TrueCommerce FOUNDRY ESSENTIALS | Do business in every direction

Pulse
User Guide

Version 5.1.150.0016

Jump To ...

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Introduction

TrueCommerce Pulse is a supply chain intelligence solution that integrates data from different sources to produce consolidated enterprise-level portraits of your business operations.

It leverages graphical dashboard technology along with interactive pivots and spreadsheets to help you visualize, aggregate, and analyze Key Performance Indicators (KPIs) from incoming and historical data. KPIs enable you to monitor and zero-in on more sensitive business metrics that may require your immediate attention. To get started using Pulse refer to the *Pulse Overview* on page 16.

About this User Guide

The Pulse User Guide provides visibility into Key Performance Indicators (KPIs) using interactive dashboard, pivots and spreadsheets. It is primarily intended for end users who need to learn about and apply these built-in tools to manipulate and organize KPI data into useful, graphical, ad hoc reports.

Implementation Consultants (ICs), installers, and system administrators should also go over this material to become familiar with basic concepts and functionality of Pulse prior to referencing the '*Pulse Administrator Guide*.'

The content provided in this guide does not cover full details for the integration of Pulse with another application. Consult that product's user documentation for instructions specific to your implementation. In addition, depending on your role as user, you may not have access to all of the functionality described. Contact your system administrator to ensure you have the permission settings to perform your work.

NOTE
Applications that run in TrueCommerce Foundry are optimized for use on multiple devices. For example, in this documentation 'click' may refer to the same action as 'tap' or 'touch' whether your device is equipped with a track pad, touch screen, or mouse-operated user interface

Additional Documentation

TrueCommerce Foundry is a responsive workspace environment that serves as principal login and user interface for the deployment of multiple integrated applications. For information about the features that are common to all the TrueCommerce applications, click the ? button to access *Online Help*.

The Key Performance Indicators (KPIs) used in Pulse come from outside sources. If required, you may need to consult the documentation associated with the applications or databases from which those metrics are derived.

Administrative users should refer to the '*TrueCommerce Pulse Administrator Guide*' for documentation on managing user accounts, designing custom KPIs, creating filters for contextual dashboards, and building new interactive pivots.

Navigating this PDF

This PDF is designed for onscreen viewing with built-in search and navigation capabilities. Use **Adobe Acrobat® Reader** to take full advantage of the following interactive features:

Bookmarks

The bookmarks panel is a clickable table of contents that is available to you anywhere in the document. Click the button on the left side of the page to activate the bookmarks panel.

Cross-References / Hyperlinks

Blue *hyperlinks* appear in the text wherever one topic references another. They also appear in generated lists, such as in the table of contents. Use the **Alt** + **Left Arrow** shortcut in Acrobat Reader to jump back to previous hyperlinks.

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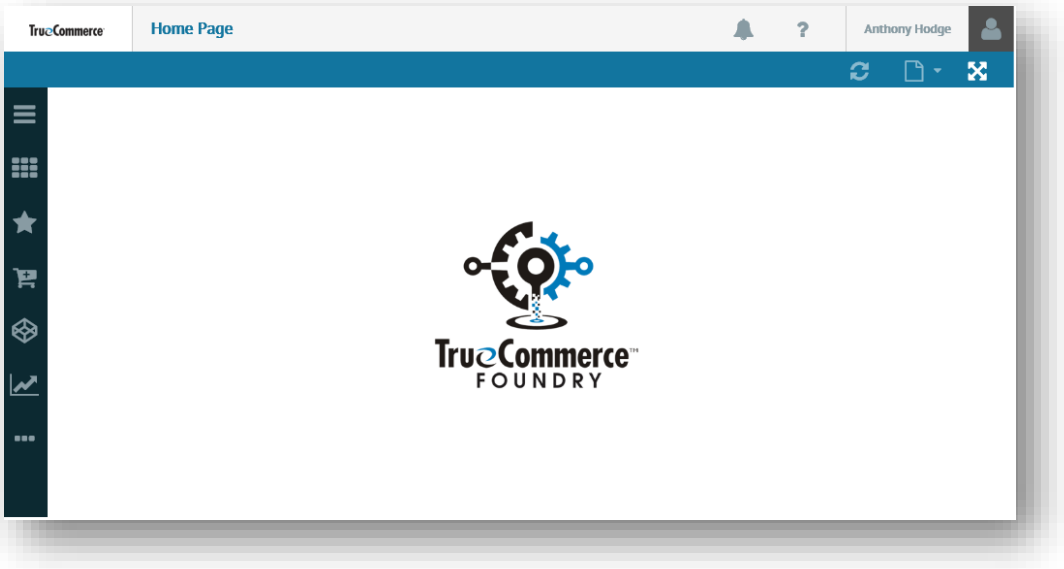
Before you Begin

Pulse runs in TrueCommerce Foundry. This section explains features of the Foundry platform and user interface that are common to all TrueCommerce applications.



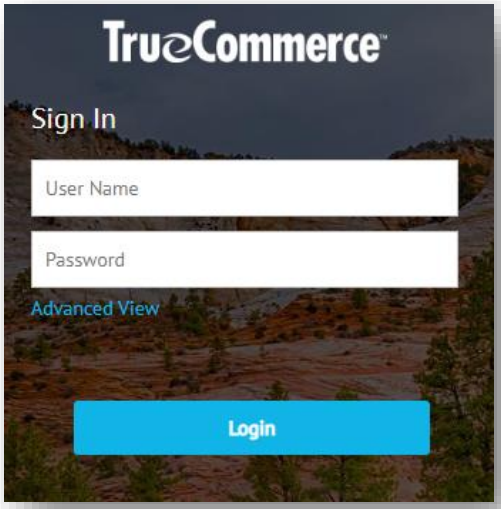
Responsive Design

Applications that run in Foundry are optimized for multiple screen sizes via mobile phone, tablet, or desktop. The layout may be adjusted, where practical, based on the size and capabilities of the device. For example, on a phone, you may see content in a single column view; a tablet might show the same content in two columns. This also changes when devices are rotated to landscape mode.

NOTE
In this documentation, ‘click’ refers to the same action as ‘tap’ or ‘touch’ whether your device is equipped with trackpad, touch screen, or mouse-operated user interface.

Logging In / Logging Out

In order to access Pulse, you must first launch TrueCommerce Foundry in your browser via the common **Sign In** prompt. You need to be an authorized user to log into Foundry. Consult your system administrator to obtain the necessary domain information and user credentials.



Your user profile should already be set up with authorizations for application and data access, as well as any *Translation Options* that may be available for your role.

Most users only need to enter their **User Name** and **Password** via the basic **Sign In** prompt, as depicted on the left. If other credentials are required for your tenant, click **Advanced View** for an expanded list of login options.

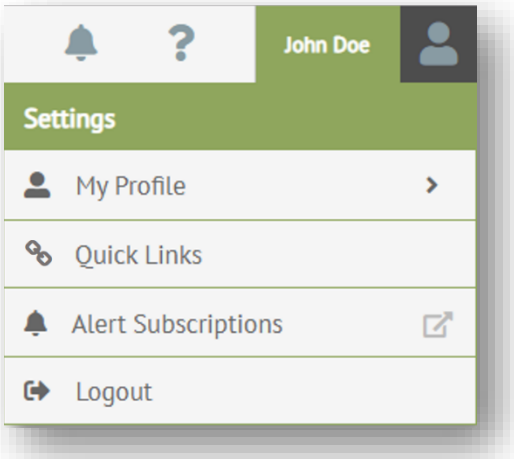
Once you have entered all your login details, click the **Login** button to launch Foundry.

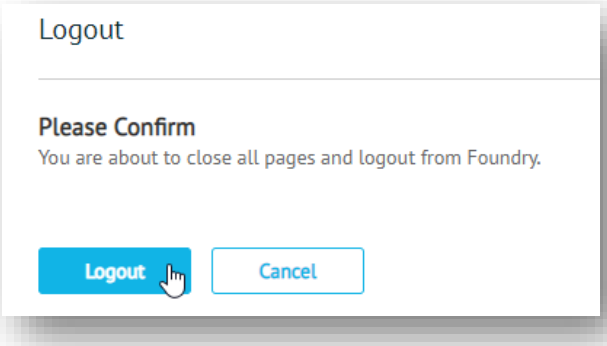
When Foundry displays, it will contain all the applications to which you have access. If application components are missing from the menu, contact your system administrator to ensure the correct authorizations are in place.

Save all changes to your work before attempting to close a Foundry session. You should also check for unfinished work the application pages that remain open in the *Spaces Menu*, explained on page 14.

To log out of Foundry, click on your user name in the header bar and select **Logout** from the drop-down menu.

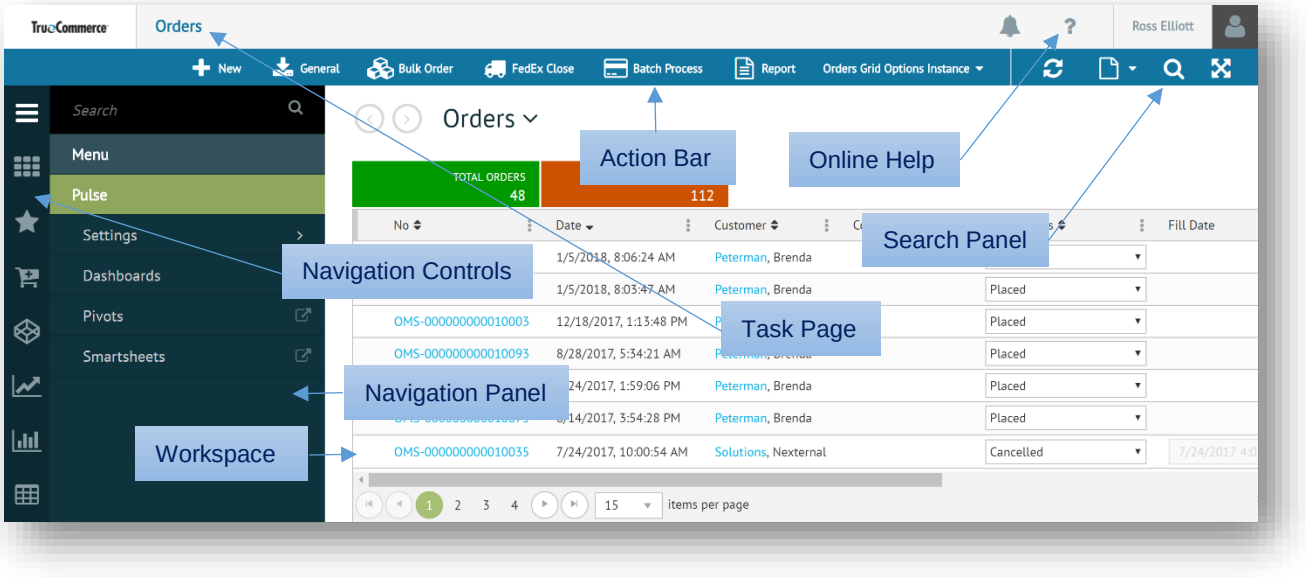
You are prompted to confirm that you intend to close all application pages that are currently open in Foundry.





About the User Interface

After successful logon, TrueCommerce Foundry displays in your browser. This is the common platform and user interface for all your TrueCommerce applications and task pages.



Common Functionality

The layout and controls you see on each task page are dependent on the application; however, the overall navigation and display functionality will be the same no matter which application is running in the platform. Key features of the user interface include:

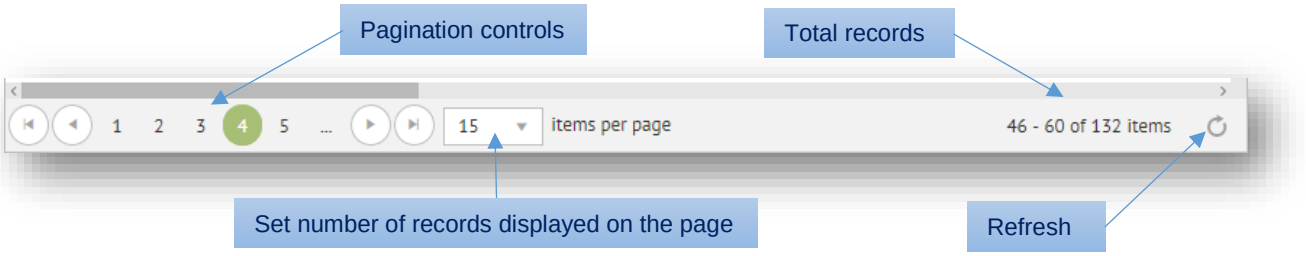
- The Foundry ☰ navigation control opens the main **Menu** for access to your applications.
- Each menu link opens to a different task page under the selected application.
- A › symbol to the right of a menu link indicates a drop-down menu to more links.
- You can only work on one task page at a time in the Foundry workspace, but active pages may be saved to the background while you work on other pages.
- Click the ⧉ button next to the menu link to save a page to the background. Use the *Spaces Menu* to retrieve previously opened pages.
- You can also set up ★ **Favorites** and *quick links* in the navigation panel for quick access to the pages you work with the most.
- The action bar contains all your application-specific buttons and controls.
- The ▪▪▪ and ▾ symbols on the action bar indicate a drop-down menu to more controls.
- If you need more room to work in a task page, use the ⤧ toggle to hide the navigation panel and page header from the Foundry workspace.
- To search, filter and organize what you see on a task page, click the 🔍 button. This invokes the Search Panel, described on page 12.
- Depending on the application, you may be *Working with Grid Data* to find the information you need.
- Event-trigged notifications are signaled by the on-screen 🔔 control. Application-specific notifications may appear as 'toast messages' at the bottom of your screen.
- To read more about Foundry, click the ? button to invoke the *Online Help* menu.

Working with Grid Data

Some applications use the grid format for displaying, creating and editing data on the page. Foundry's interactive grids include several useful controls to help you find and organize your data quickly so that your most important information is always visible and easily accessible.

Basic Navigation

The grid offers full navigational mobility to scroll through records vertically and view data horizontally using the standard mechanisms available to your user interface or device. Use the following controls on the pagination bar at the bottom of the grid to select pages and change page size.



You can customize the grid to show more records (which requires horizontal scrolling to view) or break them up into smaller pages (which requires pagination controls to view). Page size can be set to any number of records; however, reducing the number of records per page might be faster for reloading records when refreshing the grid. You can decide which page size is right for the best system performance.

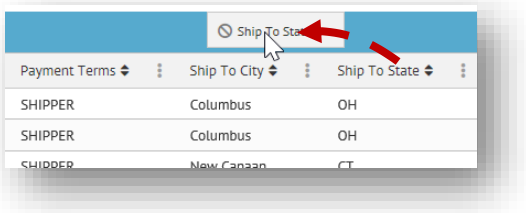
Filtering provides another powerful way for you to organize the number of records displayed. For more information, see Search Panel on page 12.

Customizing Columns

Following are some quick methods for customizing the display of columns and the data elements within a selected column to suit your preferences.

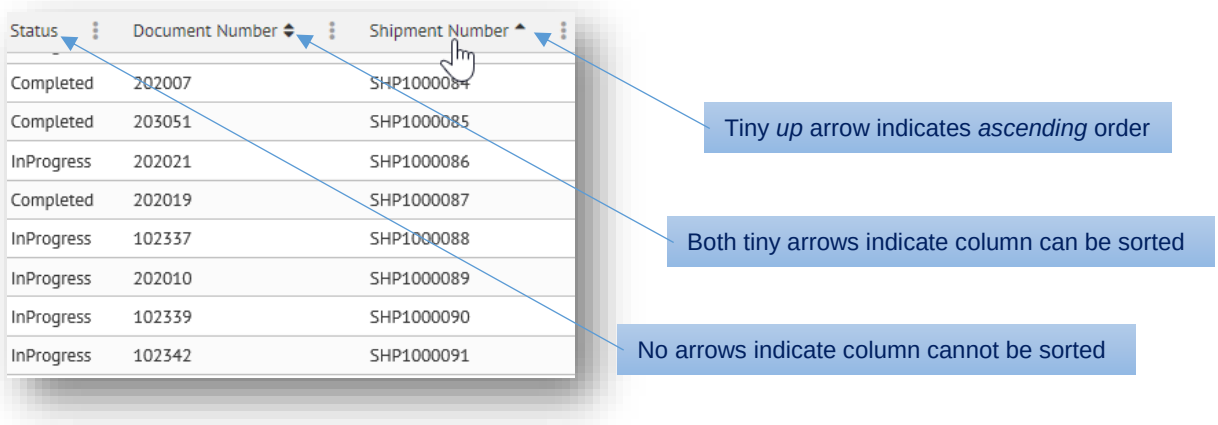
Rearrange Columns

To rearrange, simply click and hold a column heading and then drag and drop the entire column to a different place horizontally on the grid.



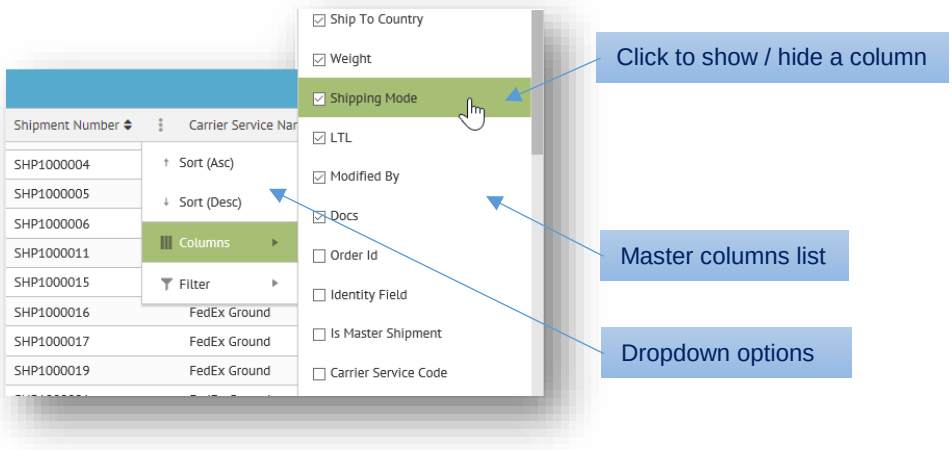
Sort Records by Column

Tiny up/down arrows to the right of a column heading indicate that a sort can be applied to the column selected. Click once on the column heading to sort all records in the grid based on the contents of that column. Click again to toggle between ascending and descending sort order.



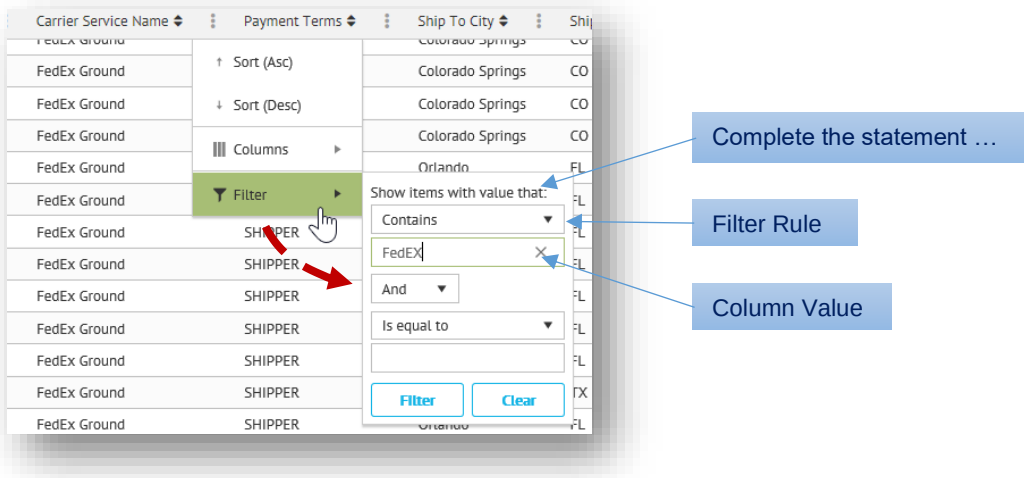
Show / Hide Columns

There is a simple way to hide (or show) columns on the grid. Click any ⋮ symbol between the column headings and then click **Columns** from the dropdown options. This opens the master columns list for displaying columns on the grid. Only the columns selected on the master list will be displayed on the grid.



Column Filter

If hundreds (possibly thousands) of records are loaded into your grid, it might be difficult (and slow) to scroll through all the data. Setting a column filter, allows you to focus only on the record(s) you need by hiding everything else on the grid. Click any ⋮ symbol between the column headings and then click **Filter** from the dropdown options. This invokes the menu for applying a quick filter based on that column.



There are several different rules available for defining how values are interpreted and used in the filter statement "**Show items with value that**".

To set a column filter, complete the statement by selecting the rules and search criteria in the menu:

- The filter is based on two sets of rules and column values (data elements) which together complete the filtering statement. You can complete the statement using just one or a combination of both.
- There will be different rules available from the drop-down field depending on if the column contains alphanumeric, numeric or date values. These rules are generally self-explanatory.
- Column values can be from any records on the grid, not just what is currently displayed on the page.
- Once your criteria is in place, click the **Filter** button to apply the filter.
- To reset the column filter, click the **Clear** button.
- Column filtering can be applied on its own or in addition to the Search Panel.

Saving Grid Settings

Lock in your grid settings by clicking **Save Configuration** via menu dropdown on the grid control bar. Use **Reset Configuration** to restore the grid to default settings.

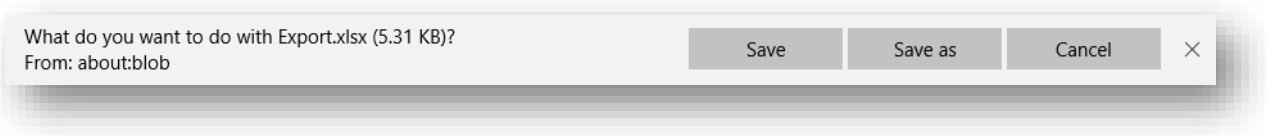
Selecting Records

Simply double-click on a record to make it editable. To select a range of records, highlight the first record, hold down the **Shift** key, and then click on the last record. To select multiple (but not consecutive) records, hold down the **Ctrl** key while clicking on the individual records you want to include. Note that these selection and editing options could be disabled for certain grids.

Export

Grids may include functionality that allows you to export and download their contents to an XLSX file. You can choose to export all available data, or filter the grid via the Search Panel.

To export grid data, select the **Export** menu option. Depending on your browser settings, the exported file may be downloaded immediately or you may be presented with other save options.

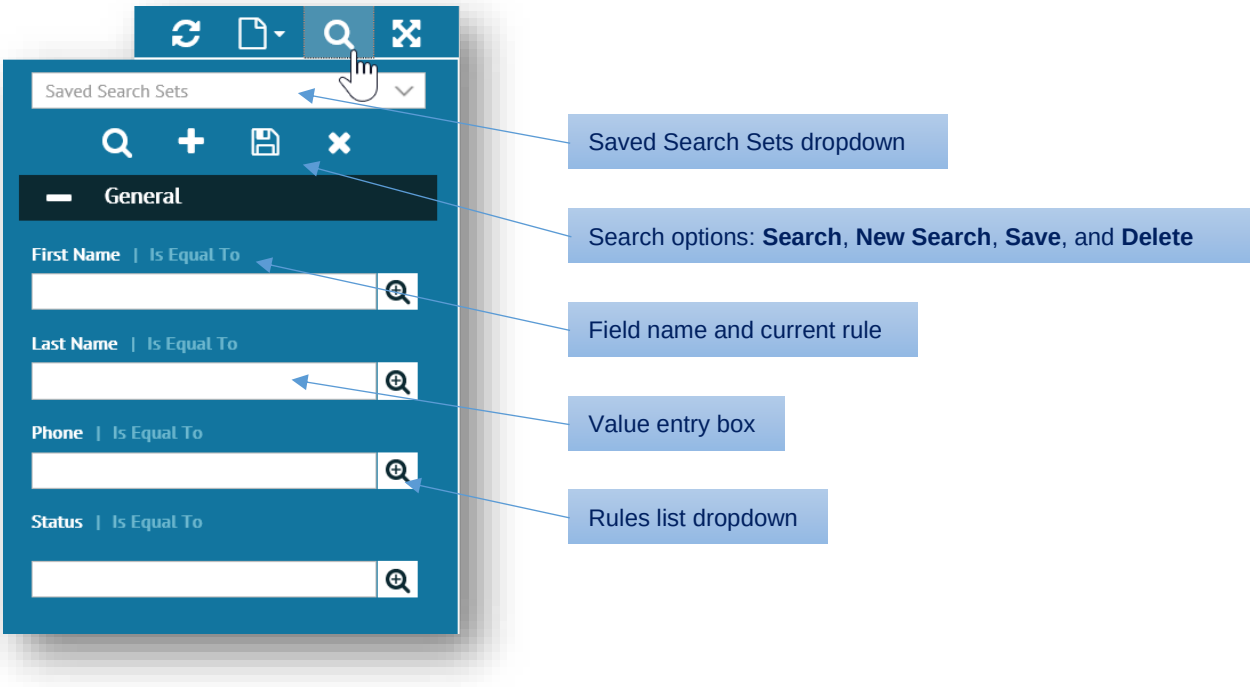


Search Panel

To help manage large amounts of data, some applications may be equipped with a collapsible search panel that allows you to customize which data you want displayed on the task page based on specified values and rules.

This feature (also known as filtering) is an effective way to find something quickly, reduce the number of records displayed, and to organize your data into logical groupings and workflow. After you set up your search criteria, you have the option to save those settings for reuse whenever you need them.

If your page includes this feature, use the control on the workspace action bar to expand/collapse the search panel on the right side of the workspace.



The panel comprises a menu of search fields that match searchable information in the application's workspace. The types of values that can be entered in a search field depend on the values defined in the application; either alphanumeric, numeric or date values.

Performing a Search

Following are the steps for defining search criteria using one or more search fields:

1. Determine which data you wish to search, and then locate the matching fields in the search panel.
2. Use the value entry box below the field name to enter your search criteria based on field type. Some fields have preset values where you must select from dropdown options instead.
3. If needed, click the button next to the search field to apply rules (as shown on the right). The options available in the rules drop-down list depend on if the data elements are alpha-numeric, numeric or date values.
4. Click the option inside the search panel to start the search using the current settings.

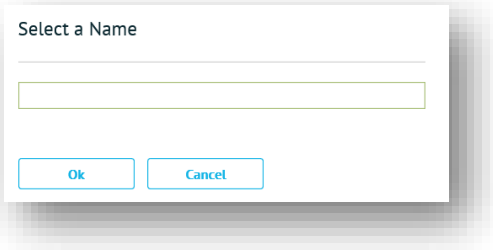
For most searches, it is enough to enter your search criteria in a single field. However, you have the option to use multiple fields to refine your search settings; for example, depending on the data, you might enter a combination of names with dates or locations.

Starting a New Search

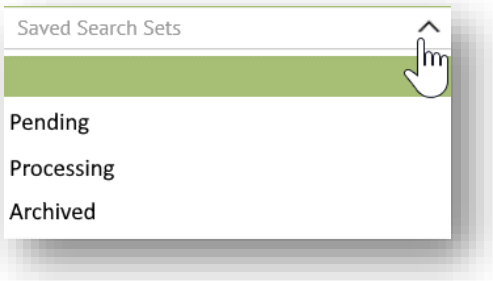
For best results, remember to use the option to clear all settings before you start a new search. If you do not reset your data using this option, any new search criteria will be applied *in addition to the previous search*.

Using Saved Search Settings

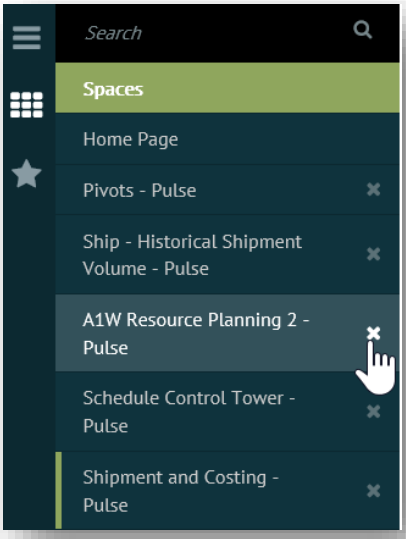
To record the current settings for future use, click the option. When the **Select a Name** dialog appears, enter a name for your saved search and click **OK**.



To reuse settings, select a named search from your list of **Saved Search Sets**. This populates search fields with previously recorded values so that you can locate or filter your data the same way every time.



Spaces Menu



Use the **Spaces** menu for quick access to previously-opened dashboards, pivots and spreadsheets.

Pulse adds new spaces (active pages) for every task page you open via the **Menu** and maintains them in a 'ready state' throughout your Foundry session. This includes the start pages for *Dashboards*, *Pivots*, and *Spreadsheets*.

When you select a Pulse-related link from the menu, the associated page resumes work at the same place where you left off. For example, a dashboard that was set to *Marquee* mode before it was added to the **Spaces** menu will resume the marquee rotation as soon as it opens in the workspace.

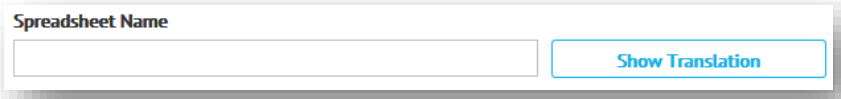
To remove any extra or unwanted pages from the **Spaces** menu, click the ✖ button to the right of the selected link.

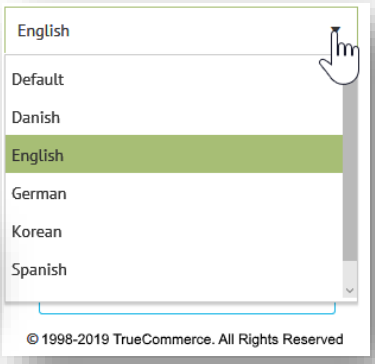
See *favorites* and *quick links* in Foundry's *Online Help* for other handy navigation tricks.

Translation Options

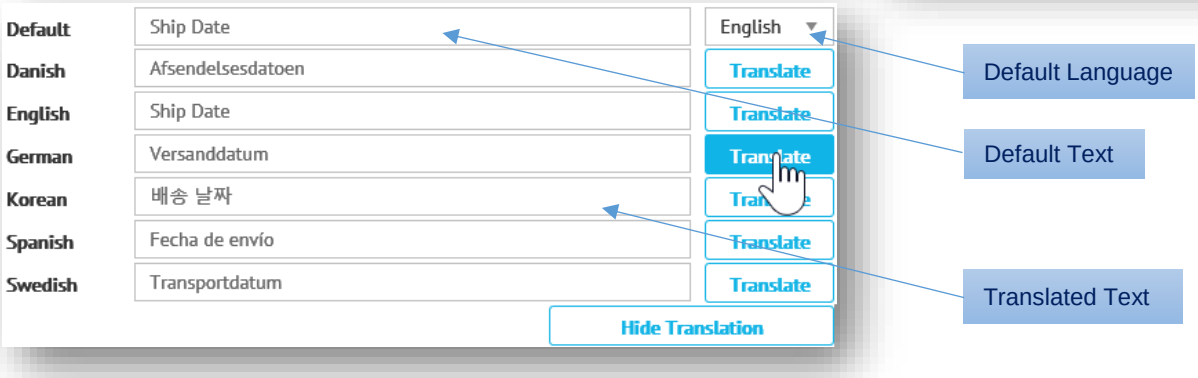
If your system supports translation options, you will be able to switch Foundry to a different language via the dropdown field on the **Sign In** prompt (*Logging In / Logging Out*, page 8).

In addition, application components may allow you to assign translations to user-defined names, titles, or labels. Click the **Show Translation** button next to input boxes in settings.





Translation options display below the input box, as illustrated below.



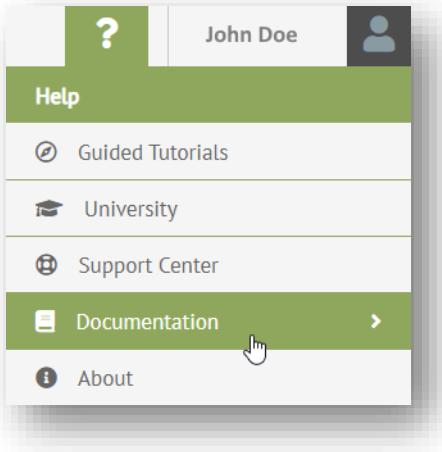
Enter your *default text*, select the *default language*, and then click the **Translate** button for any of the languages where translations are required. Translations (for default text and language) display next to each language selected. Note that your *translated text* can be edited manually as well.

Once you are satisfied with the translations in each language, click **Hide Translation** to collapse translation options. The translations entered here will display for that name, title or label for that application component whenever the corresponding language is chosen at the Foundry **Sign In** prompt.

Online Help

For help online within your Foundry session, click the ? button on the header bar and then select **Documentation > Foundry User Interface** in the drop-down menu.

A variety of documentation and training options are available depending on your implementation and the TrueCommerce applications licensed under your tenant ID, including:



Guided Tutorials - walk you through the actual steps, showing where to click or type, as you perform live tasks in Foundry and within your applications.

University - opens the official TrueCommerce training site in a new browser tab.

Support Center - displays recent support notifications and instructions on how to contact TrueCommerce Support.

Documentation - invokes a drop-down menu with links to Foundry Help and any other documentation that was provided with your applications.

About - launches the **About** dialog showing version information about the applications running under your tenant in Foundry.

Pulse Overview

Pulse comprises a variety of display tools for visualizing, monitoring, analyzing and evaluating your historical and real time KPI data. Each of these tools may be used to render your data in a variety of informative layouts, as outlined in the sections that follow.

Navigating Pulse

Dashboard, **Pivot** and **Spreadsheet** start pages (thumbnail pages) are launched via the **Pulse** menu on the ☰ menu bar. When you select a specific thumbnail from a start page, the resulting dashboard, pivot, or spreadsheet will be the only page open in the Foundry workspace.

You can only work on one page at a time. However, the pages you open in Pulse automatically create links in the *Spaces Menu*. Therefore, when you switch to working in a new page, you can always navigate back to previous pages using the links in this menu. Pulse-related links remain active until you select ✖ **Close** to remove them.

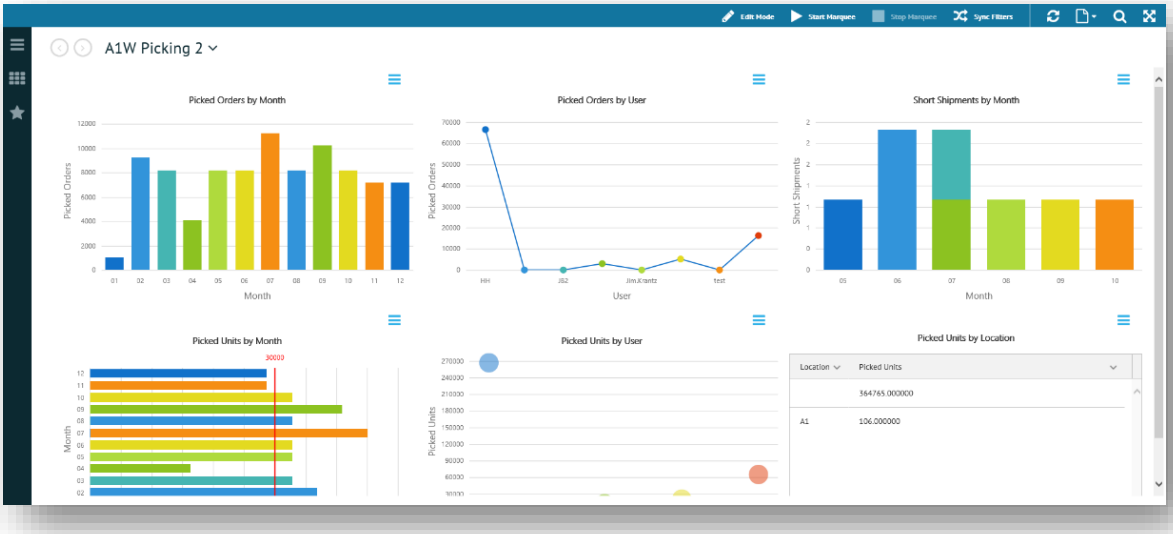
TIP
Use links in the *Spaces Menu* to keep multiple pages open (in a ready state) for quick access to the dashboards, pivots, or spreadsheets you work with the most.

KPIs

The contents of a Pulse dashboard, pivot view, or spreadsheet is derived from ***Key Performance Indicators*** (KPIs), pieces of query logic that tap into your data for measuring operational performance over a period of time. Contact your system administrator to learn more about the KPIs that may be applicable to your company and your business objectives.

What are Dashboards?

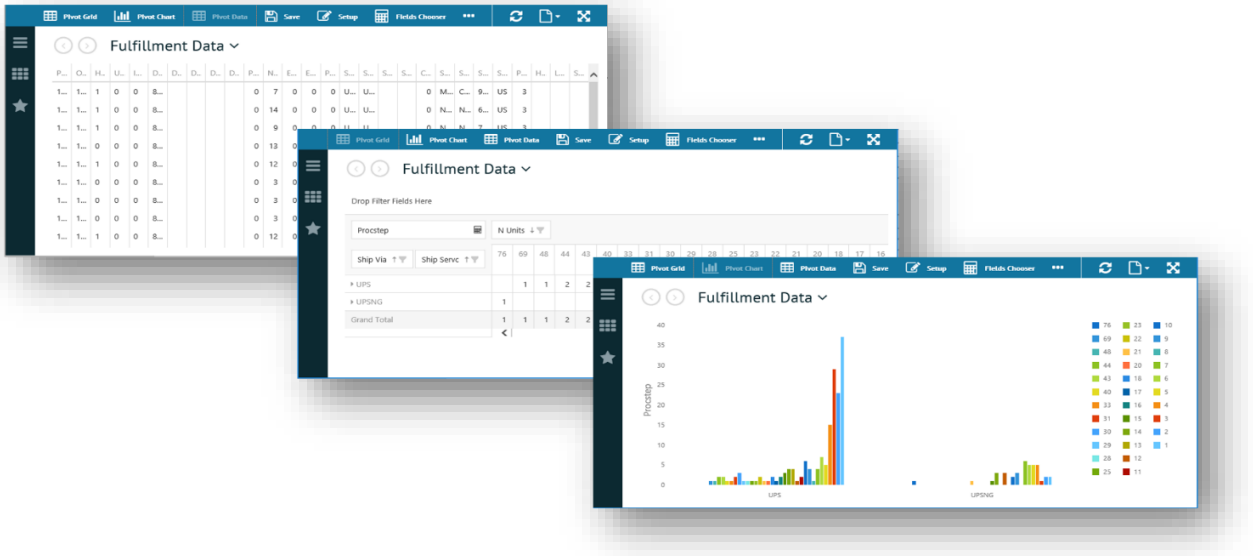
Pulse *Dashboards* contain one or many active KPIs rendered in chart, gauge, grid, or map formats. This functionality allows you to design how each KPI will convey the data retrieved. The dashboard below contains information from different KPI sources using a variety of graphics.



For complete details, see *Dashboards* on page 18.

What are Pivots?

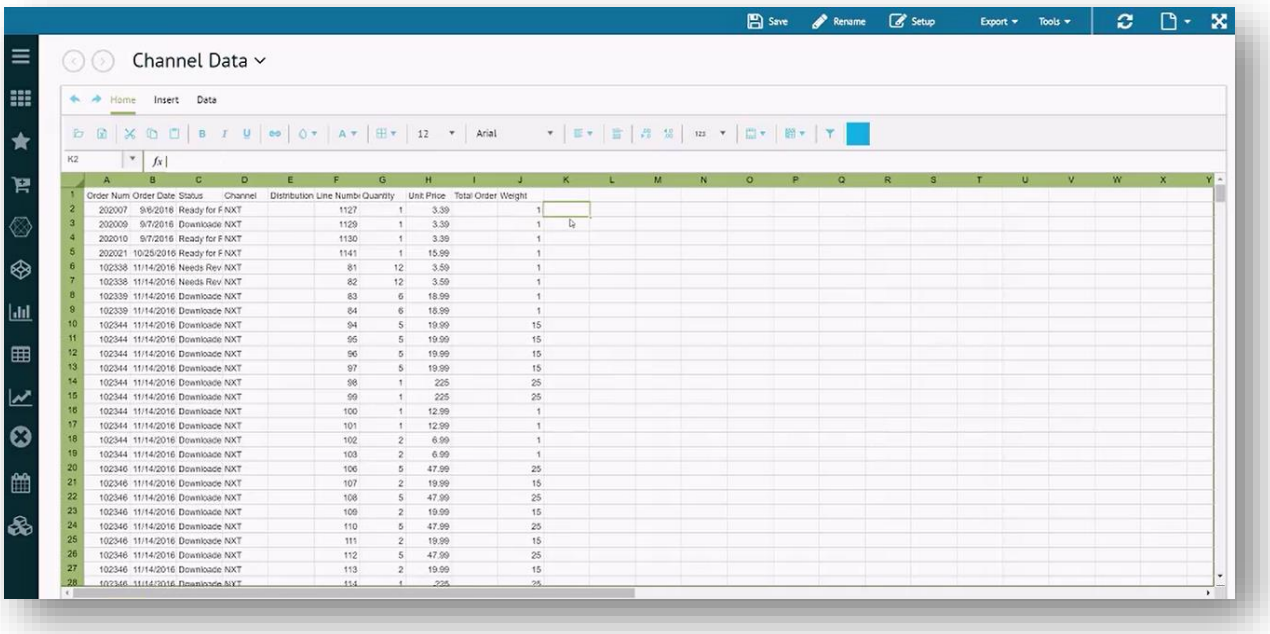
Pulse *Pivots* provide KPI renderings similar to dashboards, but each pivot comes with a set of controls that allow users to manipulate data elements and change the display ‘on the fly’. Following are renditions of KPI source data that has been changed into different formats and redisplayed instantly using controls within the same active pivot.



For complete details, see *Pivots* on page 43.

What are Spreadsheets?

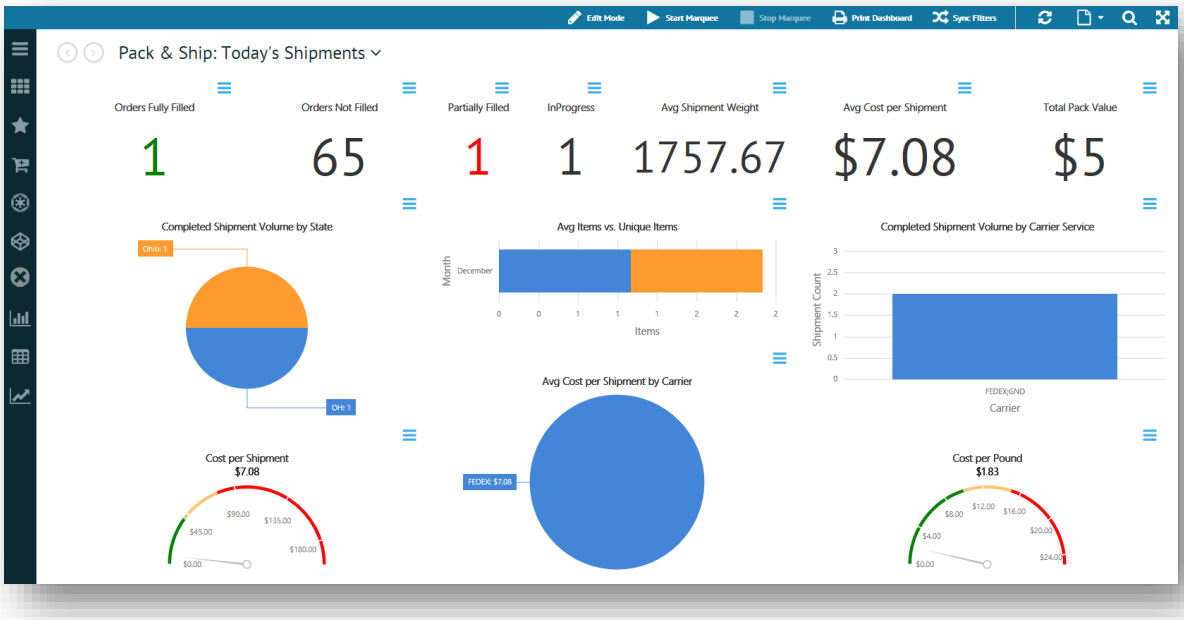
Pulse *Spreadsheets* provide the means for you to access KPI data in a fully functional Excel style spreadsheet. This feature provides all the tools you need for preparing spreadsheet-style reports from your query results before you share them in other file formats outside of Pulse.



For complete details, see *Spreadsheets* on page 56.

Dashboards

A dashboard displays a collection of one or more *KPIs*. You can retrieve prebuilt dashboards via the *Dashboards Start Page*; as well, you can make copies or build new dashboards comprising any number of KPIs. Depending on the source, each KPI in a dashboard may be set up to render data in the form of a chart, gauge, graph, grid, or map.

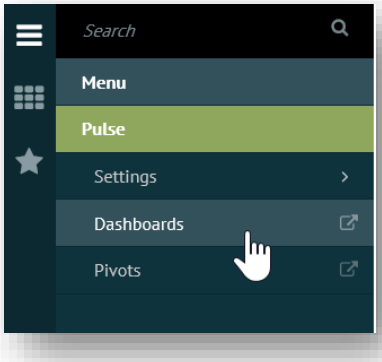


The following sections describe how to view, create, modify, print and export the contents of a dashboard:

- *Dashboards Start Page*, below
- *Open a Dashboard*, page 20
- *Create a Dashboard*, page 20
- *Add KPIs to the Dashboard,* page 22
- *Customizing Dashboards*, page 28
- *Print/Export Options*, page 33

For documentation specific to the other application components in Pulse, see *Pivots* on page 43, and *Spreadsheets* on page 56.

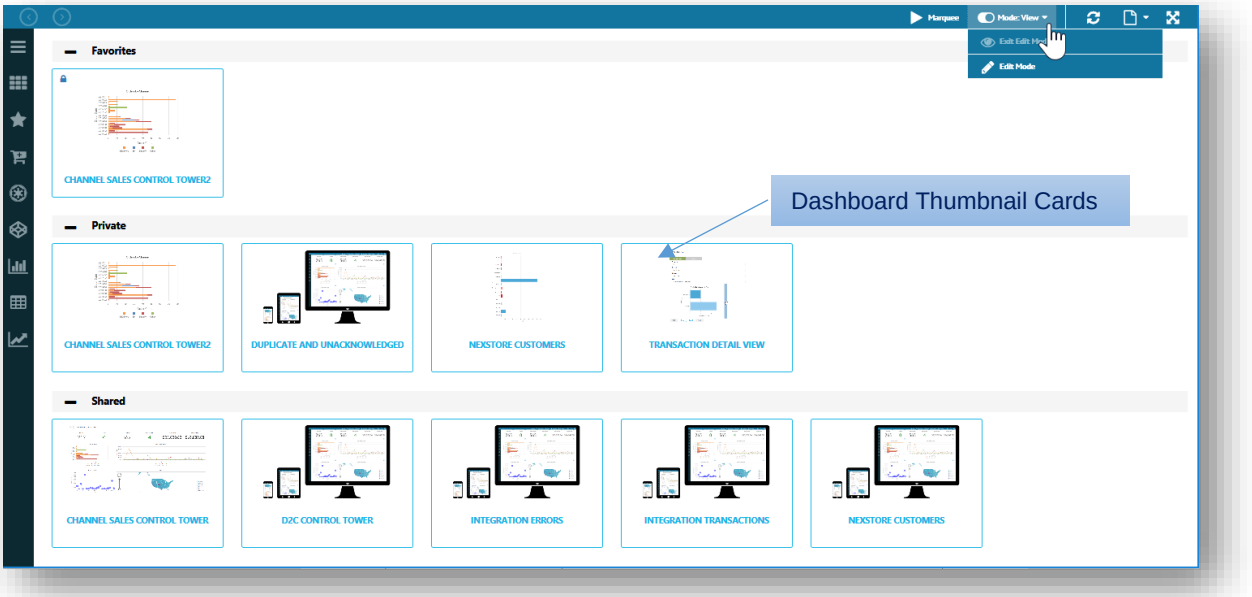
Dashboards Start Page



Pulse **Dashboards** start with a page listing all the private or shared dashboards to which you have access under your tenant.

To launch the start page, click **Pulse** > **Dashboards** via the Foundry ☰ **Menu**. If you visited the start page previously at any time during your current Foundry session, you can also find the **Dashboards** link in the ⁞⁞⁞ **Spaces** menu.

The start page opens in the Foundry workspace under the **Dashboards** ⌄ page header. Dashboards can be organized as **Favorites**, **Private**, and **Shared**, as illustrated in the example below.



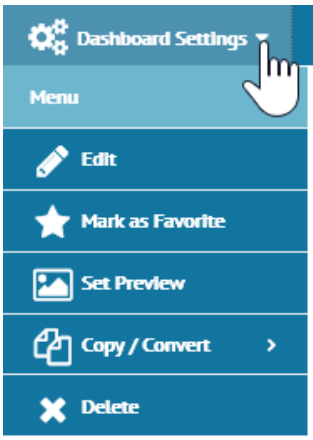
The **Dashboards** start page opens to a page of thumbnail cards, each of which can be used to *Open a Dashboard* for display and editing. From the start page, you can also create, edit, remove, and share selected dashboards. Different start page functionality is available depending on if you are in **View** or **Edit** mode. (For *dashboard* specific options refer to the *Dashboard Action Bar*, page 21.)

View Mode

If the **Mode** control on the start page is switched to **View**, you can *Open a Dashboard*, as well as set the **Marquee** control on the workspace action bar to activate a multi-dashboard *Marquee* slide show.

Edit Mode

Start Page Edit Mode. If the **Mode** control on the start page is switched to **Edit**, this gives you access to **Add Dashboard** to *Create a Dashboard* or **Dashboard Settings** when you select a dashboard.



The following drop-down options are available under **Dashboard Settings**:

Edit Opens the **Dashboard Settings** dialog to change the title, thumbnail image, or filter associated with a selected dashboard.

Mark as Favorite / **Unmark as Favorite** Marks/unmarks selected dashboards as **Favorites** on the **Pivots** start page.

Set Preview Sets dashboard thumbnail image based on a local file. Use the *Panel Menu* to set preview automatically.

Copy/Convert Changes **Menu** to display copy and convert options based on the current status of the selected dashboard:

If Shared: **Copy to Private** places a copy of the dashboard under **Private** and **Convert to Private** changes its status from **Shared** to **Private**.

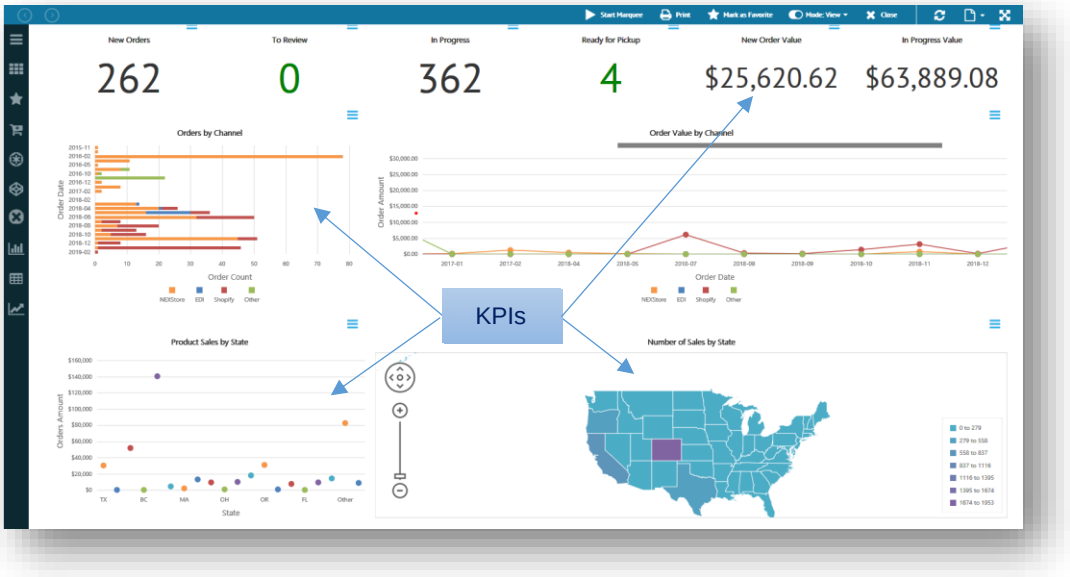
If Private: **Copy to Shared** places a copy of the dashboard under **Shared** and **Convert to Shared** changes its status from **Private** to **Shared**.

Click **Menu** to change back to **Dashboard Settings**.

Delete Removes the selected dashboard from the start page.

Open a Dashboard

If the **Mode** control is switched to **View**, you can open a dashboard by double-clicking one of the thumbnail cards on the *Dashboards Start Page*. The workspace will then display all of the KPIs contained within the selected dashboard, and switch to dashboard specific controls on the *Dashboard Action Bar*.



From here, you will be able to update, customize, and add KPIs to the dashboard, as described in the sections that follow. If a KPI appears empty, then you may need to retrieve data via *Search*.

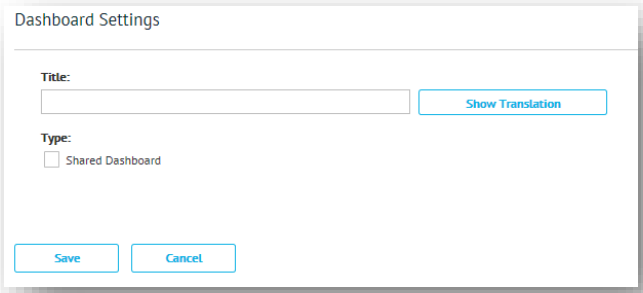
TIP
Each dashboard you open adds a new link to the *Spaces Menu*. Use this menu to keep multiple pages open (in a ready state) for quick access to the dashboards you need the most.

Create a Dashboard

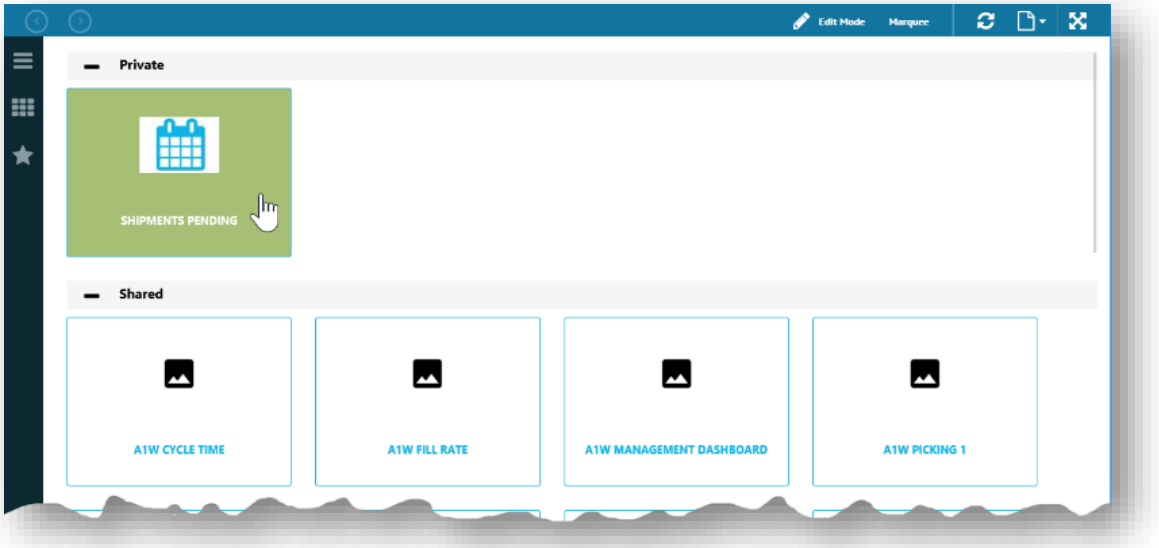
If the **Mode** control on the start page is switched to **Edit**, you can create a new dashboard via the **Add Dashboard** control. Depending on your *permission level*, you can also create new dashboard based on a **Copy**, as documented under **Dashboard Settings** (*Edit Mode*) on page 19.18

Following are the steps for creating a new (empty) dashboard from the *Dashboards Start Page*.

1. Ensure the **Mode** control on the action bar is switched to **View**.
2. Click **Add Dashboard** to access **Dashboard Settings**.
3. Enter a unique **Title** for the dashboard.
4. If the option is available, you may translate the **Title** to another language. Click **Show Translation** to select from available *Translation Options*.
5. If the option is available, you may select **Shared Dashboard** to list the dashboard as **Shared**.
6. Click the **Save** button.



The newly-created dashboard is added to the start page as illustrated below.



At this point, if you click on the new dashboard it will be empty of KPIs. The final step is to *Add KPIs to the Dashboard*, as described in the sections that follow.

Dashboard Action Bar

When you *Open a Dashboard*, the functionality available to you for adding, editing, deleting, and rearranging KPIs within the dashboard will depend on your *permission level* and on which way the **Mode** control is set. (For *start page* specific options refer to the *Dashboards Start Page*, page 18.)

View Mode

When the **Mode** control is switched to **View** mode, you will be able to rearrange KPIs, select a KPI for editing, and access the following set of controls on the dashboard action bar:

Start Marquee — Invokes the *Marquee* feature, which activates a 'slide show' style rotation of KPIs for display within the current dashboard.

Print — Saves a PDF version of the dashboard for download and printing.

Mark as Favorite / **Unmark as Favorite** — Marks/unmarks the dashboard to be included under **Favorites** on the **Dashboards** start page.

Mode — Switches dashboard functionality between **View** and **Edit** modes

Filters — Drop-down menu of controls for setting filters on the selected dashboard:

- **Save Filters** saves *Search/Filtering* changes
- **Reset Filters** Resets unsaved *Search/Filtering* changes
- **Sync Filters** removes saved *Search/Filtering* changes to the dashboard and reloads original *Filters* from the *KPI Settings*.

Close — Closes the dashboard, removes its link from the Foundry **Spaces** menu, and returns to display the *Dashboards Start Page*.

Procedures for adding, changing, and removing KPIs in dashboards are further documented under *Customizing Dashboards* on page 28.

Edit Mode

When the **Mode** control is switched to **Edit** mode, you will be able to rearrange KPIs, add new panels and access the following set of controls on the dashboard action bar:

Mark as Favorite / **Unmark as Favorite** — Marks/unmarks the dashboard to be included under **Favorites** on the **Dashboards** start page.

Mode — Switches dashboard functionality between **View** and **Edit** modes

Tools — Drop-down menu of controls for dashboard maintenance and customization:

- **Save** saves changes to KPI panel size/layout *Display Options*
- **Add KPI** launches the *KPI Selection* editor to *Add KPIs to the Dashboard*, as documented in the sections that follow
- **Rename Dashboard** launches a dialog for renaming the dashboard
- **Change Dashboard Color Scheme** launches a dialog for overriding the dashboard *Color Scheme*
- **Copy/Convert** options to copy/convert the dashboard depending on if it is private or shared, as described under the *start page* *Edit Mode*.

Procedures for adding, changing, and removing KPIs in dashboards are further documented under *Customizing Dashboards* on page 28.

Add KPIs to the Dashboard

When you first *Create a Dashboard*, it is empty until you start adding KPIs via the *KPI Settings* editor. To access the editor, select the **Add KPI** option on the **Tools** drop-down menu of the *Dashboard Action Bar*, as documented in the section below.

Each panel represents a KPI instance rendered for display based on a set of user-defined properties, such as date ranges, graphical format (chart, grid, gauge) and filter settings. The same KPI source can be displayed on a dashboard multiple times, showing different filtered data, and rendered in different formats.

NOTE
Pulse is *metadata-based*, so all source references and parameters are stored with the KPI. If entities or connections are changed at the source you will need to rebuild the panel to see the new data. To modify existing KPIs, see *Customizing Dashboards*, page 28

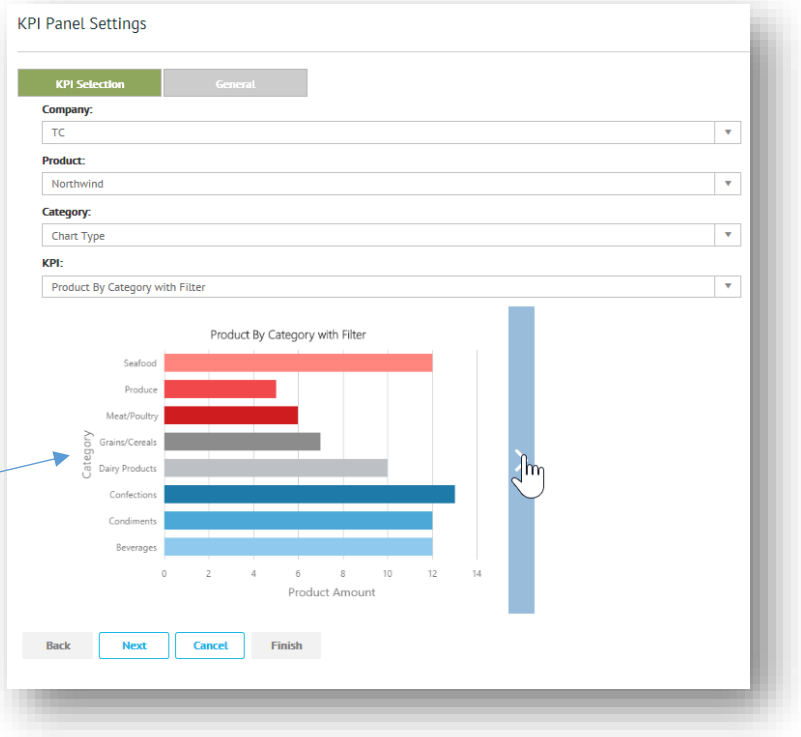
KPI Settings

KPIs are added and defined via the **KPI Panel Settings** editor:

1. Select a dashboard from the *Dashboards Start Page*.
2. When the dashboard opens, ensure the **Mode** control is switched to **Edit** mode.

3. Click **Tools** ▾ on the *Dashboard Action Bar*.
4. Select the ✚ **Add KPI** control from the drop-down options.

   This launches the **KPI Panel Settings** editor for selecting the KPI source, configuration, and filtering.



Each image represents a preset

KPI Selection

5. Under the **KPI Selection** tab, do one of the following:

Fill in each field …

Select from dropdowns for **Company**, **Product**, **Category**, and **KPI** fields.

Field options are *cascading*, which means that the option you select in one field changes the list of options available in subsequent fields. If the results contain only one option for a field, there is no dropdown and the field is filled in automatically.

Select from preset …

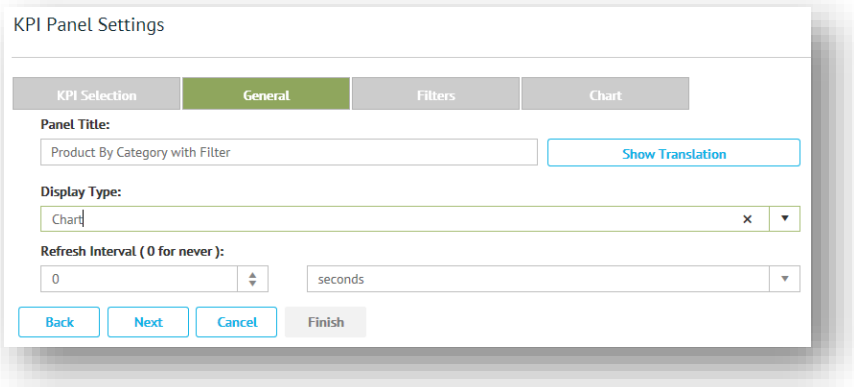
Scroll through available KPI presets as illustrated in the example above. Clicking the associated image automatically fills in any of the fields defined for that preset.

Presets are created from existing KPI settings via the **Copy Settings** control on the *Panel Menu*, page 29.

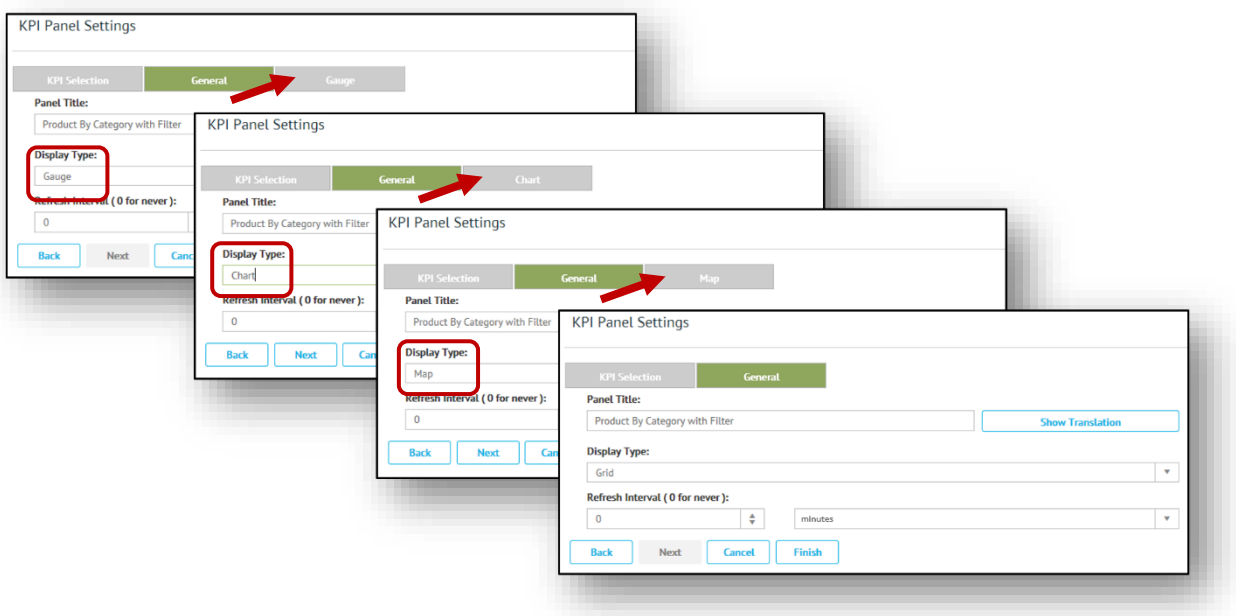
6. Click **Next** to advance to the **General** tab.

General

7. Type in a unique **Panel Title**, which is the title that will appear on the KPI's menu bar. This defaults to the source KPI name but you can override it with something more descriptive based on your settings.



8. If the option is available, you may translate the **Panel Title** to another language. Click **Show Translation** to select from available *Translation Options*.
9. Use the dropdowns for the **Display Type** field to select from available options. An additional configuration tab is added to the **KPI Panel Settings** editor when the *Chart*, *Gauge*, or *Map* display type is selected, as illustrated below. *The different display types are discussed at the end of this section.*

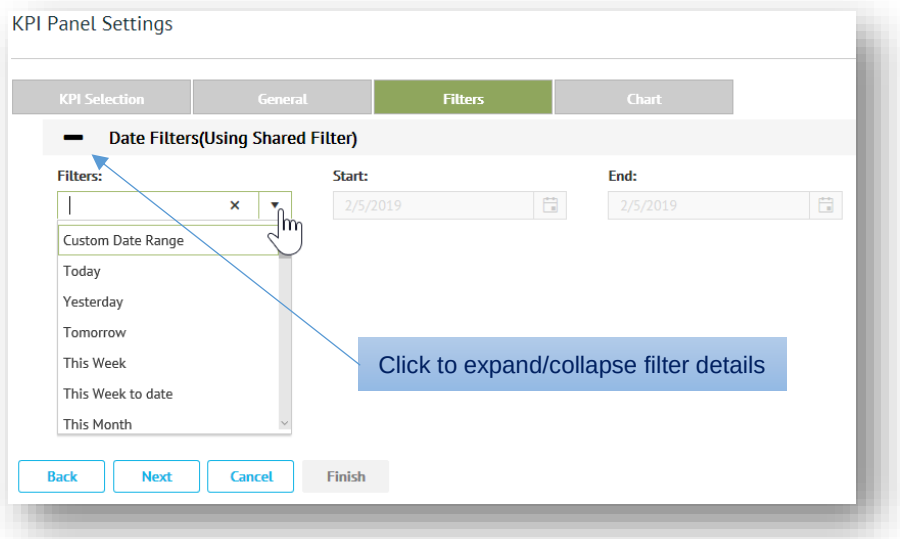


10. Set the **Refresh Interval** between refreshes of the KPI. The time limit can be in seconds, minutes (default), hours, and days, as best suits the quantity of data being presented. *Note that a value of 0 makes the KPI static.* For manual refresh, refer to the *Panel Menu*, page 29.
11. Click **Next** to advance (or click **Finish** if no other tabs are required).

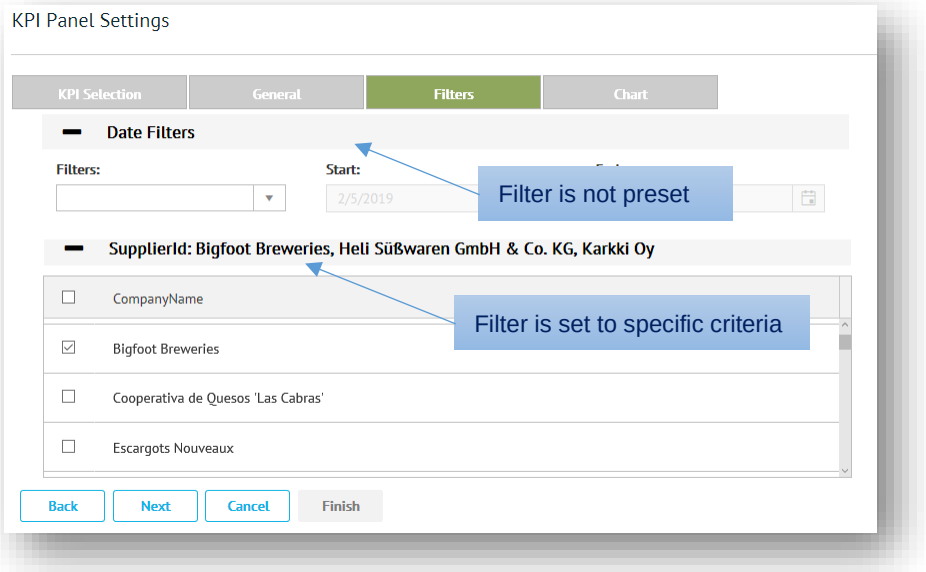
Filters

12. If a **Filters** tab is present, fill in the required fields to determine which data is to be displayed on the panel based on KPI results.

    Your system administrator establishes which filtering options are available for the KPI (if any) which could also be dependent on the **Display Type** selected. For example, some KPIs may allow you to set date ranges (**Today**, **This Week**, **Month to Date**, **Year to Date**, and so on) or to choose a **Custom Date Range** to filter incoming data.



If you choose not to define filters in the **Filters** tab, *it is possible that no data will appear in the grid or chart* when it displays on the dashboard. In this case, the data must be retrieved via *Search/Filtering* at the dashboard level, as indicated by the **Using Shared Filter** designation.



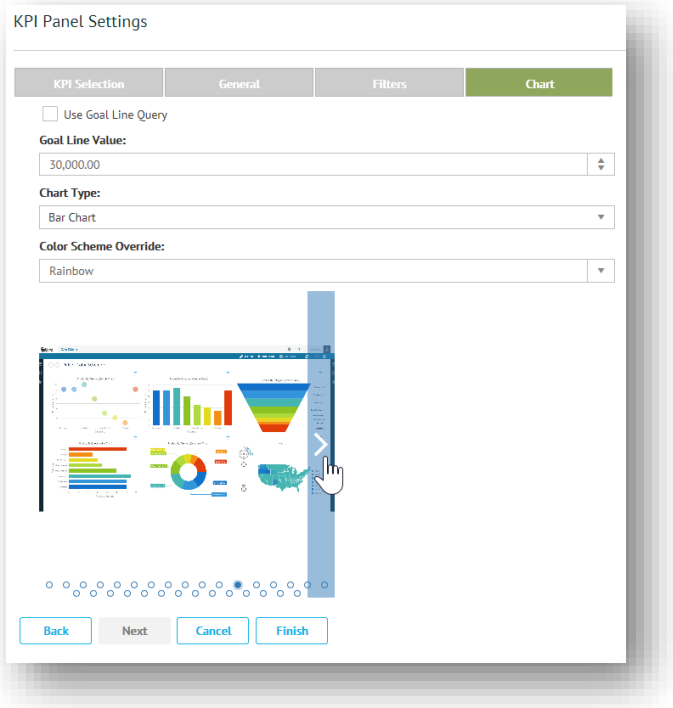
Cascading Filters. Some KPIs may be set up with cascading filters, where the options you select for one filter will automatically change the options available in subsequent filters. For example, selecting a specific *country* in the first filter provides a list of *states* in the next filter; then, selecting the *state* will change the list of available *suppliers* within that state, and so on.

Like other forms of filtering, if your KPI includes cascading filters, those options will be available via *Search/Filtering* at the dashboard level. See *Cascading Filters*, page 35.

13. Click **Next** to advance.
14. Complete any of the fields required for the remaining *Chart*, *Gauge*, or *Map* tab, whichever was selected for the **Display Type**. *These tabs are discussed at the end of this section.*
15. Click **Finish** to save the new KPI panel and return to the dashboard.

    Note that you can also make changes to the KPI within the dashboard itself. See *Customizing Dashboards* on page 28.

Chart



If the **Chart** tab is enabled, fill in the necessary fields as per the descriptions in the table below.

Set the goal line either by query as coded in the KPI source or as a fixed value.

Select the chart type that best suits the data to be displayed. There are several to choose from.

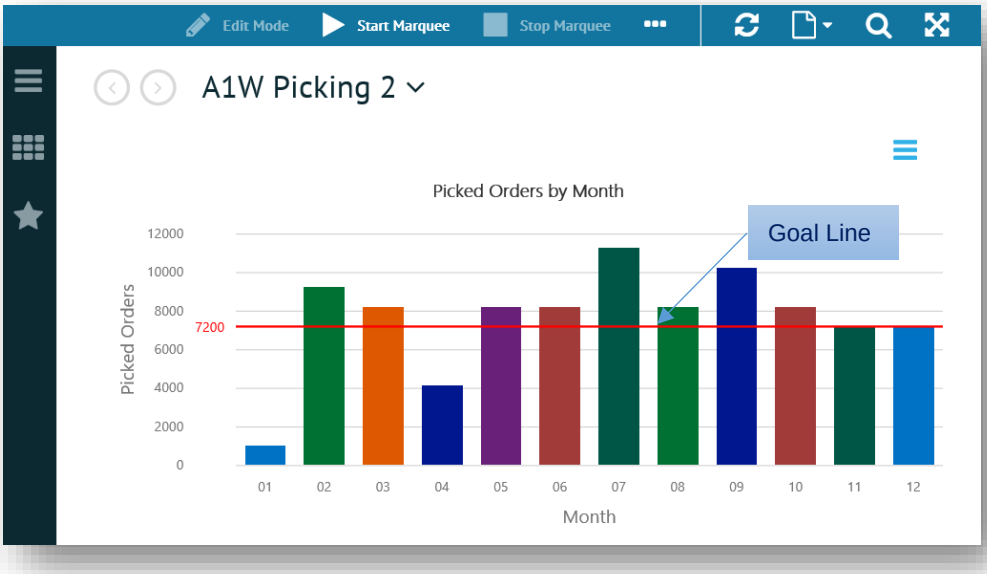
Once you select a chart, you have the option to select a color scheme to override the default, as documented under *Color Scheme*, page 32.

Click **Finish** to save the chart settings you selected for displaying the KPI in the new panel and return to the dashboard.

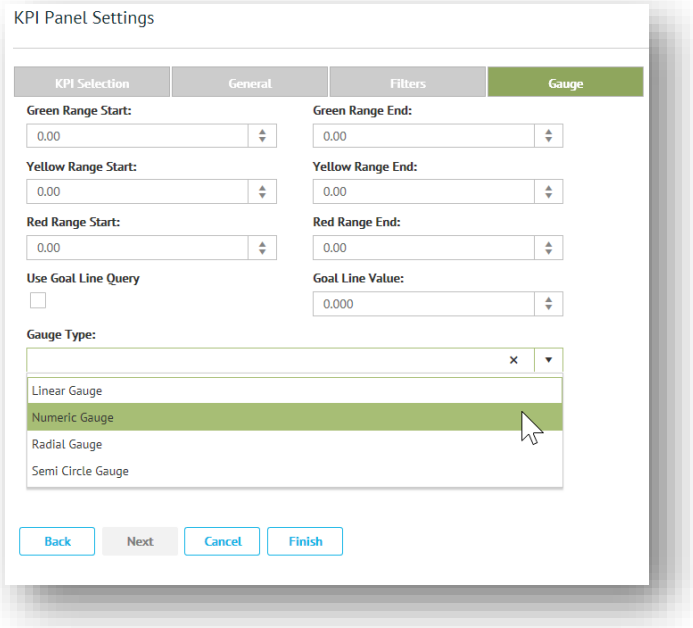
Note that you can also make changes to the KPI within the dashboard itself. See *Customizing Dashboards* on page 28.

Field Descriptions

Field	Description
Use Goal Line Query	Check box to indicate **Goal Line Value** field will list dropdown options.
Goal Line Value	Sets goal line for certain types of charts (not Pie, Doughnut and Area). The goal shows as a solid line across the Y-axis to visually compare against actual results. If **Use Goal Line Query** check box is set, you can select from generated dropdown options; otherwise, enter a fixed value.
Chart Type	Default chart type from the drop-down list that best applies to your KPI. You can at any time change between multiple chart types, such as: Column, Bar, Pie, Line, Area, Doughnut, Stacked Column, Stacked Bar, Stacked Area, Bubble and Point.
Color Scheme Override	Changes the default *Color Scheme* at the panel level.



Gauge



If the **Gauge** tab is enabled, fill in the necessary fields as per the descriptions in the table below.

The gauge color will be set to the default unless start/end values for green, yellow, and red are included.

You can enter a fixed value to determine the goal marker/line or use values determined by goal line query from the KPI.

Click **Finish** to save the gauge settings you selected for displaying the KPI in the new panel and return to the dashboard.

Note that you can also make changes to the panel within the dashboard itself. See *Customizing Dashboards* on page 28.

Field Descriptions

Field	Description
Range Settings	Values to determine start and stop points for Green, Yellow and Red ranges.
Use Goal Line Query	Check box to indicate **Goal Line Value** field will list dropdown options.
Goal Line Value	Sets goal marker. If **Use Goal Line Query** check box is set, you can select from generated dropdown options; otherwise, enter a fixed value.
Gauge Type	Gauge type from the drop-down list that best applies to your KPI. You can at any time change between Linear, Numeric, Radial, and Semicircle formats.

CAUTION
Numbers defined in this tab are *literal*. Therefore, if the source data is not suited to ranges in your settings, the resulting gauge may appear skewed beyond normal readings. Ensure that you set ranges that can accommodate the values expected.

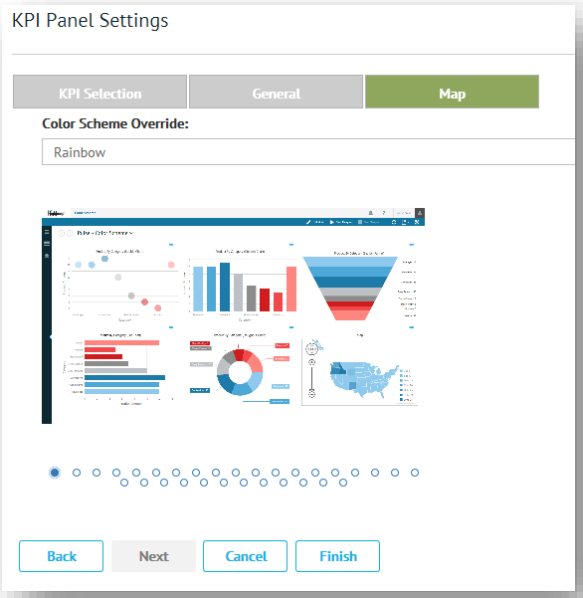
Map

If the **Map** tab is enabled, you will be able to make changes to the default *Color Scheme* at the panel level.

This is the only setting that is not completely under the control of the KPI itself.

Click **Finish** to save the map settings you selected for displaying the KPI in the new panel and return to the dashboard.

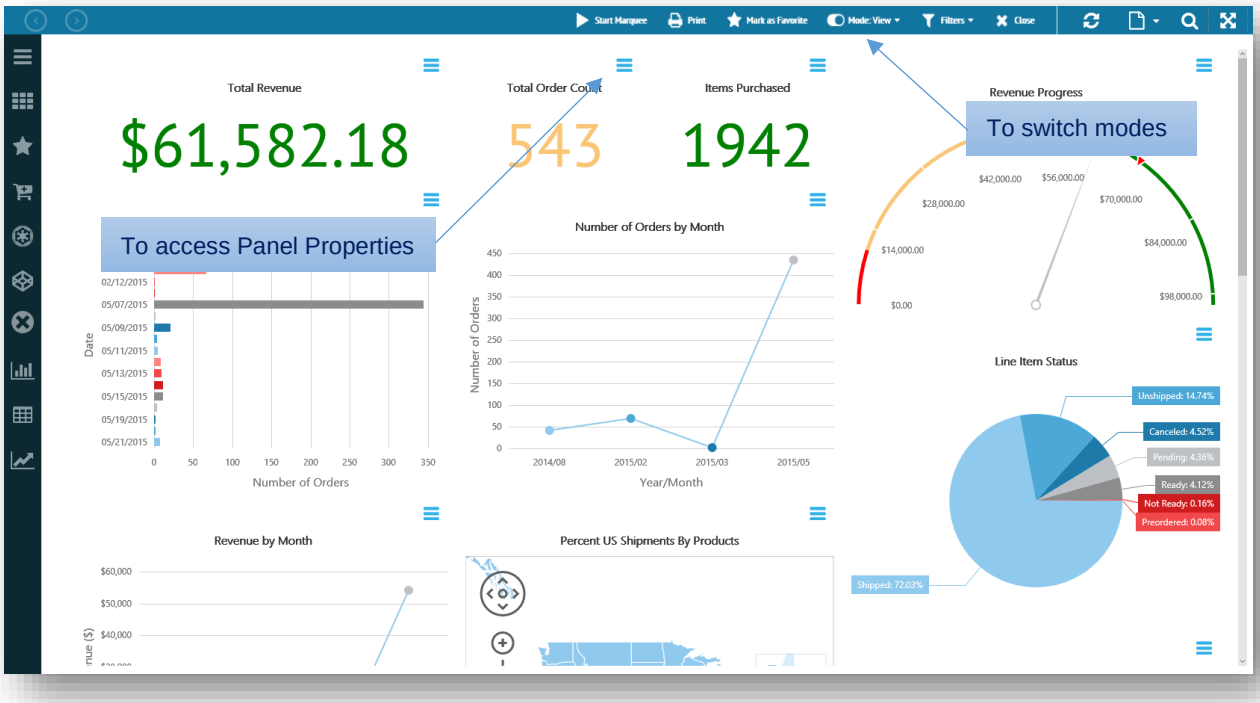
Note that you can also make changes to the KPI within the dashboard itself. See *Customizing Dashboards* on page 28.



Customizing Dashboards

After you *Add KPIs to the Dashboard* you will be able to customize the dashboard layout as well as the KPIs within each dashboard. The options available to you will depend on your *permission level* and on which way the **Mode** control is set.

- Access *KPI Panel* Properties to adjust settings, print and export selected KPIs
- Apply different *Display Options* to control how charts, maps, and data are displayed in the workspace
- Use the *Marquee* feature to invoke 'slide show' effects on dashboards and KPIs



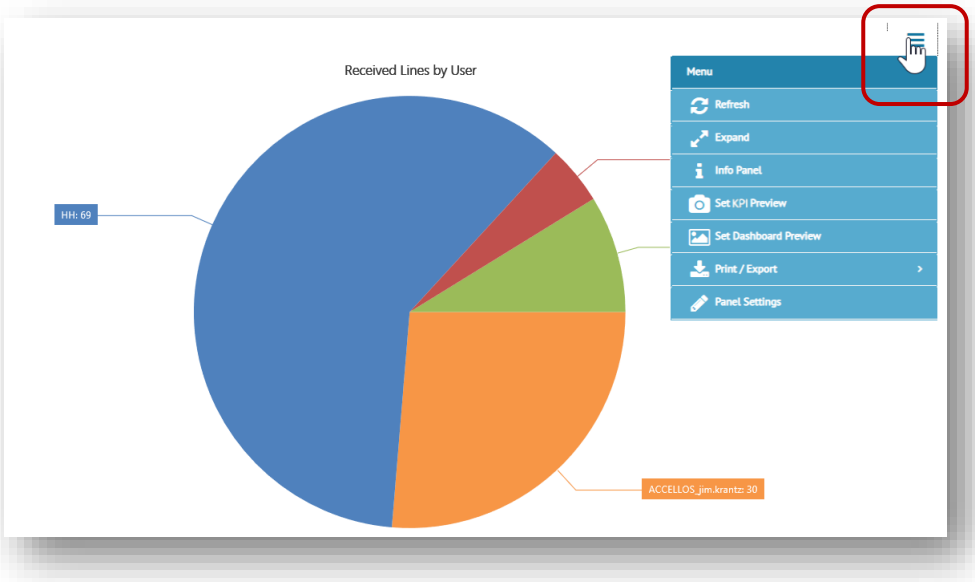
KPI Panel Properties

Depending on the source, each KPI can be viewed as a data grid or rendered in chart, gauge, graph, or map format. There are controls for modifying the appearance, viewing underlying data, changing KPI settings, exporting and printing. The following options are available for customizing the panels in which KPIs are contained:

- Access the *Panel Menu* for panel-specific options, described below
- Zoom in to panel contents or start *Marquee* mode, as described under *Display Options*
- Click elements in a chart, graph, gauge, or map to access *Source Data*.

Panel Menu

Panel-specific controls are available when the dashboard **Mode** control is switched to **View** mode. Click the ☰ button on the top right corner of a KPI's panel to access the dropdown menu.



Refresh	Immediately refreshes display of the current KPI. To refresh all KPIs at the same time, use the control on the workspace action bar. To set auto refresh, refer to the **Refresh Interval** field under the **KPI Panel Settings** > *General* tab.
Expand **Collapse**	Toggles the KPI between expanding to fill the entire workspace and collapsing to its original size. See *Display Options* on page 30.
Info Panel	Opens a popup dialog providing brief details about the KPI
Set KPI Preview	Adds the settings of the current KPI to the list of the preset options under *KPI Settings*
Set Dashboard Preview	Sets the dashboard thumbnail (on the *Dashboards Start Page*) to the current KPI's chart, map or gauge
Grid View **Chart View**	Toggles the KPI between the graphic rendering (chart, gauge, etc.) and displaying the data in grid format (if that option is set up in the source). See *Switching between Chart View and Grid View* on page 34.
Print/Export	Changes the **Menu** to display *Print/Export Options*, described on page 40. Click **Menu** to change back to the original controls.
Panel Settings	Opens a dialog for making changes to the KPI's panel, including the title, display type, filters, and colors. See *KPI Settings*, page 22.

Display Options

Customize dashboard display by resizing, altering the layout, changing colors, switching between charts and data grid, and/or rendering dashboards in the form of a slide show. The following sections document the dashboard display options in Pulse:

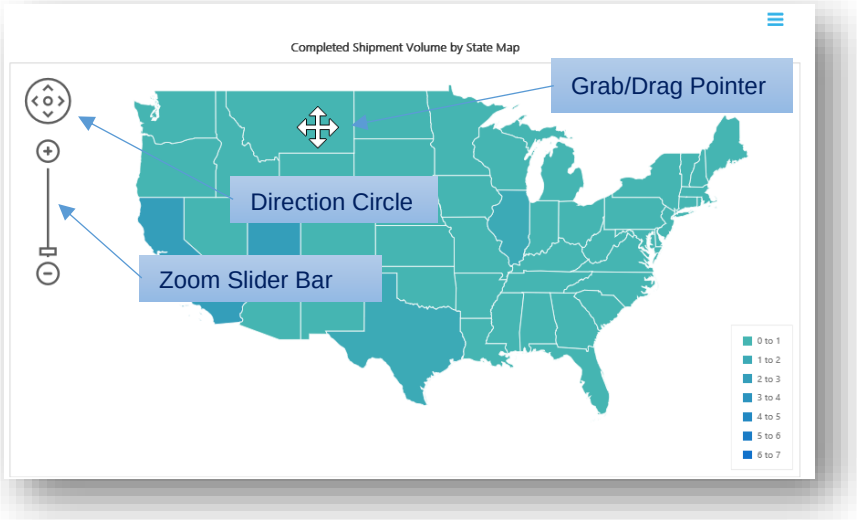
Zoom

When the dashboard **Mode** control is switched to **View** mode, you can easily zoom in and out of charts or maps. The zoom feature is particularly useful when you need to focus on a slice or range of data within a very large, or more detailed, chart.

For **charts**, place your pointer in the KPI's panel, and then use your mouse scroll wheel to zoom in and out.

A *focus bar* will appear above (or on the side) as the chart is being resized. Drag the focus bar to move to segments of the chart that are not visible in the zoomed area.

To zoom in on **maps**, you have the option to use your scroll wheel or use the slider bar. To move around to different areas, click on the 'direction circle' or simply grab/drag the map with your mouse.



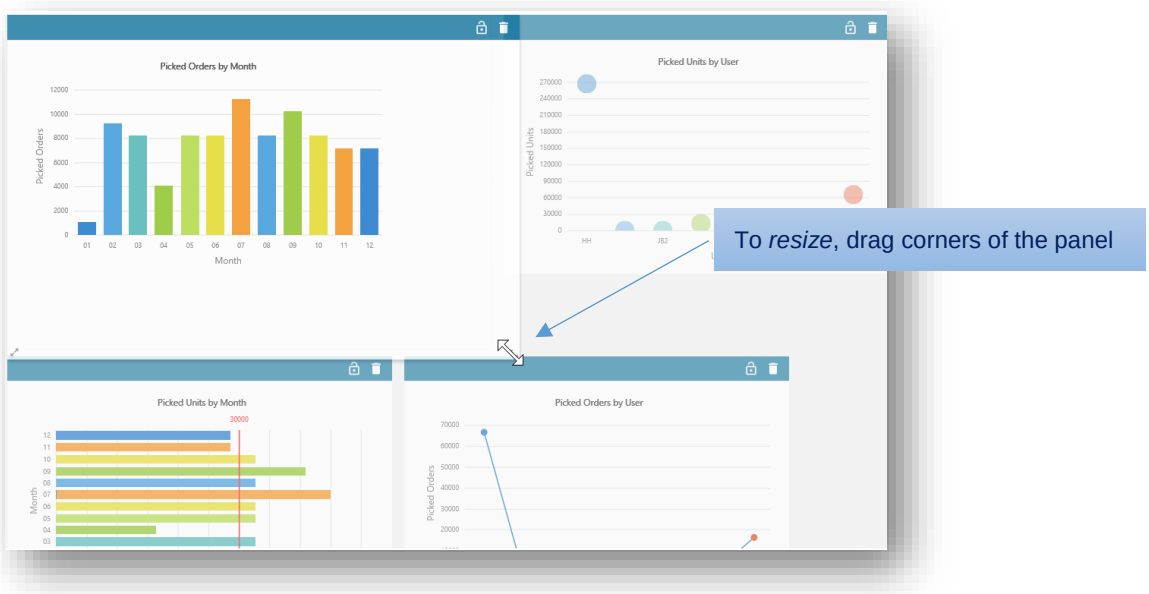
Rearrange

When the **Mode** control is switched to **Edit** mode, you can change the placement of each KPI. Click and hold the panel you want to move, and then slowly drag the mouse pointer over to the new location.

When you release the moved KPI, the dashboard will reset the other panels automatically to the new formation. If there is a blank spot, you may need to scroll down in case some KPIs were pushed out of view.

Resize

When the **Mode** control is switched to **Edit** mode, you can resize a specific KPI to be larger/smaller than the others. Click on a corner of the KPI's panel, and slowly drag until it reaches the size you want.



When you release the resized KPI, the dashboard will reset the others automatically to the new formation. If there is a blank spot, you may need to scroll down in case some KPIs were pushed out of view.

Expand/Collapse

When the dashboard **Mode** control is switched to **View** mode, you can resize KPIs so they take up the entire workspace. To maximize, click the ☰ button on the top right corner of the KPI's panel, and then select the **Expand** option from the *Panel Menu*.

To minimize the full size KPI, click the ☰ button, and then select the **Collapse** option. This collapses the KPI to its original size and returns the dashboard to display multiple panels in the workspace.

Color Scheme

Pulse includes a library of preset color schemes for quickly selecting a new look for your KPI colors.

There are three methods for changing KPI colors in Pulse:

- *All Dashboards*, below
- *Selected Dashboard*, page 33
- *Selected KPIs*, page 33

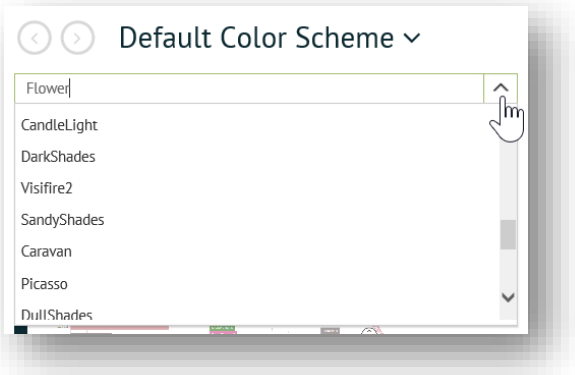
Note that color changes made to a shared dashboard will affect all who use that dashboard.

All Dashboards

To change the default color scheme for *all* dashboards:

1. Select **Pulse > Settings** > **Default Color Scheme** via the Foundry ☰ **Menu**.

   The **Dashboard Color Scheme** dialog opens with a sample dashboard in the workspace.
2. Click on the drop-down field at the top of the workspace to select from the available color schemes. Each selection changes the color scheme of the KPIs in the sample dashboard below.
3. You can also browse the colors directly by dragging the samples to the left or right.



4. When you decide on a color scheme, click **Save** on the workspace menu bar.

   The new color scheme will be applied to all your dashboards; that is, unless the color scheme is overridden at the dashboard or KPI level (described next).

Selected Dashboard

To change the color scheme of the currently open dashboard:

1. Switch the **Mode** control to **Edit** mode.
2. Select the **Change Dashboard Color Scheme** option from the **Tools** dropdown menu on the *Dashboard Action Bar*.

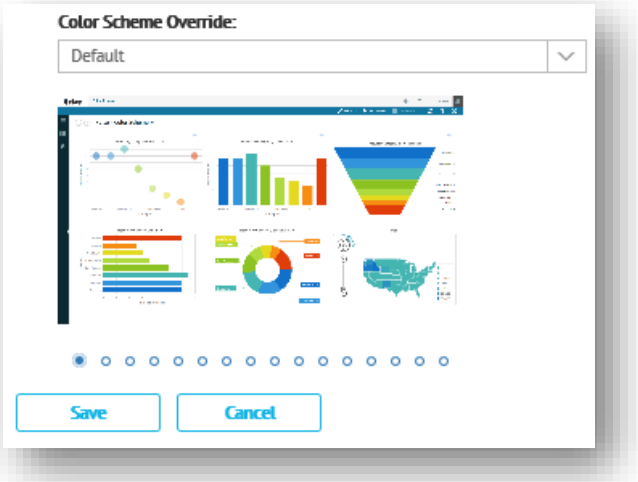
   The **Dashboard Color Scheme Override** dialog opens with a sample dashboard in the workspace. Select from the drop-down options or drag the sample dashboard left or right to browse through the available color schemes.
3. When you decide on a color scheme, click **Save** on the workspace menu bar. This changes the default color for all the KPIs in the current dashboard (unless overridden at the KPI level).

Selected KPIs

To change the default color scheme for charts or maps at the *KPI level*:

1. Switch the **Mode** control to **View** mode and click the button on the selected KPI.
2. Click **Panel Settings** from the *Panel Menu*.
3. For charts, select the **Chart** tab in the **KPI Panel Settings** dialog. For maps, select the **Map** tab in the **KPI Panel Settings** dialog.

   Select from the **Color Scheme Override** drop-down options or drag the sample dashboard to browse through the available color schemes.
4. When you decide on new colors, click **Save**.



Source Data

There are several ways to set up KPIs to allow quick access to the data they are based on:

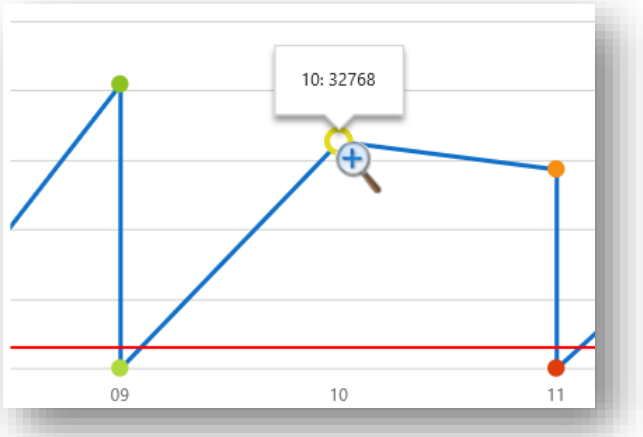
- As described under *KPI Settings* you have the option to display KPIs in the form of a data grid when you create or modify the panel.
- You may be able to click on selected elements in a chart, gauge, or map to view underlying details in popup form or jump directly into the source application.
- KPIs coded in the form of *Actionable Analytics* allow you to pass parameters via chart, gauge, or map in Pulse to invoke actions in the source applications.
- You can *Switching between Chart View and* Grid using controls in the panel menu.

Quick View

Depending on the KPI, some panels may include functionality where you can quickly view the data behind a chart, gauge or map.

Hovering the mouse pointer over data elements (points, bars, slices, etc.) invokes a small popup that displays specified content.

Double-clicking on the chart element may launch a sub-page that shows the data associated with the chart or jump directly into the source application where the data originates.



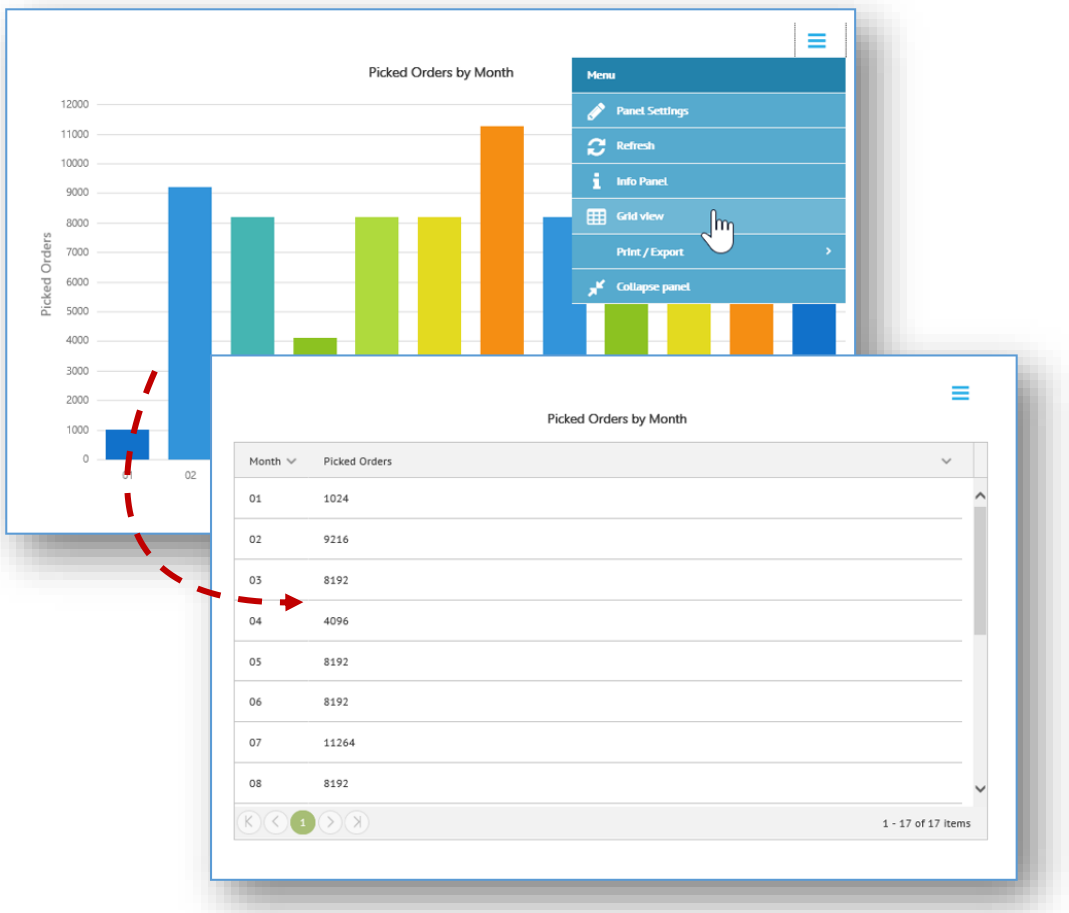
Actionable Analytics

It is possible for some KPIs to be configured in a way that allows you to control other integrated applications directly from your chart, gauge, or map in Pulse. With KPI enhancements, you can build *interactive dashboards* that provide both a graphical view of your data, and the ability to invoke changes in the source application or database. For example, clicking on a data element in an 'orders' chart may be configured to pass that value as a parameter to the corresponding 'orders' page in another application, which triggers a process in that application to update data.

It is entirely up to your organization to assess the need and to create the KPIs for this purpose. If required, contact your TrueCommerce Sales representative to discuss custom KPI development options. For more information, refer to the '*TrueCommerce Pulse Administrator Guide*'.

Switching between Chart View and Grid View

Depending on your KPI settings, you may have the option to toggle the panel display between chart and grid format. Click the ☰ button and then select the **Grid View** option from the *Panel Menu*.



The KPI panel changes automatically to grid format, displaying the data only, including when rendered in *Marquee* mode. Grids include several useful controls to help you find and organize your data. For more information, see *Working with Grid Data* on page 10. If necessary, use the **Expand** option on the *Panel Menu* to maximize the size of the grid. When displayed as a grid, the panel also includes the option to *Export to Excel*, as described on page 41.

To return to chart format, click the ☰ button, and then select the **Chart View** option.

Search/Filtering

Some dashboards are configured so that you can choose which source data you want to display in KPI panels. If this is the case, the search control will be present on the dashboard action bar. Clicking the control opens (and also closes) the search panel. For a general discussion on filtering, refer to *Search Panel* on page 12. This section discusses filtering as it pertains to the dashboard display and KPI panel functionality:

- Search functionality may be required to populate charts and grids that have not been configured with predefined *Filters* in their KPI settings. Such panels start out empty when you open the dashboard.
- The values that can be entered in a field depend on the data in the associated panel (alphanumeric, numeric or dates). The search can also be set up to use *Cascading Filters*, described below.
- To save changes to the search panel, click **Save Filters** on the dashboard's action bar. **Reset Filters** can be used to reset unsaved changes to the search panel. Note that the **Save Filters** option is only available to the owner of a dashboard that is shared.
- To change back to default search/filtering click **Sync Filters** on the dashboard's action bar.

Cascading Filters

When KPIs are designed using *cascading filters*, the options you select in one field will automatically change the list of options in the fields that follow.

Refer to the example on the right.

Selecting one or more options in the **Country** field changes the list of regions (states) in the **Region** field; then, selecting regions changes the list of companies in the **SupplierId** field, and so on.

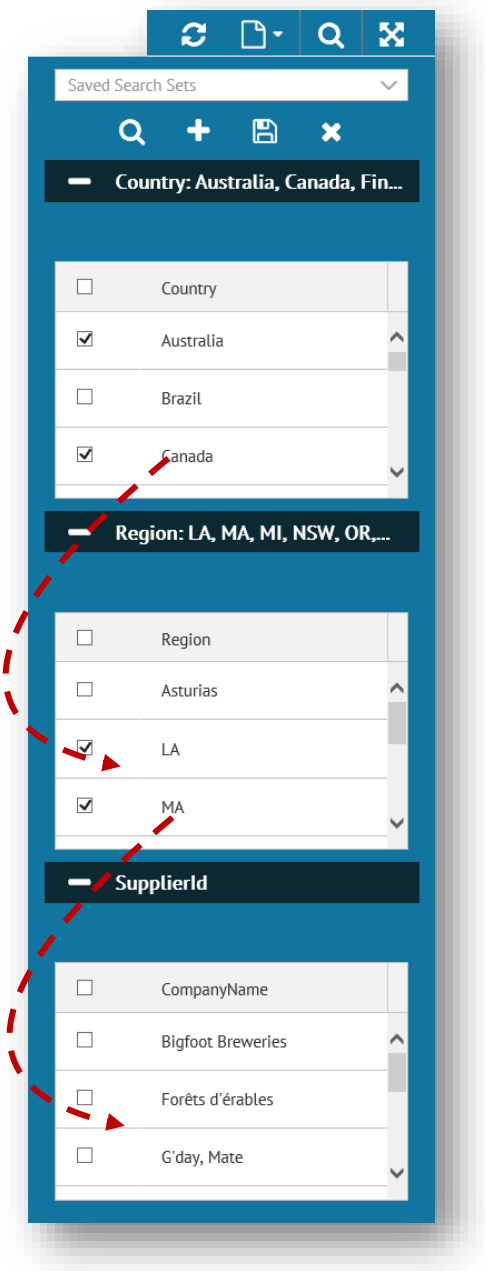
You can also select/deselect all the options in a field by clicking the first check box listed; for example, **CompanyName** in the **SupplierId** field.

When you are finished selecting the options you need, click the control, as described for *Performing a Search* at the beginning of this user guide. This automatically changes the display of charts and grids on the dashboard to reflect the changed filters.

Note that if you edited the filters within specific panels (via the *Panel Menu*) those panels will not be changed.

As mentioned earlier, click **Sync Filters** on the dashboard's action bar to reset panels to their default filters.

For documentation on KPI design, refer to the '*TrueCommerce Pulse Administrator Guide*'.



Marquee

Pulse marquee feature renders KPI panels in an automated 'slide show' format. It provides a quick and easy mechanism for you to present dashboards in continuous rotation; for example, as a 'display board' in your corporate lobby, lunchroom, or conference booth. In addition, with *Display Board Feeds* you will be able to provide external access to marquees as well.

There are two methods for running a marquee in Pulse:

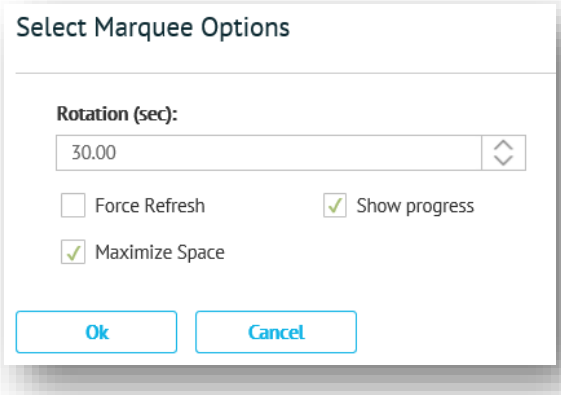
- *Current Dashboard*, which cycles through panels in the currently-open dashboard, one at a time based on intervals set by the user
- *Multi-Dashboard*, which cycles through panels in one or more selected dashboards, one at a time or all on the same page, at intervals set by the user.

Current Dashboard

To run a slide show of panels from the currently-open dashboard:

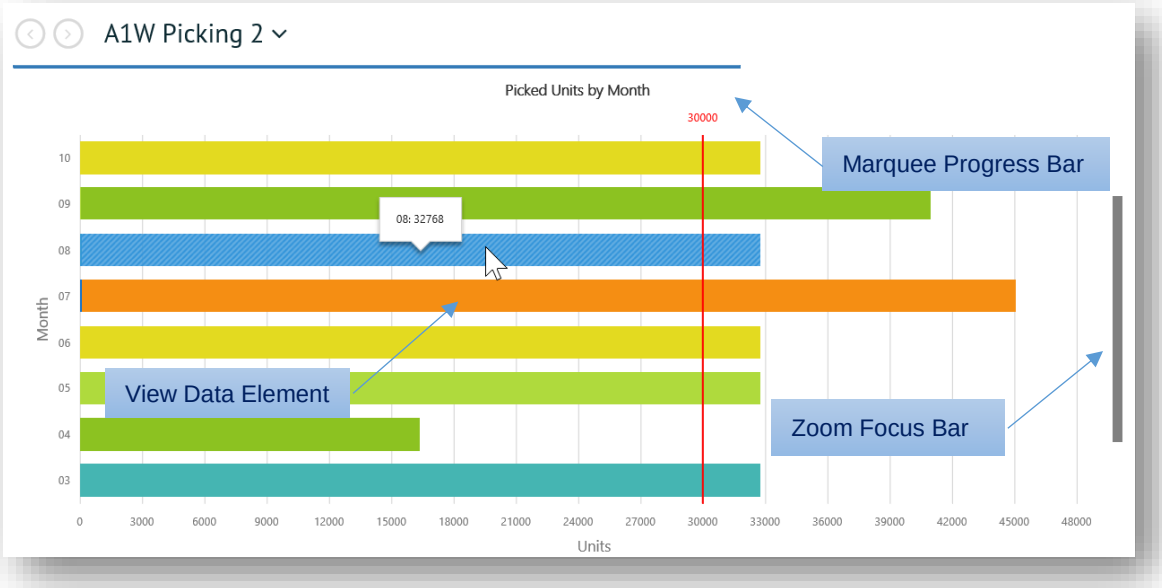
1. Select a dashboard on the *Dashboards Start Page*.
2. Ensure the **Mode** control is switched to **View** mode and then click **Start Marquee** on the action bar. You will be prompted to define the parameters for your slide show.

   See *Marquee Options* for field descriptions.



3. Click **OK** in the **Marquee Options** dialog to start the marquee using the parameters defined above.

   In marquee mode, the slide show format cycles through each panel in expanded view. Note that you can still apply *Zoom* or click on data elements in each panel that comes up in rotation.



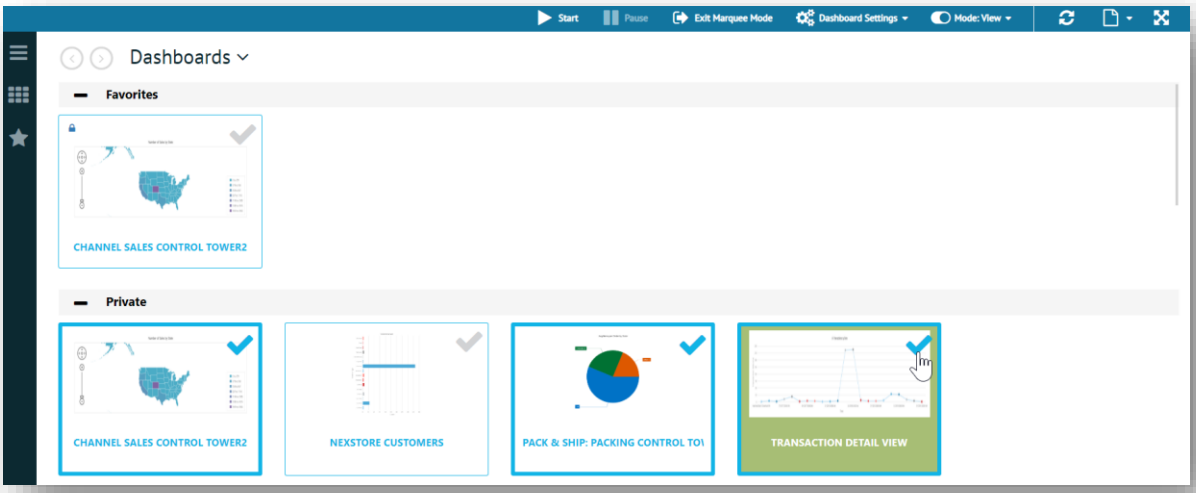
4. To exit marquee mode, click **Stop Marquee** on the action bar.

NOTE
If you retrieve a dashboard from the *Spaces Menu* that was previously set to marquee mode, it will resume with the panel rotation when it opens in the workspace.

Multi-Dashboard

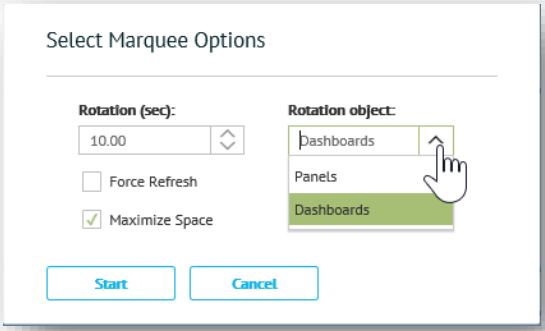
To run a slide show of one or more dashboards:

1. Open the *Dashboards Start Page*.
2. Ensure the **Mode** control is switched to **View** mode and then click **Marquee** on the action bar.
3. Click on the dashboards you want to use in the marquee rotation. Each dashboard you select will be highlighted with a blue border and checkbox.



4. When you finish selecting dashboards for rotation, click **Start** on the workspace action bar.

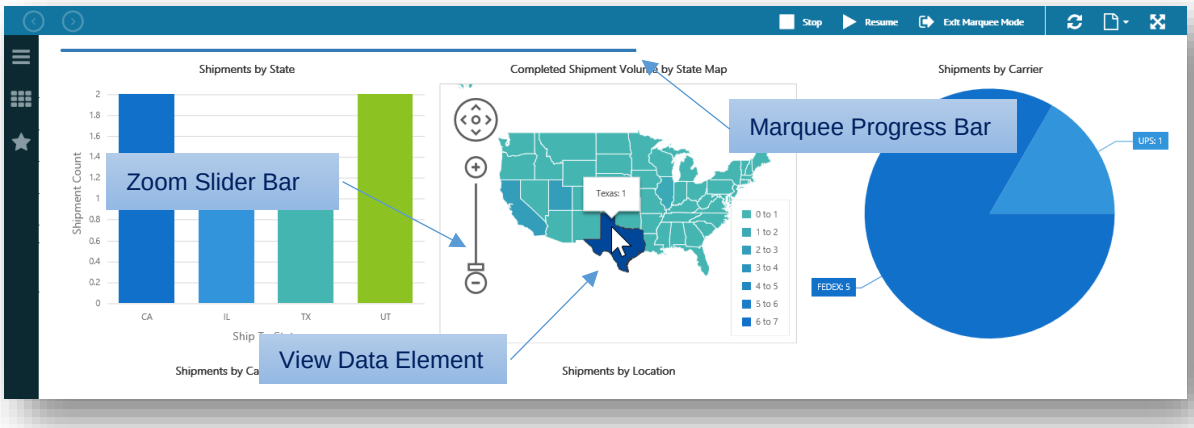
   You will be prompted to define parameters, including the rotation object, for your slide show. See *Marquee Options* for field descriptions.



5. Click **OK** in the **Marquee Options** dialog to start the marquee using the parameters defined.

   Note that you can still apply *Zoom* or click on data elements in the panels within each dashboard that comes up in marquee rotation.

   The following marquee example is displaying all the panels in the dashboard using tile formation.



6. Click **Pause** on the action bar to pause the rotation at the currently-displayed dashboard. To keep going, click **Resume**.

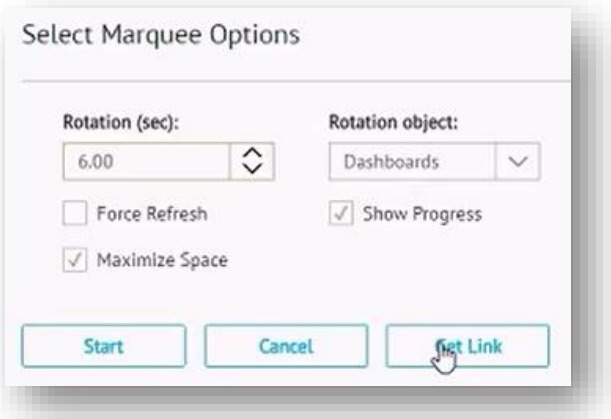
7. If you want to *add* or *remove* the dashboards selected for rotation, click **Stop**. To return to marquee mode, click **Start** again.
8. To exit completely, click **Exit Marquee Mode** on the action bar. When you return to the **Dashboards** page, your dashboards will no longer be selected for rotation.

Display Board Feeds

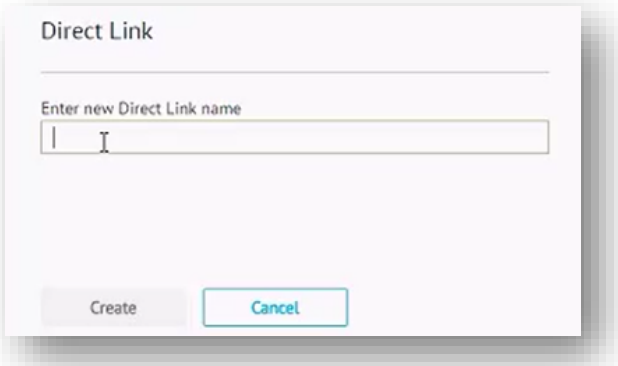
Direct Link is a separately licensed option that allows you to share the marquees you create for use as external display board feeds. It works by generating a URL link to a configured marquee that can be copied directly into their browser window for display (without the need for user credentials). To acquire this add on feature for use with Pulse contact your TrueCommerce representative.

To generate a URL link of a marquee configuration:

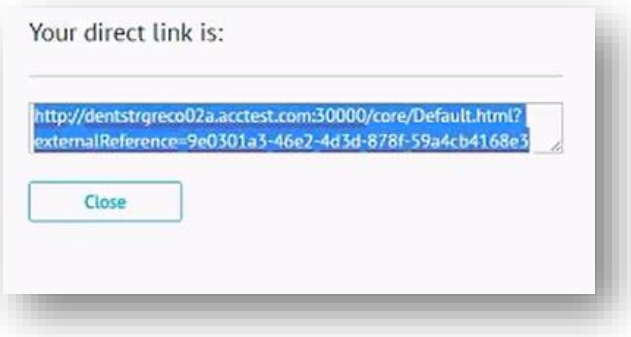
1. Set up the dashboards and parameters for your marquee, and then click the **Get Link** button in the *Marquee Options* dialog.



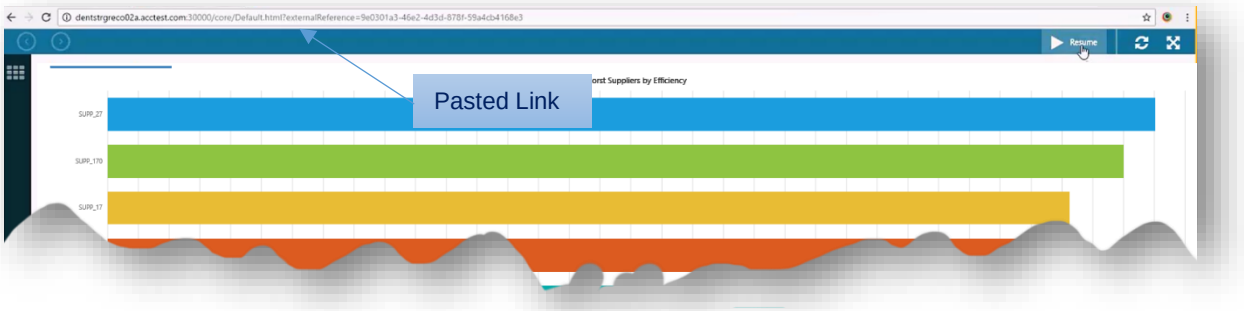
2. In the **Direct Link** dialog, enter a name for your link, and then click **Create**.



3. When the link to your marquee is generated, select the text box and copy it to the clipboard.

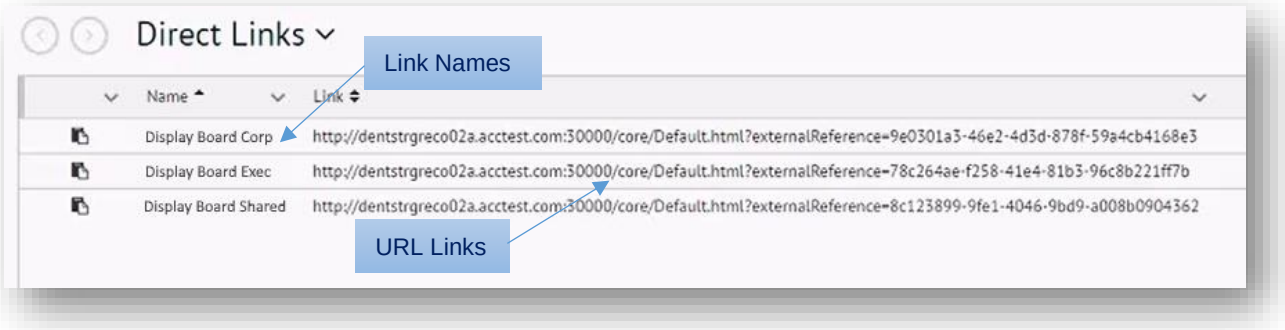


4. Paste the copied link into a browser address bar to launch the marquee. Linked marquees run within a limited version of Pulse that allows *read-access only*, with no other functionality except basic refresh, resize and pause/resume controls.



5. To exit the linked marquee, simply close the browser tab.

The **Direct Links** feature also records all of the links you generate. For access to previously-generated links, select **Pulse > Settings** > **Dashboard Direct Link** via the Pulse folder under the ☰ main applications menu. The **Direct Links** list opens in the workspace.



To use saved links, simply copy and paste them from this list.

Marquee Options

Field	Description
Rotation (sec)	Duration each slide will be displayed on the screen.
Rotation Object	***Multi-Dashboard Only***. Selects the format in which panels are displayed for each dashboard in a *Multi-Dashboard* rotation: **Panels** — cycles through each panel in expanded view before advancing to the next dashboard **Dashboards** — displays all panels at once (in tile formation) before advancing to the next dashboard
Force Refresh	Check box to indicate that data will be refreshed when it comes in rotation. This is recommended when **Rotation** setting is longer than 60 seconds.
Show Progress	Check box to show the progress bar, which indicates how long before the next panel in the slide show
Maximize Space	Check box to indicate that panels are to fill the browser window, which is the same as selecting the ⤢ button on the action bar.

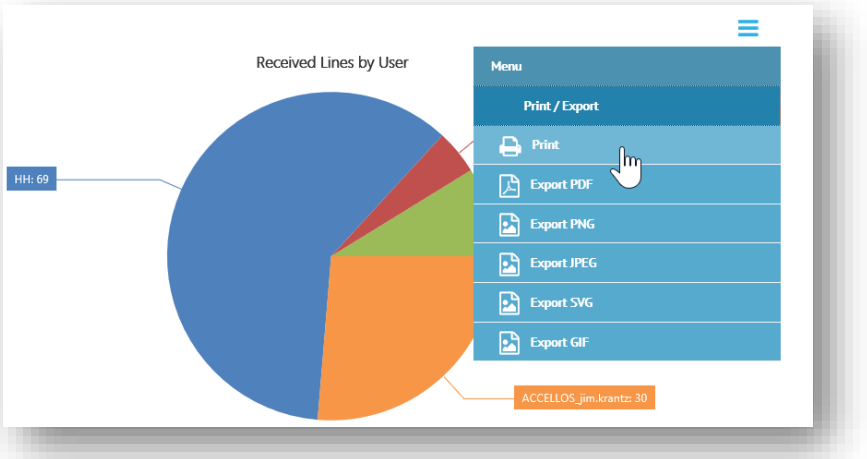
Print/Export Options

You can select a KPI to send to print, or export as an image file or PDF, described below. When *Switching between Chart View and Grid*, you can also *Export to Excel*.

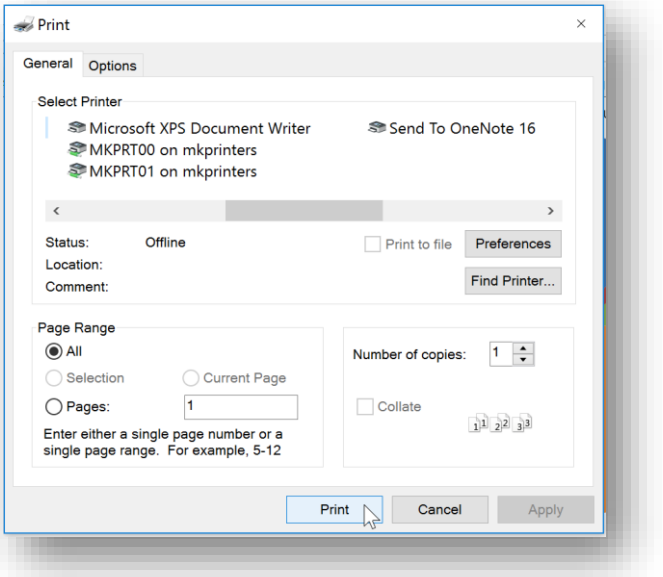
Print

To print a selected chart, gauge, or map:

1. Click ☰ on the top right corner of the KPI's panel, and then select **Print/Export** from the *Panel Menu*.
2. Select **Print** from the **Print/Export** menu.



This invokes your browser's **Print** dialog, which allows you to select a printer location (or print file) and set preferences before printing.



Click the **Print** button to send the KPI to the selected printer.

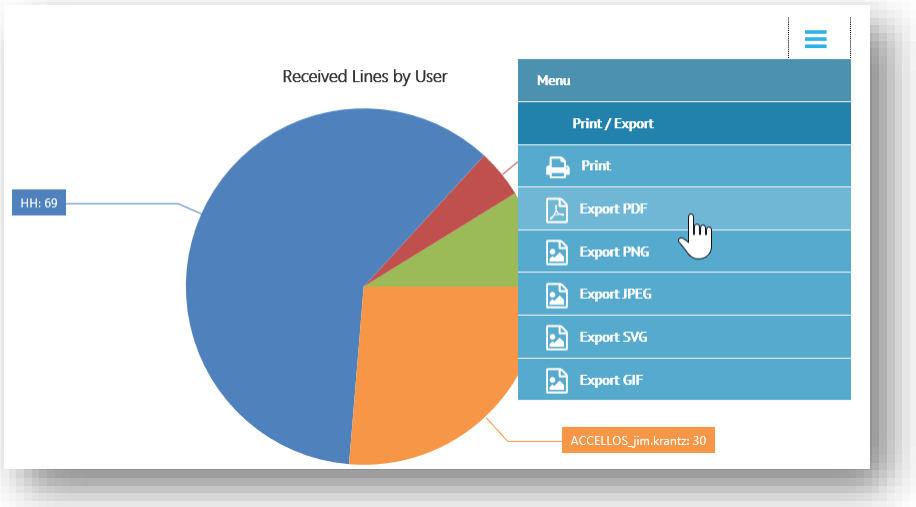
To exit the **Print/Export** menu, click ☰ on the top right corner of the KPI's panel, and then select **Menu**.

Export as an Image

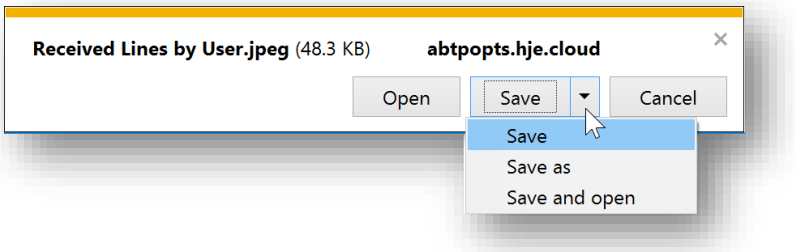
To export the selected chart, graph, gauge, or map to a PDF or image file:

1. Click ☰ on the top right corner of the KPI's panel, and then select **Print/Export** from the *Panel Menu*.

2. Select one of the **Export** options from the **Print/Export** menu.



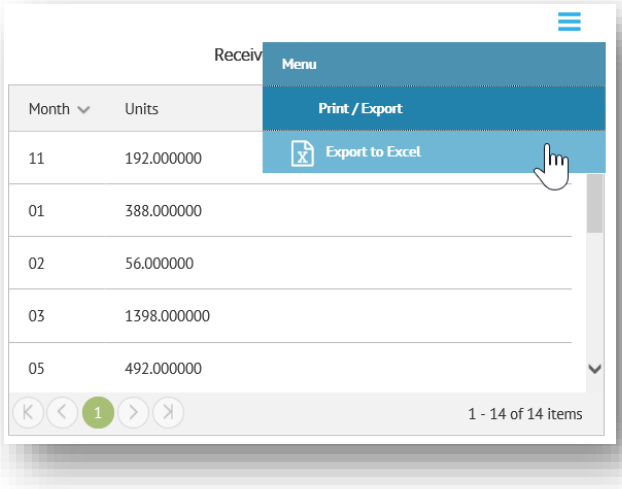
This invokes the export dialog, which provides options to **Open** and/or **Save** the generated file to a location of your choosing.



Select the appropriate option to save the KPI as an image file.

To exit the **Print/Export** menu, click ☰ on the top right corner of the KPI's panel and then select **Menu**.

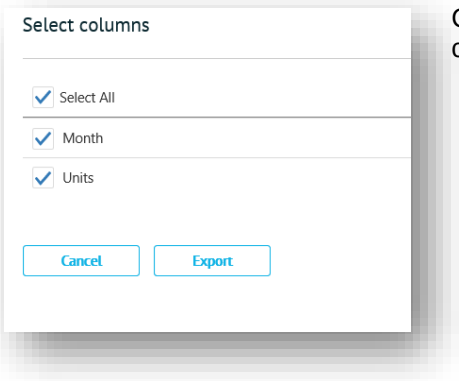
Export to Excel



To export a KPI that is currently set to **Grid View**:

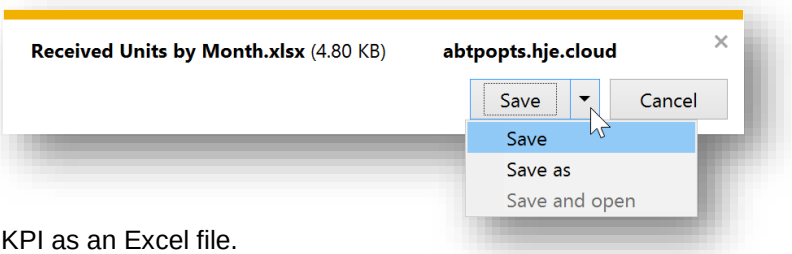
1. Click ☰ on the top right corner of the KPI's panel and then select **Print/Export**.
2. Select Export to Excel from the Print/Export menu.

   This invokes the **Select Columns** dialog, which includes check boxes for you to choose which columns from the grid you want to export to the Excel file. The default is **Select All**.



Click the **Export** button to save the contents of the selected columns to an **.xlsx** file.

This invokes the export dialog for saving the generated file to a location of your choosing.

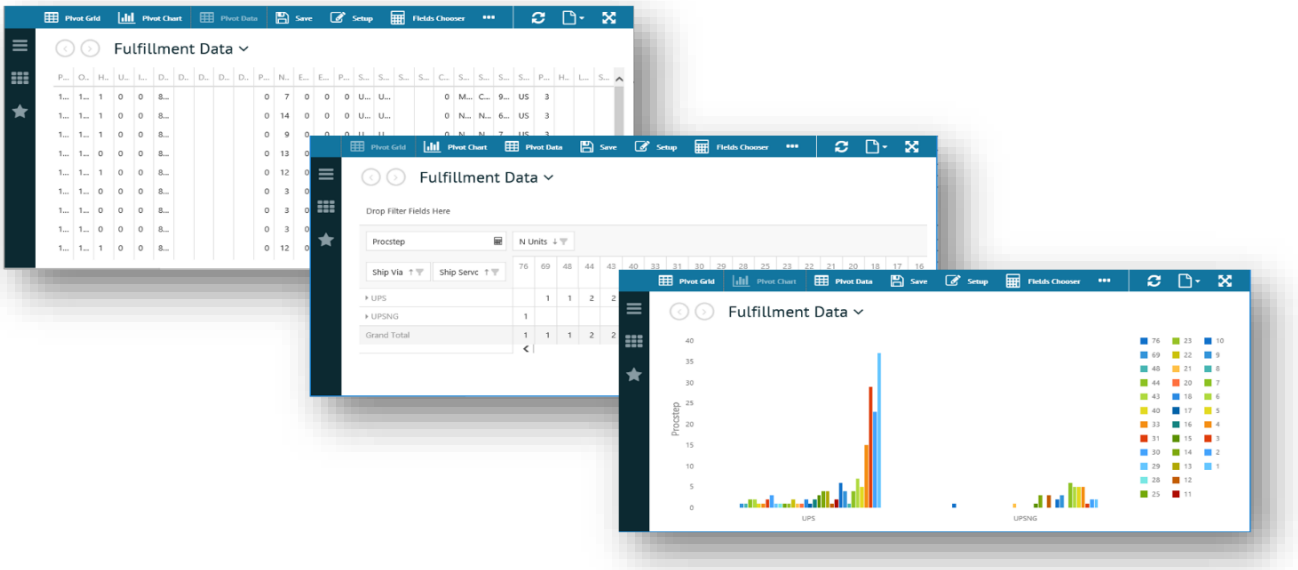


Select the appropriate option to save the KPI as an Excel file.

To exit the **Print/Export** menu, click ☰ on the top right corner of a KPI's panel, and then select **Menu**.

Pivots

Pulse offers the ability to deliver *KPIs* in the form of interactive pivot grids. Pivots, which are conceptually similar to Excel pivot tables, give users direct control to change the appearance of data elements while they are still in use. They enable ad hoc reporting with the capacity to instantly switch (*pivot*) between columns and rows, or to add, remove, sort and filter the data they are based on.

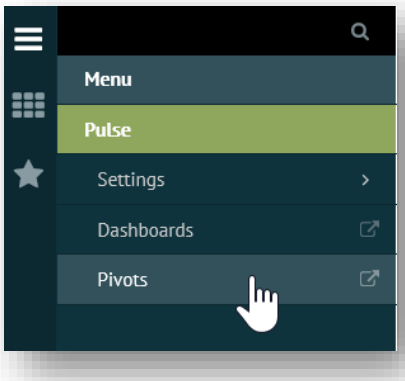


The following sections describe how to view, create, modify, and export pivots:

- *Pivots Start Page*, *below*
- *Open a Pivot*, page 45
- *Create a Pivot*, page 45
- *Pivot Action Bar*, page 47
- *Pivot Grid* and *Pivot Chart*, page 47
- *Calculated Fields*, page 50
- *Field Chooser*, page 52
- *Export Options*, page 55

For documentation specific to the other application components in Pulse, see *Dashboards* on page 18, and *Spreadsheets* on page 56.

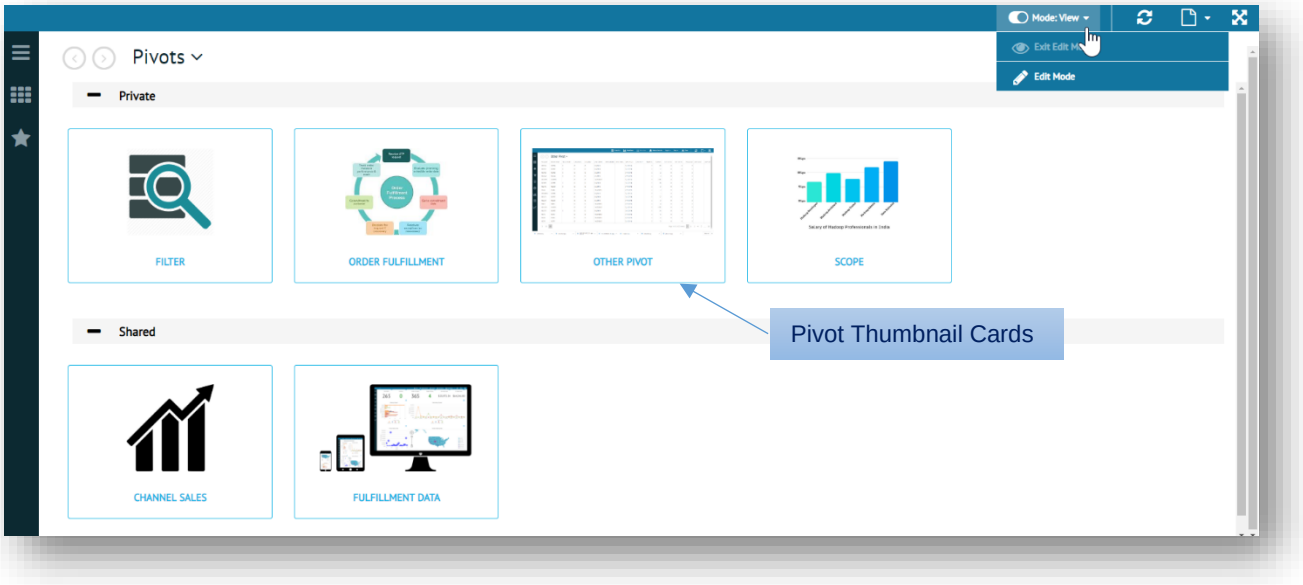
Pivots Start Page



Pulse **Pivots** starts with a start listing all the private or shared pivots to which you have access under your tenant.

To launch the start page, click **Pulse** > **Pivots** via the Foundry ☰ **Menu**. If you visited the start page previously at any time during your current Foundry session, you can also find a **Pivots** link in the ⠿ **Spaces** menu.

The start page opens the Foundry workspace under the **Pivots** ⌄ page header. Pivots can be organized as **Favorites**, **Private**, and **Shared**, as illustrated in the example below.



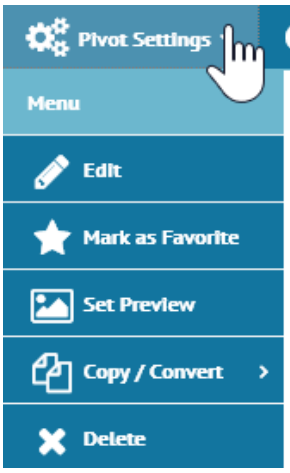
The **Pivots** start page opens to a page of thumbnail cards, each of which can be used to *Open a Pivot* for display and editing. From the start page, you can also create, edit, remove, and share selected pivots. Different start page functionality is available depending on if you are in **View** or **Edit** mode.

View Mode

If the **Mode** control on the start page is switched to **View**, you will be able to double click on a thumbnail card to select and *Open a Pivot*.

Edit Mode

If the **Mode** control on the start page is switched to **Edit**, this gives you access to the **Add Pivot** control to *Create a Pivot* or **Pivot Settings** when you select a pivot.



The following dropdown options are available under **Pivot Settings**:

Edit — Opens the **Pivot Settings** dialog to change the title, thumbnail image, or filter associated with a selected pivot.

Mark as Favorite / **Unmark as Favorite** — Marks/unmarks selected pivots under **Favorites** on the **Pivots** start page.

Set Preview — Sets pivot thumbnail image based on a local file.

Copy/Convert — Changes **Menu** to display copy and convert options based on the current status of the selected pivot:

If Shared: **Copy to Private** places a copy of the pivot under **Private** and **Convert to Private** changes its status from **Shared** to **Private**.

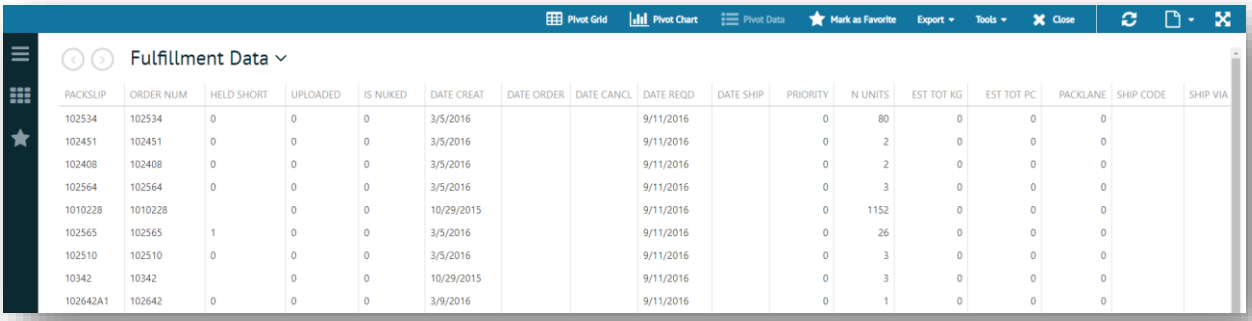
If Private: **Copy to Shared** places a copy of the pivot under **Shared** and **Convert to Shared** changes its status from **Private** to **Shared**.

Click **Menu** to return to the initial **Pivot Settings**.

Delete — Removes the selected pivot from the start page.

Open a Pivot

If the **Mode** control is switched to **View** mode, you will be able to open a pivot by double-clicking one of the thumbnails in the *Pivots Start Page*. The selected pivot opens to display KPI data in grid format according to the fields defined and on previously saved settings.



From here, you can easily switch between *Pivot Grid* and *Pivot Chart*, select which fields to display, set as a favorite, and adjust various other settings via controls on the *Pivot Action Bar*, page 47.

TIP
Each pivot you open adds a link to the *Spaces Menu*. Use this menu to keep multiple pages open (in a ready state) for quick access to the pivots you need the most.

Create a Pivot

When the start page is in *Edit Mode*, you can create a new pivot based on any of the KPI criteria set up by your administrator, as described below. Depending on your *permission level*, you can also create new pivot based on a **Copy**, as documented under **Pivot Settings** (*Edit Mode*) on page 44.

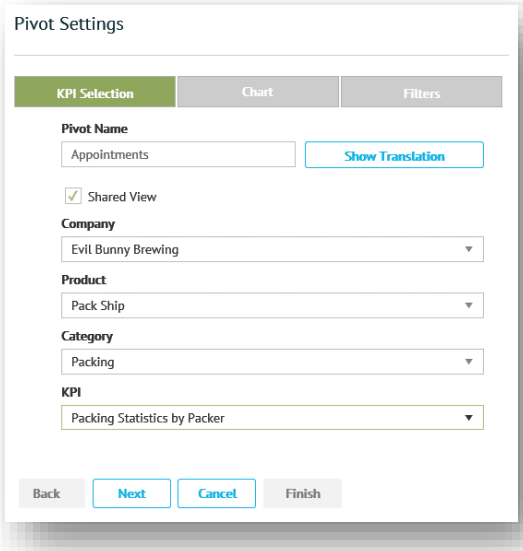
Pivot Settings

Pivots are added and defined in the **Pivot Settings** editor:

1. Ensure the **Mode** control on the *Pivots Start Page* is switched to **View**.
2. Click **Add Pivot** on the action bar. This launches the editor to set *KPI Selection*, *Chart*, and *Filters* for the new pivot.

KPI Selection

3. Type in a unique **Pivot Name**. The name entered here appears with the thumbnail image on the *Pivots Start Page*.
4. If the option is available, you may translate the **Pivot Name** to another language. Click **Show Translation** to select from available *Translation Options*.
5. If the option is available, you may select **Shared View** to list the pivot under **Shared**.

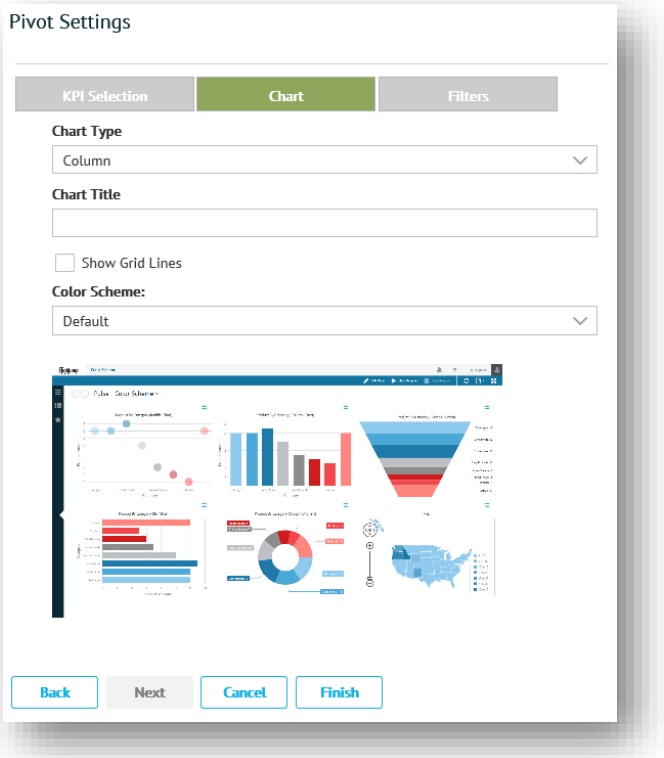


6. Select from the dropdowns for **Company**, **Product**, **Category**, and **KPI** fields.

Field options are *cascading*, which means that the option you select in one field changes the list of options available in subsequent fields. If the KPI provides only one option for a field, then there is no dropdown and the field is filled in automatically.

7. Click **Next** to advance to the **Chart** tab.

Chart



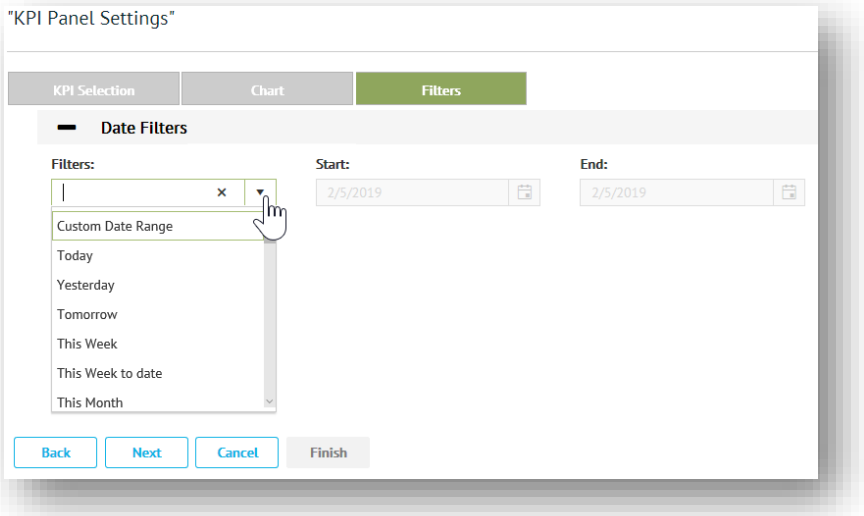
8. Select a **Chart Type** from the dropdown options that best suits the data to be displayed. This will be the default chart that displays when you select the **Pivot Chart** control on the *Pivot Action Bar*.

   Note that your choices for chart types in a pivot are different from the ones listed for dashboard KPIs.
9. Enter a unique **Chart Title** for the chart selected.
10. *Optionally*, you can click the check box to **Show Grid Lines** in the chart selected.
11. *Optionally*, you can select a **Color Scheme** to override the default, as documented under *Color Scheme*, page 32.
12. Click **Next** to advance to the **Filters** tab or click **Finish** to exit the editor and add the newly created pivot to the *Pivots Start Page*.

Filters

13. If a **Filters** tab is present, fill in the required fields to determine which data is to be displayed in the pivot based on KPI results.

    Your system administrator establishes what can be filtered. For example, the KPI may allow you to set date ranges (**Today**, **This Week**, **Month to Date**, **Year to Date**, and so on) or choose a **Custom Date Range** to filter incoming data. Other options may include a checklist for adding/removing criteria.



14. Click **Finish** to add the newly created pivot to the *Pivots Start Page*.

Pivot Action Bar

Once you *Open a Pivot* in the workspace, you have the ability to transform how your data is being presented by dragging and dropping data elements from the KPI source. The pivot action bar includes a set of controls for changing the open pivot's appearance instantly, on-the-fly:

Pivot Grid — Displays data in *Pivot Grid* format based on *Field Chooser* settings. Drag and drop functionality allows you to make adjustments to *Pivot Fields* directly within the grid.

Pivot Chart — Displays data in *Pivot Chart* format based on *Field Chooser* settings.

Pivot Data — Displays all *Pivot Data* as it is defined in the KPI source.

Mark as Favorite / **Unmark as Favorite** — Marks/unmarks the currently selected pivot under **Favorites** on the *Pivots Start Page*.

Export — Dropdown menu of controls for exporting the selected pivot. See *Export Options*, page 55.

Tools — Dropdown menu of controls for pivot maintenance and customization:

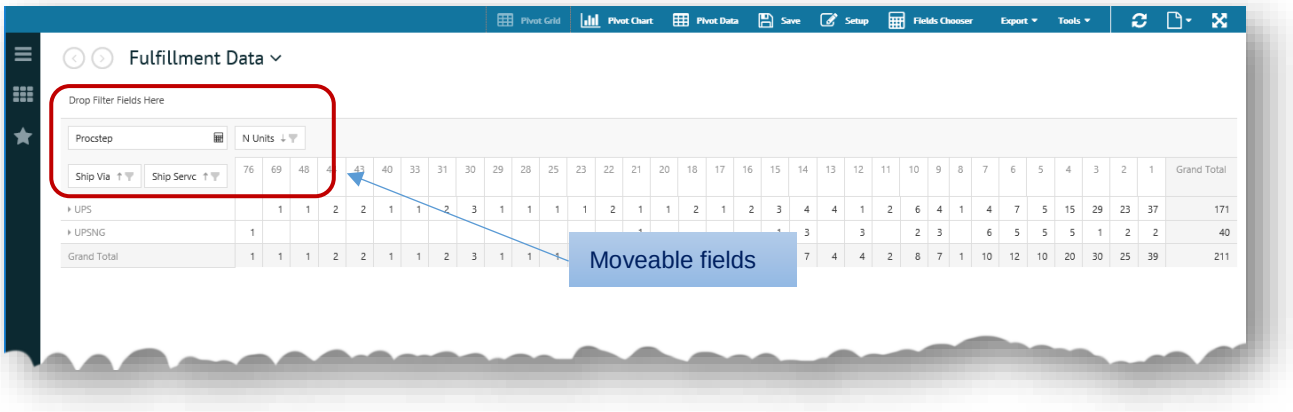
- **Save** saves changes to the pivot grid and chart layout
- **Field Chooser** launches an editor for adjusting *Field Chooser* settings
- **Calculated Fields** launches an editor for adjusting *Calculated Fields*
- **Rename Pivot** launches a dialog for renaming the pivot
- **Setup** accesses the *KPI Selection* for modifying the pivot's name, chart style, and use of any filters that many be available
- **Copy/Convert** options to copy/convert the pivot depending on if it is private or shared, as described under the *start page* Edit Mode.

Close — Closes the pivot, removes its link from the Foundry **Spaces** menu, and returns to the *Pivots Start Page*.

Pivot Grid

The **Pivot Grid** control on the *Pivot Action Bar* displays the KPI data as a grid. The initial layout is based on fields selected from your KPI data source and placed in the *Field Chooser* dialog. However, you can make a variety of quick changes simply by dragging and dropping *Pivot Fields* within the grid itself.

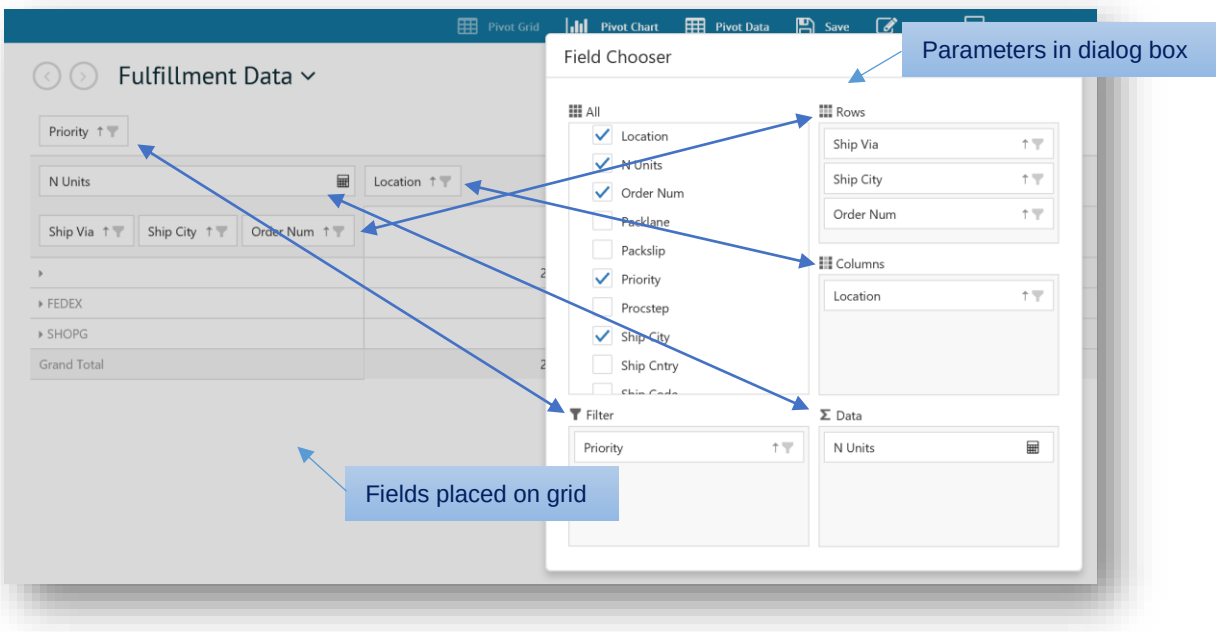
Grid functionality is documented in the sections that follow. To view 'raw' data with no **Fields Chooser** parameters applied, use the **Pivot Data** control.



Pivot Fields

Before using a pivot grid, you must first select which fields you plan to use via the **Fields Chooser** control on the action bar. Data displayed in the pivot is based on fields selected for each of the *Filter*, *Rows*, *Columns*, and *Data* parameters in the dialog box. When you move fields to a different location on the pivot grid, the changes you make are reflected in the *Field Chooser* dialog and vice versa.

The example below illustrates how fields are placed on the grid based on parameters in the dialog box.



NOTE
Fields can only be added to, or removed from, the pivot using the **All** checklist in the *Field Chooser* dialog. If no fields are assigned to parameters, the grid will be empty.

Following are the options available to you for changing fields within the grid:

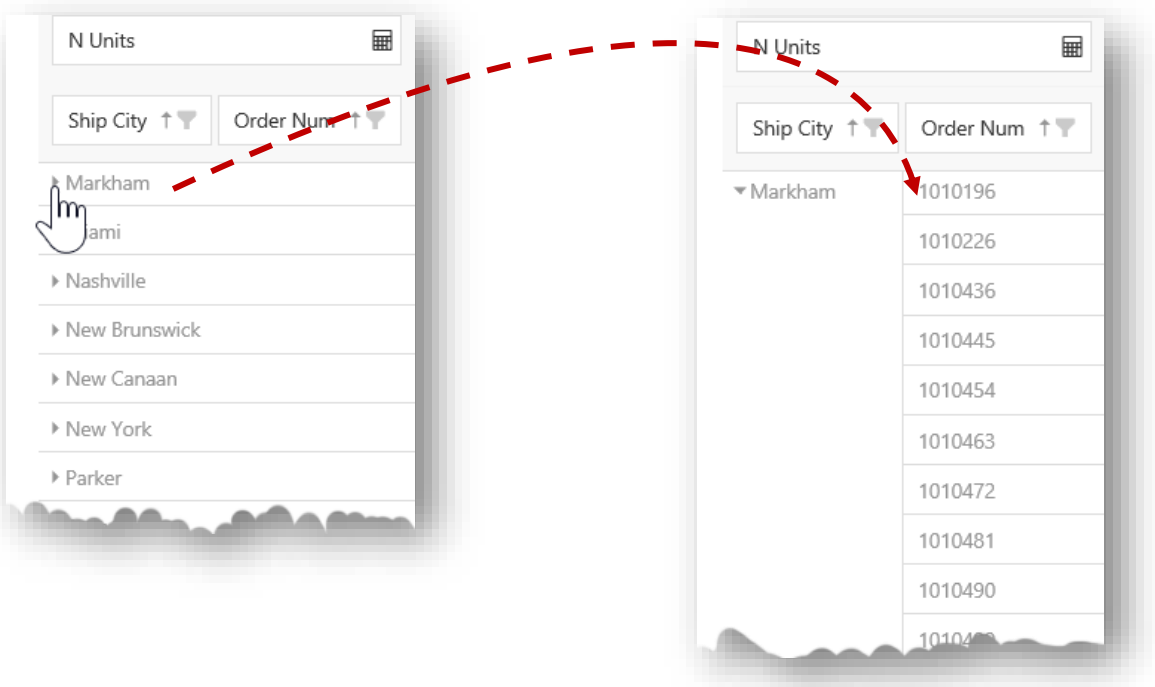
- Simply *drag and drop* selected fields from any grid location to another
- Toggle the ↑ or ↓ icon next to the selected field to sort results in ascending/descending order
- To set a filter within a selected field, click the ▼ drop-down control

Upon refresh, these changes will have an immediate effect on the contents of the grid, the *Field Chooser* dialog, and the *Pivot Chart*.

Field Hierarchy

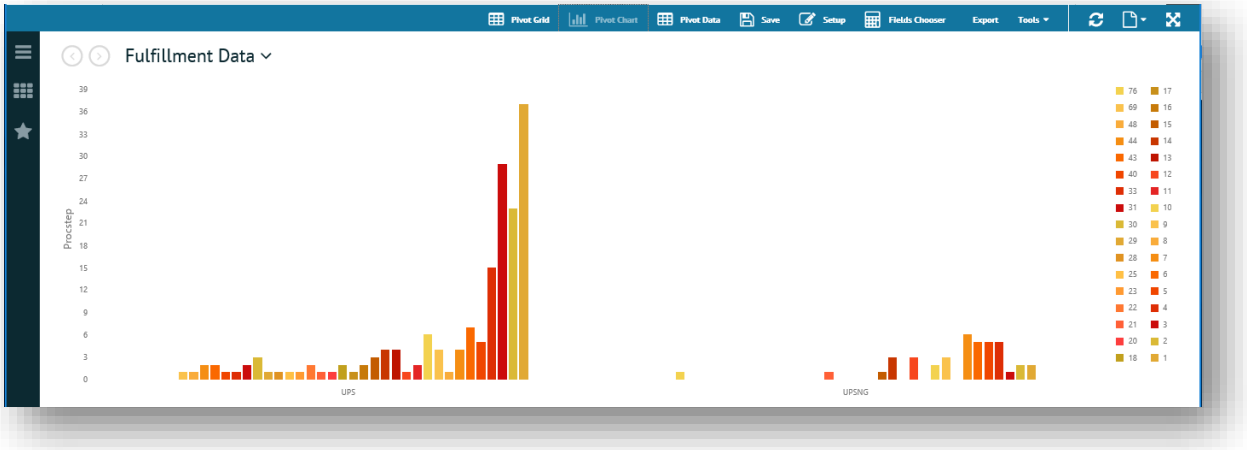
If practical, multiple fields may be assigned to columns or rows in the grid. When this is the case, the placement of the field in the row or column parameter will determine the order in which the data is to be displayed. Also, for each level in the hierarchy, the ▸ button next to a data element indicates the existence of a subordinate (child) field.

Refer to the next example. In the *Rows* parameter, the **Ship City** field ranks above **Order Num** for the display of row data. Clicking the ▸ button next to 'Markham' under the **Ship City** field expands all the **Order Num** data for 'Markham'. When you expand each level of data in this manner, the ▸ button toggles to ▾ to indicate the expanded view. To hide the data in the subordinate field, click the ▾ button again.



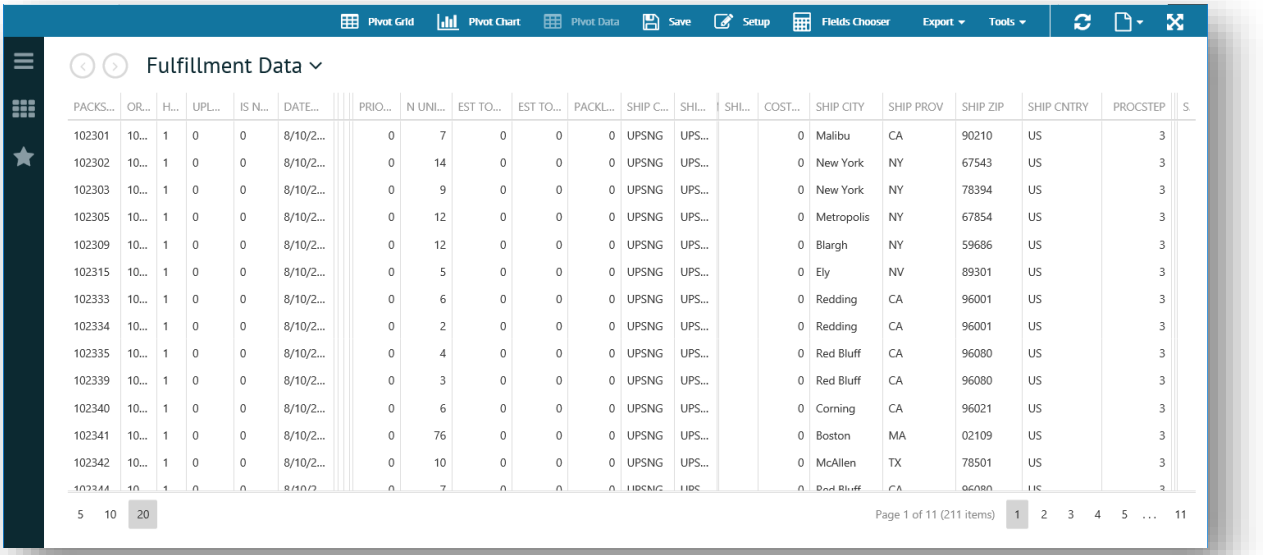
Pivot Chart

The **Pivot Chart** control on the the *Pivot Action Bar*d displays the pivot's KPI data as a chart, defined by the fields and filters selected in the *Field Chooser* dialog. To change the chart type, click **Setup** on the pivot action bar and select the *Chart* tab under *Pivot Settings*.



Pivot Data

To view all the data behind the pivot, select **Pivot Data** on the *Pivot Action Bar*. This displays every field (column) produced by the KPI with no **Fields Chooser** parameters applied.



To view pivot data based on parameters defined by the **Fields Chooser**, use the **Pivot Chart** and **Pivot Grid** controls.

Calculated Fields

Use the **Calculated Fields** control to add new fields (columns) to *Pivot Data* by combining values from existing fields. The new field provides a means for you to run user-defined calculations after your KPI data has been retrieved, avoiding the need to create a new field in the source.

While this feature offers similar functionality to Excel, Pulse uses simple ***JavaScript*** functions to create the formulas for calculated fields. For syntax details, refer to the w3schools developer site:

String Functions: www.w3schools.com/jsref/jsref_obj_string.asp

Date Functions: www.w3schools.com/js/js_date_methods.asp

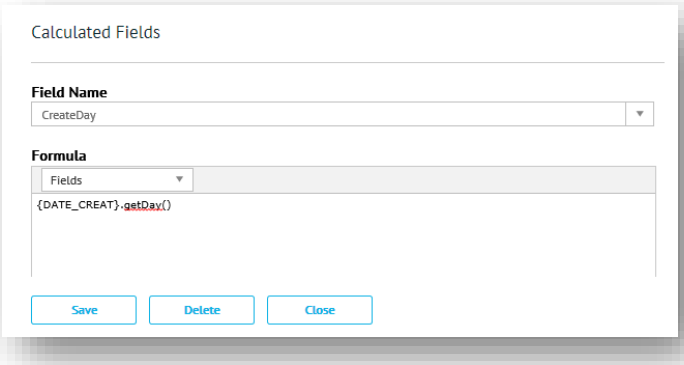
Math Functions: www.w3schools.com/js/js_math.asp

Creating a Calculated Field

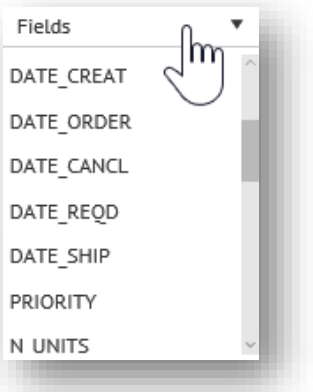
New calculated fields are named and defined for pivots via the **Calculated Fields** editor.

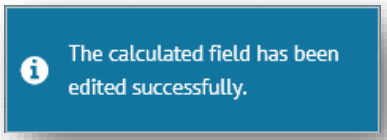
1. *Open a Pivot* to view all available fields (columns) under *Pivot Data*.
2. Select the **Calculated Fields** control on the **Tools** dropdown menu of the *Pivot Action Bar*.

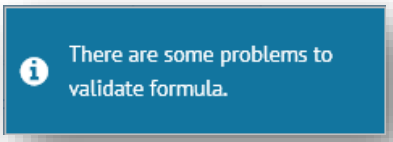
   This launches the **Calculated Fields** editor for creating the new field.
3. Enter a unique **Field Name** that best describes calculation result.



4. Enter a **Formula** using **Fields** selected from the dropdown list (illustrated on the right) along with any JavaScript functions and operators needed to create calculations for the new field.
5. When you are finished entering the formula, click **Save**. Pulse validates the syntax and then issues a popup message to indicate if the calculation is successful or if problems need to be corrected.

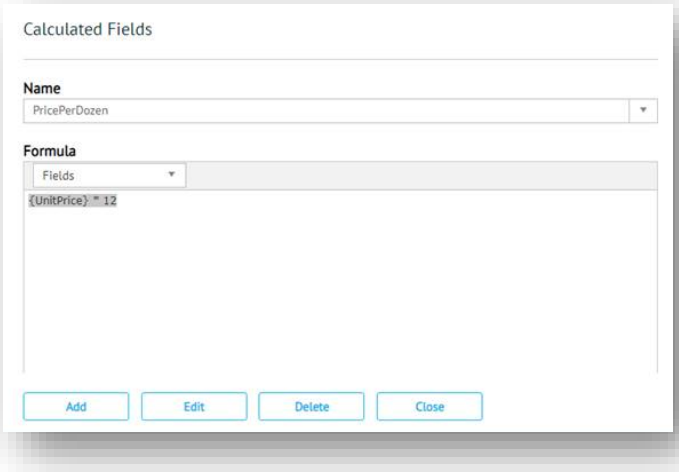




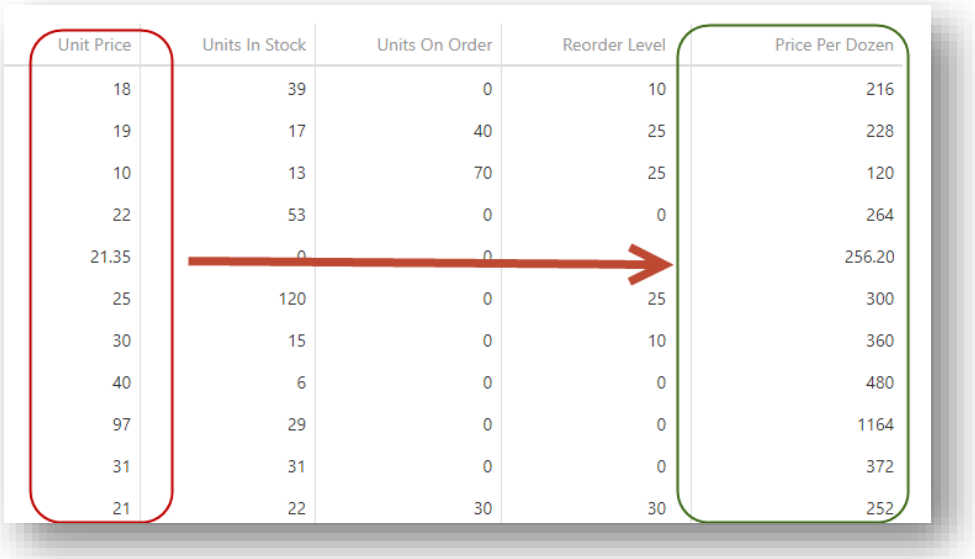


6. If the calculation is successful, click **Close**. The calculated field is added to the pivot to become the last column on the (*Pivot Data*) grid.

   Following is a simple example where the formula calculates a new **PricePerDozen** field based on the existing **UnitPrice** field.



   When the editor is closed, the calculated field is added to the pivot at the end of the (*Pivot Data*) grid.



Unit Price	Units In Stock	Units On Order	Reorder Level	Price Per Dozen
18	39	0	10	216
19	17	40	25	228
10	13	70	25	120
22	53	0	0	264
21.35	0	0		256.20
25	120	0	25	300
30	15	0	10	360
40	6	0	0	480
97	29	0	0	1164
31	31	0	0	372
21	22	30	30	252

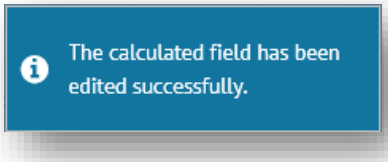
Changing or Deleting a Calculated Field

The **Calculated Fields** editor is also used to change or delete an existing calculated field.

1. Click the **Calculated Fields** control on the *Pivot Action Bar* to launch the **Calculated Fields** editor.
2. Use the dropdown control on the **Field Name** to select a previously created field, and then do one of the following:

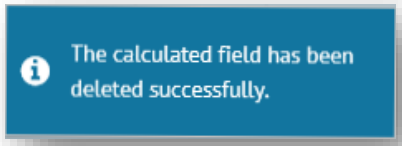
Edit the field …

Make any changes to the **Field Name** and/or **Formula** that may be required and click **Save** to validate the new syntax for the selected field.



Delete the field …

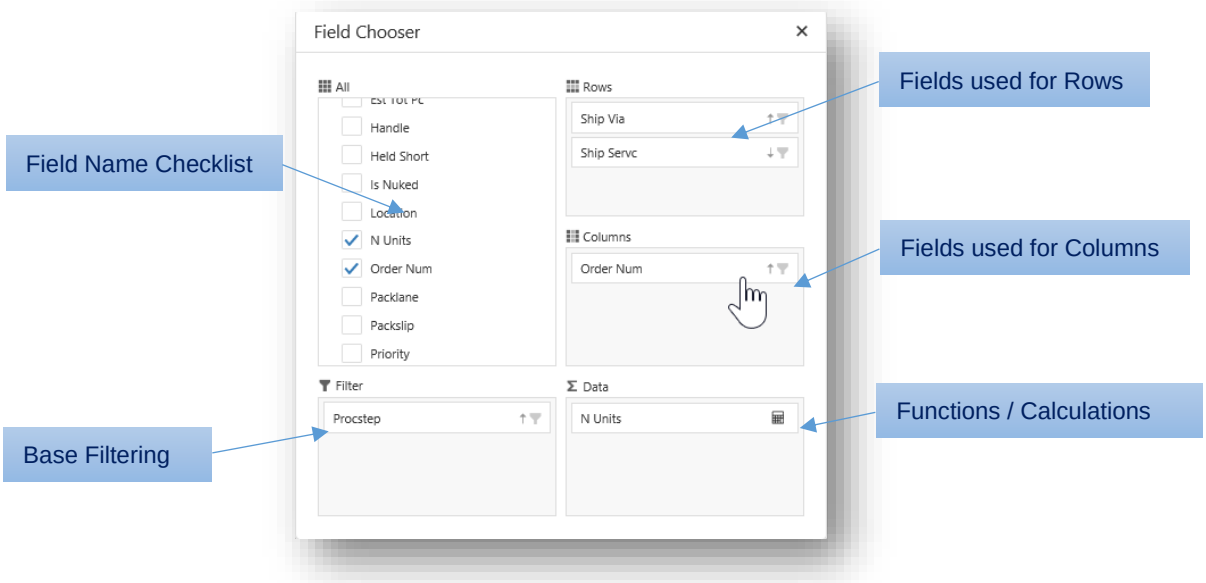
Click **Delete** to remove the selected field from the pivot.



4. Click **Close** to exit the **Calculated Fields** editor.
   Your changes will be reflected in the (*Pivot Data*) grid.

Field Chooser

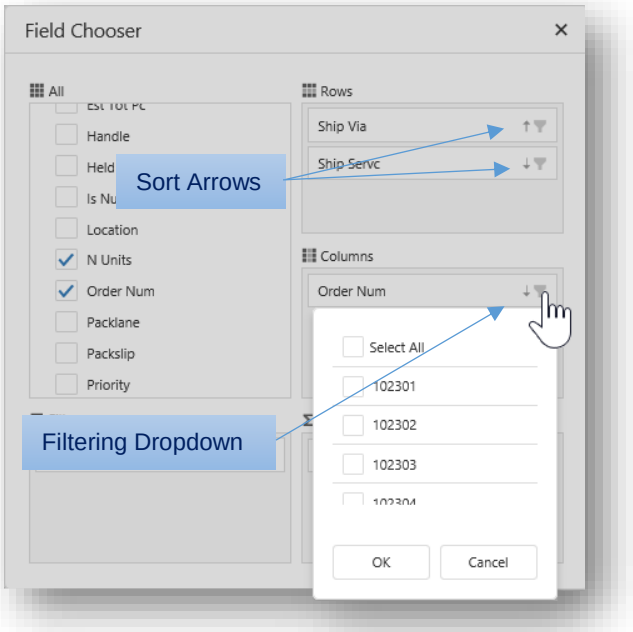
Selecting the **Field Chooser** control on the **Tools** dropdown menu of the *Pivot Action Bar* launches a dialog box for you to pick fields from your data source and set *Parameter Options* that will affect the contents and layout of results.



Double-click field names from the **All** checklist to assign them to the *Filter*, *Rows*, *Columns*, and *Data* parameters (described below). The changes you make in the **Field Chooser** dialog box will appear automatically in the *Pivot Grid* and *Pivot Chart*.

Parameter Options

- A check mark to the left of each field name in the **All** checklist indicates which fields are currently in use for pivot results.
- Double-clicking a field name from the checklist adds it to the **Columns** parameter by default.
- Simply *drag and drop* any field from any parameter box into another.
- Toggle the ↑ or ↓ icon next to the selected field to sort results in ascending/descending order.
- To set a filter within a selected field, click the ▼ dropdown control to include/exclude specific data items from the pivot display.
- To remove a field from the **Fields Chooser**, double-click to de-select the field name from the **All** checklist or drag the selected field name out of its current parameter box.



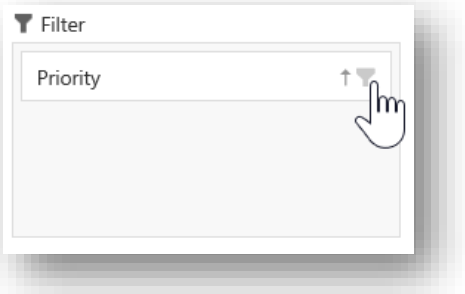
If no field names have been selected for any of these parameters, the **Pivot Chart** and **Pivot Grid** controls will display no data when you click on them.

Filter

The ▼ **Filter** parameter is used to apply *overall* pivot filtering based on the field(s) selected. Click the ▼ dropdown control next to the field name to include/exclude specific data items to set the filter.

For example, if you assign a **City** field to the ▼ **Filter** parameter and then select specific *cities*, no matter what **Rows** and **Columns** are applied, the results displayed must fall within those cities.

If the ▼ **Filter** parameter is left empty, filtering will be determined entirely by individual filters in the *Rows* and/or *Columns* parameters.



Rows

The **Rows** parameter determines the fields being used for the rows of the *Pivot Grid*. These fields are also used to populate the Y-axis in the *Pivot Chart*. After dropping a field into the parameter box, you can apply sorting, filtering and other *Parameter Options*.

If practical, multiple fields may be added to this parameter (in top-down priority); however, the more fields referenced, the more fractional your data may be. See *Field Hierarchy*, page 48.

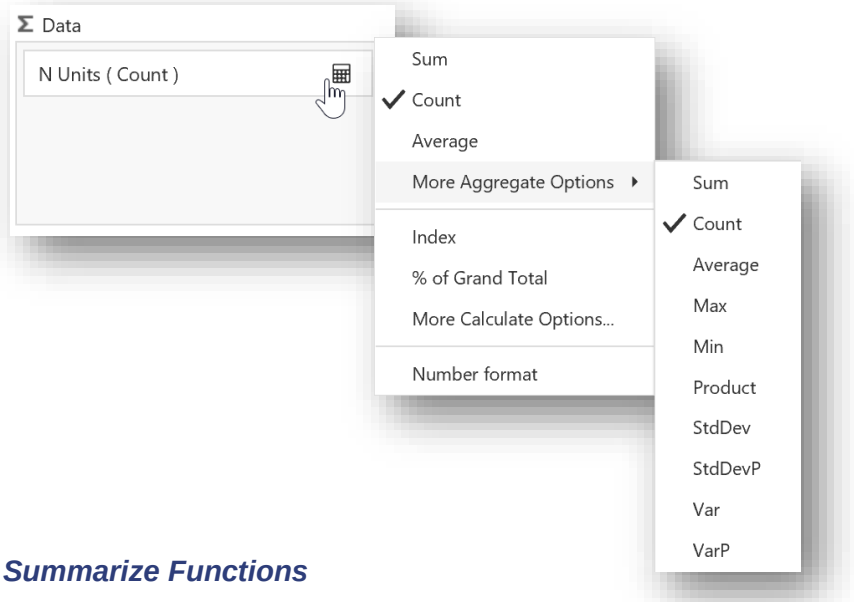
Columns

The **Columns** parameter determines the fields being used for column headers of the grid. These are also used to populate the X-axis in the *Pivot Chart*. After dropping a field into the parameter box, you can apply sorting, filtering and other *Parameter Options*.

If practical, multiple fields may be added to this parameter (in top-down priority); however, the more fields referenced, the more fractional your data may be. See *Field Hierarchy*, page 48.

Data

The Σ **Data** parameter determines which numeric values are reported (defined within column/row cells) and allows aggregate options to be defined for summarizing the values specified. Only numeric fields can be used for this purpose. Once the field name is placed in the **Data** parameter box, you can click the drop-down to access different summary functions and calculations.



Summarize Functions

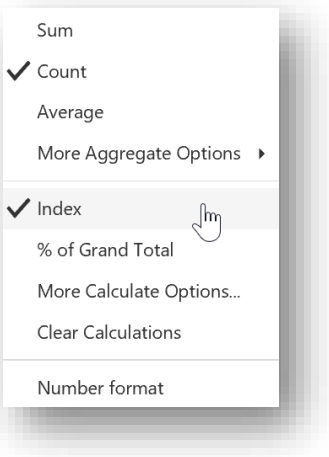
The functions located on the top half of the menu are used to summarize the data represented by the selected field. Each applies a different type of calculation to the Grand Total of columns and rows in the *Pivot Grid*. Note that the prefix to the field name indicates which function is currently in use, as illustrated by **N Units (Count)** above.

Click **More Aggregate Options** ▸ to display the expanded list of functions used to summarize the data, which includes **Sum**, **Count**, and **Average**. The aggregate options are described in the table below.

Aggregate Options

Function	Description
Sum	Calculates the sum of all the values. This is the default setting for fields with numeric fields.
Count	Counts the number of entries that include numeric values.
Average	Calculates the average of the values.
Max	Shows the largest value.
Min	Shows the smallest value.
Product	Shows the product of the values.
StDev	Estimates the standard deviation of a population, where the sample is a subset of the entire data population.
StDevp	Calculates the standard deviation of a population, where the population is all of the data to be summarized.
Var	Estimates the variance of a population, where the sample is a subset of the entire population.
Varp	Calculates the variance of a population, where the population is all of the data to be summarized.

Calculation Options



In addition to the *Aggregate Options*, further analytical calculations can be applied to the pivot. These calculation options typically perform mathematical operations that use the currently-applied function (described above) to summarize the data using values in other cells defined by fields in the **Data** parameter.

Index calculates values as an index where each index number represents its value's "importance" compared to other values. Each ranking uses the calculation: (value × grand total) / (row total × column total)

% of Grand Total displays values as a percentage of the grand total of all values in the report.

Clear Calculations displays the value that is entered in the field with no calculations.

Number Format

Click the **Number Format** option to format cells for the selected field name. You have the option to select the format to be used for general computations such as sum, average, min, max, and others.

Export Options

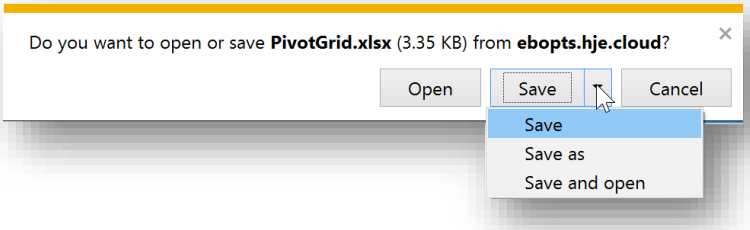
The following sections discuss options for exporting KPI data as an image, PDF or Excel file. Pivots can be exported from any display format (**Pivot Grid**, **Pivot Chart**, or **Pivot Data**) to any of the file types selected.

NOTE
Currently, there is no 'print' control for printing pivots directly from Pulse. If needed, you can print exported pivots locally once they are in an image, PDF or Excel file format.

To export the contents of an opened pivot to a local file:

1. Click **Export** on the *Pivot Action* Bar.
2. Select one of the options from the dropdown menu.

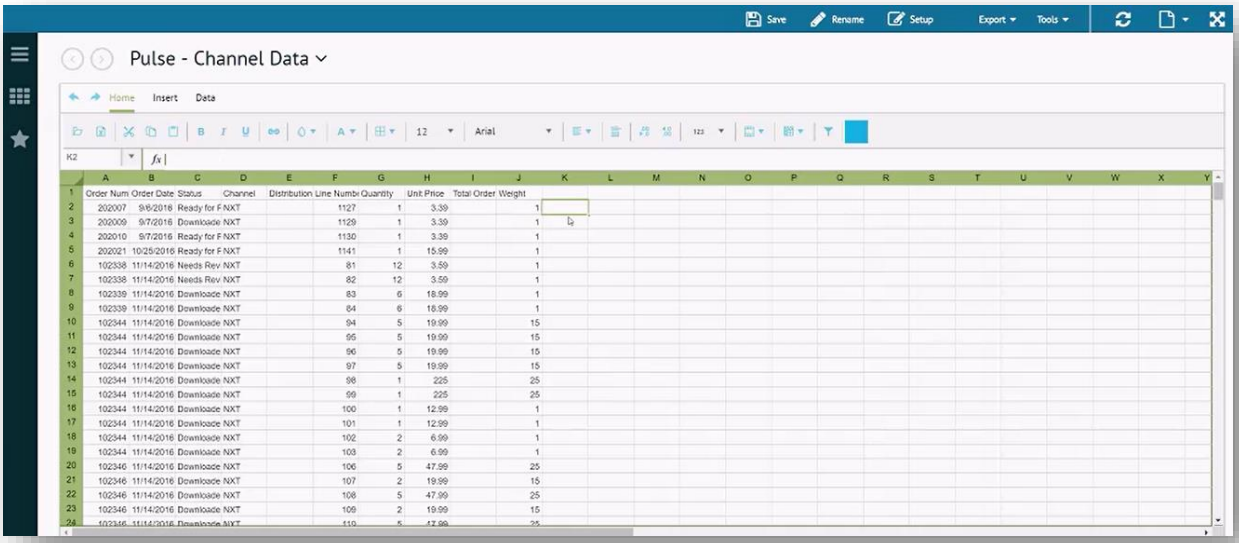
   Your browser may launch a dialog with options to **Open** and/or **Save** the generated file to a location of your choosing.



A message from your browser will indicate when the download has completed.

Spreadsheets

While *Dashboards* and *Pivots* offer functionality for exporting KPI results that can be edited in Excel, the Spreadsheets feature allows you to manipulate and format within Pulse itself. Data elements derived from your *KPIs* are loaded directly into a fully functional spreadsheet, which can then be manipulated using standard spreadsheet functions and formulas — if you know how to use Excel, you will have no trouble sorting, calculating, and formatting numbers and strings in a Pulse spreadsheet.

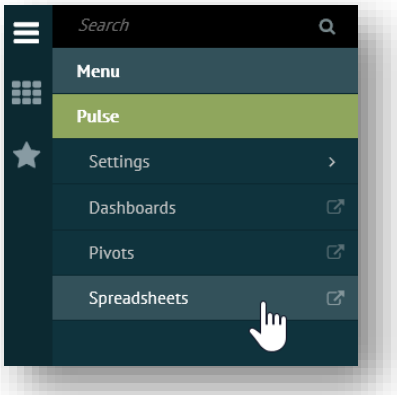


The following sections describe how to use this feature in Pulse.

- *Spreadsheets Start Page*, *below*
- *Open a Spreadsheet*, page 45
- *Create a Spreadsheet*, page 58
- *Spreadsheet Action Bar*, page 59
- *Worksheets*, page 60
- *File Management*, page 86

For documentation specific to the other application components in Pulse, see *Dashboards* on page 18, and *Pivots* on page 43.

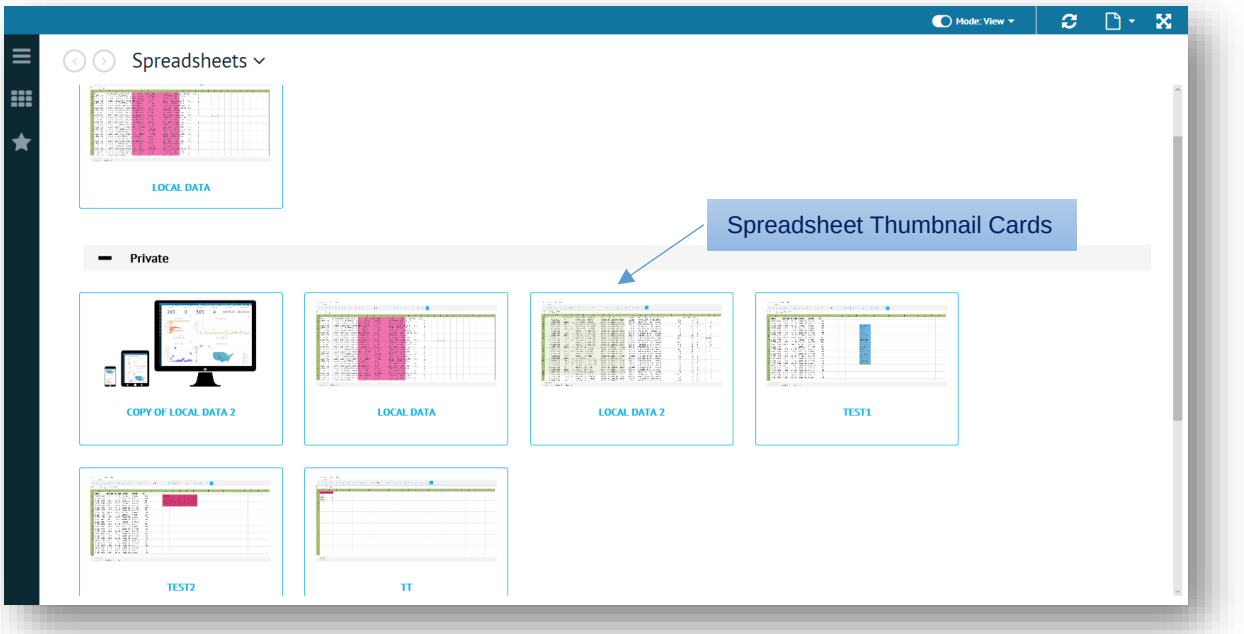
Spreadsheets Start Page



Pulse **Spreadsheets** start with a page listing all the private or shared spreadsheets to which you have access under your tenant.

To launch the start page, click **Pulse** > **Spreadsheets** via the Foundry ☰ **Menu**. If you visited the start page previously during your current Foundry session, you can also find a **Spreadsheets** link in the ⁞⁞⁞ **Spaces** menu.

The start page opens in the Foundry workspace under the **Spreadsheets** ⌄ page header. Spreadsheets can be organized as **Favorites**, **Private**, and **Shared**, as illustrated in the example below.



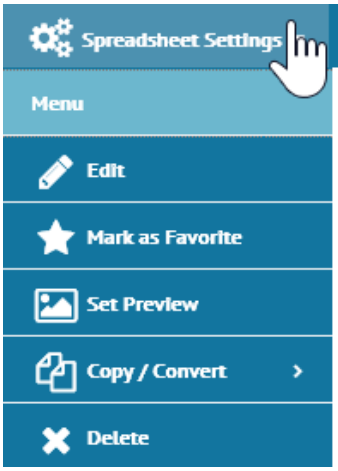
The **Spreadsheets** start page opens to a page of thumbnail cards, each of which can be used to *Open a Spreadsheet*. From the start page, you can also create, edit, remove, and share selected spreadsheets. Different start page functionality is available depending on if you are in **View** or **Edit** mode.

View Mode

If the **Mode** control on the start page is switched to **View**, you will be able to double click on a thumbnail card to select and *Open a Spreadsheet*.

Edit Mode

If the **Mode** control on the start page is switched to **Edit**, this gives you access to the **Add Spreadsheet** control to *Create a Spreadsheet*, or **Spreadsheet Settings** when you select a spreadsheet. (For documentation on editing the *contents* of a spreadsheet, see *Worksheets*, page 60.)



The following dropdown options are available under **Spreadsheet Settings**:

Edit Opens the **Spreadsheet Settings** dialog to change the title, thumbnail image, or filter associated with a selected spreadsheet.

Mark as Favorite / **Unmark as Favorite** Marks/unmarks selected spreadsheets as **Favorites** on the **Spreadsheets** start page.

Set Preview Sets spreadsheet thumbnail image based on a local file.

Copy/Convert Changes **Menu** to display copy and convert options based on the current status of the selected spreadsheet:

If Shared: **Copy to Private** places a copy of the spreadsheet under **Private** and **Convert to Private** changes its status from **Shared** to **Private**.

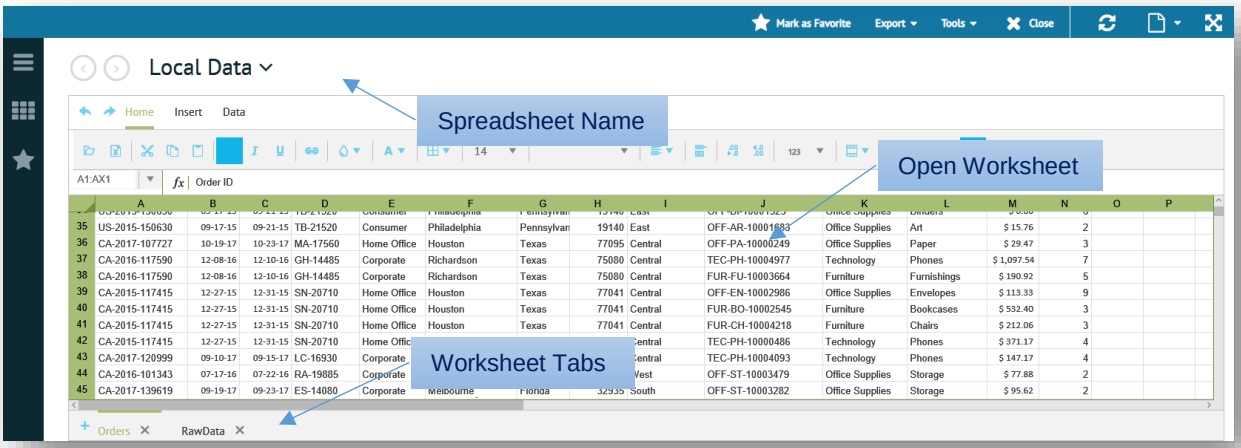
If Private: **Copy to Shared** places a copy of the spreadsheet under **Shared** and **Convert to Shared** changes its status from **Private** to **Shared**.

Click **Menu** to return to **Spreadsheet Settings**.

Delete Removes the selected spreadsheet from the start page.

Open a Spreadsheet

To open a spreadsheet, click on one of the thumbnails displayed on the *Spreadsheets Start Page*. The selected spreadsheet opens to display KPI results in one or more tabbed *worksheets*, with the data contained in 'cells' defined by lettered columns and numbered rows.



Pulse includes a menu of tools for you to design how each of the worksheets in a spreadsheet is to convey the information presented. Within each worksheet, you will be able to add, edit, or format text, numbers or formulas, as discussed under *Worksheets*, page 60.

TIP
Each spreadsheet you open adds a link to the *Spaces Menu*. Use this menu to keep multiple pages open (in a ready state) for quick access to the spreadsheets you need the most.

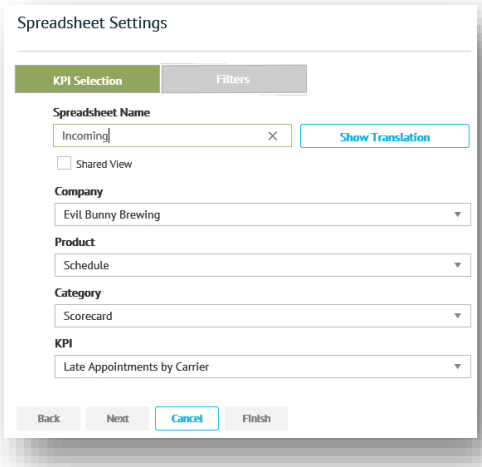
Create a Spreadsheet

The **+ Add Spreadsheet** control on the start page is used to create a new spreadsheet based on KPI criteria set up by your administrator, as described below. Depending on your *permission level*, you can also create new spreadsheet based on a **Copy**, as documented under **Spreadsheet Settings** (*Edit Mode*) on page 57.

Spreadsheet Settings

New spreadsheets are added and defined in the **Spreadsheets Settings** editor:

1. Ensure the **Mode** control on the *Spreadsheets Start Page* is switched to **View**.
2. Click **+ Add Spreadsheet** on the action bar. This launches the **Spreadsheet Settings** editor to set *KPI Selection* and filter options.



KPI Selection

3. Type in a unique **Spreadsheet Name**. The name entered here appears with the thumbnail image on the start page.
4. If the option is available, you may translate the **Spreadsheet Name** to another language. Click **Show Translation** to select from available *Translation Options*.

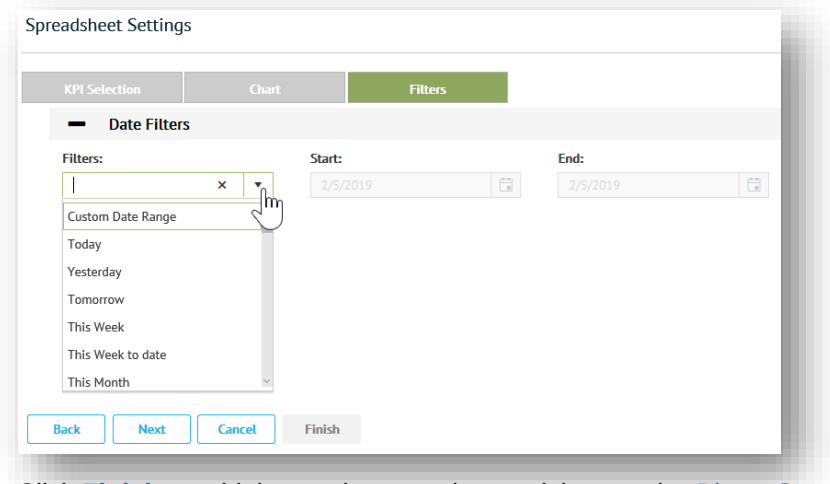
5. If the option is available, you can select **Shared View** to list the spreadsheet under **Shared**.
6. Select from the dropdowns for **Company**, **Product**, **Category**, and **KPI** fields.

   Field options are *cascading*, which means that the option you select in one field changes the list of options available in subsequent fields. If the KPI provides only one option for a field, then there is no dropdown and the field is filled in automatically.
7. Click **Next** to advance to the **Filters** tab.

Filters

8. If a **Filters** tab is present, fill in the required fields to determine which data is to be displayed in the pivot based on KPI results.

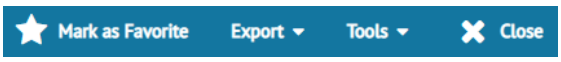
   Your system administrator establishes what can be filtered. For example, the KPI may allow you to set date ranges (**Today**, **This Week**, **Month to Date**, **Year to Date**, and so on) or choose a **Custom Date Range** to filter incoming data. Other options may include a checklist for adding/removing criteria.



9. Click **Finish** to add the newly created spreadsheet to the *Pivots Start Page*.

Spreadsheet Action Bar

When you *Open a Spreadsheet*, the action bar contains the following file management controls:



Mark as Favorite
Unmark as Favorite
Marks/unmarks the currently selected spreadsheet under **Favorites** on the *Pivots Start Page*.

Export Dropdown menu of controls to *Export to Excel* and *Export to PDF*.

Tools Dropdown menu of controls for spreadsheet maintenance and customization:

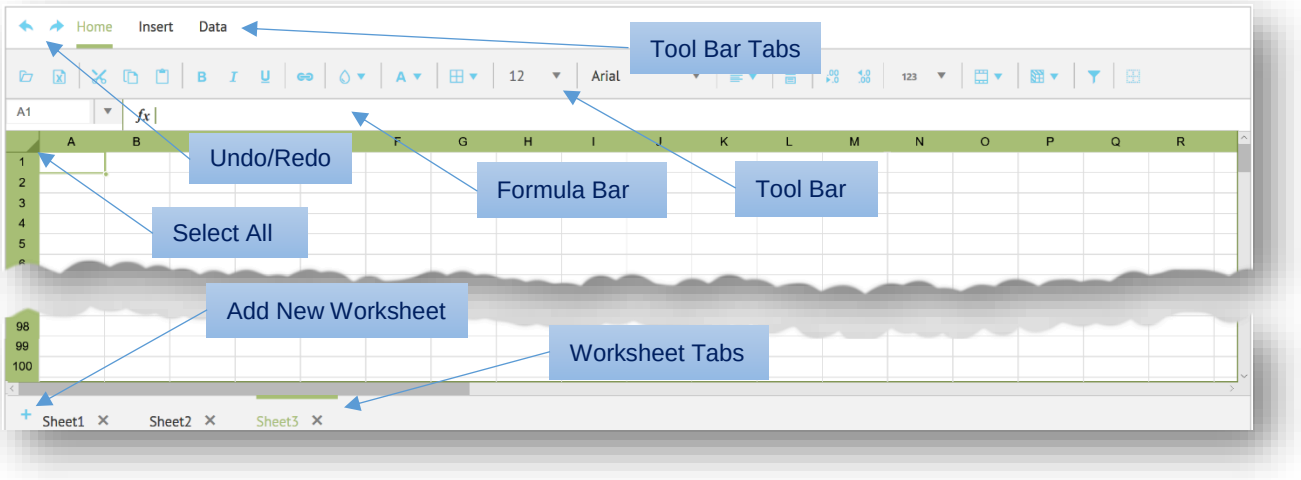
- **Save** saves changes to the pivot grid and chart layout
- **Set Preview** sets the current worksheet as the start page thumbnail.
- **Setup** accesses *KPI Selection* for modifying some spreadsheet settings.
- **Copy/Convert** options to copy/convert the spreadsheet depending on if it is private or shared, as described under the *start page* *Edit Mode*.

Close Closes the current spreadsheet, removes its link from the Foundry **Spaces** menu, and returns you to the *Spreadsheets Start Page*.

Controls for editing and formatting the *contents* of a spreadsheet are outlined under *Worksheets*, next.

Worksheets

Spreadsheets comprise one or more *worksheets* either generated via the source KPI or added later by a user. Each worksheet is equipped with the standard functionality to edit and visualize your data as found in Microsoft Excel.



To add a new (blank) worksheet, click the + control on the bottom left corner of the grid. Click on a worksheet tab to *open*, double click to *rename*, and click the ✕ control to *delete* specific worksheets.

This section provides a quick reference of worksheet functionality and describes the various tasks that you can perform with data contained when you *Open a Spreadsheet* in Pulse:

- *Implementation Notes*, below
- *Worksheet Tools*, page 61
- *Columns and Rows*, page 66
- *Formatting*, page 66
- *Sorting and Filtering*, page 70
- *Data Validation*, page 74
- *Formulas and Functions*, page 79

Pulse controls to save, copy, rename and export an opened spreadsheet are discussed previously under *Spreadsheet Action Bar* on page 59.

Implementation Notes

Most Excel-style functionality in Pulse Spreadsheets is intuitive by design. Some options are familiar and others may be handled differently in a browser based environment. Be aware that some Excel functionality will not be practical or fully supported due to the size of the incoming data. Refer to the notes below:

- Pulse supports universal spreadsheet functionality, matching the most commonly-used Excel functions, formulas and keyboard shortcuts.
- Equivalent Excel controls are invoked via the *Tool Bar*, *Dropdown Menus*, and *Shortcut Keys*, as described throughout this section.
- Some browsers may not support the **Copy**, **Cut** and **Paste** commands if selected from the tool bar or via the right-mouse click menu. If an error message occurs as a result, use *Shortcut Keys* instead.
- Depending on the browser, formulas that are too deeply nested may result in an error. Use a different method to avoid nesting values more than 100 levels deep.

Worksheet Tools

When you need to work with the contents of a worksheet, most of the functionality for adding, formatting and manipulating your data is accessible via the *Tool Bar*, *Dropdown Menus*, and *Shortcut Keys*.

Other familiar controls include:

Undo (Ctrl+Z) – Reverses the last action or deletes the last typed entry.

Redo (Ctrl+Y) – Repeats the last action if possible.

Select All – *Top left of grid*, selects every cell on the worksheet.

Add Worksheet – *Bottom left of grid*, adds a new blank worksheet to the spreadsheet.

Tool Bar

Tool bar controls are listed in the sections that follow. Most of the functionality described below will be familiar to anyone who uses Excel but for quick reference, simply hover over a control to see its description.

The *Home*, *Insert* or *Data* tabs are used to switch the list of tool bar controls according to functionality.

Home

Select **Home** to access general controls, primarily for use in *Formatting*.

Open – Launches a dialog for selecting an xlsx file to open in the spreadsheet from a local folder.

Export – Launches a dialog to export spreadsheet contents as an xlsx file to a local folder.

Cut (Ctrl+X) – Cuts selected cells from the spreadsheet and adds them to the clipboard.

Copy (Ctrl+C) – Copies selected cells from the spreadsheet and adds them to the clipboard.

Paste (Ctrl+V) – Pastes contents of the clipboard at your cursor location.

Bold – Bolds text within cells selected.

Italics – Italicizes text within cells selected.

Underline – Underlines text within cells selected.

Link – Launches a dialog to embed external xlsx content via hyperlink at the cursor location.

Background – Lists options to change background color of cells selected.

Text Color – Lists options to change text color of cells selected.

Borders – Lists options to change border lines (and color) of cells selected.

Font Size – Lists options to change font size for text within cells selected.

Font – Lists options to change font type for text within cells selected.

Alignment – Lists options to change the text alignment within cells selected.

Wrap Text – Toggles between wrapping and truncating text within cells selected.

Increase Decimal – Increases decimal places of numbers within cells selected.

Decrease Decimal – Decreases decimal places of numbers within cells selected.

Custom Format – Lists options to change format of data elements within cells selected.

Merge Cells – Lists options to merge cells selected.

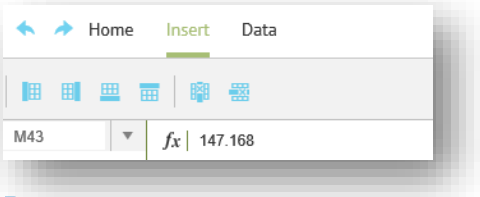
Freeze – Lists options to keep selected columns, rows, or cells in one place when scrolling.

Filter – Invokes filtering options for the column selected.

Toggle Gridlines – Toggles between showing/hiding spreadsheet gridlines.

Insert

Select **Insert** to access controls for adding/removing *Columns and Rows*.



Add Column Left – Inserts a new blank column to the left of the cell or column selected.

Add Column Right – Inserts a new blank column to the right of the cell or column selected.

Add Row Below – Inserts a new blank row immediately below the cell or column selected.

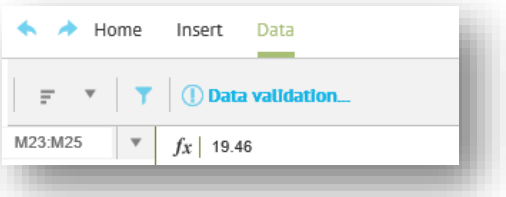
Add Row Above – Inserts a new blank row immediately above the cell or row selected.

Delete Column – Removes one or more columns at location where cells or columns are selected.

Delete Row – Removes one or more rows at location where cells or rows are selected.

Data

Select **Data** to access controls for organizing your data via *Sorting and Filtering* and controlling content via *Data Validation*:



Quick Sort – Lists options to sort the selected data based on the first column only.

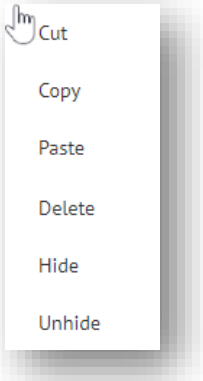
Filter – Launches a dialog to set more advanced sorting and filtering criteria.

Data validation... Launches a dialog to validation criteria on selected cells or columns.

Dropdown Menus

Depending on where you place your mouse pointer, you can right click for quick access to certain controls based on the location in the worksheet and the data selected.

Columns or Rows



Right click on column or row header to dropdown view options, described below.

Cut – Cuts entire column or row and adds them to the clipboard.

Copy – Copies entire column or row and adds them to the clipboard.

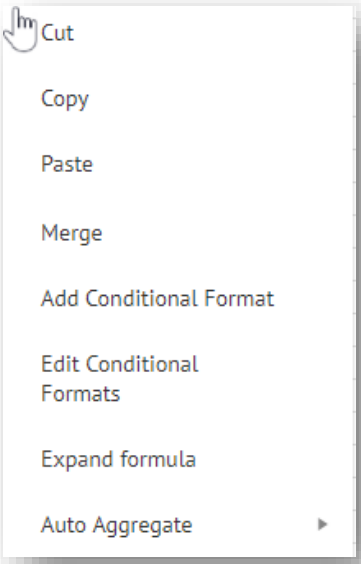
Paste – Pastes contents of the clipboard at your cursor location.

Delete – Deletes entire column or row from the worksheet.

Hide – Hides selected column or row.

Unhide – Restores hidden columns and rows. Click **Select All** (top left corner of the worksheet) prior to right-clicking column or row headers.

Cell Contents



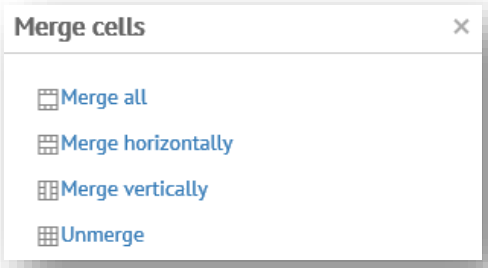
Right click on cells to view dropdown options, described below:

Cut – Cuts the contents of one or more selected cells and adds them to the clipboard.

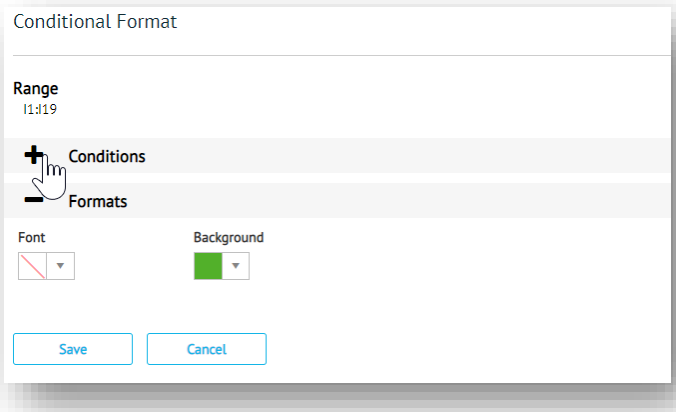
Copy – Copies the contents of one or more selected cells and adds them to the clipboard.

Paste – Pastes contents of the clipboard at your cursor location.

Merge – Launches the **Merge Cells** dialog to apply merge options.



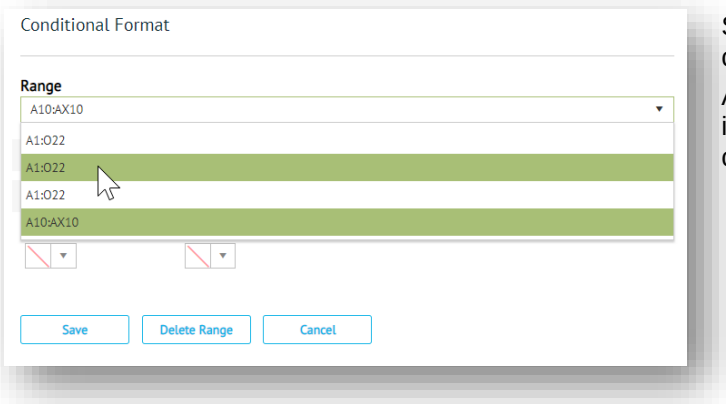
Add Conditional Format – Launches the **Conditional Format** dialog to apply automatic font and background color formatting to the selected cell range based on a set of conditions.



Select **Save** to activate the condition setting.

A pop up message will be displayed to indicate when the condition has been activated.

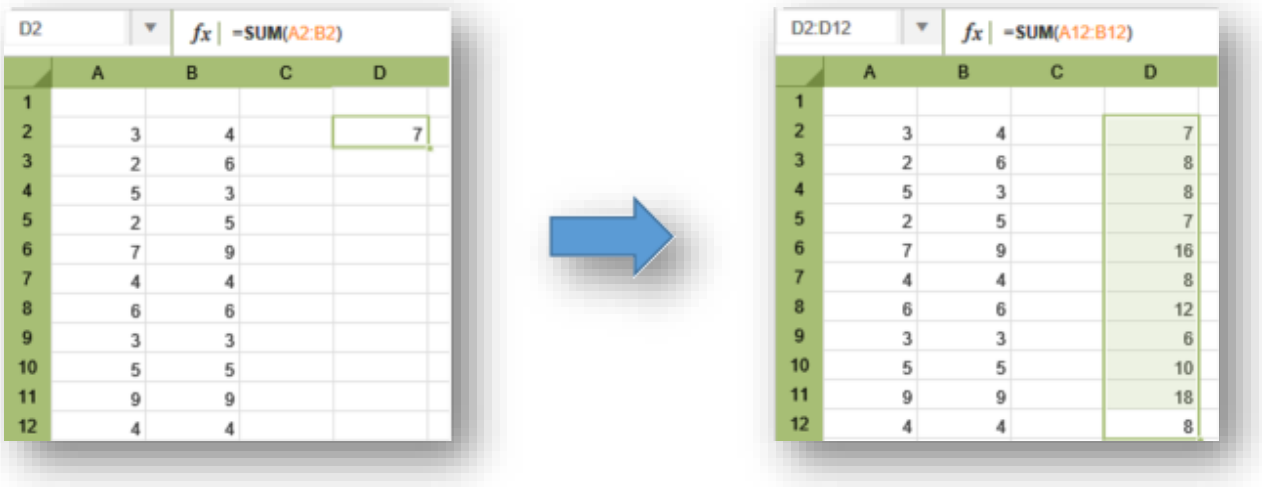
Edit Conditional Format – Launches the **Conditional Format** dialog to change or remove automatic conditional formatting on a selected cell ranges.



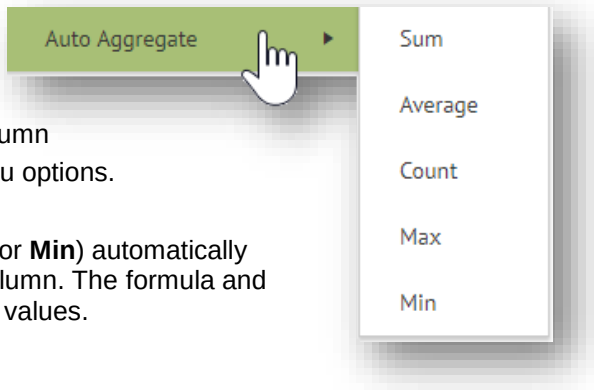
Select **Save** to activate changed or deleted condition settings

A toast message will be displayed to indicate when the condition has been changed or deleted.

Expand Formula –Copies the formula in the selected cell to all other cells in the same column, automatically adjusting the input references of adjacent cells.



Auto Aggregate – Invokes a dropdown list of function options that, when selected, will calculate numeric values in the current column.



1. Select any cell below a list of numeric values in a column
2. Right click and select **Auto Aggregate** from the menu options.
3. Click on a function from the dropdown list.

   The selected function (**Sum**, **Average**, **Count**, **Max**, or **Min**) automatically performs a calculation based on the values in that column. The formula and result is placed in the first empty cell below the list of values.

Shortcut Keys

Many of the actions you perform with a mouse may also be handled using your keyboard. Pulse spreadsheets support the following standard keyboard shortcuts:

Ctrl + **A**	Selects whole worksheet
Ctrl + **C**	Copies selected cells
Ctrl + **S**	Saves the active spreadsheet file
Ctrl + **V**	Inserts copied or cut cells to a selected location within the worksheet
Ctrl + **X**	Cuts selected cells
Ctrl + **Y**	Invokes Redo control, if possible, to repeat the previous action
Ctrl + **Z**	Invokes Undo control, if possible, to reverse the previous action
Ctrl + *selected cell*	Selects an adjacent or non adjacent cell
Shift + *selected cells*	Selects a range of adjacent cells.
Ctrl + *selected rows or columns*	Selects an adjacent or nonadjacent row or column.
Esc	Cancels an entry in a cell or in the formula bar.
Arrows	Move a cell up, down, left, or right in a worksheet.
Down Arrow **Up Arrow**	Selects the next or previous command when a menu or submenu is open. In a dialog box, the arrow keys move between options in a dropdown list, or between options in a group of options.
Ctrl + **Arrow**	Moves to the edge of the current data region of the worksheet.
Shift + **Arrow**	Selects (a range of) adjacent cells, rows, or columns, by extending the selection by one cell, row, or column.
Backspace	Removes all contents of a selected cell. When editing cell contents, it deletes characters to the left of the cursor. In the formula bar, it deletes characters to the left of the cursor.
Delete	Removes the contents of selected cells without affecting cell format. When editing cell contents, it deletes characters to the right of the cursor.
End	Moves to the last cell on the right of the currently selected row. In a menu or submenu, it selects the last command. In the formula bar, it moves the cursor to the end of the text.
Ctrl + **End**	Selects the last cell on a worksheet.
Ctrl + **Shift** + **Home**	Extends the selection of cells to the last cell on a worksheet.
Enter	Completes a cell entry from the cell or formula bar, and selects the cell below. In a dialog box, it performs the action for the default command button.
Esc	Cancels an entry in the cell or formula. Cancels and then closes an open menu, submenu, or dialog box.
Home	Moves to the first cell on the left of the currently selected row. In a menu or submenu, it selects the first command. In the formula bar, it moves the cursor to the beginning of the text.
Ctrl + **Home**	Selects the first cell on a worksheet.

Ctrl + **Shift** + **Home**	Extends the selection of cells to the first cell on a worksheet.
Page Down	Moves one screen down in a worksheet.
Page Up	Moves one screen up in a worksheet.
Spacebar	Inserts space at cursor location when editing contents of a cell or formula bar.
Tab	Moves one cell to the right. In a dialog box, it moves to the next option or option group. On the tool bar, it moves to the next control on the right. Within a selected range (cells, rows, or columns) it moves to the next cell.
Shift + **Tab**	Moves one cell to the left. In a dialog box, it moves to the previous option or option group. On the tool bar, it moves to the previous control on the left. Within a selected range (cells, rows, or columns) it moves to the previous cell.

Columns and Rows

Following are the basic methods to resize, insert or delete, and hide or unhide whole columns and rows in a worksheet.

Selecting Columns or Rows

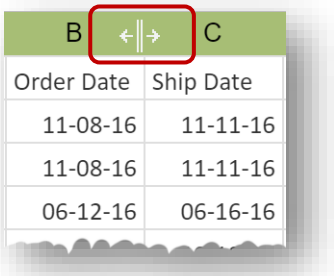
In the column/row header, click on the letter of the column or number of the row you want selected. This will highlight the entire row or column to indicate that it is now selected.

To select multiple adjacent columns or rows, drag the mouse pointer along the column/row header. To select nonadjacent columns or rows, press the **Ctrl** key and click on the letter of the columns or number of the rows you want selected. To select *all* columns and rows in a worksheet, click the **Select All** control.

Resizing a Column or Row

In the column/row header, hover your cursor at the line denoting the edge of the column or row until it changes to appear as illustrated below:

Columns



Rows

Drag the cursor left or right to change the width of the selected column. Drag the cursor up or down to change the height of the selected row.

Adding Columns or Rows

After *Selecting Columns or Rows*, select the column or row next to where want the new column or row, and then select the *Insert* tab on the *Tool Bar*. Click one of the following:

Columns	***Rows***
To insert on the left	*To insert below*
To insert on the right	*To insert above*

Deleting Columns or Rows

Select the column or row and then select the *Insert* tab on the *Tool Bar*. Click one of the following:

To delete a column *To delete a row*

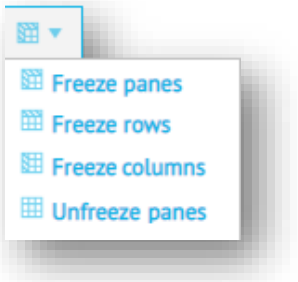
Another option for deleting is to right click on the column letter or row number and then select **Delete** from the menu options.

Hiding/Unhiding Columns or Rows

To hide, right click on the column letter or row number and then select the **Hide** menu option. To restore hidden columns or rows, click **Select All** (top left corner of the worksheet) prior to selecting the **Unhide** menu option. For further details, see *Dropdown Menus* on page 63.

Freezing a Column or Row

Select the column or row and then select the *Home* tab on the *Tool Bar*. Click and select from the dropdown options.

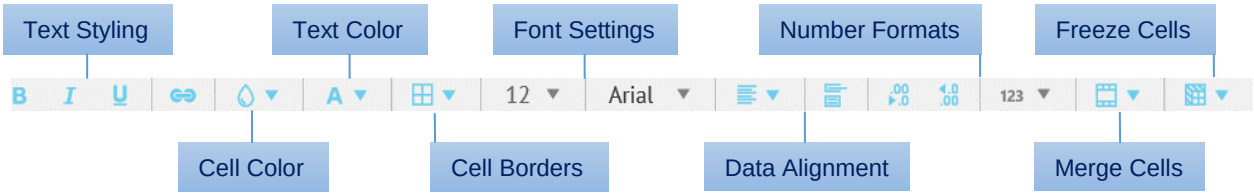


Freezing options allow you to keep selected data in the same place as you scroll through the rest of your worksheet.

For example, if your first row is used for column headings, freezing will keep the headings visible no matter how much data lies below. This is particularly useful when you have a long list of data in your worksheet and you need to differentiate columns near the bottom of the table.

Formatting

Formatting controls are available under the *Home* tab on the *Tool Bar*. Some of this functionality will be familiar to those with experience formatting data in Excel but for quick reference, simply hover over a control to see what it does.



Selecting Cells

Click to select a cell. For a range or block of cells, extend the selection by dragging the mouse pointer over adjacent cells. Press the **Ctrl** key to select multiple nonadjacent cells. To select all cells in a worksheet, click the **Select All** control.

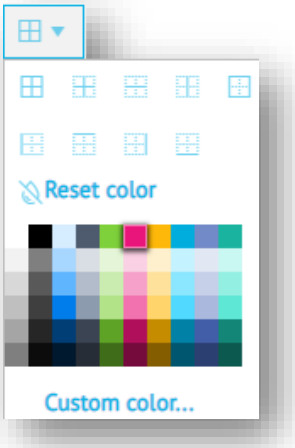
This highlights the cells to indicate that they are now selected.

Selecting a Cell for Editing

Double click to edit cell contents. This places the cursor inside the selected cell to allow editing.

NOTE
When a cell is *selected for editing*, **Copy** (Ctrl+C), **Cut** (Ctrl+X) and **Paste** (Ctrl+P) commands affect the *contents* of the cell and not the cell itself.

Adding Cell Borders

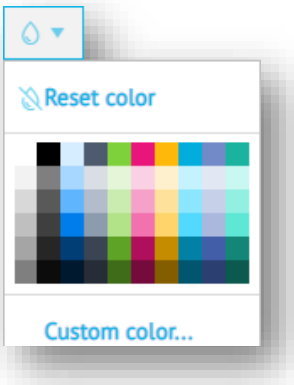


Select the cells, columns, or rows you want to modify, and then select the *Home* tab on the *Tool Bar*. Click ▼ and select a border style and color from the dropdown options. Click anywhere on the worksheet to exit the dropdown menu.

The **Reset Color** control changes the border color to black by default.

*To **remove a border***, reapply the border style using the method described above, and then change the color to white.

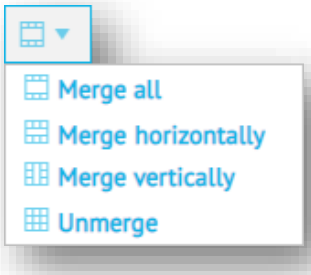
Adding Cell Background



Select the cells, columns, or rows you want to modify, and then select the *Home* tab on the *Tool Bar*. Click ▼ and select a color from the dropdown options. Click anywhere on the worksheet to exit the dropdown menu.

The **Reset Color** control changes the color to white by default.

Merging Cells



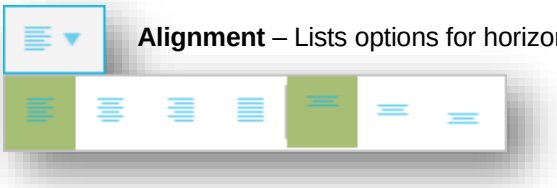
Select adjacent cells that you want to merge, and then select the *Home* tab on the *Tool Bar*. Click ▼ and select from the dropdown options. Alternately, you can right click on cells and select Merge from the dropdown options. Click anywhere on the worksheet to exit the dropdown menu.

When merging ***cells that contain data***, only the data in the first set of cells will be retained in the resulting merge.

Aligning Cell Data

Select the cells, columns, or rows that have data you want to modify, and then select the *Home* tab on the *Tool Bar*. Click one of the following controls:

Wrap Text – Toggles between wrapping and truncating text within the cells selected. See also, *Resizing a Column or Row*, page 66.



Alignment – Lists options for horizontal and vertical alignment of text within the cells selected.

Set a horizontal style (left, center, right, or justified) as well as a vertical style (top, middle, or bottom). Click anywhere on the worksheet to exit the dropdown menu.

Formatting Text

Select the cells, columns, or rows that have data you want to modify, and then select the *Home* tab on the *Tool Bar*. Click one of the following controls:

Bold – Bolds text within the cells selected.

Italics – Italicizes text within the cells selected.

Underline – Underlines text within the cells selected.

Text Color – Lists options to change text color within the cells selected.

Font Size – Lists options to change font size for text within the cells selected.

Font – Lists options to change font type for text within the cells selected.

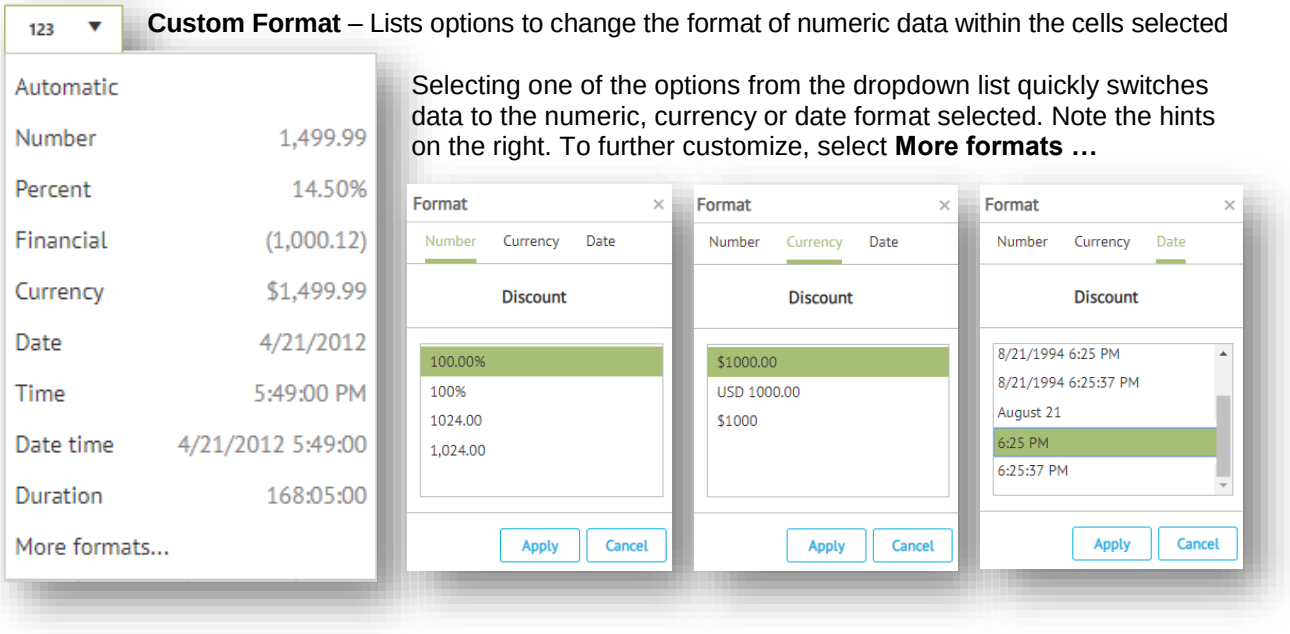
Formatting Numeric Data

Select the cells, columns, or rows that have data you want to modify, and then select the *Home* tab on the *Tool Bar*. Click one of the following controls:

Increase Decimal – Increases decimal places of numbers within the cells selected.

Decrease Decimal – Decreases decimal places of numbers within the cells selected.

Custom Format – Lists options to change the format of numeric data within the cells selected



Selecting one of the options from the dropdown list quickly switches data to the numeric, currency or date format selected. Note the hints on the right. To further customize, select **More formats …**

Sorting and Filtering

Following are the basic methods for reorganizing data in a worksheet. Click **Undo** (Ctrl+Z) if you need to reverse any *Sorting* or *Filtering* results.

Sorting

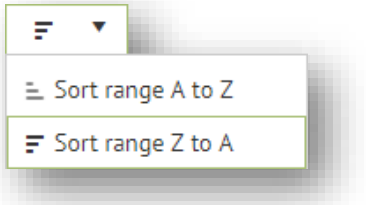
Sorting can be performed on an entire worksheet, a single column, or a range of cells. With Pulse spreadsheets, there are different methods to reorganize data depending on the type of sort you require.

On First Column

Use this type of sort to quickly reorganize selected data based on the order of cells in the *first column*. It can also be used to sort data in a single column.

To sort based on the first column:

1. Select a range of cells as described under *Selecting Cells*, or select a column as described under *Selecting Columns or Rows*.
2. Select the *Data* tab on the *Tool Bar*.
3. Click and then select from the dropdown options:



Sort range A to Z sorts the contents of selected cells in ascending order.

Sort range Z to A sorts the contents of selected cells in descending order.

If a range of cells is selected, this method reorganizes all selected data based on whatever is in the first column. If a column is selected, the data will be reorganized independent of any other data in the worksheet.

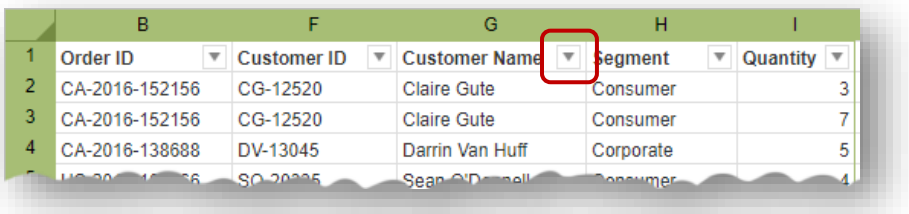
Note that this type of sort does not assume that the top row is a 'title' and therefore, the data in that row *will be included* in the reorganization.

On Any Column

This type of sort is applied using **Filter** control options, which allow you to reorganize selected data based on the order of cells in *any column* you choose.

To sort based on any column:

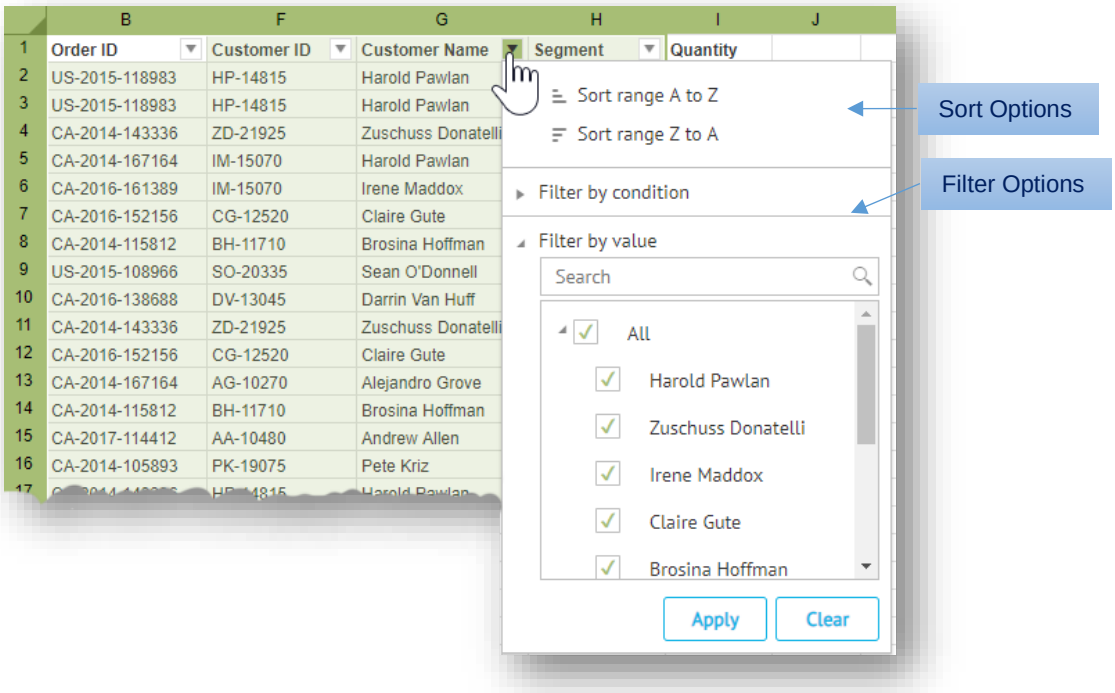
1. Select a range of cells as described under *Selecting Cells*, or select multiple columns as described under *Selecting Columns or Rows*.
2. Select the *Data* tab on the *Tool Bar*.
3. Click the control. The top row of the highlighted cells will be marked with symbols to indicate that those columns can be used for sorting or filtering.



	B	F	G	H	I
1	Order ID	Customer ID	Customer Name	Segment	Quantity
2	CA-2016-152156	CG-12520	Claire Gute	Consumer	3
3	CA-2016-152156	CG-12520	Claire Gute	Consumer	7
4	CA-2016-138688	DV-13045	Darrin Van Huff	Corporate	5

Note that this type of sort considers the top row of the data selected to be a 'title' and it is *not included* in the reorganization. Sorting only affects the cells starting below the rows that contain symbols, whether those cells are actual titles or not.

4. Click the ▼ symbol on the column you want to sort by. Column ‘ G ‘ is selected in the following example. This launches the filter/sort dropdown menu.



5. Select a sorting option from the top of the dropdown menu, where:

   Sort range A to Z sorts the contents of selected cells in ascending order.
   Sort range Z to A sorts the contents of selected cells in descending order.

   In the following example, the table from step 4 has been reorganized in ascending order based on the contents of Column G, **Customer Name**:

	B	F	G	H
1	Order ID	Customer ID	Customer Name	Segment
2	CA-2014-167164	AG-10270	Alejandro Grove	Consumer
3	CA-2017-114412	AA-10480	Andrew Allen	Consumer
4	CA-2014-115812	BH-11710	Brosina Hoffman	Consumer
5	CA-2014-115812	BH-11710	Brosina Hoffman	Consumer
6	CA-2016-152156	CG-12520	Claire Gute	Consumer
7	CA-2016-152156	CG-12520	Claire Gute	Consumer
8	CA-2016-138688	DV-13045	Darrin Van Huff	Corporate
9	CA-2014-143336	HP-14815	Harold Pawlan	Home Office
10	CA-2014-167164	IM-15070	Harold Pawlan	Home Office
11	US-2015-118983	HP-14815	Harold Pawlan	Home Office
12	US-2015-118983	HP-14815	Harold Pawlan	Home Office
13	CA-2016-161389	IM-15070	Irene Maddox	Consumer
14	CA-2014-105893	PK-19075	Pete Kriz	Consumer
15	US-2015-108966	SO-20335	Sean O'Donnell	Consumer
16	CA-2014-143336	ZD-21925	Zuschuss Donatelli	Consumer

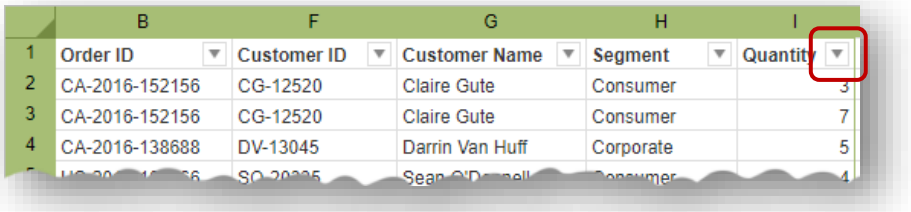
6. When you no longer require sorting options, click the control to remove ▼ symbols from the highlighted cells.

Filtering

Applying a filter in a worksheet narrows down the data within a range of cells to display only the information you need. This feature is useful for displaying a subset of data, particularly if your spreadsheet is very large, or designed to be repopulated on a regular basis via KPI mechanisms.

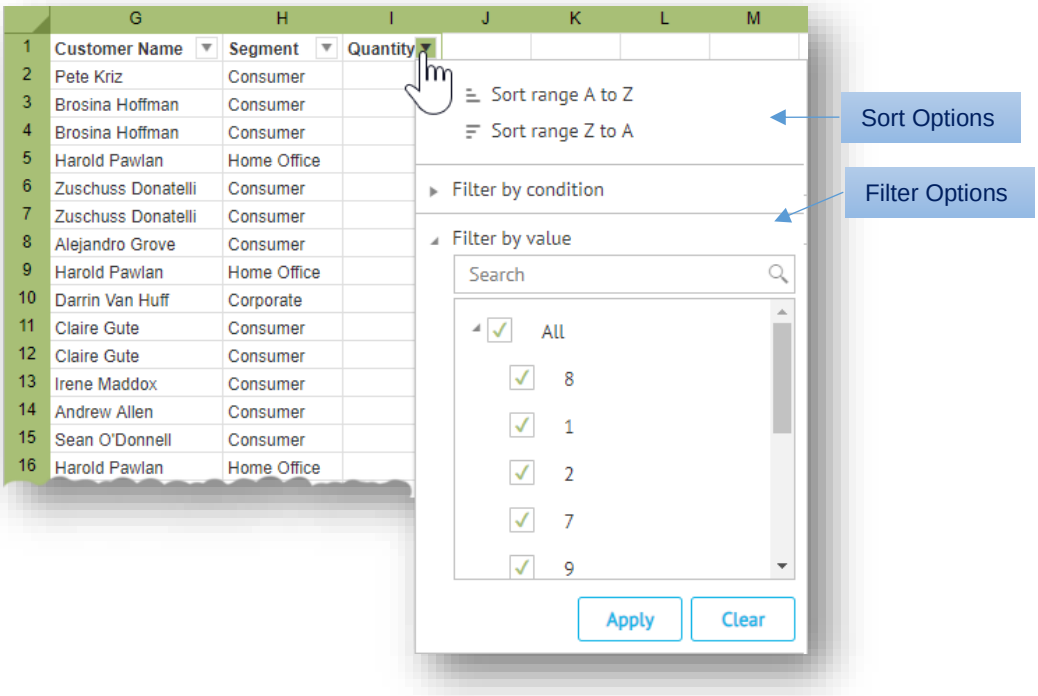
To filter a block of cells:

1. Select a range of cells as described under *Selecting Cells*, or select multiple columns as described under *Selecting Columns or Rows*.
2. Select the *Data* tab on the *Tool Bar*.
3. Click the ▼ control. The top row of the highlighted cells will be marked with ▼ symbols to indicate that those columns can be used for sorting or filtering.



	B	F	G	H	I
1	Order ID	Customer ID	Customer Name	Segment	Quantity
2	CA-2016-152156	CG-12520	Claire Gute	Consumer	3
3	CA-2016-152156	CG-12520	Claire Gute	Consumer	7
4	CA-2016-138688	DV-13045	Darrin Van Huff	Corporate	5

4. Click the ▼ symbol on the column you want to filter by. Column ‘ I ‘ is selected in the following example. This launches the filter/sort dropdown menu.



5. Select one of the following options to filter your selected data:

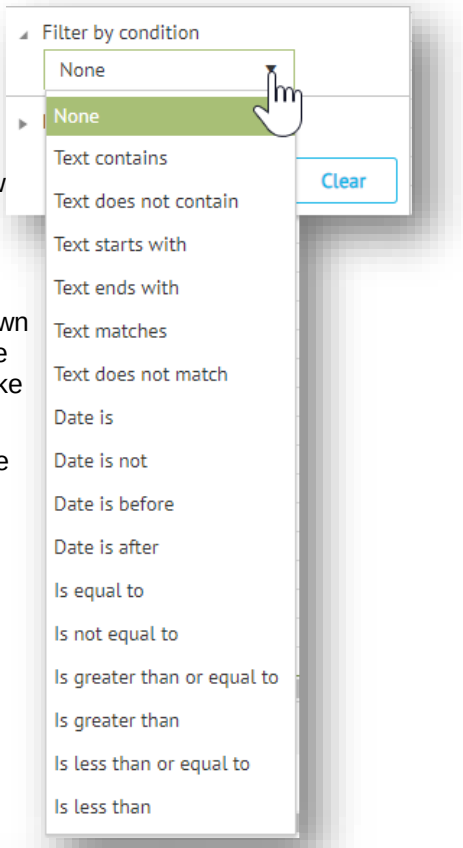
   Filter by Condition. Filters data elements based on one of several preset conditions.
   Filter by Value. Filters data elements based on a checklist of available values.

   The two methods of filtering are discussed in more detail at the end of this section.

6. Click **Apply** at the bottom of the dropdown menu to activate the filter. Once your filter is in place, only the rows that match the filter criteria will be displayed in the block of cells selected.
7. When filtering is complete, click the ▼ control to remove ▼ symbols from the highlighted cells.

   To *restore* filtered rows, click **Select All** followed by the ▼ control.

Filter by Condition



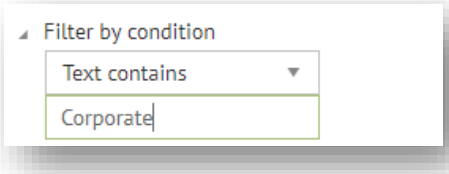
You can define filtering criteria based on conditions selected from a drop-down list of options that can be applied to either text, date, or numeric fields.

Text Fields. Choose any of the text based conditions from the drodow list and then fill in the text box to complete the filter criteria.
You can alphabetically sort the filter results by clicking **Sort range A to Z** or **Sort range Z to A** once the filter is in place.

Date Fields. Choose any of the date based conditions from the dropdown list and then fill in the text box to complete the filter criteria. Note that the date format may differ depending on the order of date components. Make sure you check the current format before applying this filter.

Numeric Fields. Choose any of the (**Is…**) numeric conditions from the dropdown list and then fill in the text box to complete the filter criteria.

Example: For the 'Segment' column, **Text contains** is the chosen condition with criteria in the text box set to 'Corporate'.

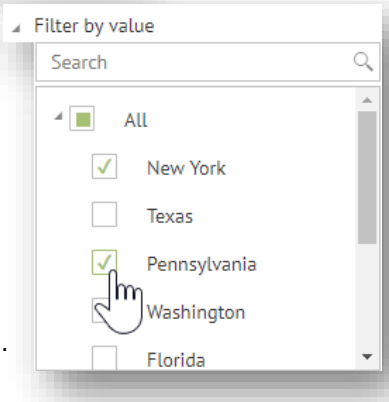


After clicking **Apply**, the resulting data displays only those rows with cells that contain 'Corporate':

	G	H	I
1	Customer Name	Segment	Quantity
2	Pete Kriz	Consumer	45
3	Brosina Hoffman	Consumer	1
4	Brosina Hoffman	Consumer	32
5	Harold Pawlan	Home Office	7
6	Zuschuss Donatelli	Consumer	21
7	Zuschuss Donatelli	Consumer	10
8	Alejandro Grove	Consumer	0
9	Harold Pawlan	Home Office	11
10	Darrin Van Huff	Corporate	33
11	Claire Gute	Consumer	28
12	Claire Gute	Consumer	61
13	Irene Maddox	Consumer	46
14	Andrew Allen	Consumer	32
15	Sean O'Donnell	Corporate	8
16	Harold Pawlan	Home Office	43
17	Harold Pawlan	Home Office	23

	G	H	I
1	Customer Name	Segment	Quantity
10	Darrin Van Huff	Corporate	33
15	Sean O'Donnell	Corporate	8

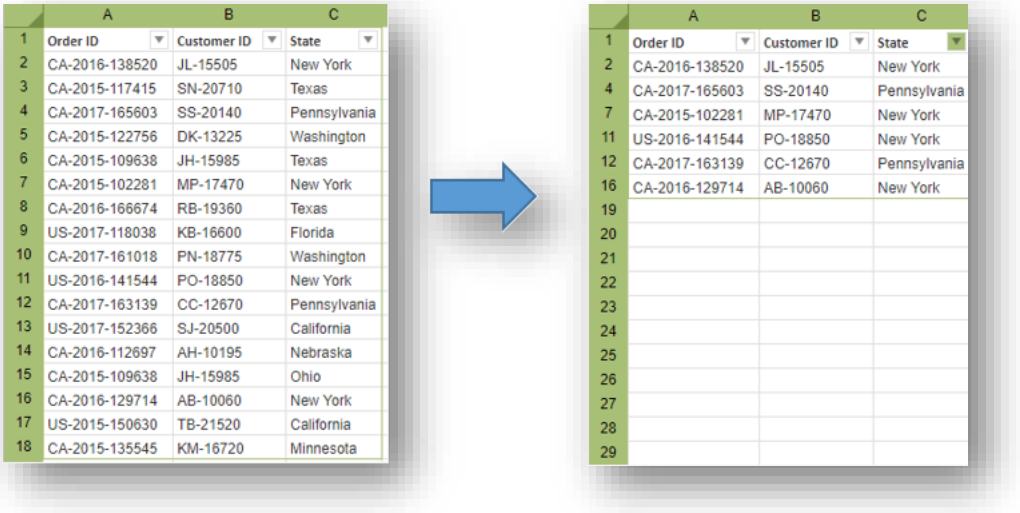
Filter by Value



You can define filtering criteria by selecting/deselecting from a checklist of column data elements.

- Each checkbox represents a value that exists one or more times in the column selected.
- Only the checkboxes selected will display rows in the filter results.
- Deselecting **All** clears all checkboxes and removes all rows from the filter results.
- Selecting **All** selects all checkboxes and displays all rows as a result.

Example: For the 'State' column, only the 'New York' and 'Pennsylvania' checkboxes are selected. After clicking **Apply**, the resulting data displays only those rows with cells that contain those two states:



	A	B	C
1	Order ID	Customer ID	State
2	CA-2016-138520	JL-15505	New York
3	CA-2015-117415	SN-20710	Texas
4	CA-2017-165603	SS-20140	Pennsylvania
5	CA-2015-122756	DK-13225	Washington
6	CA-2015-109638	JH-15985	Texas
7	CA-2015-102281	MP-17470	New York
8	CA-2016-166674	RB-19360	Texas
9	US-2017-118038	KB-16600	Florida
10	CA-2017-161018	PN-18775	Washington
11	US-2016-141544	PO-18850	New York
12	CA-2017-163139	CC-12670	Pennsylvania
13	US-2017-152366	SJ-20500	California
14	CA-2016-112697	AH-10195	Nebraska
15	CA-2015-109638	JH-15985	Ohio
16	CA-2016-129714	AB-10060	New York
17	US-2015-150630	TB-21520	California
18	CA-2015-135545	KM-16720	Minnesota

	A	B	C
1	Order ID	Customer ID	State
2	CA-2016-138520	JL-15505	New York
4	CA-2017-165603	SS-20140	Pennsylvania
7	CA-2015-102281	MP-17470	New York
11	US-2016-141544	PO-18850	New York
12	CA-2017-163139	CC-12670	Pennsylvania
16	CA-2016-129714	AB-10060	New York

Data Validation

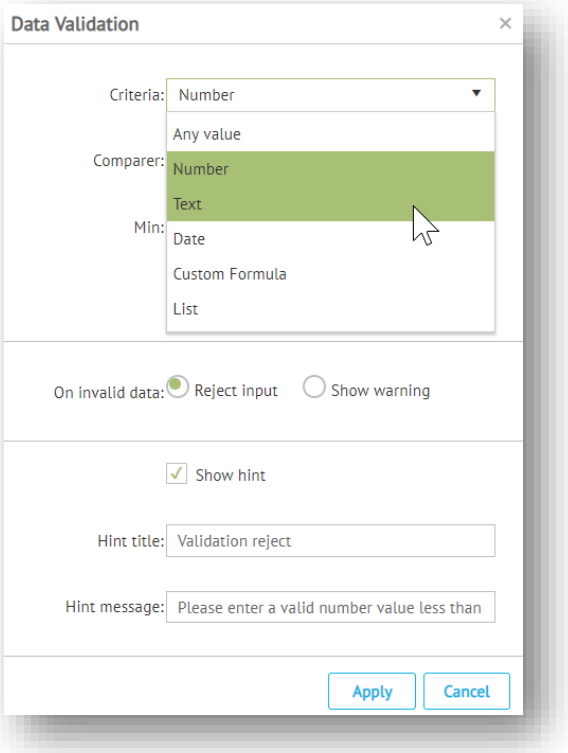
Data validation allows you to regulate which data is to be permitted for entry in selected cells, columns, or rows. Depending on your requirements, you can:

- Restrict entries to a certain set of values
- Configure data validation so users can choose values from a dropdown list of preset options
- Create custom validation rules using spreadsheet formulas
- Provide hints to notify users upon the entry of invalid data
- Copy and paste data validation from any cell into another.

Setting Validation

To set data validation in Pulse spreadsheets:

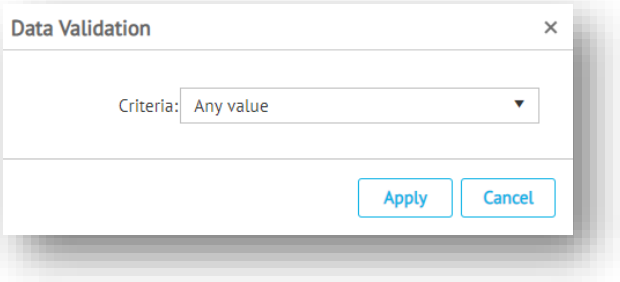
1. Select one or more cells as described under *Selecting Cells*, or select entire columns as described under *Selecting Columns or Rows*.
2. Select the *Data* tab on the *Tool Bar*.
3. Click **Data validation...** to launch the **Data Validation** editor.
4. Choose one of the options from the **Criteria** dropdown, as explained under *Validation Criteria* on page 75.
5. Select **Ignore Blank** if you want to evaluate cells that only contain data.
6. Select one of the two **On invalid data** options.
7. Select **Show Hint** and complete the hint fields if you want to write your own error message.
8. Click **Apply** to activate validation on the cells or column selected.



Validation Criteria and *Changing/Removing Validation* are documented in the sections that follow.

Validation Criteria

When *Setting Validation*, initial criteria defaults to **Any Value**, which means that no validation will be applied to the selected cells unless you select an option in the **Criteria** field.



Data validation can be based on *Number*, *Text*, *Date*, *Custom Formula*, or *List* criteria.

When you select one of these options, the following fields and check boxes in the **Data Validation** editor will change to accommodate rules associated with the criteria selected, as explained below.

Field Descriptions

Field	Description
Criteria	Dropdown options to determine the validation criteria applied, and subsequent fields to be displayed in the **Data Validation** editor: *Any Value* – No validation criteria applied (default) *Number* – Numeric value criteria *Text* – Alphanumeric value criteria *Date* – Date value criteria *Custom Formula* – Criteria based on customized spreadsheet formula *List* – Criteria selected from a list, either cell reference or built in array.
Comparer	**Number**, **Text**, *or* **Date** *only* – Dropdown options of relational operators used to build a compare statement against the contents of cell(s) selected.
Min / Max	**Number** *only* – Numeric values used in the compare statement. **Max** field is only required for 'between/not between' **Comparer** options.
Value	**Text** *only* – Alphanumeric value (in double quotes). **Custom Formula** *only* – Statement built using formula syntax (no equal sign) **List** *only* – Value(s) selected from cell reference or built in array.
Start / End	***Date*** *only* – Date values used in the compare statement, format 'mm/dd/yyyy' or 'DATEVALUE("mm/dd/yyyy")'. **End** field is only required for 'between/not between' **Comparer** options.
Ignore Blank	Checkbox to indicate that validation will not apply to empty cells.
On Invalid Data	Radio buttons to determine how invalid data is to be handled, where **Reject Input** does not allow entry of invalid data **Show Warning** allows entry of invalid data but 'red flags' the cells
Show Hint	Checkbox to display *user-defined* hint message upon entry of invalid data, using the contents of **Hint Title** and **Hint Message** fields.
Hint Title	Title of popup message.
Hint Message	Contents of popup message.

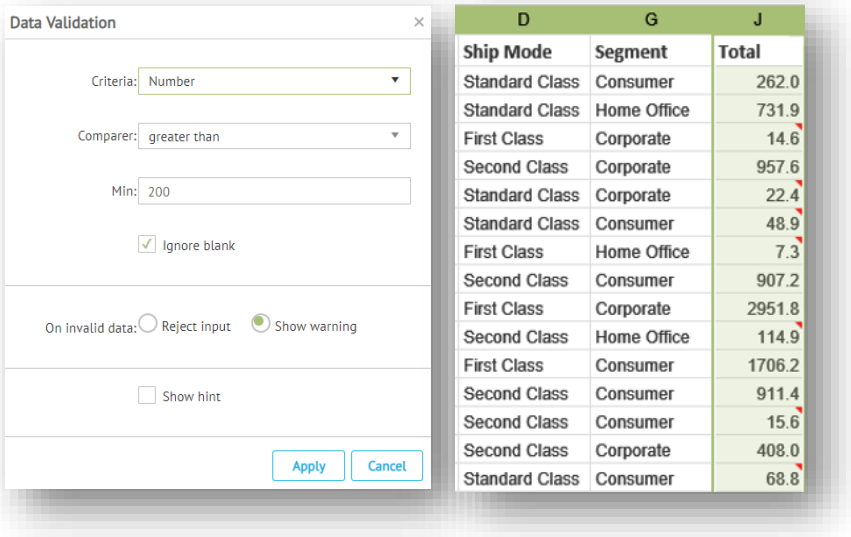
TIP
Data Validation can be copied (like a formula) by copying the cell to the new location. Cell references in the validation criteria for **Custom Formula** and **List** criteria adjust automatically to the location of new cells unless you change them to *absolute* references.

Number

If **Number** is chosen in the **Criteria** field, the validation statement can be set up to compare against a single numeric value, or between two numeric values.

In this example, **Data Validation** automatically checks against a value *greater than* 200 on data selected in column **J**.

Because **Show Warning** has been selected for handling invalid data, this results in a 'red flag' on all the values in the column that are under 200.

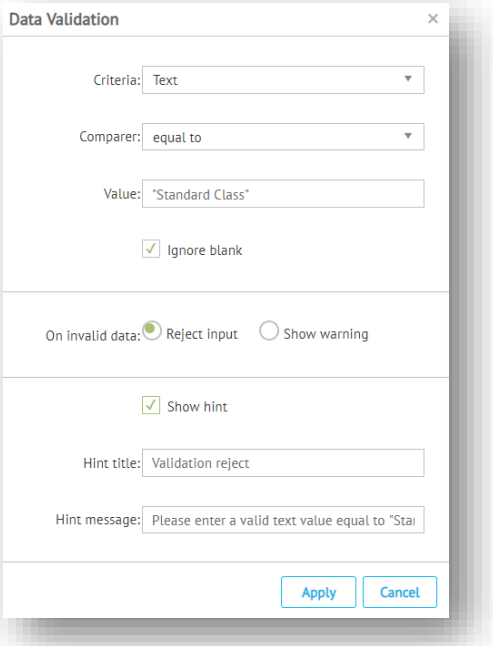


D	G	J
Ship Mode	Segment	Total
Standard Class	Consumer	262.0
Standard Class	Home Office	731.9
First Class	Corporate	14.6
Second Class	Corporate	957.6
Standard Class	Corporate	22.4
Standard Class	Consumer	48.9
First Class	Home Office	7.3
Second Class	Consumer	907.2
First Class	Corporate	2951.8
Second Class	Home Office	114.9
First Class	Consumer	1706.2
Second Class	Consumer	911.4
Second Class	Consumer	15.6
Second Class	Corporate	408.0
Standard Class	Consumer	68.8

Text

If **Text** is chosen in the **Criteria** field the validation statement compares against an alphanumeric value, which must be defined in *double quotes*.

In this example, **Data Validation** automatically checks against a text value *equal to* "Standard Class" on data selected in column **C**.



B	C	D	E
Order ID	Ship Mode	Customer ID	Customer Name
US-2015-108966	Standard Class	SO-20335	Sean O'Donnell
US-2015-108966	Standard Class	SO-20335	Sean O'Donnell
CA-2014-115812	Standard Class	BH-11710	Brosina Hoffman
CA-2014-115812	First Class	BH-11710	Brosina Hoffman
CA-2014-115812	Standard Class	BH-11710	Brosina Hoffman
CA-2014-115812	Standard C		
CA-2014-115812	Standard C		
CA-2014-115812	Standard C		
CA-2014-115812	Standard C		
CA-2017-114412	Standard C		
CA-2016-161389	Standard C		
US-2015-118983	Standard Class	HP-14815	Harold Pawlan

Validation reject

Please enter a valid text value equal to Standard Class.

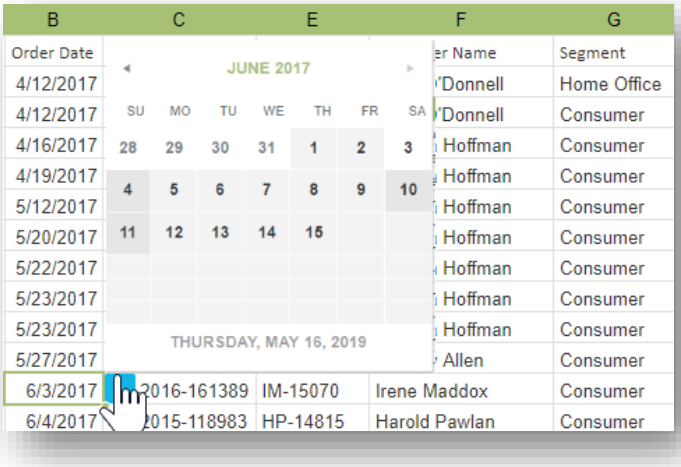
Retry Cancel

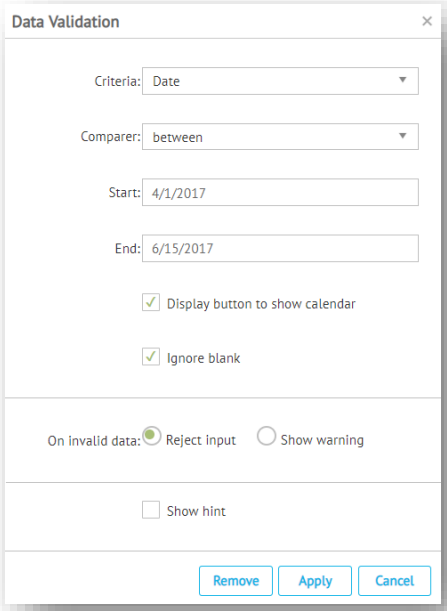
Because **Reject Input** has been selected for handling invalid data, this results in a popup message, preventing any attempt to enter a text value other than "Standard Class". Also, because the **Show Hint** option has been selected, the associated hint message "Validation reject" displays in place of the generic error message

Date

If **Date** is chosen in the **Criteria** field, the validation statement can be set up to compare against date values , which must be defined using the format 'mm/dd/yyyy' or 'DATEVALUE("mm/dd/yyyy")'.

In this example, **Data Validation** automatically checks against a date value *between two dates* on data selected in column **B**.



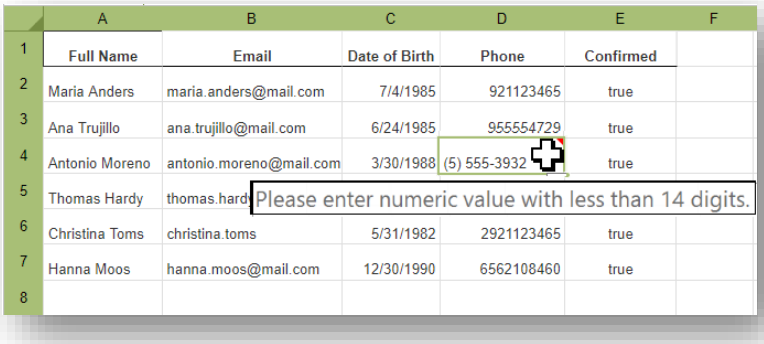


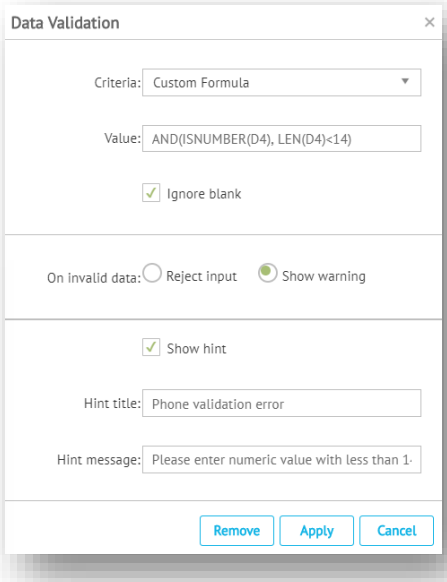
Because the **Display button to show calendar** option was set in the validation criteria, dates can be selected using the built in popup calendar (shown above). Also, because **Reject Input** has been selected for handling invalid data, the calendar will not display months that are outside of the validation date range.

Custom Formula

If **Custom Formula** is chosen in the **Criteria** field, the validation statement can be customized using spreadsheet *Formulas and Functions*, as described on page 78. *Note that data validation syntax does not use the equal sign for custom formulas.*

In this example, **Data Validation** uses the custom formula 'AND(ISNUMBER(D4), LEN(D4)<14)' to automatically check that the value in cell D4 is a numeric less than 14 digits.





Because **Show Warning** has been selected for handling invalid data, this results in a 'red flag' on the selected cell. Also, because the **Show Hint** option has been selected, the associated hint message displays when you hover your mouse over the flagged cell.

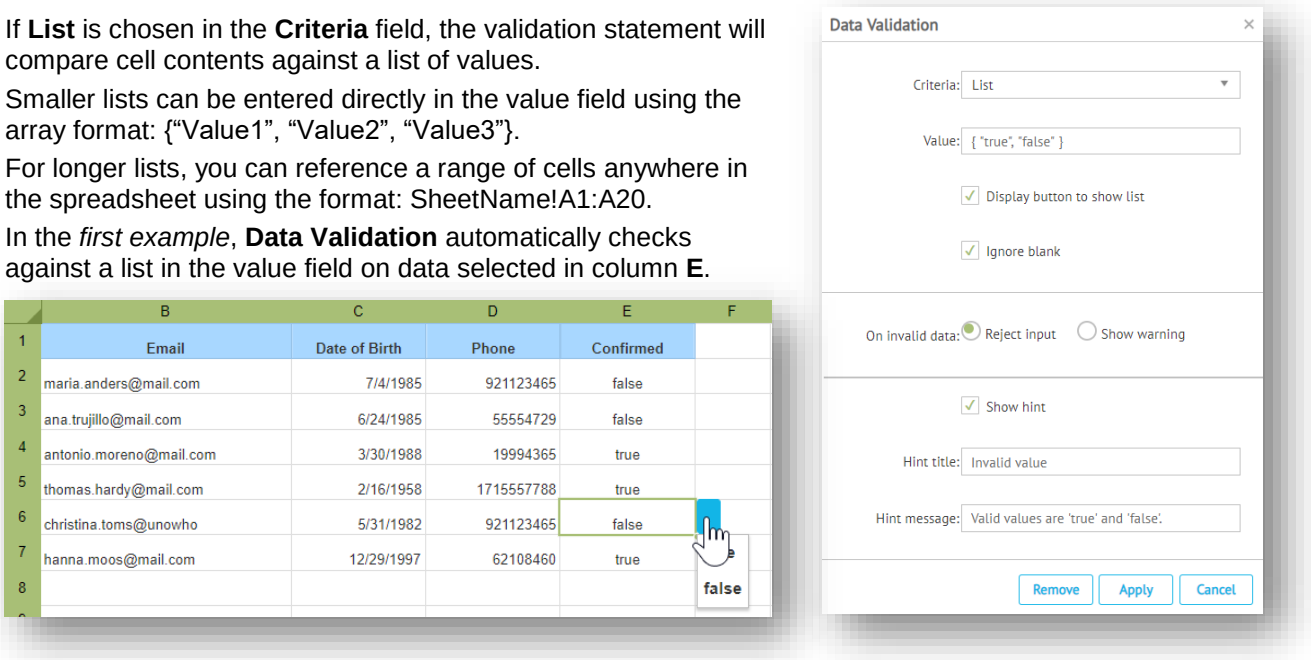
List

If **List** is chosen in the **Criteria** field, the validation statement will compare cell contents against a list of values.

Smaller lists can be entered directly in the value field using the array format: {“Value1”, “Value2”, “Value3”}.

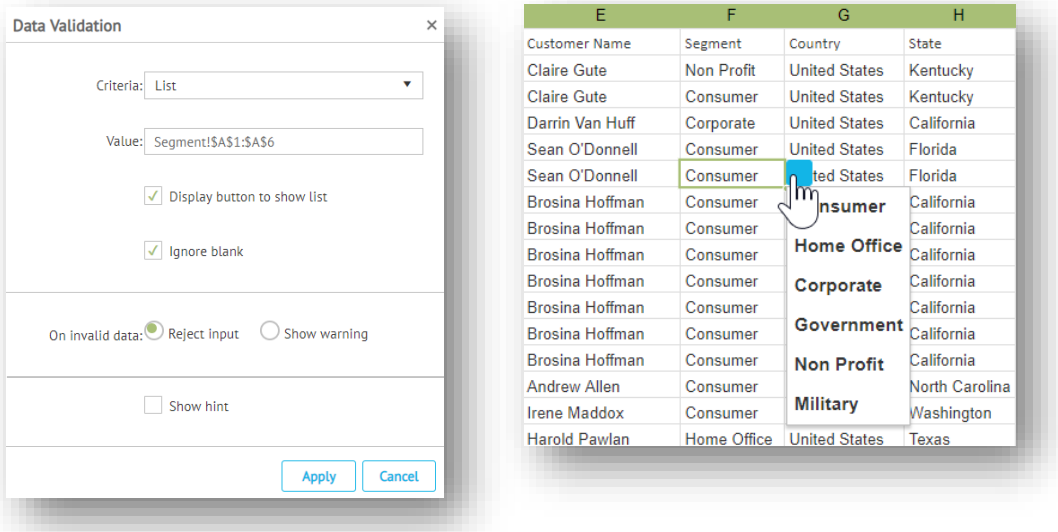
For longer lists, you can reference a range of cells anywhere in the spreadsheet using the format: SheetName!A1:A20.

In the *first example*, **Data Validation** automatically checks against a list in the value field on data selected in column **E**.



Because **Display button to show list** was set in the validation criteria, the options ‘true’ or ‘false’ can be selected from a dropdown list.

In the *second example*, **Data Validation** automatically checks against values defined in a range of cells on data selected in column **F**.



Because **Display button to show list** was set in the validation criteria, six options (contents of the cell range in the ‘Segment’ worksheet) can be selected from a dropdown list.

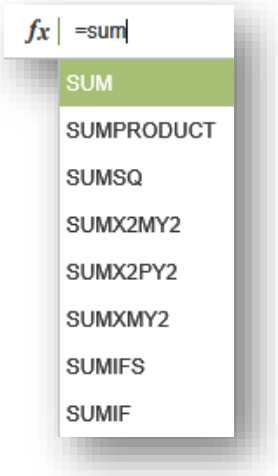
Changing/Removing Validation

To make changes to existing validation on selected cells, follow the same steps described under *Setting Validation*, edit the criteria, and then click **Apply**. To remove existing validation from selected cells, follow the steps described under *Setting Validation*, and then click **Remove**.

Formulas and Functions

You can simplify your work by entering formulas in cells to handle a wide variety of calculations. Typical of any spreadsheet application, formulas in Pulse start with an equal sign, which can then be followed by numbers, math operators, and any functions that may be required to calculate and transform your data.

To apply a formula:



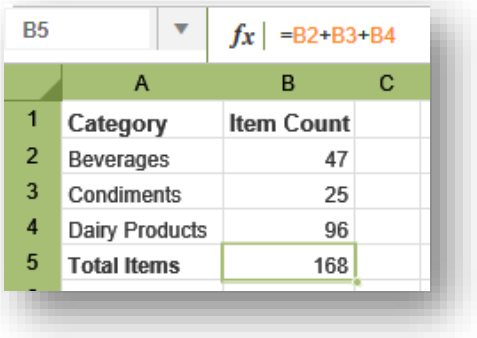
1. Select a cell.
2. Type an equal sign [=] in the **Formula Bar.**
3. Complete your formula using any combination of values, operators, or functions. There may be more than one way to achieve the result you want. When you start typing, autocomplete prompts you with options and syntax.

   For a list of supported functions, see *Function Reference* on page 79.
4. Press **Enter** to see the result of your formula in the selected cell. Refer to the example below.

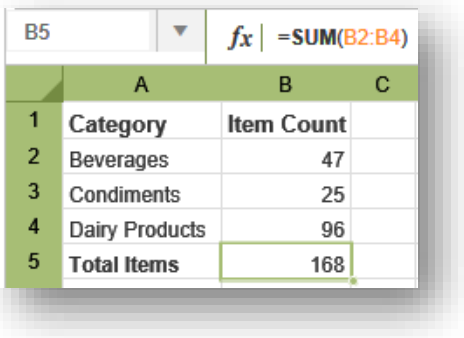
   Note that you can *modify a formula* by double-clicking on the cell, which displays the existing formula in the **Formula Bar**.

Example: A formula is entered in cell B5 to calculate the sum of values contained in the range of cells B2 to B4. This can be achieved either by using '+' math operators or the SUM function in the formula.

=B2+B3+B4



=SUM(B2:B4)



Function Reference

Each formula can contain a function or multiple functions, predefined rules used to quickly transform the contents of cells. If you are new to spreadsheets, syntax requirements and examples of functions are available from multiple sources on the internet, including the Excel help center.

Following is a quick reference of the functions that can be applied to formulas in Pulse spreadsheets:

ABS	Returns absolute (nonnegative) value of a number
ACOS	Returns principal value of the arccosine of a number. The angle is returned in radians.
ACOSH	Returns principal value of the inverse hyperbolic cosine of a number
ACOT	Returns principal value of the arccotangent of a number. The angle is returned in radians.
ACOTH	Returns hyperbolic arccotangent of a number
ADDRESS	Returns cell address (reference) as a text
AGGREGATE	Returns aggregate of a list or database
ARABIC	Converts Roman numbers to Arabic as numbers

AREAS	Returns number of areas in a reference
ASIN	Returns principal value of the arcsine of a number. The angle is returned in radians.
ASINH	Returns principal value of the inverse hyperbolic sine of a number
ATAN	Returns principal value of the arctangent of a number. The angle is returned in radians.
ATAN2	Returns principal value of the arctangent from x- and y- coordinates in radians
ATANH	Returns principal value of the inverse hyperbolic tangent of a number
AVEDEV	Calculates average of the absolute deviations of listed values
AVERAGE	Returns average of a set of numbers
AVERAGEA	Returns average of values, including numbers, text, and logical values
AVERAGEIF	Returns average of all cells in a range based on a given criteria
AVERAGEIFS	Returns average of all cells in a range based on multiple criteria
BASE	Converts number into a text representation with the given base
BETA.DIST	Returns beta cumulative distribution function
BETA.INV	Returns inverse of the cumulative distribution function for a specified beta distribution
BETADIST	Returns value of probability density function or cumulative distribution function for beta distribution
BINOM.DIST	Returns individual term binomial distribution probability
BINOM.DIST.RANGE	Returns probability of a trial result using a binomial distribution
BINOM.INV	Returns smallest value for which cumulative binomial distribution is less than or equal to criterion value
BINOMDIST	Returns binomial distribution probability
CEILING	Rounds number to the nearest integer or to the nearest multiple of significance
CEILING.MATH	Rounds number up, to the nearest integer or to the nearest multiple of significance
CEILING.PRECISE	Rounds number to nearest integer or to nearest multiple of significance. Regardless of sign of the number, the number is rounded up.
CHAR	Return character represented by given number
CHISQ.DIST	Returns cumulative beta probability density function
CHISQ.DIST.RT	Returns one-tailed probability of the chi-squared distribution
CHISQ.INV	Returns cumulative beta probability density function
CHISQ.INV.RT	Returns inverse of the one-tailed probability of the chi-squared distribution
CHISQ.TEST	Returns test for independence
CHOOSE	Uses index to return a value from a list of values
CLEAN	Removes all nonprintable characters from a text
CODE	Returns numeric value corresponding to the first character in a text string
COLUMN	Returns column number(s) of a reference
COLUMNS	Returns number of columns in a given range
COMBIN	Returns number of combinations for a given number of objects
COMBINA	Returns number of combinations with repetitions for a given number of objects
CONCATENATE	Joins number of text strings into one text string
CONFIDENCE.NORM	Returns confidence interval for a population mean
CONFIDENCE.T	Returns confidence interval for a population mean, using a Student's t distribution
COS	Returns cosine of a number. The angle is returned in radians.

COSH	Returns hyperbolic cosine of a number
COT	Returns cotangent of an angle, specified in radians
COTH	Returns hyperbolic cotangent of a number
COUNT	Counts number of numbers in a list of arguments
COUNTA	Counts number of values in a list of arguments
COUNTBLANK	Counts number of blank cells in a range
COUNTIF	Counts the number of cells in a range that meet a criteria
COUNTIFS	Counts the number of cells in a range that meet multiple criteria
COVAR	Calculates the covariance between two cell ranges
COVARIANCE.P	Returns covariance, the average of the products of paired deviations
COVARIANCE.S	Returns sample covariance, average of products deviations for each data point pair in two data sets
CRITBINOM	Returns smallest value for which cumulative binomial distribution is less than or equal to a criterion value
CSC	Returns cosecant of an angle, specified in radians
CSCH	Returns hyperbolic cosecant of an angle, specified in radians
DATE	Returns date value constructed from a year, month, and day values
DATEVALUE	Returns date converting it in the form of text to a serial number
DAY	Returns day by converting it from a serial number
DAYS	Returns number of days between two dates
DAYS360	Returns number of days between two dates using the 360-day year
DECIMAL	Converts text representation of a number in a given base into a decimal number
DEGREES	Converts radians to degrees
DOLLAR	Converts number to text, using the $ currency format
EDATE	Returns serial number of date that is the indicated number of months before or after the start date
EOMONTH	Returns serial number of the last day of the month before or after a specified number of months
ERF	Returns error function
ERFC	Returns complementary error function
EVEN	Rounds number up to the nearest even integer
EXACT	Reports if two text values are equal using a case-sensitive comparison
EXP	Returns e raised to the power of a given number
EXPON.DIST	Returns exponential distribution
F.DIST	Returns F probability distribution
F.DIST.RT	Returns F probability distribution
F.INV	Returns inverse of F probability distribution
F.INV.RT	Returns inverse of F probability distribution
F.TEST	Returns result of F -test
FACT	Return factorial of a number

FACTDOUBLE	Returns double factorial of a number
FALSE	Returns logical value False
FIND	Returns starting position of a given text
FISHER	Returns Fisher transformation
FISHERINV	Returns inverse of the Fisher transformation
FIXED	Rounds number to a specified number of decimals and formats the result as a text
FLOOR	Rounds number down to the nearest multiple of the second parameter
FLOOR.MATH	Rounds number down, to the nearest integer or to the nearest multiple of significance
FLOOR.PRECISE	Rounds number down to the nearest integer or to the nearest multiple of significance. Regardless of the sign of the number, the number is rounded down.
FORECAST	Assumes future value based on existing x- and y- values
FORMULATEXT	Returns formula at the given reference as text
FREQUENCY	Returns frequency distribution as a vertical array
GAMMA	Return Gamma function value
GAMMA.DIST	Returns Gamma distribution
GAMMA.INV	Returns inverse of the Gamma cumulative distribution
GAMMALN	Returns natural logarithm of the Gamma function
GAUSS	Returns 0.5 less than the standard normal cumulative distribution
GCD	Returns greatest common divisor (GCD)
GEOMEAN	Returns geometric mean of a sequence
HARMEAN	Returns harmonic mean of a sequence
HLOOKUP	Looks for matching value in the first row of a given table, and returns the value of the indicated row
HOUR	Converts serial number to an hour
HYPERLINK	Creates hyperlink involving an evaluated expression
IF	Returns one of two values, depending on a condition
IFERROR	Returns specified value if a formula evaluates to an error; otherwise, returns the result of the formula
INDEX	Returns value or a reference to a value from within a table or range
INDIRECT	Returns reference indicated by a text value
INT	Rounds number down to the nearest integer
INTERCEPT	Returns intercept of the linear regression line for the given data
ISBLANK	Returns True if the referenced cell is blank; else returns False
ISERR	Returns True if the value is any error except #N/A; else returns False
ISERROR	Returns True if the value is any error; else returns False
ISEVEN	Returns True if the value is even; else returns False
ISLOGICAL	Returns True if the value is logical; else returns False
ISNA	Returns True if the value is the #N/A error; else returns False
ISNONTEXT	Returns True if the value is not text; else returns False

ISNUMBER	Returns True if the value is a number; else returns False
ISO.CEILING	Returns number that is rounded up to the nearest integer or to the nearest multiple of significance
ISODD	Returns True if the value is odd; else returns False
ISOWEEKNUM	Returns ISO week number of the year for a given date
ISREF	Returns True if the value is a reference; else returns False
ISTEXT	Returns True if the value is text; else returns False
KURT	Returns kurtosis (“peakedness”) of a data set
LARGE	Finds nth largest value in a list
LCM	Returns least common multiple
LEFT	Returns selected number of text characters from the left
LEN	Returns number of characters from a given text
LINEST	Returns parameters of a (simple or multiple) linear regression equation for the given data and, optionally, statistics on this regression
LN	Returns natural logarithm of a number
LOG	Returns logarithm of a number to a specified base
LOG10	Returns base-10 logarithm of a number
LOGEST	Returns parameters of an exponential regression equation for the given data obtained by linearizing this intrinsically linear response function and returns, optionally, statistics on this regression
LOGNORM.DIST	Returns cumulative lognormal distribution
LOGNORM.INV	Returns inverse of lognormal cumulative distribution
LOWER	Converts text to lowercase
MATCH	Finds item in a range of cells, and returns its relative position (starting from 1)
MAX	Returns maximum value in a set of numbers
MDETERM	Returns determinant of a matrix
MEDIAN	Returns median (middle) value in a list of numbers
MID	Returns specific number of characters from a text string, starting at a specified position
MIN	Returns minimum value in a set of numbers
MINUTE	Converts serial number into a minute
MINVERSE	Returns inverse of a matrix
MMULT	Returns matrix output of two arrays
MOD	Returns remainder when one number is divided by another number
MODE.MULT	Returns vertical array of most frequently occurring, or repetitive values in an array or range of data
MODE.SNGL	Returns most common value in a data set
MONTH	Converts serial number to a month
MROUND	Rounds number to the desired multiple
MULTINOMIAL	Returns multinomial for a given set of values
MUNIT	Creates unit matrix of a specified dimension
N	Returns number of a value

NA Returns error value #N/A

NEGBINOM.DIST Returns negative binomial distribution

NEGBINOMDIST Returns negative binomial distribution

NETWORKDAYS Returns number of whole workdays between two dates

NORM.DIST Returns normal cumulative distribution

NORM.INV Returns inverse of the normal cumulative distribution

NORM.S.DIST Returns standard normal cumulative distribution

NORM.S.INV Returns inverse of the standard normal cumulative distribution

NOT Reverses logic of its argument

NOW Returns serial number of the current date and time

ODD Rounds number up to the nearest odd integer, where "up" means "away from 0"

OFFSET Modifies position and dimension of a reference

PEARSON Returns Pearson correlation coefficient of two data sets

PERCENTILE Calculates x-th sample percentile of values in a range

PERCENTILE.EXC Returns k-th percentile of values in a range, where k is in the range 0..1, exclusive

PERCENTILE.INC Returns k-th percentile of values in a range

PERCENTRANK Returns percentage rank of a value in a sample

PERCENTRANK.EXC Returns rank of a value in a data set as a percentage (0..1, exclusive) of the data set

PERCENTRANK.INC Returns percentage rank of a value in a data set

PHI Returns value of the density function for a standard normal distribution

PI Returns approximate value of pi

POISSON.DIST Returns Poisson distribution

POWER Returns result of a number raised to the power of another number

PROB Returns probability that values in a range are between two limits

PRODUCT Multiplies set of numbers, including all numbers inside ranges

PROPER Capitalizes first letter in each word of a text value

QUARTILE Returns quartile of a data set

QUARTILE.EXC Returns quartile of the data set, based on percentile values from 0..1, exclusive

QUARTILE.INC Returns quartile of a data set

QUOTIENT Returns integer portion of a division

RADIANS Converts degrees to radians

RAND Returns random number between 0 (inclusive) and 1 (exclusive)

RANDBETWEEN Returns random number between specified values

RANK Returns rank of a number in a list of numbers

RANK.AVG Returns rank of a number in a list of numbers

RANK.EQ Returns rank of a number in a list of numbers

REPLACE	Replaces characters within text
REPT	Repeats text a specified number of times
RIGHT	Returns rightmost characters from a text value
ROMAN	Converts Arabic numbers to Roman as text
ROUNDDOWN	Rounds number down, towards zero, to the number of digits specified by digits
ROUNDUP	Rounds number up, away from 0 (zero), to the number of digits specified by digits
ROW	Returns row number(s) of a reference
ROWS	Returns number of rows in a reference
RSQ	Returns square of the Pearson product moment correlation coefficient
SEARCH	Finds text value within another text value (not case-sensitive)
SEC	Returns secant of an angle specified in radians
SECH	Returns hyperbolic secant of a given angle specified in radians
SECOND	Converts serial number to a second. This function presumes that leap seconds never exist.
SERIESSUM	Returns sum of a power series based on the formula
SIGN	Returns sign of a number
SIN	Returns sine of an angle specified in radians
SINH	Returns hyperbolic sine of a number
SLOPE	Calculates slope of the linear regression line
SMALL	Finds the n-th smallest value in a data set
SQRT	Returns positive square root of a number
SQRTPI	Returns square root of a number multiplied by pi
STDEV.P	Calculates standard deviation based on the entire population
STDEV.S	Estimates standard deviation based on a sample
STEYX	Returns standard error of the predicted y-value for each x in the regression
SUBSTITUTE	Substitutes text for old text string
SUBTOTAL	Evaluates function on a range
SUM	Sums (adds) the set of numbers, including all numbers in a range
SUMIF	Sums values of cells in a range that meet a criteria
SUMIFS	Sums values of cells in a range that meet multiple criteria
SUMPRODUCT	Returns sum of products of corresponding array elements
SUMSQ	Sums (adds) set of squares of numbers, including all numbers in a range
SUMX2MY2	Returns sum of the difference between the squares of corresponding values in two arrays
SUMX2PY2	Returns sum of squares of corresponding values in two arrays
SUMXMY2	Returns sum of squares of corresponding values in two arrays
T	Converts its arguments to text; else returns a 0-length text value
T.DIST	Returns Percentage Points (probability) for the Student t-distribution
T.DIST.2T	Returns Percentage Points (probability) for the Student t-distribution
T.DIST.RT	Returns Student's t-distribution

T.INV	Returns t-value of Student's t-distribution as a function of the probability and the degrees of freedom
T.INV.2T	Returns inverse of the Student's t-distribution
T.TEST	Returns probability associated with a Student's t-test
TAN	Returns tangent of a number in radians
TANH	Returns hyperbolic tangent of a number
TEXT	Formats number and converts it to text
TIME	Constructs time value from hours, minutes, and seconds
TIMEVALUE	Returns serial number of a particular time
TODAY	Returns serial number of today's date
TRANSPOSE	Returns transpose of an array
TRIM	Removes spaces from text; replaces all internal multiple spaces with a single space
TRIMMEAN	Returns mean of the interior of a data set, ignoring a proportion of high and low values
TRUE	Returns logical value True
UNICHAR	Returns character represented by the given numeric value according to the Unicode Standard
UNICODE	Returns Unicode code point that corresponds to the first character of a text value
UPPER	Converts text to uppercase
VALUE	Converts text argument to a number
VAR.P	Calculates variance based on the entire population
VAR.S	Estimates variance based on a sample
VLOOKUP	Looks for matching value in a table or a range by row
WEEKDAY	Converts serial number to a day of the week
WEEKNUM	Determines week number of the year for a given date
WORKDAY	Returns date serial number which is a specified number of work days before or after an input date
YEAR	Converts serial number to a year
YEARFRAC	Extracts number of years (including fractional part) between two dates

File Management

The *Spreadsheet Action Bar* provides a **Save** control to save changes to a spreadsheet. The following sections discuss various other options to import and export spreadsheets.

- *Import from Excel*, below
- *Export to Excel*, page 87
- *Export to PDF*, page 88

NOTE
Currently, there is no ‘print’ control for printing spreadsheets directly from Pulse. If needed, you can print exported spreadsheets locally either as a PDF or Excel file.

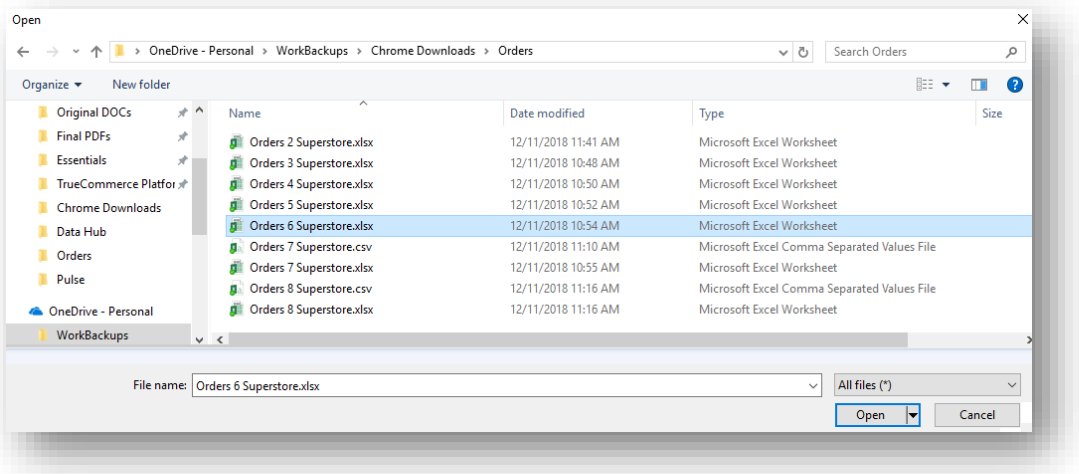
Import from Excel

You can upload the contents of Excel files into Pulse Spreadsheets.

> **CAUTION**
> Importing from a local file will *overwrite* all worksheets in the currently opened spreadsheet. Before importing, ensure that your destination spreadsheet is suitable for this purpose.

To import a local Excel file:

1. Click from the *Home* tab on the worksheet toolbar.
   This launches your browser's **Open** dialog for locating an Excel file to upload into your spreadsheet.



2. Select an **xlsx** file and click **Open**.
   When the upload is complete, the destination spreadsheet displays all the data and worksheets that are contained in the imported file.

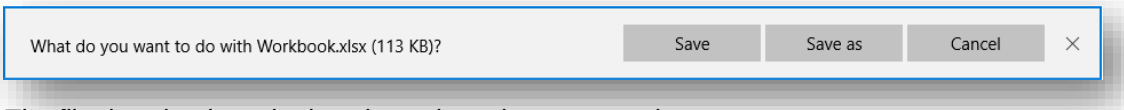
Export to Excel

Pulse allows you to export spreadsheets or single worksheets into Excel.

Export Spreadsheet

To save an opened spreadsheet as a local Excel file:

1. Click **Export** ▾ on the *Spreadsheet Action Bar*.
2. Click **Excel** from the dropdown menu.
   Depending on your browser, the file may download automatically to your default folder or invoke options to **Save** or **Save As** to a location of your choosing.

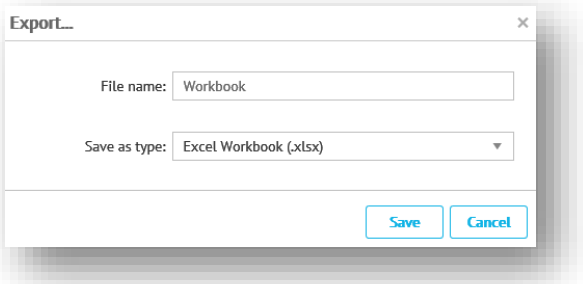


   The file downloads to the location selected as per your browser set up.

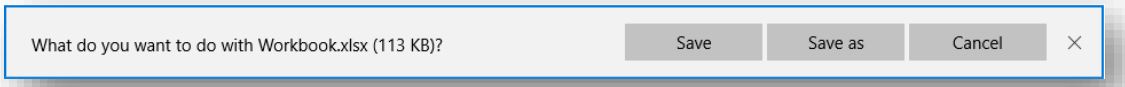
Export Worksheet

To save the currently displayed worksheet as a local Excel file:

1. Click from the *Home* tab on the worksheet toolbar.
   This invokes the **Export..** dialog for selecting a file type.



2. Enter a unique file name and select the **Excel Workbook** file type from the dropdown menu.
3. Click **Save**. Depending on your browser, the file may download automatically to your default folder or invoke options to **Save** or **Save As** to a location of your choosing.



The file downloads to the selected (or default) location in your browser set up.

Export to PDF

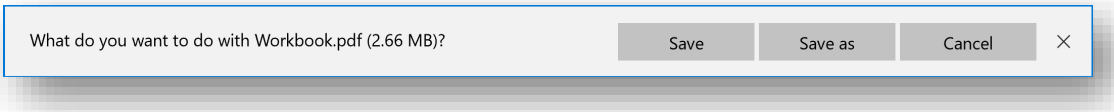
Pulse allows you to export spreadsheets or single worksheets to PDF.

Export Spreadsheet

To save an opened spreadsheet as a local PDF file:

1. Click **Export** ▾ on the *Spreadsheet Action Bar*.
2. Click **PDF** from the dropdown menu.

   Depending on your browser, the file may download automatically to your default folder or invoke options to **Save** or **Save As** to a location of your choosing.



The file downloads to the selected (or default) location in your browser set up.

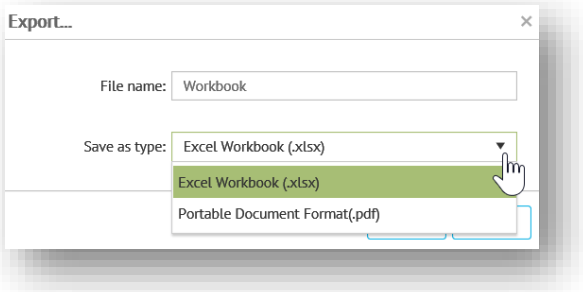
Export Worksheet

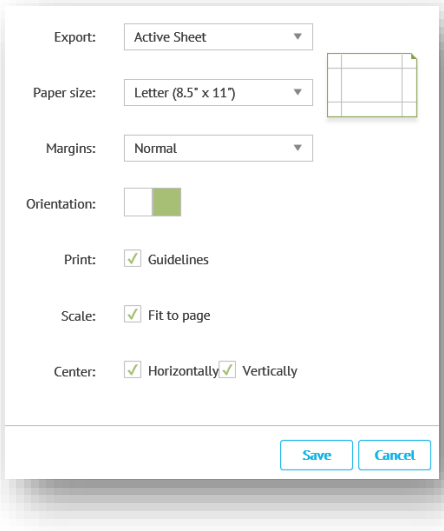
To save the currently displayed worksheet as a local PDF file:

1. Click from the *Home* tab on the worksheet toolbar.

   This invokes the **Export..** dialog for selecting a file type.
2. Enter a unique file name and select the **Portable Document Format** file type from the dropdown menu.

   This invokes a dialog for defining the layout options for exporting to PDF.





3. Select the worksheet(s) you want to export and then complete the layout details from the options provided in the dialog.

   Note that some options are better suited for printing the PDF after the file is exported.

4. When you are finished with the layout options, click **Save** at the bottom of the dialog.

   Depending on your browser, the file may download automatically to your default folder or invoke options to **Save** or **Save As** to a location of your choosing.

   The file downloads to the location selected as per your browser set up.