

Oracle® Application Express

End User's Guide



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Contents

Preface

Audience	vii
Documentation Accessibility	vii
Related Documents	vii
Conventions	viii

1 Changes in Release 21.1 for Oracle Application Express End User's Guide

2 About Oracle Application Express

2.1 Browser Requirements	2-1
2.2 About Oracle Application Express	2-1
2.3 About Database Applications	2-2

3 Using Interactive Grids

3.1 About Interactive Grids	3-2
3.2 About Editable Interactive Grids	3-3
3.3 Using an Interactive Grid	3-4
3.3.1 Searching in an Interactive Grid	3-4
3.3.1.1 About the Search Bar	3-5
3.3.1.2 Using the Select Columns To Search Icon	3-5
3.3.2 Rearranging Columns Using Drag and Drop	3-6
3.3.3 Resizing Columns in an Interactive Grid	3-7
3.3.4 Sorting Columns in an Interactive Grid	3-8
3.3.5 Using Charts in an Interactive Grid	3-9
3.4 Customizing an Interactive Grid with the Actions Menu	3-10
3.4.1 Changing the Column Display in an Interactive Grid	3-11
3.4.2 Filtering an Interactive Grid	3-12
3.4.2.1 About Filters in Interactive Grids	3-12
3.4.2.2 Creating a Row Filter in an Interactive Grid	3-13

3.4.2.3	Creating a Column Filter in an Interactive Grid	3-13
3.4.2.4	Editing a Filter in an Interactive Grid	3-14
3.4.2.5	Disabling a Filter in an Interactive Grid	3-15
3.4.2.6	Removing a Filter from an Interactive Grid	3-15
3.4.3	Selecting Column Sort Order in an Interactive Grid	3-16
3.4.4	Defining an Aggregation in an Interactive Grid	3-17
3.4.4.1	Creating an Aggregation in an Interactive Grid	3-17
3.4.4.2	Editing an Aggregation in an Interactive Grid	3-18
3.4.4.3	Removing an Aggregation in an Interactive Grid	3-19
3.4.5	Creating a Control Break from the Actions Menu in an Interactive Grid	3-20
3.4.6	Adding Highlighting to an Interactive Grid	3-21
3.5	Customizing an Interactive Grid with the Column Heading Menu	3-22
3.5.1	About the Column Heading Menu in an Interactive Grid	3-23
3.5.2	Displaying the Column Heading Menu	3-24
3.5.3	Creating a Control Break in an Interactive Grid	3-24
3.5.4	Creating an Aggregation with the Column Heading Menu	3-26
3.5.5	Freezing Columns in Place	3-27
3.5.6	Hiding Columns in an Interactive Grid	3-27
3.5.7	Unhiding Columns in an Interactive Grid	3-28
3.5.8	Filtering with the Column Heading Menu	3-29
3.6	Using an Editable Interactive Grid	3-30
3.6.1	Adding a Row in an Editable Interactive Grid	3-30
3.6.2	Editing Rows in an Interactive Grid	3-31
3.6.2.1	About the Row Actions Menu in an Editable Interactive Grid	3-31
3.6.2.2	About the Edit Button in an Editable Interactive Grid	3-32
3.6.2.3	Editing a Cell in an Interactive Grid	3-33
3.6.2.4	Editing Multiple Rows in an Editable Interactive Grid	3-33
3.6.3	Deleting a Row in an Interactive Grid	3-34
3.6.4	Modifying Multiple Rows and Cells in an Editable Interactive Grid	3-34
3.6.4.1	About Selection Modes in an Editable Interactive Grid	3-34
3.6.4.2	Changing Selection Mode in an Editable Interactive Grid	3-35
3.6.4.3	Copying to Multiple Rows in an Editable Interactive Grid	3-35
3.6.4.4	Copying to Multiple Cells in an Editable Interactive Grid	3-36
3.6.4.5	Filling Cells in an Editable Interactive Grid	3-37
3.6.4.6	Clearing Cells in an Interactive Grid	3-37
3.7	Saving Interactive Grids	3-38
3.7.1	About Interactive Grid Report Types	3-38
3.7.2	Saving a Report in an Interactive Grid	3-39
3.7.3	Renaming a Report in an Interactive Grid	3-40
3.7.4	Deleting a Report in an Interactive Grid	3-41
3.8	Resetting Interactive Grids	3-41

3.8.1	Refreshing an Interactive Grid	3-41
3.8.2	Resetting an Interactive Grid	3-42
3.8.3	How the Reset Button Affects Saved Interactive Grid Reports	3-42
3.8.4	Reverting an Interactive Grid to a Specific Save State	3-43
3.9	Downloading or Emailing an Interactive Grid	3-43

4 Using Interactive Reports

4.1	About Interactive Reports	4-1
4.2	Using the Search Bar	4-2
4.3	Using the Select Columns To Search Icon	4-3
4.4	Using the Column Heading Menu	4-4
4.5	Using Interactive Report Filters	4-4
4.6	Customizing an Interactive Report Using the Actions Menu	4-5
4.6.1	About the Actions Menu	4-7
4.6.2	Selecting Columns to Display	4-9
4.6.3	Adding a Filter	4-9
4.6.3.1	About Creating Filters	4-9
4.6.3.2	Adding, Editing, and Removing a Column Filter	4-10
4.6.3.3	Adding, Editing, and Removing a Row Filter	4-11
4.6.4	Selecting Column Sort Order	4-11
4.6.5	Creating a Control Break	4-11
4.6.6	Adding Highlighting	4-12
4.6.7	Computing Columns	4-14
4.6.7.1	Creating a Computation	4-14
4.6.7.2	Deleting a Computation	4-15
4.6.8	Defining an Aggregation Against a Column	4-15
4.6.8.1	Creating an Aggregation Against a Column	4-15
4.6.8.2	Removing a Column Aggregation	4-16
4.6.9	Creating a Chart from the Actions Menu	4-17
4.6.9.1	Creating a Chart	4-17
4.6.9.2	Editing a Chart	4-18
4.6.9.3	Deleting a Chart	4-18
4.6.10	Grouping Columns	4-18
4.6.10.1	Creating a Group By	4-19
4.6.10.2	Editing a Group By	4-20
4.6.10.3	Selecting a Group By Sort Order	4-20
4.6.10.4	Deleting a Group By	4-20
4.6.11	Managing Pivot Reports	4-21
4.6.11.1	Creating a Pivot Report	4-21
4.6.11.2	Editing a Pivot Report	4-22

4.6.11.3	Deleting a Pivot Report	4-22
4.6.12	Executing a Flashback Query	4-23
4.6.12.1	Creating a Flashback Query	4-23
4.6.12.2	Editing a Flashback Query	4-23
4.6.12.3	Deleting a Flashback Query	4-23
4.6.13	Saving an Interactive Report	4-24
4.6.13.1	About the Report List	4-24
4.6.13.2	About Configuration Dependencies	4-25
4.6.13.3	Saving a Public or Private Interactive Report	4-25
4.6.13.4	Renaming a Public or Private Interactive Report	4-26
4.6.13.5	Deleting a Public or Private Interactive Report	4-26
4.6.14	Resetting a Report	4-27
4.6.15	Downloading a Report	4-27
4.6.16	Subscribing to Report Updates by Email	4-28
4.6.16.1	How Report Subscriptions Work	4-28
4.6.16.2	Subscribing to Updated Report Results	4-29

Index

Preface

Oracle Application Express End User's Guide offers an introduction to using Oracle Application Express 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 Application Express End User's Guide is intended for end users who are running Oracle Application Express 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 Oracle Application Express.

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 Application Express Release Notes*
- *Oracle Application Express Installation Guide*
- *Oracle Application Express App Builder User's Guide*
- *Oracle Application Express Administration Guide*
- *Oracle Application Express SQL Workshop Guide*
- *Oracle Application Express API Reference*

- *Oracle Application Express 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.
<i>italic</i>	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 21.1 for *Oracle Application Express End User's Guide*

All content in *Oracle Application Express End User's Guide* has been updated to reflect release 21.1 functionality and user interface changes.

Deprecated and Desupported Features

Desupported features include:

- **Websheets**

Websheets are desupported as of this release. The Websheets chapter and associated content are removed from this guide.

- **Data Loading Wizard Examples**

Previously existing examples for the Data Loading Wizard are removed from this guide.

See "[Deprecated Features](#)" and "[Desupported Features](#)" *Oracle Application Express Release Notes*.

2

About Oracle Application Express

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

- [Browser Requirements](#)
Oracle Application Express requires a JavaScript-enabled browser and supports the current and prior major release of Google Chrome, Mozilla Firefox, Apple Safari, Microsoft Internet Explorer, and Microsoft Edge.
- [About Oracle Application Express](#)
Oracle Application Express 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 Application Express App Builder User's Guide*

2.1 Browser Requirements

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

Note:

Microsoft Internet Explorer 11 is the prior major release, with Microsoft Edge being the current Microsoft browser.

2.2 About Oracle Application Express

Oracle Application Express 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.

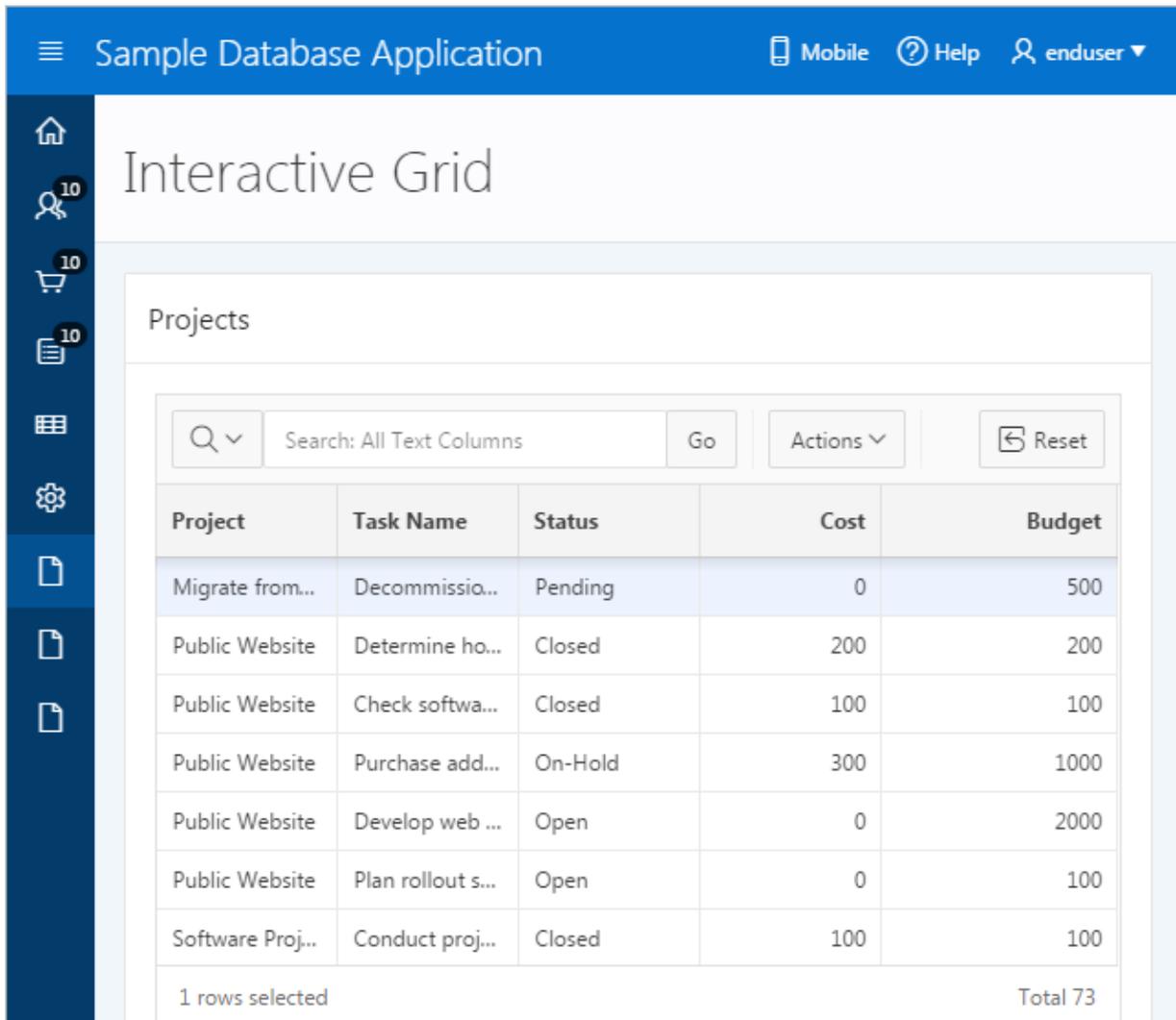
- [About Interactive Grids](#)
Interactive grids feature many ways to change how the data is displayed. Options include the Actions menu, Column Heading menus, and the ability to rearrange the report interactively using the mouse.
- [About Editable Interactive Grids](#)
Editable interactive grids possess 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 Interactive Grids](#)
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 Application Express App Builder User's Guide*

3.1 About Interactive Grids

Interactive grids feature many ways to change how the data is displayed. Options include the Actions menu, Column Heading menus, and the ability to rearrange the report interactively using the mouse.



The screenshot displays the Oracle Interactive Grid interface for a 'Sample Database Application'. The page title is 'Interactive Grid' and the data is presented in a table titled 'Projects'. The table has five columns: Project, Task Name, Status, Cost, and Budget. The first row is selected, and the table footer shows '1 rows selected' and 'Total 73'. The interface includes a search bar, an Actions menu, and a Reset button.

Project	Task Name	Status	Cost	Budget
Migrate from...	Decommissio...	Pending	0	500
Public Website	Determine ho...	Closed	200	200
Public Website	Check softwa...	Closed	100	100
Public Website	Purchase add...	On-Hold	300	1000
Public Website	Develop web ...	Open	0	2000
Public Website	Plan rollout s...	Open	0	100
Software Proj...	Conduct proj...	Closed	100	100

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. (The width and order of columns can also be configured in the Columns dialog.)

You can quickly chart the data with the **Chart** function. 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 with the **Flashback** function. You can use the **Refresh** function to pull in the latest version of the data on the database (useful for highly dynamic datasets).

Reports in Interactive Grids

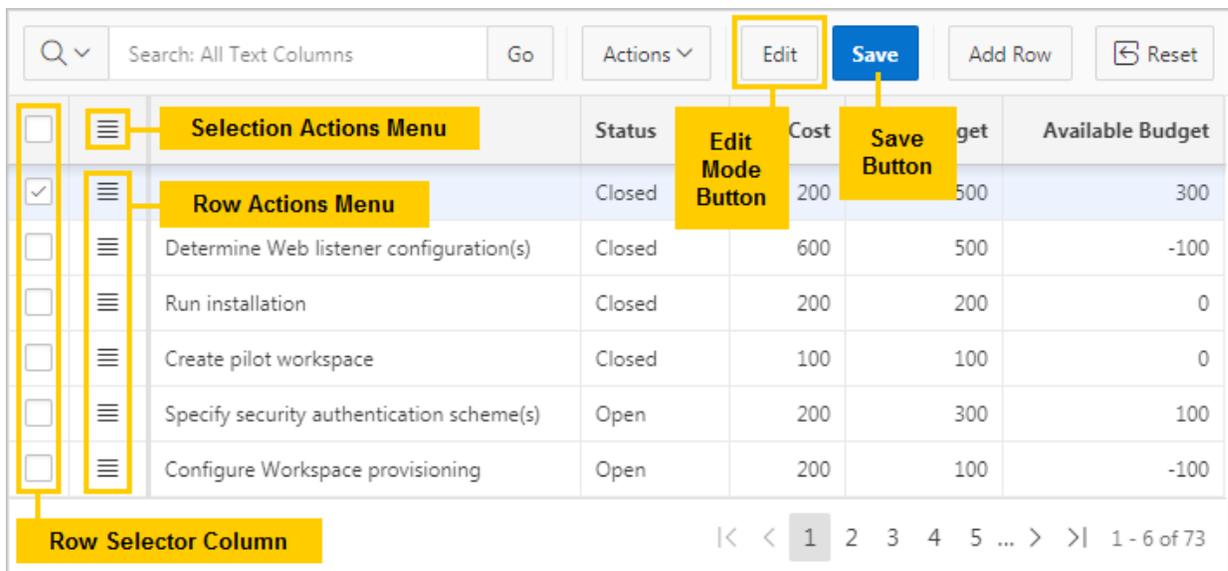
You can save your customizations to an interactive grid by creating a custom **report** by selecting Report, Save As from the Actions menu.

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.



<input type="checkbox"/>		Status	Cost	Budget	Available Budget
<input checked="" type="checkbox"/>		Closed	200	500	300
<input type="checkbox"/>	Determine Web listener configuration(s)	Closed	600	500	-100
<input type="checkbox"/>	Run installation	Closed	200	200	0
<input type="checkbox"/>	Create pilot workspace	Closed	100	100	0
<input type="checkbox"/>	Specify security authentication scheme(s)	Open	200	300	100
<input type="checkbox"/>	Configure Workspace provisioning	Open	200	100	-100

Row Selector Column

1 2 3 4 5 ... > | 1 - 6 of 73

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.
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).

1. 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:**

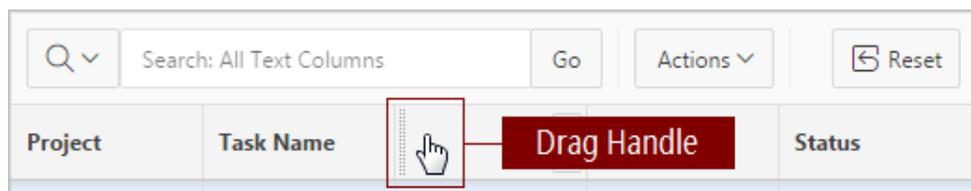
- [Disabling a Filter in an Interactive Grid](#)
- [Removing a Filter from an Interactive Grid](#)

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.

1. 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 Application Express 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.

1. 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:**

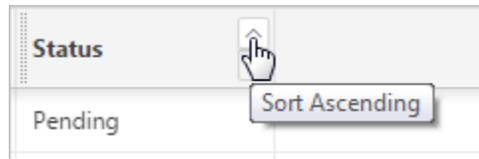
- [Changing the Column Display in an Interactive Grid](#)
- [Keyboard Shortcuts in Interactive Grid Regions in the *Oracle Application Express Accessibility Guide*](#)

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.

Search: All Text Columns		Go	Actions ▾	Reset	
Project	Sort Order Buttons		 	Cost	Budget
Migrate fro...	Decommiss...	Pending		0	500

- To specify the sort order of a column:
 - Hover the mouse in the column heading.
The **Sort Ascending** and **Sort Descending** buttons display.
 - 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.

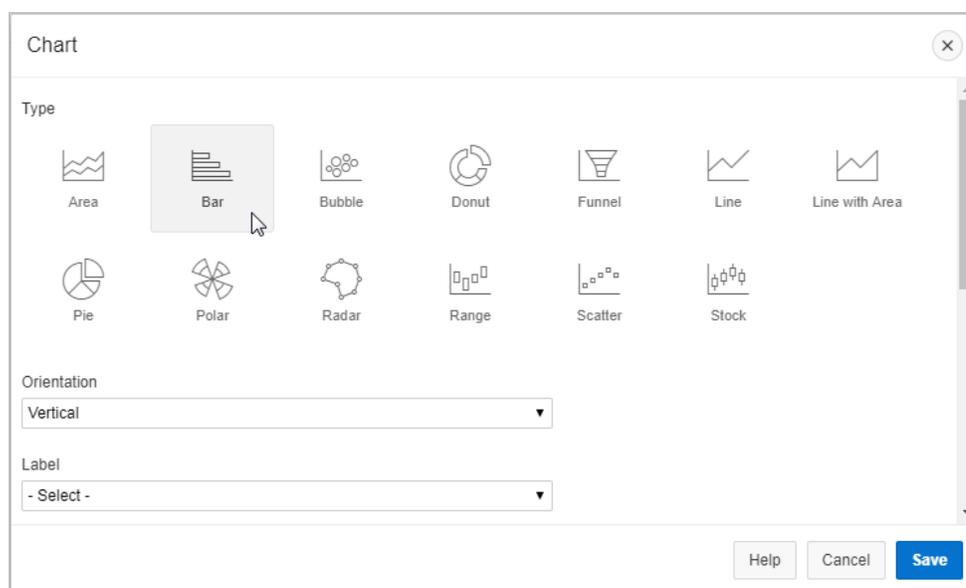
1. To create a chart from the data in an interactive grid:

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.



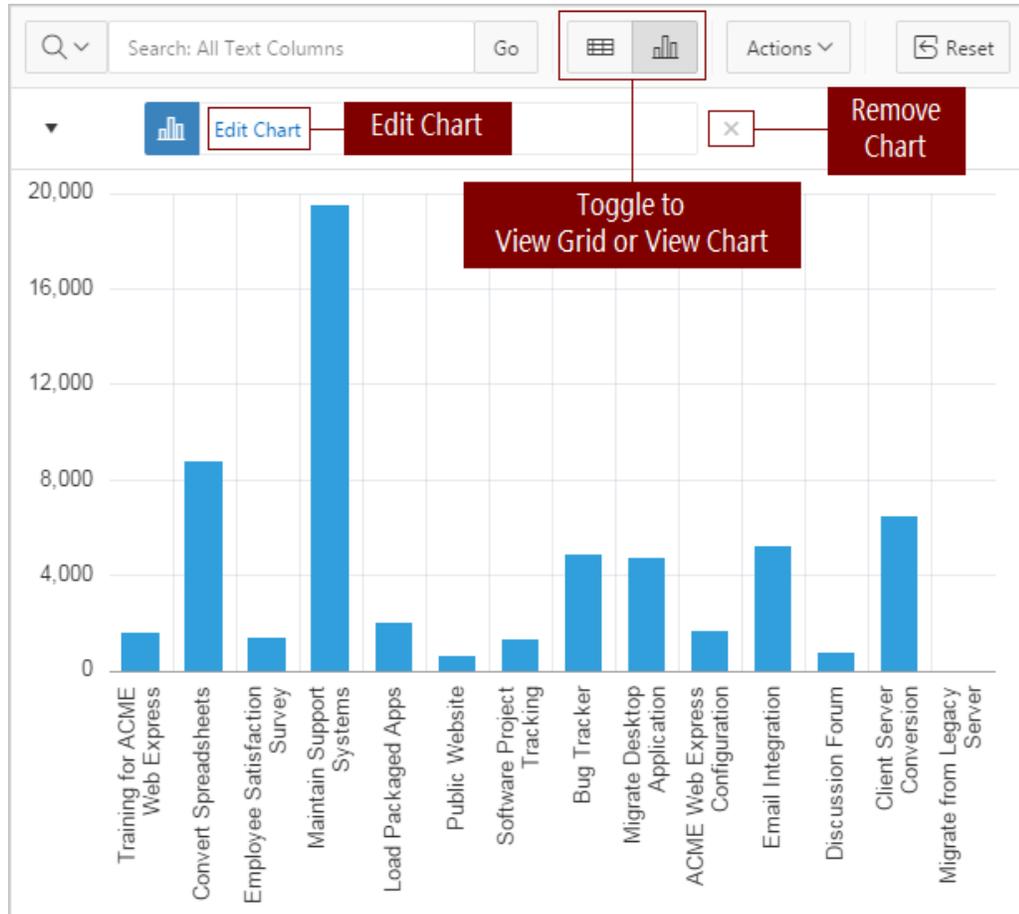
3. Configure the chart settings.

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, 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

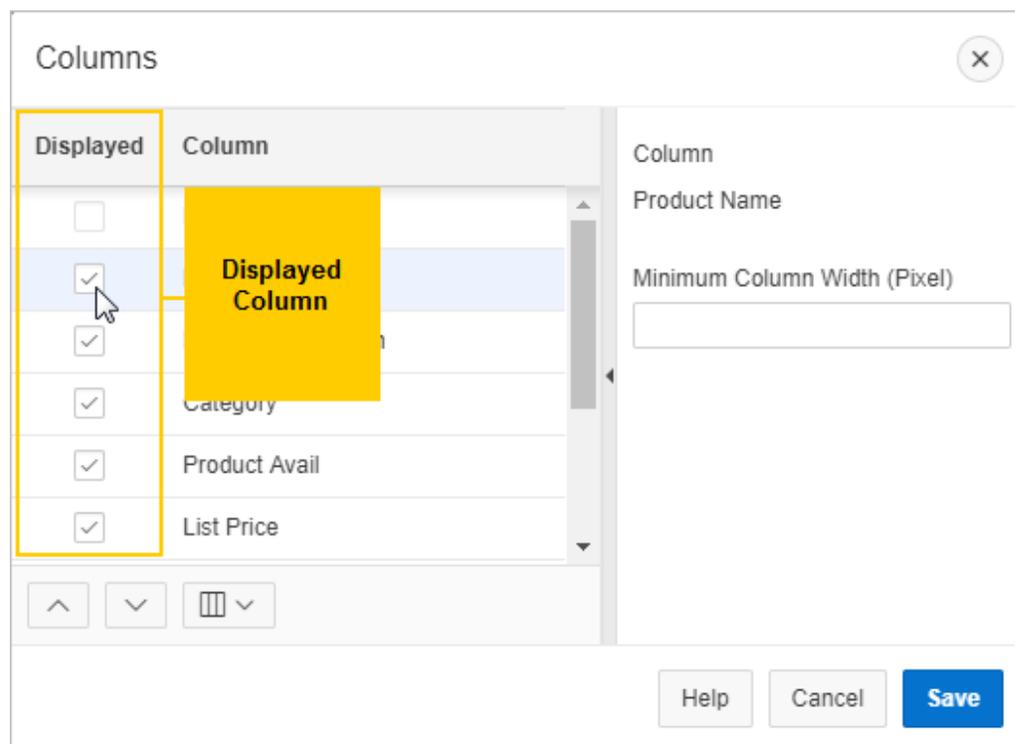
Reconfigure and augment how an interactive grid displays data by using the Actions menu.

- [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](#)
Break an interactive grid (that is, compartmentalize the layout) by column 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.

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.



1. 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.
 - **Columns** 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 (for example, a higher number widens the column).
3. Click **Save**.

The interactive grid refreshes.

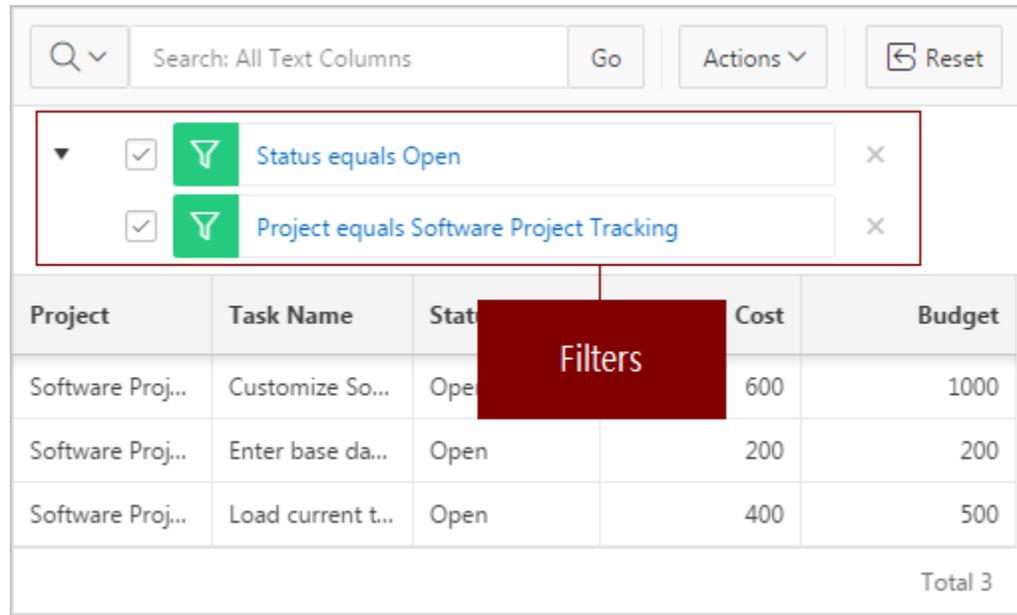
3.4.2 Filtering an Interactive Grid

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.

1. 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.

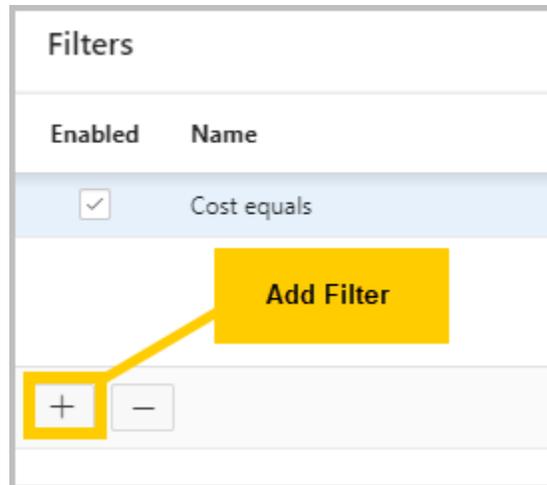
1. To add a filter to a column in an interactive grid:
 1. Click the **Actions** menu.
 2. Select **Filter**.
The Filters dialog displays.
 3. In the Filters dialog:
 - a. Type - Select **Column**.
 - b. Column - Choose the column to filter.
 - c. Operator - Choose the filter logic.
 - d. Value - Enter 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.

1. 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 valueOther 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

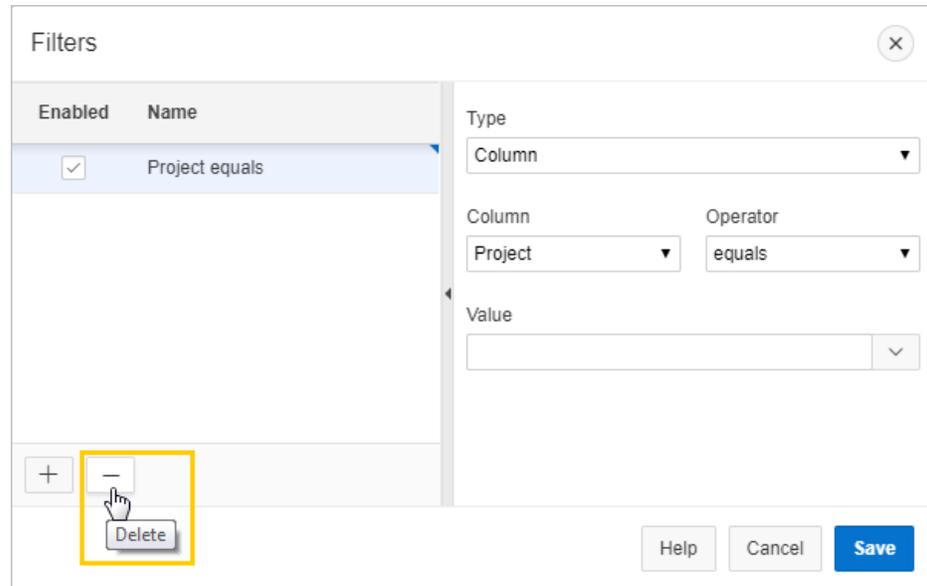
Remove a filter by deleting it in the Filters dialog or by clicking the adjacent Remove Filter icon (X).

 **Tip:**

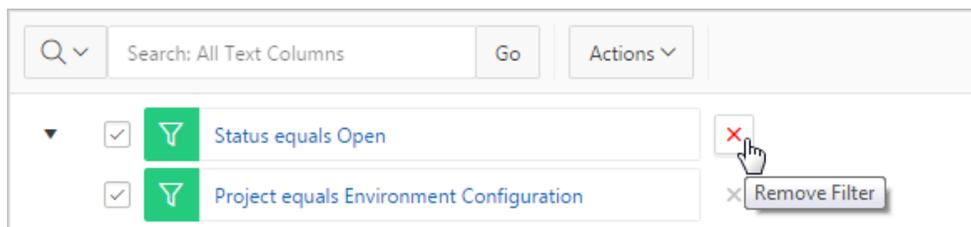
To temporarily disable a filter, deselect the adjacent check box either within the Filters dialog or above the interactive grid.

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.

1. 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.

1. 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.)

Enabled	Column	Aggregation
<input checked="" type="checkbox"/>	Product Na...	Count

Column: Product Name

Aggregation: Count

Tooltip:

Show Overall Value:

Buttons: Help, Cancel, Save

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):

Task Name	Status	Cost	Budget
Project: Bug Tracker			
		4850	6100
Project: Convert Spreadsheets			
Collect mission-critical s...	Closed	2500	4000
Lock spreadsheets	Closed	300	800
Create applications fro...	Open	6000	10000
Send links to previous s...	Pending	0	500
			Total 73

3.4.4.2 Editing an Aggregation in an Interactive Grid

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

1. 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**.

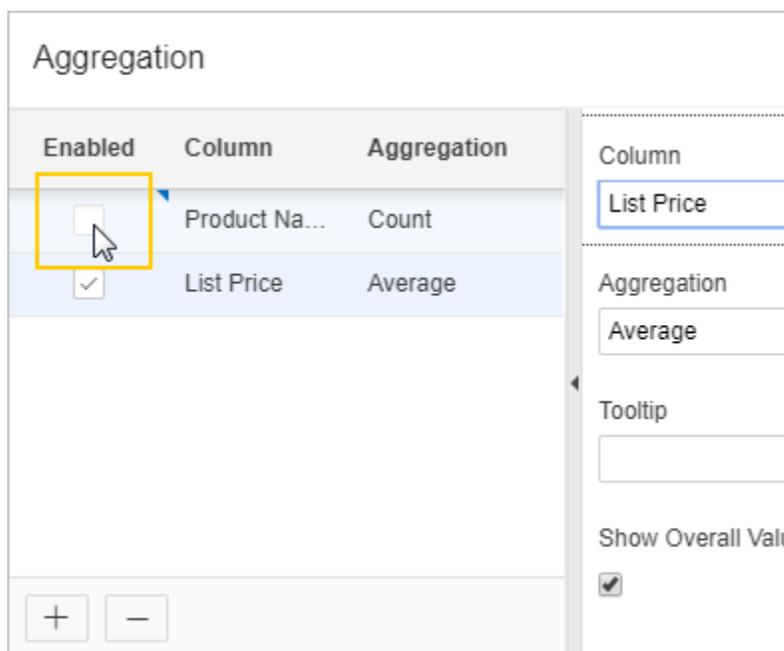
3.4.4.3 Removing an Aggregation in an Interactive Grid

Use the Aggregate dialog to remove an aggregation.

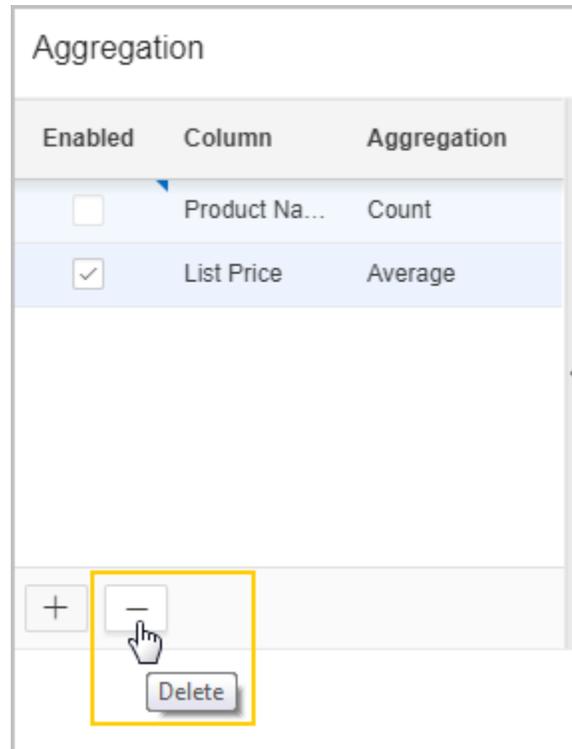
 **Tip:**

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.

1. 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

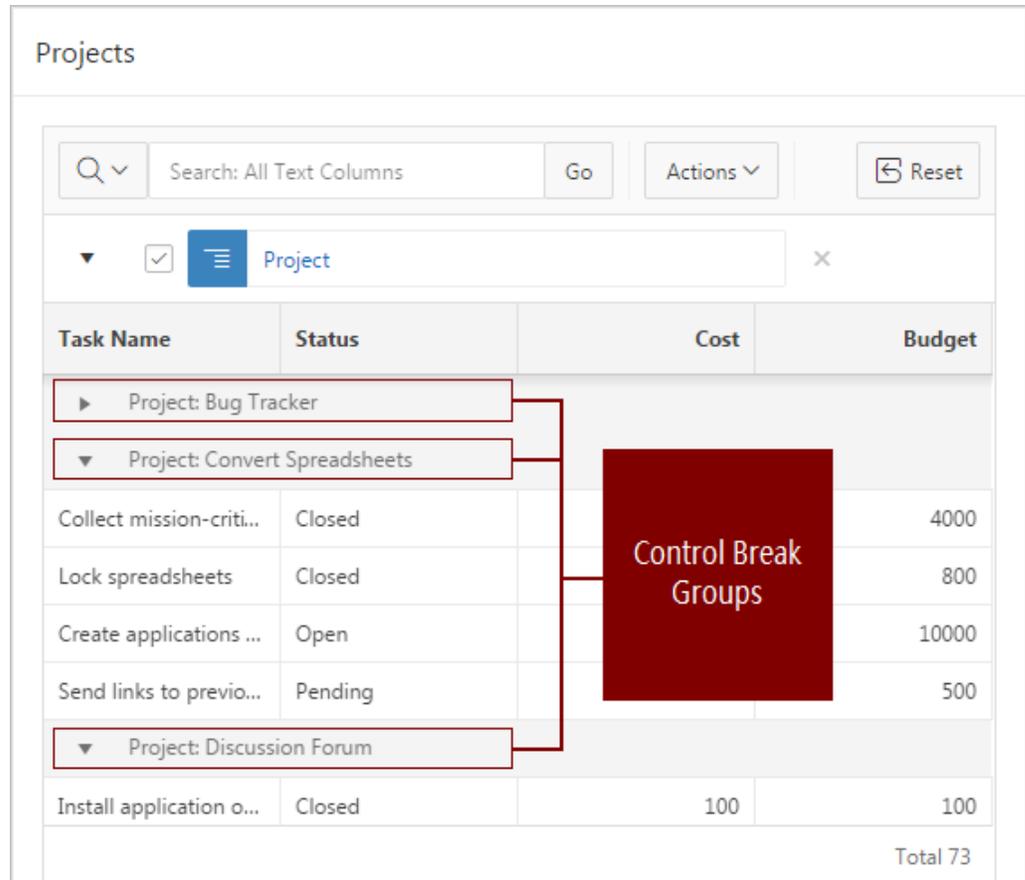
Break an interactive grid (that is, compartmentalize the layout) by column by selecting Control Break in the Actions, Format submenu.

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

1. 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.

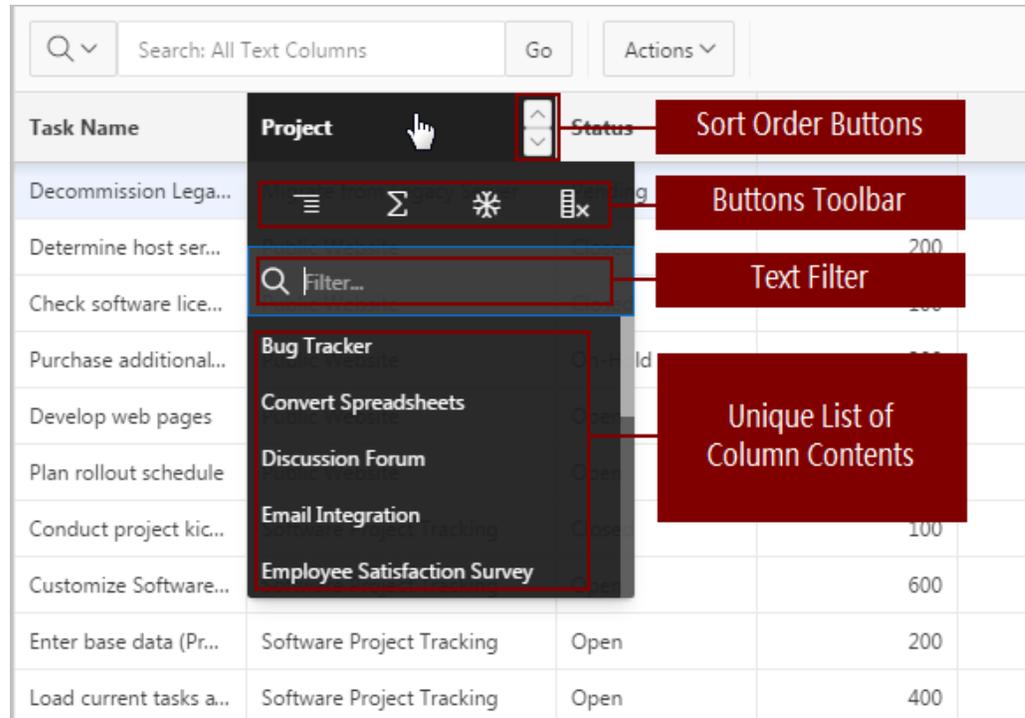
1. To highlight an interactive grid cell:
 1. Click **Actions** and select **Format** then **Highlight**.
The Highlight dialog displays.
 2. In the Highlight dialog:
 - a. Name - Enter the name of the highlight (this name displays as a filter above the interactive grid).

3.5.1 About the Column Heading Menu in an Interactive Grid

The Column Heading Menu contains buttons 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.](#)"

Button Toolbar

The toolbar on the Column Heading menu contains the following buttons and functions.

- **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](#)."

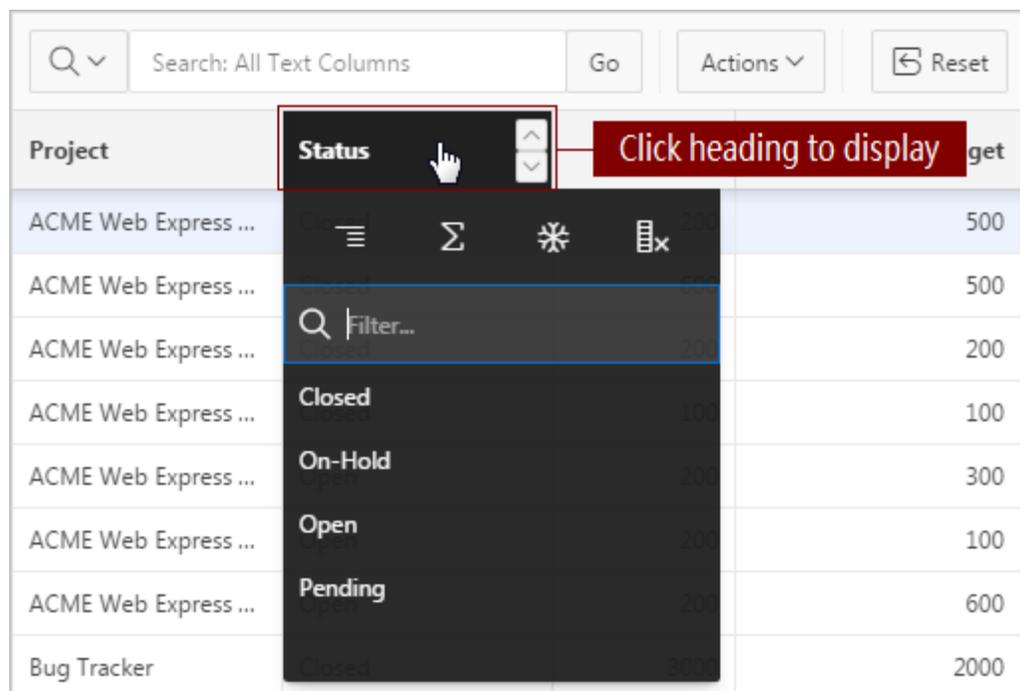
Text Filter

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 a column's Column Heading menu by clicking the heading of the column.



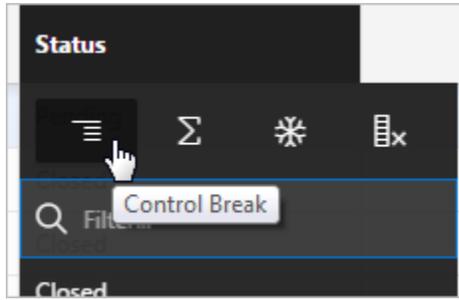
To display a column's Column Heading menu:

- 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.

1. 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.

Projects

Search: All Text Columns Go Actions Reset

Project

Task Name	Status	Cost	Budget
▶ Project: Bug Tracker			
▼ Project: Convert Spreadsheets			
Collect mission-criti...	Closed		4000
Lock spreadsheets	Closed		800
Create applications ...	Open		10000
Send links to previo...	Pending		500
▼ Project: Discussion Forum			
Install application o...	Closed	100	100
			Total 73

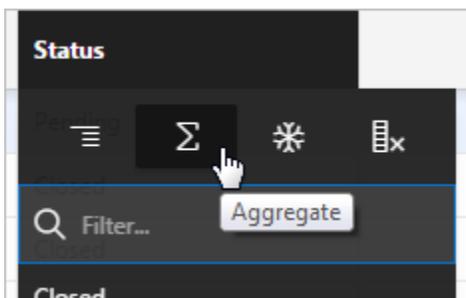
To remove a control break, click the **Remove Control Break** icon (X) on the control break filter.

 **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.



1. 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**.

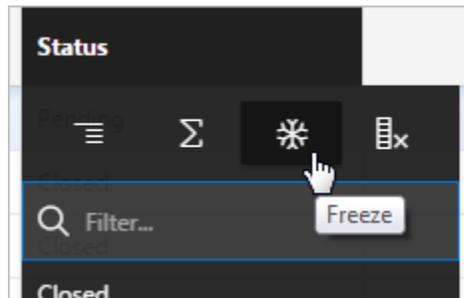
The interactive grid reloads with the aggregation applied.

 **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.



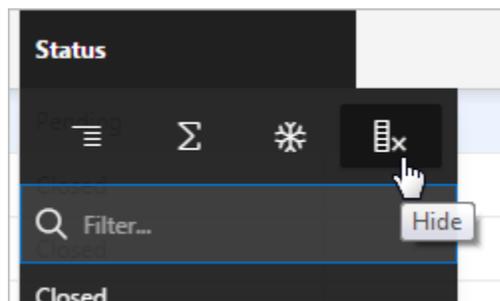
1. To freeze a column in place:
 1. Click the heading of the column that you wish to freeze.
The Column Heading menu appears.
 2. Click the **Freeze** icon.

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.



1. 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.

2. 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**.

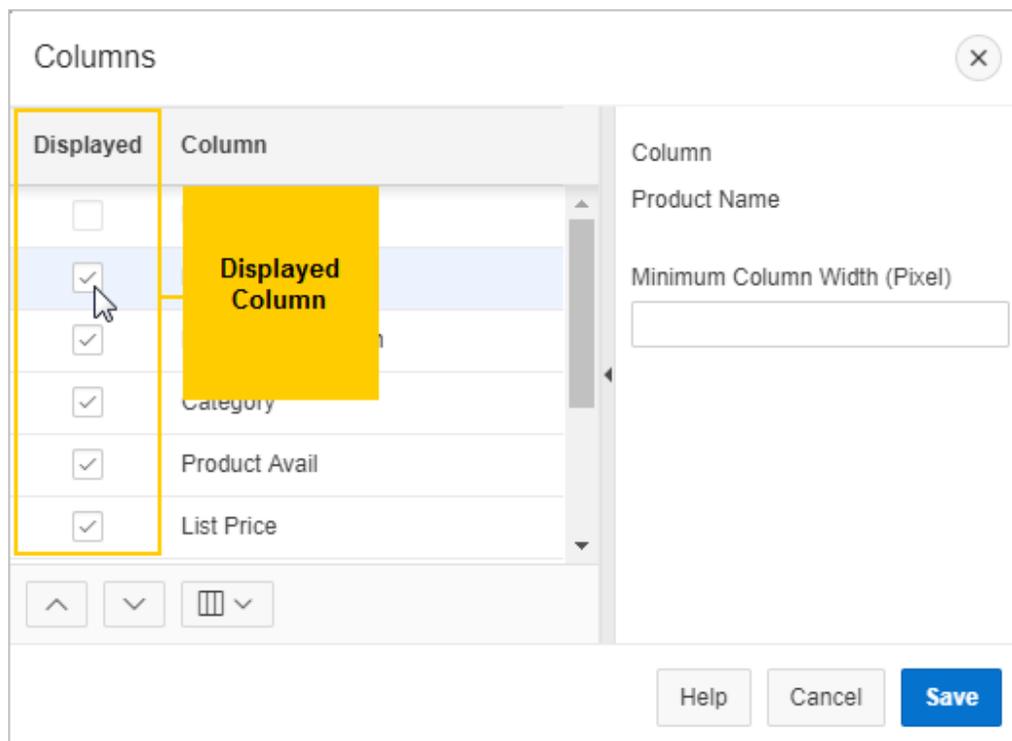
6. Click **Save**.

 **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.



1. 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.

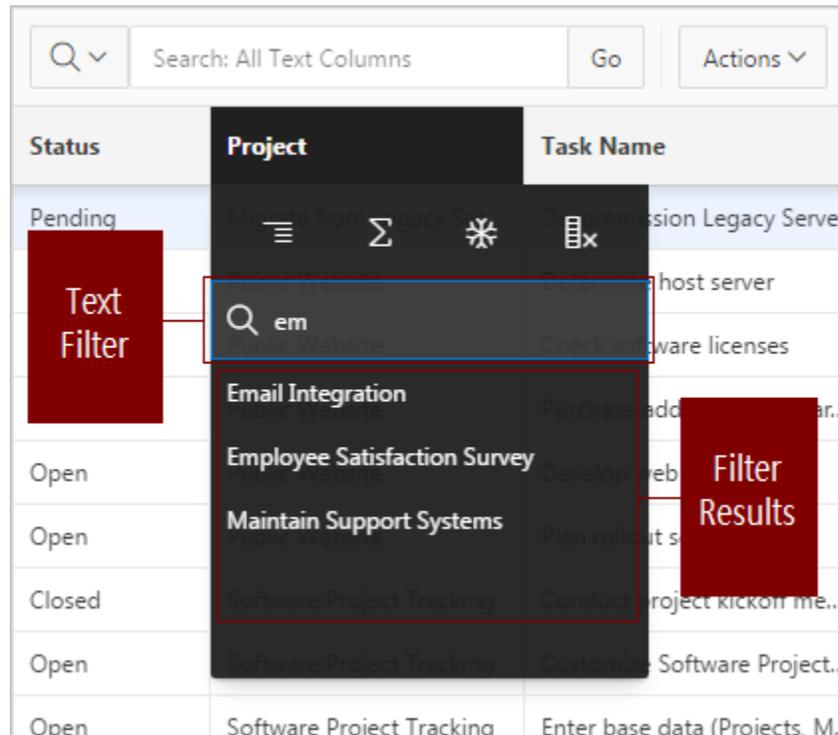
Tip:

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.



1. 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 execute the filter.
 - Select an entry from a list of valid strings that autogenerates when you start typing.

The interactive grid redisplayes 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.

		Project	Task Na...	Start D...	End Dat	Add Row Button		Cost	Budget
<input checked="" type="checkbox"/>	☰	Migrate ...	Decom...	05-NOV	05-NOV	Pending	AI Bines	0	500
<input type="checkbox"/>	☰	Public W	Determi	20-AUG	20-AUG	Closed	Tiger Sc	200	200

- 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.

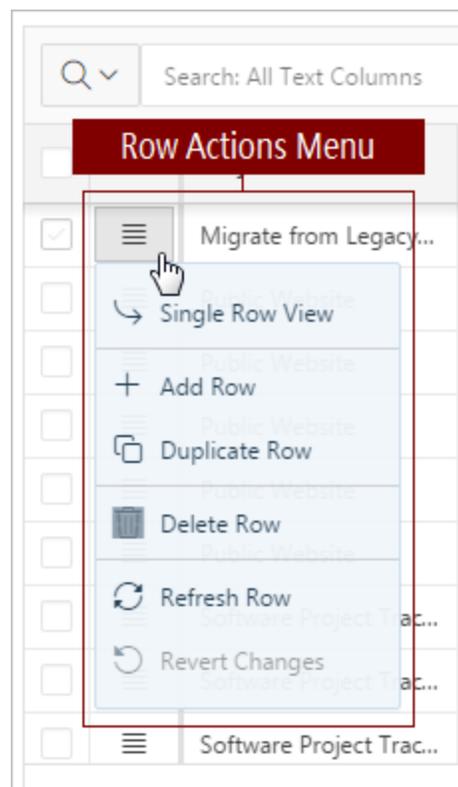
3.6.2 Editing Rows in an Interactive Grid

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.

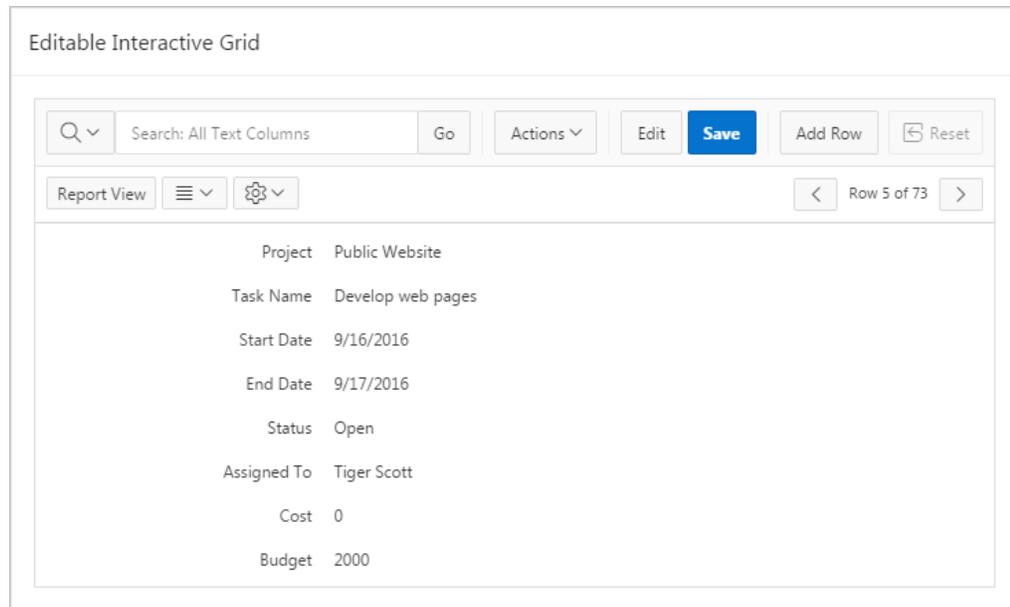
3.6.2.1 About the Row Actions Menu in an Editable Interactive Grid

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

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. Click the **Previous** and **Next** buttons to navigate between rows in the grid. Click the **Report View** button to return to the grid.



Project	Public Website
Task Name	Develop web pages
Start Date	9/16/2016
End Date	9/17/2016
Status	Open
Assigned To	Tiger Scott
Cost	0
Budget	2000

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 row.

Refresh Row

Reloads the row by calling the database and pulling in any updates. 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:
 - Double-click a cell.
Editing mode engages and a cursor displays in the cell.
 - Edit the cell contents.
 - 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.
 - To exit editing mode, press **Escape**.
 - 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

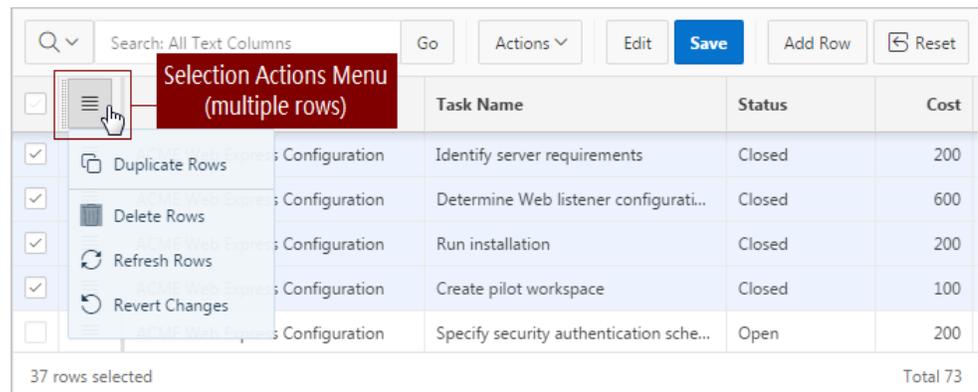
Select the desired rows of an editable interactive grid to edit, then select an option from the Selection Actions menu.

- To edit multiple rows in an editable interactive grid:
 - 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.

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



- 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:
- Click the **Row Actions** menu icon adjacent to the row.
- Select **Delete Row**.

The row is crossed out in the grid.

		Search: All Text Columns	Go	Actions	Edit	Save	Add Row	Reset
<input type="checkbox"/>	☰	Project	Task Name	Deleted Row	Status	Cost	Budget	
<input type="checkbox"/>	☰	ACME Web Express-C...	Identify server requirements		Closed	200	500	
<input type="checkbox"/>	☰	ACME Web Express C...	Determine Web listener configuration(s)		Closed	600	500	

- 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.

1. 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, press the **down arrow key** to quickly select a group of adjacent rows below the first row (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 clicking **Revert Changes** in the Selection or Selection Actions menus.

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.

1. 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 clicking **Revert Changes** in the Selection or Selection Actions menus.

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.

1. To
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 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**.

The entered value applies to the selected cells.

 **Tip:**

Undo changes to the data by clicking **Revert Changes** in the Selection or Selection Actions menus.

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.

1. 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 clicking **Revert Changes** in the Selection or Selection Actions menus.

3.7 Saving Interactive Grids

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 in 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 Application Express, 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 Effects Available Save Options" in the *Oracle Application Express App Builder User's Guide*

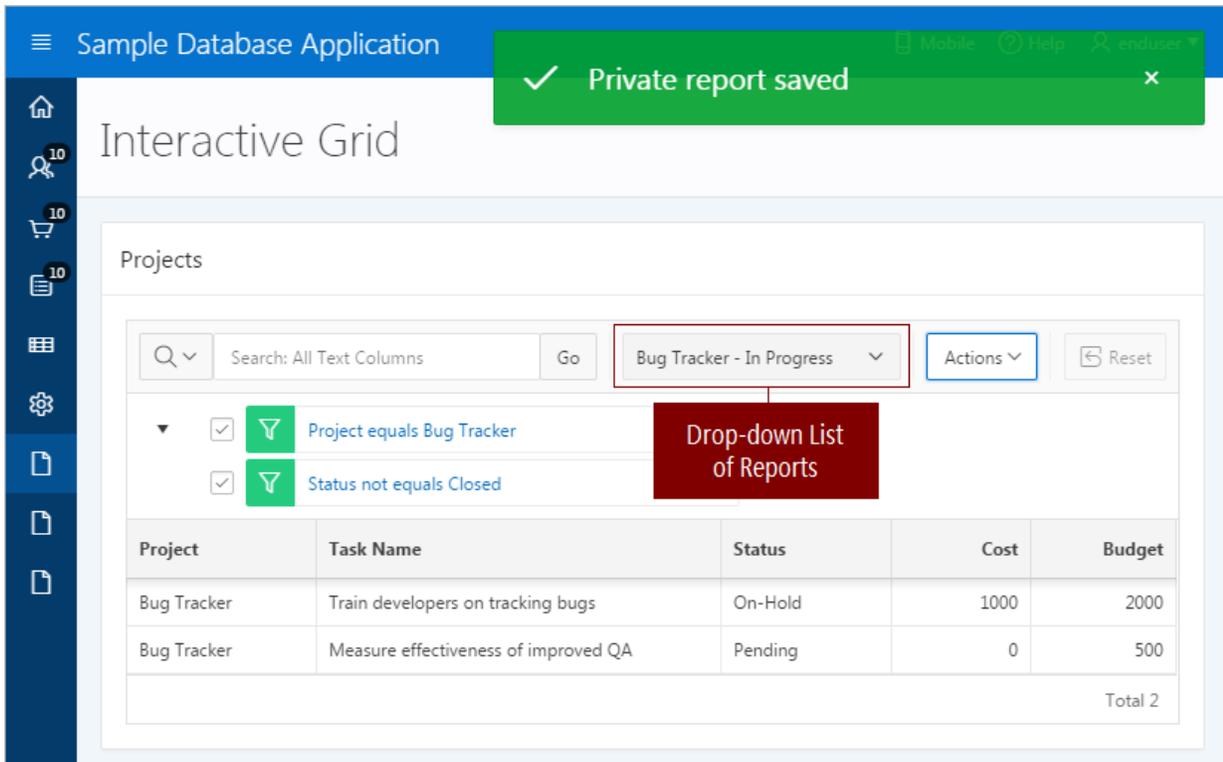
3.7.2 Saving a Report in an Interactive Grid

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

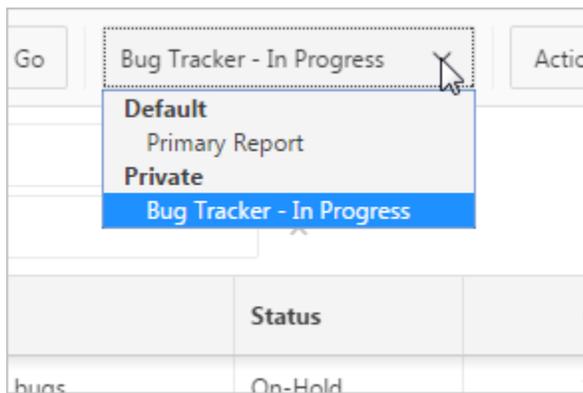
1. To save a Private interactive grid:
 1. Click the **Actions** menu and select **Report** then **Save As**.
The Save As dialog displays.
 2. In the Save As dialog:
 - a. Type - Select **Private**.
 - b. Name - Enter a name for the grid.
 3. Click **Save**.

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 there is now more than one saved report available in the interactive grid, 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.

1. 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.

1. 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.

1. 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.

Projects

Project	Task Name	Status	Assigned To	Cost
Migrate from Le...	Decommission L...	Pending	Al Bines	0
Public Website	Determine host s...	Closed	Tiger Scott	200
Public Website	Check software li...	Closed	Tom Suess	100
Public Website	Purchase additio...	On-Hold	Al Bines	300
Public Website	Develop web pa...	Open	Tiger Scott	0

1 rows selected Total 73

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.

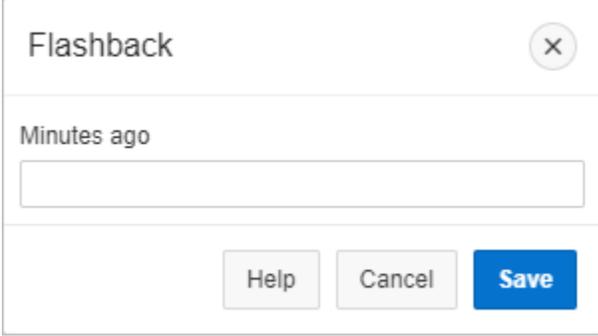
In a Primary report, the **Reset** button undoes all changes that you have made—including reorganization and new content—because only developers can overwrite Primary reports. To preserve your changes, save a Private report.

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 Interactive Grids](#)

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.



The image shows a dialog box titled "Flashback" with a close button (X) in the top right corner. Below the title bar, there is a label "Minutes ago" followed by a text input field. At the bottom of the dialog, there are three buttons: "Help", "Cancel", and "Save". The "Save" button is highlighted in blue.

1. 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 into the past that you wish to return to.
 3. Click **Save**.

The grid reloads.

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.

1. 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**, **Excel**, or **PDF**.
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. 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, Body).
 - c. Click **Send**.



See Also:

"Configuring Interactive Grid Download Formats" in *Oracle Application Express 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 Application Express 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 Application Express App Builder User's Guide*

4.1 About Interactive Reports

In addition to interactive grids, Oracle Application Express 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
	APEX Environment Configuration	Identify server requirements	28-MAY-14	29-MAY-14	Closed	John Watson	100	200	100
	Maintain Support Systems	HR software upgrades	28-MAY-14	23-JUL-14	On-Hold	Pam King	8,000	7,000	-1,000
	Maintain Support Systems	Apply Billing System updates	28-MAY-14	27-JUL-14	On-Hold	Russ Sanders	9,500	7,000	-2,500
	APEX Environment Configuration	Determine Web listener configuration(s)	29-MAY-14	29-MAY-14	Closed	James Cassidy	100	100	0
	APEX Environment Configuration	Specify security authentication scheme(s)	30-MAY-14	01-JUN-14	Closed	John Watson	200	300	100

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.



See Also:

"Utilizing Packaged Applications" in *Oracle Application Express App Builder User's Guide*

4.2 Using the Search Bar

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

	<input type="text"/>	<input type="button" value="Go"/>	1. Primary Report			<input type="button" value="Actions"/>
--	----------------------	-----------------------------------	-------------------	--	--	--

- 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.

- View Report - Displays alternate default and saved private or public reports. See ["Saving an Interactive Report."](#)
- View icons - Switches between an icon, report and detail view of 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."](#)

 **Tip:**

Developers can customize what displays on the Search bar. To learn more, see "Customizing the Interactive Search Bar" in *Oracle Application Express 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.

1. 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.

Project	Task Name	Start Date	End Date	Status	Assigned To
	Identify server requirements	25-DEC	26-DEC	Closed	John Watson
APEX Environment Configuration	Configure Web listener configuration(s)	26-DEC	26-DEC	Closed	James Cassidy
Bug Tracker	Configure security authentication scheme(s)	27-DEC	29-DEC	Closed	John Watson
Convert Excel Spreadsheet	Configure servers for Development, Test, Production	27-DEC	01-JAN	Closed	James Cassidy
Discussion Forum	Configure Workspace provisioning	03-JAN	03-JAN	Closed	John Watson

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.

The screenshot shows an interactive report interface. At the top, there is a search bar with a magnifying glass icon, a 'Go' button, and an 'Actions' dropdown menu. Below the search bar, there are two active filters: 'Status = 'On-Hold'' and 'Project = 'Bug Tracker'', each with a green funnel icon, a checkmark, and a close 'x' button. A hand cursor is pointing at the first filter. Below the filters is a table with the following columns: Project, Task Name, Start Date, End Date, Status, Assigned To, and Cost. The table contains two rows of data. At the bottom right of the table area, it says '1 - 2'.

	Project	Task Name	Start Date	End Date	Status	Assigned To	Cost
	Bug Tracker	Train developers on tracking bugs	15-MAR	04-MAY	On-Hold	Myra Sutcliff	0
	Bug Tracker	Review automated testing tools	09-JAN	07-FEB	On-Hold	Myra Sutcliff	2750

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.

This screenshot is similar to the previous one, but the 'Status = 'On-Hold'' filter is expanded. A hand cursor is pointing at the filter name. The table below remains the same.

	Project	Task Name	Start Date	End Date	Status	Assigned To	Cost
	Bug Tracker	Train developers on tracking bugs	15-MAR	04-MAY	On-Hold	Myra Sutcliff	0
	Bug Tracker	Review automated testing tools	09-JAN	07-FEB	On-Hold	Myra Sutcliff	2750

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 Application Express 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 buttons 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 View Icon 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 executing 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 updated versions it.

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

Name ↑	Category	Available	Price	Units	Customers
Bag	Accessories	Yes	\$125.00	6	6
Belt	Accessories	Yes	\$30.00	3	3
Blouse	Womens	Yes	\$60.00	5	5
Business Shirt	Mens	Yes	\$50.00	5	5
Jacket	Mens	Yes	\$150.00	6	6
Ladies Shoes	Womens	Yes	\$120.00	5	5
Mens Shoes	Mens	Yes	\$110.00	4	4
Skirt	Womens	Yes	\$80.00	5	5
Trousers	Mens	Yes	\$80.00	6	6
Wallet	Accessories	Yes	\$50.00	4	4

1 - 10 of 10

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 grid.

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.

1. 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 adding or modifying the `WHERE` clause on the query.

- [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 adding or modifying the `WHERE` clause on the query.

You can create two types of filters:

- **Column** - Creates a custom column filter. Select a column, select a standard Oracle operator (=, !=, not in, between), and enter an expression to compare against. Expressions are case sensitive. Use the percent sign (%) as a wildcard. Note that the selected column does not need to be one that currently displays. For example:

```
STATE_NAME like A%
```

- **Row** - Creates a custom row filter. This filter creates a complex WHERE clauses using column aliases and any Oracle functions or operators. For example:

```
G = 'VA' or G = 'CT'
```

Where G is the alias for CUSTOMER_STATE.

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.

1. 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.

2. 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.

1. 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, `1 >=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.

1. 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.

1. 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 : Train Developers in APEX						
	Task Name	Start Date	End Date	Status	Assigned To	Cost
	Publish links to self-study courses	24-JAN	24-JAN	Closed	John Watson	100
	Create training workspace	24-JAN	31-JAN	Closed	James Cassidy	500
	Publish development standards	21-JAN	29-MAR	On-Hold	John Watson	1000
Project : Software Projects Tracking						
	Task Name	Start Date	End Date	Status	Assigned To	Cost
	Customize Software Projects software	07-FEB	15-MAR	Open	Tom Suess	600
	Load current tasks and enhancements	04-FEB	08-FEB	Closed	Tom Suess	400

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

4. Click the left arrow to expand the filter.
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.

1. To add highlighting:
 1. Click the **Actions** menu and select **Format** and then **Highlight**.
The Highlight dialog appears.
 2. Edit the following information:
 - a. Name - Enter a name that describes this filter.
 - b. Sequence - Enter a numeric value to identify the sequence in which highlighting rules are evaluated.
 - c. Enabled - Select **Yes**.

- d. Highlight Type - Select **Cell** or **Row**.
- 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 expression.

Highlight ✕

Name

Sequence

Enabled Yes ▼

Highlight Type ▼

Background Color ^ [yellow] [green] [blue] [orange] [red]

Text Color ^ [yellow] [green] [blue] [orange] [red]

Highlight Condition

Column	Operator	Expression
<input style="border: none; border-bottom: 1px solid #ccc;" type="text" value="Status"/> ▼	<input style="border: none; border-bottom: 1px solid #ccc;" type="text" value="="/> ▼	<input style="border: none; border-bottom: 1px solid #ccc;" type="text" value="On-Hold"/> ▼

- h. Click **Apply**.

▼

★ On-Hold Projects
✕

	Project	Task Name	Start Date	End Date	Status	Assigned To	Cost
	Train Developers in APEX	Publish links to self-study courses	24-JAN	24-JAN	Closed	John Watson	100
	Train Developers in APEX	Publish development standards	21-JAN	29-MAR	On-Hold	John Watson	1000
	Train Developers in APEX	Create training workspace	24-JAN	31-JAN	Closed	James Cassidy	500
	Software Projects Tracking	Load current tasks and enhancements	04-FEB	08-FEB	Closed	Tom Suess	400
	Software Projects Tracking	Enter base data (Projects, Milestones, etc.)	02-FEB	03-FEB	Closed	Tom Suess	200
	Software Projects Tracking	Customize Software Projects software	07-FEB	15-MAR	Open	Tom Suess	600

 **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 **yellow**.
 - b. Text Color - Select **red**.
 - 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.

1. 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.
 - 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. Columns - Select a column or alias.
 - 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**.

<input type="text" value="Q"/> <input type="button" value="Go"/> <input type="button" value="Actions"/>									
	Project	Task Name	Start Date	End Date	Status	Assigned To	Cost	Budget	Cost Analysis
	Train Developers in APEX	Publish development standards	21-JAN	29-MAR	On-Hold	John Watson	1000	2000	1000
	Train Developers in APEX	Publish links to self-study courses	24-JAN	24-JAN	Closed	John Watson	100	100	0
	Train Developers in APEX	Create training workspace	24-JAN	31-JAN	Closed	James Cassidy	500	700	200
	Software Projects Tracking	Customize Software Projects software	07-FEB	15-MAR	Open	Tom Suess	600	1000	400
	Software Projects Tracking	Conduct project kickoff meeting	28-JAN	28-JAN	Closed	Pam King	100	100	0

The revised report appears containing a new Cost Analysis column.

4.6.7.2 Deleting a Computation

Open the Compute dialog to remove a computation.

1. 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.

1. 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**.

	Project	Task Name	Start Date	End Date	Status	Assigned To	Cost	Budget
	APEX Environment Configuration	Configure Workspace provisioning	03-JAN	03-JAN	Closed	John Watson	200	100
	APEX Environment Configuration	Create pilot workspace	03-JAN	03-JAN	Closed	John Watson	100	100
	APEX Environment Configuration	Run installation	04-JAN	04-JAN	Closed	James Cassidy	100	100
							60,150	

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.

1. 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 buttons 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.

1. 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 (horizontal bar, vertical bar, pie, or line).
 - b. Label - Select the column to be used as the label.
 - c. Axis for 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.

1. 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.

1. 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 View Icon 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 Goup 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:
 - Click the **Actions** menu and select **Group By**.
The Group By dialog appears.
 - In the Group by dialog:
 - Select a column to display. To add additional columns, click **Add Group By Column**.
 - Select the function, column, label, and format mask. To create a sum, click the **Sum** check box. To add another function, click **Add Function**.

- Click **Apply**.

Project	Task Name	Budget	Total Cost
Bug Tracker	Measure effectiveness of improved QA	1500	0
Maintain Support Systems	HR software upgrades	7000	8,000
APEX Environment Configuration	Create pilot workspace	100	100
Discussion Forum	Identify owners	300	250
Discussion Forum	Install APEX application on internet server	100	100
Migrate Access Application	Plan migration schedule	200	600

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 Goup By dialog.

1. 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.

1. 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.

1. 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.

1. 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. Computation:
 - 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 two icons: 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.

<input type="text" value="Q"/> <input type="button" value="Go"/> <input type="button" value="Actions"/>				
<input type="button" value="Edit Pivot"/> <input type="button" value="View Pivot"/>				
	Closed	On-Hold	Open	Pending
Project	Task Count	Task Count	Task Count	Task Count
APEX Environment Configuration	7	0	0	0
Bug Tracker	1	2	1	1
Convert Excel Spreadsheet	0	0	4	0
Discussion Forum	2	0	1	0
Email Integration	2	0	1	1
Employee Satisfaction Survey	0	3	0	0
Forms Conversion	4	0	1	4

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:
 - Click the **Edit Pivot** filter.
The Pivot dialog appears.
 - Edit the attributes.
 - To remove a previously defined column or row, select the default setting, **Select Pivot Column** and **Select Row Column**.
 - 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:
 - Click the **Edit Pivot** filter.
The Pivot dialog appears.
 - 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 executing 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.

1. To execute a flashback query:
 1. Click the **Actions** menu and select **Data** then **Flashback**.
 2. In the Flashback field, 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.

1. To edit a flashback query:
 1. Click **flashback query** filter.
The Flashback dialog appears.
 2. Edit minute ago attribute.
 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.

1. 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 from a drop-down 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 from a drop-down list of default or primary reports and private reports.

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

Q		Go	1. Primary Report	Actions					
Project	Task	Start Date	End Date	Status	Assigned To	Cost	Budget		
Train Developers in APEX	Publish development standards	21-JAN	29-MAR	On-Hold	John Watson	1,000	2000		
Train Developers in APEX	Publish links to self-study courses	24-JAN	24-JAN	Closed	John Watson	100	100		
Train Developers in APEX	Create training workspace	24-JAN	31-JAN	Closed	James Cassidy	500	700		
Software Projects Tracking	Customize Software Projects software	07-FEB	15-MAR	Open	Tom Suess	600	1000		

This example shows two 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.

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 Application Express App Builder User's Guide*
- "Saving Interactive Report" in *Oracle Application Express 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

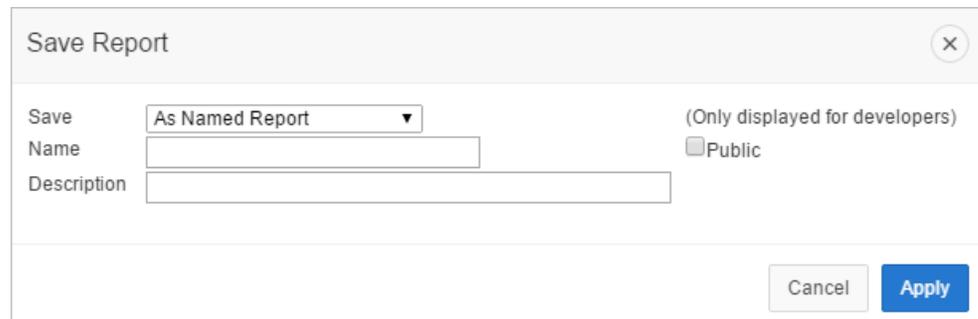
The report can be saved, renamed, or deleted by the end user who created it. Other users can view and save the layout as another report.

Private

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

1. 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.



The image shows a 'Save Report' dialog box with a close button (X) in the top right corner. It contains the following fields and controls:

- Save**: A dropdown menu currently set to 'As Named Report'.
- Name**: A text input field.
- Description**: A text input field.
- Public**: A checkbox labeled 'Public' with the text '(Only displayed for developers)' above it.
- Buttons**: 'Cancel' and 'Apply' buttons at the bottom right.

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

 **Tip:**

This option is available for only 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:**

The ability to save an interactive report as Public is determined by your application developer.

- 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

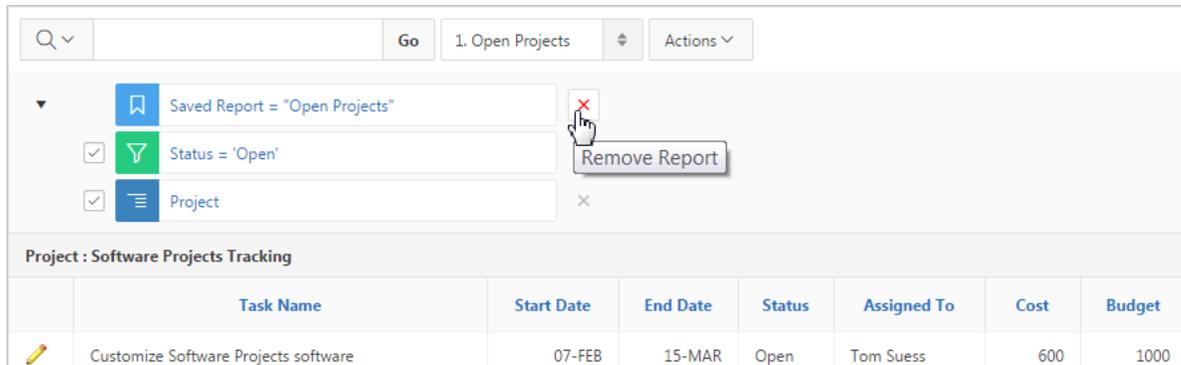
Rename a public or private report that you have created by clicking its report name.

1. 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.

1. 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.

1. 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.

1. 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**.
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. 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, Body).
 - c. Click **Send**.



See Also:

"Configuring Interactive Report Actions Menu Download Options" in *Oracle Application Express App Builder User's Guide*

4.6.16 Subscribing to Report Updates by Email

Subscribe to an interactive report to receive updated versions it.

- [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 Application Express 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 that identifies who originated the email.

To use Subscription:

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



See Also:

"Customizing the Action Menu" in *Oracle Application Express 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 email signature indicating who created the subscription. This signature cannot be removed.

1. To receive updated report results by email:
 1. Click the **Actions** menu and select **Subscription**.
The Subscription dialog appears.
 2. Under Subscription:
 - a. Email Address - Enter the email addresses to receive the report. To include multiple email addresses, separate each email address with a comma.
 - b. Subject - Enter text to display in the email subject line.
 - c. Frequency - Select the interval at which the report is sent.
 - d. Starting From - Select a start date and time.
 - e. Ending - Select an end date and time. Select a day, week, month, or year.
 - f. Click **Apply**.

Index

A

- Actions menu
 - Aggregate, [4-7](#)
 - Chart, [4-7](#)
 - Compute, [4-7](#)
 - Control Break, [4-7](#)
 - Download, [4-7](#)
 - Filter, [4-7](#)
 - Flashback, [4-7](#)
 - Format, [4-7](#)
 - Group By, [4-7](#)
 - Help, [4-7](#)
 - Highlight, [4-7](#)
 - Reset, [4-7](#)
 - Rows Per Page, [4-7](#)
 - Save Report, [4-7](#)
 - Select Columns, [4-7](#), [4-9](#)
 - Sort, [4-7](#)
 - Subscription, [4-7](#)
- aggregation
 - creating, [4-15](#)
 - removing, [4-16](#)
- Application Express
 - browser requirement, [2-1](#)

B

- browser
 - requirement, [2-1](#)

C

- chart
 - deleting, [4-18](#)
 - editing, [4-18](#)

D

- database applications, about, [2-2](#)

E

- editable interactive grids, [3-30](#), [3-33](#)
 - about, [3-3](#)
 - Cell Selection mode, [3-34](#), [3-35](#)
 - Clear, [3-37](#)
 - Copy Down, [3-35](#), [3-36](#)
 - Edit button, [3-32](#)
 - Fill, [3-37](#)
 - Row Actions menu, [3-31](#)
 - Row Selection mode, [3-34](#), [3-35](#)
 - rows, adding, [3-30](#)
 - rows, deleting, [3-34](#)
 - selection mode, [3-34](#), [3-35](#)

F

- Flashback query
 - creating, [4-23](#)
 - deleting, [4-23](#)
 - editing, [4-23](#)

G

- group by
 - about, [4-18](#)
 - creating, [4-19](#)
 - deleting, [4-20](#)
 - editing, [4-20](#)
 - sort order, [4-20](#)

I

- interactive grid filters, [3-12](#)
 - disabling, [3-15](#)
- interactive grids, [3-1](#), [3-39](#)
 - about, [3-2](#)
 - aggregation, creating, [3-17](#)
 - aggregations, editing, [3-18](#)
 - aggregations, removing, [3-19](#)
 - break, [3-20](#), [3-24](#)
 - Cell Selection mode, [3-35](#)
 - chart, [3-9](#)

interactive grids (*continued*)

- column heading menu
 - about, [3-23](#)
- Column Heading menu, [3-24](#)
- column sort order, [3-8](#), [3-16](#)
- column width, [3-7](#)
- columns, [3-11](#)
- control break, [3-20](#), [3-24](#), [3-26](#)
- delete report, [3-41](#)
- download, [3-43](#)
- drag and drop, [3-6](#)
- editable, [3-3](#), [3-30](#)
- email, [3-43](#)
- filtering by column, [3-29](#)
- filters, [3-12](#)
- flashback, [3-43](#)
- freezing columns, [3-27](#)
- hiding columns, [3-27](#)
- highlight, [3-21](#)
- refresh, [3-41](#)
- report types, [3-38](#)
- reset, [3-42](#)
- revert, [3-43](#)
- Row Selection mode, [3-35](#)
- search bar, [3-5](#)
- selection mode, [3-35](#)
- showing columns, [3-28](#)
- update, [3-41](#)

interactive report filters, [4-4](#)

- editing, [4-4](#)
- enabling and disabling, [4-4](#)
- removing, [4-4](#)
- showing and hiding details, [4-4](#)

interactive reports

- about, [4-1](#)
- about Column Heading menu, [4-4](#)
- about search bar, [4-2](#)
- adding computations, [4-14](#)
- adding filters, [4-9](#)
- adding highlighting, [4-12](#)
- aggregating a column, [4-15](#)
- charts, [4-17](#)
- creating a chart, [4-17](#)
- creating a control break, [4-11](#)

interactive reports (*continued*)

- creating a pivot report, [4-21](#)
- creating Flashback query, [4-23](#)
- deleting Flashback query, [4-23](#)
- deleting private report, [4-26](#)
- deleting public report, [4-26](#)
- downloading, [4-27](#)
- editing Flashback query, [4-23](#)
- executing a Flashback query, [4-23](#)
- group by, [4-18](#)
- grouping results by column, [4-18](#)
- renaming private report, [4-26](#)
- renaming public report, [4-26](#)
- resetting, [4-27](#)
- saving, [4-24](#)
- saving as private, [4-25](#)
- saving as public, [4-25](#)
- Select columns to search icon, [4-3](#)
- selecting column sort order, [4-11](#)
- selecting columns to display, [4-9](#)
- selecting sort order, [4-11](#)
- subscribing to, [4-28](#)
- using, [4-1](#)
- using Actions menu, [4-7](#)
- using filters, [4-4](#)

P

pivot report

- creating, [4-21](#)
- creating deleting, [4-22](#)
- editing, [4-22](#)

private, [3-39](#)

R

requirements

- browser, [2-1](#)

W

Web browser

- requirements, [2-1](#)