Oracle® APEX

End User's Guide

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Diversity and Inclusion

Oracle is fully committed to diversity and inclusion. Oracle respects and values having a diverse workforce that increases thought leadership and innovation. As part of our initiative to build a more inclusive culture that positively impacts our employees, customers, and partners, we are working to remove insensitive terms from our products and documentation. We are also mindful of the necessity to maintain compatibility with our customers' existing technologies and the need to ensure continuity of service as Oracle's offerings and industry standards evolve. Because of these technical constraints, our effort to remove insensitive terms is ongoing and will take time and external cooperation.

Preface

Oracle APEX End User’s Guide offers an introduction to using Oracle APEX applications from an end user's perspective. This guide explains how to use interactive grids and interactive reports.

- Audience
- Documentation Accessibility
- Related Documents
- Conventions

Audience

Oracle APEX End User’s Guide is intended for end users who are running Oracle APEX applications. To use this guide, you must have a general understanding of relational database concepts and an understanding of the operating system environment under which you are running APEX.

Documentation Accessibility

For information about Oracle's commitment to accessibility, visit the Oracle Accessibility Program website at http://www.oracle.com/pls/topic/lookup?ctx=acc&id=docacc.

Access to Oracle Support

Oracle customers that have purchased support have access to electronic support through My Oracle Support. For information, visit http://www.oracle.com/pls/topic/lookup?ctx=acc&id=info or visit http://www.oracle.com/pls/topic/lookup?ctx=acc&id=trs if you are hearing impaired.

Related Documents

For more information, see these Oracle resources:

- *Oracle APEX Release Notes*
- *Oracle APEX Installation Guide*
- *Oracle APEX App Builder User’s Guide*
- *Oracle APEX Administration Guide*
- *Oracle APEX SQL Workshop Guide*
- *Oracle APEX API Reference*
- *Oracle APEX Accessibility Guide*

Conventions

The following text conventions are used in this document:

Convention	Meaning
boldface	Boldface type indicates graphical user interface elements associated with an action, or terms defined in text or the glossary.
italic	Italic type indicates book titles, emphasis, or placeholder variables for which you supply particular values.
`monospace`	Monospace type indicates commands within a paragraph, URLs, code in examples, text that appears on the screen, or text that you enter.

1 Changes in Release 23.2 for *Oracle APEX End User's Guide*

All content in *Oracle APEX End User's Guide* has been updated to reflect release 23.2 functionality and user interface changes.

New Features and Updates

New features include:

- **Workflows -** Use workflows in applications to automate business processes, and monitor workflow instances through a workflow console page. For more details, see Using Workflows.
- **Action Tasks -** Use action tasks to complete evaluations, confirm information, or complete any other task that does not require an approval or rejection. For more details, see Using Tasks.

Deprecated and Desupported Features

See Deprecated Features and Desupported Features in *Oracle APEX Release Notes*.

2

About Oracle APEX

Oracle APEX is a rapid web application development tool for the Oracle Database.

- Browser Requirements
  Oracle APEX requires a JavaScript-enabled browser and supports the current and prior major release of Google Chrome, Mozilla Firefox, Apple Safari, and Microsoft Edge.
- About Oracle APEX
  Oracle APEX is a rapid web application development platform for the Oracle Database.
- About Database Applications
  A database application is an interactive user interface (UI) that enables you to display, add, update, or delete information stored in a local Oracle Database or an external data source using REST-based APIs. A database application can display information in many formats, including static and interactive reports, forms, charts, and interactive grids.

> **See Also:**
>
> Quick Start in *Oracle APEX App Builder User's Guide*

2.1 Browser Requirements

Oracle APEX requires a JavaScript-enabled browser and supports the current and prior major release of Google Chrome, Mozilla Firefox, Apple Safari, and Microsoft Edge.

2.2 About Oracle APEX

Oracle APEX is a rapid web application development platform for the Oracle Database.

Developers assemble an HTML interface (or **application**) on top of database objects with wizards or direct input. Each application is a collection of linked pages using tabs, buttons, or hypertext links.

You can manage, manipulate, and display the data in a local Oracle Database or an external data source using REST-based APIs.

2.3 About Database Applications

A database application is an interactive user interface (UI) that enables you to display, add, update, or delete information stored in a local Oracle Database or an external data source using REST-based APIs. A database application can display information in many formats, including static and interactive reports, forms, charts, and interactive grids.

This guide explains how you can customize interactive grids and interactive reports. In an interactive grid or interactive report, you can customize the appearance of report data through searching, filtering, sorting, column selection, highlighting, and other data manipulations. You can save your customizations in the application or, depending on the developer’s configuration, you can also download reports locally for offline use.

3

Using Interactive Grids

An interactive grid presents a set of data in a searchable, customizable report. In an editable interactive grid, users can also add to, modify, and delete the data set directly on the page.

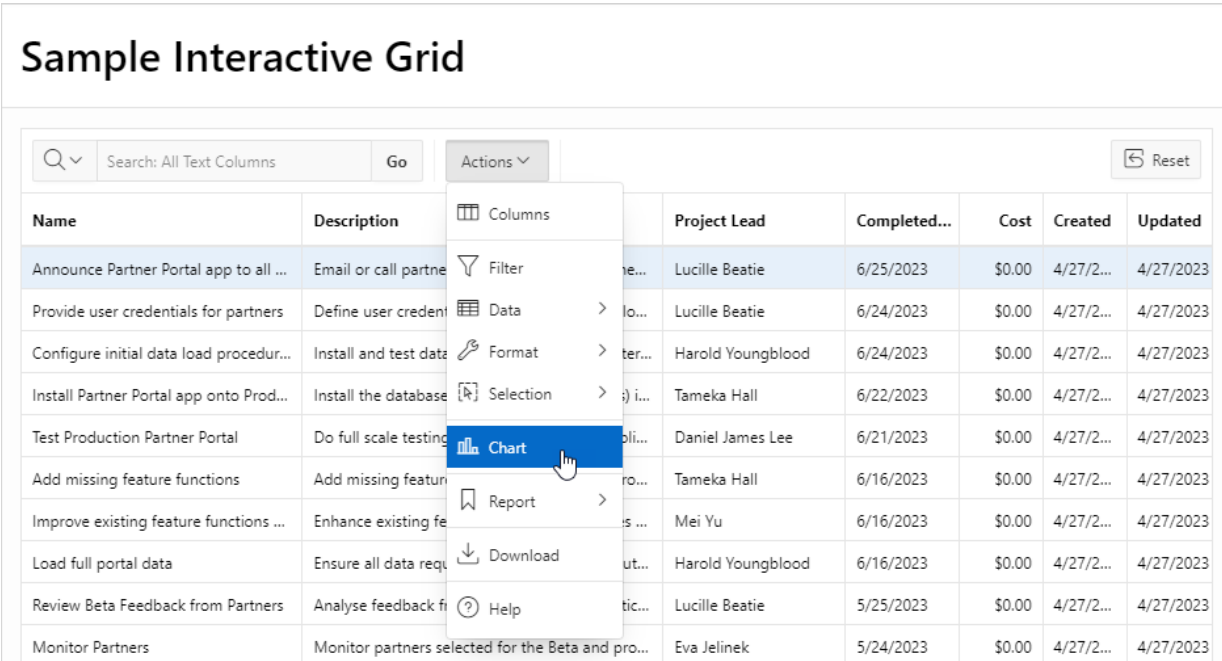
- About Interactive Grids
  Interactive grids feature many ways to change how the data is displayed, including the Actions menu and the Column Heading menus. You can also rearrange the grid interactively using the mouse.
- About Editable Interactive Grids
  Editable interactive grids possess all the same functionality of regular interactive grids, plus some additional functions in the interface and the customization menus. You can add, edit, delete, and refresh much of the underlying data in an editable grid.
- Using an Interactive Grid
  Use the interactive grid's menus and interface to search the grid, add elements such as filters and computations, reorganize with sort and breaks, and further customize how the data displays.
- Customizing an Interactive Grid with the Actions Menu
  Reconfigure and augment how an interactive grid displays data by using the Actions menu.
- Customizing an Interactive Grid with the Column Heading Menu
  Use the Column Heading menu to quickly customize a column in an interactive grid.
- Using an Editable Interactive Grid
  Editable interactive grids expand the functionality of regular interactive grids to enable you to more directly update a grid's structure and contents. You can add and delete rows, edit cell contents, and refresh the grid with the latest updates.
- Saving an Interactive Grid
  Save your changes as a new report within the application. Name and keep these interactive grid reports private or make them public to share with other users.
- Resetting Interactive Grids
  You can refresh, reset, or flashback a grid to revert your changes to it. Resetting an interactive grid can have different outcomes depending on the report type.
- Downloading or Emailing an Interactive Grid
  Download or email an interactive grid as a CSV, HTML, Excel, or PDF file by selecting Download in the Actions menu.

See Also:

Managing Interactive Grids in *Oracle APEX App Builder User's Guide*

3.1 About Interactive Grids

Interactive grids feature many ways to change how the data is displayed, including the Actions menu and the Column Heading menus. You can also rearrange the grid interactively using the mouse.



Interactive Grid Interface

By default, all interactive grids have a **search bar**, **Actions menu**, and **Reset** button. Interactive grids also have **Column Heading Menus**, which you access by clicking the name or heading of a column.

You can hide, filter, freeze, highlight, sort, and create control breaks on individual columns with the Actions and Column Heading menus. Advanced users can also define aggregations, which appear at the bottom of the column or column group.

Using the mouse, you can resize columns or drag and drop columns into different places to directly customize the appearance of an interactive grid. You can also configure the width and order of columnsin the Columns dialog.

You can quickly chart the data by clicking the **Actions** menu and selecting the **Chart** option. This feature is useful for quick data visualization or even presentation, and responds immediately to changes in the data.

You can quickly revert your modifications with the **Reset** function or perform an incremental revert by clicking the Actions menu and selecting, **Data**, **Flashback**. You can use the **Refresh** option to pull in the latest version of the data on the database (useful for highly dynamic datasets).

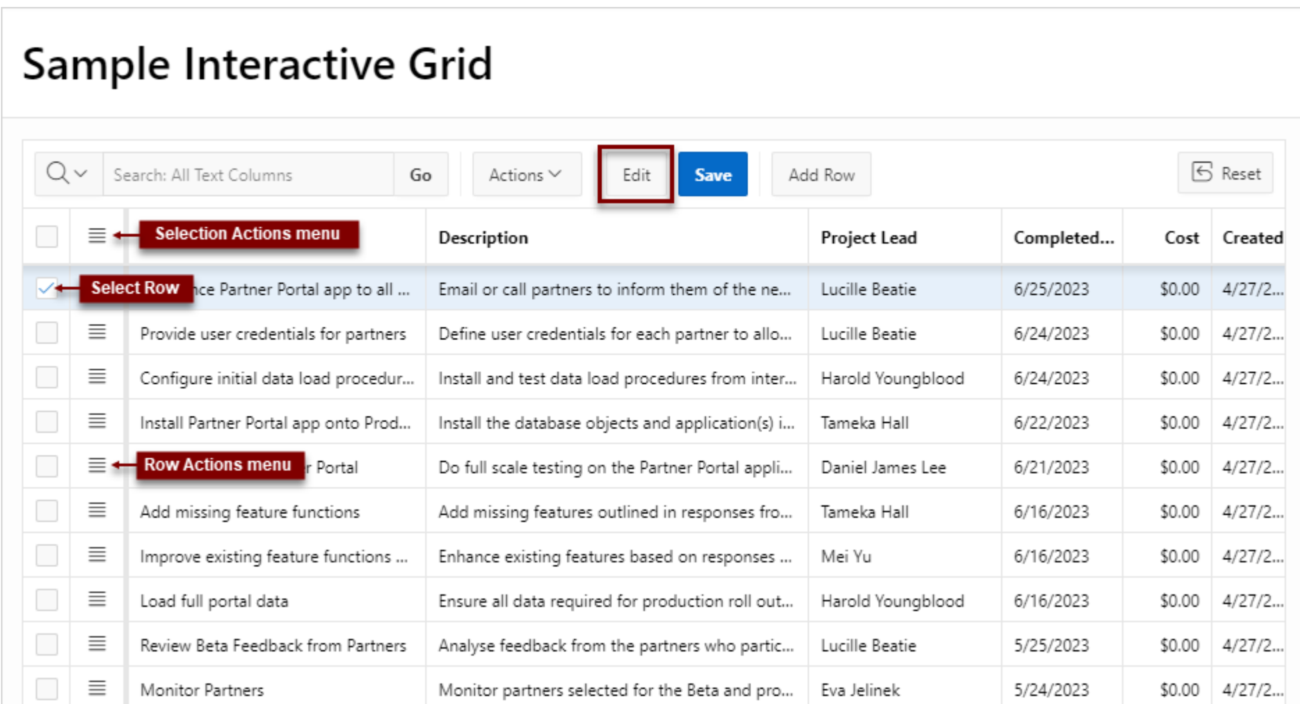
Reports in Interactive Grids

You can save your customizations to an interactive grid by creating a custom **report** by selecting **Report**, **Save As** from the **Actions** menu.

> **See Also:**
>
> - About Interactive Grid Report Types

3.2 About Editable Interactive Grids

Editable interactive grids possess all the same functionality of regular interactive grids, plus some additional functions in the interface and the customization menus. You can add, edit, delete, and refresh much of the underlying data in an editable grid.



About Editable Interactive Grids

Editable interactive grids enable users to change or update data. An editable interactive grid allows you to select, add, and change a grid's contents in real time, similar to working in spreadsheet software.

Editable Cells

You can change the contents of an individual cell in real time by double-clicking a cell.

You can also toggle the **Edit** button to enable improved keyboard usability when updating multiple columns. For example, rather than pointing and clicking on every cell in the grid, you can use the **Tab** and **Ctrl + Tab** keys to move focus across cells in a row.

Editable Rows

The primary way of adding new content to an editable interactive grid is by adding new rows. You can use the **Row Actions** menu to edit an individual row, or the **Selection Actions** menu to edit multiple rows at once.

3.3 Using an Interactive Grid

Use the interactive grid's menus and interface to search the grid, add elements such as filters and computations, reorganize with sort and breaks, and further customize how the data displays.

- Searching in an Interactive Grid
  Search an interactive grid by entering criteria into the Search Bar.
- Rearranging Columns Using Drag and Drop
  Drag and drop a column into place by clicking and holding the drag handle on the column heading.
- Resizing Columns in an Interactive Grid
  Resize the width of a column by clicking and holding the edge of a column heading and adjusting it with the mouse.
- Sorting Columns in an Interactive Grid
  Specify the alphabetical, numerical, or chronological order of a column by clicking the Sort Ascending and Sort Descending buttons on the column heading.
- Using Charts in an Interactive Grid
  Create a chart in an interactive grid by selecting Chart in the Actions menu. Edit or remove the chart with the Edit Chart link.

3.3.1 Searching in an Interactive Grid

Search an interactive grid by entering criteria into the Search Bar.

> **Tip:**
>
> You can also search an interactive grid using a supported browser's search function (such as **Ctrl + F** or **Cmd + F**).

- About the Search Bar
  You can perform text searches with the Search Bar at the top of an interactive grid.
- Using the Select Columns To Search Icon
  Narrow your search parameters by clicking the Select Columns to Search icon (magnifying glass).

3.3.1.1 About the Search Bar

You can perform text searches with the Search Bar at the top of an interactive grid.

Select Columns to Search icon
Resembles a magnifying glass. Narrows your search to a specific column and optionally enabling case sensitivity for columns with alphabetical characters.
See Using the Select Columns To Search Icon.

Text area
Displays entered search criteria (wildcard characters are implied).

Go button
Executes a search.

3.3.1.2 Using the Select Columns To Search Icon

Narrow your search parameters by clicking the Select Columns to Search icon (magnifying glass).

To search a specific column:

1. Click the **Select Columns to Search** icon.
2. Select the name of a column.
3. (Optional) To enable case sensitive searching, select **Case Sensitive**.

> **Note:**
>
> Search only works in columns with alphabetical characters. Search does not work in number or date columns.

4. Enter a search string in the Search field.
5. Press the **Enter** key or click **Go**.

The interactive grid reloads with a filter applied.
To reset the search bar back to the default setting, click the **Select Columns to Search** icon and select **All Text Columns**.

You may need to disable or remove existing filters for broader searching to take effect.

See Also:

- Disabling a Filter in an Interactive Grid
- Removing a Filter from an Interactive Grid

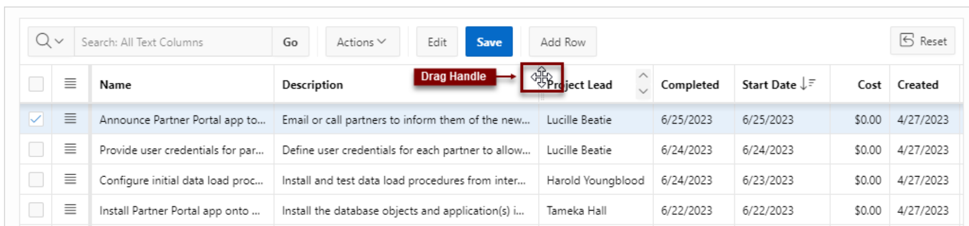
3.3.2 Rearranging Columns Using Drag and Drop

Drag and drop a column into place by clicking and holding the drag handle on the column heading.

You can also rearrange the order of the columns in the Columns dialog.

To drag and drop a column:

1. Hover the mouse over a column heading to display the drag handle.



   The mouse cursor also changes when it comes into contact with the drag handle.
2. Click and hold the drag handle.
3. Drag the column to the desired location.

   The heading shifts out of place in the row.
4. While holding the mouse, use the indicator to determine which column to place the dragged column ahead of.
5. Release the mouse.

   The column drops into place.

To undo all changes, click the **Reset** button.

WARNING:

Resetting an interactive grid reverts it to a previously saved state. Any changes since that time may be lost.

See Also:

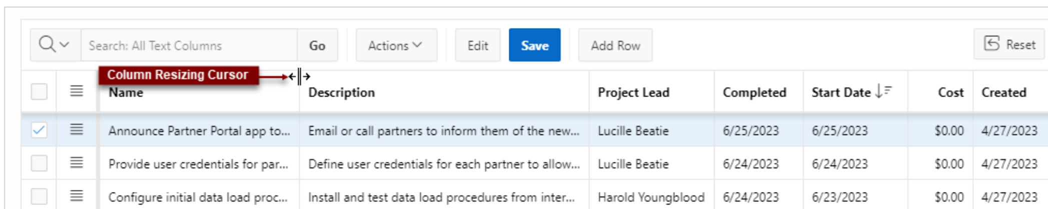
- Changing the Column Display in an Interactive Grid
- Keyboard Shortcuts in Interactive Grid Regions in the *Oracle APEX Accessibility Guide*

3.3.3 Resizing Columns in an Interactive Grid

Resize the width of a column by clicking and holding the edge of a column heading and adjusting it with the mouse.

To resize a column with your mouse:

1. Hover your mouse cursor over the edge of column heading until the cursor changes.



2. Click and hold the mouse.
3. Move the mouse left and right to achieve the desired width.
4. Release the mouse.

The column resizes.
To undo all changes, click the **Reset** button.

WARNING:

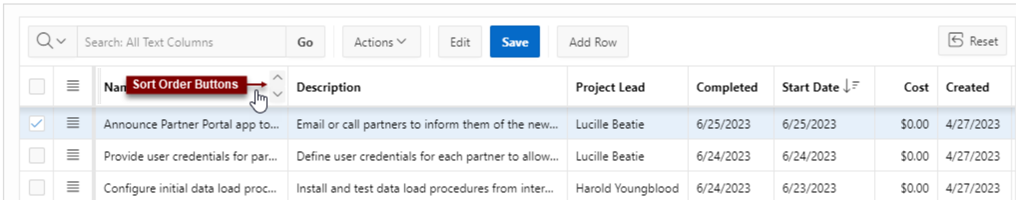
Resetting an interactive grid reverts it to a previously saved state. Any changes since that time may be lost.

See Also:

- Changing the Column Display in an Interactive Grid
- Interactive Grid for keyboard shortcuts in Interactive Grid

3.3.4 Sorting Columns in an Interactive Grid

Specify the alphabetical, numerical, or chronological order of a column by clicking the Sort Ascending and Sort Descending buttons on the column heading.



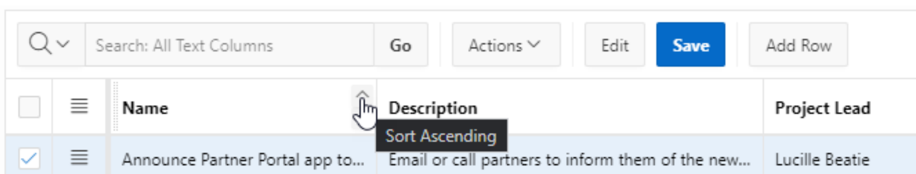
To specify the sort order of a column:

1. Hover the mouse in the column heading.

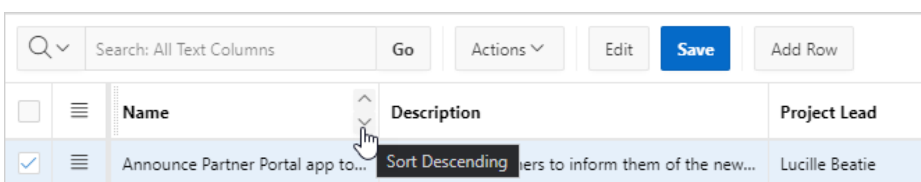
   The **Sort Ascending** and **Sort Descending** buttons display.

2. Do one of the following:

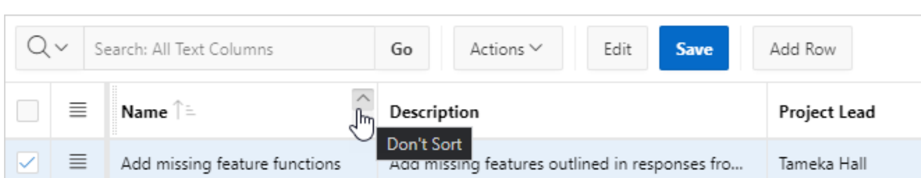
   - To sort a column in ascending order (A to Z, 1 to 9, earliest to latest), click the **Sort Ascending** button (up arrow).

   - To sort a column in descending order (Z to A, 9 to 1, latest to earliest), click the **Sort Descending** button (down arrow).

   - To remove an existing sort, click the toggled button again (now labeled **Don't Sort**).

The column sorts.

3.3.5 Using Charts in an Interactive Grid

Create a chart in an interactive grid by selecting Chart in the Actions menu. Edit or remove the chart with the Edit Chart link.

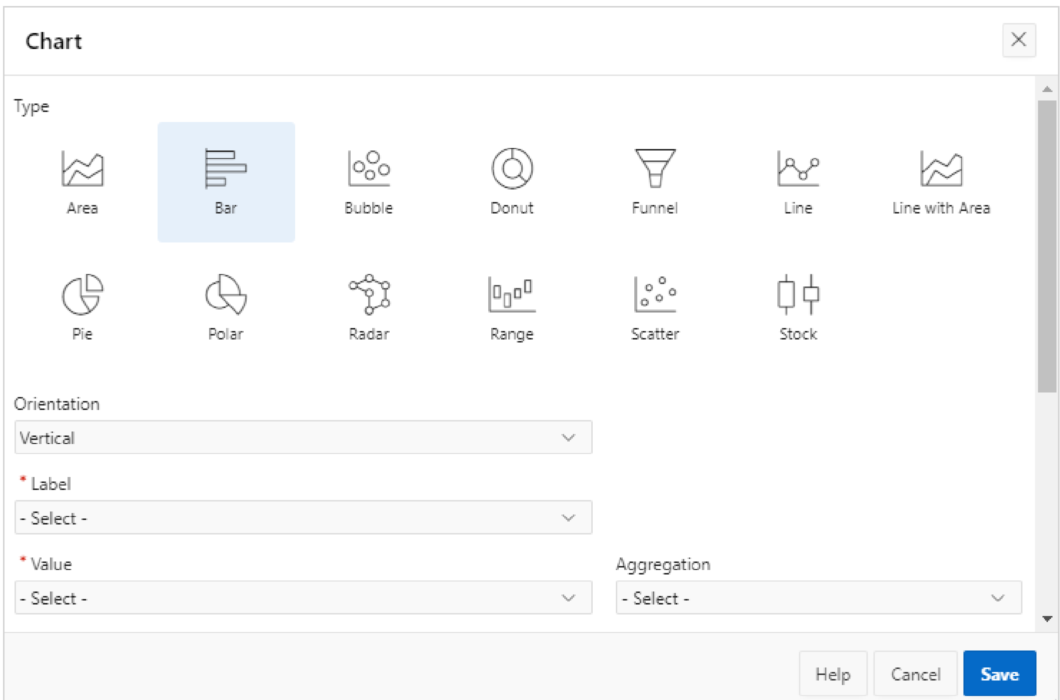
To create a chart from the data in an interactive grid:

1. Click the **Actions** menu and select **Chart**.

   The Chart dialog appears.

2. Select a chart type.

   The dialog populates with options specific to the selected chart type. For example, a bar chart has a different set of configuration fields than a pie chart. Select different types to see the range of available options.

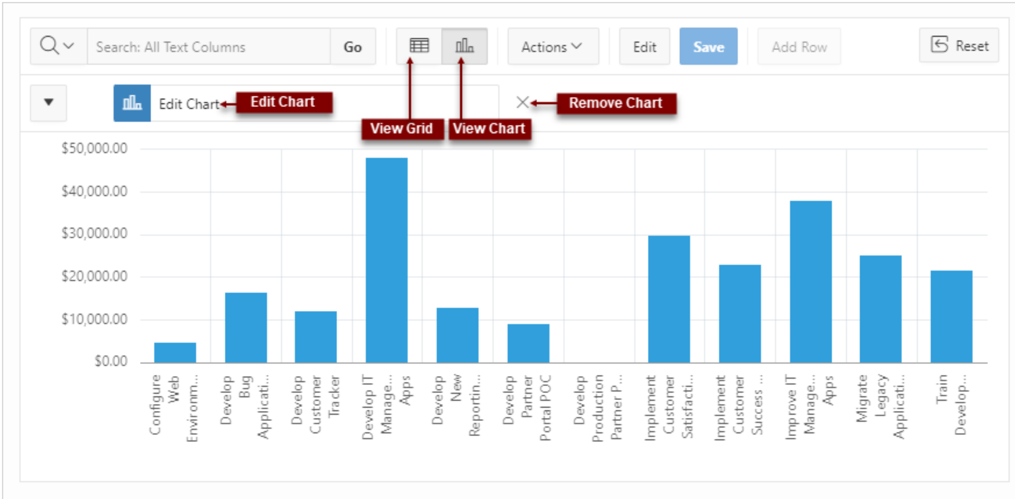
3. Configure the chart settings.

   For example, the following is a configuration for a Bar chart:

   - **Orientation** - Select **Vertical** for the bars to increase toward the top of the chart, or **Horizontal** to increase toward the right.
   - **Label** - Select the column to be used as the Label (the label appears beneath or beside the bar).
   - **Value** - Select the column to be used as the Value (the value is the quantity that determines the size of the bar).
   - **Aggregation** - (Optional) Select an additional aggregation to be performed on the column selected for the Value. Valid selections include: Count, Count Distinct, Approx. Count Distinct, Minimum, Maximum, Sum, or Average.

4. Click **Save**.

The chart appears. The following is an example of a bar chart that depicts project budgets with a sum aggregation. To switch the view between **Grid** and **Chart**, click the toggle that now appears at the top of the interactive grid.



To reconfigure the chart, click the **Edit Chart** link.

To remove a chart, click the **Remove Chart** icon (`X`) adjacent to the chart link.

You can only create one chart at a time in an interactive grid. To create a second chart, reconfigure the existing chart by clicking **Edit Chart**, or delete it by clicking the adjacent **Remove Chart** icon (X).

> **See Also:**
>
> Filtering an Interactive Grid

3.4 Customizing an Interactive Grid with the Actions Menu

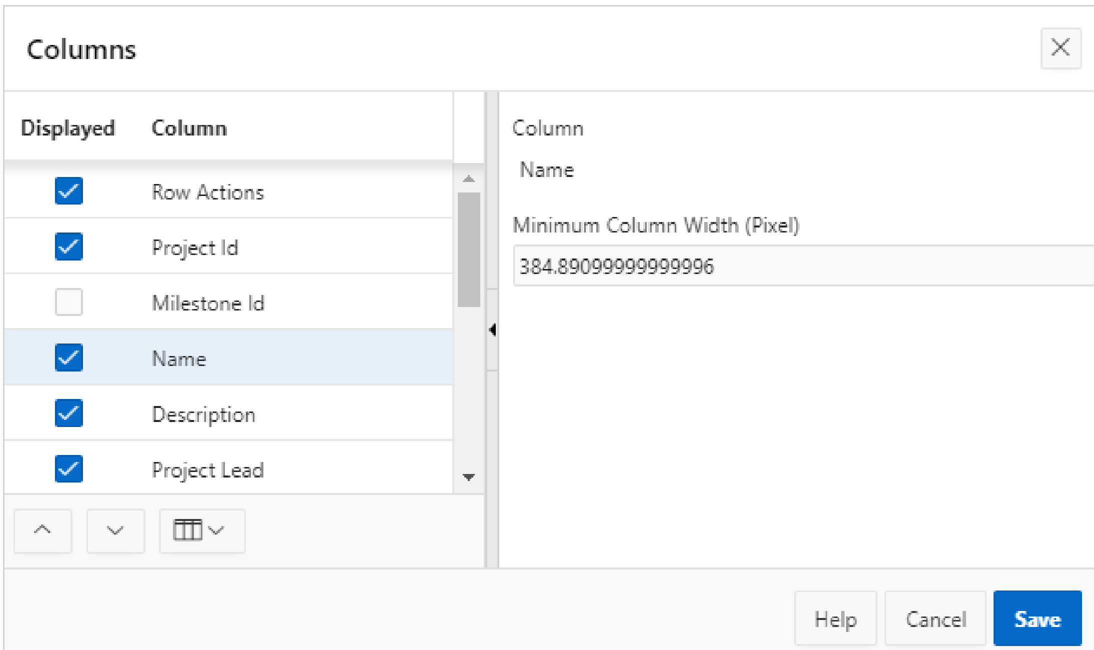
Reconfigure and augment how an interactive grid displays data by using the Actions menu.

- Changing the Column Display in an Interactive Grid
  Edit which columns display and in what order by selecting Columns in the Actions menu.
- Filtering an Interactive Grid
  Filter an interactive grid by column, row, or both, with text strings and using operators such as *contains* and *equals*.
- Selecting Column Sort Order in an Interactive Grid
  Specify the sort order (ascending or descending) of a column by selecting Sort on the Data submenu. You can also specify how to handle `NULL` values.
- Defining an Aggregation in an Interactive Grid
  Define an aggregation in an interactive grid by selecting Aggregate from the Actions, Format submenu. Aggregates display after each control break and at the end of the interactive grid within the column for which they are defined.

- Creating a Control Break from the Actions Menu in an Interactive Grid
  Apply a hierarchy based on a specific column to an interactive grid by selecting Control Break in the Actions, Format submenu.
- Adding Highlighting to an Interactive Grid
  Apply color effects to an interactive grid by selecting Highlight in the Actions, Format submenu.
- Toggling Stretch Column Widths in an Interactive Grid
  Change the behavior of column widths in an interactive grid by toggling Stretch Column Widths in the Actions, Format submenu.

3.4.1 Changing the Column Display in an Interactive Grid

Edit which columns display and in what order by selecting Columns in the Actions menu.



To edit how columns display in an interactive grid:

1. Click the **Actions** menu and select **Columns**.

   The Columns dialog displays.

2. Edit the columns:
   - **Displayed -** Select the check box to show a column in the grid; deselect a check box to hide a column in the grid.
   - **Move Up** and **Move Down** - Adjust the order in which a column appears in the grid.
   - **Show** button - Toggle whether the list displays **All**, **Displayed**, or **Not Displayed** (hidden) columns.
   - **Minimum Column Width (Pixel) -** Adjust the displayed numeric value to widen or narrow the column.
     a. Set the Minimum Column Width to a smaller number to narrow the column or a larger number to widen the column.

b. If **Stretch Column Widths** is checked under **Format**, **Actions**, a column may display wider than its Minimum Column Width in order for the grid to stretch to the width of the region. For more information, see Toggling Stretch Column Widths in an Interactive Grid.

3. Click **Save**.

The interactive grid refreshes.

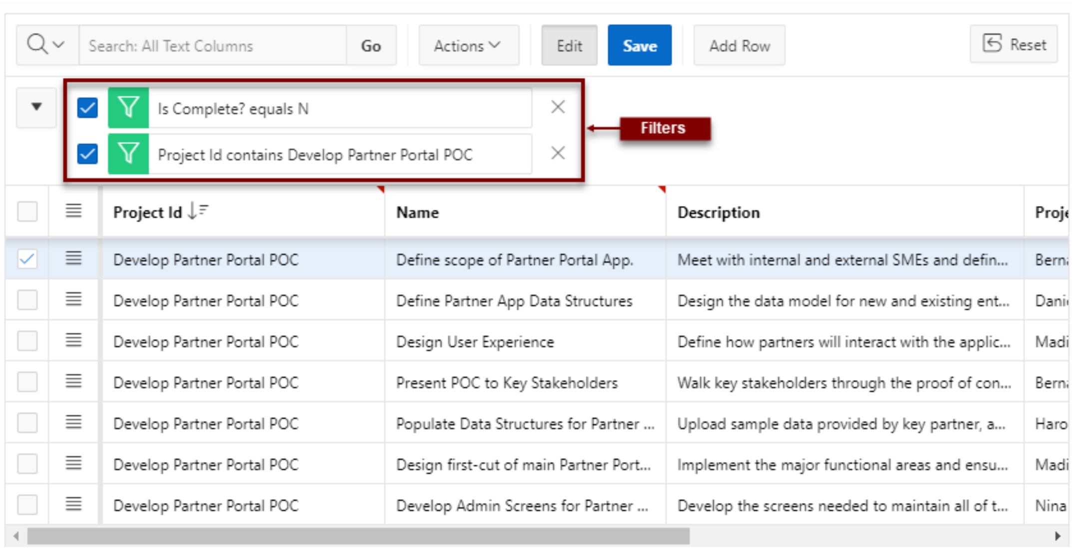
3.4.2 Filtering an Interactive Grid

Filter an interactive grid by column, row, or both, with text strings and using operators such as *contains* and *equals*.

- About Filters in Interactive Grids
  You can narrow the contents of an interactive grid by applying a filter to it. Once applied, filters can be temporarily enabled or disabled or removed permanently directly in the interactive grid. You can also click the filter name for quick reconfiguration.
- Creating a Row Filter in an Interactive Grid
  Create a row filter to limit the number of rows returned in an interactive grid. Filtering by row filters for a term in any filterable column.
- Creating a Column Filter in an Interactive Grid
  Filter a column in an interactive grid with a specified operator and value.
- Editing a Filter in an Interactive Grid
  Edit a filter by clicking the name of a filter to open the Filters dialog. The Filters dialog enables you to edit properties of any filter.
- Disabling a Filter in an Interactive Grid
  Disable a filter by clicking the check box adjacent to the name of the filter.
- Removing a Filter from an Interactive Grid
  Remove a filter by deleting it in the Filters dialog or by clicking the adjacent Remove Filter icon (X).

3.4.2.1 About Filters in Interactive Grids

You can narrow the contents of an interactive grid by applying a filter to it. Once applied, filters can be temporarily enabled or disabled or removed permanently directly in the interactive grid. You can also click the filter name for quick reconfiguration.



Existing filters display between the search bar and the grid.

Rather than deleting a filter, you can disable it by deselecting the adjacent checkbox. You can leave a filter disabled and save your report to preserve it for future usage.

To edit a filter, you can click its name or open the Filters dialog and select it in the list.

You can permanently remove a filter by clicking the adjacent **Remove Filter** icon (X) or by removing it from the list in the Filters dialog.

3.4.2.2 Creating a Row Filter in an Interactive Grid

Create a row filter to limit the number of rows returned in an interactive grid. Filtering by row filters for a term in any filterable column.

To add a filter to the rows in an interactive grid:

1. Click the **Actions** menu.
2. Select **Filter**.

   The Filters dialog displays.
3. In the Filters dialog:
   a. Type - Select **Row**.
   b. Search - Enter the text string to filter.
   c. Case Sensitive - Enable to make the filter case sensitive.
4. Click **Save**.

The interactive grid applies the filter.

3.4.2.3 Creating a Column Filter in an Interactive Grid

Filter a column in an interactive grid with a specified operator and value.

To add a filter to a column in an interactive grid:

1. Click the **Actions** menu.

2. Select **Filter**.

   The Filters dialog displays.

3. In the Filters dialog:

   a. Type - Select **Column**.

   b. Column - Choose the column to filter.

   c. Operator - Choose the filter logic.

   d. Value - Enter the filter criterion.

4. Click **Save**.

The filter is added to the grid.

3.4.2.4 Editing a Filter in an Interactive Grid

Edit a filter by clicking the name of a filter to open the Filters dialog. The Filters dialog enables you to edit properties of any filter.

To edit an existing filter:

1. Click the name of a filter.

   The Filters dialog displays.

2. Edit the filter by selecting new values.

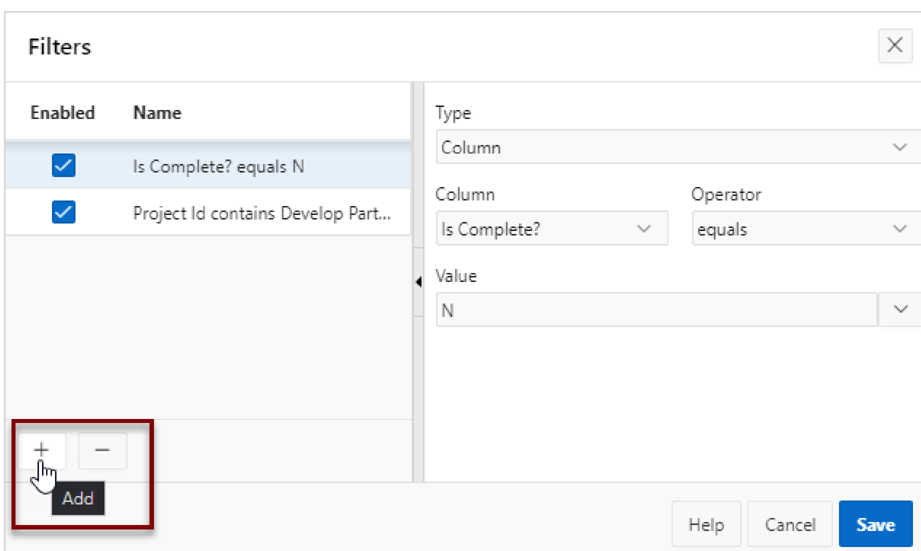
   Editable parameters include:

   - the filter type (row, column)
   - the name of the row or column the filter applies to
   - the filter operator
   - the filtered value

   Other filters can also be added, edited, enabled, and removed in this dialog.

3. To add a new filter:

   a. Click the **Add** button (+) adjacent to the Filters list.



   b. Configure the appropriate fields.
4. Click **Save** to apply your changes.

3.4.2.5 Disabling a Filter in an Interactive Grid

Disable a filter by clicking the check box adjacent to the name of the filter.

Disabling a filter is often preferable to deleting it because disabling saves the time of recreating and reconfiguring the same filter.

- To disable a filter in an interactive grid:
- Click the check box adjacent to the name of the filter.

The interactive grid reloads and the check box unchecks.
To re-enable the filter, click the check box again.

3.4.2.6 Removing a Filter from an Interactive Grid

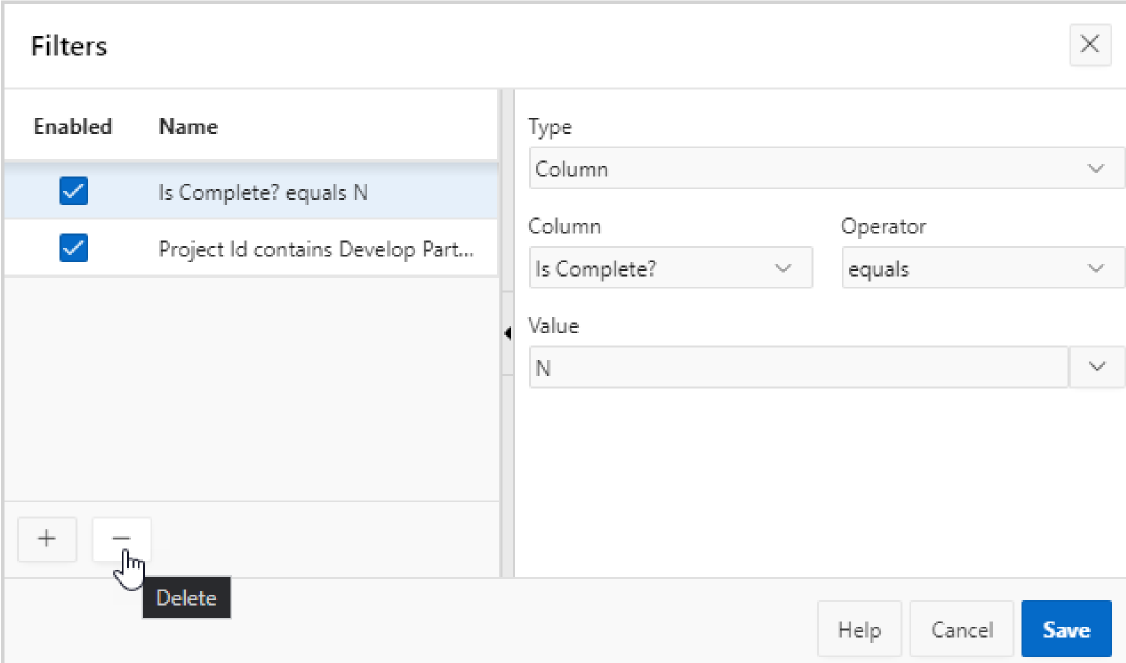
Remove a filter by deleting it in the Filters dialog or by clicking the adjacent Remove Filter icon (X).

> **Tip:**
>
> To temporarily disable a filter, deselect the adjacent check box either within the Filters dialog or above the interactive grid.

To remove a filter, do one of the following:

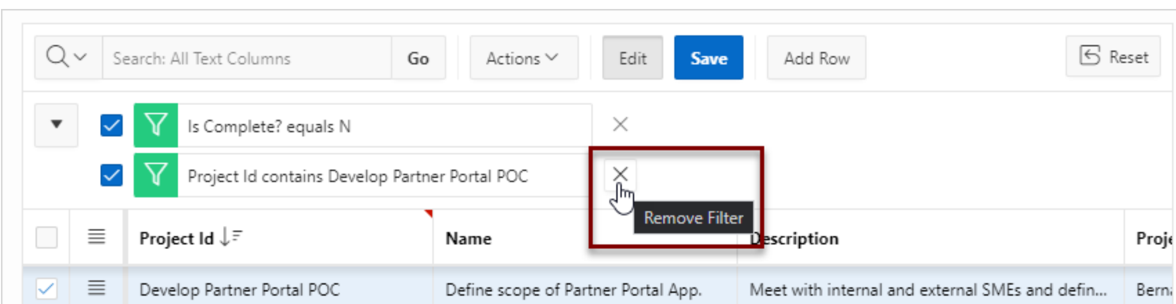
- Open the Filters dialog and delete it:
  1. Click the **Actions** menu and select **Filter**.

     The Filters dialog appears.
  2. In the list of filters, select the filter to remove.
  3. Click the **Delete** button (-).



4. Click **Save**.

- Above the interactive grid, click the **Remove Filter** icon (X) adjacent to a filter.



3.4.3 Selecting Column Sort Order in an Interactive Grid

Specify the sort order (ascending or descending) of a column by selecting Sort on the Data submenu. You can also specify how to handle `NULL` values.

To sort by column:

1. Click the **Actions** menu, select **Data**, then **Sort**.

   The Sort dialog appears.

2. In the Sort dialog: Select a column, the sort direction (**Ascending** or **Descending**), and the null sorting behavior (**Default**, **Nulls Always Last**, or **Nulls Always First**).

   a. Column - Select a column.

   b. Direction - Select **Descending** or **Ascending**.

   c. Nulls - Select **First** or **Last**.

3. To add another sort rule, click the **Add** button (+).
4. Click **Save**.

The interactive grid reloads.

3.4.4 Defining an Aggregation in an Interactive Grid

Define an aggregation in an interactive grid by selecting Aggregate from the Actions, Format submenu. Aggregates display after each control break and at the end of the interactive grid within the column for which they are defined.

- Creating an Aggregation in an Interactive Grid
  Create an aggregation in an interactive grid by selecting Aggregate in the Actions, Data submenu.
- Editing an Aggregation in an Interactive Grid
  Edit an existing aggregations by selecting the Aggregate in the Actions, Data submenu.
- Removing an Aggregation in an Interactive Grid
  Use the Aggregate dialog to remove an aggregation.

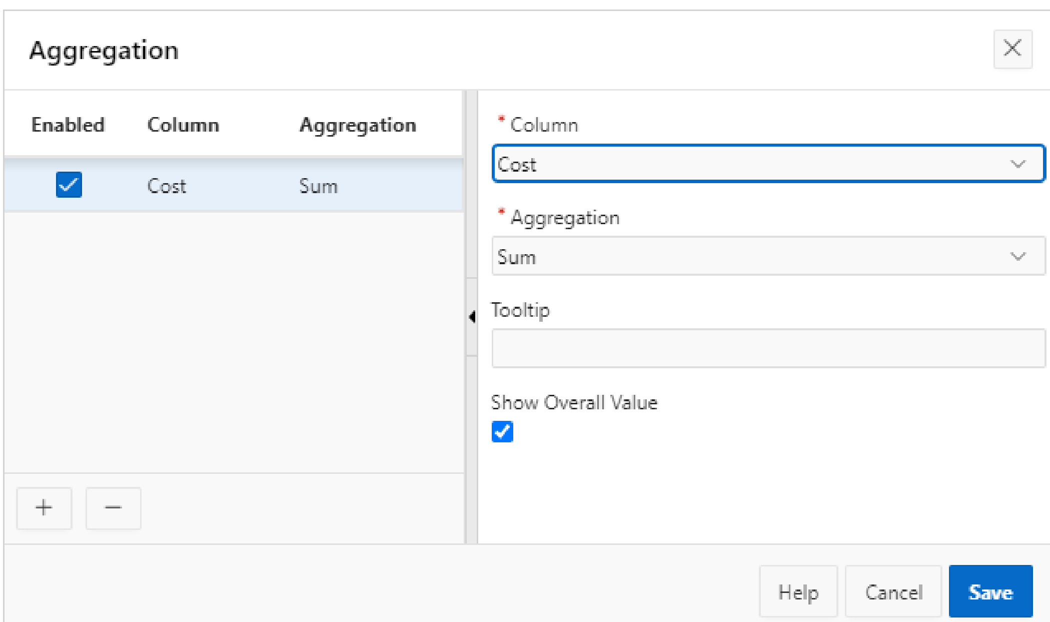
3.4.4.1 Creating an Aggregation in an Interactive Grid

Create an aggregation in an interactive grid by selecting Aggregate in the Actions, Data submenu.

To create an aggregation against a column:

1. Click the **Actions** menu, select **Data**, then **Aggregate**.

   The Aggregation dialog appears. (Some fields may be pre-filled.)



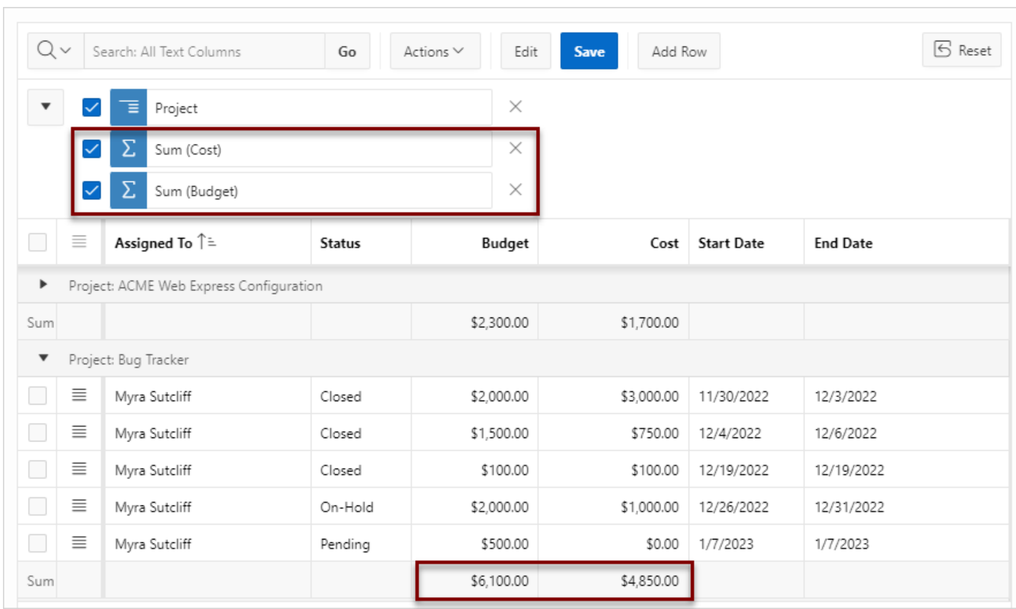
2. In the Aggregation dialog:
   a. Column – Select the column to define against

   b. Aggregation – Select the type of aggregation to apply
   c. Tooltip – (Optional) Add a label that appears when you hover the mouse over the aggregation.
   d. (Optional) Show Overall Value – Select to display the grand total of a column
3. To add another aggregation:
   a. Click the **Add** icon (+).

      A new Aggregation appears in the list.
   b. Define the new aggregation as described in the previous step.
4. Click **Save**.

The result of the aggregation appears at the bottom of the last page of the report.

The following example is an interactive grid with two *sum* aggregations applied to two different columns (a control break has also been applied to simplify the presentation):



3.4.4.2 Editing an Aggregation in an Interactive Grid

Edit an existing aggregations by selecting the Aggregate in the Actions, Data submenu.

To edit an aggregation with the Aggregate dialog:

1. Click the **Actions** menu.
2. Select the **Data** submenu, then **Aggregate**.

   The Aggregate dialog displays.
3. Select an aggregation.
4. Edit the aggregation. Editable fields include the column to define against, the function type, Tooltip, and Show Overall Value.
5. Click **Save**.

3.4.4.3 Removing an Aggregation in an Interactive Grid

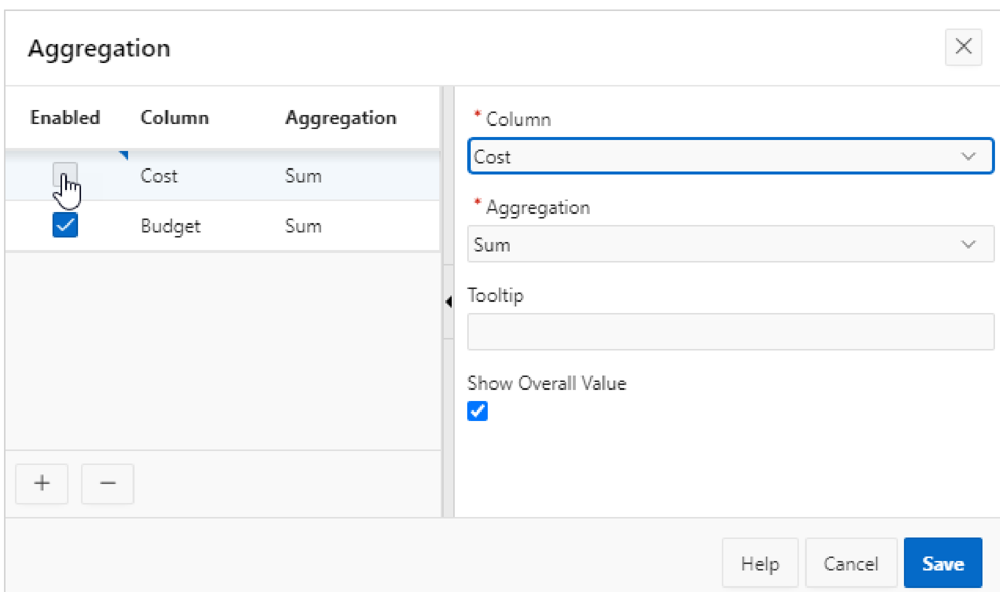
Use the Aggregate dialog to remove an aggregation.

> **Tip:**
>
> You can delete or disable an aggregation by interacting with the aggregation filter above the interactive grid. To delete an aggregation, click the **Remove Aggregation** icon (X); to disable an aggregation, select the adjacent check box.

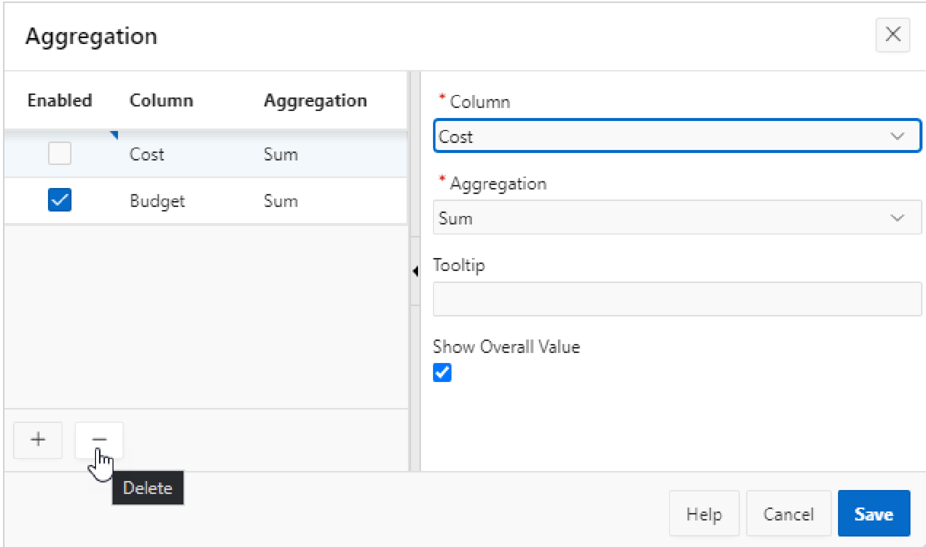
To remove an aggregation with the Aggregation dialog:

1. Click the **Actions** menu.
2. Select the **Data** submenu, then **Aggregate**.

   The Aggregation dialog displays.
3. Do one of the following:
   - To hide an aggregation from view in the grid, click the adjacent checkbox in the Enabled column. This disables the aggregation and stores it for future use in the Aggregation dialog.

   - To remove the selected aggregation from the grid completely and permanently, click the **Delete** icon (**—**).



4. Click **Save**.

3.4.5 Creating a Control Break from the Actions Menu in an Interactive Grid

Apply a hierarchy based on a specific column to an interactive grid by selecting Control Break in the Actions, Format submenu.

Creating a break group pulls the columns out of the interactive grid and displays them as a master record.

To create a control break:

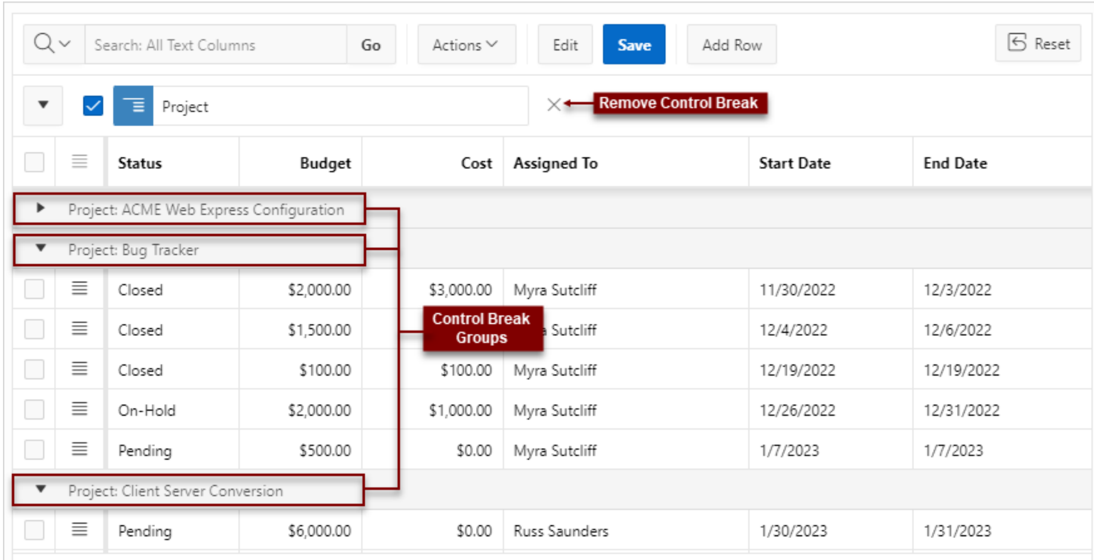
1. Click the **Actions** menu and select **Format** then **Control Break**.

   The Control Break dialog displays.

2. In the Control Break dialog:
   a. Column - Select the name of the column.
   b. Direction - Select the sort direction (**Ascending** or **Descending**).
   c. Nulls - Select the null sorting behavior (**First** or **Last**).
3. Click **Save**.

The interactive grid reloads with the control break applied for the selected column, and a control break filter appears above the grid near the toolbar.

In the following example, a control break has been applied to the interactive grid for the Project column.



To edit a control break, click the name to display the Control Break dialog. You can also add, edit, and delete other control breaks in the Control Break dialog.

To remove a control break, click the **Remove Control Break** icon (X) on the control break filter.

> **See Also:**
>
> About Filters in Interactive Grids

3.4.6 Adding Highlighting to an Interactive Grid

Apply color effects to an interactive grid by selecting Highlight in the Actions, Format submenu.

To highlight an interactive grid cell:

1. Click **Actions** and select **Format** then **Highlight**.

   The Highlight dialog displays.

2. In the Highlight dialog:

   a. Name - Enter the name of the highlight (this name displays as a filter above the interactive grid).

   b. Highlight - Choose the **Row** or **Column** to apply the highlight.

   c. Background Color - Select the color of the background in a highlighted cell. Choose a specific RGB value or a basic color from a list of presets.

   d. Text Color - Select the color of the text in a highlighted cell. Choose a specific RGB value or a basic color from a list of presets.

3. (Optional) In the Highlight dialog, configure advanced highlighting conditions. For example, to conditionally highlight all tasks with a Status of Closed:

   a. Condition Type - Select **Column**.

   b. Column - Select **Status**.
   c. Operator - Select **equals**.
   d. Value - Click the arrow to display the drop-down list of valid values and select **Closed** from the drop-down list.

4. To add an additional highlight, click the **Add** icon (+); click the **Delete** icon (—) to remove an existing highlight.
5. Click **Save**.

3.4.7 Toggling Stretch Column Widths in an Interactive Grid

Change the behavior of column widths in an interactive grid by toggling Stretch Column Widths in the Actions, Format submenu.

When **Stretch Column Widths** is toggled on, the interactive grid automatically takes up the width of your screen, even if you resize some of the columns to be smaller. When **Stretch Column Widths** is toggled off, the grid may be smaller than the width of your screen.

To change the behavior of interactive grid column widths:

1. Click **Actions** and select **Format**.
   - If there is a checkmark next to **Stretch Column Widths**, it is toggled on, and the interactive grid automatically takes up the width of your screen.
   - If there is no checkmark next to **Stretch Column Widths**, it is toggled off, and the interactive grid may be smaller than the width of your screen.
2. Select **Stretch Column Widths** to change the settings for column widths.

   For more on column widths, see Changing the Column Display in an Interactive Grid.
3. Click **Save**.

3.5 Customizing an Interactive Grid with the Column Heading Menu

Use the Column Heading menu to quickly customize a column in an interactive grid.

- About the Column Heading Menu in an Interactive Grid
  The Column Heading Menu contains buttons and icons to sort, break, aggregate, freeze, and hide a column, as well as a text filter for searching within a column.
- Displaying the Column Heading Menu
  Display the Column Heading menu by clicking the column heading.
- Creating a Control Break in an Interactive Grid
  Create a break group in an interactive grid by clicking the Control Break icon in the Column Heading menu.
- Creating an Aggregation with the Column Heading Menu
  Quickly apply an aggregation to an interactive grid by clicking the Aggregate icon in the Column Heading menu.

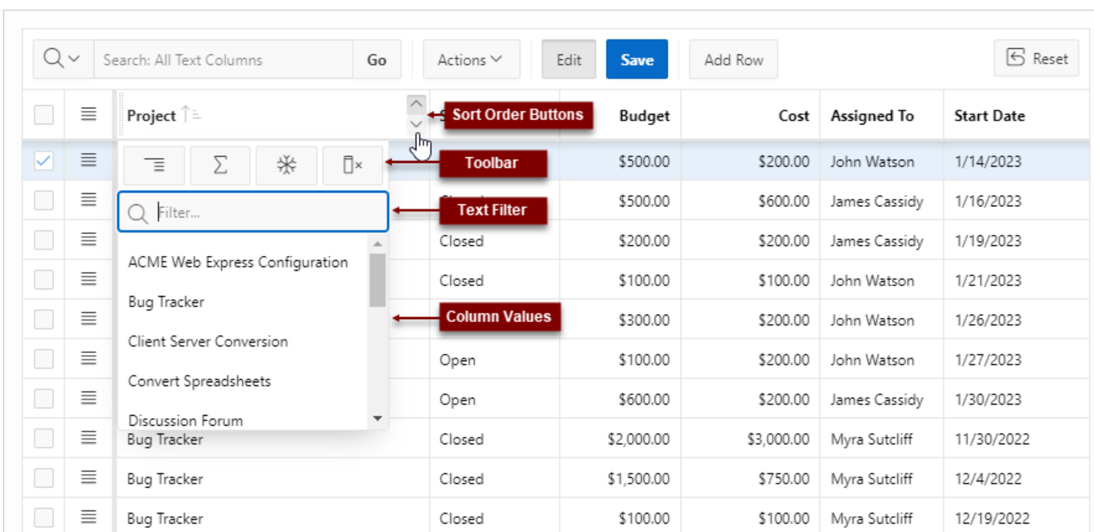
- Freezing Columns in Place
  Freeze a column in place by clicking the Freeze icon in the Column Heading menu. Freezing a column excludes it from the scrollable area so that the frozen column is always visible.
- Hiding Columns in an Interactive Grid
  Hide a column in an interactive grid from view by clicking the Hide icon in the Column Heading menu.
- Unhiding Columns in an Interactive Grid
  Show a hidden column in an interactive grid by opening the Columns dialog and enabling it in the Displayed column.
- Filtering with the Column Heading Menu
  Filter an interactive grid by the contents of a column by entering keywords in the Search field of the Column Heading menu.

3.5.1 About the Column Heading Menu in an Interactive Grid

The Column Heading Menu contains buttons and icons to sort, break, aggregate, freeze, and hide a column, as well as a text filter for searching within a column.

Overview

The Column Heading menu contains Sort Order buttons, a Toolbar, a Text Filter, and a unique list of the column’s contents.



Sort Order Buttons

The **Sort Ascending** and **Sort Descending** buttons appear at the right of every column heading.

See Sorting Columns in an Interactive Grid.

Column Heading Toolbar

The toolbar on the Column Heading menu contains the following options.

- **Control Break** - Creates a Control Break in the interactive grid based on the selected column.

  See Creating a Control Break in an Interactive Grid.
- **Aggregate** - Opens the Aggregation dialog to define an aggregation against the selected column.

  See Creating an Aggregation in an Interactive Grid.
- **Freeze** - Freezes the selected column in place, preventing horizontal scrolling.

  See Freezing Columns in Place.
- **Hide** - Hides the selected column from view.

  See Hiding Columns in an Interactive Grid.

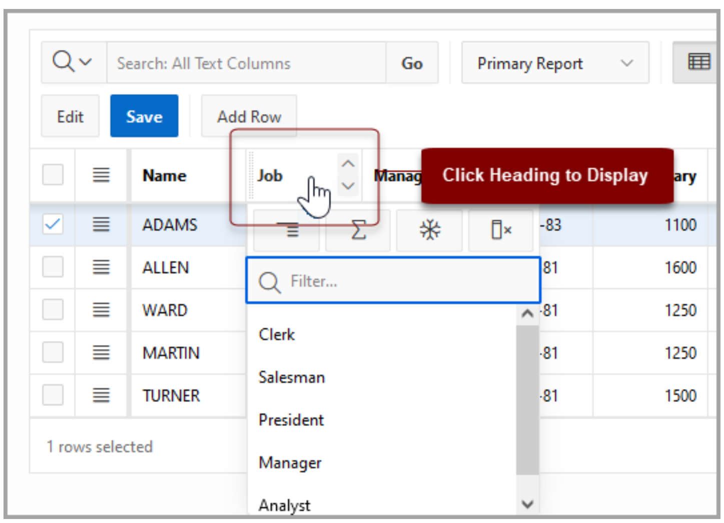
Text Filter

The text filter dynamically limits the list of column contents based on the text string entered into the filter field.

See Filtering with the Column Heading Menu.

3.5.2 Displaying the Column Heading Menu

Display the Column Heading menu by clicking the column heading.



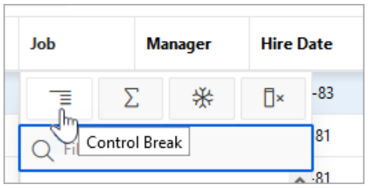
To display a column’s Column Heading menu:

- Click the heading of a column in an interactive grid.

The Column Heading menu displays.

3.5.3 Creating a Control Break in an Interactive Grid

Create a break group in an interactive grid by clicking the Control Break icon in the Column Heading menu.



Creating a break group pulls the columns out of the interactive grid and displays them as a master record.

To create a control break:

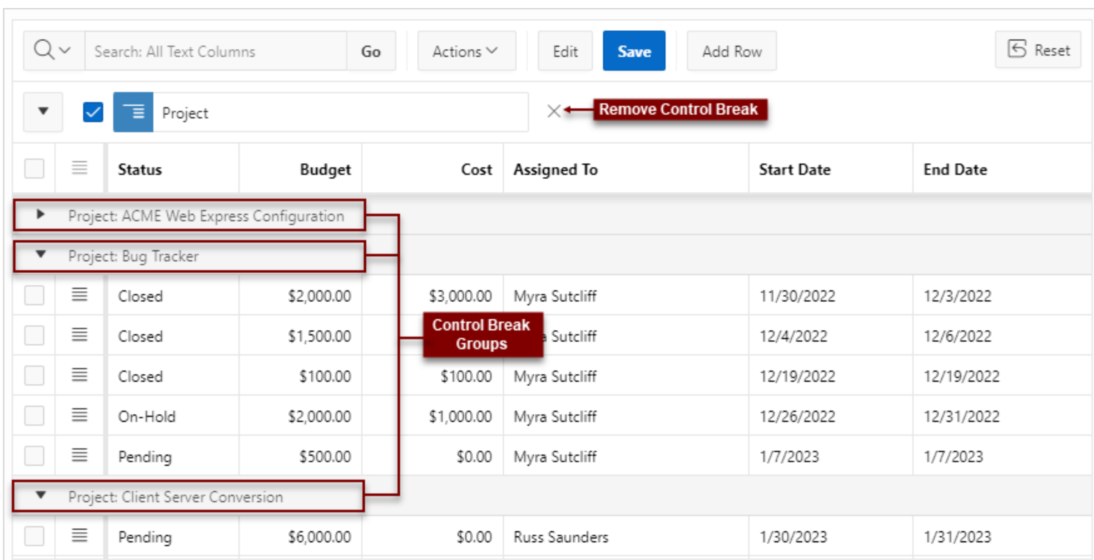
1. Click the heading of the desired break group column.

   The Column Heading menu appears.

2. Click the **Control Break** icon.

The interactive grid reloads with the control break applied for the selected column, and a control break filter appears above the grid near the toolbar.

In the following example, a control break has been applied to the interactive grid for the Project column.

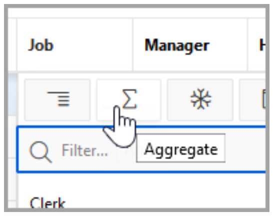


To remove a control break, click the **Remove Control Break** icon (X) on the control break filter.

> ### See Also:
>
> - About Filters in Interactive Grids
> - Creating a Control Break from the Actions Menu in an Interactive Grid

3.5.4 Creating an Aggregation with the Column Heading Menu

Quickly apply an aggregation to an interactive grid by clicking the Aggregate icon in the Column Heading menu.



To apply an aggregation against a selected column:

1. Click the heading of the column to display the Column Heading menu.
2. Click the **Aggregate** icon.

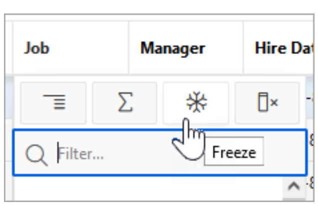
   The Aggregation dialog appears.
3. Configure the aggregation.
4. Click **Save**.

The interactive grid reloads with the aggregation applied.

> **See Also:**
>
> Creating an Aggregation in an Interactive Grid

3.5.5 Freezing Columns in Place

Freeze a column in place by clicking the Freeze icon in the Column Heading menu. Freezing a column excludes it from the scrollable area so that the frozen column is always visible.



To freeze a column in place:

1. Click the heading of the column that you wish to freeze.

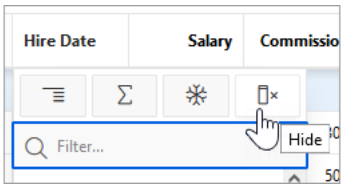
   The Column Heading menu appears.

2. Click the **Freeze** icon.

The scroll bar resizes to fit the new scrollable area.
To unfreeze a frozen column, reopen the Column Heading menu and click the **Unfreeze** icon (snowflake).

3.5.6 Hiding Columns in an Interactive Grid

Hide a column in an interactive grid from view by clicking the Hide icon in the Column Heading menu.



To hide a column in an interactive grid:

1. Click the heading of the column to display the Column Heading menu.
2. Click the **Hide** icon.

   The column disappears. Remaining columns shift sideways to fill the space.

To redisplay hidden columns:

3. Click the **Actions** menu.
4. Select **Columns**.

   The Columns dialog displays.
5. In the Displayed column, select the check box adjacent to the name of the hidden column.

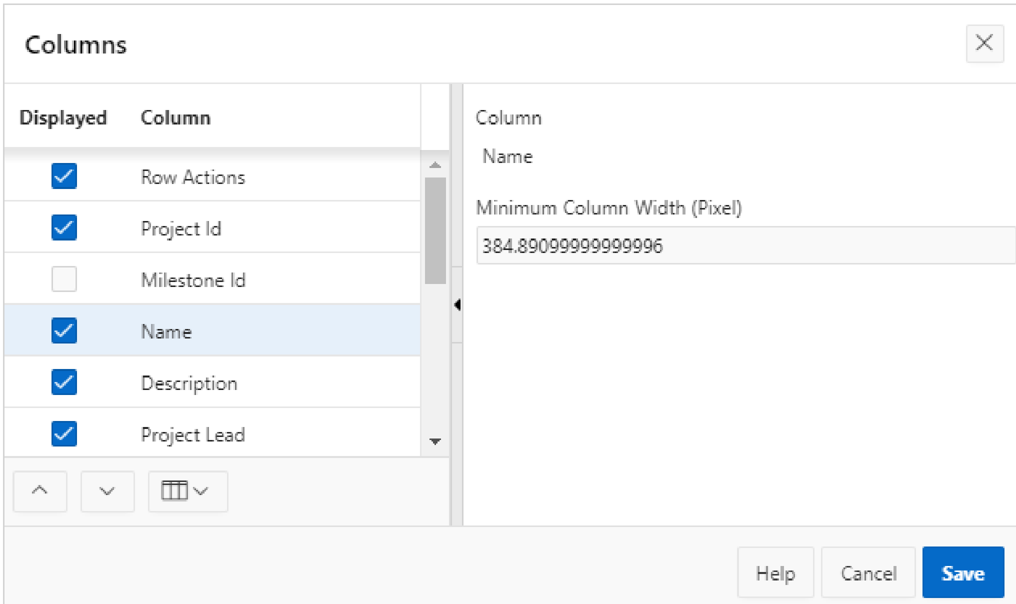
   > **Tip:**
   >
   > Narrow the list of columns to only the hidden columns by clicking the **Columns** icon and selecting **Not Displayed**.

6. Click **Save**.

> **Tip:**
>
> You can also reset the grid to redisplay a hidden column. Resetting an interactive grid reverts it to a previously saved state. Any changes since that time may be lost. To reset the grid, click the **Reset** button.

3.5.7 Unhiding Columns in an Interactive Grid

Show a hidden column in an interactive grid by opening the Columns dialog and enabling it in the Displayed column.



To show a hidden column in an interactive grid:

1. Click the **Actions** menu.
2. Select **Columns**.

   The Columns dialog displays.
3. In the Displayed column, select the check box adjacent to the name of the hidden column.

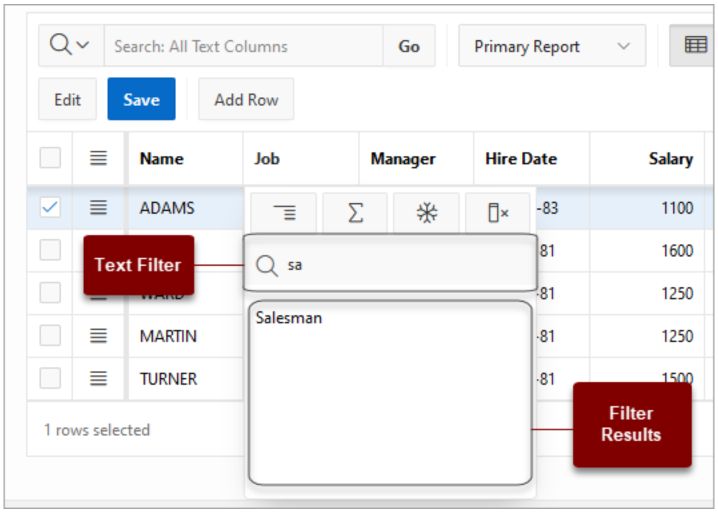
   > **Tip:**
   >
   > Narrow the list of columns to only the hidden columns by clicking the **Columns** icon and selecting **Not Displayed**.

4. Click **Save**.

The column appears in the interactive grid.

3.5.8 Filtering with the Column Heading Menu

Filter an interactive grid by the contents of a column by entering keywords in the Search field of the Column Heading menu.



To filter an interactive grid by column:

1. Click the heading of the column that you wish to sort by.

   The Column Heading menu displays.

2. Do one of the following:
   - Click within the **Filter...** text area.
   - Press the **Tab** key until the cursor is within the **Filter...** text area.
3. Enter the text string you wish to filter by. Wildcards (such as quotation marks) are valid.
4. Do one of the following:
   - Press **Enter** to run the filter.
   - Select an entry from a list of valid strings that autogenerates when you start typing.

The interactive grid redisplays with the filter applied.
To remove a filter, click the adjacent **Remove Filter** icon (X).

> **See Also:**
>
> Filtering an Interactive Grid

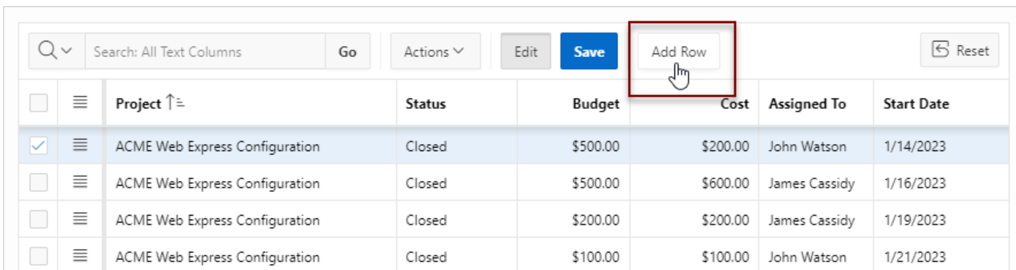
3.6 Using an Editable Interactive Grid

Editable interactive grids expand the functionality of regular interactive grids to enable you to more directly update a grid's structure and contents. You can add and delete rows, edit cell contents, and refresh the grid with the latest updates.

- [Adding a Row in an Editable Interactive Grid](#)
  Click the Add Row button to add a new row to an editable interactive grid.
- [Editing Rows in an Interactive Grid](#)
  Edit rows of an editable interactive grid with the Row Actions Menu, Edit button, and other functions in the interface.
- [Deleting a Row in an Interactive Grid](#)
  Use the Row Actions Menu to delete a row from an editable interactive grid.
- [Modifying Multiple Rows and Cells in an Editable Interactive Grid](#)
  Quickly modify the values of multiple rows and cells with the Actions, Selection submenu.

3.6.1 Adding a Row in an Editable Interactive Grid

Click the Add Row button to add a new row to an editable interactive grid.



- To add a new row to the top of an editable interactive grid:
- Click the **Add Row** button.

A blank row appears at the top of the grid or below the currently selected row.

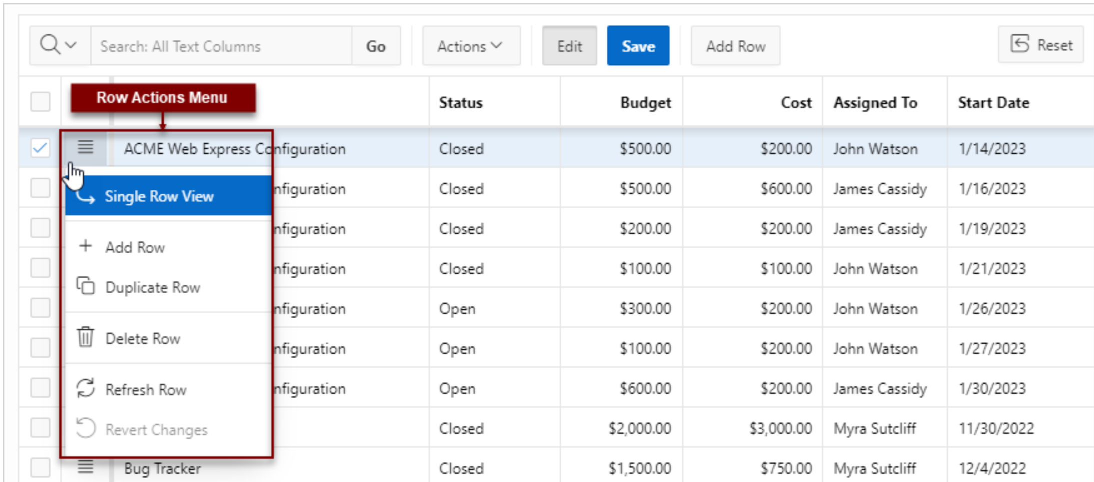
3.6.2 Editing Rows in an Interactive Grid

Edit rows of an editable interactive grid with the Row Actions Menu, Edit button, and other functions in the interface.

- [About the Row Actions Menu in an Editable Interactive Grid](#)
  The Row Actions Menu appears in editable interactive grids. Users can quickly edit the rows of an editable grid with functions such as adding, duplicating, deleting, refreshing, and reverting rows.
- [About the Edit Button in an Editable Interactive Grid](#)
- [Editing a Cell in an Interactive Grid](#)
  Double-click a cell in an editable interactive grid to edit the contents.
- [Editing Multiple Rows in an Editable Interactive Grid](#)
  Select the desired rows of an editable interactive grid to edit, then select an option from the Selection Actions menu.

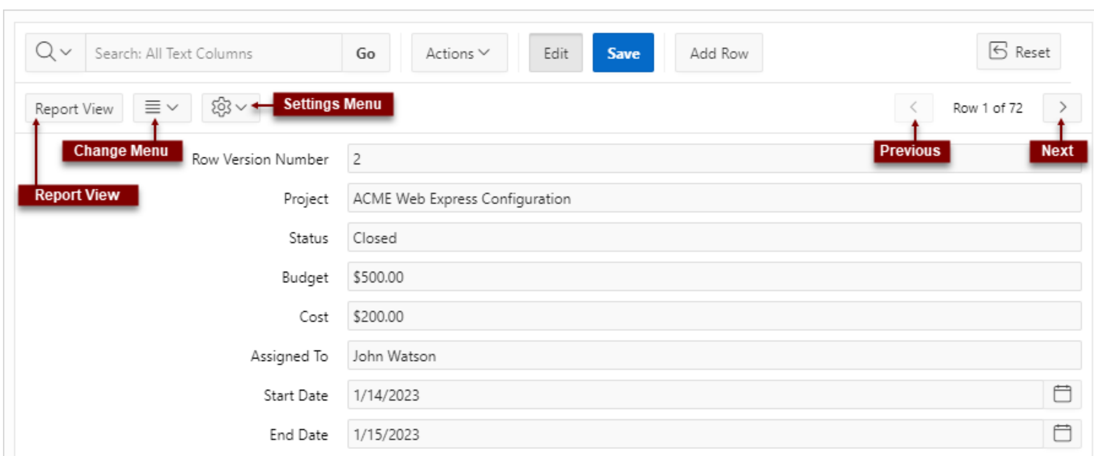
3.6.2.1 About the Row Actions Menu in an Editable Interactive Grid

The Row Actions Menu appears in editable interactive grids. Users can quickly edit the rows of an editable grid with functions such as adding, duplicating, deleting, refreshing, and reverting rows.



Single Row View

Single Row View changes the grid display to a single-page view of a row's contents. Used for viewing an individual row in detail, one row at a time.



Available controls include:

- **Report View** - Closes the Single Row View and returns to the grid.
- **Change Menu** - Displays the options **Add Row**, **Duplicate Row**, **Delete Row**, and **Refresh Row**.
- **Setting Menu** - Enable or disable **Exclude Null Values** and **Display Values** settings.

- **Previous** and **Next**- Click the **Previous** and **Next** buttons to navigate between rows in the grid.

Add Row

Adds a new row below the current one.

Duplicate Row

Creates a copy of the currently selected row and inserts the copy below the original.

Delete Row

Deletes the current row.

Refresh Row

Reloads the row by calling the database and pulling in any updates.

> **Note:**
>
> Refresh a row to update it without reloading the entire application page.

Revert Changes

Undoes any changes to the row since the grid was last saved.

> **See Also:**
>
> Editing Multiple Rows in an Editable Interactive Grid

3.6.2.2 About the Edit Button in an Editable Interactive Grid

The Edit button toggles Editing mode in editable interactive grids. When enabled, you can single-click a cell to edit it; when disabled, you must double-click. While Editing mode enables quicker editing of multiple cells in succession, it can impede navigation in larger grids.

3.6.2.3 Editing a Cell in an Interactive Grid

Double-click a cell in an editable interactive grid to edit the contents.

To edit the contents of a single cell in an editable interactive grid:

1. Double-click a cell.

   Editing mode engages and a cursor displays in the cell.
2. Edit the cell contents.
3. Press **Tab** or **Shift + Tab** to edit an adjacent cell in the row or **Enter** or **Shift + Enter** to edit an adjacent cell in the column.
4. To exit editing mode, press **Escape**.

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

Changes to the interactive grid are saved.

3.6.2.4 Editing Multiple Rows in an Editable Interactive Grid

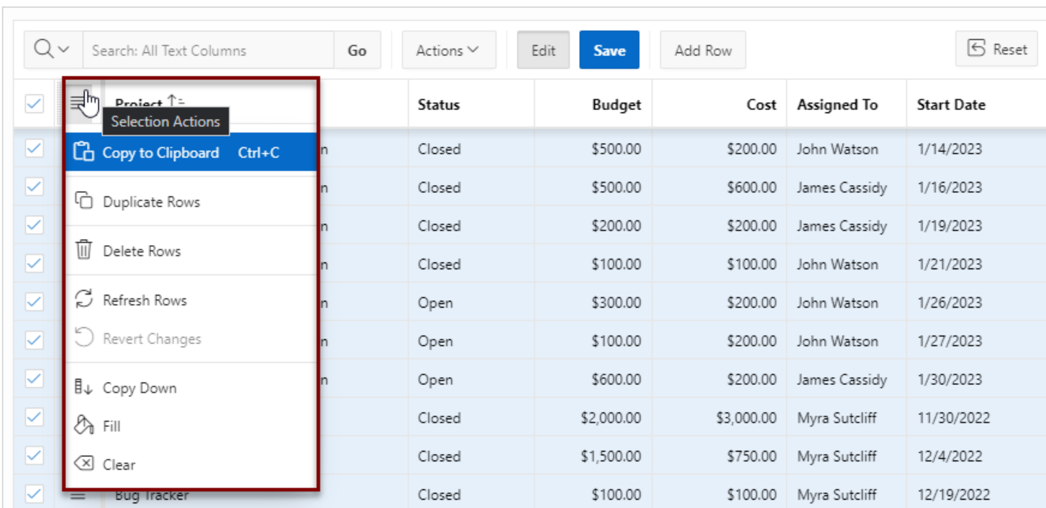
Select the desired rows of an editable interactive grid to edit, then select an option from the Selection Actions menu.

To edit multiple rows in an editable interactive grid:

1. Select rows by selecting check boxes in the check box column.

   > **Tip:**
   >
   > Click the check box in the column heading to select all rows. With all rows selected, click it again to deselect all rows.

2. In the column heading of the interactive grid, click the **Selection Actions** menu icon



3. Select a valid option. Options include **Copy to Clipboard**, **Duplicate Rows**, **Delete Rows**, **Refresh Rows**, **Revert Changes**, **Copy Down**, **Fill**, and **Clear**.

The selected change applies.

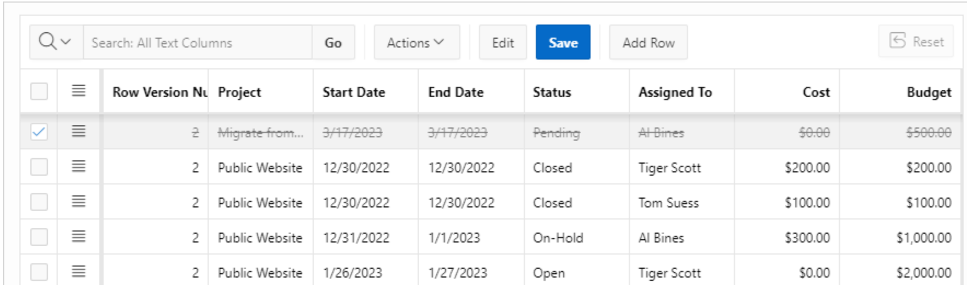
3.6.3 Deleting a Row in an Interactive Grid

Use the Row Actions Menu to delete a row from an editable interactive grid.

To delete a row from an editable grid:

1. Click the **Row Actions** menu icon adjacent to the row.
2. Select **Delete Row**.

   The row is crossed out in the grid.



3. To finalize the deletion, click **Save**.

The grid reloads with the selected row removed.

3.6.4 Modifying Multiple Rows and Cells in an Editable Interactive Grid

Quickly modify the values of multiple rows and cells with the Actions, Selection submenu.

- About Selection Modes in an Editable Interactive Grid
  You can select rows or groups of cells in an interactive grid by toggling between selection modes.
- Changing Selection Mode in an Editable Interactive Grid
  Switch between Cell Selection mode and Row Selection mode by using the Actions, Selection submenu.
- Copying to Multiple Rows in an Editable Interactive Grid
  Copy the value of a row and apply it to a group of rows by using Copy Down in the Actions, Selection submenu.
- Copying to Multiple Cells in an Editable Interactive Grid
  Copy the value of a cell and apply it to a group of cells in the same column by using Copy Down in the Actions, Selection submenu.
- Filling Cells in an Editable Interactive Grid
  Apply a single value to a group of cells in an editable interactive grid by using Fill in the Actions, Selection submenu.
- Clearing Cells in an Interactive Grid
  Delete the contents of multiple cells by using Clear in the Actions, Selection submenu.

3.6.4.1 About Selection Modes in an Editable Interactive Grid

You can select rows or groups of cells in an interactive grid by toggling between selection modes.

Row Selection
Row Selection is the default selection mode in interactive grids. Check boxes appear next to every row in the left-hand column, so you can select multiple individual rows at once by mouse-click. You can also press the arrow keys on the keyboard to navigate up and down between rows, or hold the **Shift** key at the same time to select multiple adjacent rows.

With multiple rows selected, you can use the Selection menus to apply a single change to the entire selection.

Cell Selection
You can switch to Cell Selection mode in the Selection submenu in the Actions menu or by pressing **F8**.
In Cell Selection mode, the check boxes disappear, and you can select individual cells by mouse-click. You can also hold the **Shift** key and use mouse or the arrow keys to select multiple adjacent cells.
With multiple cells selected, you can use the Selection menus to apply a single change to the entire selection.

3.6.4.2 Changing Selection Mode in an Editable Interactive Grid

Switch between Cell Selection mode and Row Selection mode by using the Actions, Selection submenu.

Interactive grids are in Row Selection mode by default. You can switch to selection modes to select groups of rows or cells.

1. To switch selection modes, do one of the following:
   - Click the **Actions** menu, select **Selection**, and click **Cell Selection** or **Row Selection**.
   - Press **F8** on your keyboard (**Tip:** ensure only one or no objects are selected).

   The selection mode switches.
2. To switch back, repeat this step.

3.6.4.3 Copying to Multiple Rows in an Editable Interactive Grid

Copy the value of a row and apply it to a group of rows by using Copy Down in the Actions, Selection submenu.

To apply the value of an existing row to a group of rows below it:

1. Ensure you are in **Row Selection** mode.
2. Select the row you want to copy.
3. Do one of the following to select the rows you want to change:
   - Using the mouse, click the adjacent check boxes. Using the check boxes enables you to apply changes to non-contiguous rows.
   - Using the keyboard, hold **Shift** and press the **Down** arrow key to quickly select a group of adjacent rows below the first row. If you select too many rows, keep holding **Shift** and press the **Up** arrow key to de-select rows.
4. Click the **Actions** menu, select **Selection**, and select **Copy Down**.

> **Tip:**
>
> You can also use the Selection Actions menu in the header row to quickly access several Selection submenu options (including Copy Down).

The first row is copied to the rows selected below it.

> **Tip:**
>
> Undo changes to the data by selecting the affected row(s), and clicking **Actions**, **Selection**, **Revert Changes**.

3.6.4.4 Copying to Multiple Cells in an Editable Interactive Grid

Copy the value of a cell and apply it to a group of cells in the same column by using Copy Down in the Actions, Selection submenu.

To apply the value of an existing cell to a group of cells below it:

1. Ensure you are in **Cell Selection** mode.
2. Select the cell you want to copy.
3. Do one of the following to select the cells you want to change (all cells in a single selection must be contiguous):
   - Using the mouse, hold the **Shift** key and click the last cell in the group.
   - Using the keyboard, hold the **Shift** key and press the **down arrow key** to select cells.
4. Click the **Actions** menu, select **Selection**, and select **Copy Down**.

   > **Tip:**
   >
   > You can also use the Selection Actions menu in the header row to quickly access several Selection submenu options (including Copy Down).

The first cell is copied to the cells selected below it.

You can also select cells in adjacent columns and use Copy Down to copy the value of the different cells in each column to cells below it (values do not copy across columns).

> **Tip:**
>
> Undo changes to the data by selecting the affected row(s), and clicking **Actions**, **Selection**, **Revert Changes**.

3.6.4.5 Filling Cells in an Editable Interactive Grid

Apply a single value to a group of cells in an editable interactive grid by using Fill in the Actions, Selection submenu.

You can also apply a single value to all the cells in a row (or a group of rows) by using Fill in **Row Selection** mode.

To apply a single value to all the cells in a row or group of rows:

1. Ensure you are in **Cell Selection** mode by selecting **Actions**, then **Selection**, and then **Cell Selection**. You can also press **F8**.

2. Select the first cell of the group.
3. Press and hold the **Shift** key, and use the mouse or arrow keys to select a group of cells.

> **Tip:**
>
> All selected cells must be adjacent for a single Fill action. Repeat this procedure for non-adjacent cells.

4. Select the **Actions** menu, select **Selection**, and select **Fill**.

   The Fill Selection dialog displays.
5. Enter a value. Click **OK**.
6. (Optional) Change back to **Row Selection** mode by selecting **Actions**, then **Selection**, and then **Row Selection**. You can also press **F8**.

The entered value applies to the selected cells.

> **Tip:**
>
> Undo changes to the data by selecting the affected row(s), and clicking **Actions**, **Selection**, **Revert Changes**.

3.6.4.6 Clearing Cells in an Interactive Grid

Delete the contents of multiple cells by using Clear in the Actions, Selection submenu.

You can also clear all of the cells in a row (or a group of rows) by using Fill in **Row Selection** mode.

To delete the contents of a group of adjacent cells:

1. Ensure you are in **Cell Selection** mode (select **Actions** menu and then **Selection**, or press **F8**).
2. Select the first cell of the group.
3. Press and hold the **Shift** key, and use the mouse or arrow keys to select a group of cells.

> **Tip:**
>
> All selected cells must be adjacent for a single Clear action. Repeat this procedure for non-adjacent cells.

4. Select the **Actions** menu, select **Selection**, and select **Clear**.

The value of the selected cells is replaced with an empty text string.

You do not need to save the report because Clear directly affects the data in the database.

> **Tip:**
>
> Undo changes to the data by selecting the affected row(s), and clicking **Actions**, **Selection**, **Revert Changes**.

3.7 Saving an Interactive Grid

Save your changes as a new report within the application. Name and keep these interactive grid reports private or make them public to share with other users.

- About Interactive Grid Report Types
  Reports in interactive grids have different uses and characteristics. You interact with the Primary report of an interactive grid, and save your changes as Private reports.
- Saving a Report in an Interactive Grid
  Save your changes to an interactive grid by clicking Save As from the Actions, Report submenu.
- Renaming a Report in an Interactive Grid
  Change the name of an interactive grid report by selecting Edit in the Actions, Report submenu.
- Deleting a Report in an Interactive Grid
  Delete a Private report from an interactive grid by selecting Delete in the Actions, Report submenu.

3.7.1 About Interactive Grid Report Types

Reports in interactive grids have different uses and characteristics. You interact with the Primary report of an interactive grid, and save your changes as Private reports.

The following is a list of default report types in Oracle APEX, although developers can choose to add more:

Private Report
You can save a Private report of the interactive grid to preserve your changes to it (such as filters, aggregations, column order, visible columns, and other customizations).
Private reports can only be viewed by the user who creates them.

Primary Report
The default view of an interactive grid is the Primary report.
While you can customize the look and organization of a Primary report, you cannot overwrite or rename it. The Primary report is useful as a backup or a starting point for customizing new views of the interactive grid.

After you save at least one private report, a drop-down list appears on the toolbar near the Search bar. You can use this to select between reports.

> **See Also:**
>
> How the User Type Affects Available Save Options in *Oracle APEX App Builder User's Guide*

3.7.2 Saving a Report in an Interactive Grid

Save your changes to an interactive grid by clicking Save As from the Actions, Report submenu.

To save a private interactive grid report:

1. Click the **Actions** menu and select **Report** then **Save As**.

   The Save As dialog displays.

2. In the Save As dialog:

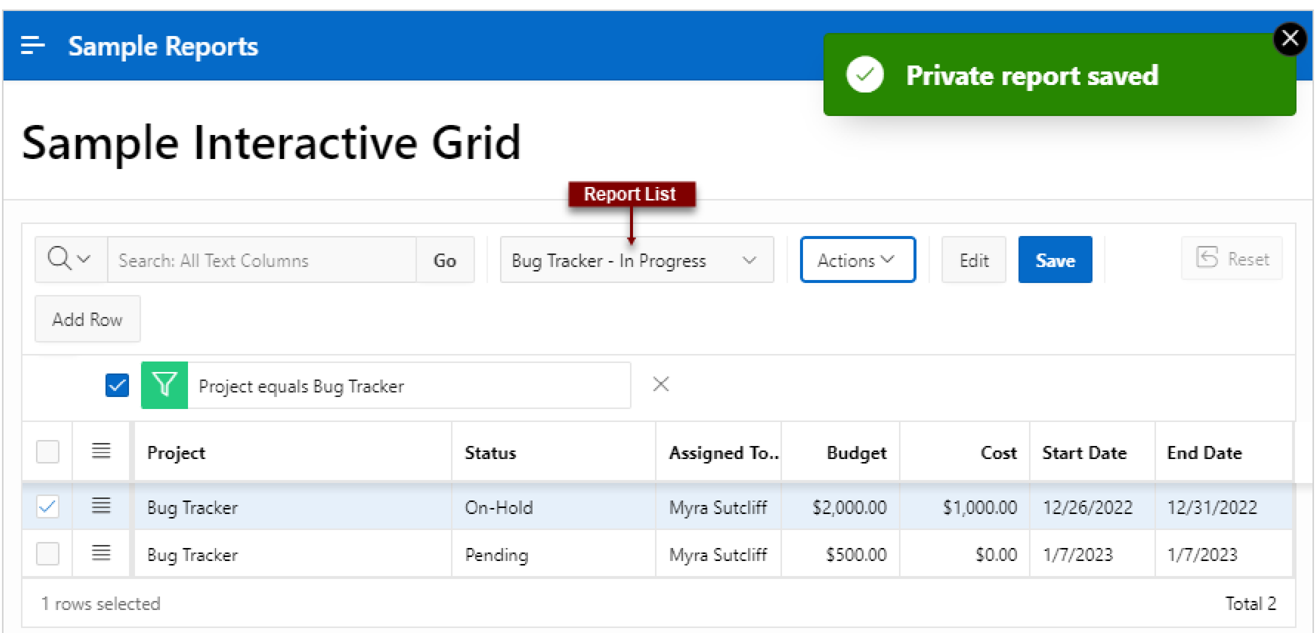
   a. Type - Select **Private**.

   b. Name - Enter a name for the grid.

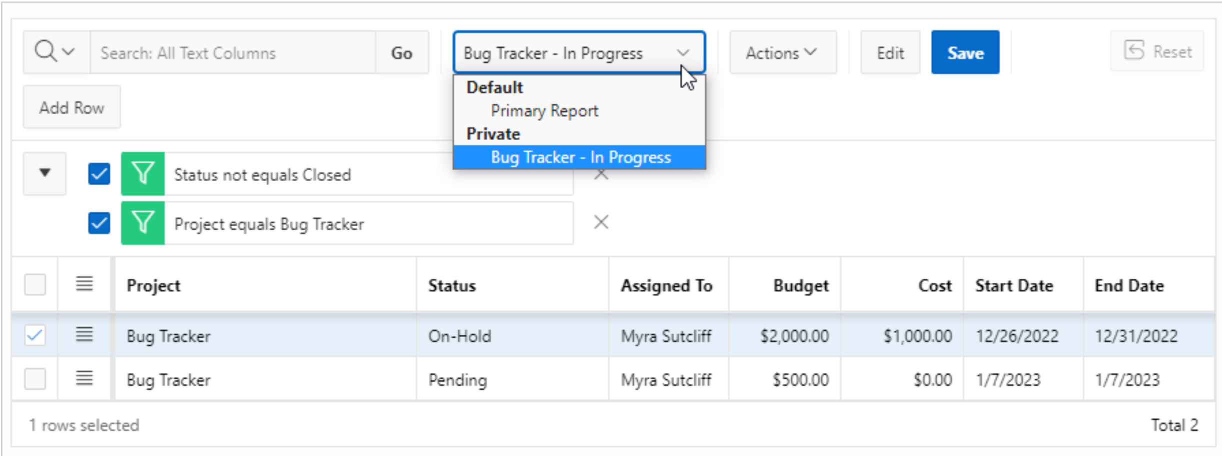
3. Click **Save**.

   Save further changes to the report by selecting **Save** in the Actions, Report Setting submenu.

The report is saved and a confirmation message displays.



If an interactive grid has a saved report, a drop-down list appears on the toolbar between the Search Bar and Actions menu.



3.7.3 Renaming a Report in an Interactive Grid

Change the name of an interactive grid report by selecting Edit in the Actions, Report submenu.

To rename a report:

1. Select the report from the drop-down list.
2. Click the **Actions** menu and select **Report** then **Edit**.

   The Report Settings dialog displays.
3. Rename the report.
4. Click **Save**.

The report is saved.

3.7.4 Deleting a Report in an Interactive Grid

Delete a Private report from an interactive grid by selecting Delete in the Actions, Report submenu.

To delete an interactive grid report:

1. Select the report from the drop-down list.
2. Click the **Actions** menu and select **Report** then **Delete**.

   A confirmation dialog appears.
3. Click **OK**.

The report is deleted and the Primary report reloads.

3.8 Resetting Interactive Grids

You can refresh, reset, or flashback a grid to revert your changes to it. Resetting an interactive grid can have different outcomes depending on the report type.

Refresh an interactive grid to update it with the most recent version of the data in the database. Reset an interactive grid to undo any changes since it was last saved.

Flashback a grid to a point in the past (in minutes) to retrieve data from the database as it existed at that time, which ignores any changes made to the data in the database since that time.

- Refreshing an Interactive Grid
  Update an interactive grid with the most current data available on the database by selecting Refresh in the Actions, Data submenu.
- Resetting an Interactive Grid
  Undo changes to an interactive grid by clicking the Reset button or by selecting Reset from the Actions, Report submenu.
- How the Reset Button Affects Saved Interactive Grid Reports
  Clicking the Reset button reloads an interactive grid’s last saved state. The saved state varies between report types.
- Reverting an Interactive Grid to a Specific Save State
  Revert an interactive grid to a specific point in time by selecting the Flashback in the Actions, Data submenu.

3.8.1 Refreshing an Interactive Grid

Update an interactive grid with the most current data available on the database by selecting Refresh in the Actions, Data submenu.

Refreshing an interactive grid is quicker than reloading the entire page in the browser. Refreshing is also a valuable feature for highly fluid data sets.

To refresh an interactive grid:

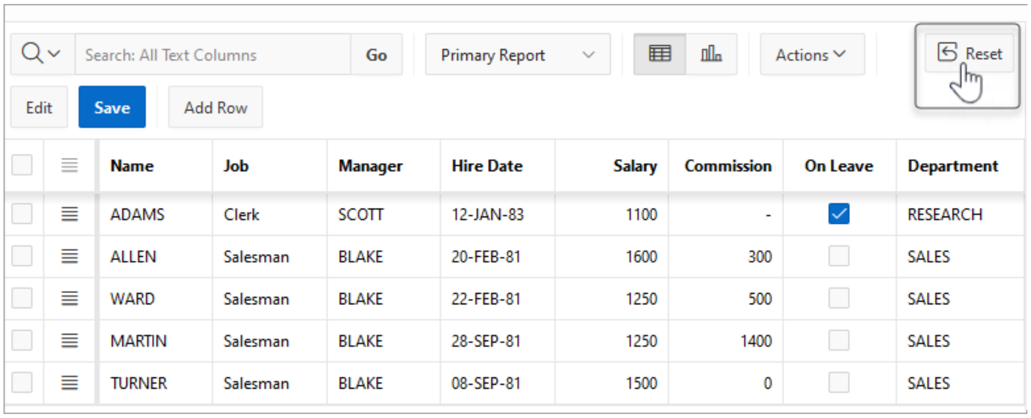
1. Click the **Actions** menu and select **Data**.
2. Select **Refresh**.

The grid refreshes. Updates to the data are applied, but not marked.

3.8.2 Resetting an Interactive Grid

Undo changes to an interactive grid by clicking the Reset button or by selecting Reset from the Actions, Report submenu.

> **WARNING:**
>
> Resetting an interactive grid reverts it to a previously saved state. Any changes since that time may be lost.



To reset an interactive grid, do one of the following:

- Click the **Reset** button.
- Click the **Actions** menu, select **Report**, and select **Reset**.

The grid reloads the last saved state.

3.8.3 How the Reset Button Affects Saved Interactive Grid Reports

Clicking the Reset button reloads an interactive grid's last saved state. The saved state varies between report types.

In a Primary report, the **Reset** button undoes all changes that you have made—including reorganization and new content—because only developers can overwrite Primary reports. To preserve your changes, save a Private report.

In a Private report, the **Reset** button undoes only the changes that you have made since the last time you saved the report.

> **See Also:**
>
> Saving an Interactive Grid

3.8.4 Reverting an Interactive Grid to a Specific Save State

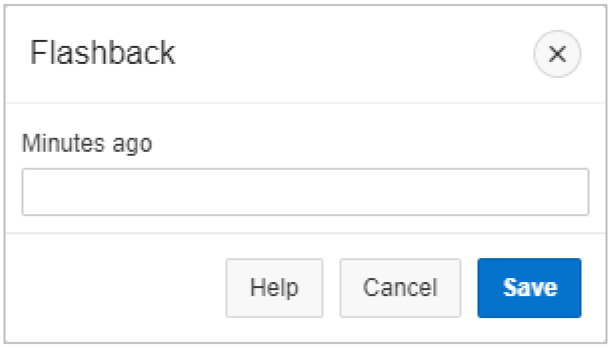
Revert an interactive grid to a specific point in time by selecting the Flashback in the Actions, Data submenu.

Flashback allows you to revert the interactive grid back a specific number of minutes.

To revert an interactive grid:

1. Click the **Actions** menu, select **Data**, and select **Flashback**.

   The Flashback dialog displays.



2. Enter the number of minutes you want to revert. For example, enter `10` to go back ten minutes.
3. Click **Save**.

The grid reverts to the state it was in ten minutes ago.

3.9 Downloading or Emailing an Interactive Grid

Download or email an interactive grid as a CSV, HTML, Excel, or PDF file by selecting Download in the Actions menu.

To download or email an interactive grid:

1. Click the **Actions** menu and select **Download**.

   The Download dialog displays.

2. Choose report download format - Select **CSV**, **HTML**, **PDF**, or **Excel**.

   Extra PDF options may appear if you use native PDF printing without an external print server.

3. For **PDF**, choose the Page Size, Page Orientation, and whether to include Accessibility Tags.

   Enabling **Include Accessibility Tags** enables the document to be read aloud by a screen reader and other text-to-speech tools (this increases the file size of the PDF).

4. **Data Only** - Enable **Data Only** to include only columns and rows, and ignore any active column groups, aggregates, highlights, and control breaks.

   The **Data Only** option only displays if the grid you are downloading has column groups, aggregates, highlights, or control breaks enabled.

5. (Optional) **Strip Rich Text** - Enable **Strip Rich Text** to remove Rich Text formatting from the file output.

   This option only appears for CSV and Excel downloads of interactive grids that have a Rich Text column.

6. Do one of the following:

   - To download the file, click **Download**.
   - To email the file as an attachment to an email:

     a. Enable **Send as Email**.

     b. Complete the fields for the recipients (To, Cc, Bcc, Subject, Message).

     c. Click **Send**.

See Also:

Configuring Interactive Grid Download Formats in *Oracle APEX App Builder User’s Guide*

4 Using Interactive Reports

An interactive report is a formatted result of a SQL query.

- About Interactive Reports
  In addition to interactive grids, Oracle APEX includes two main report types: an interactive report and a classic report.
- Using the Search Bar
  A search bar displays above interactive reports and includes the following features.
- Using the Select Columns To Search Icon
  The Select columns to search icon displays to the left of the search bar. Click this icon to display a listing of all columns in the current report.
- Using the Column Heading Menu
  Clicking a column heading in an interactive report displays the Column Heading menu. Positioning the cursor over each icon displays a tooltip that describes its function.
- Using Interactive Report Filters
  When you customize an interactive report, a filter displays between the search bar and the report.
- Customizing an Interactive Report Using the Actions Menu
  Customize an interactive report by selecting options on the Actions menu.

> **See Also:**
>
> Managing Interactive Reports in *Oracle APEX App Builder User's Guide*

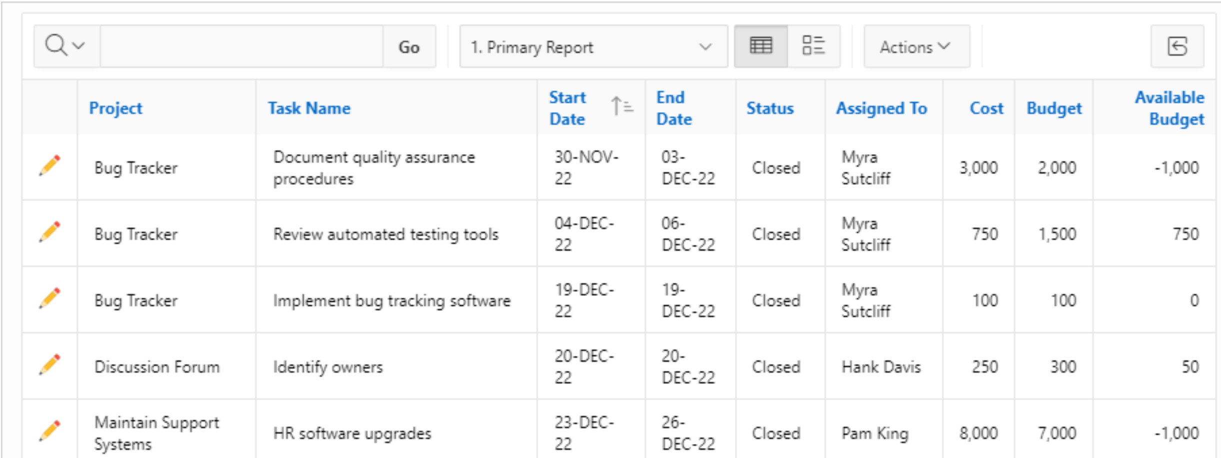
4.1 About Interactive Reports

In addition to interactive grids, Oracle APEX includes two main report types: an interactive report and a classic report.

The main difference between these two report types is that interactive reports enable you to customize the appearance of the data through searching, filtering, sorting, column selection, highlighting, and other data manipulations.

About Interactive Reports

The following is an example of an interactive report in the packaged application, Sample Reporting.



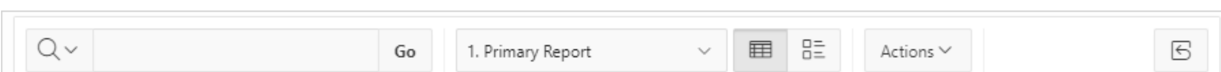
	Project	Task Name	Start Date	End Date	Status	Assigned To	Cost	Budget	Available Budget
	Bug Tracker	Document quality assurance procedures	30-NOV-22	03-DEC-22	Closed	Myra Sutcliff	3,000	2,000	-1,000
	Bug Tracker	Review automated testing tools	04-DEC-22	06-DEC-22	Closed	Myra Sutcliff	750	1,500	750
	Bug Tracker	Implement bug tracking software	19-DEC-22	19-DEC-22	Closed	Myra Sutcliff	100	100	0
	Discussion Forum	Identify owners	20-DEC-22	20-DEC-22	Closed	Hank Davis	250	300	50
	Maintain Support Systems	HR software upgrades	23-DEC-22	26-DEC-22	Closed	Pam King	8,000	7,000	-1,000

Interactive reports enable you to create highly customized reports. You can alter the report layout by hiding or exposing specific columns and applying filters, highlighting, and sorting. You can also define breaks, aggregations, charts, group data, and add their own computations. Once customized, the report can be saved as either a private or public report. Most interactive reports include a search bar, Actions menu, Column Heading menu, and edit icons in the first column of each row.

In contrast, classic reports support general keyword search capability, the ability to specify the number of rows that display, and basic column sorting.

4.2 Using the Search Bar

A search bar displays above interactive reports and includes the following features.



- Select columns to search icon - Resembles a magnifying glass. Click this icon to narrow your search to specific columns. To search all columns, select **All Columns**. See Using the Select Columns To Search Icon.
- Text area - Enter case insensitive search criteria (wildcard characters are implied) and then click **Go**.
- Go button - Executes a search.
- Reports list - Displays alternate default and saved private or public reports. See Saving an Interactive Report.
- View icons - Switches between two icons: View Report and View Details (the default report, if enabled). May also include Chart and Group By View (if defined). Icons do not display by default, but must be configured by the developer.
- Actions menu - Use the Actions menu to customize an interactive report. See Customizing an Interactive Report Using the Actions Menu.
- Reset - Resets the interactive report. Resetting an interactive report can have different outcomes depending on the report type. See Resetting a Report.

Tip:

Developers can customize what displays on the Search bar. To learn more, see *Oracle APEX App Builder User's Guide* in *Oracle APEX App Builder User's Guide*.

4.3 Using the Select Columns To Search Icon

The Select columns to search icon displays to the left of the search bar. Click this icon to display a listing of all columns in the current report.

To search specific columns:

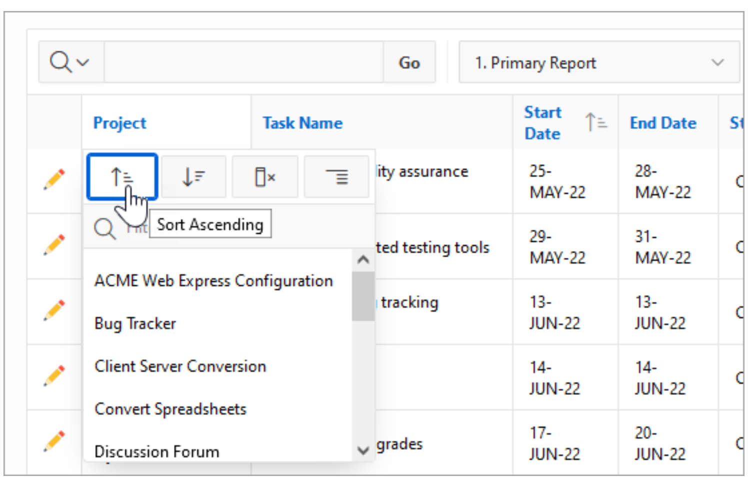
1. Click the **Select columns to search** icon and select a column.
2. Enter keywords in the Text area and click **Go**.
3. To disable the filter, select the **Enable/Disable Filter** check box.
4. To delete the filter, click the **Remove Filter** icon.

See Also:

Selecting Columns to Display

4.4 Using the Column Heading Menu

Clicking a column heading in an interactive report displays the Column Heading menu. Positioning the cursor over each icon displays a tooltip that describes its function.



Column Heading menu options include:

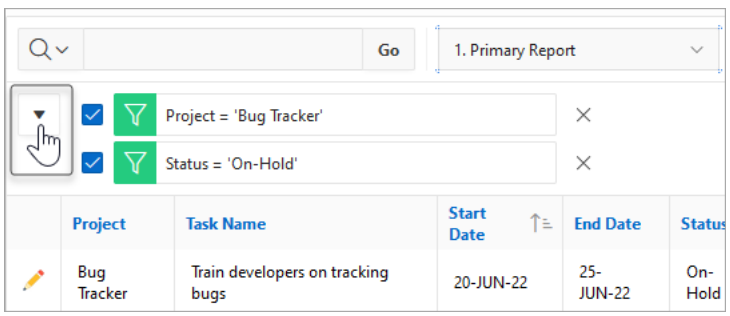
- Sort Ascending - Sorts the report by the column in ascending order.

- Sort Descending - Sorts the report by the column in descending order.
- Hide Column - Hides the column. Not all columns can be hidden. If a column cannot be hidden, the Hide Column icon does not display. To show a hidden column, select **Reset** from the Actions menu.
- Control Break - Creates a break group on the column. This pulls the column out of the report as a master record. See Creating a Control Break.
- Column Information - Displays help text about the column, if available.
- Filter - Enter a case insensitive search criteria. Entering a value reduces the list of values at the bottom of the menu. You can then select a value from the bottom. The selected value will be created as a filter using either the `equal` sign (=) or `contains` depending on the List of Values Column Filter Type.

4.5 Using Interactive Report Filters

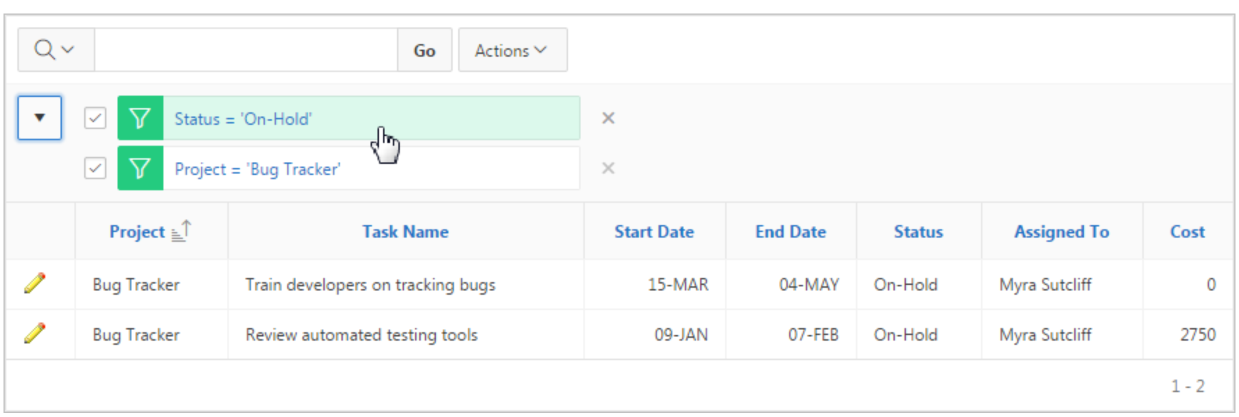
When you customize an interactive report, a filter displays between the search bar and the report.

The following illustration shows a report with two filters `Project = 'Bug Tracker'` and `Status = 'On-Hold'`. By default, filters display in the Report Settings area above the report. You can show or hide the filter details by clicking the arrow to the left of the filter name.



When you expand a filter and view the details, you can edit it as follows:

- **Enable/Disable** - To enable and disable a filter, select and deselect the check box to the left of the filter name.
- **Filter Edit** - To edit a filter, click the filter name.
- **Remove Filter** - To remove a filter, select the Remove Filter icon to the right of the filter name.



4.6 Customizing an Interactive Report Using the Actions Menu

Customize an interactive report by selecting options on the Actions menu.

> **Tip:**
>
> Not all options described in this section are available on every Actions menu. Developers can customize what options appear. To learn more, see Customizing the Interactive Report Search Bar in *Oracle APEX App Builder User's Guide*.

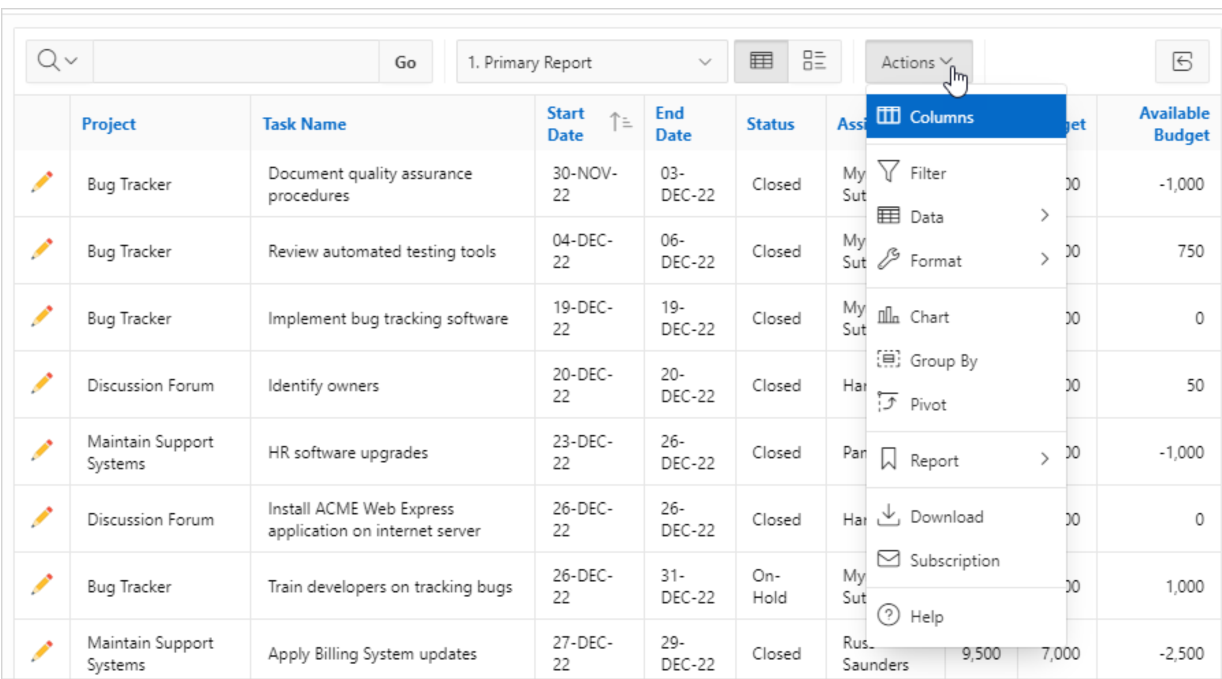
- About the Actions Menu
  The Actions menu appears to the right of the Go button on the Search bar. Use this menu to customize an interactive report.
- Selecting Columns to Display
  Customize a report to include specific columns.
- Adding a Filter
  Create row and column filters on an interactive report.
- Selecting Column Sort Order
  You can specify column display sort order (ascending or descending) by selecting Sort on the Data submenu.
- Creating a Control Break
  You can create a break group of one or several columns by selecting Actions, Format, and Control Break.
- Adding Highlighting
  Customize the display to highlight specific rows in a report by selecting Highlight on the Actions, Format submenu.
- Computing Columns
  Add mathematical computations (for example, `NBR_HOURS/24`) or standard Oracle functions to columns.
- Defining an Aggregation Against a Column
  Define an aggregation against a column with the Actions, Data submenu. Aggregates are displayed after each control break and at the end of the report within the column for which they are defined.
- Creating a Chart from the Actions Menu
  Create charts in an interactive report with the Actions menu. You can create one chart for each interactive report. Once defined, you can switch between the chart and report views using icons on the Search bar.
- Grouping Columns
  Group sets of results by one or more columns with Group By, then perform mathematical computations against the columns. Once you define the Group By, switch between the Group By and Report views using the icons on the Search bar.
- Managing Pivot Reports
  Pivot reports transpose rows into columns to generate results in a crosstab format.

- [Executing a Flashback Query](#)
  View the data as it existed at a previous point in time by running a flashback query on the Actions, Data submenu.
- [Saving an Interactive Report](#)
  Save a private or public interactive report. Only the user who creates a private report can view, save, rename, or delete that private report.
- [Resetting a Report](#)
  Reset a report back to the default settings by selecting Reset from the Actions, Report submenu. Resetting a report removes any customizations you have made.
- [Downloading a Report](#)
  Download or email an interactive report as a CSV, HTML, Excel, or PDF file by selecting Download in the Actions menu.
- [Subscribing to Report Updates by Email](#)
  Subscribe to an interactive report to receive emails when the report is updated.

4.6.1 About the Actions Menu

The Actions menu appears to the right of the Go button on the Search bar. Use this menu to customize an interactive report.

Actions Menu



The Actions menu contains the following options:

Columns
Specifies which columns to display and in what order. See [Selecting Columns to Display](#).

Filter
Focuses the report by adding or modifying the filter clause on the query. See Adding a Filter.

Data
Contains the Data submenu (see below).

Format
Contains the Format submenu (see below).

Chart
Displays the report data as a chart. See Creating a Chart from the Actions Menu.

Group By
Enables users to group the result set by one or more columns and perform mathematical computations against columns. See Grouping Columns.

Pivot
Enables users to define a Pivot report. See Managing Pivot Reports.

Report
Contains the Report submenu. Manage your private and public reports of the interactive report.
Saves the interactive report. Depending upon their user credentials, users can save different types of reports. See Saving an Interactive Report.
Revert the grid to its last saved state with the **Reset** function.

Reset
Resets the report back to the default report settings. See Resetting a Report.

Download
Downloads a report. Available download formats depend upon your installation and report definition. See Downloading a Report.

Subscription
Send an interactive report by email. See Subscribing to Report Updates by Email.

Help
Provides descriptions of how to customize interactive reports.

Data Submenu

The Actions Menu also contains the Data submenu. The Data submenu contains the following options:

Sort
Changes the columns to sort on and determines whether to sort in ascending or descending order. See Selecting Column Sort Order.

Aggregate
Enables users to perform mathematical computations against a column. See Defining an Aggregation Against a Column.

Compute
Enables users to add computed columns to a report. See Computing Columns.

Flashback
Enables users to view the data as it existed at a previous point in time. See Executing a Flashback Query.

Format Submenu

The Actions Menu also contains the Format submenu. The Format submenu contains the following options:

Control Break
Creates a break group on one or several columns. This pulls the columns out of the interactive report and displays them as a master record. See Creating a Control Break.

Highlight
Defines a filter that highlights the rows that meet the filter criteria. See Adding Highlighting.

Rows Per Page
Select the number of rows that display per page.

4.6.2 Selecting Columns to Display

Customize a report to include specific columns.

To use the Select Columns option:

1. Click the **Actions** menu and select **Columns**.

   The Select Columns dialog appears.

2. Select the columns you want to move. Click the center arrows to move a column from Display in Report to Do Not Display. To select multiple columns at once, press and hold the **CTRL** key.
3. To change the order of the columns, click the **Top**, **Up**, **Down**, and **Bottom** arrows on the right.
4. Click **Apply**.

   A revised report appears.

> **See Also:**
>
> Resetting a Report

4.6.3 Adding a Filter

Create row and column filters on an interactive report.

- About Creating Filters
  You can create a filter on an interactive report by using the Actions menu to create or modify a column filter or row filter.

- Adding, Editing, and Removing a Column Filter
  Use the Actions menu to add, edit, or remove a column filter in an interactive report.
- Adding, Editing, and Removing a Row Filter
  Use the Actions menu to add, edit, or remove a row filter in an interactive report.

4.6.3.1 About Creating Filters

You can create a filter on an interactive report by using the Actions menu to create or modify a column filter or row filter.

You can create two types of filters on an interactive report to search or narrow down the report data:

1. **Column** - Creates a simple filter based on a column.
2. **Row** - Creates a complex filter that allows multiple filter conditions, including column alias names and any Oracle functions, operators, or expressions.
   - For example, a Row filter could contain an `OR` operator, or an `AND` operator.

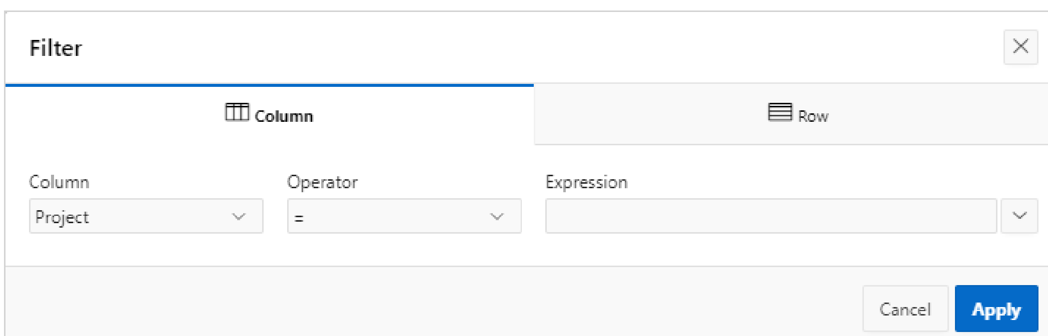
4.6.3.2 Adding, Editing, and Removing a Column Filter

Use the Actions menu to add, edit, or remove a column filter in an interactive report.

To add a column filter:

1. Click the **Actions** menu and select **Filter**.

   The Filter dialog appears.
2. For Filter Type, select **Column**.



3. In the Filter region, specify a column, an operator, and an expression and click **Apply**.

   Notice the filter that displays in the Report Settings area above the report. You can show or hide the filter details by clicking the arrow to the left of the filter name.

To revise the filter:

4. Click the filter name (in this example, `Project = 'Discussion Forum'`).
5. Edit your selections and click **Apply**.
6. To disable the filter, select the **Enable/Disable Filter** check box.
7. To delete the filter, click **Remove Filter**.

4.6.3.3 Adding, Editing, and Removing a Row Filter

Use the Actions menu to add, edit, or remove a row filter in an interactive report.

To add a row filter:

1. Click the **Actions** menu and select **Filter**.

   The Filter dialog appears.

2. For Filter Type, select **Row**.
3. In the Filter dialog:
   a. Name - Enter a name that describes this filter.
   b. Filter Expression - Enter an expression. Select a column and function or operator at the bottom of the region. For example, `I >=2500` displays projects costing more than $2,500.
   c. Click **Apply**.

      Notice the filter that displays in the Report Settings area above the report. You can show or hide the filter details by clicking the arrow to the left of the filter name.

4. To revise the filter:
   a. Click the filter name.
   b. Edit your selections and click **Apply**.
5. To disable the filter, select the **Enable/Disable Filter** check box.
6. To delete the filter, click **Remove Filter**.

4.6.4 Selecting Column Sort Order

You can specify column display sort order (ascending or descending) by selecting Sort on the Data submenu.

You can also specify how to handle `NULL` values. Using the default setting always displays `NULL` values last or always displays them first.

To sort by column:

1. Click the **Actions** menu and select **Data** and then **Sort**.

   The Sort dialog appears.

2. Select a column, the sort direction (**Ascending** or **Descending**), and Null Sorting behavior (**Default**, **Nulls Always Last**, or **Nulls Always First**).
3. Click **Apply**.

4.6.5 Creating a Control Break

You can create a break group of one or several columns by selecting Actions, Format, and Control Break.

Creating a break group pulls the columns out of the interactive report and displays them as a master record.

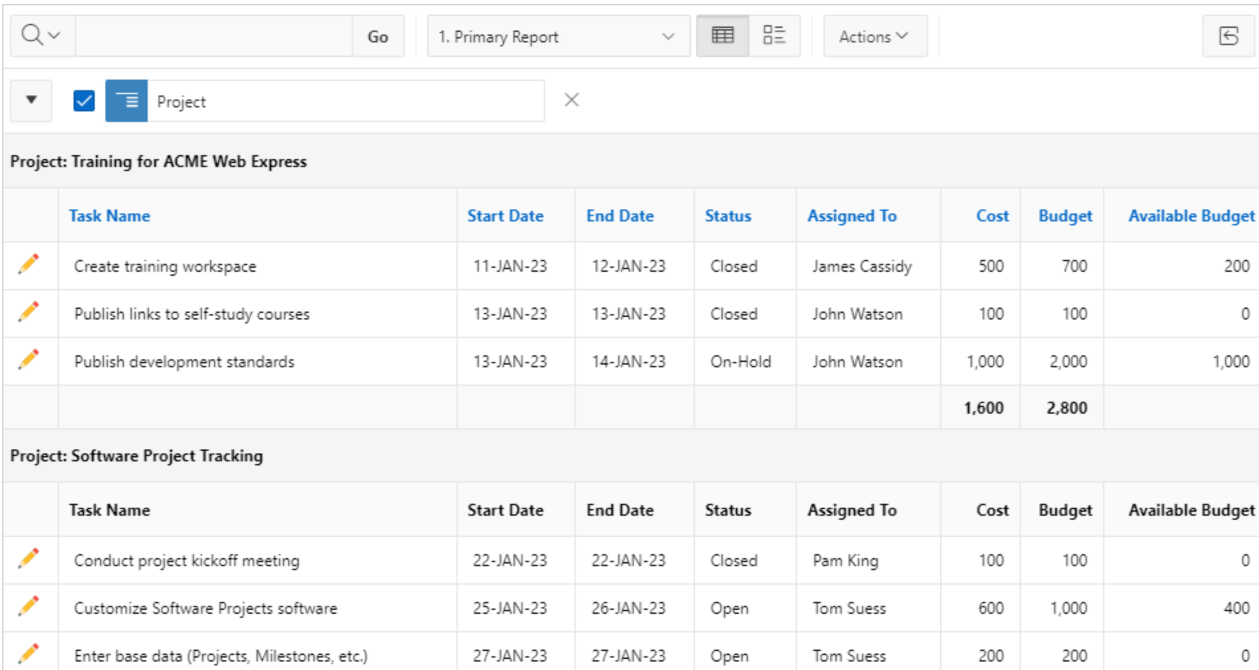
To create a break group:

1. Click the **Actions** menu and select **Format** and then **Control Break**.

   The Control Break dialog appears.

2. Select a column and then a status (**Enable** or **Disable**).
3. Click **Apply**.

   A revised report displays.



Project: Training for ACME Web Express

	Task Name	Start Date	End Date	Status	Assigned To	Cost	Budget	Available Budget
	Create training workspace	11-JAN-23	12-JAN-23	Closed	James Cassidy	500	700	200
	Publish links to self-study courses	13-JAN-23	13-JAN-23	Closed	John Watson	100	100	0
	Publish development standards	13-JAN-23	14-JAN-23	On-Hold	John Watson	1,000	2,000	1,000
						1,600	2,800	

Project: Software Project Tracking

	Task Name	Start Date	End Date	Status	Assigned To	Cost	Budget	Available Budget
	Conduct project kickoff meeting	22-JAN-23	22-JAN-23	Closed	Pam King	100	100	0
	Customize Software Projects software	25-JAN-23	26-JAN-23	Open	Tom Suess	600	1,000	400
	Enter base data (Projects, Milestones, etc.)	27-JAN-23	27-JAN-23	Open	Tom Suess	200	200	0

   Note the defined filter displays in the Report Settings area above the report.

4. Click the left arrow to minimize the filter display.
5. To disable the Control Break filter, deselect the **Enable/Disable Filter** check box. To activate a disabled filter, select the **Enable/Disable Filter** check box again.
6. To delete the filter, click **Remove Control Break**.

4.6.6 Adding Highlighting

Customize the display to highlight specific rows in a report by selecting Highlight on the Actions, Format submenu.

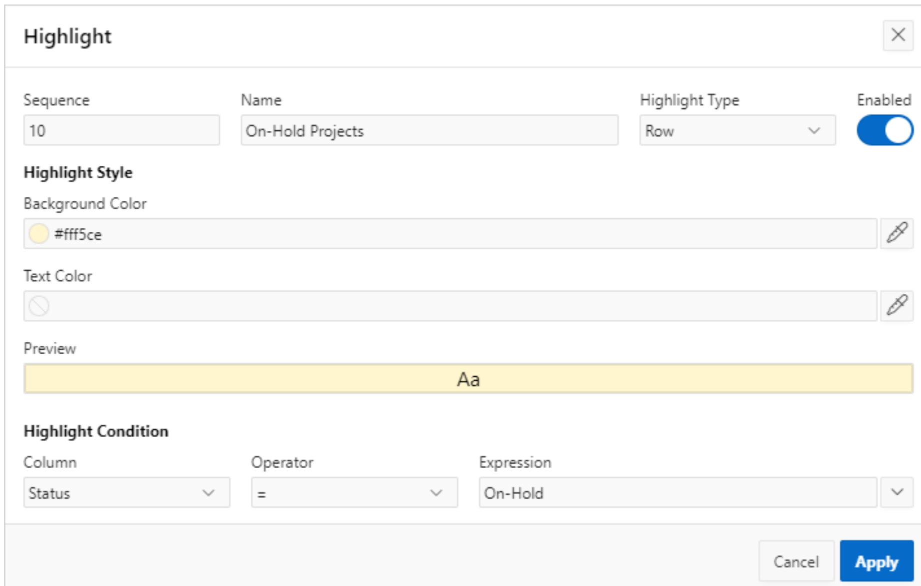
To add highlighting:

1. Click the **Actions** menu and select **Format** and then **Highlight**.

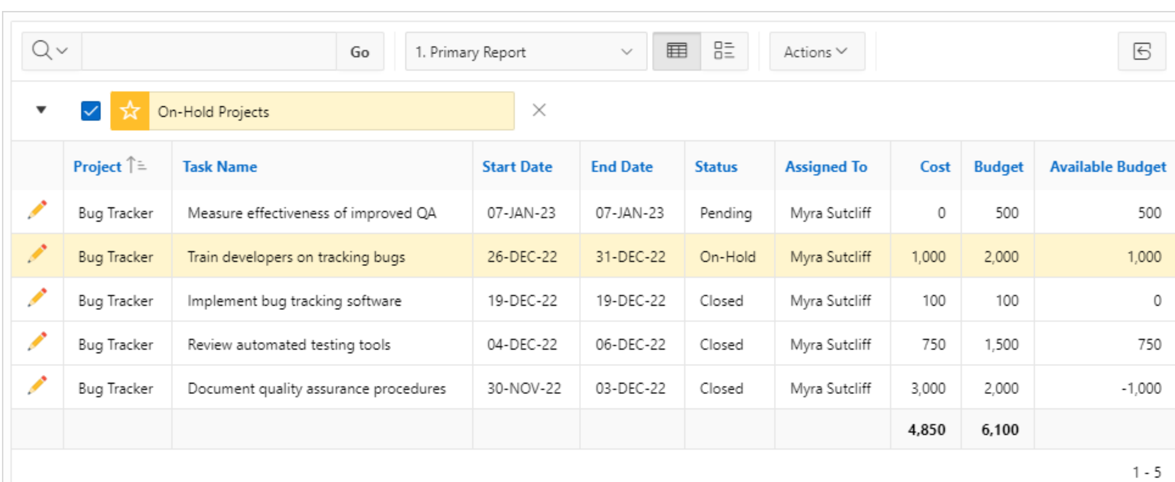
   The Highlight dialog appears.

2. Edit the following information:
   a. Sequence - Enter a numeric value to identify the sequence in which highlighting rules are evaluated.
   b. Name - Enter a name that describes this filter.

c. Highlight Type - Select **Cell** or **Row**.
d. Enabled - Select **Yes**.
e. Background Color - Select a new color for the background of the highlighted area.
f. Text Color - Select a new color for the text in the highlighted area.
g. Highlight Condition - Select a column, an operator, and an expression.



h. Click **Apply**.



Tip:

Note the highlight `On-Hold Projects` displays in the Report Settings area above the report. You can show or hide the filter details by clicking the arrow to the left of the filter name.

3. To revise the highlight, click the highlight name and make the following edits:
   a. Background Color - Select **Black**.
   b. Text Color - Select **White**.
   c. Click **Apply**.
4. To disable the highlight, select the **Enable/Disable** check box.
5. To delete the highlight, click **Remove Highlight**.

4.6.7 Computing Columns

Add mathematical computations (for example, `NBR_HOURS/24`) or standard Oracle functions to columns.

- Creating a Computation
  Use the Compute function in the Actions, Data submenu to add a computation to a column.
- Deleting a Computation
  Open the Compute dialog to remove a computation.

4.6.7.1 Creating a Computation

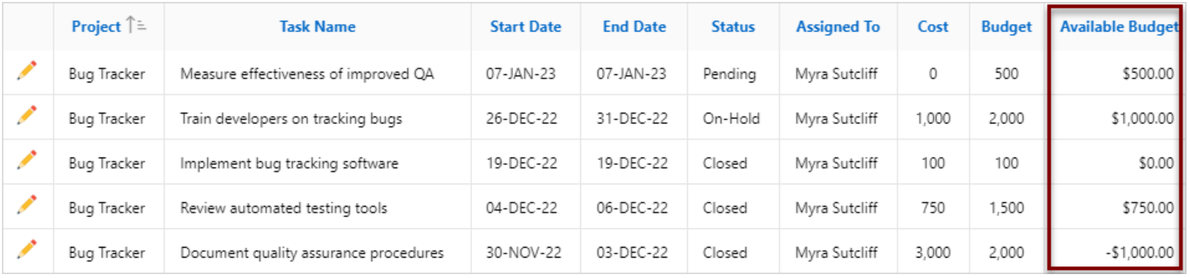
Use the Compute function in the Actions, Data submenu to add a computation to a column.

To create a computation:

1. Click the **Actions** menu and select **Data** and then **Compute**.

   The Compute dialog appears.
2. In the Compute dialog:
   a. Computation - Select **New Computation**.
   b. Column Label - Enter the name of the new column to be created. For example, `Available Budget`.
   c. Format Mask - Select an Oracle format mask to be applied to the new column. For example, `$5,234.10`.
3. Create the computation:
   a. Column Aliases - Select a column to add the column alias in the computation expression.
   b. Keypad - Select a shortcut for commonly used keys.
   c. Functions - Select the appropriate function.

   In the following example, a new column compares the actual cost to the budgeted amount, using the formula `I - H`, where `I` is the budgeted amount and `H` is the cost.
4. Click **Apply**.



	Project	Task Name	Start Date	End Date	Status	Assigned To	Cost	Budget	Available Budget
	Bug Tracker	Measure effectiveness of improved QA	07-JAN-23	07-JAN-23	Pending	Myra Sutcliff	0	500	$500.00
	Bug Tracker	Train developers on tracking bugs	26-DEC-22	31-DEC-22	On-Hold	Myra Sutcliff	1,000	2,000	$1,000.00
	Bug Tracker	Implement bug tracking software	19-DEC-22	19-DEC-22	Closed	Myra Sutcliff	100	100	$0.00
	Bug Tracker	Review automated testing tools	04-DEC-22	06-DEC-22	Closed	Myra Sutcliff	750	1,500	$750.00
	Bug Tracker	Document quality assurance procedures	30-NOV-22	03-DEC-22	Closed	Myra Sutcliff	3,000	2,000	-$1,000.00

The revised report appears with the new Available Budget column.

4.6.7.2 Deleting a Computation

Open the Compute dialog to remove a computation.

To delete a computation:

1. Click the **Actions** menu and select **Data** and then **Compute**.

   The Compute dialog appears.
2. From Computation, select the computation.

   The computation appears.
3. Click **Delete**.

4.6.8 Defining an Aggregation Against a Column

Define an aggregation against a column with the Actions, Data submenu. Aggregates are displayed after each control break and at the end of the report within the column for which they are defined.

- Creating an Aggregation Against a Column
  Create an aggregation by selecting Aggregate in the Actions, Data submenu.
- Removing a Column Aggregation
  Open the Aggregate dialog to remove an aggregation.

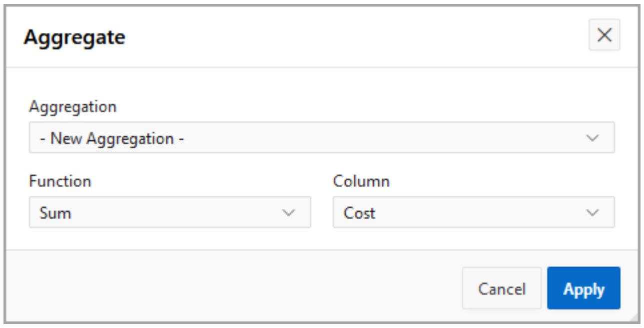
4.6.8.1 Creating an Aggregation Against a Column

Create an aggregation by selecting Aggregate in the Actions, Data submenu.

To create an aggregation against a column:

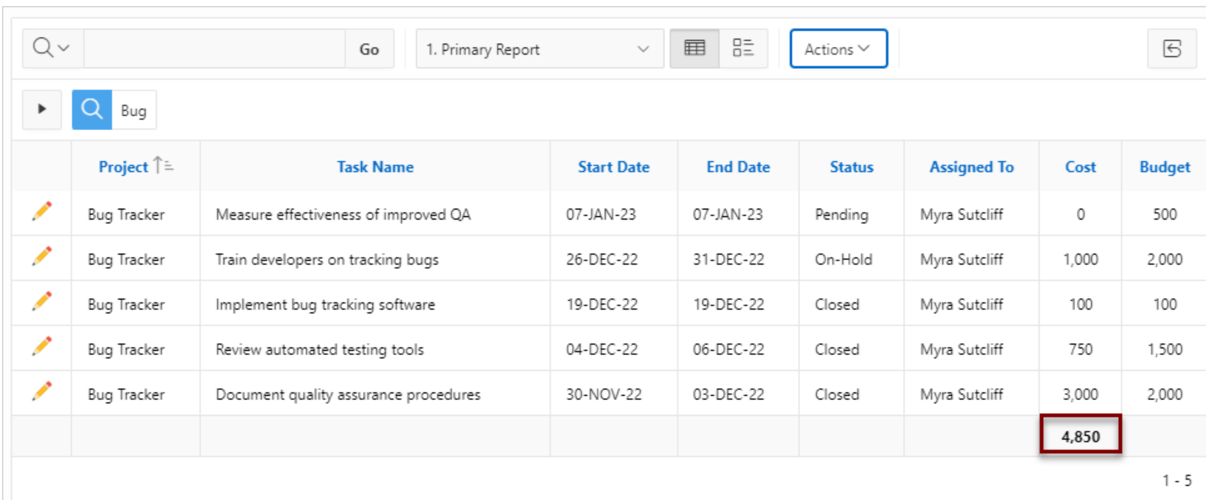
1. Click the **Actions** menu and select **Data** and then **Aggregate**.

   The Aggregate dialog appears.
2. In the Aggregate dialog:
   a. Aggregation - Select **New Aggregation**.
   b. Function - Select one of the following: **Sum**; **Average**, **Count**, **Count Distinct**, **Minimum**, **Maximum**, or **Median**.
   c. Column - Select a column.



This example creates a sum of the Cost column.

d. Click **Apply**.



The computation appears at the bottom of the last page of the report. In this example, the aggregate shows the sum of all amounts in the Cost column.

4.6.8.2 Removing a Column Aggregation

Open the Aggregate dialog to remove an aggregation.

To remove column aggregation:

1. Click the **Actions** menu and select **Data** and then **Aggregate**.

   The Aggregate dialog appears.

2. From Aggregation, select a previously defined aggregation.
3. Click **Delete**.

4.6.9 Creating a Chart from the Actions Menu

Create charts in an interactive report with the Actions menu. You can create one chart for each interactive report. Once defined, you can switch between the chart and report views using icons on the Search bar.

- Creating a Chart
  Use the Chart function in the Actions menu to create a chart in an interactive report.
- Editing a Chart
  Open the Chart dialog to edit a chart in an interactive report.
- Deleting a Chart
  Open the Chart dialog to remove a chart in an interactive report.

4.6.9.1 Creating a Chart

Use the Chart function in the Actions menu to create a chart in an interactive report.

To create a chart:

1. Click the **Actions** menu and select **Chart**.

   The Chart dialog appears.
2. In the Chart dialog, specify the appropriate options.
   a. Chart Type - Select the type of chart you want to create. The options are Bar, Line with Area, Pie, and Line.
   b. Label - Select the column to be used as the label.
   c. Axis Title for Label - Enter the title to display on the axis associated with the column selected for Label (not available for pie chart)
   d. Value - Select the column to be used as the Value. If your function is a `COUNT`, a Value does not need to be selected.
   e. Axis Title for Value - Enter the title to display on the axis associated with the column selected for Value (not available for pie chart).
   f. Function - (Optional) Select a function to be performed on the column selected for Value.
   g. Orientation - Select whether chart elements extend up and down or sideways. (Not applicable for pie charts.)
   h. Sort - Select a sorting method.
3. Click **Apply**.

The chart appears.

> **Tip:**
>
> The Search bar now contains two icons: **View Report** and **View Chart**. Click these icons to toggle between chart and report views.

4.6.9.2 Editing a Chart

Open the Chart dialog to edit a chart in an interactive report.

To edit a chart:

1. While viewing a report:

a. Click the **Actions** menu and select **Chart**.

   The Chart dialog appears.

b. Edit your selections and click **Apply**.

2. While viewing a chart:
   a. Click **Edit Chart**.
   b. Edit your selections and click **Apply**.

4.6.9.3 Deleting a Chart

Open the Chart dialog to remove a chart in an interactive report.

To delete a chart:

1. While viewing a report:
   a. Click the **Actions** menu and select **Chart**.

      The Chart dialog appears.

   b. Click **Delete**.
2. While viewing a chart:
   a. Click **Edit Chart**.
   b. Click **Delete**.

> **Tip:**
>
> You can also click the **Remove Chart** icon to the right of the Edit Chart filter.

4.6.10 Grouping Columns

Group sets of results by one or more columns with Group By, then perform mathematical computations against the columns. Once you define the Group By, switch between the Group By and Report views using the icons on the Search bar.

- Creating a Group By
  Use the Group By function in the Actions menu to reorganize an interactive grid.
- Editing a Group By
  Edit the properties of a grouping in the Group By dialog.
- Selecting a Group By Sort Order
  Specify Group By column sort order (ascending or descending) by either clicking on the group by column heading or selecting Group By Sort on the Data submenu.
- Deleting a Group By
  Delete a grouping in the Group By dialog.

4.6.10.1 Creating a Group By

Use the Group By function in the Actions menu to reorganize an interactive grid.

To use Group By:

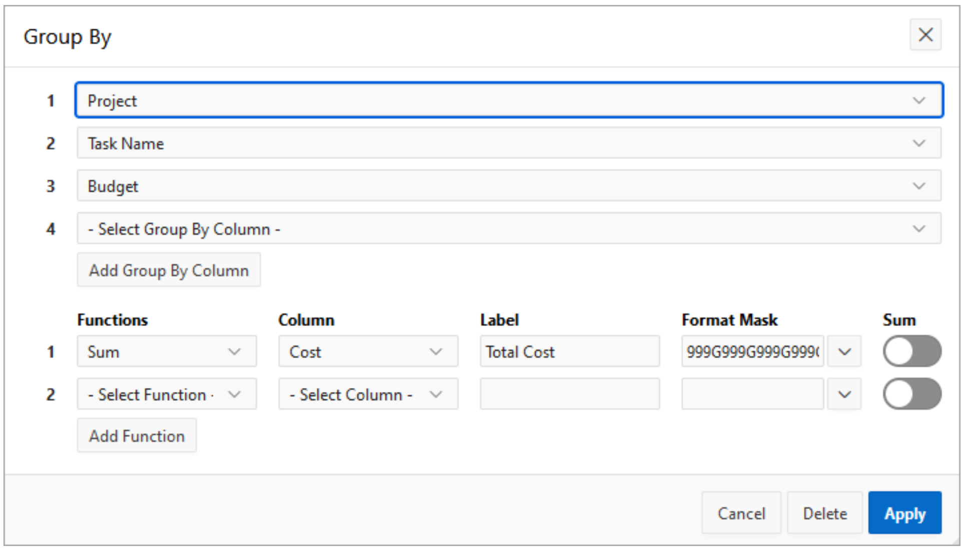
1. Click the **Actions** menu and select **Group By**.

   The Group By dialog appears.

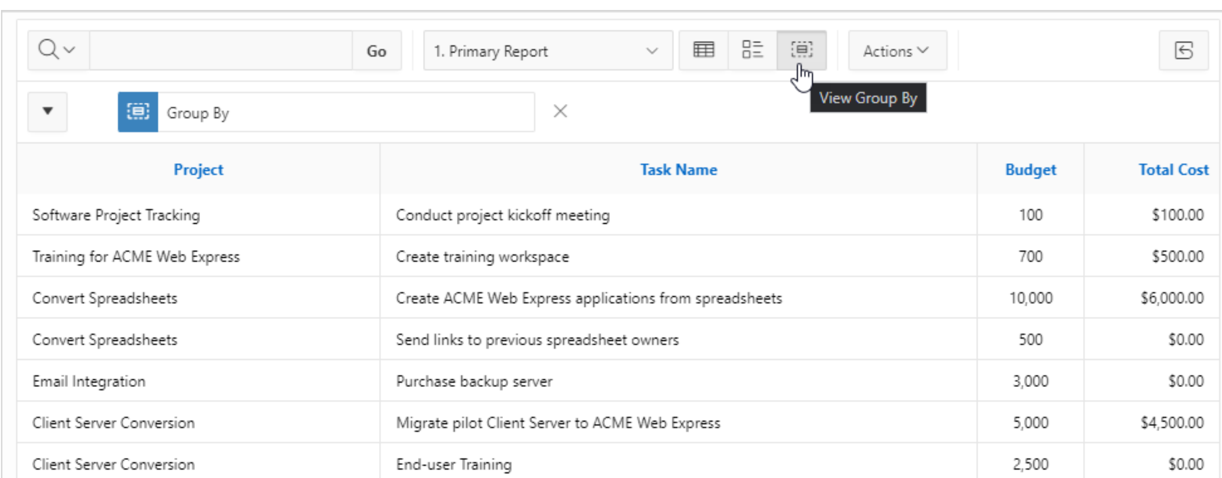
2. In the Group By dialog:

   a. Select a column to display. To add additional columns, click **Add Group By Column**.

   b. Select the function, column, label, and format mask. To create a sum, click the **Sum** toggle. To add another function, click **Add Function**.



   c. Click **Apply**.



A Group By icon appears to the left of the Actions menu. The resulting report displays the Project, Task Name, and Budget columns. Additionally, a new column, Total Cost, displays on the right side.

4.6.10.2 Editing a Group By

Edit the properties of a grouping in the Group By dialog.

To edit a Group By:

1. Click **Edit Group By**.

   The Group By dialog appears.

2. Edit the attributes.
3. To remove a previously defined Group by Column, select the default setting **Select Group By Column**.
4. Click **Apply**.

4.6.10.3 Selecting a Group By Sort Order

Specify Group By column sort order (ascending or descending) by either clicking on the group by column heading or selecting Group By Sort on the Data submenu.

You can also specify how to handle NULL values. Using the default setting always displays NULL values last or always displays them first.

To sort a group by column:

1. Access a Group By view.
2. Click the **Actions** menu, select **Data**, and select **Group By Sort**.

   > **Tip:**
   >
   > The Group By Sort menu is only visible when you are viewing Group By view.

   The Group By Sort dialog appears.

3. Select a column, the sort direction (Ascending or Descending), and Null Sorting behavior (Default, Nulls Always Last, or Nulls Always First).
4. Click **Apply**.

> **See Also:**
>
> Creating a Group By

4.6.10.4 Deleting a Group By

Delete a grouping in the Group By dialog.

To delete a Group By:

1. Click **Edit Group By**.

   The Group By dialog appears.

2. Click **Delete**.

> **Tip:**
>
> You can also click the Remove Group By icon to the right of the Edit Group By filter.

4.6.11 Managing Pivot Reports

Pivot reports transpose rows into columns to generate results in a crosstab format.

Select pivot columns and rows and then provide the functions to be represented in the pivot report. Once created, pivot reports display a new icon in the search bar.

- Creating a Pivot Report
  Create a pivot report by opening the Pivot dialog from the Actions menu.
- Editing a Pivot Report
  Edit a pivot report by clicking the Edit Pivot filter in an interactive report and opening the Pivot dialog.
- Deleting a Pivot Report
  Remove a pivot report from an interactive report in the Pivot dialog.

4.6.11.1 Creating a Pivot Report

Create a pivot report by opening the Pivot dialog from the Actions menu.

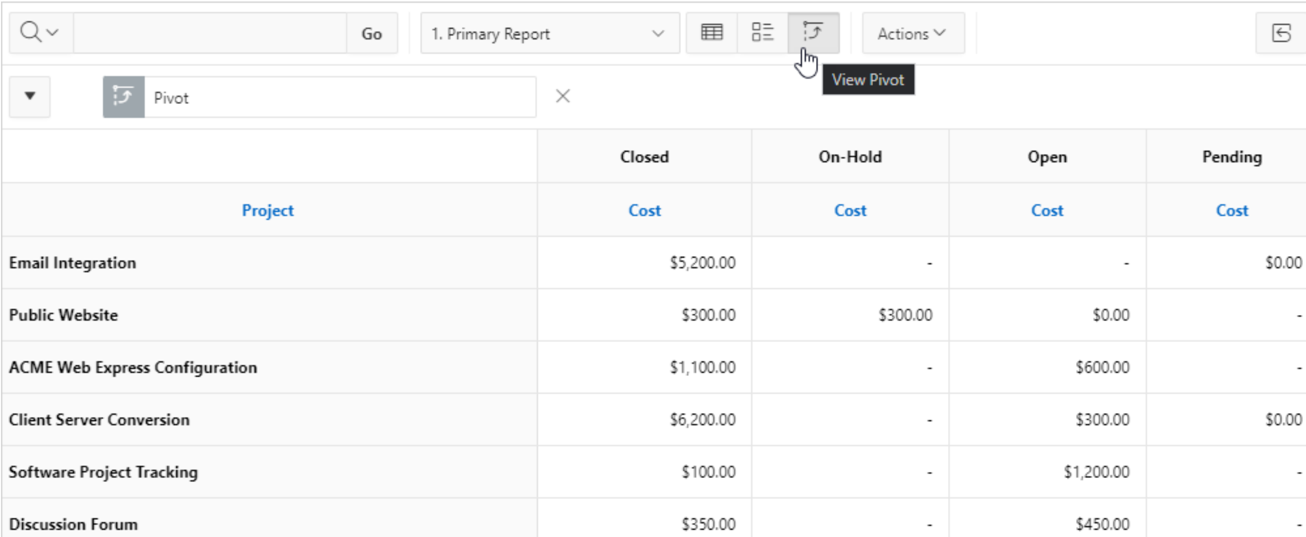
To create a pivot report:

1. Click the **Actions** menu and select **Pivot**.

   The Pivot dialog appears.
2. In the Pivot dialog:
   a. Pivot Columns - Select the columns to display (for example, **Status**). To add additional columns, click **Add Pivot Column**.
   b. Row Columns - Select the rows to display (for example, **Project**). To add additional columns, click **Add Row Column**.
   c. Functions:
      - Select a function, column, label, and format mask.
      - To create a sum, click the **Sum** check box (optional).
   d. Click **Apply**.

The Search Bar now contains at least two icons, including **View Report** and **View Pivot**. Click these icons to toggle between the report view and the pivot view.

The following example shows a Pivot report that displays the number of closed, on-hold, open, and pending tasks associated with each project.



4.6.11.2 Editing a Pivot Report

Edit a pivot report by clicking the Edit Pivot filter in an interactive report and opening the Pivot dialog.

To edit a pivot report:

1. Click the **Edit Pivot** filter.

   The Pivot dialog appears.
2. Edit the attributes.
3. To remove a previously defined column or row, select the default setting, **Select Pivot Column** and **Select Row Column**.
4. Click **Apply**.

4.6.11.3 Deleting a Pivot Report

Remove a pivot report from an interactive report in the Pivot dialog.

To delete a pivot report:

1. Click the **Edit Pivot** filter.

   The Pivot dialog appears.
2. Click **Delete**.

> **Tip:**
>
> You can also click the **Remove Pivot** icon to the right of the Edit Pivot filter.

4.6.12 Executing a Flashback Query

View the data as it existed at a previous point in time by running a flashback query on the Actions, Data submenu.

The default amount of time that you can flashback is 3 hours (or 180 minutes) but the actual amount is different for each database.

- Creating a Flashback Query
  Create a flashback query by using the Actions, Data submenu.
- Editing a Flashback Query
  Edit a flashback query by clicking the flashback query filter in an interactive report.
- Deleting a Flashback Query
  Delete a flashback query by using the flashback query filter dialog in an interactive report.

4.6.12.1 Creating a Flashback Query

Create a flashback query by using the Actions, Data submenu.

To run a flashback query:

1. Click the **Actions** menu and select **Data** then **Flashback**.
2. In Flashback Duration (minutes), enter the number of minutes.
3. Click **Apply**.

4.6.12.2 Editing a Flashback Query

Edit a flashback query by clicking the flashback query filter in an interactive report.

To edit a flashback query:

1. Click **flashback query** filter.

   The Flashback dialog appears.
2. Edit Flashback Duration (minutes).
3. Click **Apply**.

4.6.12.3 Deleting a Flashback Query

Delete a flashback query by using the flashback query filter dialog in an interactive report.

To delete a flashback query:

1. Click the **flashback query** filter.

   The Flashback dialog appears.
2. Click **Delete**.

> **Tip:**
>
> You can also click the Remove Flashback icon to the right of the **flashback query** filter.

4.6.13 Saving an Interactive Report

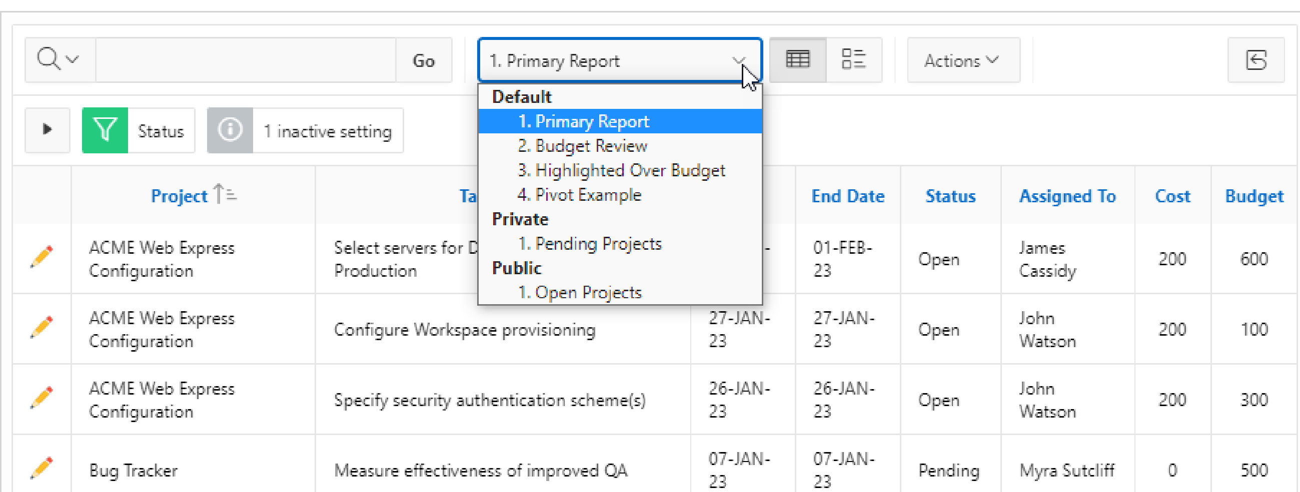
Save a private or public interactive report. Only the user who creates a private report can view, save, rename, or delete that private report.

- About the Report List
  You can view different versions of an interactive report by selecting reports from a Reports list of default or primary reports and private reports.
- About Configuration Dependencies
  The ability to save an interactive report is configurable by the application developer who creates the interactive report.
- Saving a Public or Private Interactive Report
  End users can save an interactive report and classify it as Public or Private.
- Renaming a Public or Private Interactive Report
  Rename a public or private report that you have created by clicking its report name.
- Deleting a Public or Private Interactive Report
  Remove a public or private report that you have created by clicking its Remove Report icon.

4.6.13.1 About the Report List

You can view different versions of an interactive report by selecting reports from a Reports list of default or primary reports and private reports.

The following illustration shows the Reports list on the Search bar of an interactive report.



This example shows three types of reports:

- **Default - Primary Report**

  This is the initial report created by the application developer. Default, Primary reports cannot be renamed or deleted.
- **Private - 1. Open Projects**

  This is a Private report. Only the user who creates a private report can view, save, rename, or delete it.
- **Public - 1. Open Projects**

  This is a Public report. Only the user who creates a public report can save, rename, or delete it. Other users can view and save the layout as another report.

4.6.13.2 About Configuration Dependencies

The ability to save an interactive report is configurable by the application developer who creates the interactive report.

> **See Also:**
>
> - Customizing the Interactive Report Search Bar in *Oracle APEX App Builder User's Guide*
> - Saving Interactive Reports in *Oracle APEX App Builder User's Guide*

4.6.13.3 Saving a Public or Private Interactive Report

End users can save an interactive report and classify it as Public or Private.

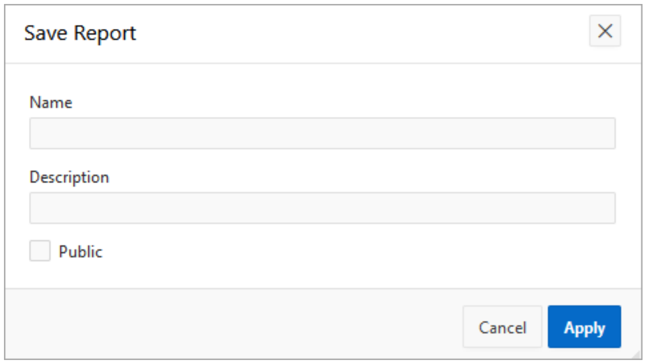
Public
The report can be saved, renamed, or deleted by the end user who created it. Other users can view and save the layout as another report.

Private
Only the user that created the report can view, save, rename, or delete the report.

To save a public or private interactive report:

1. Go to the page containing the interactive report you want to save.
2. Customize the report (for example, hide columns, add filters, and so on).
3. Click the **Actions** menu and select **Report** then **Save Report**.

   The Save Report dialog appears.



4. In Save Report:
   a. Select either **As Named Report** or **As Default Report Settings** option.

      > **Tip:**
      >
      > This option is only available for developers.

   b. **Name** - Enter a name for the report.
   c. **Description** - Enter an optional description.
   d. **Public** - Select this check box to make the report viewable to all users. Deselect this check box to make the report private.

      > **Tip:**
      >
      > Your application developer determines whether you have the ability to save an interactive report as a Public report.

   e. Click **Apply**.

> **See Also:**
>
> - Customizing an Interactive Report Using the Actions Menu
> - About Configuration Dependencies

4.6.13.4 Renaming a Public or Private Interactive Report

Rename a public or private report that you have created by clicking its report name.

To rename a public or private interactive report:

1. Select a public or private interactive report to rename.
2. Click the Saved Report filter which displays between between the search bar and the report.
3. In the Rename Report dialog, edit the attributes (for example, enter a new name).

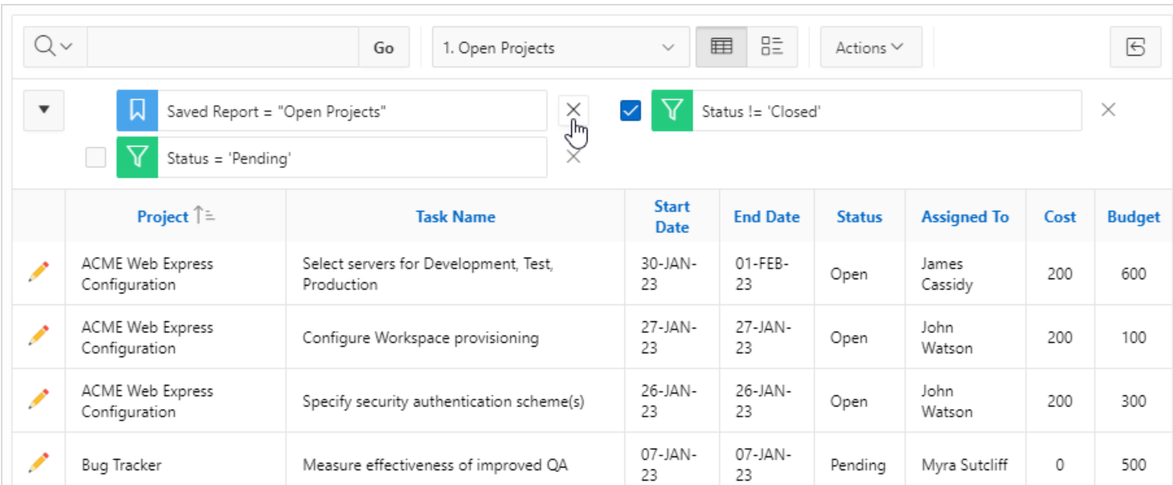
4. Click **Apply**.

4.6.13.5 Deleting a Public or Private Interactive Report

Remove a public or private report that you have created by clicking its Remove Report icon.

To delete a public or private interactive report:

1. Click the **Remove Report** icon next to the report name link.



2. Click **Apply**.

4.6.14 Resetting a Report

Reset a report back to the default settings by selecting Reset from the Actions, Report submenu. Resetting a report removes any customizations you have made.

To reset a report:

1. Click the **Actions** menu and select **Report** then **Reset**.
2. Click **Apply**.

4.6.15 Downloading a Report

Download or email an interactive report as a CSV, HTML, Excel, or PDF file by selecting Download in the Actions menu.

To download or email an interactive report:

1. Click the **Actions** menu and select **Download**.

   The Download dialog displays.

2. Choose report download format - Select **CSV**, **HTML**, **Excel**, or **PDF**.

   All options may not be available depending on how your developer has configured the application. Extra PDF options may appear if you use native PDF printing without an external print server.

3. For **PDF**, choose the Page Size, Page Orientation, and whether to include Accessibility Tags.

Enabling **Include Accessibility Tags** enables the document to be read aloud by a screen reader and other text-to-speech tools (this increases the file size of the PDF).

4. **Data Only** - Select **Data Only** to include only columns and rows and ignores any active column groups, aggregates, highlights and control breaks.
5. (Optional) **Strip Rich Text** - Enable **Strip Rich Text** to remove Rich Text formatting from the file output. (Option only appears for interactive grids containing a Rich Text column.)
6. Do one of the following:
   - To download the file, click **Download**.
   - To email the file as an attachment:
     a. Enable **Send as Email**.
     b. Complete the fields for the recipients (To, Cc, Bcc, Subject, Body).
     c. Click **Send**.

> **See Also:**
>
> Configuring Interactive Report Actions Menu Download Options in *Oracle APEX App Builder User's Guide*

4.6.16 Subscribing to Report Updates by Email

Subscribe to an interactive report to receive emails when the report is updated.

- How Report Subscriptions Work
  You can subscribe to a report by clicking Subscription on the Actions menu.
- Subscribing to Updated Report Results
  Subscribe to a report by selecting Subscription in the Actions menu.

> **See Also:**
>
> Managing Interactive Report Subscriptions in *Oracle APEX Administration Guide*

4.6.16.1 How Report Subscriptions Work

You can subscribe to a report by clicking Subscription on the Actions menu.

Emails sent from an interactive report contain a system-generated email signature that cannot be overwritten. The signature identifies who originated the email.

To use Subscription:

- An APEX administrator must configure email at the Instance level.
- The application developer must select the report Attributes and enable the Actions Menu, Subscription attribute.
- The application developer must enable Download.

See Also:

- Customizing the Interactive Report Actions Menu in *Oracle APEX App Builder User's Guide*
- Configuring Interactive Report Actions Menu Download Options in *Oracle APEX App Builder User's Guide*

4.6.16.2 Subscribing to Updated Report Results

Subscribe to a report by selecting Subscription in the Actions menu.

Note:

Emails sent from a subscription include a system-generated signature that indicates who created the subscription. This signature cannot be removed.

To receive updated report results by email:

1. Click the **Actions** menu and select **Subscription**.

   The Subscription dialog appears.
2. Under Subscription:
   a. Choose report format - Choose the format you want to receive the report in.
   b. Email Address - Enter the email addresses to receive the report. To include multiple email addresses, separate each email address with a comma.
   c. Subject - Enter text to display in the email subject line.
   d. Frequency - Select the interval at which the report is sent.
   e. Skip if No Data Found - If enabled, an email is not sent if no new data is found.
   f. Starting From - Select a start date and time.
   g. Ending - Select an end date and time. Select a day, week, month, or year.
   h. Click **Apply**.

5

Using Tasks

When configured in Oracle APEX, tasks allow users to approve, reject, or complete items.

- About Tasks
  You can use tasks to approve, reject, or complete items. Depending on your role, you may be able to interact with tasks by leaving comments, submitting additional information, or updating due dates.
- Working with Tasks
  Your ability to update tasks depends on the role you have for the task, the state the task is in, and the way the application is configured. Depending on the way the application is configured, some features may be unavailable.
- About Unified Task Lists
  Unified Task Lists allow you to see a summary of your tasks.
- Troubleshooting Tasks
  Common questions and solutions for tasks.

> **See Also:**
>
> Managing Tasks in *Oracle APEX App Builder User's Guide*

5.1 About Tasks

You can use tasks to approve, reject, or complete items. Depending on your role, you may be able to interact with tasks by leaving comments, submitting additional information, or updating due dates.

Developers can add two different types of tasks to APEX applications: approval tasks, and action tasks:

- **Approval Tasks** are tasks that you can approve or reject, as long as you are listed as the task owner. A task that asks you to approve or deny a laptop request for an employee is an approval task.
- **Action Tasks** are tasks that need to be actioned, but don't have any approval requirements. A task that asks an employee to fill in a self-evaluation is an action task.

When you work with tasks, you usually interact with two areas:

1. **Unified Task List -** A summary of your tasks that functions like an inbox.
2. **Task Details Page -** A page that displays information specific to an individual task.

APEX creates tasks according to a **task definition** configured by the application developer. This ensures that each instance of a specific type of task (for example, an approval tasks for an employee's proposed job change) goes through the same process. The task definition specifies who is able to participate in specific types of tasks.

The actions you can take with tasks depend on the role you have as a task participant.

- About Task Participants
  Task Participants can take action on tasks. A participant can be an initiator, owner, or business administrator.
- About Task Due Dates
  Developers can specify the due date for tasks. If a task has a due date, it may expire after that due date. Expired tasks may renew automatically.
- About Task Actions
  Task actions are any operations that you can do on a task instance, including editing the task details, approving or rejecting the task. or leaving a comment on the task.
- About Task Details
  The task details page displays information about a specific task instance.

5.1.1 About Task Participants

Task Participants can take action on tasks. A participant can be an initiator, owner, or business administrator.

You must be a task participant to update or modify individual tasks. There are multiple participant **roles**:

- As a **Task Initiator**, you can cancel your tasks, or update your task's priority. The actual owner of the task may ask you to provide more information about the task.
- As a **Potential Owner**, you can claim unassigned tasks to become the **Actual Owner** of those tasks. Tasks can have multiple potential owners. You cannot claim approval tasks that you initiated, but you can claim your own action tasks.
- As an **Actual Owner**, you can make changes to tasks you own, including requesting more information about the task from the initiator, delegating the task, and approving, rejecting, or completing the task. You can also update the values of the task parameters that are marked as **updatable** in the Task Definition. You cannot own approval tasks you initiated, but you can own action tasks you initiated.
- As a **Business Administrator**, you can manage tasks for a specific task definition by updating the task priority, changing the task due date, adding new potential owners, removing existing potential owners, canceling unneeded tasks, or renewing expired tasks. You cannot remove the actual owner of the task. You can also update the values of task parameters if they are marked as updatable in the task definition.

> **Tip:**
>
> Any changes you make only impact the individual task. You cannot modify the underlying task definition.

Each task has at least one potential owner and one business administrator.

5.1.2 About Task Due Dates

Developers can specify the due date for tasks. If a task has a due date, it may expire after that due date. Expired tasks may renew automatically.

Developers can configure tasks to have **Due Dates**. Due dates are normally set in the task definition. However, due dates can be overridden by a process type plugin. For more information, see About Creating Approval Process Plug-ins

If the actual owner for the task does not complete the task before the due date, the task may:

1. Stay in the owner's task list. The task is **Overdue**, and the owner can approve or reject the task at any time.
2. Expire. The task is **Expired** and is no longer visible in the initiator's task list or the owner's task list. The business administrator can see expired tasks by selecting **Show expired tasks**, and can renew the task.
3. Renew. The original task is **Expired**, and APEX automatically creates a new task with a new due date. After the task is automatically renewed a certain number of times, the task expires and does not renew automatically.

The business administrator can renew tasks that have expired or tasks that have already reached their maximum number of renewals. See Renewing a Task for more details.

5.1.3 About Task Actions

Task actions are any operations that you can do on a task instance, including editing the task details, approving or rejecting the task. or leaving a comment on the task.

You can perform various **actions** on tasks. The actions you can do depend on the type of task, your role, and the task state. For example, you can't update tasks that are already completed, errored, or canceled. You also cannot approve or reject approval tasks that you initiated.

Action	Initiator	Potential Owner	Actual Owner	Business Administrator
Claim	Yes, but only if you are also a potential owner.	Yes, if task is Unassigned.	No **Note:** You cannot claim an approval task you initiated,	No

Action	Initiator	Potential Owner	Actual Owner	Business Administrator
			even if you are a potential owner for that task.	

Action	Initiator	Potential Owner	Actual Owner	Business Administrator
Complete (**Approve** or **Reject** for approval tasks, and **Complete** for action tasks.)	Yes, but only if you are also the actual owner.	Yes, from the Task Details page by Claiming the task and then completing it, or directly from the Unified Task List for approval tasks.	Yes, from the Task Details page, or directly from the Unified Task List for approval tasks. **Note:** You cannot approve or reject an approval	No **Note:** You cannot become the actual owner for an app

Action	Initiator	Potential Owner	Actual Owner	Business Administrator
			task you initiated, even if you are a potential owner for that tas	roval task you initiated.

Action	Initiator	Potential Owner	Actual Owner	Business Administrator
			k .	
Delegate	No	No	Yes	Yes
Release	Yes, if you are also the actual owner for the task.	No	Yes	No
Cancel	Yes	No	No	Yes
Add Potential Owner	No	No	No	Yes
Remove Participant	No	No	No	Yes
Add Comment	Yes	Yes	Yes	Yes
Set Priority	Yes	No	No	Yes
Update Parameter	No	No	Yes	Yes
Request Information	No	No	Yes	No
Submit Information	Yes	No	No	No
Update Due Date	No	No	No	Yes
Renew	No	No	No	Yes, if the task is expired. Tasks can be manually renewed as many times as needed.

See Also:

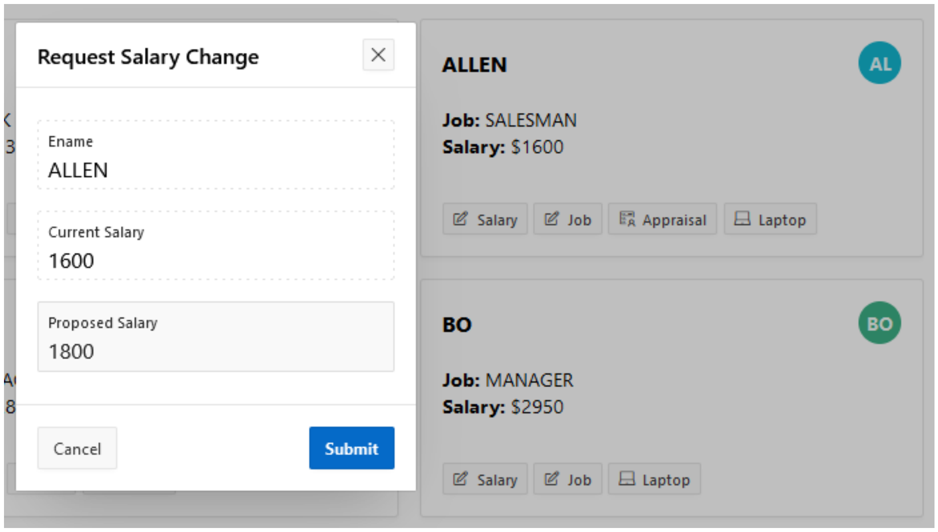
About Task States and Transitions in *Oracle APEX App Builder User's Guide*

5.1.4 About Task Details

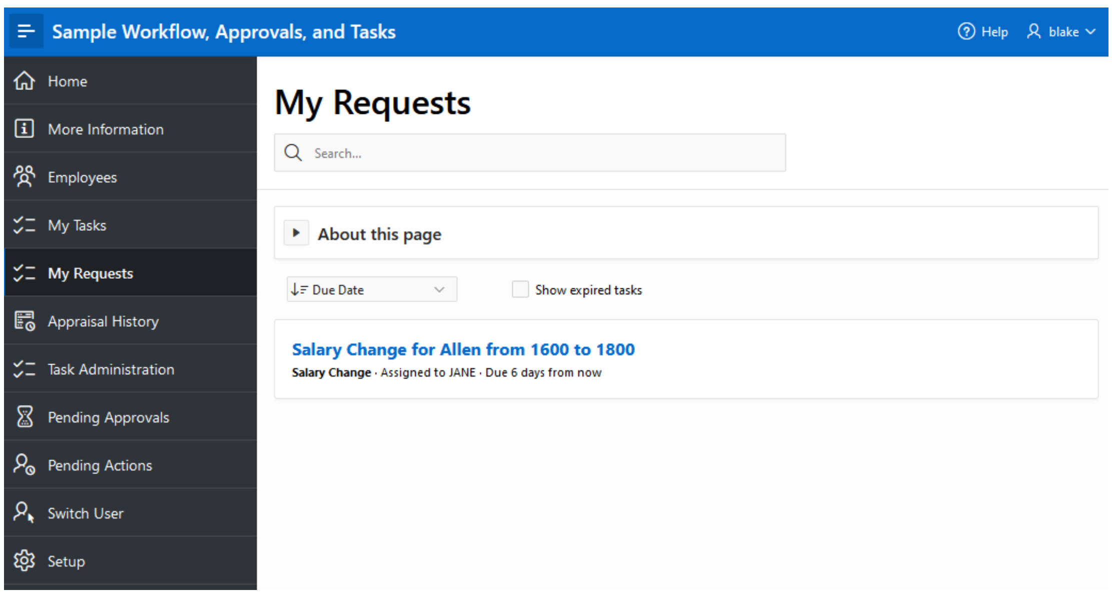
The task details page displays information about a specific task instance.

The task details page shows information about a specific task instance. This information is more detailed than the information shown on the Unified Task List.

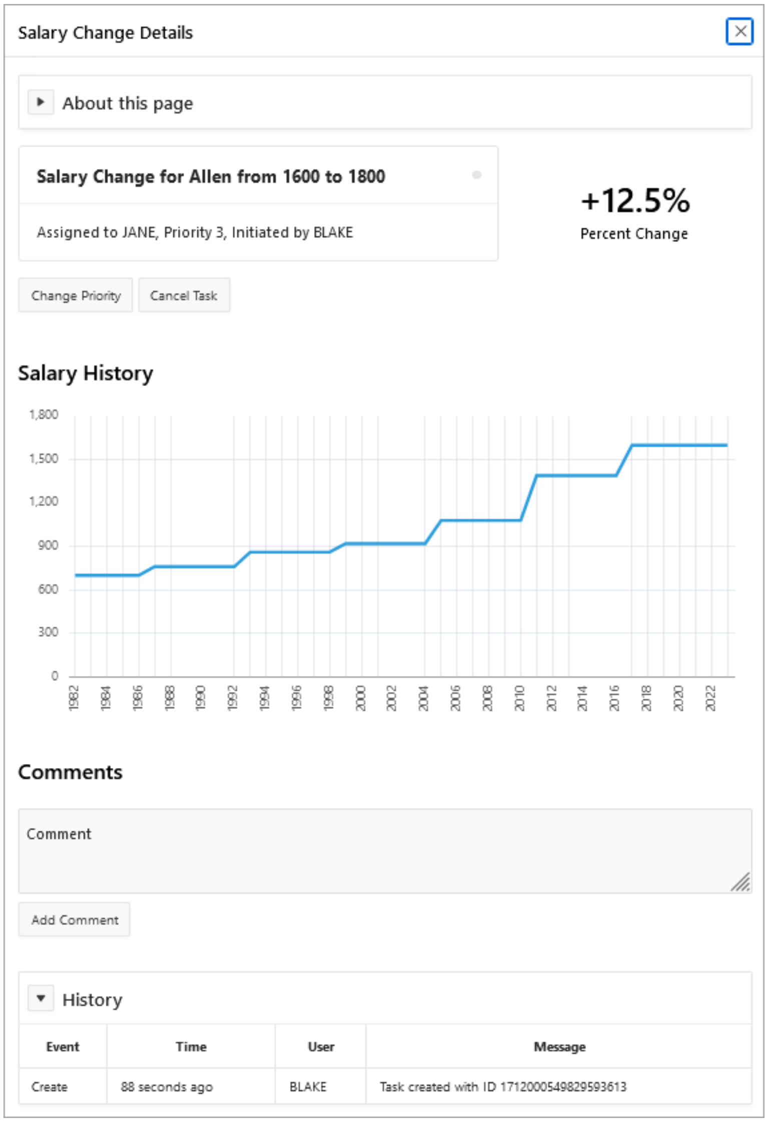
For example, say you use the **Sample Workflows, Approvals, and Tasks** app to put in a salary change request for Allen from 1600 to 1800.



The **My Requests** Unified Task List displays "Salary Change for Allen from 1600 to 1800" and indicates the task is assigned to Jane, due six days from now.



Clicking on the task title to access the task details page provides more information about the task, including the task priority, the user who initiated the task, the percentage change this request represents, a graph indicating Allen's salary changes over time, comments on the task, and the history of the task.



5.2 Working with Tasks

Your ability to update tasks depends on the role you have for the task, the state the task is in, and the way the application is configured. Depending on the way the application is configured, some features may be unavailable.

- Claiming a Task
  You can claim a task to assign it to you.
- Approving, Rejecting, or Completing a Task
  Approve, reject, or complete tasks from the task details page.
- Requesting Information for a Task
  If you are the actual owner for a task, you can request more information from the task initiator.

- Submitting Information for a Task
  If you are the task initiator, you may be asked to submit information about the task to the task owner.
- Commenting on a Task
  You can comment on a task to provide additional information about the task.
- Changing the Priority of a Task
  You can change the priority of a task.
- Updating the Parameters of a Task
  You can update the parameters of a task if the parameter is marked as updatable.
- Delegating a Task
  Delegating a task allows you assign a task to another user.
- Inviting a Participant to a Task
  As a business administrator, you can invite a participant to a specific instance of a task.
- Removing a Participant from a Task
  As a business administrator, you can remove an existing participant from a specific instance of a task.
- Updating the Due Date for a Task
  As a business administrator, you can update the due date for a specific instance of a task.
- Releasing a Task
  Releasing a task allows you to remove yourself as the actual owner, and make the task available for other potential owners to claim.
- Canceling a Task
  You can cancel a task if you no longer need it.
- Renewing a Task
  As a business administrator, you can renew an expired task,
- Viewing the Task History
  You can view the history of a task to see what has already happened with the task.

5.2.1 Claiming a Task

You can claim a task to assign it to you.

If there are multiple potential owners for a task, the task is **Unassigned**.

To claim a task, you must be a **Potential Owner**. If you are the only potential owner for a task, APEX automatically assigns the task to you and you become the **Actual Owner**. If you are not a potential owner, the **Business Administrator** can add you as a potential owner.

1. Open the application.
2. Open the appropriate Unified Task List. For the **Sample Workflows, Approvals, and Tasks** app, the task list is called **My Approvals**.
3. Locate the unassigned task you want to claim, and click on the task to access the task details page.
4. Click **Claim Task** to claim the task.

   The position of the Claim Task button varies by application depending on how the developer customizes the task details page.

The task is now assigned to you.

5.2.2 Approving, Rejecting, or Completing a Task

Approve, reject, or complete tasks from the task details page.

In order to work on a task, you must be the **Actual Owner** for the task. If you are a **Potential Owner**, you can claim the task to become the actual owner. Note that if the task is an approval task, you cannot become the actual owner of a task you initiated.

To approve, reject, or complete a task:

1. Open the application.
2. Access the appropriate Unified Task List. For the **Sample Workflows, Approvals, and Tasks** app, the task list is called **My Approvals**.
3. Locate the task you want to approve, reject, or complete.

   If you click **Approve** or **Reject** directly from the Unified Task List, APEX automatically claims the task for you. If you use the buttons on the Unified Task List, you cannot add comments to the task.

To see more details about a task or to work on the task:

4. Click on the task subject to open the Task Details page.
5. If necessary, claim the task by clicking **Claim Task**.
6. (Optional) Add a comment to the task.
7. (Optional) For action tasks, click **Save** to save your work.

   You can save your work without completing the task. This leaves the task open for you to complete later.
8. Click **Approve**, **Reject**, or **Complete**.

   The position of the buttons varies by application, depending on how the task details page is configured.

The task state updates. The task is now complete.

5.2.3 Requesting Information for a Task

If you are the actual owner for a task, you can request more information from the task initiator.

To request information for a task, you must be the **Actual Owner** for the task.

1. Open the application.
2. Access the appropriate Unified Task List. For the **Sample Workflows, Approvals, and Tasks** app, the task list is called **My Tasks**.
3. Locate the task you want to request more information for.
4. Click on the task to open the Task Details page.
5. Click **Request Information**.

   The position of the Request Information button varies by application, depending on how the developer configured the task details page.
6. Type in the details of your request in the Message field, and click **Request Information**.

APEX assigns the task to the initiator, with your request information text in the comments section of the task details page.

5.2.4 Submitting Information for a Task

If you are the task initiator, you may be asked to submit information about the task to the task owner.

If one of your tasks is in the **Information Requested** status, you can submit information to send the task back to the task owner.

1. Open the application.
2. Access the appropriate Unified Task List. For the **Sample Workflows, Approvals, and Tasks** app, the task list is called **My Tasks**.
3. Locate the task in the **Information Requested** status.
4. Click on the task to open the Task Details page.
5. Click **Submit Information**.

   The position of **Request Information** varies by application, depending on how the developer configured the task details page.
6. Type in the details of your request in the Message field, and click **Submit Information**.

APEX reassigns the task back to the actual owner, with your submitted information text in the comments section of the task details page.

5.2.5 Commenting on a Task

You can comment on a task to provide additional information about the task.

You can comment on a task that is in progress. If you want to comment on a completed task, you need to be the business administrator for that task.

1. Open the application.
2. Access the appropriate Unified Task List.
3. Locate the task you want to update, and click on the task to access the task details page.
4. Type your comment in the comment text box.
5. Click **Add Comment**.

The comment displays on the task.

5.2.6 Changing the Priority of a Task

You can change the priority of a task.

To change the priority of a task, you must be the **Initiator** or **Business Administrator** for the task.

1. Open the application.
2. Access the appropriate Unified Task List.
3. Locate the task you want to update, and click on the task to access the task details page.
4. Click **Priority**.

The position of the Priority button varies by application, depending on how the task details page is configured.

5. Select the new priority from the list.
6. Click **Set Priority**.

The priority is updated.

5.2.7 Updating the Parameters of a Task

You can update the parameters of a task if the parameter is marked as updatable.

To change the parameters of a task, you must be the **Actual Owner** or **Business Administrator** for the task.

1. Open the application.
2. Access the appropriate Unified Task List.
3. Locate the task you want to update, and click on the task to access the task details page.
4. In the Details section, click **Edit**.

   The Edit button only appears if the task definition has at least one parameter that is updatable.
5. Select the parameter from the drop-down list.
6. Enter the new value.
7. Click **Apply Changes**.

The parameter updates.

5.2.8 Delegating a Task

Delegating a task allows you assign a task to another user.

An assigned task can be **Delegated** to another user. That user becomes the new Actual Owner for the task.

To delegate a task, you must be a Business Administrator or the Actual Owner of the task. Tasks that are completed cannot be delegated. The user you delegate the task to must be listed as a potential owner for the task.

1. Open the application.
2. Access the appropriate Unified Task List.
3. Locate the task you want to delegate, and click on the task to access the task details page.
4. Click **Delegate**.

   The position of the Delegate button varies by application, depending on how the task details page is configured.
5. Select the new actual owner for the task.
6. Click **Delegate**.

The task is delegated to the selected user.

5.2.9 Inviting a Participant to a Task

As a business administrator, you can invite a participant to a specific instance of a task.

You may want to invite a participant to a task if the actual owner is away from the office. The new participant can claim the specific task they are added to, but does not have access to any future tasks created from the same task definition.

To invite a participant, you must be a Business Administrator for the task. You cannot invite a participant to a completed task.

1. Open the application.
2. Access the appropriate Unified Task List.
3. Locate the task you want to invite a participant to, and click on the task to access the task details page.
4. Click **Invite Participant**.

   The position of the Invite Participant button varies by application, depending on how the task details page is configured.
5. Type in the login name for the participant you want to add.
6. Click **Invite Participant**.

If the task is unassigned, the new participant can claim the task. If the task is assigned, either you, as the Business Administrator, or the actual owner of the task can delegate the task to the new participant.

5.2.10 Removing a Participant from a Task

As a business administrator, you can remove an existing participant from a specific instance of a task.

You may want to remove a participant from a task if the participant is away from the office or is no longer available for the task. Removing the participant from the task instance does not remove them from any future tasks created from the same task definition.

To remove a participant, you must be a Business Administrator for the task. You cannot remove a participant from a completed task.

1. Open the application.
2. Access the appropriate Unified Task List.
3. Locate the task you want to remove a participant from, and click on the task to access the task details page.
4. Click **Remove Participant**.

   The position of the Remove Participant button varies by application, depending on how the task details page is configured.
5. Select the participant you want to remove from the drop-down list.
6. Click **Remove Participant**.

   If the task is assigned, the drop-down list does not contain the actual owner, because only potential owners can be removed.

The participant is removed from the task.

5.2.11 Updating the Due Date for a Task

As a business administrator, you can update the due date for a specific instance of a task.

To update the due date, you must be the business administrator for the task. You cannot update the due date if a task is already approved, rejected, or expired.

1. Open the application.
2. Access the appropriate Unified Task List.
3. Locate the task you want to update the due date on, and click on the task to access the task details page.
4. Click **Change Due Date**.

   The position of the Change Due Date button varies by application, depending on how the task details page is configured.
5. Select the new due date for the task.
6. Click **Change Due Date**.

The due date updates.

5.2.12 Releasing a Task

Releasing a task allows you to remove yourself as the actual owner, and make the task available for other potential owners to claim.

Releasing a task you own makes the task available for other **Potential Owners** to claim.

To release a task, you must be the **Actual Owner** of the task. Tasks that you have already approved or rejected cannot be released.

1. Open the application.
2. Access the appropriate Unified Task List. For the **Sample Workflows, Approvals, and Tasks** app, the task list is called **My Tasks**.
3. Locate the task you want to release, and click on the task to access the task details page.
4. Click **Release**.

   The position of the Release button varies by application, depending on how the task details page is configured.

The task is now unassigned, and available for potential owners to claim.

5.2.13 Canceling a Task

You can cancel a task if you no longer need it.

Canceling a task stops the task from continuing.

To cancel a task, you must be the task initiator or the business administrator. Tasks that are already complete cannot be canceled.

1. Open the application.

2. Access the appropriate Unified Task List.
3. Locate the task you want to cancel, and click on the task to access the task details page.
4. Click **Cancel Task**.

   The **Cancel Task** position varies by application, depending on how the task details page is configured.
5. Click **Cancel Task** on the dialog window.

The task is now canceled.

5.2.14 Renewing a Task

As a business administrator, you can renew an expired task,

Renewing an expired task creates a new task from the same task definition.

As a business administrator, you can renew a task once it is expired.

1. Open the application.
2. Access the appropriate Unified Task List. For the **Sample Workflows, Approvals, and Tasks** app, the task list is called **Admin Tasks**.
3. Locate the task you want to renew, and click on the task to access the task details page.
4. Click **Renew Task**.

   Renew Task is only visible if the task is expired. Tasks cannot be renewed prior to expiring.

APEX creates a new task from the same task definition. The renewed task has a new due date.

5.2.15 Viewing the Task History

You can view the history of a task to see what has already happened with the task.

The **Task History** show a log of everything that has occurred with the task.

To view the task history, you must be able to open the task details page.

1. Open the application.
2. Access the appropriate Unified Task List.
3. Locate the task you want to view, and click on the task to access the task details page.
4. Click the dropdown arrow next to **History**.

   The position of the History region varies by application, depending on how the task details page is configured.
5. The task history displays. Events are logged in chronological order, and details for each event are in the Message column.

5.3 About Unified Task Lists

Unified Task Lists allow you to see a summary of your tasks.

Unified Task Lists allow you to see a summary of your tasks, similar to an inbox. Although the name and exact configuration of a task list is specific to the application you're using, there are different **Report Contexts** available:

- **Initiated by Me** - For any tasks where you are the Initiator. You can update the task priority, cancel the task, or submit information on the task.
- **My Tasks** - For any tasks where you are a Potential or Actual Owner. You can claim tasks, approve, reject, or complete tasks, request information on tasks, or update task parameters.
- **Admin Tasks** - For any tasks where you are the Business Administrator. You can update the task priority, delegate the task, add or remove participants, update task parameters, or renew the task.

In the **Sample Workflows, Approvals, and Tasks** app, the My Tasks context is represented by the **My Approvals** page, the Admin Tasks context by the **Approvals Administration** page, and the Initiated by Me context by the **My Requests** page. Depending on your role, you may not be able to see all pages in the application.

- Searching for a Task
  Learn how to search for specific tasks using filters.

5.3.1 Searching for a Task

Learn how to search for specific tasks using filters.

1. Open the application.
2. Access the appropriate Unified Task List. For the **Sample Workflows, Approvals, and Tasks** app, the task list with tasks assigned to you is called **My Tasks**.
3. In the Search bar, you can:
   a. Type the search criteria into the search bar
   b. Select a suggestion chip from the dropdown, and choose criteria for the search.
   c. Select whether or not to show expired tasks (Business Administrator only).

The search results automatically update, displaying the results.

> **See Also:**
>
> Example Smart Filters in *Oracle APEX App Builder User's Guide*

5.4 Troubleshooting Tasks

Common questions and solutions for tasks.

Frequently Asked Questions for Tasks

Question	Solution	Responsible Person	Further Reading
I have multiple approval tasks assigned to me, but when I click on a task, I don't see the approve or reject button. How can I complete the task?	You must claim the task so that it is assigned to you before you can access the approve or reject buttons.	Potential Owner	• Claiming a Task • Approving, Rejecting, or Completing a Task
I accidentally claimed a task, but don't want to complete it. What can I do?	You have two options: 1. Delegate the task to someone else. 2. Release the task so another potential owner can claim it.	Actual Owner	• Delegating a Task • Releasing a Task
Someone assigned a task to me, but I can't find it in the Unified Task List. How do I find the task?	You can use Smart Filters to search by keyword, due date, priority, and other information.	Actual Owner	• Searching for a Task • Example Smart Filters in *Oracle APEX App Builder User's Guide*
I can see a task in the Unified Task List, but when I click on the task, I get a "Your session has ended." error. How can I see the Task Details?	This happens when the Unified Task List and the Task Details page are in different applications. An application developer can set up Session Sharing, which lets you view the Task Details.	Application Developer	• Managing Session State Values in *Oracle APEX App Builder User's Guide*
The application I'm using sends an email to the task initiator when the task is completed, but I don't receive emails. How do I fix this?	APEX sends emails from the email queue every fifteen minutes. Wait fifteen minutes, and if the email still hasn't arrived, contact your application developer.	User / Instance Administrator	• Sending Email from an Application in *Oracle APEX App Builder User's Guide*
The actual owner for a task has left the organization, and cannot complete the task. How can I reroute the task?	The Business Administrator can delegate the task to another potential owner.	Business Administrator	• Delegating a Task

Question	Solution	Responsible Person	Further Reading
My task list no longer shows tasks that were completed last week. How do I view historical tasks?	Tasks that are completed, canceled, or errored are automatically purged by APEX. The retention period is application-specific, and a report of purged tasks is available for the workspace administrator.	Application Developer / Workspace Administrator	• About Task Retention and Task Purging in *Oracle APEX App Builder User's Guide* • Configuring Workflow Settings in *Oracle APEX Administration Guide*
What actions can I take on a task?	Task actions depend on the task state, and the role you have for the task.	All	• About Task Actions

Note:

For information about troubleshooting tasks from a developer perspective, see Troubleshooting Tasks in *Oracle APEX App Builder User's Guide*.

6

Using Workflows

Learn about using workflows.

- About Workflows
  Learn about workflows, including workflow and activity states, participants, and the workflow console.
- Working with Workflows
  View workflow instances in the workflow console. Use the workflow details page to act on specific workflow instances.
- Frequently Asked Questions
  Frequently asked questions for workflows.

6.1 About Workflows

Learn about workflows, including workflow and activity states, participants, and the workflow console.

The workflow component in APEX allows APEX developers to design, implement, and automate business processes, in whole or part, during which documents, information, records, or tasks are passed from one participant to another for action according to a set of procedural rules.

The structure of a workflow is determined by the **Workflow Definition**, which is established by an application developer. Every time a workflow starts, APEX creates a **Workflow Instance**, which is a specific runtime from a workflow definition. To learn about designing workflows for an application, see About the Workflow Designer in *Oracle APEX App Builder User's Guide*.

A workflow instance may include **Workflow Variables** and **Workflow Parameters**. **Workflow Parameters** are inputs provided when starting a new workflow instance. For example, in a laptop requisition workflow, parameters could include:

- the type of laptop requested
- the requisition date
- the employee number of the person requesting the laptop

Workflow Variables are additional data that may be used by one or more workflow activities. For example, if one activity in a workflow generates a laptop order, the order ID from that activity can be saved as a workflow variable. The order ID could then be used by a later activity in the workflow instance, such as an activity that sends a confirmation email.

Workflow parameters are read-only. Workflow variables can be updated by a workflow administrator.

Workflows may involve **Tasks**. For more information on tasks, see Using Tasks.

- About Workflow States
  A workflow instance can be active, suspended, completed, terminated, or faulted.

- About Activity States
  An activity in a workflow instance can be active, waiting, faulted, or completed.
- About Workflow Participants
  Workflow participants can take action on workflows, including starting or terminating workflow, retrying faulted workflows, and updating workflow variables.
- About the Workflow Console and Workflow Details
  The workflow console is a summary of workflows for an application. Select a workflow from the workflow console to view details about that specific workflow.

6.1.1 About Workflow States

A workflow instance can be active, suspended, completed, terminated, or faulted.

Workflow States

A **workflow state** is the current state of a workflow instance. There are five separate workflow states, and a workflow may only be in one state at a time.

Active
A workflow that is currently running.

Suspended
A workflow that is currently suspended at a particular activity. A suspended workflow can be resumed again by the **Workflow Administrator**.

Completed
A workflow that has reached an end activity and completed successfully.

Terminated
A workflow that has been stopped by the **Workflow Owner** or **Workflow Administrator** or a workflow that has reached an end activity with the state attribute set to terminated.

Faulted
A workflow that produced an error at one of its activities. The **Workflow Administrator** can retry or stop a faulted workflow.

6.1.2 About Activity States

An activity in a workflow instance can be active, waiting, faulted, or completed.

Activity States

An **activity state** is the current state of an activity in a workflow instance. There are four separate activity states, and an activity may only be in one state at a time.

Active
An activity that is currently running.

Waiting
An activity that is currently waiting for a result. For example, an activity might be waiting on approval from a task.

Completed
An activity that completed successfully.

Terminated
An activity that was in active state when the workflow was stopped.

Faulted
An activity that fails to run.

6.1.3 About Workflow Participants

Workflow participants can take action on workflows, including starting or terminating workflow, retrying faulted workflows, and updating workflow variables.

Workflow Participants are APEX users with operational privileges over a workflow.

There are three types of workflow participants:

Workflow Initiator
Can start and terminate an instance of the workflow. Does not need to be specifically named in the workflow definition.

Workflow Owner
Can start and terminate any instance of the workflow. Can retry a faulted workflow. Must be specifically named in the workflow definition.

Workflow Administrator
Can start, terminate, suspend, resume, and retry any workflow instance. Can update variable values of a workflow instance. Must be specifically named in the workflow definition.

6.1.4 About the Workflow Console and Workflow Details

The workflow console is a summary of workflows for an application. Select a workflow from the workflow console to view details about that specific workflow.

Every application that uses workflows has two pages used for monitoring those workflows: the **Workflow Console** page, which summarizes workflows in the current application, and the **Workflow Details** page, which contains details about a specific workflow instance.

The Workflow Console Page

The **Workflow Console** allows you to see a summary of your workflows. Although the name and exact configuration of a workflow console is specific to the application you're using, there are different report contexts available::

- **Initiated by Me**, for workflows where you are the **Workflow Initiator**.
- **My Workflows**, for workflows where you are a **Workflow Owner**.
- **Admin Workflows**, for workflows where you are a **Workflow Administrator**.

Depending on your role and the configuration of the application you're using, you may not be able to see all three pages.

The Workflow Details Page

Clicking on a workflow in the workflow console page opens the **Workflow Details** page. The workflow details page shows:

- activity instances and their states
- when an activity was started, completed, retried, faulted, or terminated
- workflow instance variables, which can be edited by workflow administrators
- workflow instance parameters
- an audit history of the workflow instance

Depending on the workflow context and your role, you can perform certain operations on active workflows:

- If you are the **Workflow Initiator**, you can start a workflow, or terminate a workflow that you started.
- If you are the **Workflow Owner**, you can start a workflow, retry a faulted workflow, or terminate a workflow.
- If you are the **Workflow Administrator**, you can start, suspend, resume, retry, or terminate a workflow. You can also update workflow variables when the workflow is faulted or suspended.

6.2 Working with Workflows

View workflow instances in the workflow console. Use the workflow details page to act on specific workflow instances.

Your ability to perform operations on workflows depends on the role you have for the workflow, the state the workflow is in, and the way the specific application is configured.

In general, accessing the **Workflow Console** page gives you a list of all the workflows you can participate in. Clicking on a specific workflow to get the **Workflow Details** page gives you a list of actions you can take with that workflow. For more on the workflow console and the workflow details page, see About the Workflow Console and Workflow Details.

- Suspending a Workflow
  Suspend a workflow by clicking **Suspend** on the workflow details page.
- Resuming a Workflow
  Resume a workflow by clicking **Resume** on the workflow details page.
- Terminating a Workflow
  Cancel a workflow by clicking **Terminate** on the workflow details page.
- Retrying a Workflow
  Retry a workflow by clicking **Retry** on the workflow details page.
- Updating Workflow Variables
  Update workflow variables with the **Edit** link in the workflow details page.
- Viewing the Workflow Audit History
  View the audit history of a workflow by expanding the History section in the workflow details page.
- Viewing the Activity Audit History
  View the audit history of a workflow activity by clicking on the activity in the workflow details page.

6.2.1 Suspending a Workflow

Suspend a workflow by clicking **Suspend** on the workflow details page.

Suspending a workflow pauses the execution of a running (active) workflow.

You must be the **Workflow Administrator** to suspend a workflow.

1. Open the application.
2. Open the appropriate Workflow Console. The name of the page varies depending on the application, but the report context is **Admin Workflows**.
3. Locate the workflow you want to suspend, and click on the workflow name to open the workflow details page.
4. Click **Suspend** to suspend the workflow.

The workflow instance suspends, and no further operations are possible. You must **resume** the workflow in order for the workflow to continue.

6.2.2 Resuming a Workflow

Resume a workflow by clicking **Resume** on the workflow details page.

Resuming a workflow resumes the execution of a suspended workflow.

You must be the **Workflow Administrator** to resume a workflow. You can only resume suspended workflows.

1. Open the application.
2. Open the appropriate Workflow Console. The name of the page varies depending on the application, but the report context is **Admin Workflows**.
3. Locate the workflow you want to resume, and click on the workflow name to open the workflow details page.
4. Click **Resume** to resume the workflow.

The workflow instance resumes at the same activity where it was suspended. Resuming the workflow brings it back to an **active** state.

6.2.3 Terminating a Workflow

Cancel a workflow by clicking **Terminate** on the workflow details page.

Terminating a workflow cancels the workflow.

You must be the **Workflow Owner**, **Workflow Administrator**, or **Workflow Initiator** to terminate a workflow. You can terminate a workflow instance regardless of whether it is active, suspended, or faulted.

1. Open the application.
2. Open the appropriate Workflow Console. The name of the page varies depending on the application, but depending on your role, the report context is **Initiated by Me**, **My Workflows**, or **Admin Workflows**.
3. Locate the workflow you want to terminate, and click on the workflow name to open the workflow details page.

4. Click **Terminate** to cancel the workflow.

The workflow instance is canceled. There are no further operations possible for this workflow instance.

6.2.4 Retrying a Workflow

Retry a workflow by clicking **Retry** on the workflow details page.

When a workflow instance faults, you can retry the workflow.

You must be the **Workflow Owner** or **Workflow Administrator** to retry a workflow.

1. Open the application.
2. Open the appropriate Workflow Console. The name of the page varies depending on the application, but depending on your role, the report context could be **My Workflows** or **Admin Workflows**.
3. Locate the workflow you want to retry, and click on the workflow name to open the workflow details page.
4. Click **Retry** to retry the workflow.

The workflow instance attempts to run again by retrying the faulted activity.

6.2.5 Updating Workflow Variables

Update workflow variables with the **Edit** link in the workflow details page.

Updating a workflow variable updates the value of a workflow variable in a running workflow instance.

You must be a **Workflow Administrator** to update workflow variables.

1. Open the application.
2. Open the appropriate Workflow Console. The name of the page varies depending on the application, but the report context is **Admin Workflows**.
3. Locate the workflow you want to retry, and click on the workflow name to open the workflow details page.
4. Click the dropdown arrow on **Variables** to open the variables section.

   The variables section opens, and displays all workflow variables for the workflow instance.
5. Click **Edit** next to a variable.
6. Edit the variable, and click **Apply Changes**.

The workflow variable updates.

6.2.6 Viewing the Workflow Audit History

View the audit history of a workflow by expanding the History section in the workflow details page.

The workflow history is a list of the actions for a workflow instance.

1. Open the application.

2. Open the appropriate Workflow Console. The name of the page varies depending on the application, but depending on your role, the report context could be **Initiated by Me**, **My Workflows** or **Admin Workflows**.
3. Locate the workflow and click on the workflow name to open the workflow details page.
4. Click the dropdown arrow on **History** to open the history section.

The workflow audit history displays.

6.2.7 Viewing the Activity Audit History

View the audit history of a workflow activity by clicking on the activity in the workflow details page.

The activity audit history is an audit history for specific actions in a workflow instance.

1. Open the application.
2. Open the appropriate Workflow Console. The name of the page varies depending on the application, but depending on your role, the report context could be **Initiated by Me**, **My Workflows** or **Admin Workflows**.
3. Locate the workflow and click on the workflow name to open the workflow details page.
4. Click the specific activity you are interested in the **Activities** section.

The activity's audit history displays.

6.3 Frequently Asked Questions

Frequently asked questions for workflows.

Workflow Runtime

Topic	Question	Answer
Approvals and Workflow - Deadlines and Expiration	When a Workflow contains an approval (Human Task) activity with a due on specified in the workflow and a deadline specified in the task definition, which deadline is honored?	The due on specified in the workflow gets precedence over the deadline specified in the task definition. If there is no due on specified for the workflow activity, the deadline specified in the task definition becomes the activity's due date.

Topic	Question	Answer
Approvals and Workflow - Deadlines and Expiration	Approval tasks can expire and be auto-renewed. Does this also apply to approval tasks created using workflow?	At runtime, if the task fails to complete by the due date, the expiration policy in the task definition activates, and the task is automatically renewed or expired accordingly. If the expiration policy in the task definition is `NONE`, the task still expires because it is a workflow-generated task, and cannot remain active while governed by workflow timeout. Once the task expires, control goes back to the workflow engine, and follows the timeout connection in the workflow model. If there is no timeout connection, the workflow transitions to a faulted state.
Approvals and Workflow - Deadlines and Expiration	If a task is created using workflow, can the Business Administrator of the approval task manually renew or update the due date?	No. Approval tasks created by a workflow can only be auto-renewed based on their expiration policy settings. The Business Administrator cannot manually renew or update the due date of a task because the due date is governed by the workflow timeout.
Approvals and Workflow - Errored or Canceled Tasks	What happens to the workflow when its approval task transitions to errored or canceled?	When an approval task is canceled by the initiator or the business administrator, the workflow receives no outcome from the approval task, and continues executing the next activity in the workflow. If the next activity in the workflow is a switch based on the outcome of the approval task, the switch activity transitions to faulted because the task-based workflow activity has no outcome. When an approval task transitions into an errored state, control returns to the workflow, which transitions into a faulted state. Note that the workflow administrator can retry a faulted workflow after fixing the underlying cause of the error.

Topic	Question	Answer
Approvals and Workflow - Errored or Canceled Tasks	What happens when a workflow is terminated while its approval tasks are still active and haven't been completed?	Currently, the approval tasks remain active and do not automatically cancel. However, if a user completes the task, the workflow does not progress since it is already terminated. This is a known issue in the current release.
Approvals and Workflow - Using Task Outcomes in Workflow	I accidentally rejected an approval task instead of accepting it. Can I fix this in the associated workflow?	Yes, the Workflow Administrator can do this if the workflow is modelled to have a wait activity of minimal duration (two to five minutes) right after the human task activity. After an approval task is rejected, the `TASK_OUTCOME` workflow variable value is `Rejected`. During the wait activity, the Workflow Administrator can suspend the workflow from the Admin Console Details page. The Administrator can then expand the variables section on that page, click the Edit link next to the `TASK_OUTCOME` variable, and manually update the value to `Approved`. When this is done, the Workflow Administrator can resume the workflow. Note: Only workflow administrators can update workflow variables, and only when the workflow is suspended or faulted.
Workflow Subprocess	Can a workflow be used as an activity in another workflow?	This is not currently supported.
Workflow Retries	Can auto-retry be configured for workflow activities?	No. Workflow activities that transition to faulted status must be manually retried. To manually retry a workflow, the Workflow Administrator can click **Retry** in the Workflow Console Details Page. Retrying a workflow always re-executes the activity where the workflow faulted, and then continues the rest of the flow. There is no limit to the number of times a workflow can be manually retried.

Topic	Question	Answer
Workflow Retries	What is the difference between Retry and Resume operations on a Workflow?	**Retry** is only applicable to faulted workflows, and can be performed by both the workflow administrator and the workflow owner. **Resume** is only applicable to suspended workflows, and can be performed by the workflow administrator.

A

Keyboard Shortcuts

Reference keyboard shortcuts for Oracle APEX.

> **Note:**
>
> The Oracle APEX interface is intended for use with the US keyboard layout. Users of other keyboard layouts should refer to the US keyboard layout in conjunction with this documentation as there may be incompatibilities regarding number and special character keys, such as the `'` (quote) key.

- General Keyboard Shortcuts
  Learn about general keyboard shortcuts for Oracle APEX.
- Component-Specific Keyboard Shortcuts
  Learn about component-specific keyboard shortcuts.

A.1 General Keyboard Shortcuts

Learn about general keyboard shortcuts for Oracle APEX.

You can use general keyboard shortcuts throughout Oracle APEX.

If a page incorporates specialized keyboard shortcuts, click the **Help** icon located in the top-right of the page and select **Shortcuts**, or press **Alt+Shift+F1** to display a list of valid keyboard shortcuts. Not all pages have specialized shortcuts.

Action	Where	Keys
Display the list of valid keyboard shortcuts for the page	Any page with special keyboard shortcuts	Windows: Alt+Shift+F1 Mac: Option+Shift+F1
Open field help dialog	When focus is on any field with a (?) help icon	Windows: Alt+F1 Mac: Option+F1
Move focus back to field without closing dialog	When focus is on a field help dialog	Windows: Alt+F6 Mac: Option+F6
Close dialog	When focus is on any dialog	Escape
Select the previous/next tab	Any page with focus in region display selector tabs	Arrow keys

A.2 Component-Specific Keyboard Shortcuts

Learn about component-specific keyboard shortcuts.

Component-specific keyboard shortcuts only work for specific components.

If a page incorporates specialized keyboard shortcuts, click the **Help** icon located in the top-right of the page and select **Shortcuts**, or press **Alt+Shift+F1** to display a list of valid keyboard shortcuts. Not all pages have specialized shortcuts.

- Date Picker
  Learn about Date Picker keyboard shortcuts.
- Chart Region
  Learn about chart region keyboard shortcuts.
- Map Region
  Learn about map region keyboard shortcuts.
- Interactive Grid
  Learn about interactive grid keyboard shortcuts.
- Markdown Editor Keyboard Shortcuts
  Learn about markdown editor keyboard shortcuts.
- Rich Text Editor Keyboard Shortcuts
  Learn about rich text editor keyboard shortcuts.

A.2.1 Date Picker

Learn about Date Picker keyboard shortcuts.

Action	Keys
Open the popup, when the input has focus and Display Mode is set to popup	Down arrow
Close the popup and focus the input, when Display Mode is set to popup	Escape
Focus the next element	Tab • Note: When the **Display Mode** is set to popup and the last element is focused, pressing Tab moves focus to the first element
Focus the previous element	Shift+Tab • Note: When the **Display Mode** is set to popup and the first element is focused, pressing Tab moves focus to the last element
Move focus to the same day of the previous week	Up arrow
Move focus to the same day of the next week	Down arrow
Move focus to the previous day	Left arrow
Move focus to the next day	Right arrow
Move focus to the first day of the current week	Home
Move focus to the last day of the current week	End
Change the grid of dates to the previous month	Page Up
Change the grid of dates to the next month	Page Down
Change the grid of dates to the previous year	Shift+Page Up
Change the grid of dates to the next year	Shift+Page Down
Select the focused date, when **Show Time** is off	Enter or Space

Action	Keys
Select the focused date, when **Show Time** is on	Enter or Space, then Done

A.2.2 Chart Region

Learn about chart region keyboard shortcuts.

Action	Keys
Move focus to next element	Tab
Move focus to previous element	Shift+Tab
Move focus and selection to previous data item	Up arrow
Move focus and selection to next data item	Down arrow
Move focus and selection to previous data item (on left)	Left arrow
Move focus and selection to next data item (on right)	Right arrow
Move focus and multiselect previous data item	Shift+Up arrow
Move focus and multiselect next data item	Shift+Down arrow
Move focus and multiselect previous data item (on left)	Shift+Left arrow
Move focus and multiselect next data item (on right)	Shift+Right arrow
Move focus to previous data item, without changing the current selection	Ctrl+Up arrow
Move focus to next data item, without changing the current selection	Ctrl+Down arrow
Move focus to previous data item (on left), without changing the current selection	Ctrl+Left arrow
Move focus to next data item (on right), without changing the current selection	Ctrl+Right arrow
Multiselect data item with focus	Ctrl+Space
Zoom in one level if zooming is enabled	= or +
Zoom out one level if zooming is enabled	- or _
Pan up if scrolling is enabled	Page Up
Pan down if scrolling is enabled	Page Down
Pan left in left-to-right locales/Pan right in right-to-left locales	Shift+Page Up
Pan right in left-to-right locales/Pan left in right-to-left locales	Shift+Page Down
Drill on data item, categorical axis label, or legend item when drilling is enabled	Enter

A.2.3 Map Region

Learn about map region keyboard shortcuts.

Action	Keys
Increase the zoom level by 1	= / +
Increase the zoom level by 2	Shift-= / Shift-+
Decrease the zoom level by 1	-
Pan by 100 pixels	Arrow keys
Increase the rotation by 15 degrees	Shift+Right arrow
Decrease the rotation by 15 degrees	Shift+Left arrow
Increase the pitch by 10 degrees	Shift+Up arrow
Decrease the pitch by 10 degrees	Shift+Down arrow

A.2.4 Interactive Grid

Learn about interactive grid keyboard shortcuts.

Interactive grid regions come with many keyboard shortcuts and keyboard-specific features to help the keyboard-only and power user. Specifically, they are designed to provide all functionality that is available with the mouse to keyboard users.

In addition, the grid containing the data provides two distinct modes of interaction: **Navigation** and **Edit** mode. **Navigation** mode is designed for use when the grid is not currently editable and allows fast and easy navigation around the grid using keyboard. **Navigation** mode is the default and the only mode if the interactive grid is not editable. **Edit** mode is designed for use when the grid is currently editable, and keyboard behavior differs slightly.

The interactive grid region consists of multiple separate user interface elements, some of which handle tab stops differently depending on the element type and the expected keyboard semantics. For example, the toolbar and pagination controls are implemented as separate tab stops, while the grid view and icon view are implemented as a single tab stop where cursor key navigation is used to move around the view elements when the view has focus.

The following tables list available keyboard shortcuts in interactive grid regions. General shortcuts work in both navigation mode and in edit mode.

General Interactive Grid Keyboard Shortcuts

Action	Keys
Move to the next tab stop	Tab
Move to the previous tab stop	Shift+Tab
Toggle between row selection and cell selection	F8
Open the column header menu, when focus is on the column header	Enter or Space
Increase column width, when focus is on the column header	Windows: Ctrl+Right arrow Mac: Ctrl+Cmd+Right arrow
Decrease column width, when focus is on the column header	Windows: Ctrl+Left arrow Mac: Ctrl+Cmd+Left arrow
Move column to next column position, when focus is on the column header	Shift+Right arrow

Action	Keys
Move column to the previous column position, when focus is on the column header	Shift+Left arrow
Sort ascending on the current column, when focus is on the column header	Windows: Alt+Up arrow Mac: Option+ Up arrow
Sort ascending on the current column in addition to the existing search columns, when focus is on the column header	Windows: Shift+Alt+Up arrow Mac: Shift+Option+ Up arrow
Sort descending on the current column, when focus is on the column header	Windows: Alt+Down arrow Mac: Option+ Down arrow
Sort descending on the current column in addition to the existing search columns, when focus is on the column header	Windows: Shift+Alt+Down arrow Mac: Shift+Option+Down arrow
Move to next tab stop in column header menu, when column header menu is open	Tab
Move to previous tab stop in the column header menu, when column header menu is open	Shift+Tab
Close the column header menu, when the column header menu is open	Escape
Show help (if defined) for an item, when a single row is viewed and focus is on the column	Windows: Alt+F1 Mac: Option+F1

Navigation Mode Interactive Grid Keyboard Shortcuts

Action	Keys
Move around the grid, including column headers	Arrow keys
Move without changing the selection	Windows: Ctrl+Up arrow or Ctrl+Down arrow Mac: Shift+Option+Up arrow or Shift+Option+Down arrow
Select	Space
Toggle selection	Windows: Ctrl+Space Mac: Ctrl+Alt+Space
Range select and deselect multiple rows	Shift+Up arrow or Shift+Down arrow
Move one page up in the current column	Page Up
Move one page down in the current column	Page Down
Move to first cell in current row	Home
Move to last cell in current row	End
Move to the first cell in the grid	Windows: Ctrl+Home Mac: Option+Up arrow
Move to the last cell in the grid	Windows: Ctrl+End Mac: Option+Down arrow
Add a row after the last selected row, if grid is editable	Windows: Insert Mac: No equivalent
Delete the selected rows, if grid is editable	Delete
Move around the icons, while in icon view	Arrow keys
Move to the first icon, while in icon view	Home

Action	Keys
Move to the last icon, while in icon view	End
Switch from navigation mode to edit mode, if the interactive grid is editable	Enter or F2

Edit Mode Interactive Grid Keyboard Shortcuts

Action	Keys
Move to the next cell in the same row	Tab
Move to the previous cell in the same row	Shift+Tab
Move to the next cell in the same column	Enter
Move to the previous cell in the same column	Shift+Enter
Exit edit mode and return to navigation mode	Escape

A.2.5 Markdown Editor Keyboard Shortcuts

Learn about markdown editor keyboard shortcuts.

Action	Keys
Leave Markdown Editor and go to next tab stop	Ctrl+Shift+.
Leave Markdown Editor and go to previous tab stop	Ctrl+Shift+,

A.2.6 Rich Text Editor Keyboard Shortcuts

Learn about rich text editor keyboard shortcuts.

Content Editing Shortcuts for the Rich Text Editor (TinyMCE)

Action	Keys
Bold	Windows: Ctrl+B Mac: Cmd+B
Italic	Windows: Ctrl+I Mac: Cmd+I
Underline	Windows: Ctrl+U Mac: Cmd+U
Select All	Windows: Ctrl+A Mac: Cmd+A
Redo	Windows: Ctrl+Y / Ctrl+Shift+Z Mac: Cmd+Y / Cmd+Shift+Z
Undo	Windows: Ctrl+Z Mac: Cmd+Z
Header 1	Windows: Alt+Shift+1 Mac: Ctrl+Option+1
Header 2	Windows: Alt+Shift+2 Mac: Ctrl+Option+2

Action	Keys
Header 3	Windows: Alt+Shift+3 Mac: Ctrl+Option+3
Header 4	Windows: Alt+Shift+4 Mac: Ctrl+Option+4
Header 5	Windows: Alt+Shift+5 Mac: Ctrl+Option+5
Header 6	Windows: Alt+Shift+6 Mac: Ctrl+Option+6
Paragraph	Windows: Alt+Shift+7 Mac: Ctrl+Option+7
Div	Windows: Alt+Shift+8 Mac: Ctrl+Option+8
Address	Windows: Alt+Shift+9 Mac: Ctrl+Option+9
Focus to toolbar	Windows: Alt+F10 Mac: Option+F10
Focus to element path	Windows: Alt+F11 Mac: Option+F11
Focus to contextual toolbar	Windows: Ctrl+F9 Mac: Ctrl+F9
Insert link	Windows: Ctrl+K Mac: Cmd+K

User Interface and Navigation Keyboard Shortcuts for the Rich Text Editor (TinyMCE)

Action	Keys
Execute command	Enter / Space
Focus on next UI element	Tab
Focus on previous UI element	Shift+Tab
Focus next control	Right arrow / Down arrow
Focus previous control	Left arrow / Up arrow
Open menu or toolbar menu button	Down arrow / Space
Open group toolbar button	Space
Open split toolbar button	Down arrow
Open the popup menu on split toolbar buttons	Shift+Enter
Open submenu	Right Arrow
Close submenu	Left Arrow / Esc
Close dialog	Esc
Close menu	Esc
Move focus back to editor body	Esc

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