select **Duplicate**.

A duplicate of each data source is created with "Copy1" suffixed to the name of the data source.

Publish Data Sources

You must have Configure permission for visualization data sources to complete this task.

To publish data sources for visualizations:

1. Sign in to Unifier with company administration credentials.
2. Go to the **Company Workspace** tab, and switch to **Admin** mode.
3. In the left Navigator, select **Visualizations**, and then select **Data Sources**.
4. In the **Data Sources** log (right pane), select the checkbox corresponding to one or more data sources, and then select **Publish**.
5. If the Content Recommendations feature is enabled, when the Content Recommendation page appears, do one of the following:
   - From the **Preview Project** list:
     a. Select the applicable project.
     b. Review the recommendations.
     c. Select the checkbox for the items that you want added to the Content Library.

- To see additional recommendations, select **Generate More Recommendations** at the bottom of the page.

d. When you are done, select **Save to Content** in the upper-right corner.

- To skip this step, select **Skip** in the upper-right corner. You can return to this step at any time. For more information, see Update AI-Generated Content Recommendations (Cloud Only).

The status of each selected data source displays as **Published**.

Update AI-Generated Content Recommendations (Cloud Only)

Video: Create AI-Generated Content Recommendations in Admin Mode

When the Content Recommendations feature is enabled, you can review and select content to add to the Content Library after publishing a data source.

You can update content selections both immediately after publishing a data source and at any time for existing published data sources.

You must have Configure permission for visualization data sources *and* content to complete this task.

To view and select content for inclusion in the library:

1. Go to the **Company Workspace** tab, and switch to **Admin** mode.
2. In the left Navigator, select **Visualizations**, and then select **Data Sources**.
3. In the **Data Sources** log, select the checkbox for the one **Published** data source you want to add content from, and then select **Recommend Content**.

> **Note**
>
> You can only select one Published data source at a time.

4. On the **Content Recommendation** page, select the applicable project from **Preview Project**.
   You can perform any of the following actions:
   - To view the data for the applicable project, select **Preview Data** ().
   - To maximize the view of a visualization, select it.
   - To view additional information about a visualization, hover over the **Information** () icon or the **Tooltip** () icon.
5. To view more content recommendations, select **Generate More Recommendations** at the bottom of the page.
6. Select the check box for the items that you want to add to the Content Library.
7. When you have finished, select **Save to Content** in the upper-right corner.

> **Note**
>
> This summary was prepared by generative AI. Carefully review and verify it against trusted sources, as it may include out-of-date, inaccurate, or incomplete information.

Delete Data Sources

You can delete draft and published data sources only if they are not used for data visualizations. Their Usage status should indicate Not Used in the Data Sources log.

You must have Configure permission for visualization data sources to complete this task.

To delete one or more data sources for data visualizations:

1. Sign in to Unifier with company administration credentials.
2. Go to the **Company Workspace** tab, and switch to **Admin** mode.
3. In the left Navigator, select **Visualizations**, and then select **Data Sources**.
4. In the **Data Sources** log (right pane), select the checkbox corresponding to one or more data source whose **Usage** indicates **Not Used**.
5. From the **More Actions** menu, select **Delete**.
6. In the **Delete Items(s)** confirmation dialog box, select any of the following options:
   - Select **Delete** to delete the data source.
   - Select **Cancel** to discontinue deleting the data source.

> **Note**
>
> Deleted data sources cannot be recovered.

Restore Data Sources to the Last Published Version

You can revert to a previously published version of a data source. This action can only be performed on data sources whose current status is Published and edited.

You must have Configure permission for visualization data sources to complete this task.

To revert to a previous published version of a data source:

1. Sign in to Unifier with company administration credentials.
2. Go to the **Company Workspace** tab, and switch to **Admin** mode.
3. In the left Navigator, select **Visualizations**, and then select **Data Sources**.
4. In the **Data Sources** log (right pane):
   a. Select the checkbox for a data source whose status is **Published and edited**.
   b. From the **More Actions** menu, select **Restore to Last Published**.
   c. In the confirmation dialog box, select **Yes**; otherwise, select **No** to discontinue this task.

> **Note**
>
> Verify the changes have been reverted in the data source.

View and Export the Data Source Audit Log

The audit log is a chronological list of actions performed by all users with access to the data source. Company Administrators can view and export the audit log.

You must have Configure permission for visualization data sources to complete this task.

To view and export the audit log of a data source:

1. Sign in to Unifier with company administration credentials.
2. Go to the **Company Workspace** tab, and switch to **Admin** mode.
3. In the left Navigator, select **Visualizations**, and then select **Data Sources**.
4. In the **Data Sources** log (right pane), select **Audit Log** for a data source.
5. In the **Audit Log** drawer, view the following information:
   - **Modified**: Date and time each change was made in the data source. Date and time format is based on the user's preferences.
   - **Action**: Type of change made to the data source. Actions include **Created**, **Published**, **Updated**, and more.
   - **Modified By**: Name of the user who made the change in the data source.
6. To download the audit log as a Microsoft Excel spreadsheet (.xlsx), select **Export** () .

View and Export the Data Source Usage Log

The Usage Log is available for data sources with Used status only. The log displays how the data source is being used by displaying a list of content items that use each data source. Company Administrators can view and export the usage log of each data source.

You must have Configure or View permissions for Data Sources in the Company Workspace to perform this task.

To view and export the usage log of a data source:

1. Sign in to Unifier with company administration credentials.
2. Go to the **Company Workspace** tab, and switch to **Admin** mode.
3. In the left Navigator, select **Visualizations**, and then select **Data Sources**.
4. In the **Data Source** log (right pane), in the **Usage** column, select **Used** for the data source.
5. In the **Usage Log** drawer, view the following information:
   - **Content Name**: The name of the content item using the data source.
   - **View Type**: The type of content item created such as a Bar chart, Pie chart, and so on.
6. To download the log as a Microsoft Excel spreadsheet (.xlsx), select **Export** (). You must have **Configure** permissions.

Update Draft Data Sources

Update Published Data Sources

Manage Visualization Content

Content for all visualization data sources is created and managed from the Content log in the Company Workspace tabUnifier. The Content log can be regarded as a master repository of various types of content items such as bar charts, pivot grids, and tables that can be used by your users in visualizations across shells.

Company Administrators can:

- Set up permissions for users and groups to administer or view visualization content. See Enable Permissions to Administer or View Visualizations Content in the Company Workspace.
- Create various types of charts, grids, and KPIs in the Content log for visualizations. See Create or Update Content for Data Visualizations.
- Manage upkeep of the content created in the Content log.
- Publish Content so that content Project/Shell Administrators or users can use customized and AI-generated content in project/shell visualizations.
- Unpublish Content prevents content from being added to the content library and used by new visualizations until the content items are published. However, this does not impact the existing visualizations that use the unpublished content.
- Delete Content.
- View and Export the Audit Log of Visualization Contents.
- View and Export the Visualizations Usage Log.

Company Administrators with either Configure or View permissions for data sources and content should review this information.

Types of Visualization Content Users

Company Administrators can create two types of users that can work with content from data sources:

- Content Administrators
- Content Viewers

Content refers to the content library of components created using one or more data sources. The content library can be published and made available to other users for creating and publishing visualizations.

In Unifier, these users can access the **Content** node as follows:

1. Go to the **Company Workspace** tab, and switch to **Admin** mode.
2. In the left Navigator, select **Visualizations**, and then select **Content**.

Content Administrators

Users designated as Content Administrators are assigned the Configure permission to configure the content log of one or more data sources that they have been given access to. These users can perform tasks such as:

- Create or Update Content for Data Visualizations
- Duplicate Content
- Publish Content
- Unpublish Content
- Delete Content
- View and Export the Audit Log of Visualization Contents
- View and Export the Visualizations Usage Log

Content Viewers

Users designated as Content Viewers are assigned the View permission to view the content log that they have been given access to. These users can view information such as:

- Access the Content Log in the Company Workspace and only view content created for visualizations
- View and Export the Audit Log of Visualization Contents
- View and Export the Visualizations Usage Log

For more information on how to set up these permissions for each user/groups category, see Enable Permissions to Administer or View Visualizations Content in the Company Workspace.

Enable Permissions to Administer or View Visualizations Content in the Company Workspace

To administer content, Company Administrators must be able to access the Visualizations node in the left Navigator from the Company Workspace tab in the Admin mode. Completing this task displays the Visualizations sub-node under the Setup node in the left Navigator. As a Company Administrator, you can set up this permission for yourself and for other users and groups you select as additional company administrators.

To set permissions to administer or view content from the Visualizations node in the left Navigator of the Company Workspace tab:

1. Sign in to Unifier with company administration credentials.
2. Go to the **Company Workspace** tab, and switch to **Admin** mode.
3. In the left Navigator, select **User Administration**, and then select **Access Control**.
4. In the **Access Control** log (right pane), expand **Administration Mode Access**, select the **Visualizations** node, and then select the **Content** sub-node.
5. In the **Permissions Settings for: Data Sources** dialog box, select **Add**.
   a. In the **Select User/Groups** block (upper block), select **Add Users/Group**.
      i. In the **User/Group Picker** window, select yourself and any other users and groups you want to add as Content Administrators or Content Viewers.

ii. Select **Add**, and then select **OK**.

b. In the **Permission Settings** block (lower block), select the following permissions for each user/group selected in the upper block (step 5a):

- **Configure**: Select this permission to administer content from the **Visualizations** node in left Navigator in the **Admin** mode.
- **View**: Select this permission to view content from the **Visualizations** node in left Navigator in the **Admin** mode.

c. Select **OK**.

6. Select **OK**.

Enable Permissions to View Visualization Content in the User Mode

Company Administrators can set up permissions for users and groups to view visualization content in the User mode.

To set permissions that will enable view access to the Visualizations node in the left Navigator in the User mode:

1. Sign in to Unifier with company administration credentials.
2. Go to the **Company Workspace** tab, and switch to **Admin** mode.
3. In the left Navigator, select **User Administration**, and then select **Access Control**.
4. In the **Access Control** log (right pane), expand **User Mode Access**, and then select the **Visualizations** node.
5. In the **Permissions Settings for: Visualizations** dialog box, select **Add**.
   a. In the **Select User/Groups** block (upper block), select **Add Users/Group**.
      i. In the **User/Group Picker** window, select users and groups to give view-only permission for visualization content.
      ii. Select **Add**, and then select **OK**.
   b. In the **Permission Settings** block (lower block), select the **View** permission for each user and group selected in the upper block (step 5a), and then select **OK.**
6. Select **OK**.

Access the Content Log in the Company Workspace

The Content log is the repository used for creating and managing the content made available from one or more data sources in the application. The log displays a list of various types of content that can be made available with the metadata of each content item.

Company Administrators must have Configure or View permissions for the Content node in the Company Workspace.

To access the Content log in the Company Workspace:

1. Sign in to Unifier with company administration credentials.
2. Go to the **Company Workspace** tab, and switch to **Admin** mode.
3. In the left Navigator, select **Visualizations**, and then select **Content**.

4. In the **Content** log (right pane), the following information is displayed as metadata for each content:
   - **Status**: Current status of the content. Valid statuses include:
     - **Draft**: Indicates that the content item cannot be used in visualization pages within shells and shell templates. Project/Shell administrators and users cannot access it.
     - **Published**: Indicates administrators and users can use it in visualization pages. It appears in the content catalog of a shell or shell template.
   - **Name**: Name for the content type. For example, KPI cards called **Revised Budget** and **Original Budget**.
   - **View Type**: The type of content created. The following types can display: **Area Chart**, **Bar Chart**, **Bubble Chart**, **KPI Card**, **Line Chart**, **Pie Chart**, **Pivot Grid**, and **Table**.
   - **Description**: (Optional) A short statement that outlines the purpose of the created content.
   - **Data Source**: Names of data sources that use this content type. For example, the KPI card content type is used in the **Estate View** data source.
   - **Last Modified**: The most recent date that the content type was modified.
   - **Modified By**: The name of the user who modified the content type.
   - **Usage**: Indicates whether the content item is currently used in visualization pages.
     - **Used**: Select this link to view at least one visualization page using the content item. See View and Export the Visualizations Usage Log.
     - **Not Used**: Indicates the content item is not used in visualizations.
   - **Audit Log**: Select **Audit Log** () to view the actions taken in each data source. See View and Export the Audit Log of Visualization Contents.
5. (Optional) To focus on a subset of content items displayed in the log (step 4), select any of the following filters:
   - **Status**: Select this filter to focus on content in the following statuses:
     - **Draft**: Indicates the content item is currently not available for data visualizations.
     - **Published**: Indicates the content item is available for data visualizations.
     - **Published and edited**: Indicates that a published content item has been subsequently updated.
   - **Data Source**: Select this filter to focus on content items associated with a specific data source. For example, an RFI data source.
   - **Last Modified**: Select this filter and enter a date range to select only those content items that were last modified in the selected dates.
   - **Usage**: Select this filter to focus on only those content items whose **Usage** status indicates either **Used** or **Not Used**.

In the **Content** log, Company Administrators can perform the following tasks:

- Create or Update Content for Data Visualizations
- Duplicate Content
- Publish Content
- Unpublish Content
- Delete Content

Keyboard Navigation

You can use your computer keyboard to navigate through the application. Use the following keyboard shortcuts to access frequently used or important functionality. Note that keyboard shortcuts may change depending on your selected browser, and disabled buttons/fields are skipped.

Common Shortcuts

Action	Windows Shortcut Key	Mac Shortcut Key
Move right through elements in a log/page (right pane)	Press **Tab**	Press **Tab**
Move left through the elements in a log/page (right pane)	Press **Shift**+**Tab**	Press **Shift**+**Tab**
Select a current focus element	Press **Spacebar** or **Enter**	Press **Spacebar** or **Enter**

Content Log

Action	Windows Shortcut Key	Mac Shortcut Key
Scroll through filter values and select/deselect a filter value from the list	Press **Tab**, and then press **Spacebar**	
Select a row in the **Content** log		
Select the **Usage Log** of a content item		
Select the **Audit Log** of a content item		

Create or Update Content for Data Visualizations

Company Administrators can create or update various types of content items in the Content log if they have Configure permission for the visualization Content node

Video

These include:

- Create or Update Area Charts, Bar Charts, and Line Charts
- Create or Update Bubble Charts
- Create or Update Combo Charts
- Create or Update Pie Charts and Donut Charts
- Create or Update Funnel Charts
- Create or Update KPI Cards
- Create or Update Pivot Grids
- Create or Update Pyramid Charts
- Create or Update Scatter Charts
- Create or Update Tables

- Create or Update Timeline Charts

Create or Update Area Charts, Bar Charts, and Line Charts

To create Area Charts, Bar Charts, and Line Charts for visualizations:

1. Sign in to Unifier with company administration credentials.
2. Go to the **Company Workspace** tab, and switch to **Admin** mode.
3. In the left Navigator, select **Visualizations**, and then select **Content**.
4. In the **Content** log (right pane), select **Create**.
5. On the **Create** page, specify the following information:
   a. To preview the data before creating the chart:
      i. From the **Data Source** list, select the data source to use for creating the content item. The list shows published content in the alphabetical order.
      ii. From the **Preview Project** list, select an active project/shell, and then select **Preview Data**.
   b. From the **View Type** list, select **Area Chart**, **Bar Chart**, or **Line Chart**.
   c. In the **Name** field, enter a name for the chart.
   d. (Optional) In the **Description** field, enter a short description about the chart.
   e. From the **Value** list, select a data element from the data source selected in step 5b. Displays **Count** by default.

      For the selected data element in the **Value** list, select any of the following measures:

      - **Average**: The mean of all values of the selected data element.
      - **Count**: (Default for non-numeric data elements) The total number of rows of the selected data element.
      - **Max**: For numeric fields, displays the highest value. For date fields, displays the maximum date.
      - **Median**: The central value among all values of the selected data element.
      - **Min**: For numeric fields, displays the lowest value of the selected data element. This measure is not applicable to date fields.
      - **Percentage**: A percent of the filtered value from the total of the selected data element.
      - **Sum**: Sum of all values of the selected data element.

   f. After populating the required fields for a Bar chart, you can allow your users to explore related data using dynamic content by selecting **More Actions** (**...**) and then selecting **Configure Drill down**.

      For more information, see Configure Drill-down Content for View Types.

   g. (Optional) From the **Color By** list, select a non-numeric data element to differentiate using a color-code. Perform any of the following actions:

      - To color-code additional data elements, select **Add Color By**.
      - To remove a color code and the associated data element, select **Delete** (**x**).
      - If you have selected more than one color code, select **Drag** (=) to reorder the color codes.

h. From the **Category** list, select a non-numeric data element that you can use as a category to differentiate the bars in the chart. Perform any of the following actions:
   - To select a data element for the category, select **Add Category**.
   - To remove a category and the associated data element, select **Delete** (**x**).
   - If you have selected more than one category, select **Drag** (=) to reorder the categories.

i. From the **Data Labels** list, select the location for displaying labels on the chart.

   Common options are:
   - **Auto**: The default data label display setting for all types of charts.
   - **Center**: The data label displays in the center of an Area chart, Bar chart, or Line chart.
   - **None**: The data labels do not display in the chart.

   For Area charts and Line charts, the following additional options display:
   - **Above Marker**: The data label displays above the marker point.
   - **Below Marker**: The data label displays below the marker point.
   - **Before Marker**: The data label displays before the marker point.
   - **After Marker**: The data label displays after the marker point.

   For Bar charts, the following additional options display:
   - **Inside Bar Edge**: The data label displays on the inside edge in a Bar chart.
   - **Outside Bar Edge**: The data label displays on the outside edge in a Bar chart.

j. From the **Orientation** list, select the orientation as either **Horizontal** or **Vertical** (default).

k. In the **Stacked** field, toggle to show or hide a stacked Bar chart.

l. In the **Show Category Axis Title** field, toggle to show or hide the label of the data element selected for the X-axis .

m. In the **Show Value Axis Title** field, toggle to show or hide the label of the data element selected for the Y-axis.

n. Make changes as needed to refine your selections.

o. After making all changes, perform any of the following actions:
   - To save the chart in a **Draft** status, select **Create Draft**, and return to the **Content** log.
   - To save additional changes made to an existing chart in **Draft** status, select **Update Draft**.
   - To delete the chart, select **Cancel**. You will lose all unsaved changes made to the chart.
   - To make the chart available to your users for data visualizations, select **Publish**, and return to the **Content** log.

Create or Update Bubble Charts

Bubble charts enable you to measure and compare more than two characteristics in the data. Data on Bubble charts is interpreted using the size, position (X and Y co-ordinates), and the color of each Bubble. You can specify these characteristics from the **Content** log of the applicationUnifier.

To create or update Bubble charts for visualizations:

1. Sign in to Unifier with company administration credentials.
2. Go to the **Company Workspace** tab, and switch to **Admin** mode.
3. In the left Navigator, select **Visualizations**, and then select **Content**.
4. In the **Content** log (right pane), select **Create**.
5. On the **Create** page, specify the following information:
   a. To preview the data before creating the chart:
      i. From the **Data Source** list, select the data source to use for creating the content item.
      ii. From the **Preview Project** list, select an active project/shell, and then select **Preview Data**.
   b. From the **View Type** list, select **Bubble Chart**.
   c. In the **Name** field, enter a name for the Bubble chart.
   d. (Optional) In the **Description** field, enter a short description about the Bubble chart.
   e. (Required) From the **Size By** list, select a non-numeric data element to use as the criteria to size the Bubble from the data source selected above.

      For the selected data element in the **Size By** list, select any of the following measures:

      - **Average**: The mean of all values of the selected data element.
      - **Count**: (Default for non-numeric data elements) The total number of rows of the selected data element.
      - **Max**: For numeric fields, displays the highest value. For date fields, displays the maximum date.
      - **Median**: The central value among all values of the selected data element.
      - **Min**: For numeric fields, displays the lowest value of the selected data element. This measure is not applicable to date fields.
      - **Percentage**: A percent of the filtered value from the total of the selected data element.
      - **Sum**: Sum of all values of the selected data element.

   f. (Required) From the **X Axis** list, select a data element.

      For the selected data element in the **X-Axis** list, select any of the following measures:

      - **Average**: The mean of all values of the selected data element.
      - **Count**: (Default for non-numeric data elements) The total number of rows of the selected data element.
      - **Max**: For numeric fields, displays the highest value. For date fields, displays the maximum date.

- **Median**: The central value among all values of the selected data element.
- **Min**: For numeric fields, displays the lowest value of the selected data element. For date fields, displays the minimum date.
- **Percentage**: A percent of the filtered value from the total of the selected data element.
- **Sum**: Sum of all values of the selected data element.

g. (Required) From the **Y Axis** list, select a data element.

   For the selected data element in the **Y-Axis** list, select any of the following measures:

   - **Average**: The mean of all values of the selected data element.
   - **Count**: (Default for non-numeric data elements) The total number of rows of the selected data element.
   - **Max**: For numeric fields, displays the highest value. For date fields, displays the maximum date.
   - **Median**: The central value among all values of the selected data element.
   - **Min**: For numeric fields, displays the lowest value of the selected data element. This measure is not applicable to date-type data elements.
   - **Percentage**: A percent of the filtered value from the total of the selected data element.
   - **Sum**: Sum of all values of the selected data element.

h. After populating the required fields, you can allow your users to explore related data using dynamic content by selecting **More Actions** (**...**) and then selecting **Configure Drill down**.

   For more information, see Configure Drill-down Content for View Types.

i. (Optional) From the **Color By** list, select one or more data elements to measure using a color-code. Perform any of the following actions:

   - To color-code additional data elements, select **Add Color By**.
   - To remove a color code and the associated data element, select **Delete** (**x**).
   - If you have selected more than one color code, select **Drag** (=) to reorder the color codes.

j. From the **Category** list, select a data element to use as a category to differentiate the bars in the chart. Perform any of the following actions:

   - To select a data element for the category, select **Add Category** .
   - To remove a category and the associated data element, select **Delete** (**x**).
   - If you have selected more than one category, select **Drag** (=) to reorder the categories.

k. From the **Data Labels** list, select the location for displaying labels on the chart. Choices include:

   The following options display:

   - **Auto**: The default data label display setting for all types of charts.
   - **Center**: The data label displays in the center of each data point on an Area chart, Bar chart, or Line chart.
   - **Above Marker**: The data label displays above the marker point.

- **Below Marker**: The data label displays below the marker point.
- **Before Marker**: The data label displays before the marker point.
- **After Marker**: The data label displays after the marker point.
- **None**: The data labels do not display on the chart.

l. In the **Show X Axis Title** field, toggle to show or hide the label of the data element selected for the X-axis (Step f).

m. In the **Show Y Axis Title** field, toggle to show or hide the label of the data element selected for the Y-axis (Step g).

n. Make changes as needed to refine the above selections.

o. After making all changes, perform any of the following actions:

- To save the chart in a **Draft** status, select **Create Draft**, and return to the **Content** log.
- To save additional changes made to an existing chart in **Draft** status, select **Update Draft**.
- To delete the chart, select **Cancel**. You will lose all unsaved changes made to the chart.
- To make the chart available to your users for data visualizations, select **Publish**, and return to the **Content** log.

Create or Update Combo Charts

Combo charts are a combination of two types of charts that allow you to compare and contrast two data sets in a single view to highlight the similarities or differences between the data sets.

For example:

- Project Controls Managers can use combo charts to monitor the frequency and the cumulative value of Change Orders (COs) over the course of a construction project to detect scope changes early and contract value trends in real time.
- Cost Engineers or Project Managers overseeing a large scale construction project can use combo charts to compare the baseline budget, actual, and the forecast (ETC) on a monthly basis to detect and address financial risks early.

To create or update Combo charts for visualizations:

1. Sign in to Unifier with company administration credentials.
2. Select the **Company Workspace** tab, and switch to **Admin** mode.
3. In the left Navigator, select **Visualizations**, and then select **Content**.
4. In the **Content** log (right pane), select **Create**.
5. On the **Create** page, specify the following information:

a. To preview the data before creating the chart:

i. From the **Data Source** list, select the data source to use for creating the content item.

ii. From the **Preview Project** list, select an active project/shell, and then select **Preview Data**.

b. From the **View Type** list, select **Combo Chart**.

c. In the **Name** field, enter a name for the Combo chart.

d. (Optional) In the **Description** field, enter a short description about the Combo chart.

e. From the **Values** list, select a data element from the data source selected in step 5b. The selected values display as metrics on the y-axis. Displays **Count** by default. For the selected data element in the **Value** list, select two metrics for the y-axis using any of the following measures:

- **Average**: The mean of all values of the selected data element.
- **Count**: (Default for non-numeric data elements) The total number of rows of the selected data element.
- **Max**: For numeric fields, displays the highest value. For date fields, displays the maximum date.
- **Median**: The central value among all values of the selected data element.
- **Min**: For numeric fields, displays the lowest value of the selected data element. This measure is not applicable to date fields.
- **Percentage**: A percent of the filtered value from the total of the selected data element.
- **Sum**: Sum of all values of the selected data element.
- **Bar Chart**: A bar chart as a measure of the second metric.
- **Line Chart**: A line chart as a measure of the second metric.
- **Area Chart**: An area chart as a measure of the second metric.

f. (Optional) Add a secondary set of values on the y-axis as follows:

i. Select **Add Values**.

ii. From the **Values** list, select a second data element from the data source.

iii. Select **Set as Secondary Y-Axis** from **More Actions** (***).

iv. Select a second pair of metrics to display on the y-axis (step f). To discard the secondary y-axis, select **Remove Secondary Y-Axis** or **Remove**.

g. (Optional) From the **Color By** list, select a non-numeric data element to differentiate using a color-code. Perform any of the following actions:

- To color-code additional data elements, select **Add Color By**.
- To remove a color code and the associated data element, select **Delete** (**x**).
- If you have selected more than one color code, select **Drag** (=) to reorder the color codes.

h. From the **Category** list, select a non-numeric data element to use as a metric on the x-axis. Perform any of the following actions:

- To select a data element for the category, select **Add Category**.
- To remove a category and the associated data element, select **Delete** (**x**).
- If you have selected more than one category, select **Drag** =) to reorder the categories.

i. From the **Data Labels** list, select the location for displaying labels on the Bar chart. Common options are:

- **Auto**: The default data label display setting for all types of charts.

- **Center**: The data label displays in the center of an Area chart, Bar chart, or Line chart.
- **None**: The data labels do not display in the chart.
- **Above**: The data label displays above the marker point.
- **Below**: The data label displays below the marker point.
- **Before**: The data label displays before the marker point.
- **After**: The data label displays after the marker point.

j. From the **Orientation** list, select the orientation as either **Horizontal** or **Vertical** (default).

k. In the **Stacked** field, toggle to show or hide a stacked Bar chart.

l. In the **Show Category Axis Title** field, toggle to show or hide the label of the data element selected for the X-axis.

m. In the **Show Value Axis Title** field, toggle to show or hide the label of the data element selected for the Y-axis.

n. Make changes as needed to refine the above selections.

o. After making all changes, perform any of the following actions:

- To save the chart in a **Draft** status, select **Create Draft**, and return to the **Content** log.
- To save additional changes made to an existing chart in **Draft** status, select **Update Draft**.
- To delete the chart, select **Cancel**. You will lose all unsaved changes made to the chart.
- To make the chart available to your users for data visualizations, select **Publish**, and return to the **Content** log.

Create or Update Pie Charts and Donut Charts

Pie charts and Donut charts enable you to measure and compare segments within a category. You can create these charts from the **Content** log of the applicationUnifier.

To create or update Pie charts or Donut charts for visualizations:

1. Sign in to Unifier with company administration credentials.
2. Go to the **Company Workspace** tab, and switch to **Admin** mode.
3. In the left Navigator, select **Visualizations**, and then select **Content**.
4. In the **Content** log (right pane), select **Create**.
5. On the **Create** page, specify the following information:

   a. To preview the data before creating the chart:

      i. From the **Data Source** list, select the data source to use for creating the content item.

      ii. From the **Preview Project** list, select an active project/shell, and then select **Preview Data**.

   b. From the **View Type** list, select **Pie Chart**.

   c. In the **Name** field, enter a name for the chart.

d. (Optional) In the **Description** field, enter a short description about the chart.

e. From the **Value** list, select a data element from the data source selected above.

   For the selected data element in the **Value** list, select any of the following measures:

   - **Average**: The mean of all values of the selected data element.
   - **Count**: (Default for non-numeric data elements) The total number of rows of the selected data element.
   - **Max**: For numeric fields, displays the highest value. For date fields, displays the maximum date.
   - **Median**: The central value among all values of the selected data element.
   - **Min**: For numeric fields, displays the lowest value of the selected data element. This measure is not applicable to date fields.
   - **Percentage**: A percent of the filtered value from the total of the selected data element.
   - **Sum**: Sum of all values of the selected data element.

f. After populating the required fields, you can allow your users to explore related data using dynamic content by selecting **More Actions** (**...**) and then selecting **Configure Drill down**.

   For more information, see Configure Drill-down Content for View Types.

g. (Optional) From the **Color By** list, select one or more data elements to measure using a color code. Perform any of the following actions:

   - To color-code additional data elements, select **Add Color By**.
   - To remove a color code and the associated data element, select **Delete** (**x**).
   - If you have selected more than one color code, select **Drag** (=) to reorder the color codes.

h. From the **Data Labels** list, select the location for displaying labels on the chart. Choices include:

   - **Auto**: The default data label display setting for all types of charts.
   - **Center**: The data label displays in the center of each data point on the chart.
   - **Above Marker**: The data label displays above the marker point.
   - **Below Marker**: The data label displays below the marker point.
   - **Before Marker**: The data label displays before the marker point.
   - **After Marker**: The data label displays after the marker point.
   - **None**: The data labels do not display in the chart.

i. In the **Donut** field, toggle to show or hide the Pie chart shaped as a Donut chart.

j. Make changes as needed to refine the above selections.

k. After making all changes, perform any of the following actions:

   - To save the chart in a **Draft** status, select **Create Draft**, and return to the **Content** log.
   - To save additional changes made to an existing chart in **Draft** status, select **Update Draft**.

- To delete the chart, select **Cancel**. You will lose all unsaved changes made to the chart.
- To make the chart available to your users for data visualizations, select **Publish**, and return to the **Content** log.

Create or Update Funnel Charts

Funnel charts help you visualize a process through its various stages. Use a Funnel chart to identify bottlenecks and develop process improvements.

To create or update Funnel charts:

1. Sign in to Unifier with company administration credentials.
2. Select the **Company Workspace** tab, and switch to **Admin** mode.
3. In the left Navigator, select **Visualizations**, and then select **Content**.
4. In the **Content** log (right pane), select **Create**.
5. On the **Create** page, specify the following information:
   a. To preview the data before creating the chart:
      i. From the **Data Source** list, select the data source to use for creating the content item.
      ii. From the **Preview Project** list, select an active project/shell, and then select **Preview Data**.
   b. From the **View Type** list, select **Funnel Chart**.
   c. In the **Name** field, enter a name for the Funnel chart.
   d. (Optional) In the **Description** field, enter a short description about the Funnel chart.
   e. From the **Value** list, select a data element from the data source selected in step 5a. to represent the actual value measured in each stage. This is represented by the filled-in area of each horizontal slice of the Funnel chart. Displays **Count** by default.

      For the selected data element in the **Value** list, select any of the following measures:

      - **Average**: The mean of all values of the selected data element.
      - **Count**: (Default for non-numeric data elements) The total number of rows of the selected data element.
      - **Max**: For numeric fields, displays the highest value. For date fields, displays the maximum date.
      - **Median**: The central value among all values of the selected data element.
      - **Min**: For numeric fields, displays the lowest value of the selected data element. This measure is not applicable to date fields.
      - **Percentage**: A percent of the filtered value from the total of the selected data element.
      - **Sum**: Sum of all values of the selected data element.
      - **Bar Chart**: A bar chart as a measure of the second metric.
   f. After populating the required fields, you can allow your users to explore related data using dynamic content by selecting **More Actions** (**…**) and then selecting **Configure Drill down**.

For more information, see Configure Drill-down Content for View Types.

g. From the **Target Value** list, select a data element to represent the goals to be achieved at each stage as a horizontal slice in the Funnel chart.

h. (Optional) From the **Color By** list, select a non-numeric data element to differentiate using a color-code. Perform any of the following actions:

- To color-code additional data elements, select **Add Color By**.
- To remove a color code and the associated data element, select **Delete** (**x**).
- If you have selected more than one color code, select **Drag** (=) to reorder the color codes.

i. From the **Orientation** list, select the orientation as either **Horizontal** or **Vertical** (default).

j. Make changes as needed to refine the above selections.

k. After making all changes, perform any of the following actions:

- To save the chart in a **Draft** status, select **Create Draft**, and return to the **Content** log.
- To save additional changes made to an existing chart in **Draft** status, select **Update Draft**.
- To delete the chart, select **Cancel**. You will lose all unsaved changes made to the chart.
- To make the chart available to your users for data visualizations, select **Publish**, and return to the **Content** log.

Create or Update Gauge Charts

Gauge charts are used to evaluate a measure of performance against a goal. The chart resembles a dial and provides a visual of a value on the dial. Gauge charts can be used by:

- Cost Controllers can use a Gauge chart to view key performance metrics using a gauge chart with color-coded thresholds to assess whether project budget is on track or at risk.
- Project Managers can track how much of allocated budget has been spent on a project to determine if the project costs is within budget, near the limit or over budget.

To create or update Gauge charts:

1. Sign in to Unifier with company administration credentials.
2. Select the **Company Workspace** tab, and switch to **Admin** mode.
3. In the left Navigator, select **Visualizations**, and then select **Content**.
4. In the **Content** log (right pane), select **Create**.
5. On the **Create** page, specify the following information:

a. To preview the data before creating the chart:

i. From the **Data Source** list, select the data source to use for creating the content item.

ii. From the **Preview Project** list, select an active project/shell, and then select **Preview Data**.

b. From the **View Type** list, select **Gauge Chart**.

c. In the **Name** field, enter a name for the Gauge chart.

d. (Optional) In the **Description** field, enter a short description about the Gauge chart.

e. From the **Values** list, select a data element from the data source selected in step 5b. The selected values display as metric being measured on the Gauge chart. Displays **Count** by default.
For the selected data element in the **Values** list, select any of the following measures:

- **Average**: The mean of all values of the selected data element.
- **Count**: (Default for non-numeric data elements) The total number of rows of the selected data element.
- **Max**: For numeric fields, displays the highest value. For date fields, displays the maximum date.
- **Median**: The central value among all values of the selected data element.
- **Min**: For numeric fields, displays the lowest value of the selected data element. This measure is not applicable to date fields.
- **Percentage**: A percent of the filtered value from the total of the selected data element.
- **Sum**: Sum of all values of the selected data element.
- **Bar Chart**: A bar chart as a measure of the second metric.

f. Specify a maximum of three thresholds to measure on the Gauge chart. For each threshold specify a range of values and a color code as follows:

i. Select **Add Threshold**.

ii. In the **Min** field, enter a minimum value for the threshold in the range 0 to 100.

iii. In the **Max** field, enter the maximum value for the threshold in the range 0 to 100.

iv. From the **Color** (⃠ list, associate a color for each threshold defined.

v. (Optional) Repeat this step sequence to specify ranges for three thresholds.

g. In the **Shape** field, select the shape of the Gauge chart as **Circle** or **Semi-circle**.

h. Make changes as needed to refine the above selections.

i. After making all changes, perform any of the following actions:

- To save the chart in a **Draft** status, select **Create Draft**, and return to the **Content** log.
- To save additional changes made to an existing chart in **Draft** status, select **Update Draft**.
- To delete the chart, select **Cancel**. You will lose all unsaved changes made to the chart.
- To make the chart available to your users for data visualizations, select **Publish**, and return to the **Content** log.

Create or Update KPI Cards

Create Key Performance Indicator (KPI) cards to provide various performance metrics of your projects/shells in visualizations. A maximum of eight KPIs can be included in a visualization. You can create these cards from the **Content** log of the application. Unifier

To create or update KPI cards for data visualizations:

1. Sign in to Unifier with company administration credentials.
2. Go to the **Company Workspace** tab, and switch to **Admin** mode.
3. In the left Navigator, select **Visualizations**, and then select **Content**.
4. In the **Content** log (right pane), select **Create**.
5. On the **Create** page, specify the following information:
   a. To preview the data before creating the chart:
      i. From the **Data Source** list, select the data source to use for creating the content item.
      ii. From the **Preview Project** list, select an active project/shell, and then select **Preview Data**.
   b. From the **View Type** list, select **KPI Card**.
   c. In the **Name** field, enter a name for the KPI card.
   d. (Optional) In the **Description** field, enter a short description about the card.
   e. From the **Value** list, select a data element from the data source selected above. Displays **Count** by default.

      For the selected data element in the **Value** list, select any of the following measures:
      - **Average**: The mean of all values of the selected data element.
      - **Count**: (Default for non-numeric data elements) The total number of rows of the selected data element.
      - **Max**: For numeric fields, displays the highest value. For date fields, displays the most recent date.
      - **Median**: The central value among all values of the selected data element.
      - **Min**: For numeric fields, displays the lowest value of the selected data element. For date fields displays the earliest date.
      - **Sum**: Sum of all values of the selected data element.
   f. From the **Period** list, select a data element to measure time for the data element selected in the previous step. Select any of the following to further specify the time period:
      - **No Period**: (Default) Does not display a measure of time on the KPI card.
      - **Today**: Displays today's date in the format based on the user's preferences.
      - **Current Month**: Displays the month and the year in the format, MONTH YYYY.
      - **Current Year**: Displays the year on the KPI card in the format, YYYY.
      - **Current Quarter**: Displays the year on the KPI card in the format, Q<#> YYYY.
   g. For KPIs that display currency and amounts, select the display format as follows:
      i. From the **Decimal Places** list, select display format for decimal values from 0 to 8 places. Defaults to 2 decimal places. For example, select 2 to display values in *nn.dd* format.
      ii. From the **Abbreviation (Show in thousands, millions etc)** list, select one from the following:
         - **Auto** (default)
         - **None**

- **Thousands** (K)
- Millions (M)
- **Billions** (B)
- **Trillions** (T)

h. Make changes as needed to refine the above selections.

i. After making all changes, perform any of the following actions:

- To save the chart in a **Draft** status, select **Create Draft**, and return to the **Content** log.
- To save additional changes made to an existing chart in **Draft** status, select **Update Draft**.
- To delete the chart, select **Cancel**. You will lose all unsaved changes made to the chart.
- To make the chart available to your users for data visualizations, select **Publish**, and return to the **Content** log.

Create or Update Pivot Grids

Create or update Pivot grids to organize and analyze data from a selected data source and a selected project/shell in visualizations. You can create these grids from the Content log of the application.Unifier

To create or update Pivot grids for visualizations:

1. Sign in to Unifier with company administration credentials.
2. Go to the **Company Workspace** tab, and switch to **Admin** mode.
3. In the left Navigator, select **Visualizations**, and then select **Content**.
4. In the **Content** log (right pane), select **Create**.
5. On the **Create** page, specify the following information:
   a. To preview the data before creating the chart:
      i. From the **Data Source** list, select the data source to use for creating the content item.
      ii. From the **Preview Project** list, select an active project/shell, and then select **Preview Data**.
   b. From the **View Type** list, select **Pivot Grid**.
   c. In the **Name** field, enter a name for the Pivot grid.
   d. (Optional) In the **Description** field, enter a short description about the Pivot grid.
   e. From the **Value** list, select a data element from the data source selected above. Displays **Count** by default.

      For the selected data element in the **Value** list, select any of the following measures:

      - **Average**: The mean of all values of the selected data element.
      - **Count**: (Default for non-numeric data elements) The total number of rows of the selected data element.
      - **Max**: For numeric fields, displays the highest value. For date fields, displays the maximum date.

- **Median**: The central value among all values of the selected data element.
- **Min**: For numeric fields, displays the lowest value of the selected data element. This measure is not applicable to date fields.
- **Percentage**: A percent of the filtered value from the total of the selected data element.
- **Sum**: Sum of all values of the selected data element.

f. From the **Columns** list, select a data element to create columns for the Pivot grid.

g. (Optional) Select **Add Columns** to include additional column tiers in the Pivot grid.

h. From the **Rows** list, select a data element to create rows for the Pivot grid.

i. (Optional) Select **Add Rows** to add row tiers in the Pivot grid.

j. (Optional) In the **Show Totals** field, toggle to show or hide the column totals in the grid.

k. To visually highlight specific fields in the Pivot Grid, Configure and Manage Conditional Formatting of Tables and Pivot Grids.

l. Make changes as needed to refine your selections.

m. After making all changes, perform any of the following actions:

- To save the chart in a **Draft** status, select **Create Draft**, and return to the **Content** log.
- To save additional changes made to an existing chart in **Draft** status, select **Update Draft**.
- To delete the chart, select **Cancel**. You will lose all unsaved changes made to the chart.
- To make the chart available to your users for data visualizations, select **Publish**, and return to the **Content** log.

Create or Update Pyramid Charts

Pyramid charts help with analyzing how data is distributed, ordered and ranked within an hierarchy. They can also be used to depict the progression of a process from concept to delivery. For example, you can use pyramid charts to compare marketing and sales performances of products in your organization.

To create or update Pyramid charts:

1. Sign in to Unifier with company administration credentials.
2. Select the **Company Workspace** tab, and switch to **Admin** mode.
3. In the left Navigator, select **Visualizations**, and then select **Content**.
4. In the **Content** log (right pane), select **Create**.
5. On the **Create** page, specify the following information:

a. To preview the data before creating the chart:

i. From the **Data Source** list, select the data source to use for creating the content item.

ii. From the **Preview Project** list, select an active project/shell, and then select **Preview Data**.

b. From the **View Type** list, select **Pyramid Chart**.

c. In the **Name** field, enter a name for the Pyramid chart.

d. (Optional) In the **Description** field, enter a short description about the Pyramid chart.

e. From the **Value** list, select a data element from the data source selected in step 5b. The selected values display as metrics on the y-axis. Displays **Count** by default. For the selected data element in the **Values** list, select any of the following measures:

- **Average**: The mean of all values of the selected data element.
- **Count**: (Default for non-numeric data elements) The total number of rows of the selected data element.
- **Max**: For numeric fields, displays the highest value. For date fields, displays the maximum date.
- **Median**: The central value among all values of the selected data element.
- **Min**: For numeric fields, displays the lowest value of the selected data element. This measure is not applicable to date fields.
- **Percentage**: A percent of the filtered value from the total of the selected data element.
- **Sum**: Sum of all values of the selected data element.

f. After populating the required fields, you can allow your users to explore related data using dynamic content by selecting **More Actions** (**...**) and then selecting **Configure Drill down**. For more information, see Configure Drill-down Content for View Types.

g. (Optional) From the **Color By** list, select a non-numeric data element to differentiate using a color-code. A maximum of six colors can be added in the chart. Perform any of the following actions:

- To color-code additional data elements, select **Add Color By**.
- To remove a color code and the associated data element, select **Delete** (**x**).
- If you have selected more than one color code, select **Drag** (=) to reorder the color codes.

h. Make changes as needed to refine your selections.

i. After making all changes, perform any of the following actions:

- To save the chart in a **Draft** status, select **Create Draft**, and return to the **Content** log.
- To save additional changes made to an existing chart in **Draft** status, select **Update Draft**.
- To delete the chart, select **Cancel**. You will lose all unsaved changes made to the chart.
- To make the chart available to your users for data visualizations, select **Publish**, and return to the **Content** log.

Create or Update Scatter Charts

Scatter charts are used to analyze the relationship, patterns, trends, and correlations between two entities.

To create or update Scatter charts:

1. Sign in to Unifier with company administration credentials.
2. Select the **Company Workspace** tab, and switch to **Admin** mode.
3. In the left Navigator, select **Visualizations**, and then select **Content**.
4. In the **Content** log (right pane), select **Create**.
5. On the **Create** page, specify the following information:
   a. From the **Preview Project** list, select an active project/shell, and select **Preview Data** to preview the data you can use to create the chart.
   b. From the **Data Source** list, select the data source to use for creating the content item.
   c. From the **View Type** list, select **Scatter Chart**.
   d. In the **Name** field, enter a name for the Scatter chart.
   e. (Optional) In the **Description** field, enter a short description about the Funnel chart.
   f. From the **Y-Axis** list, select a data element from the data source selected in step 5b. The selected values display as metrics on the y-axis. Displays **Count** by default. For the selected data element in the **Values** list, select any of the following measures:
      - **Average**: The mean of all values of the selected data element.
      - **Count**: (Default for non-numeric data elements) The total number of rows of the selected data element.
      - **Max**: For numeric fields, displays the highest value. For date fields, displays the maximum date.
      - **Median**: The central value among all values of the selected data element.
      - **Min**: For numeric fields, displays the lowest value of the selected data element. This measure is not applicable to date fields.
      - **Percentage**: A percent of the filtered value from the total of the selected data element.
      - **Sum**: Sum of all values of the selected data element.
   g. From the **X-Axis** list, select a data element from the data source selected in step 5b. The selected values display as metrics on the y-axis. Displays **Count** by default. For the selected data element in the **Values** list, select any of the following measures:
      - **Average**: The mean of all values of the selected data element.
      - **Count**: (Default for non-numeric data elements) The total number of rows of the selected data element.
      - **Max**: For numeric fields, displays the highest value. For date fields, displays the maximum date.
      - **Median**: The central value among all values of the selected data element.
      - **Min**: For numeric fields, displays the lowest value of the selected data element. This measure is not applicable to date fields.
      - **Percentage**: A percent of the filtered value from the total of the selected data element.
      - **Sum**: Sum of all values of the selected data element.
   h. From the **Color By** list, select a non-numeric data element to differentiate using a color-code. Perform any of the following actions:
      - To color-code additional data elements, select **Add Color By**.

- To remove a color code and the associated data element, select **Delete** (**x**).
- If you have selected more than one color code, select **Drag** (=) to reorder the color codes.

i. After populating the required fields, you can allow your users to explore related data using dynamic content by selecting **More Actions** (**...**) and then selecting **Configure Drill down**. For more information, see Configure Drill-down Content for View Types.

j. From the **Category** list, select a non-numeric data element to use as a metric on the x-axis. A maximum of three categories can be included on the chart. Perform any of the following actions:
   - To select a data element for the category, select **Add Category**.
   - To remove a category and the associated data element, select **Delete** (**x**).
   - If you have selected more than one category, select **Drag** (=) to reorder the categories.

k. From the **Markers** list, select a data element to associate different shapes with distinct groups to differentiate between data points on the Scatter chart.
For example, RFIs associated with the Architectural discipline display as diamond shapes whereas Electrical discipline display as squares.

l. From the **Data Labels** list, select the location for displaying labels on the Scatter chart. Common options are:
   - **Auto**: The default data label display setting for all types of charts.
   - **Center**: The data label displays in the center of an Area chart, Bar chart, or Line chart.
   - **None**: The data labels do not display in the chart.
   - **Above**: The data label displays above the marker point.
   - **Below**: The data label displays below the marker point.
   - **Before**: The data label displays before the marker point.
   - **After**: The data label displays after the marker point.

m. In the **Zoom and Scroll** field, toggle to enable or disable the ability to zoom and scroll the Scatter chart.

n. In the **Show X Axis Title** field, toggle to show or hide the label of the data element selected for the X-axis (see step g).

o. In the **Show Y Axis Title** field, toggle to show or hide the label of the data element selected for the Y-axis (see step f).

p. Make changes as needed to refine your selections.

q. After making all changes, perform any of the following actions:
   - To save the chart in a **Draft** status, select **Create Draft**, and return to the **Content** log.
   - To save additional changes made to an existing chart in **Draft** status, select **Update Draft**.
   - To delete the chart, select **Cancel**. You will lose all unsaved changes made to the chart.
   - To make the chart available to your users for data visualizations, select **Publish**, and return to the **Content** log.

Create or Update Tables

Create tables to organize and display data from a selected data source and a selected project/shell in visualizations. You can create these tables from the **Content** log of the application.

To create tables for visualizations:

1. Sign in to Unifier with company administration credentials.
2. Go to the **Company Workspace** tab, and switch to **Admin** mode.
3. In the left Navigator, select **Visualizations**, and then select **Content**.
4. In the **Content** log (right pane), select **Create**.
5. In the **Create** page, specify the following information:
   a. From the **Preview Project** list, select an active project/shell, and select **Preview Data** to preview the data you can use to create the table.
   b. From the **Data Source** list, select the data source to use for creating the content item.
   c. From the **View Type** list, select **Table**.
   d. In the **Name** field, enter a name for the table.
   e. (Optional) In the **Description** field, enter a short description about the table.
   f. From the **Columns** list, select a data element to create columns for the table.
   g. (Optional) Select **Add Columns**, and select a data element to include additional columns in the table.
   h. From the **Group By** list, select a data element to organize the information based on a specific characteristic. For example, group RFIs based on the RFI reasons.
   i. (Optional) In the **Show Totals** field, toggle to show or hide the column totals.
   j. To visually highlight values based on criteria in the table, Configure and Manage Conditional Formatting of Tables and Pivot Grids.
   k. Make changes as needed to refine the above selections.
   l. After making all changes, perform any of the following actions:
      - To save the chart in a **Draft** status, select **Create Draft**, and return to the **Content** log.
      - To save additional changes made to an existing chart in **Draft** status, select **Update Draft**.
      - To delete the chart, select **Cancel**. You will lose all unsaved changes made to the chart.
      - To make the chart available to your users for data visualizations, select **Publish**, and return to the **Content** log.

Create or Update Timeline Charts

Create Timeline charts to visualize data points or events over an extended length of time in a chronological order.

To create Timeline charts for visualizations:

1. Sign in to Unifier with company administration credentials.
2. Go to the **Company Workspace** tab, and switch to **Admin** mode.
3. In the left Navigator, select **Visualizations**, and then select **Content**.
4. In the **Content** log (right pane), select **Create**.
5. In the **Create** page, specify the following information:
   a. From the **Preview Project** list, select an active project/shell, and select **Preview Data** to preview the data you can use to create the chart.
   b. From the **Data Source** list, select the data source to use for creating the content item.
   c. From the **View Type** list, select **Timeline Chart**.
   d. In the **Name** field, enter a name for the Timeline chart.

      > **Note**
      >
      > The combination of **Name** and **View Type** field values must be unique.

   e. (Optional) In the **Description** field, enter a short description about the Timeline chart.
   f. From the **Event Type** list, select **Single Event** (default) or **Duration Event**.
   g. If you chose **Single Event**, from the **Category (Time Axis)**, select a date type data element that defines the event timeline.
   h. From the **Event Title** list, select a data element that can be used as the title for the timeline event.
   i. From the **Event Detail** list, select a maximum of two event details to track in the Timeline chart.
      - To add another event detail, click **Add**.
      - To remove an event detail and its associated data element, click **Delete (x)**.
   j. If you chose a **Duration Event**, in the **Event Duration** field, select a date or date/time data element to choose the start date and end date of the duration of the Timeline chart.
   k. From the **Color By** list, select a data element to measure using a color-code. To remove a color code and the associated data element, click **Delete** (**x**).
   l. From the **Orientation** list, select **Vertical** or **Horizontal** (default).
   m. In the **Timeline Overview** field, toggle to hide or display a compressed overview of the entire timeline.
   n. In the **Tooltip** field, toggle to hide or display tooltips when you hover over events on the Timeline chart.
   o. Make changes as needed to refine the above selections.
   p. After making all changes, perform any of the following actions:
      - To save the chart in a **Draft** status, select **Create Draft**, and return to the **Content** log.
      - To save additional changes made to an existing chart in **Draft** status, select **Update Draft**.
      - To delete the chart, select **Cancel**. You will lose all unsaved changes made to the chart.

- To make the chart available to your users for data visualizations, select **Publish**, and return to the **Content** log.

Duplicate Content

From the Content log, you can efficiently create content by duplicating multiple content items and modifying each as needed. For example, select and create duplicates of a Bar chart, KPI card, and KPI scoreboard, and then modify each accordingly.

You must have Configure permission for visualization content to complete this task.

To duplicate content items for visualizations:

1. Sign in to Unifier with company administration credentials.
2. Go to the **Company Workspace** tab, and switch to **Admin** mode.
3. In the left Navigator, select **Visualizations**, and then select **Content**.
4. In the **Content** log (right pane), select the checkbox for one or more content items such as a KPI card or a Bar chart, and then select **Duplicate**.

   The duplicate item is created with a **Draft** status wherein the name of the duplicate is suffixed with "Copy1". For example, KPI Card Copy 1.

Publish Content

From the Content log, you can publish content items, such as a Bar chart, a KPI card, or a KPI Scoreboard, that are currently in Draft status. When you publish content, your users can now use this content to create visualization pages in the corresponding data source.

You must have Configure permission for visualization content to complete this task.

To publish content items for visualizations:

1. Sign in to Unifier with company administration credentials.
2. Go to the **Company Workspace** tab, and switch to **Admin** mode.
3. In the left Navigator, select **Visualizations**, and then select **Content**.
4. Use any of the following methods to publish:
   - Publish multiple content items simultaneously from the **Content** log (right pane). In the **Content** log (right pane), select the checkbox for multiple content items in **Draft** status, and then select **Publish**.
   - Update and then publish an individual content item from the **Content** log (right pane):
     a. In the **Content** log (right pane), select to open a content item in **Draft** status.
     b. Make changes as required to the content item.
     c. From the **Actions** menu, select **Update Draft**.
     d. To publish the updated content item, from the **Actions** menu, select **Restore to Published**.

Unpublish Content

From the Content log, you can unpublish content items that are in Published status whose Usage status indicates either Used or Unused in visualizations. Unpublished content items display Draft status. When you unpublish content, your users will no longer be able to view these content items in the Content drawer of visualization pages in projects/shells and project/shell templates.

> **Note**
>
> Existing project/shell or project/shell template visualizations containing the content will remain unaffected, as they always display the most recent published version unless explicitly modified.

You must have the permission to Configure content for visualizations to complete this task.

To unpublish content items for visualizations:

1. Sign in to Unifier with company administration credentials.
2. Go to the **Company Workspace** tab, and switch to **Admin** mode.
3. In the left Navigator, select **Visualizations**, and then select **Content**.
4. Use any of the following methods to unpublish:

   In the **Content** log (right pane), select the checkbox for one or more content items in **Published** status, and select **Unpublish**.

   or

   Select to open a published content item, and then select **Unpublish and Save**.
5. Use any of the following methods to unpublish:
   - Unpublish multiple content items simultaneously from the **Content** log (right pane). In the **Content** log (right pane), select the checkbox for multiple content items in **Published** status, and then select **UnPublish**.
   - Unpublish an individual content item from the **Content** log (right pane):
     a. In the **Content** log (right pane), select to open a content item in **Published** status.
     b. Select **Unpublish and Save**.

The status of each unpublished content item now displays as **Draft**.

Delete Content

From the Content log, you can delete multiple content items that are currently in Published or Draft statuses if their Usage status is Unused. An error message displays if you choose to delete a content item in Used status.

You must have Configure permission for visualization content to complete this task.

To delete unused content items:

1. Sign in to Unifier with company administration credentials.

2. Go to the **Company Workspace** tab, and switch to **Admin** mode.
3. In the left Navigator, select **Visualizations**, and then select **Content**.
4. In the **Content** log (right pane), select the checkbox for one or more unused content items in **Draft** or **Published** statuses, and then select **Delete**.
5. In the **Delete Items** dialog box, select **Delete** to reconfirm.

View and Export the Audit Log of Visualization Contents

The Audit Log displays a chronological list of actions performed in a visualization by all users with access to the Content log in the Company Workspace (Admin). Company Administrators can view and export the audit log.

You must have Configure or View permissions to check the audit log of content for visualizations in the Company Workspace to perform this task.

To view and export the audit log of a content item:

1. Sign in to Unifier with company administration credentials.
2. Go to the **Company Workspace** tab, and switch to **Admin** mode.
3. In the left Navigator, select **Visualizations**, and then select **Content**.
4. In the **Content** log (right pane), select the **Audit Log** () of a visualization.
   - **Modified**: Date and time each change was made in the data source. The date and time format is based on the user's preferences.
   - **Action**: Type of change made to the content, such as, **Created**, **Draft**, **Published**, and **Duplicate**.
   - **Modified By**: Name of the user who made the change in the data source.
5. If you have Configure permission, select **Export** () to download the audit log as an Excel spreadsheet (.xlsx).

View and Export the Visualizations Usage Log

The Usage Log is available for content items in Used status only. The log displays information on where the content item has been used in visualizations. Company Administrators can view and export the usage log for each content item.

You must Configure or View permissions for visualization content in the Company Workspace to perform this task.

To view or export the usage log of a content item:

1. Sign in to Unifier with company administration credentials.
2. Go to the **Company Workspace** tab, and switch to **Admin** mode.
3. In the left Navigator, select **Visualizations**, and then select **Content**.
4. In the **Content** log (right pane), select **Used** for a content **Name**.
5. In the **Usage Log** drawer, view the following information:
   - **Location**: The location information of a project/shell.

- **Visualization**: Name of the visualization using the content item.
- **State**: The current state of the visualization as **Synced** or

6. If you have **Configure** permission, select **Export** (⬇) to download the log as a Microsoft Excel spreadsheet (.xlsx).

Manage Visualizations in Project/Shell Templates

Company Administrators can use the created data sources and content items to:

- Set up project/shell templates with visualizations
- Set up additional administrators for visualizations
- Set up users and groups who can only view visualizations
- Create visualizations in one or more tabs in project/shell templates and make these available to your users and groups
- Create or edit new content for visualizations in the content library
- Edit visualizations in project/shell templates
- Duplicate visualizations in project/shell templates
- Delete visualizations in project/shell templates
- Manage user/group permissions for specific visualizations who can:
  - Manage or modify visualizations in a project/shell. These users can be regarded as additional project/shell administrators for those visualizations.
  - View specific visualizations in a project/shell. These users can be regarded as end users of those visualizations.

The above tasks are identical to the tasks performed by Project/Shell Administrators at the project/shell-level. However, you will perform the above tasks from the Setup node of a project /shell that rolls up to the Templates node in the Company Workspace tab. To perform the above tasks, see Administer Visualizations in Projects/Shells, and to set these up in the Company Workspace tab, see Add and Update Project/Shell Templates with Visualizations.

After completing the above tasks in a project/shell template, you can perform any of the following tasks:

- Update specific project/shell templates with visualizations
- Update all project/shell templates with visualizations
- Update specific project/shell templates with visualizations
- Update all project/shell templates with visualizations
- View the update history to view details of selected project/shell templates that are updated or not updated

Company Administrators who have Configure or View permissions for either visualizations data sources and/or visualization content, and can set up templates in the Company Workspace tab should review this information.

Prerequisites

To set up visualizations in projects/shell templates and deploy these visualizations to individual projects/shells, ensure you have:

- Created data sources for visualizations
  See Manage Data Sources
- Created content items for visualizations
  See Manage Visualization Content.

Add and Update Project/Shell Templates with Visualizations

From the Company Workspace tab, Company Administrators can create and publish visualizations from the Visualizations log of project/shell templates and then deploy the published visualizations to individual projects/shells.

To access the Visualizations log of a project/shell template:

1. Sign in to Unifier with company administration credentials.
2. Go to the **Company Workspace** tab, and switch to **Admin** mode.
3. In the left Navigator, select **Templates**, select **Shells**, and then select **Projects**.
4. In the **Project Templates** log (right pane), select a project template.
5. From the **gear menu** (⚙), select **Open** to open a project template.
6. Under the opened project/shell template node in the left Navigator, select **Setup** and then select **Visualizations**.
7. Perform any of the following actions:
   - To add visualizations in the project/shell template, select **Create**. See Create Visualizations in Projects/Shells.
   - To efficiently create similar visualizations that can be modified as needed, select **Duplicate**. See Duplicate Visualizations in Projects/Shells.
   - To delete visualizations from a project/shell template, select **Delete**. See Delete Visualizations in Projects/Shells.
   - Edit a visualization. See Edit Visualizations in Projects/Shells.
   - Modify visualization properties. See Edit Visualization Properties.
   - Manage user/group permissions for specific visualizations. See Manage User/Group Permissions for Specific Visualizations.
   - View and/or download the audit log of a visualization. See View and Export the Visualizations Audit Log From Projects/Shells.
8. Make changes as needed to finalize the visualizations in a project/shell template.
9. From the **Update** menu, select any of the following menu options to update projects/shells with visualizations created in this project/shell template:
   - Select **Shells** to update only selected shells with visualizations. See Update Specific Projects/Shells with Visualizations From Project/Shell Template.
   - Select **All Shells** to update *all* shells with visualizations. See Update All Projects/Shells with Visualizations From a Project/Shell Template.
   - Select **Shell Templates** to update selected shell templates with visualizations. See Update Selected Project/Shell Templates with Visualizations.

- Select **All Shell Templates** to update *all* shell templates with visualizations. See Update All Shell Templates with Visualizations.
- Select **History** to update the job history of projects/shells that were populated with visualizations through project/shell templates. See Update the History Log Across Shell Templates.

Update Specific Projects/Shells with Visualizations From Project/Shell Template

From the Company Workspace tab, you can selectively replicate visualizations across one or more individual projects/shells.

To copy visualizations from a project/shell template into one or more projects/shells:

1. Sign in to Unifier with company administration credentials.
2. Go to the **Company Workspace** tab, and switch to **Admin** mode.
3. In the left Navigator, select **Templates**, select **Shells**, and then select **Projects**.
4. In the **Project Templates** log (right pane), select a project template.
5. From the **gear menu** (⚙), select **Open** to open a project template.
6. Under the opened project/shell template node in the left Navigator, select **Setup** and then select **Visualizations**.
7. In the **Visualizations** log (right pane), select the checkbox for one or more visualizations that you want to replicate.
8. From the **Update** menu, select **Shells**.
9. In the **Update Shells** drawer, select the checkbox for one or more projects/shells that the selected visualizations (step 7) will be copied into, and select **Update**.
10. In the **Update Shells** dialog box, select **Update** to reconfirm.

Review the visualizations in the respective projects/shells.

> **Note**
>
> You can select **Cancel** in any step to discontinue this task.

Update All Projects/Shells with Visualizations From a Project/Shell Template

From the **Company Workspace** tab, you can replicate visualizations across *all* projects/shells.

To copy visualizations from a project/shell template into all projects/shells:

1. Sign in to Unifier with company administration credentials.
2. Go to the **Company Workspace** tab, and switch to **Admin** mode.
3. In the left Navigator, select **Templates**, select **Shells**, and then select **Projects**.
4. In the **Project Templates** log (right pane), select a project template.

5. From the **gear menu** (⚙), select **Open** to open a project template.
6. Under the opened project/shell template node in the left Navigator, select **Setup** and then select **Visualizations**.
7. In the **Visualizations** log (right pane), select the checkbox for one or more visualizations that you want to replicate.
8. From the **Update** menu, select **All Shells**.
9. In the **Update All Shells** dialog box, select **Update** to reconfirm.

Review the visualizations in the updated projects/shells.

> **Note**
>
> You can select **Cancel** in any step to discontinue this task.

Update Selected Project/Shell Templates with Visualizations

From the **Company Workspace** tab, you can selectively replicate visualizations across one or more project/shell *templates*.

To copy visualizations from a project/shell template into one or more project/shell *templates*:

1. Sign in to Unifier with company administration credentials.
2. Go to the **Company Workspace** tab, and switch to **Admin** mode.
3. In the left Navigator, select **Templates**, select **Shells**, and then select **Projects**.
4. In the **Project Templates** log (right pane), select a project template.
5. From the **gear menu** (⚙), select **Open** to open a project template.
6. Under the opened project/shell template node in the left Navigator, select **Setup** and then select **Visualizations**.
7. In the **Visualizations** log (right pane), select the checkbox for one or more visualizations that you want to replicate.
8. From the **Update** menu, select **Shell Templates**.
9. In the **Update Shell Templates** drawer, select the checkbox for one or more project/shell templates that the selected visualizations (step 7) will be copied into, and select **Update**.
10. In the **Update Shell Templates** dialog box, select **Update** to reconfirm.

Review the visualizations in the updated project/shell templates.

> **Note**
>
> You can select **Cancel** in any step to discontinue this task.

Update All Shell Templates with Visualizations

From the Company Workspace tab, you can replicate visualizations created in a specific project/shell template across *all* project/shell templates.

To copy visualizations from a project/shell template into all project/shell *templates*:

1. Sign in to Unifier with company administration credentials.
2. Go to the **Company Workspace** tab, and switch to **Admin** mode.
3. In the left Navigator, select **Templates**, select **Shells**, and then select **Projects**.
4. In the **Project Templates** log (right pane), select a project template.
5. From the **gear menu** (⚙), select **Open** to open a project template.
6. Under the opened project/shell template node in the left Navigator, select **Setup** and then select **Visualizations**.
7. In the **Visualizations** log (right pane), select the checkbox for one or more visualizations that you want to replicate.
8. From the **Update** menu, select **All Shell Templates**.
9. In the **Update All Shell Templates** dialog box, select **Update** to reconfirm.

Review the visualizations in the updated project/shell templates.

> **Note**
>
> You can select **Cancel** in any step to discontinue this task.

Configure and Manage Conditional Formatting of Tables and Pivot Grids

To visually highlight values based on criteria in a Table or Pivot Grid, you can configure conditional formatting rules at the project or shell templates and shell levels. After rules are set up at the template level, you can push the rules to all new shells.

Limitations

The following limitations apply:

- Only Table/Pivot Grid view is supported.
- Maximum 5 rules per column, 10 columns with rules, 5 conditions per rule.
- Rule names must be unique. At least one condition and style required.
- Conditional formatting not applicable to charts.
- Columns with rules cannot be removed until rules are deleted.
- Export to PDF retains formatting.

To configure and manage conditional formatting of Tables and Pivot Grids:

1. Sign in to Unifier with company administration credentials.
2. Go to the **Company Workspace** tab, and switch to **Admin** mode.

3. In the left Navigator, select **Templates**, select **Shells**, and then select **Projects**.
4. In the **Project Templates** log (right pane), select a project template.
5. From the **gear menu** (⚙), select **Open** to open a project template.
6. Under the opened project/shell template node in the left Navigator, select **Setup** and then select **Visualizations**.
7. Select a Table or Pivot Grid, or create a new one.
8. From the **More Actions** (***) menu, select **Conditional Formatting**.
9. In the **Conditional Formatting** drawer, select **Add** to create a new rule by specifying a maximum of 5 conditions:
    a. (Required) In the **Rule Name** field, enter a unique rule name, a maximum length of 60 characters.
    b. (Required) From the **Column** list, select a data element on which the rule will be applied.

       For Tables, select a data field for a column.

       For Pivot Grids, select a data field for a column, row, or value.
    c. In the **Condition Builder** block, to define at least one condition:
        i. Select **Any** (to apply any one condition) or **All** (to apply all conditions), and then select **Add** (+).
        ii. (Required) From the **Data Element** list, select a data element to create a condition.
        iii. (Required) From the **Condition** list, select a condition to apply on the selected data element such as **Contains**, **Does not contain**, **Is empty**, or **Is not empty**.
        iv. (Required) From the **Value** list, enter a value that needs to be satisfied by the condition.
        v. To add another condition, repeat the previous steps.
        vi. To discard a specific condition or a group of conditions, select **Delete** (🗑).
        vii. Select any or all formatting options such as bold, italic, underline, strikethrough, text color, or background color.
        viii. Preview and adjust the formatting as required, and then perform any of the following actions:
            - To add more rules, select **Create and Close** or **Create and Next**. Rules created for the same data element selected in the **Column** list are grouped together.
            - To discard the condition, select **Cancel**.

    When multiple rules are specified, the Conditional Formatting drawer groups the rules by Column or Row.
10. After creating rules, perform any of the following actions in the **Conditional Formatting** drawer:
    - To duplicate multiple rules, select one or more rules, and then select **Duplicate**.
    - To remove multiple rules, select one or more rules, and then select **Remove**.
    - To reorder the rules, select **Drag**(=).

- To edit a specific rule, select **Edit** from the **Actions** (⋯) menu.
- To discard the rule, select **Remove** from the **Actions** (⋯) menu.

11. Package content with formatting rules.

Upon pushing the shell template to new or existing project shells, all visualizations and their rules will be included.

Update the History Log Across Shell Templates

After populating projects/shells with visualizations, it is a good practice to update the job history of the updated projects/shells to maintain the chronology of actions performed in each project/template.

To update the history log across one or more projects/shells:

1. Sign in to Unifier with company administration credentials.
2. Go to the **Company Workspace** tab, and switch to **Admin** mode.
3. In the left Navigator, select **Templates**, select **Shells**, and then select **Projects**.
4. In the **Project Templates** log (right pane), select a project template.
5. From the **gear menu** (⚙), select **Open** to open a project template.
6. Under the opened project/shell template node in the left Navigator, select **Setup** and then select **Visualizations**.
7. In the **Visualizations** log (right pane), from the **Update** menu, select **History**.
8. In the **History** drawer, perform any of the following actions:
   - Select the checkbox for each project/shell whose history is to be updated, and select **Refresh**.
   - Select **Cancel Request** to cancel a job request that has not yet started. You cannot cancel a job request that is in progress or revert if the job request has been completed.

Review the history log in the updated projects/shells.

> **Note**
>
> You can select **Cancel** in any step to discontinue this task.

2

Administer Visualizations in Projects/Shells

Project/Shell Administrators can access visualization data sources and content published by Company Administrators.

Your Company Administrators can continue to publish new data sources and content to meet the needs of your organization over time. However, any new data sources or new/modified content published and subsequently made available to you will not impact current visualizations created in projects/shells.

When Company Administrators publish new content items or new data sources and make these available to you in a project/shell, you have the option to:

- Update existing visualizations with new content
- Use new data sources/new content items made available to you
- Create visualizations using the new content/new data sources in projects/shells

Project/Shell Administrators can:

- Set up additional administrators for visualizations
- Set up users who can only view visualizations
- Create visualizations in projects/shells and make these available to your users and groups
- Create or edit new content for visualizations in the content library
- Edit visualizations in projects/shells
- Duplicate visualizations in projects/shells
- Delete visualizations in projects/shells
- Manage user/group permissions for specific visualizations who can:
  - Manage or modify visualizations in a project/shell. These users can be regarded as additional project/shell administrators for those visualizations.
  - View specific visualizations in a project/shell. These users can be regarded as end users of those visualizations.

Project/Shell Administrators and administrators in similar capacities should review this information.

Enable Permission to Administer Visualizations in Projects/Shells

To administer visualizations in a project/shell, Project/Shell Administrators must be able to access the **Visualizations** node in the left Navigator. Completing this task displays the **Visualizations** sub-node under the **Setup** node in the left Navigator of the project/shell. As a Project/Shell Administrator, you can set up this permission for yourself as well as for any other users and groups you select as additional project/shell administrators.

To set the permission that will allow you to administer and give access to the **Visualizations** node in the left Navigator of a project/shell:

1. Sign in to Unifier with project/shell administration credentials.
2. Go to the project/shell tab, and switch to **Admin** mode. For example, select a tab called Vision Corporation.
3. In the left Navigator, select **Access Control**.
4. In the right pane, under the **Administration Mode Access** node, select **Setup** and then select **Visualizations**.
5. In the **Permissions Settings for: Visualizations** dialog box, select **Add**.
   a. In the **Select User/Groups** block, (upper block), select **Add Users/Group**.
      i. In the **User/Group Picker** window select yourself and any other users and groups you want to add as administrators for visualizations.
      ii. Select **Add**, and then select **OK**.
   b. In the **Permission Settings** block (lower block), select the **Setup** permission.

      This permission gives the users and groups selected in the upper block, (step 5a) access to the **Visualizations** node in left Navigator of the project/shell in **Admin** mode.
   c. Select **OK**.

Enable View Permission For Visualizations in Projects/Shells

Apart from setting up additional administrators for a project/shell, Project/Shell Administrators can also set up users and groups who can only view visualizations created in a project/shell. Completing this task displays the Visualizations node in the left Navigator of the project/shell for your users and groups when they sign in to the project/shell in the User mode.

To set the permission that will allow your users and groups to access the Visualizations node in the left Navigator of a project/shell in User mode:

1. Sign in to Unifier with project/shell administration credentials.
2. Go to the project/shell tab, and switch to **Admin** mode. For example, select a tab called Vision Corporation.
3. In the left Navigator, select **Access Control**.
4. In the right pane, under the **User Mode Access** node, select **Visualizations**.
5. In the **Permissions Settings for: Visualizations** dialog box, select **Add**.
   a. In the **Select User/Groups** block, (upper block), select **Add Users/Group**.
      i. In the **User/Group Picker** window select users and groups who can only view visualizations in the current project/shell tab.
      ii. Select **Add**, and then select **OK**.
   b. In the **Permission Settings** block (lower block), select the checkbox for the **View** permission.

      This will give users and groups, selected in the upper block, (step 5a) access to the **Visualizations** node in left Navigator of the project/shell in **User** mode.
   c. Select **OK**.

Access the Visualizations Log in a Project/Shell (Admin Mode)

Project/Shell Administrators must have the permission to set up visualizations to perform administration tasks in a project/shell and access the Visualizations log from the left Navigator. For more information on how to set up this permission, see Enable Permission to Administer Visualizations in Projects/Shells.

To access the Visualizations log in the project/shell (Admin mode):

1. Sign in to Unifier with project/shell administration credentials.
2. Go to the specific project/shell tab, and switch to **Admin** mode. For example, select a tab called Vision Corporation.
3. In the left Navigator, select **Setup**, and then select **Visualizations**.
   - **Name**: Name of the visualization. For example, a visualization called **RFI Summary**.
   - **Description**: (Optional) A short statement that outlines the purpose of the visualization.
   - **Location**: (Optional) The location of the visualization in the left Navigator in the **User** mode.
     If a location is specified, the visualization displays under the selected business process (BP) node in the **User** mode. For example, the **Visualizations** node displays under the **Contracts** BP node.

     (Default) If a location is not specified, the visualization displays under the **Visualizations** node in the **User** mode.
   - **Last Modified Date**: The most recent date that the visualization was modified.
   - **Last Modified By**: The name of the user who last modified the visualization.
   - **Action**: From the **More Action** (⋮) menu select any of the following menu options to perform the corresponding task:
     - **Edit Properties**: Select to Edit Visualization Properties.
     - **Permissions**: Select to Add Users and Groups For Specific Visualizations.
     - **Audit Log**: Select to view the View and Export the Visualizations Audit Log From Projects/Shells.
4. (Optional) To focus on a subset of visualizations displayed in the **Visualizations** log (right pane), select any of the following search filters:
   - **Location**: Select this filter to focus on visualizations in a specific location or node. For example, visualizations in the **Contracts** business process node.
   - **Last Modified Date**: Select this filter and enter a date range to select only those visualizations that were last modified in the selected dates.
   - **Last Modified By**: Select this filter to focus on visualizations modified by a specific user.

As Project/Shell Administrators, you can also perform the following tasks from the Visualizations log:

- Add Users and Groups For Specific Visualizations
- Create Visualizations in Projects/Shells
- Duplicate Visualizations in Projects/Shells

- Edit Visualization Properties
- Delete Visualizations in Projects/Shells

Create Visualizations in Projects/Shells

Project/Shell Administrators can create and edit visualizations in projects/shells they have access to. The visualizations can be created using the default content items made available to you by your Company Administrators. Apart from the default content, Project/Shell administrators can also create content in projects/shells. See Create or Edit Visualization Content Items in Projects/Shells.

To create visualizations in a project/shell (Admin mode):

1. Sign in to Unifier with project/shell administration credentials.
2. Go to the specific project/shell tab, and switch to **Admin** mode. For example, select a tab called Vision Corporation.
3. In the left Navigator, select **Setup**, and then select **Visualizations**.
4. In the **Visualizations** log (right pane), select **Create**.
5. In the **Create Visualization** drawer, enter the following information:
   a. (Required) In the **Name** field, enter a user-friendly name for the visualization.
   b. In the **Description** field, enter a short description of the visualization.
   c. From the **Location** list, select the location of the visualization in the left Navigator. For example, select **Document Issues** to display the **Visualizations** node under the **Document Issues** business process (BP) in the **User** mode.

      (Default) If a location is not specified, the visualization displays in the **Visualization** node of the project/shell in the **User** mode.
   d. Select **Continue** to select a layout for the visualization.

   > **Note**
   >
   > You can select **Cancel** in any step to discontinue creating the visualization.

6. In the **Choose layout to start** drawer, select a layout for the visualization. Options include:
   - 1-panel collection
   - 2-panel hero visualization
   - 2-panel side-by-side
   - 2-panel vertical collection
   - 3-panel auto fit
   - 3-panel collection
   - 5-panel collection
7. In the selected blank layout page, select **Library**.
8. In the **Library** drawer, select the **Content** tab.
   - The name of the content item.
   - The type of content, such as a KPI card, Bar chart, and so on.

- The data source used for creating the content item.
- The published status can be any of the following:
  - **Synced**: Indicates the published content item is in sync with the saved version.
  - **Local**: Indicates the content item has been newly created and is available only in this project/shell.

9. Select a content item, and then select and drag the item onto a block in the visualization layout. Repeat to populate all blocks in the layout. For example, select and drag a stacked Bar chart to the layout.
10. (Optional) If you want to create content items for the visualization, select **Create**. See Create or Edit Visualization Content Items in Projects/Shells.
11. Perform any of the following actions in any order:
    - In the **Search** bar, locate a content item by name, data source, view type (such as a Bar chart, Area chart, and so on), or published status.
    - To refresh the list of displayed content items, select **Refresh** ( ).
    - To change the visualization layout, select the **Layout** tab.
12. Make changes as needed to refine the above selections.
13. To add visualization in additional tabs, select **Add new tab** (+), adjacent to the **Default** or a renamed tab.
14. Repeat the above steps for each tab. You can:
    - Add, remove, or update a maximum of 15 tabs with layout and content,
    - Select a different layout in each tab.
    - Drag and reorder the tab sequence.
    - Set up independent filters for each tab.
    - Select **Save** to save changes across all tabs.
15. After populating the tabs and visualizations, select **Create**, and return to the **Visualizations** log.

Create or Edit Visualization Content Items in Projects/Shells

Project/Shell Administrators can create additional content items at the project/shell level for visualizations. The Create page for such content items is initially labeled Local Copy.

Upon creating content items, you can select and drag these content items onto the visualization layout. The status of these content items displays as **Local** to indicate the content item has been newly created and is available only in this project/shell.

Video

You can create the following types of content items:

- Create or Edit Area Charts, Bar Charts, and Line Charts for Visualizations in Projects/Shells
- Create or Edit Bubble Charts for Visualizations in Projects/Shells
- Create or Edit Combo Charts for Visualizations in Projects/Shells
- Create or Edit Pie Charts and Donut Charts for Visualizations in Projects/Shells

- Create or Edit Funnel Charts for Visualizations in Projects/Shells
- Create or Edit Gauge Charts for Visualizations in Projects/Shells
- Create or Edit KPI Cards for Visualizations in Projects/Shells
- Create or Edit Pivot Grids for Visualizations in Projects/Shells
- Create or Edit Pyramid Charts for Visualizations in Projects/Shells
- Create or Edit Scatter Charts for Visualizations in Projects/Shells
- Create or Edit Tables for Visualizations in Projects/Shells
- Create or Edit Timeline Charts for Visualizations in Projects/Shells

Create or Edit Area Charts, Bar Charts, and Line Charts for Visualizations in Projects/Shells

To create or edit Area charts, Bar charts, and Line charts for visualizations in a project/shell (**Admin** mode):

1. Sign in to Unifier with project/shell administration credentials.
2. Go to the specific project/shell tab, and switch to **Admin** mode. For example, select a tab called Vision Corporation.
3. In the left Navigator, select **Setup**, and then select **Visualizations**.
4. In the **Visualizations** log (right pane), select any of the following actions:
   - Select **Create** to add a new visualization in the project/shell. Proceed to step 6.
   - Select a visualization in the log, and then select **Edit**. Proceed to step 5.
5. On the **Edit** page, select **Edit** () for a content item in the visualization layout. Proceed to step 6b.
6. On the **Create** page, specify or update the following information:
   a. To preview the data before creating the chart:
      i. From the **Data Source** list, select the data source to use for creating the content item. The list shows published content in the alphabetical order.
      ii. From the **Preview Project** list, select an active project/shell and then click **Preview Data**.
   b. From the **View Type** list, select **Area Chart**, **Bar Chart**, or **Line Chart**.
   c. In the **Name** field, enter a name for the chart.
   d. (Optional) In the **Description** field, enter a short description about the chart.
   e. From the **Value** list, select a data element from the data source selected above. Displays **Count** by default.

      For the selected data element in the **Value** list, select any of the following measures:
      - **Average**: The mean of all values of the selected data element.
      - **Count**: (Default) The total number of rows of the selected data element.
      - **Max**: For numeric fields, displays the highest value. For date fields, displays the maximum date.
      - **Median**: The central value among all values of the selected data element.

- **Min**: For numeric fields, displays the lowest value of the selected data element. For date fields, displays the minimum date.
- **Percentage**: A percent of the filtered value from the total of the selected data element.
- **Sum**: Sum of all values of the selected data element.

f. After populating the required fields for a Bar chart, you can allow your users to explore related data using dynamic content by selecting **More Actions** (**...**) and then selecting **Configure Drill down**.

For more information, see Configure Drill-down Content for View Types.

g. (Optional) From the **Color By** list, select a data element to differentiate using a color code. Perform any of the following actions:

- To color-code additional data elements, click **Add Color By**.
- To remove a color code and the associated data element, click **Delete** (**x**).
- If you have selected more than one color code, click **Drag** ( ) to reorder the color codes.

h. From the **Category** list, select a data element that you can use as a category to differentiate the bars in the chart. Perform any of the following actions:

- To select a data element for the category, click **Add Category** .
- To remove a category and the associated data element, click **Delete** (**x**).
- If you have selected more than one category, click **Drag** ( ) to reorder the categories.

i. h. If the data element selected in the **Value** list (step e) represents a numeric or currency value, specify the display format for these values:

i. From the **Decimal Places** list, select the number of decimal places following the decimal point to be used for numeric values. Choices include 0 through 8.

ii. From the **Abbreviations** list, select the abbreviated format to be used for currency values. Choices include: **Auto** (default), **None**, **Thousands (K)**, **Millions (M)**, **Billions (B)**, and **Trillions (T)**.

iii. From the **Currency Options** list, select the currency used by the project/shell. Choices include: **None**, **Shell Currency**, and **Base Currency**.

j. From the **Data Labels** list, select the location for displaying labels on the chart.

Common options are:

- **Auto**: The default data label display setting for all types of charts.
- **Center**: The data label displays in the center of an Area chart, Bar chart, or Line chart.
- **None**: The data labels do not display in the chart.

For Area charts and Line charts, the following additional options display:

- **Above Marker**: The data label displays above the marker point.
- **Below Marker**: The data label displays below the marker point.
- **Before Marker**: The data label displays before the marker point.
- **After Marker**: The data label displays after the marker point.

For Bar charts, the following additional options display:

- **Inside Bar Edge**: The data label displays on the inside edge in a Bar chart.
- **Outside Bar Edge**: The data label displays on the outside edge in a Bar chart.

k. From the **Orientation** list, select the orientation as either **Horizontal** or **Vertical** (default).

l. In the **Stacked** field, toggle to show or hide a stacked Bar chart.

m. In the **Show Category Axis Title** field, toggle to show or hide the label of the data element you selected for the X-axis.

n. In the **Show Value Axis Title** field, toggle to show or hide the label of the data element you selected for the Y-axis.

o. Make changes as needed to refine your selections.

7. After making all changes, perform any of the following actions:
8. After making all changes, perform any of the following actions:
   - If you created an Area chart, Bar chart, or Line chart, select **Create**, and return to the **Edit** page.
   - To confirm all the changes made to the edited content item, select **Update**, and return to the **Edit** page.
9. On the **Edit** page, select **Save** to update the visualization with any created or edited content.

Create or Edit Bubble Charts for Visualizations in Projects/Shells

To create or edit Bubble charts for visualizations in a project/shell (Admin mode):

1. Sign in to Unifier with project/shell administration credentials.
2. Go to the specific project/shell tab, and switch to **Admin** mode. For example, select a tab called Vision Corporation.
3. In the left Navigator, select **Setup**, and then select **Visualizations**.
4. In the **Visualizations** log (right pane), select any of the following actions:
   - Select **Create** to add a new visualization in the project/shell. Proceed to step 6.
   - Select a visualization in the log, and then select **Edit**. Proceed to step 5.
5. On the **Edit** page, select **Edit** ( )for a Bubble chart in the visualization layout. Proceed to step 6b.
6. On the **Create** or **Edit** page, specify or update the following information:

   a. To preview the data before creating the chart:

      i. From the **Data Source** list, select the data source to use for creating the content item. The list shows published content in the alphabetical order.

      ii. From the **Preview Project** list, select an active project/shell and then click **Preview Data**.

   b. From the **View Type** list, select **Bubble Chart**.

   c. In the **Name** field, enter a name for the Bubble chart.

   d. (Optional) In the **Description** field, enter a short description about the Bubble chart.

e. From the **Size By** list, select a data element to use as the criteria to size the bubble from the data source selected above. Displays **Count** by default.

   For the selected data element in the **Size By** list, select any of the following measures:

   - **Average**: The mean of all values of the selected data element.
   - **Count**: (Default) The total number of rows of the selected data element.
   - **Max**: For numeric fields, displays the highest value. For date fields, displays the maximum date.
   - **Median**: The central value among all values of the selected data element.
   - **Min**: For numeric fields, displays the lowest value of the selected data element. For date fields, displays the minimum date.
   - **Percentage**: A percent of the filtered value from the total of the selected data element.
   - **Sum**: Sum of all values of the selected data element.

f. From the **X Axis** list, select a data element.

   For the selected data element in the **X-Axis** list, select any of the following measures:

   - **Average**: The mean of all values of the selected data element.
   - **Count**: (Default) The total number of rows of the selected data element.
   - **Max**: For numeric fields, displays the highest value. For date fields, displays the maximum date.
   - **Median**: The central value among all values of the selected data element.
   - **Min**: For numeric fields, displays the lowest value of the selected data element. For date fields, displays the minimum date.
   - **Percentage**: A percent of the filtered value from the total of the selected data element.
   - **Sum**: Sum of all values of the selected data element.

g. From the **Y Axis** list, select a data element.

   For the selected data element in the Y**-Axis** list, select any of the following measures:

   - **Average**: The mean of all values of the selected data element.
   - **Count**: (Default) The total number of rows of the selected data element.
   - **Max**: For numeric fields, displays the highest value. For date fields, displays the maximum date.
   - **Median**: The central value among all values of the selected data element.
   - **Min**: For numeric fields, displays the lowest value of the selected data element. For date fields, displays the minimum date.
   - **Percentage**: A percent of the filtered value from the total of the selected data element.
   - **Sum**: Sum of all values of the selected data element.

h. After populating the required fields, you can allow your users to explore related data using dynamic content by selecting **More Actions** (**...**) and then selecting **Configure Drill down**.

   For more information, see Configure Drill-down Content for View Types.

i. From the **Color By** list, select one or more data elements to measure using a color-code. Perform any of the following actions:
   - To color-code additional data elements, click **Add Color By**.
   - To remove a color code and the associated data element, click **Delete** (**x**).
   - If you have selected more than one color code, click **Drag** (=) to reorder the color codes.

j. From the **Category** list, select a data element to use as a category to differentiate the bars in the chart. Perform any of the following actions:
   - To select a data element for the category, click **Add Category** .
   - To remove a category and the associated data element, click **Delete** (**x**).
   - If you have selected more than one category, click **Drag** (=) to reorder the categories.

k. If the data elements selected for the **X-Axis** and **Y-Axis** (steps f and g) represent numeric or currency values, specify the display format for these values:
   i. From the **Decimal Places** list, select the number of decimal places following the decimal point to be used for numeric values. Choices include 0 through 8.
   ii. From the **Abbreviations** list, select the abbreviated format to be used for currency values. Choices include: **Auto** (default), **None**, **Thousands (K)**, **Millions (M)**, **Billions (B)**, and **Trillions (T)**.
   iii. From the **Currency Options** list, select the currency used by the project/shell. Choices include: **None**, **Shell Currency**, and **Base Currency**.

l. From the **Data Labels** list, select the location for displaying labels on the chart. Choices include:

   The following options display:
   - **Auto**: The default data label display setting for all types of charts.
   - **Center**: The data label displays in the center of each data point on an Area chart, Bar chart or Line chart.
   - **Above Marker**: The data label displays above the marker point.
   - **Below Marker**: The data label displays below the marker point.
   - **Before Marker**: The data label displays before the marker point.
   - **After Marker**: The data label displays after the marker point.
   - **None**: The data labels do not display on the chart.

m. In the **Show X Axis Title** field, slide right to display the label of the data element you selected for the X-axis (See step g).

n. In the **Show Y Axis Title** field, slide right to display the label of the data element you selected for the Y-axis (See step h).

o. Make changes as needed to refine the above selections.

7. After making all changes, perform any of the following actions:
   - If you created a Bubble chart, select **Create**, and return to the **Edit** page.
   - To confirm all the changes made to the edited Bubble chart, select **Update**, and return to the **Edit** page.

8. On the **Edit** page, select **Save** to update the visualization with any created or edited content.

Create or Edit Combo Charts for Visualizations in Projects/Shells

To create or edit Combo charts for visualizations in a project/shell (Admin mode):

1. Sign in to Unifier with project/shell administration credentials.
2. Go to the specific project/shell tab, and switch to **Admin** mode. For example, select a tab called Vision Corporation.
3. In the left Navigator, select **Setup**, and then select **Visualizations**.
4. In the **Visualizations** log (right pane), select any of the following actions:
   - Select **Create** to add a new visualization in the project/shell, and then proceed to step 6.
   - To edit an existing visualization, select the visualization in the log, select **Edit**, and then proceed to step 5.
5. On the **Edit** page, select **Edit** ( )for a Combo chart in the visualization layout. Proceed to step 6b.
6. On the **Create** or **Edit** page, specify or update the following information:
   a. To preview the data before creating the chart:
      i. From the **Data Source** list, select the data source to use for creating the content item. The list shows published content in the alphabetical order.
      ii. From the **Preview Project** list, select an active project/shell, and then select **Preview Data**.
   b. From the **View Type** list, select **Combo Chart**.
   c. In the **Name** field, enter a name for the Combo chart.
   d. (Optional) In the **Description** field, enter a short description about the Combo chart.
   e. From the **Values** list, select a data element from the data source selected above. A maximum of three values can be selected for a Combo chart. For each value, select a type of chart (Bar, Line, or Area) and a measure listed below. Displays **Count** by default.

      For each data element selected in the **Value** list, select any of the following measures:
      - **Average**: The mean of all values of the selected data element.
      - **Count**: (Default) The total number of rows of the selected data element.
      - **Max**: For numeric fields, displays the highest value. For date fields, displays the maximum date.
      - **Median**: The central value among all values of the selected data element.
      - **Min**: For numeric fields, displays the lowest value of the selected data element. For date fields, displays the minimum date.
      - **Sum**: Sum of all values of the selected data element.
   f. (Optional) From the **Color By** list, select a data element to measure using a color-code. A maximum of three Color By values can be selected for a Combo chart. Perform any of the following actions:

- To color-code additional data elements, select **Add Color By**.
- To remove a color code and the associated data element, select **Delete** (**x**).
- If you have selected more than one color code, select **Drag** (=) to reorder the color codes.

g. From the **Category** list, select a data element to use as a category to differentiate the bars on the chart. A maximum of three categories can be selected for a Combo chart. Perform any of the following actions:

- To select a data element for the category, select **Add Category** .
- To remove a category and the associated data element, select **Delete** (**x**).
- If you have selected more than one category, select **Drag** (=) to reorder the categories.

h. If the data elements selected for the **Value** list (step e) represents a numeric or currency value, specify the display format for these values:

i. From the **Decimal Places** list, select the number of decimal places following the decimal point to be used for numeric values. Choices include 0 through 8.

ii. From the **Abbreviations** list, select the abbreviated format to be used for currency values. Choices include: **Auto** (default), **None**, **Thousands (K)**, **Millions (M)**, **Billions (B)**, and **Trillions (T)**.

iii. From the **Currency Options** list, select the currency used by the project/shell. Choices include: **None**, **Shell Currency**, and **Base Currency**.

i. From the **Data Labels** list, select the position for displaying labels on the charts. Choices include:

The following options display:

- **Auto**: The default data label display setting for all types of charts.
- **Center**: The data label displays in the center of each data point on an Area chart, Bar chart or Line chart.
- **Above Marker**: The data label displays above the marker point.
- **Below Marker**: The data label displays below the marker point.
- **Before Marker**: The data label displays before the marker point.
- **After Marker**: The data label displays after the marker point.
- **None**: The data labels do not display on the chart.

j. From the **Orientation** list, select **Vertical** or **Horizontal**.

k. In the **Stacked** field, toggle to hide or display stacked bar charts in the Combo chart.

l. In the **Show Color by Axis Title** field, toggle to hide or display the label of the data element you selected for the X-axis in the **Color By** field (Step f).

m. In the **Show Values Axis Title** field, toggle to hide or display the label of the data element you selected for the Y-axis in the Values list (Step e).

n. Make changes as needed to refine the above selections.

7. After making all changes, perform any of the following actions:

- If you created a Combo chart, select **Create**, and return to the **Edit** page.
- To confirm all the changes made to the edited Combo chart, select **Update**, and return to the **Edit** page.

8. On the **Edit** page, select **Save** to update the visualization with any created or edited content.

Create or Edit Pie Charts and Donut Charts for Visualizations in Projects/Shells

To create or edit Pie charts and Donut charts for visualizations in a project/shell (Admin mode):

1. Sign in to Unifier with project/shell administration credentials.
2. Go to the specific project/shell tab, and switch to **Admin** mode. For example, select a tab called Vision Corporation.
3. In the left Navigator, select **Setup**, and then select **Visualizations**.
4. In the **Visualizations** log (right pane), select any of the following actions:
   - Select **Create** to add a new visualization in the project/shell. Proceed to step 6.
   - Select a visualization in the log, and then select **Edit**. Proceed to step 5.
5. On the **Edit** page, select **Edit** (✎) for a Pie chart or Donut chart in the visualization layout. Proceed to step 6b.
6. On the **Create** or **Edit** page, specify or update the following information:
   a. To preview the data before creating the chart:
      i. From the **Data Source** list, select the data source to use for creating the content item. The list shows published content in the alphabetical order.
      ii. From the **Preview Project** list, select an active project/shell and then click **Preview Data**.
   b. From the **View Type** list, select **Pie Chart**.
   c. In the **Name** field, enter a name for the bubble chart.
   d. In the **Description** field, enter a short description about the bubble chart.
   e. From the **Value** list, select a data element from the data source selected above. Displays **Count** by default.

      For the selected data element in the **Value** list, select any of the following measures:
      - **Average**: The mean of all values of the selected data element.
      - **Count**: (Default) The total number of rows of the selected data element.
      - **Max**: For numeric fields, displays the highest value. For date fields, displays the maximum date.
      - **Median**: The central value among all values of the selected data element.
      - **Min**: For numeric fields, displays the lowest value of the selected data element. For date fields, displays the minimum date.
      - **Sum**: Sum of all values of the selected data element.
   f. After populating the required fields, you can allow your users to explore related data using dynamic content by selecting **More Actions** (**…**) and then selecting **Configure Drill down**.

      For more information, see Configure Drill-down Content for View Types.
   g. From the **Color By** list, select one or more data elements to measure using a color code. Perform any of the following actions:
      - To color-code additional data elements, click **Add Color By**.

- To remove a color code and the associated data element, click **Delete** (**x**).
- If you have selected more than one color code, click **Drag** (=) to reorder the color codes.

h. If the data element selected in the **Value** list (step e) represents a numeric or currency value, specify the display format for these values:

i. From the **Decimal Places** list, select the number of decimal places following the decimal point to be used for numeric values. Choices include 0 through 8.

ii. From the **Abbreviations** list, select the abbreviated format to be used for currency values. Choices include: **Auto** (default), **None**, **Thousands (K)**, **Millions (M)**, **Billions (B)**, and **Trillions (T)**.

iii. From the **Currency Options** list, select the currency used by the project/shell. Choices include: **None**, **Shell Currency**, and **Base Currency**.

i. From the **Data Labels** list, select the location for displaying labels on the bar chart. Choices include:

The following options display:

- **Auto**: The default data label display setting for all types of charts.
- **Center**: The data label displays in the center of each data point on an Area chart, Bar chart or Line chart.
- **Above Marker**: The data label displays above the marker point.
- **Below Marker**: The data label displays below the marker point.
- **Before Marker**: The data label displays before the marker point.
- **After Marker**: The data label displays after the marker point.
- **None**: The data labels do not display in the chart.

j. In the **Donut** field, slide right to display the pie chart shaped as a donut chart.

k. Make changes as needed to refine the above selections.

7. After making all changes, perform any of the following actions:
   - If you created a Pie chart or Donut chart, select **Create**, and return to the **Edit** page.
   - To confirm all the changes made to the edited charts, select **Update**, and return to the **Edit** page.
8. On the **Edit** page, select **Save** to update the visualization with any created or edited content.

Create or Edit Funnel Charts for Visualizations in Projects/Shells

To create or edit Funnel charts for visualizations in a project/shell (Admin mode):

1. Sign in to Unifier with project/shell administration credentials.
2. Go to the specific project/shell tab, and switch to **Admin** mode. For example, select a tab called Vision Corporation.
3. In the left Navigator, select **Setup**, and then select **Visualizations**.
4. In the **Visualizations** log (right pane), select any of the following actions:
   - Select **Create** to add a new visualization in the project/shell. Proceed to step 6.

- Select a visualization in the log, and then select **Edit**. Proceed to step 5.

5. On the **Edit** page, select **Edit** ( )for a Funnel chart in the visualization layout. Proceed to step 6b.
6. On the **Create** or **Edit** page, specify or update the following information:
   a. From the **Preview Data** list, select an active project or shell, and select **Preview Data** to preview the data you can use to create the chart.
   b. To preview the data before creating the chart:
      i. From the **Data Source** list, select the data source to use for creating the content item. The list shows published content in the alphabetical order.
      ii. From the **Preview Project** list, select an active project/shell, and then select **Preview Data**.
   c. From the **View Type** list, select **Funnel Chart**.
   d. In the **Name** field, enter a name for the Funnel chart.
   e. (Optional) In the **Description** field, enter a short description about the Funnel chart.
   f. From the **Value** list, select a data element from the above selected data source to represent the actual value measured in each stage. This is represented by the filled-in area of each horizontal slice in the Funnel chart. Displays **Count** by default.

      For each data element selected in the **Value** list, select any of the following measures:

      - **Average**: The mean of all values of the selected data element.
      - **Count**: (Default) The total number of rows of the selected data element.
      - **Max**: For numeric fields, displays the highest value. For date fields, displays the maximum date.
      - **Median**: The central value among all values of the selected data element.
      - **Min**: For numeric fields, displays the lowest value of the selected data element. For date fields, displays the minimum date.
      - **Sum**: Sum of all values of the selected data element.

   g. After populating the required fields, you can allow your users to explore related data using dynamic content by selecting **More Actions** (**...**) and then selecting **Configure Drill down**.

      For more information, see Configure Drill-down Content for View Types.
   h. From the **Target Value** list, select a data element to represent the goals to be achieved at each stage as a horizontal slice in the Funnel chart.
   i. From the **Color By** list, select a data element to measure using a color-code. A maximum of six colors can be selected for the Funnel chart. Perform any of the following actions:

      - To color-code additional data elements, select **Add Color By**.
      - To remove a color code and the associated data element, select **Delete** (**x**).
      - If you have selected more than one color code, select **Drag** ( ) to reorder the color codes.

   j. h. If the data element selected in the **Value** list (step f) represents a numeric or currency value, specify the display format for these values:
      i. From the **Decimal Places** list, select the number of decimal places following the decimal point to be used for numeric values. Choices include 0 through 8.

ii. From the **Abbreviations** list, select the abbreviated format to be used for currency values. Choices include: **Auto** (default), **None**, **Thousands (K)**, **Millions (M)**, **Billions (B)**, and **Trillions (T)**.

iii. From the **Currency Options** list, select the currency used by the project/shell. Choices include: **None**, **Shell Currency**, and **Base Currency**.

k. From the **Orientation** list, select **Vertical** or **Horizontal**.

l. Make changes as needed to refine the above selections.

7. After making all changes, perform any of the following actions:
   - If you created a Funnel chart, select **Create**, and return to the **Edit** page.
   - To confirm all the changes made to the edited Combo chart, select **Update**, and return to the **Edit** page.
8. On the **Edit** page, select **Save** to update the visualization with any created or edited content.

Create or Edit Gauge Charts for Visualizations in Projects/Shells

To create or edit Gauge charts for visualizations in a project/shell (Admin mode):

1. Sign in to Unifier with project/shell administration credentials.
2. Go to the specific project/shell tab, and switch to **Admin** mode. For example, select a tab called Vision Corporation.
3. In the left Navigator, select **Setup**, and then select **Visualizations**.
4. In the **Visualizations** log (right pane), select any of the following actions:
   - Select **Create** to add a new visualization in the project/shell. Proceed to step 6.
   - Select a visualization in the log, and then select **Edit**. Proceed to step 5.
5. On the **Edit** page, select **Edit** (✎) for a Gauge chart in the visualization layout. Proceed to step 6b.
6. On the **Create** or **Edit** page, specify or update the following information:

   a. To preview the data before creating the chart:

      i. From the **Data Source** list, select the data source to use for creating the content item. The list shows published content in the alphabetical order.

      ii. From the **Preview Project** list, select an active project/shell and then click **Preview Data**.

   b. From the **View Type** list, select **Gauge Chart**.

   c. In the **Name** field, enter a name for the Gauge chart.

   d. (Optional) In the **Description** field, enter a short description about the Gauge chart.

   e. From the **Value** list, select a data element from the data source selected above. Displays **Count** by default.

      For each data element selected in the **Value** list, select any of the following measures:
      - **Average**: The mean of all values of the selected data element.
      - **Count**: (Default) The total number of rows of the selected data element.
      - **Max**: For numeric fields, displays the highest value. For date fields, displays the maximum date.

- **Median**: The central value among all values of the selected data element.
- **Min**: For numeric fields, displays the lowest value of the selected data element. For date fields, displays the minimum date.
- **Sum**: Sum of all values of the selected data element.

f. From the **Target** list, select a data element to use as a measure for targets.

g. In the **Threshold** field, specify a maximum of three thresholds to measure on the Gauge chart. For each threshold specify a range of values and a color code as follows:

i. Click **Add Threshold**.

ii. In the **Min** field, enter a minimum value for the threshold in the range 0 to 100.

iii. In the **Max** field, enter the maximum value for the threshold in the range 0 to 100.

iv. From the **Color** ( ) list, associate a color for each threshold defined.

h. If the data elements selected for the **Value** list (step e) represents a numeric or currency value, specify the display format for these values:

i. From the **Decimal Places** list, select the number of decimal places following the decimal point to be used for numeric values. Choices include 0 through 8.

ii. From the **Abbreviations** list, select the abbreviated format to be used for currency values. Choices include: **Auto** (default), **None**, **Thousands (K)**, **Millions (M)**, **Billions (B)**, and **Trillions (T)**.

iii. From the **Currency Options** list, select the currency used by the project/shell. Choices include: **None**, **Shell Currency**, and **Base Currency**.

i. In the **Shape** field, select the shape of the Gauge chart as **Circle** or **Semi-circle**.

j. Make changes as needed to refine the above selections.

7. After making all changes, perform any of the following actions:
   - If you created a Gauge chart, select **Create**, and return to the **Edit** page.
   - To confirm all the changes made to the edited charts, select **Update**, and return to the **Edit** page.
8. On the **Edit** page, select **Save** to update the visualization with any created or edited content.

Create or Edit KPI Cards for Visualizations in Projects/Shells

Create or edit Key Performance Indicator (KPI) cards to provide various performance metrics of your projects/shells in visualizations. A maximum of eight KPIs can be included in a visualization.

To create or edit KPI cards for visualizations in a project/shell (**Admin** mode):

1. Sign in to Unifier with project/shell administration credentials.
2. Go to the specific project/shell tab, and switch to **Admin** mode. For example, select a tab called Vision Corporation.
3. In the left Navigator, select **Setup**, and then select **Visualizations**.
4. In the **Visualizations** log (right pane), select any of the following actions:
   - Select **Create** to add a new visualization in the project/shell. Proceed to step 6.
   - Select a visualization in the log, and then select **Edit**. Proceed to step 5.

5. On the **Edit** page, select **Edit** ( )for a KPI card in the visualization layout. Proceed to step 6b.
6. On the **Create** or **Edit** page, specify or update the following information:
   a. From the **Preview Data** list, select an active project or shell, and select **Preview Data** to preview the data you can use to create or update the card.
   b. To preview the data before creating the chart:
      i. From the **Data Source** list, select the data source to use for creating the content item. The list shows published content in the alphabetical order.
      ii. From the **Preview Project** list, select an active project/shell and then click **Preview Data**.
   c. From the **View Type** list, select **KPI Card**.
   d. In the **Name** field, enter a name for the KPI card.
   e. (Optional) In the **Description** field, enter a short description about the KPI card.
   f. From the **Value** list, select a data element from the data source selected above. Displays **Count** by default.

      For the selected data element in the **Value** list, select any of the following measures:

      - **Average**: The mean of all values of the selected data element.
      - **Count**: (Default) The total number of rows of the selected data element.
      - **Max**: For numeric fields, displays the highest value. For date fields, displays the maximum date.
      - **Median**: The central value among all values of the selected data element.
      - **Min**: For numeric fields, displays the lowest value of the selected data element. For date fields, displays the minimum date.
      - **Sum**: Sum of all values of the selected data element.

   g. From the **Period** list, select a data element to measure time for the data element selected in the previous step. Select any of the following to further specify the time period:

      - **No Period**: (Default) Does not display a measure of time on the KPI card.
      - **Today**: Displays today's date in the format based on the user's preferences.
      - **Current Month**: Displays the month and the year in the format, MONTH YYYY.
      - **Current Year**: Displays the year on the KPI card in the format, YYYY.
      - **Current Quarter**: Displays the year on the KPI card in the format, Q<#> YYYY.

   h. For KPIs that display currency and amounts, select the display format as follows:
      i. From the **Decimal Places** list, select display format for decimal values from 0 (default) to 8 places. For example, select 2 to display values in *nn.dd* format.
      ii. From the **Abbreviation (Show in thousands, millions etc)** list, select one from the following:

         - **Auto** (default)
         - **None**
         - **Thousands (K)**
         - **Millions (M)**

- **Billions (B)**
- **Trillions (T)**

i. Make changes as needed to refine the above selections.

7. After making all changes, perform any of the following actions:
   - If you created a KPI card, select **Create**, and return to the **Edit** page.
   - To confirm all the changes made to the edited charts, select **Update**, and return to the **Edit** page.
8. On the **Edit** page, select **Save** to update the visualization with any created or edited content.

Create or Edit Pivot Grids for Visualizations in Projects/Shells

To create or edit Pivot grids for visualizations in a project/shell (**Admin** mode):

1. Sign in to Unifier with project/shell administration credentials.
2. Go to the specific project/shell tab, and switch to **Admin** mode. For example, select a tab called Vision Corporation.
3. In the left Navigator, select **Setup**, and then select **Visualizations**.
4. In the **Visualizations** log (right pane), select any of the following actions:
   - Select **Create** to add a new visualization in the project/shell. Proceed to step 6.
   - Select a visualization in the log, and then select **Edit**. Proceed to step 5.
5. On the **Edit** page, select **Edit** ( )for a Pivot grid in the visualization layout. Proceed to step 6b.
6. On the **Create** or **Edit** page, specify or update the following information:
   a. To preview the data before creating the chart:
      i. From the **Data Source** list, select the data source to use for creating the content item. The list shows published content in the alphabetical order.
      ii. From the **Preview Project** list, select an active project/shell and then click **Preview Data**.
   b. From the **View Type** list, select **Pivot Grid**.
   c. In the **Name** field, enter a name for the Pivot grid.
   d. (Optional) In the **Description** field, enter a short description about the Pivot grid.
   e. From the **Value** list, select a data element from the data source selected above. Displays **Count** by default.

      For the selected data element in the **Value** list, select any of the following measures:
      - **Average**: The mean of all values of the selected data element.
      - **Count**: (Default) The total number of rows of the selected data element.
      - **Max**: For numeric fields, displays the highest value. For date fields, displays the maximum date.
      - **Median**: The central value among all values of the selected data element.
      - **Min**: For numeric fields, displays the lowest value of the selected data element. For date fields, displays the minimum date.

- **Sum**: Sum of all values of the selected data element.

f. From the **Columns** list, select a data element to create columns for the Pivot grid.

g. (Optional) To include additional column tiers in the Pivot grid, click **Add Columns**.

h. From the **Rows** list, select a data element to create rows for the Pivot grid.

i. (Optional) Click **Add Rows** to include additional row tiers in the Pivot grid.

j. (Optional) In the **Show Totals** field, toggle to show or hide the column totals in the grid.

k. To visually highlight specific fields in the Pivot Grid, Configure and Manage Conditional Formatting of Tables and Pivot Grids.

l. Make changes as needed to refine the above selections.

7. After making all changes, perform any of the following actions:
   - If you created a Pivot grid, select **Create**, and return to the **Edit** page.
   - To confirm all the changes made to the edited grid, select **Update**, and return to the **Edit** page.
8. On the **Edit** page, select **Save** to update the visualization with any created or edited content.

Create or Edit Pyramid Charts for Visualizations in Projects/Shells

To create or edit Pyramid charts for visualizations in a project/shell (Admin mode):

1. Sign in to Unifier with project/shell administration credentials.
2. Go to the specific project/shell tab, and switch to **Admin** mode. For example, select a tab called Vision Corporation.
3. In the left Navigator, select **Setup**, and then select **Visualizations**.
4. In the **Visualizations** log (right pane), select any of the following actions:
   - Select **Create** to add a new visualization in the project/shell. Proceed to step 6.
   - Select a visualization in the log, and then select **Edit**. Proceed to step 5.
5. On the **Edit** page, select **Edit** (✎) for a Pyramid chart in the visualization layout. Proceed to step 6b.
6. On the **Create** or **Edit** page, specify or update the following information:

   a. To preview the data before creating the chart:

      i. From the **Data Source** list, select the data source to use for creating the content item. The list shows published content in the alphabetical order.

      ii. From the **Preview Project** list, select an active project/shell, and then select **Preview Data**.

   b. From the **View Type** list, select **Pyramid Chart**.

   c. In the **Name** field, enter a name for the Pyramid chart.

   d. (Optional) In the **Description** field, enter a short description about the Pyramid chart.

   e. From the **Value** list, select a data element from the data source selected above. A maximum of three values can be selected for a Pyramid chart. Displays **Count** by default.

For each data element selected in the **Value** list, select any of the following measures:

- **Average**: The mean of all values of the selected data element.
- **Count**: (Default) The total number of rows of the selected data element.
- **Max**: For numeric fields, displays the highest value. For date fields, displays the maximum date.
- **Median**: The central value among all values of the selected data element.
- **Min**: For numeric fields, displays the lowest value of the selected data element. For date fields, displays the minimum date.
- **Sum**: Sum of all values of the selected data element.

f. After populating the required fields, you can allow your users to explore related data using dynamic content by selecting **More Actions** (**...**) and then selecting **Configure Drill down**.

For more information, see Configure Drill-down Content for View Types.

g. From the **Color By** list, select a non-numeric data element to differentiate using a color-code. A maximum of six colors can be added in the chart. Perform any of the following actions:

- To color-code additional data elements, select **Add Color By**.
- To remove a color code and the associated data element, select **Delete** (**x**).
- If you have selected more than one color code, select **Drag** (=) to reorder the color codes.

h. If the data element selected in the **Value** list (step e) represents a numeric or currency value, specify the display format for these values:

i. From the **Decimal Places** list, select the number of decimal places following the decimal point to be used for numeric values. Choices include 0 through 8.

ii. From the **Abbreviations** list, select the abbreviated format to be used for currency values. Choices include: **Auto** (default), **None**, **Thousands (K)**, **Millions (M)**, **Billions (B)**, and **Trillions (T)**.

iii. From the **Currency Options** list, select the currency used by the project/shell. Choices include: **None**, **Shell Currency**, and **Base Currency**.

i. Make changes as needed to refine the above selections.

7. After making all changes, perform any of the following actions:

- If you created a Pyramid chart, select **Create**, and return to the **Edit** page.
- To confirm all the changes made to the edited chart, select **Update**, and return to the **Edit** page.

8. On the **Edit** page, select **Save** to update the visualization with any created or edited content.

Create or Edit Scatter Charts for Visualizations in Projects/Shells

To create or edit Scatter charts for visualizations in a project/shell (Admin mode):

1. Sign in to Unifier with project/shell administration credentials.
2. Go to the specific project/shell tab, and switch to **Admin** mode. For example, select a tab called Vision Corporation.

3. In the left Navigator, select **Setup**, and then select **Visualizations**.
4. In the **Visualizations** log (right pane), select any of the following actions:
   - Select **Create** to add a new visualization in the project/shell. Proceed to step 6.
   - Select a visualization in the log, and then select **Edit**. Proceed to step 5.
5. On the **Edit** page, select **Edit** () for a Scatter chart in the visualization layout. Proceed to step 6b.
6. On the **Create** or **Edit** page, specify or update the following information:
   a. To preview the data before creating the chart:
      i. From the **Data Source** list, select the data source to use for creating the content item. The list shows published content in the alphabetical order.
      ii. From the **Preview Project** list, select an active project/shell, and then select **Preview Data**.
   b. From the **View Type** list, select **Scatter Chart**.
   c. In the **Name** field, enter a name for the Scatter chart.
   d. (Optional) In the **Description** field, enter a short description about the Scatter chart.
   e. From the **Y-Axis** list, select a data element from the data source selected in step 5b. The selected values display as metrics on the y-axis. Displays **Count** by default.

      For the selected data element in the **Values** list, select any of the following measures:
      - **Average**: The mean of all values of the selected data element.
      - **Count**: (Default for non-numeric data elements) The total number of rows of the selected data element.
      - **Max**: For numeric fields, displays the highest value. For date fields, displays the maximum date.
      - **Median**: The central value among all values of the selected data element.
      - **Min**: For numeric fields, displays the lowest value of the selected data element. This measure is not applicable to date fields.
      - **Percentage**: A percent of the filtered value from the total of the selected data element.
      - **Sum**: Sum of all values of the selected data element.
   f. From the **X-Axis** list, select a data element from the data source selected in step 5b. The selected values display as metrics on the y-axis. Displays **Count** by default.

      For the selected data element in the **Values** list, select any of the following measures:
      - **Average**: The mean of all values of the selected data element.
      - **Count**: (Default for non-numeric data elements) The total number of rows of the selected data element.
      - **Max**: For numeric fields, displays the highest value. For date fields, displays the maximum date.
      - **Median**: The central value among all values of the selected data element.
      - **Min**: For numeric fields, displays the lowest value of the selected data element. This measure is not applicable to date fields.
      - **Percentage**: A percent of the filtered value from the total of the selected data element.

- **Sum**: Sum of all values of the selected data element.

g. After populating the required fields, you can allow your users to explore related data using dynamic content by selecting **More Actions** (**...**) and then selecting **Configure Drill down**.

   For more information, see Configure Drill-down Content for View Types.

h. (Optional) From the **Color By** list, select a non-numeric data element to differentiate using a color-code. A maximum of three colors can be added in the chart. Perform any of the following actions:

   - To color-code additional data elements, select **Add Color By**.
   - To remove a color code and the associated data element, select **Delete** (**x**).
   - If you have selected more than one color code, select **Drag** (=) to reorder the color codes.

i. From the **Category** list, select a non-numeric data element to use as a metric on the x-axis. A maximum of three categories can be included on the chart. Perform any of the following actions:

   - To select a data element for the category, select **Add Category** .
   - To remove a category and the associated data element, select **Delete** (**x**).
   - If you have selected more than one category, select **Drag** (=) to reorder the categories.

j. From the **Markers** list, select a data element to associate different shapes with distinct groups to differentiate between data points on the Scatter chart.

   For example, RFIs associated with the Architectural discipline display as diamond shapes whereas Electrical discipline display as squares.

k. If the data elements selected for the **X-Axis** and **Y-Axis** (steps f and g) represent numeric or currency values, specify the display format for these values:

   i. From the **Decimal Places** list, select the number of decimal places following the decimal point to be used for numeric values. Choices include 0 through 8.

   ii. From the **Abbreviations** list, select the abbreviated format to be used for currency values. Choices include: **Auto** (default), **None**, **Thousands (K)**, **Millions (M)**, **Billions (B)**, and **Trillions (T)**.

   iii. From the **Currency Options** list, select the currency used by the project/shell. Choices include: **None**, **Shell Currency**, and **Base Currency**.

l. From the **Data Labels** list, select the location for displaying labels on the Scatter chart.

   Common options are:

   - **Auto**: The default data label display setting for all types of charts.
   - **Center**: The data label displays in the center of an Area chart, Bar chart, or Line chart.
   - **None**: The data labels do not display in the chart.
   - **Above**: The data label displays above the marker point.
   - **Below**: The data label displays below the marker point.
   - **Before**: The data label displays before the marker point.
   - **After**: The data label displays after the marker point.

m. In the **Zoom and Scroll** field, toggle to enable or disable the ability to zoom and scroll the Scatter chart.

n. In the **Show X Axis Title** field, toggle to show or hide the label of the data element selected for the X-axis (See step g).

o. In the **Show Y Axis Title** field, toggle to show or hide the label of the data element selected for the Y-axis (See step f).

p. Make changes as needed to refine the above selections.

7. After making all changes, perform any of the following actions:
   - If you created a Scatter chart, select **Create**, and return to the **Edit** page.
   - To confirm all the changes made to the edited chart, select **Update**, and return to the **Edit** page.
8. On the **Edit** page, select **Save** to update the visualization with any created or edited content.

Create or Edit Tables for Visualizations in Projects/Shells

To create or edit tables for visualizations in a project/shell (Admin mode):

1. Sign in to Unifier with project/shell administration credentials.
2. Go to the specific project/shell tab, and switch to **Admin** mode. For example, select a tab called Vision Corporation.
3. In the left Navigator, select **Setup**, and then select **Visualizations**.
4. In the **Visualizations** log (right pane), select any of the following actions:
   - Select **Create** to add a new visualization in the project/shell. Proceed to step 6.
   - Select a visualization in the log, and then select **Edit**. Proceed to step 5.
5. On the **Edit** page, select **Edit** ( )for a table in the visualization layout. Proceed to step 6b.
6. On the **Create** or **Edit** page, specify or update the following information:

   a. To preview the data before creating the chart:

      i. From the **Data Source** list, select the data source to use for creating the content item. The list shows published content in the alphabetical order.

      ii. From the **Preview Project** list, select an active project/shell and then click **Preview Data**.

   b. From the **View Type** list, select **Table**.

   c. In the **Name** field, enter a name for the table.

   d. (Optional) In the **Description** field, enter a short description about the table.

   e. From the **Columns** list, select a data element to create columns for the table.

   f. (Optional) To include additional columns in the table, click **Add Columns** and select a data element.

   g. From the **Group By** list, select a data element to organize the information based on a specific characteristic. For example, group RFIs based on the RFI reasons.

   h. (Optional) In the **Show Totals** field, toggle to show or hide the column totals in the grid.

i. To visually highlight specific fields in the Pivot Grid, Configure and Manage Conditional Formatting of Tables and Pivot Grids.

j. Make changes as needed to refine the above selections.

7. After making all changes, perform any of the following actions:
   - If you created a table, select **Create**, and return to the **Edit** page.
   - To confirm all the changes made to the edited table, select **Update**, and return to the **Edit** page.
8. On the **Edit** page, select **Save** to update the visualization with any created or edited content.

Create or Edit Timeline Charts for Visualizations in Projects/Shells

To create or edit Timeline charts for visualizations in a project/shell (Admin mode):

1. Sign in to Unifier with project/shell administration credentials.
2. Go to the specific project/shell tab, and switch to **Admin** mode. For example, select a tab called Vision Corporation.
3. In the left Navigator, select **Setup**, and then select **Visualizations**.
4. In the **Visualizations** log (right pane), select any of the following actions:
   - Select **Create** to add a new visualization in the project/shell. Proceed to step 6.
   - Select a visualization in the log, and then select **Edit**. Proceed to step 5.
5. In the **Edit** page, select **Edit** ( )for a Combo chart in the visualization layout. Proceed to step 6b.
6. In the **Create** or **Edit** page, specify or update the following information:
   a. From the **Preview Data** list, select an active project or shell, and select **Preview Data** to preview the data you can use to create the chart.
   b. To preview the data before creating the chart:
      i. From the **Data Source** list, select the data source to use for creating the content item. The list shows published content in the alphabetical order.
      ii. From the **Preview Project** list, select an active project/shell and then click **Preview Data**.
   c. From the **View Type** list, select **Timeline Chart**.
   d. In the **Name** field, enter a name for the Timeline chart.

      > **Note**
      >
      > The combination of **Name** and **View Type** field values must be unique.

   e. (Optional) In the **Description** field, enter a short description about the Timeline chart.
   f. From the **Event Type** list, select **Single Event** (default) or **Duration Event**.
   g. If you chose **Single Event**, from the **Category (Time Axis)**, select a date field that defines the event timeline.
   h. From the **Event Title** list, select a data element that can be used as the title for the timeline event.

i. From the **Event Detail** list, select a maximum of two event details to track in the timeline chart.
   - To add a another event detail, click **Add**.
   - To remove an event detail and its associated data element, click **Delete (x)**.

j. If you chose a **Duration Event**, in the **Event Duration** field, select a date or date/time data element to choose the start date and end date of the duration of the Timeline chart.

k. From the **Color By** list, select a data element to measure using a color-code. To remove a color code and the associated data element, click **Delete** (**x**).

l. If the data element selected in the **Event Detail** field (step h) represents a numeric or currency value, specify the display format for this value:
   i. From the **Decimal Places** list, select the number of decimal places following the decimal point to be used for numeric values. Choices include 0 through 8.
   ii. From the **Abbreviations** list, select the abbreviated format to be used for currency values. Choices include: **Auto** (default), **None**, **Thousands (K)**, **Millions (M)**, **Billions (B)**, and **Trillions (T)**.
   iii. From the **Currency Options** list, select the currency used by the project/shell. Choices include: **None**, **Shell Currency**, and **Base Currency**.

m. From the **Orientation** list, select **Vertical** or **Horizontal** (default).

n. In the **Timeline Overview** field, toggle to hide or display a compressed overview of the entire timeline.

o. In the **Tooltip** field, toggle to hide or display tooltips when you hover over events on the Timeline chart.

p. Make changes as needed to refine the above selections.

7. After making all changes, perform any of the following actions:
   - If you created a table, select **Create**, and return to the **Edit** page.
   - To confirm all the changes made to the edited table, select **Update**, and return to the **Edit** page.
8. On the **Edit** page, select **Save** to update the visualization with any created or edited content.

Edit Content Items in the Visualization Layout

Apart from editing content items you add in the Library, you can edit content items on the visualization layout page.

To edit content items from visualizations in a project/shell (Admin mode):

1. Sign in to Unifier with project/shell administration credentials.
2. Go to the specific project/shell tab, and switch to **Admin** mode. For example, select a tab called Vision Corporation.
3. In the left Navigator, select **Setup**, and then select **Visualizations**.
4. In the **Visualizations** log (right pane), select a visualization, and select **Edit**.
5. On the **Edit** page, select a content item in the visualization layout, and select **Edit** ( ).
6. Make changes to the content item, and then select **Update**.

7. On the **Edit** page, perform any of the following actions:
   - To confirm all the changes made to the visualization, select **Save**.
   - To discontinue the process, select **Cancel** any time.

Configure and Manage Conditional Formatting of Tables and Pivot Grids

Conditional formatting enhances the clarity of data in Table and Pivot Grid views by allowing you to set rules that visually highlight values based on criteria. You can use this to identify trends, outliers, or key metrics through defined formatting styles such as font color, background color, and font style.

Limitations

The following limitations apply:

- Only Table/Pivot Grid view is supported.
- Maximum 5 rules per column, 10 columns with rules, 5 conditions per rule.
- Rule names must be unique. At least one condition and style required.
- Conditional formatting not applicable to charts.
- Columns with rules cannot be removed until rules are deleted.
- Export to PDF retains formatting.

To configure and manage conditional formatting of tables and pivot grids in a project or shell (Admin mode):

1. Sign in to Unifier with project/shell administration credentials.
2. Go to the specific project/shell tab, and switch to **Admin** mode. For example, select a tab called Vision Corporation.
3. In the left Navigator, select **Setup**, and then select **Visualizations**.
4. In the **Visualizations** log (right pane), select any of the following actions:
   - Select **Create** to add a new Table or Pivot Grid visualization in the project/shell.
   - Select a Table or Pivot Grid visualization with a *Draft* status in the log, and then select **Edit**.
5. From the **More Actions** (•••) menu, select **Conditional Formatting**.
6. In the **Conditional Formatting** drawer, select **Add** to create a new rule by specifying a maximum of 5 conditions:
   a. (Required) In the **Rule Name** field, enter a unique rule name, a maximum length of 60 characters.
   b. (Required) From the **Column** list, select a data element on which the rule will be applied.

      For Tables, select a data field for a column.

      For Pivot Grids, select a data field for a column, row, or value.
   c. In the **Condition Builder** block, to define at least one condition:
      i. Select **Any** (to apply any one condition) or **All** (to apply all conditions), and then select **Add** (+).

ii. (Required) From the **Data Element** list, select a data element to create a condition.

iii. (Required) From the **Condition** list, select a condition to apply on the selected data element such as **Contains**, **Does not contain**, **Is empty**, or **Is not empty**.

iv. (Required) From the **Value** list, enter a value that needs to be satisfied by the condition.

v. To add another condition, repeat the previous steps.

vi. To discard a specific condition or a group of conditions, select **Delete** ( ).

vii. Select any or all formatting options such as bold, italic, underline, strikethrough, text color, or background color.

viii. Preview and adjust the formatting as required, and then perform any of the following actions:

- To add more rules, select **Create and Close** or **Create and Next**. Rules created for the same data element selected in the **Column** list are grouped together.
- To discard the condition, select **Cancel**.

When multiple rules are specified, the Conditional Formatting drawer groups the rules by Column or Row.

7. After creating rules, perform any of the following actions from the **Actions** (•••) menu:
   - To edit a rule, select **Edit**.
   - To discard the rule, select **Remove**.
8. To reorder the rules, select **Drag**( ).Update visualizations in project shells as needed, retaining all applicable formatting.
9. For existing shells, you can update the templates and push new or modified rules to project or shell visualizations.

Configure Drill-down Content for View Types

To provide your users with a rich interactive content experience, you can configure drill-down options that enable your users to explore related data from within the current context of a view type (chart).

The drill-down menu can be configured for the following view types:

- Bar charts
- Bubble charts
- Funnel charts
- Pie charts
- Scatter charts
- Pyramid charts

Prerequisites
You have the required permissions to create and manage the Visualizations **Content** log from the **Company Workspace** tab or modify content in the Visualizations **Setup** node of a project/ shell.

To configure drill-down content for the above view types

1. Sign in with company administration or project/shell administration credentials, and switch to **Admin** mode.
2. In the left Navigator, select any of the following nodes:
   - Select **Company Workspace** tab, select **Visualizations**, and then select **Content** log
   - Select a targeted project/shell tab, select **Setup**, and then select **Visualizations**.
3. In the **Content** log (right pane), create or edit a visualization.
   - If you chose to create a visualization, enter the required information on the **Create** page.
   - If you chose to edit a visualization, select a content item in the visualization layout, such as a Bar Chart or a Pie chart.
4. From the **More Actions** (**...**) menu of the selected content item, and then select **Configure drill-down**.
5. On the **Configure Drill Down** page:
   a. Select **+ Add Level** to create a drill-down level.

      You can create a maximum of six nested-levels of drill-down content.

   b. For each level, enter the following information:
      i. To create from an existing drill-down configuration, from the **Copy from Existing Content** list, select published content from the same data source.
      ii. Use this option to quickly create by copying existing drill-down configurations.
      iii. From the **View Type** list, select any of the following:
         - Bar chart
         - Bubble chart
         - Funnel chart
         - Pie chart
         - Scatter chart
         - Pyramid chart

         > **Note**
         >
         > If you select Table or Pivot grid, you cannot add any more levels. Therefore, ensure it is the final level in the drill-down configuration. Also, conditional formatting in Pivot Grid and Table view is not supported for drill-down content.

      iv. In the **Name** field, enter a name for the selected chart.
      v. Complete the remaining information as outlined in the Create or Update Content for Data Visualizations or Create or Edit Visualization Content Items in Projects/Shells for each of the above charts.
      vi. Select **Create**.
   c. For additional drill-down levels, repeat the above sequence as needed.
   d. To finalize the drill-down levels, perform any of the following actions:
      - To reorder the drill-down sequence, select **Drag** (

=

).

- To delete a drill-down level, select **Remove** (

)
- To remove all drill-down levels, select the checkbox displaying the total number of items.
- To preview the drill-down configuration before publishing, from the **More Actions** (**...**) menu, select **Preview Drilldown**.
- To return to the visualization, select **Back to Main Content**.

Remove Content Items From Visualizations in Projects/Shells

You can remove content items from the visualization layout as needed.

To remove content items from visualizations in a project/shell (Admin mode):

1. Sign in to Unifier with project/shell administration credentials.
2. Go to the specific project/shell tab, and switch to **Admin** mode. For example, select a tab called Vision Corporation.
3. In the left Navigator, select **Setup**, and then select **Visualizations**.
4. In the **Visualizations** log (right pane), select a visualization, and select **Edit**.
5. On the **Edit** page, select a content item in the visualization layout, and select **Remove** ().

Edit Visualizations in Projects/Shells

To edit visualizations in a project/shell (Admin mode):

1. Sign in to Unifier with project/shell administration credentials.
2. Go to the specific project/shell tab, and switch to **Admin** mode. For example, select a tab called Vision Corporation.
3. In the left Navigator, select **Setup**, and then select **Visualizations**.
4. In the **Visualizations** log (right pane), select a visualization.
5. In the visualization layout page, select **Edit**.
6. Perform any of the following actions to modify the visualization:
   - Add content items from the visualization layout. See Create Visualizations in Projects/Shells (step 9).
   - Remove content items from the visualization layout. See Remove Content Items From Visualizations in Projects/Shells
   - Create additional content items for use in visualizations. See Create or Edit Visualization Content Items in Projects/Shells.

- Select another layout for the visualization from the **Layout** tab.

7. To add one or more tabs, select **Add new tab** (+), adjacent to the **Default** or a renamed tab, and repeat the previous step in each tab. Tab names cannot exceed a maximum of 120 characters.
   - Add, remove, or update a maximum of 15 tabs with layout and content,
   - Select a different layout in each tab.
   - Drag and reorder the tab sequence.
   - Set up independent filters for each tab.
   - Select **Save** to save changes across all tabs.
8. Make changes as needed to refine the above selections.
9. Perform any of the following actions to finish editing:
   - To save all the changes made to the visualization, select **Save**, and return to the **Visualizations** log.
   - To discontinue editing the visualization, select **Cancel** at any time. All unsaved changes will be lost.

Duplicate Visualizations in Projects/Shells

Project/Shell Administrators can efficiently create visualizations by duplicating current visualizations and then modifying each as needed in the Visualizations log of projects/shells they have access to.

You must have the Setup permission enabled for visualizations in the specific project/shell to perform this task.

To duplicate visualizations from the Visualizations log of a project/shell:

1. Sign in to Unifier with project/shell administration credentials.
2. Go to the specific project/shell tab, and switch to **Admin** mode. For example, select a tab called Vision Corporation.
3. In the left Navigator, select **Setup**, and then select **Visualizations**.
4. In the **Visualizations** log (right pane), select the checkbox adjacent to the **Name** of a visualization you want to copy, and then select **Duplicate**.

   The name of the duplicate visualization is suffixed with "_Copy1". For example, RFI Summary Report_Copy1.

Delete Visualizations in Projects/Shells

Project/Shell Administrators can delete visualizations from the Visualizations log of projects/shells they have access to.

You must have the Setup permission enabled for visualizations in the specific project/shell to perform this task.

To delete visualizations from the Visualizations log of a project/shell:

1. Sign in to Unifier with project/shell administration credentials.

2. Go to the specific project/shell tab, and switch to **Admin** mode. For example, select a tab called Vision Corporation.
3. In the left Navigator, select **Setup**, and then select **Visualizations**.
4. In the **Visualizations** log (right pane), select the checkbox adjacent to the **Name** of a visualization you want to delete, and then select **Delete**.
5. In the **Delete Item(s)** confirmation dialog box, select **Delete**.

Edit Visualization Properties

Project/Shell Administrators can edit visualizations from the Visualizations log of projects/shells they have access to.

You must have the Manage permission enabled for visualizations in the specific project/shell to perform this task.

To edit visualizations from the Visualizations log of a project/shell:

1. Sign in to Unifier with project/shell administration credentials.
2. Go to the specific project/shell tab, and switch to **Admin** mode. For example, select a tab called Vision Corporation.
3. In the left Navigator, select **Setup**, and then select **Visualizations**.
4. In the **Visualizations** log (right pane), from the **Action** (⋮) menu, select **Edit Properties** for a visualization.
5. In the **Edit Properties** drawer, edit the following information for the selected visualization:
   - **Name**: Name of the visualization. For example, a visualization called *RFI Summary*.
   - **Description**: (Optional) A short description of the visualization.
   - **Location**: (Optional) The location of the visualization in the left Navigator. For example, select **Document Issues** to display the **Visualizations** node under the Document Issues business process (BP) in the **User** mode.
     (Default) If a location is not specified, the visualization displays in the **Visualization** log of the project/shell in the **User** mode.
6. Perform any of the following actions:
   - To save the information modified above, select **Update**.
   - To discontinue editing the properties, select **Cancel**, and return to the **Visualization** log.

Manage User/Group Permissions for Specific Visualizations

Project/Shell Administrators are the default owners for visualizations they create in a project/shells. By default, they have all permissions on those visualizations. Their permissions on those visualizations cannot be modified or revoked. As the owner of each visualization, they can specify users and groups who can receive access to their visualizations and the level of access for each user/group.

For example, if you are the creator and owner (by default) of the **RFI Summary** visualization. You can give the following permissions to two groups to access this visualization:

- Set up a Business Executives group with **View** permission
- Set up supplementary Project/Shell Administrators with **Modify** permission
- As the visualization owner, you have all permissions by default:
  - **Manage Content**: You can edit visualizations in a project/shell by creating content and modifying existing content. By default, you also get modify and view permissions in the Admin mode.
  - **Modify**: You can edit visualizations in a project/shell by modifying only the displayed content. By default, you also get view permission in the Admin mode.
  - **View (Default)**: You can only view visualizations in a project/shell in the Admin mode.

The following visualization tasks can be performed by users and groups assigned with each permission:

Visualization Tasks	Manage Content Permission	Modify Permission	View Permission
View visualizations	Yes	Yes	Yes
Edit visualizations	Yes	Yes	No
Modify visualization layout and rearrange content items	Yes	Yes	No
Add content items from the content library	Yes	Yes	No
Create and edit content items in the content library	Yes	No	No
Remove content items from the library	Yes	No	No
Edit content items in the layout	Yes	Yes	No
Remove content items from the layout	Yes	Yes	No
Conditional Formatting of Table and Pivot Grids	Yes	No	No

Add Users and Groups For Specific Visualizations

Project/Shell Administrators can add users and groups to a project/shell from the Permissions page.

You must be the owner of the visualization or have the Manage permission enabled for visualizations in the project/shell to perform this task.

To add project/shell-level users and groups for specific visualizations:

1. Sign in to Unifier with shell administration credentials.
2. Go to the specific project/shell tab, and switch to **Admin** mode. For example, select a tab called Vision Corporation.
3. In the left Navigator, select **Setup**, and then select **Visualizations**.
4. In the **Visualizations** log (right pane), from the **Action** (⋮) menu, select **Permissions** for a visualization.
5. In the **Permissions** page, select **Add User or Group**.

6. In the **Add users and groups** drawer:
   a. Select the **Users** tab or **Groups** tab to view a corresponding list of users and groups that can be added to this project/shell.

      Alternatively, in the **Search** bar, you can type a search text and press **Enter** on your keyboard to locate users and groups that meet your search criteria.

   b. (Groups only) Select **Member Details** (**>**) to view the members in a group, or select **Sort By** to alphabetically sort the groups by **Name** or **Description**.

   c. Select one or more users or groups by selecting the checkbox adjacent to the **Name** field of each user and group.

      To select all users and groups, select the checkbox for the total user or group count. For example, select the checkbox for **35 items**.

   d. Select any of the following buttons:
      - Select **Add** to add the selected users and groups with access to visualizations in the project/shell.
      - Select **Cancel** to discontinue adding users and groups in the project/shell and return to the **Permissions** page.

7. In the **Permissions** page, select the following permissions for each user and group:
   - **Manage Content**: Select this permission to include additional visualization administrators in a project/shell. By default, they also get **Modify** and **View** permissions.
   - **Modify**: Select this permission to add users and groups who can edit visualizations created in a project/shell. By default, they also get the **View** permission.
   - **View (Default)**: Select this permission to add users and groups who can only view visualizations in a project/shell.

8. Select **Save** to add the selected users to the project/shell, and return to the **Visualizations** log.

Remove Users and Groups From Specific Visualizations

Project/Shell Administrators can remove users and groups from accessing specific visualizations available in a project/shell from the **Permissions** page.

> **Note**
>
> Contact your Company Administrator if you do not see users who should be included in a project/shell.

You must be the owner of the visualization or have the Manage permission enabled for visualizations in the specific project/shell to perform this task.

To remove shell-level users and groups from accessing specific visualizations:

1. Sign in to Unifier with project/shell administration credentials.
2. Go to the specific project/shell tab, and switch to **Admin** mode. For example, select a tab called Vision Corporation.

3. In the left Navigator, select **Setup**, and then select **Visualizations**.
4. For a visualization in the **Visualizations** log (right pane), from the **Action** (⋮) menu, select **Permissions**.
5. In the **Permissions** page, select one or more users and groups by selecting the checkbox adjacent to the **Name** field of each user/group, and then select **Remove**.
6. In the **Remove Permissions** dialog box, select **Confirm** to proceed with the removal process, or select **Cancel** if you want to discontinue removing users and groups.
7. Select **Save**, and return to the **Visualizations** log.

Use Bulk Actions to Manage Permissions of Users and Groups For Specific Visualizations

The Bulk Actions menu on the Permissions page enables you to efficiently manage permissions for a large number of users and groups. You can add, remove, or update shell-level permissions for users and groups. For example, use the Bulk Actions menu options when you need to set visualization permissions for 75 users and 15 groups in a project/shell.

You must be the owner of the visualization or have the Manage permission enabled for visualizations in the specific project/shell to perform this task.

To set visualization permissions for project/shell-level users and groups in bulk:

1. Sign in to Unifier with project/shell administration credentials.
2. Go to the specific project/shell tab, and switch to **Admin** mode. For example, select a tab called Vision Corporation.
3. In the left Navigator, select **Setup**, and then select **Visualizations**.
4. In the **Visualizations** log (right pane), from the **Action** (⋮) menu, select **Permissions** for a visualization.
5. In the **Permissions** page, select the checkbox adjacent to the **User or Group Name** field for one or more users and groups.

> **Note**
>
> Select only those users and groups for whom you want to set a specific permission.

6. From the **Bulk Actions** menu, select any of the following menu options:
   - **Disable Manage Content**: Removes the **Manage Content** permission for users and groups selected in the previous step.
   - **Disable Modify**: Removes the **Modify** permission for users and groups selected in the previous step.
   - **Enable Manage Content**: Adds the **Manage Content** permission for users and groups selected in the previous step.
   - **Enable Modify**: Adds the **Modify** permission for users and groups selected in the previous step.
   - **Reset to Default**: Sets the permission to only **View**.

7. Select any of the following buttons to complete the task:
   - Select **Save** to confirm the permissions set for users and groups for this visualization, and return to the **Visualizations** log.
   - Select **Cancel** to discontinue this procedure, and return to the **Visualizations** log.

View and Export the Visualizations Audit Log From Projects/Shells

The Audit Log displays a chronological list of actions performed on visualizations by all users/groups in the Visualizations log of a project/shell. Project/Shell Administrators can view or download the audit log.

You must have Modify or Manage permissions enabled for visualizations in the specific project/shell to perform this task.

To view and download the audit log of visualizations from a project/shell:

1. Sign in to Unifier with project/shell administration credentials.
2. Go to the specific project/shell tab, and switch to **Admin** mode. For example, select a tab called Vision Corporation.
3. In the left Navigator, select **Setup**, and then select **Visualizations**.
4. In the **Visualizations** log (right pane), from the **Action** menu, select **Audit Log**.
   - **Modified**: Date and time each change was made in the data source. The date and time format is based on the user's preferences.
   - **Action**: Type of change made to visualizations, such as, **Created**, **Added**, **Removed**, **Updated**, **Duplicate**, and so on.
   - **Modified By**: Name of the user who made the change in the data source.
5. To view the displayed column information in the ascending or descending order, select **Sort By**.
6. To download the audit log as a Microsoft Excel spreadsheet, select **Export** ( ) .

3

Appendix

How Data Caching Works in Unifier

Review the following information to learn more about the benefits of data caching.

What is caching?

Caching is a performance optimization technique where system-generated query results are stored temporarily, so users can access data faster without running live queries every time.

How can it be enabled in Unifier data sources?

In Unifier, caching helps improve the responsiveness of visualizations that are based on business process (BP) records, cash flows, and CBS cost sheets. Enabling caching for these data sources will improve performance and reduce the load on real-time data retrieval.

Caching allows users to quickly access data for visualizations without waiting for live queries to run every time, making visualization content more responsive and user-friendly.

> **Note**
>
> Caching is available only for BP, cash flow, and CBS cost sheet data sources. Data views will not have caching enabled.

Why is caching provided or why enable caching?

It is recommended to enable caching to:

- Improve performance of visualizations by reducing query time
- Minimize system load and avoid unnecessary real-time queries for data that does not frequently change
- Provide faster user experience for content that is reviewed periodically rather than in real-time

How does caching work?

When caching is enabled for a data source, Unifier temporarily stores query results. When a visualization requests the same data, Unifier retrieves it from cache instead of re-executing the query.

How often is cached data refreshed?

Cached data is automatically refreshed every 4 hours after cache creation. Cache is created when a data source is published. This refresh ensures data is relatively current while optimizing performance.

> **Note**
>
> Based on system load , available resources and number of caches being refreshed or created in parallel, the exact time of refresh could be few minutes more from the scheduled 4 hours.

Benefits of caching

- Faster load times for dashboards and visualizations
- Reduced system load from frequent or repetitive queries
- Better user experience for content that does not require real-time updates

When to use cached data?

Caching is ideal for visualizations where:

- Data does not change frequently (for example, daily/weekly reviews)
- Content used to track overall trends or statuses, not real-time activities
- Users want quick access high-level data without waiting for live refresh.(periodical)

Examples of good use cases for cached data:

- Monthly or weekly project status dashboards
- Reports on cumulative transactions or approvals

Supported Data Element Sources for Business Processes

When you are in the process of creating a data source for visualizations, the following sources are supported for each business process in the Data Elements: Select Data Elements for the Data Source section .

Supported Business Process	Sources for Selecting Data Elements Include...
Simple BP	• Main Form • Workflow • Reference Pickers: BP Picker, Activity Picker, BP Data Picker, User Data picker, Shell Data Picker, and Line item Data Pickers • Attachments • Comments • Markups • Shell • Company • BP creators • All the pickers and BP creators and its reference pickers, and so on Refer to the UDR sources for Simple BPs to get exact sources shown in data elements.

Supported Business Process	Sources for Selecting Data Elements Include...
Shell Information	• Shell Information • Company • Shell • Shell/<Shell Type> • Shell/ <Single record BP name> • Shell/ <Shell Type> /<Reference Pickers like BP Picker, BP Data picker, Shell data pickers, user data pickers, Activity Pickers and so on> • Company • Shell/<Shell hierarchy>/<shell type> • Shell/<Shell hierarchy>/<shell type>/ <Reference Pickers like BP Picker, BP Data picker, Shell data pickers, user data pickers, Activity Pickers, and so on> Refer to the UDR sources for Shell Information data type to get exact sources shown in data elements.
Cost Business Process (Lineitem with CBS Code) - Generic classification	• Upper Form • Line items • Attachments • Comments • Linked records • Shell • Company • Workflow • CBS attributes • CBS Code related sources cost sheet • CBS Code related sources in base currency • CBS Code related sources in shell currency Refer to the UDR for the entire sources list.
Cost Business Process (Lineitem with CBS Code) - Transfer Classification	• Upper Form • Line items • Attachments • Comments • Linked records • Shell • Company • Workflow • CBS attributes • CBS Code related sources cost sheet • CBS Code related sources in base currency • CBS Code related sources in shell currency • Change commit with a reference commit Upper Form as source • Relevant SOV Sheet sources for the selected contract • QBT Upper Form record level data elements • BP Data Pickers • Line item data pickers • Activity pickers Refer to the UDR for entire sources list.

Supported Business Process	Sources for Selecting Data Elements Include...
Cost Business Process (Lineitem with CBS Code) - Base Commit Classification	• Upper Form • Line items • Attachments • Comments • Linked records • Shell • Company • Workflow • CBS attributes • CBS Code related sources cost sheet • CBS Code related sources in base currency • CBS Code related sources in shell currency • Change commit with a reference commit Upper Form as source • Relevant SOV Sheet sources for the selected contract • QBT Upper Form record level data elements • BP Data Pickers • Line item data pickers • Activity pickers Refer to the UDR for entire sources list.
Cost Business Process (Lineitem with CBS Code) - Change Commit Classification	• Upper Form • Line items • Attachments • Comments • Linked records • Shell • Company • Workflow • CBS attributes • CBS Code related sources cost sheet • CBS Code related sources in base currency • CBS Code related sources in shell currency • Change commit with a reference commit Upper Form as source • Relevant SOV Sheet sources for the selected contract • QBT Upper Form record level data elements • BP Data Pickers • Line item data pickers • Activity pickers Refer to the UDR for entire sources list.

Supported Business Process	Sources for Selecting Data Elements Include...
Cost Business Process (Lineitem with CBS Code) - General Spends Classification	• Upper Form • Line items • Attachments • Comments • Linked records • Shell • Company • Workflow • CBS attributes • CBS Code related sources cost sheet • CBS Code related sources in base currency • CBS Code related sources in shell currency • Reference commit Upper Form as source • QBT Upper Form record level data elements • BP Data Pickers • Line item data pickers • Activity pickers
Cost Business Process (Lineitem with CBS Code) - Payment Applications Classification	• Upper Form • Line items • Attachments • Comments • Linked records • Shell • Company • Workflow • CBS attributes • CBS Code related sources cost sheet • CBS Code related sources in base currency • CBS Code related sources in shell currency • Reference Commit sources • All data pickers data sources • All relevant SOV data sources

Supported Functions for Calculated Elements

The following functions are supported for calculated elements by the Data Source Creation Guided Process for visualizations:

String Functions

The following string functions can be used to create Calculated Elements:

Function Name	Description	Syntax	Example
uppercase	Converts an array of strings to uppercase and concatenates them into one string.	uppercase(string1)	uppercase("hello", "world") returns "HELLOWORLD"

Function Name	Description	Syntax	Example
lowercase	Converts an array of strings to lowercase and concatenates them into one string.	lowercase(string1)	lowercase("HELLO", "WORLD") returns "helloworld"
concatenate	Concatenates an array of strings into a single string.	concatenate(string1, string2, ...stringN)	concatenate("hello", " ", "world") returns "hello world"
concat	Concatenates two strings into a single string.	concat(string1, string2)	concat("hello", "world") returns "helloworld"
substr	Extracts a substring from the given string starting at the specified position and optionally ending at the specified position.	substr(string, startIndex, endIndex)	substr("hello world", 0, 5) returns "hello"
size	Returns the length of the given string.	size(string)	size("hello") returns 5
strip	Removes leading and trailing whitespace from the given string.	strip(string)	strip(" hello world ") returns "hello world"

Mathematical Functions

The following mathematical functions can be used to create Calculated Elements:

Function Name	Description	Syntax	Example
round	Rounds a number to the specified number of decimal places.	round(number, precision)	round(3.14159, 2) returns "3.14"
ceil	Rounds a number upwards to the nearest integer with the specified number of decimal places.	ceil(number)	ceil(3.14159) returns "4"
floor	Rounds a number downwards to the nearest integer with the specified number of decimal places.	floor(number)	floor(3.14159) returns "3"
add	Adds a series of numbers together.	add(number1, number2)	add("1", "2", "3") returns "6"
multiply	Multiplies a series of numbers together.	multiply(number1, number2)	multiply("2", "3", "4") returns "24"
subtract	Subtracts a series of numbers from the first number.	subtract(number1, number2)	subtract("10", "3", "2") returns "5"
divide	Divides the first number by the product of the rest of the numbers.	divide(number1, number2)	divide("10", "2", "2") returns "2.5"
pow	Raises the first number to the power of the second number.	pow(base, exponent)	pow("2", "3") returns "8"
max	Returns the maximum value from an array of numbers.	max(number1, number2, ...numberN)	max("1", "3", "2") returns "3"

Function Name	Description	Syntax	Example
min	Returns the minimum value from an array of numbers.	min(number1, number2, ...numberN)	min("1", "3", "2") returns "1"

Comparison Functions

The following comparison functions can be used to create Calculated Elements:

Function Name	Description	Syntax	Example
lt	Checks if the first value is less than the second value.	lt(value1, value2)	lt("2", "3") returns "1" (true)
lte	Checks if the first value is less than or equal to the second value.	lte(value1, value2)	lte("2", "3") returns "1" (true)
eq	Checks if the first value is equal to the second value.	eq(value1, value2)	eq("2", "2") returns "1" (true)
gte	Checks if the first value is greater than or equal to the second value.	gte(value1, value2)	gte("3", "2") returns "1" (true)
gt	gt: Checks if the first value is greater than the second value.	gt(value1, value2)	gt("3", "2") returns "1" (true)

Date Functions

The following date functions can be used to create Calculated Elements:

Function Name	Description	Syntax	Example
date	Extracts the day of the month from a given date string.	date(date)	date("2024-11-06") returns "6"
month	Extracts the month (0-11) from a given date string.	month(date)	month("2024-11-06") returns "10"
year	Extracts the year from a given date string.	year(date)	year("2024-11-06") returns "2024"
datediff	Calculates the difference between two dates in milliseconds.	datediff(date1, date2)	datediff("2024-11-06", "2024-11-05") returns "86400000"
dateadd	Adds a specified number of days to a date.	dateadd(date, days)	dateadd("2024-11-06", "5") returns "2024-11-11"
quarter	Returns the quarter (1-4) of the year for the given date.	quarter(date)	quarter("2024-12-16") returns 4
day	Returns the day of the month for the given date.	day(date)	day("2024-12-16") returns 16
weekday	Returns the day of the week (0-6) for the given date, where 0 is Sunday.	weekday(date)	weekday("2024-12-16") returns Monday
hour	Returns the hour (0-23) of the day for the given date.	hour(date)	hour("2024-12-16T15:30:00Z") returns 15
minute	Returns the minute (0-59) of the hour for the given date.	minute(date)	minute("2024-12-16T15:30:00Z") returns 30

Conditional Function

The following conditional function can be used to create Calculated Elements:

Function Name	Description	Syntax	Example
if	Returns a value based on a condition. If the first parameter is truthy, return the second parameter; otherwise, return the third parameter.	if(condition, valueIfTrue, valueIfFalse)	if(1==2, "Yes", "No") returns "No"

Special Functions

The following special functions can be used to create Calculated Elements:

Function Name	Description	Syntax	Example
today	Gets today's date with time as 00:00:00.	today()	today() returns the current date
now	Gets today's date with current time.	now()	now() returns the current date and time

Supported Conditions for Data Types

The following type of conditions are supported for specific data types of data elements by the Data Source Creation Guided Process for visualizations:

This Condition...	Supports the Data Type...
After	Date
Before	Date
Contains	String
Does not contain	String
Is empty	String, Date
Is not empty	String, Date
Is	Double, String, Integer, Boolean
Is not	Double, String, Integer, Boolean
Less than	Double, Integer
Less than or equal to	Double, Integer
More than	Double, Integer
More than or equal to	Double, Integer
On	Date
On or after	Date
On or before	Date
Not on	Date
Between	Double, Date, Integer
Not between	Double, Date, Integer