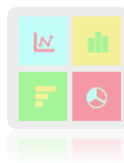


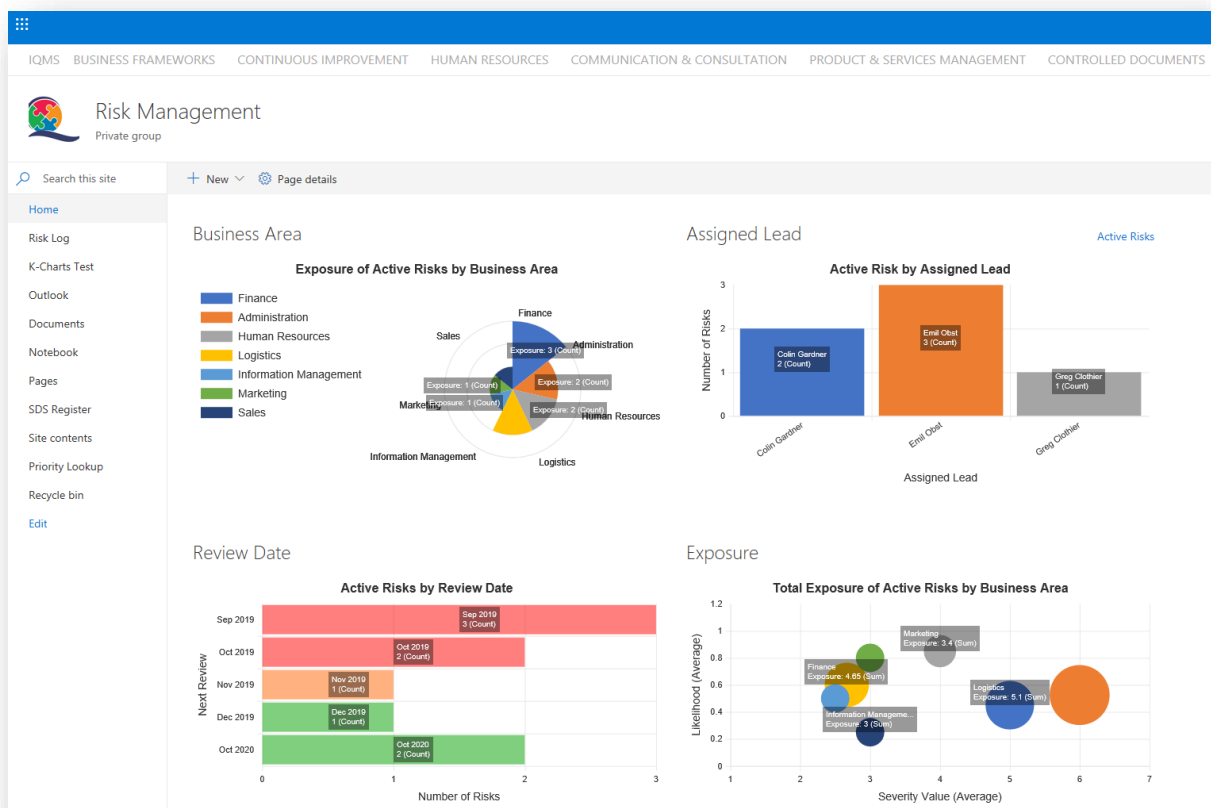


Kaboodle K-Charts for SharePoint Online and Microsoft Teams

Simple BI for Everyone



Installation and User Guide



Product Version: 1.2020.3.7
 Document Version: 1.6
 Author: Colin Gardner
 Release Date: 23 March 2020

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Introduction

SharePoint has always been a great platform to present Business Intelligence (BI) information and historically there have been many ways in which to do so. However, with the move to the Modern UX the standard options are effectively limited to:

- **Power BI:** A truly awesome piece of software engineering but which comes with an equally awesome price tag and a level of complexity beyond the comfort zone of most users.
- **Quick Chart Web Part:** A quick and easy way to add simple data visualisations to a Modern SharePoint Site Page but woefully inadequate for anything more.

Microsoft offer us solutions at either end of the spectrum but nothing in between.

We believe that many organisations would see the benefits of a lighter-weight BI solution built using modern technologies to deliver highly configurable, responsive and engaging data visualisations at a very affordable price point. So that's why we built K-Charts.

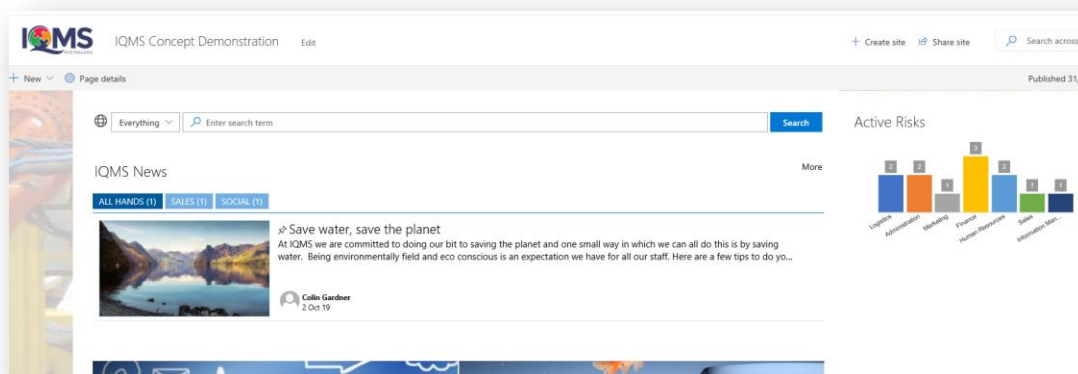
Please be aware that the data on which K-Chart visualisations are based, must reside in SharePoint lists or document libraries. This might seem a limitation but it means that K-Charts is something that end users can cope with as there is no need to train people how to use a specialist data modelling tool or design studio.

If you need to fuse and combine data sources and report on complex data structures then K-Charts is probably not the right tool for the job and there are plenty of other (expensive and complex) offerings out there which will likely better serve your needs. But if you want quick, simple, elegant, clear, engaging and responsive data visualisations that can be added to a page in literally under a minute, then K-Charts is our offering to add real business benefit to your organisation with minimal effort.

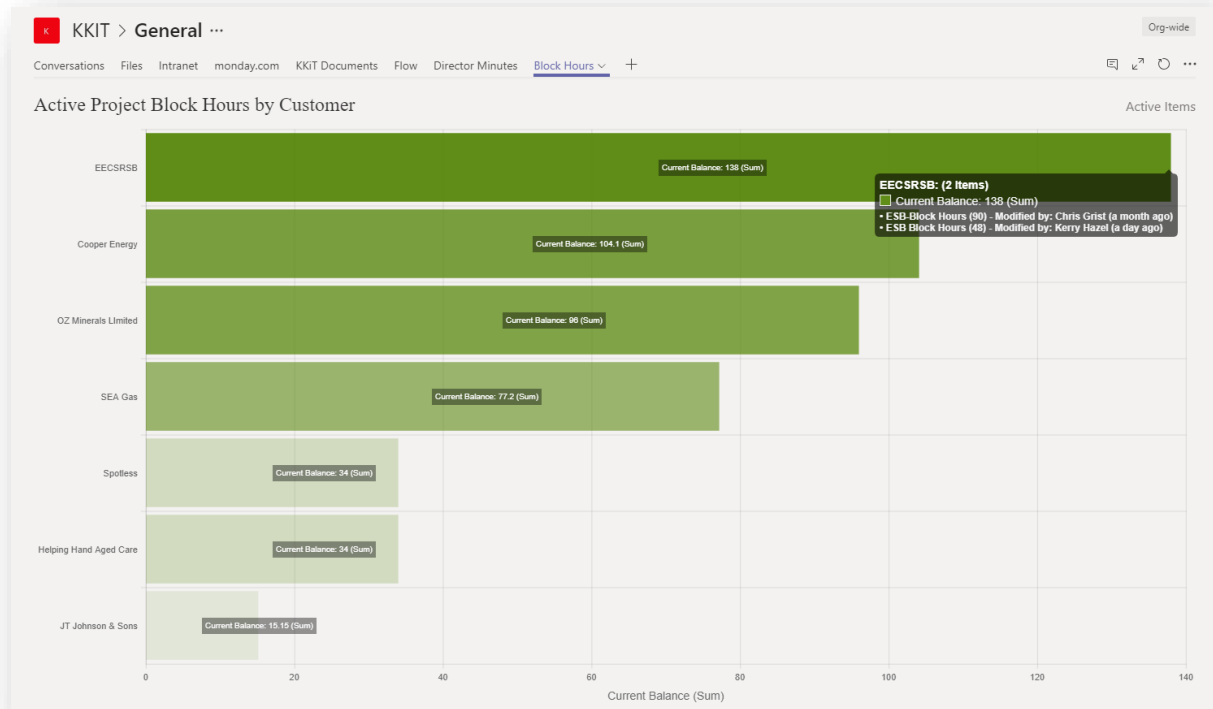
What is K-Charts?

K-Charts is a self-contained web part that connects with a SharePoint list or library and can render data visualisations (charts and graphs), based on list content. It is built using the [SharePoint Framework \(SPFx\)](#) with [Office Fabric React controls](#), the [PnP JS](#) library and [Chart.js](#).

K-Chart web parts can be added to any modern site page in SharePoint Online. These web parts might be used to construct a complete dashboard application page or simply to add some dynamic status information to the homepage of an Intranet Portal as shown below.



K-Charts can also be added to Microsoft Teams by adding a custom tab.



So why use K-Charts

Listed below are what we believe to be K-Charts unique selling points:

- **Affordability:** Unlike other vendors, we license all our SharePoint products collectively so your buck goes a long way. As we roll all our products into a single license you might expect to pay a premium, but we don't think so. We charge a flat annual fee, based on the number of users registered users in your O365 domain. Prices start from an amazing \$333 USD per tenancy per year¹. And remember, that price is for all our products, not just K-Charts!
- **Ease of Use:** K-Charts is well within the capabilities of your SharePoint users. In fact, we reckon most users won't need to read this manual at all and will figure it out for themselves with just a little trial and error.
- **Functionality:** Just because K-Charts is easy to use, does not mean that it is lacking in functionality. There are 9 different chart types to choose from and you have an amazing array of customisations at your disposal to create that perfect visualisation.
- **Smart Defaults:** Because the web part knows which list, view and columns you are using to create the visualisation, K-Charts is able to automatically generate default tooltips and labels for all chart elements and set up scales based on the data returned from SharePoint. You can of course always override the defaults and provide your own custom values.
- **Support for Microsoft Teams:** Teams is great technology for pulling together all your collaborative working channels and technologies and we would be selling you short if K-Charts didn't work in Teams, as well as it does in SharePoint.
- **Integrated Data Access:** Unlike other products, K-Charts allows you to access list item data directly from charts, without the need to go hunting in the source data lists.

¹ Based on a micro sized (less than 10 users) Not for Profit organization and including a new customer bonus discount of 25% for the first year.

- **Group, Filter, Sort and Color:** Although an initial filter and sort of the data is provided by a list view referenced by a web part, the data can then be refined to construct a custom visualisation based on the exact data you need. Chart items can also be grouped and assigned colors according to your business logic.
- **Data Columns:** Unlike most of our competitors, K-Charts can use nearly every type of column as a data source including calculated columns, look-ups, user/group, date/time, yes/no, choice and managed metadata. And get this, it even supports columns that have been configured to accept multiple values.
- **Data Aggregation:** When chart data is grouped, it is possible to aggregate numeric data from items in the group. If the list is used to track expenses you might want to use the Sum aggregation function which simply calculates the total cost of items, whereas a list used to capture user feedback might be better supported using the Average (Mean) aggregation function. There are 10 aggregations functions to choose from.
- **Truly Engaging:** K-Charts is built using the latest client-side technologies which means that the visualisations are slick and professional looking with configurable animation settings which delivers the experience that your users will expect from a modern software solution.
- **Responsive Design:** K-Charts is built using a Responsive Design architecture which means that charts will adapt dynamically to fit the available screen real-estate. These make K-Charts as great to use on a smart phone or tablet as it is on a laptop or desktop.

Getting Started

K-Charts is simple to use because it requires no modelling tools and absolutely no code (not even JSON). You can create a stunning visualisation in less than a minute, we kid you not!

The quick steps are:

- Add a K-Chart web part to a page.
- From the web part configuration pane, select a SharePoint list or library and a view to retrieve the items of interest.
- Then select an appropriate chart type (Pie, Bar, Bubble etc.) – there are 9 to choose from.
- Chose the columns from the list that can be used to group items and provide chart data.
- Finally, apply any custom formatting options and you're done.

If your users can't figure out how to do that without a detailed training program or without reference to this user manual, then we will have failed in our mission, which is to bring simple but stunning data visualisations to all users.

K-Charts is simple BI for everyone!

Key Features

Having said that, K-Charts is not light on features and options and in order that you can get the best from our products we provide this document as a detailed user and administration guide.

The following table provides a summary list of the key features and capabilities offered in this version of K-Charts.

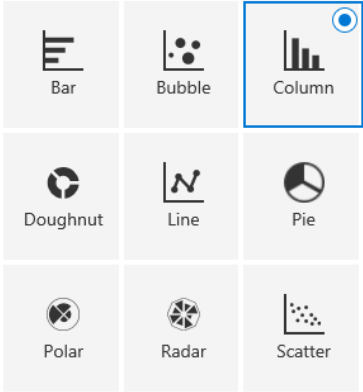
Feature	Key Points	Notes
Data Sources	Any SharePoint list or document library	The only restriction is that the source data must reside in the same O365 tenancy from which the visualisation web parts are being accessed.
Supported Environments	<ul style="list-style-type: none"> — SharePoint Online — Microsoft Teams 	This version of K-Charts does not support on-prem implementations of SharePoint ² .
Cross Site Access	K-Charts can be hooked up with any list or document library in any site in your tenancy.	A K-Chart web part will initially list all the lists and libraries in the same site but you can set the URL to access any other site in your tenancy.
Data Access	K-Charts fully respects SharePoint access control settings on the data source list	<p>Generally, care must be taken to ensure that users have at least read-level access to the data source on which the data visualisations are based.</p> <p>However, as all data resides in SharePoint lists and libraries, K-Charts will fully respect all access control settings applied to the data source.³</p>
View Driven	A data source is defined not just by a list but also by a specific view on that list.	<p>The idea is that standard SharePoint list views can be used to provide an initial sort and filter of the source data.</p> <p>So, for example, if a K-Chart web part instance were hooked up to say an Issues Log, in which a view has been set up to show 'Active' issues, just the items returned by that view can be used for the chart data.</p>
Driven by SharePoint Column Data	Columns on the source list are used to group and aggregate data so as to generate meaningful visualisations.	<p>This usually means that the data source list will be furnished with one or more numeric columns.</p> <p>However, item-count information (such as how many items are assigned to a category or a particular status value, or use a specific Content Type) can also be used.</p> <p>Visualisations can also be driven by date columns. All SharePoint list items and documents come with a Created and Modified date value as standard but this is often augmented with additional date values such as a "Next Review" date.</p>

² If we receive overwhelming request to provide a version of K-Charts that supports SharePoint 2019 then we will consider this but currently, on SharePoint Online and Microsoft Teams is supported.

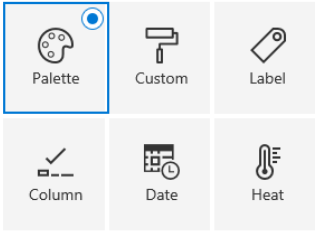
³ Please be aware that generating data visualisations based on lists which have item level security will result in a personalised view which may not be consistent with what other users are seeing. This is of course standard SharePoint behaviour.

Feature	Key Points	Notes
Driven by Data Grouping	Data can be grouped by most column types which may be defined on the source list.	<p>Specifically, items can be grouped by values of the following column types:</p> <ul style="list-style-type: none"> — Single Line Text — Date and Time — User — Yes/No — Lookup — Choice — Managed Metadata — Content Type — Approval Status⁴
Support for Multi-Value Columns	<p>Unlike most other products, K-Charts provides support to group data by columns that support multiple values.</p> <p>Specifically, the following are supported:</p> <ul style="list-style-type: none"> — Multi-Value Choice — Multi-Value Lookup — Multi-Value User — Multi-Value Managed Metadata 	<p>When a multi-value column is used to group data, there is an option to treat the item as a single element or split it out to separate chart elements.</p> <p>For example, say a document was tagged with a managed metadata attribute for 2 business functions, “IT” and “HR”, K-Charts can consider these tags separately and so include the item in both the “IT” and “HR” group or alternatively treat them as their own combined group i.e. “HR, IT”.</p>
Date Based Grouping	Date values can also easily be used to group items.	<p>Even though a SharePoint date column must be set with a specific value, K-Charts support grouping dates into commonly used time periods, specifically:</p> <ul style="list-style-type: none"> — Day: All items that share the same date value but excluding the time component. — Week: All items within the same week. — Month: All items within the same month. — Quarter: All items with the same quarter. — Year: All items with the same year. <p>Most often, date ranges will be combined for grouping purposes (so, items will be grouped by Month and Year for example) but they don’t have to be. If you are trying to spot monthly trends in a data set that spans multiple years you can group items by their month value alone.</p>

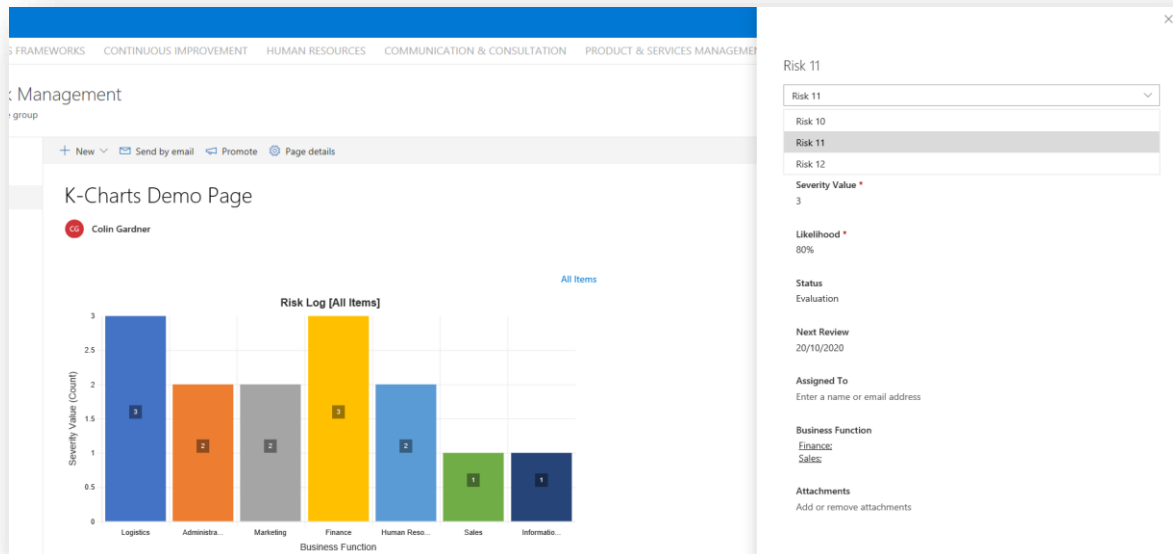
⁴ The Approval Status column is managed by SharePoint internally and is only available when the data source is a document library that has been configured to require Content Approval.

Feature	Key Points	Notes
Aggregation Functions	When data items are grouped, their values need to be evaluated or combined in some way in order that a group data value can be used in the visualisation. Group data is combined using an aggregation function.	<p>The following aggregation functions are supported for grouped data sets:</p> <ul style="list-style-type: none"> — Count: The number of SharePoint items within the group. — Sum: The sum of all data column values in the group. — Average (Mean): The mean value of grouped items. — Median: The median value of grouped items. — Standard Deviation: The SD value of group values. — Variance: The variance of group values. — Max: The maximum value in the group. — Min: The minimum value in the group. — First: The first value in the group. — Last: The last value in the group.
Custom Sorting and Filtering	Items returned by the selected view, provide an initial filter and a default sort order but further filter settings and custom ordering can be applied as required	<p>K-Charts allows you to group items in ways that are not possible in the standard list views such as by Content Type, Approval Status and by a Date Range.</p> <p>Additional filtering and ordering criteria can be then applied within the web part.</p>
Chart Types	<p>Chart Type</p> 	<p>As the solution leverages the Chart.js library, the full gamut of chart types provided by that library is also supported in K-Charts. Specifically:</p> <ul style="list-style-type: none"> — Bar — Bubble — Column — Doughnut — Line — Pie — Polar Area — Radar — Scatter
Chart Type Specific Settings	There are a wide range of configuration settings which can be applied to each type of chart.	Chart-specific, configuration settings are detailed later in this document.
Axis Settings	Data axis settings are highly configurable. You can choose which data values are used by which axis to generate the chart and how the axis information is displayed.	<p>All chart types support data grouping but some chart types only require a single set of data values. Radial charts (Pie, Doughnut, Radar and Polar charts) only require a single radial axis.</p> <p>All other chart types require both a vertical and a horizontal (X/Y) axis but Bar, Column and Line charts are considered category charts and still only require a single set of data values.</p> <p>Scatter charts require 2 sets of data values that get plotted on the X and Y axis. Bubble charts require</p>

Feature	Key Points	Notes
		<p>3 sets of data values where the 3rd set is used to control the size (radius) of the bubble.</p> <p>Axis can be formatted customised in numerous ways, including:</p> <ul style="list-style-type: none"> — How and if data to be shown on the axis is grouped. — What numeric columns in the data source list are used as axis data. — For grouped data sets, how the data values within each group are to be combined into a single value, by selection of an appropriate aggregation function. — Whether the axis is shown (or not) — How the axis data is presented including font size, color and text angle and with the ability to truncate long labels. — How grid lines are displayed including color, width and line type (dashed or solid). — Whether an axis title is displayed and how it is displayed. — An automatically generated axis label (based on the data column, grouping and aggregation function) will be used by default but this can be replaced with custom label text as required.
Custom Scales	Scales are automatically generated by default but custom scale setting can be applied if required.	<p>By default, the scale shown on a data axis will automatically be generated based on the range of values returned by the data set. However, the scales applied to X and Y axis can be customised as required by optionally setting:</p> <ul style="list-style-type: none"> — A range minimum value — A range maximum value, by default this will be the upper value of the data attribute displayed on the axis. — A step value, used to set how frequently tick marks are added to the scale
Data Labels	<p>There are a wide range of settings that can be applied to labels displayed on, or next to, chart elements.</p> <p>K-Charts will automatically apply a default label configuration based on the selected chart type but this can be customised.</p>	<p>In addition to being able to control the text shown on chart elements, you can also control:</p> <ul style="list-style-type: none"> — The label font size, color and text angle. — The anchor-point for the label and apply a vertical offset from the anchor if required. — Whether the label can span multiple lines or should be shown as a single line of text.

Feature	Key Points	Notes
Tooltip	Custom tooltips can be shown whenever the user hovers over a chart element.	<p>Tooltips can be customised in a myriad of ways, including:</p> <ul style="list-style-type: none"> — Whether they are shown (or not). — Whether to include information from an additional column on the data source list. — Whether to show Created/Modified and/or Created by/Modified By values. — Customising the tooltip font size and color. — Setting a background color.
Color Formatting	<p>Color Mode</p> 	<p>Chart item color can be controlled in 6 ways:</p> <ul style="list-style-type: none"> — Palette: There are 17 pre-defined color palettes to choose from. — Custom: You can specify single or multiple custom color values that will get used on a repeating pattern. — Label: You can map label names to color values using exact matching or wildcards. — Column: You can specify a column on the source list that returns a color value. — Date: You can color code chart items based on a date value as on offset from the current date and time. So overdue items might be colored red for example. — Heat: You can use a heat map to color code item values to provide a color based visual comparison between items in the data set.
Chart Title Formatting	By default, the chart will be shown with an automatically generated chart title based on the selected source list and view. However, the chart title can be customised and formatted in numerous ways.	<p>Specifically, the chart title can be configured as follows:</p> <ul style="list-style-type: none"> — Whether it is shown (or not). — Whether a custom title value is used instead of the automatically generated title text. — Where the chart title is displayed, either top (default), bottom, left or right of the chart area. — The title font size and color.
Chart Area	<p>The chart area can be filled with a custom color.</p> <p>A chart can be shown with a custom aspect ratio</p>	<p>The background fill for K-Charts is normally transparent such that it will show the background color applied to the section background based on the theme selected for the SharePoint site or Teams site. However, you can set the chart background color to any custom color you like.</p> <p>Be default, a chart is rendered with an aspect ratio of 2:1, meaning that the chart area will be twice as wide as it is high. However, you can adjust the aspect ratio in the range 1 to 5.</p> <p>An aspect ratio of 1:1 will result in a square chart area, whereas an aspect ratio of 5:1 will make the chart area 5 times wider than it is high.</p>

Feature	Key Points	Notes
Theme Responsive	K-Charts have been designed to be theme responsive and to look good regardless of whether a dark or light theme has been chosen for the SharePoint site.	<p>Whilst K-Charts is responsive to both the theme used on the site and the color of the section in which a web part has been added to a site page it is also highly configurable in the use of background colors and font colors.</p> <p>K-Charts is also color responsive when used in Microsoft Teams.</p>
Web Part Header	K-Charts can be displayed with or without a web part header	Whether you need both a chart title and a web part title, is a design decision.
Show View Link	The title area of the web part can be configured to show a link to the list view used as the data source for the chart.	<p>The link redirects the browser to the URL of the view.</p> <p>Alternatively, a custom link to any resource can be provided, or no link at all.</p>
Animation Settings	K-Charts support chart animations which make the page more engaging.	<p>You can control the following animation settings:</p> <ul style="list-style-type: none"> — Animation Period: A value between 0 and 5 seconds over which the chart animation should occur. Setting the animation period to zero will effectively disable any animations. — Animation Easing: The function used to generate a desired animation effect. There are 31 different effects to choose from!
No Items	It could be that a web part is connected to a view that returns no list items. A custom message can be displayed to inform users when this is the case or alternatively the web part can be configured to render nothing at all, making it essentially invisible on the page.	<p>K-Charts behaves differently when a web part has been added to a page but not yet configured.</p> <p>When a web part is not properly configured a “Configure” button will be displayed to indicate that the web part requires configuring. Clicking the Configure button, whilst in page edit mode, will open the web part’s property pane.</p>
List Item Interaction	A unique feature of K-Charts is the ability to interact directly with the SharePoint item properties which drive the visualisation, as shown in the screenshot below.	<p>When this feature is enabled (as it is by default), clicking a chart item will open the property sheet for the SharePoint item that is used to generate that chart element.</p> <p>If the chart groups data items, clicking on the group element will open a property panel with an item picker. Users then simply select the appropriate item from the picker to load the SharePoint item property sheet.</p> <p>If the user has read and write permission on the selected SharePoint item, they can update item property values directly from the property sheet. If the user has read-only permissions then the controls will operate in read-only mode.</p>



Aim

The aim of this document is to guide you through the processes of installing the K-Charts solution package and how to add and configure web part instances in SharePoint and Microsoft Teams.

Whilst this document is detailed, you will be creating your first K-Charts visualisations, in no time at all!

Downloading and Installing K-Charts

This section explains how (and where) to download the solution package and how to install it in the App Catalog of your SharePoint Tenancy.

Download the Solution Package

The solution package is downloadable from the product support page which can be found at:

<https://kaboodlesoftware.com/products/framework-solutions-for-sharepoint-modern/k-charts/>

The latest copy of this document can also be accessed from this page.

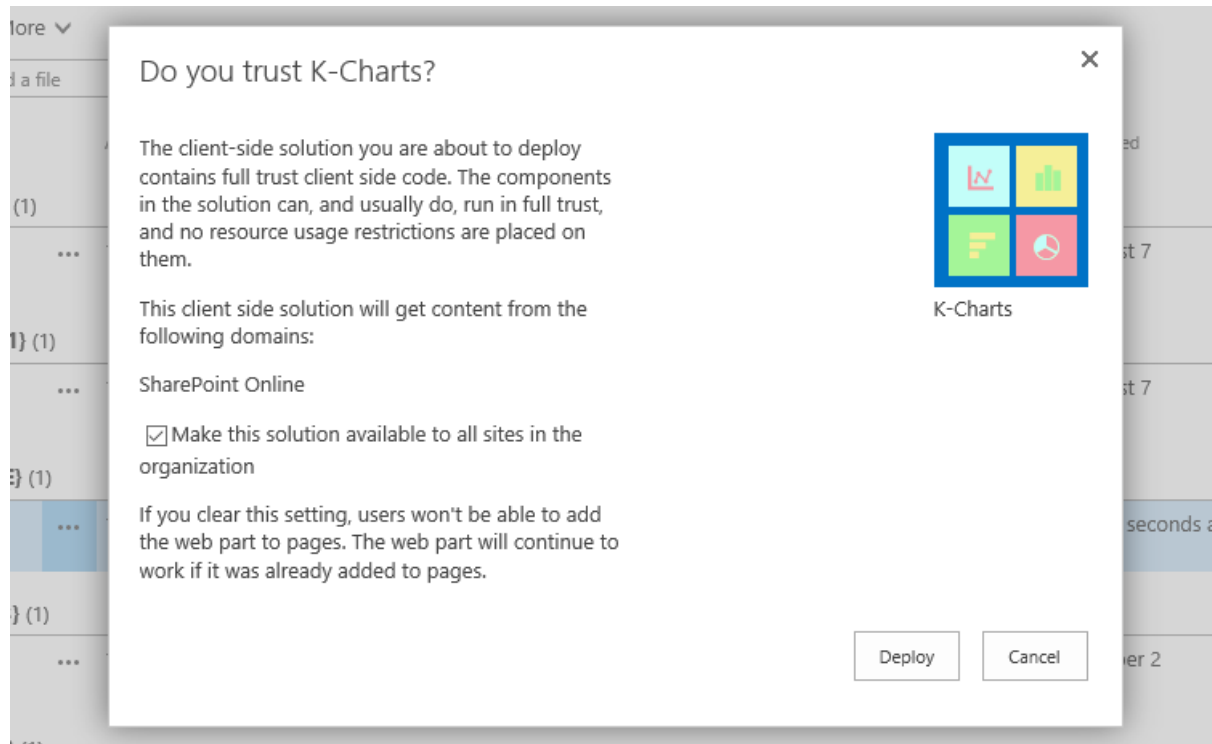
The download link will provide access to a single solution package file named **k-charts.sppkg**.

Installing the Solution Package

To install the solution package, simply upload the file (or drag and drop it from the file system) to your **Apps for SharePoint** gallery in **App Catalog** site for your tenancy.

Note that an **App Catalog** is not automatically provisioned for your tenancy but you will need one to install any solution extensions in your SharePoint online environment. Normally an **App Catalog** will have been provisioned by your SharePoint Administrator.

When the package has been uploaded you will be presented with a deployment dialog as shown below⁵.



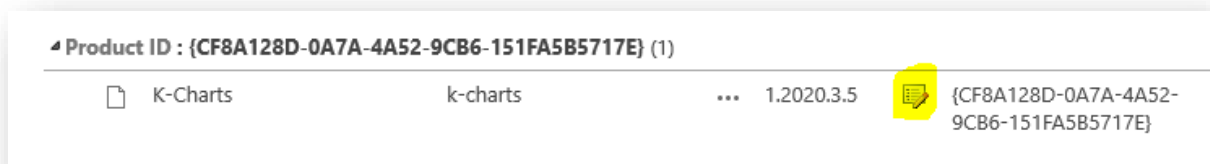
Note that the web part comes with an option to be globally deployed. If this checkbox is checked, the web part will be available everywhere in your tenancy without the need for site owners to explicitly add the K-Charts App to their sites. If you leave the option unchecked, then the K-Charts App will have to be explicitly installed before it can be used in a site.

After making your deployment option choice, click the **Deploy** button to deploy the solution package and make it available for users.

Unless there is a good reason not to, we recommend that you deploy K-Charts globally, so that it will become immediately available for use by all users in your tenancy.

Update the Solution Package Properties

Next, edit the list item properties for the solution package by clicking the edit properties button for the solution in the list.



⁵ Note that on first upload the default app icon (a hexagon) will be shown instead of the actual application icon as shown in the screenshot.

From the property edit page, enter the following values⁶:

- **Short Description:** Kaboodle Charts
- **Description:** Simple BI for everyone! Create great visualisations for data stored in SharePoint lists and document libraries.
- **Icon URL:** <https://kaboodlecdn.blob.core.windows.net/kcharts/KChartAppLogo.png>
- **Publisher Name:** Kaboodle Software
- **Support URL:** <https://kaboodlesoftware.com/products/framework-solutions-for-sharepoint-modern/k-charts/>

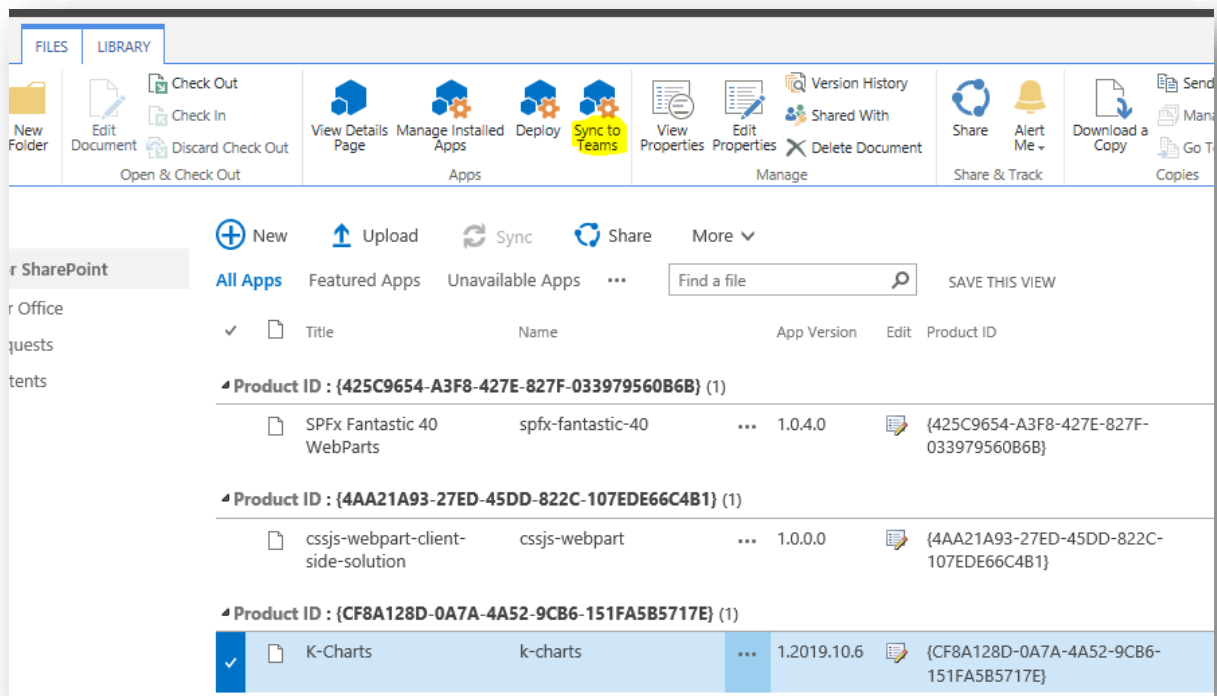
Then click the **Save** button to update the properties.

Name *	k-charts	.sppkg
Title	K-Charts	
Metadata Language	English ▼	
Default Metadata Language	<input checked="" type="checkbox"/>	
Short Description	Kaboodle Charts	
Description	A simple solution for adding great visualisations for data stored in SharePoint lists and document libraries.	
Icon URL	Type the Web address: (Click here to test) <input type="text" value="https://kaboodlecdn.blob.core.windows.net/kcharts/KChartAppLog"/> Type the description: <input type="text" value="https://kaboodlecdn.blob.core.windows.net/kcharts/KChartAppLog"/> The URL to the app icon. The icon should have a width and height of 96 pixels.	
Category	<input checked="" type="radio"/> ▼ <input type="radio"/> Specify your own value: <input type="text"/>	
Publisher Name	Kaboodle Software	
Support URL	Type the Web address: (Click here to test) <input type="text" value="https://kaboodlesoftware.com/products/framework-solutions-for-s"/> Type the description: <input type="text" value="https://kaboodlesoftware.com/products/framework-solutions-for-s"/>	

⁶ For the product title and description, you can actually add in any text that you like. If you are running K-Charts in a non-English environment then you may want to provide a translation that your users will be more comfortable with.

Deploying K-Charts to Microsoft Teams

To make K-Charts available in Microsoft Teams select the solution package in the gallery and from the **Files** tab simply click the **Sync to Teams** button.



A few seconds later and a SharePoint status message will report that the synchronisation was successful.⁷

You only have to synch the application package with Teams once. If you later upgrade to a newer version of K-Charts there is no need to re-publish the solution with Teams.

Adding a K-Chart Web Part to a SharePoint Site Page

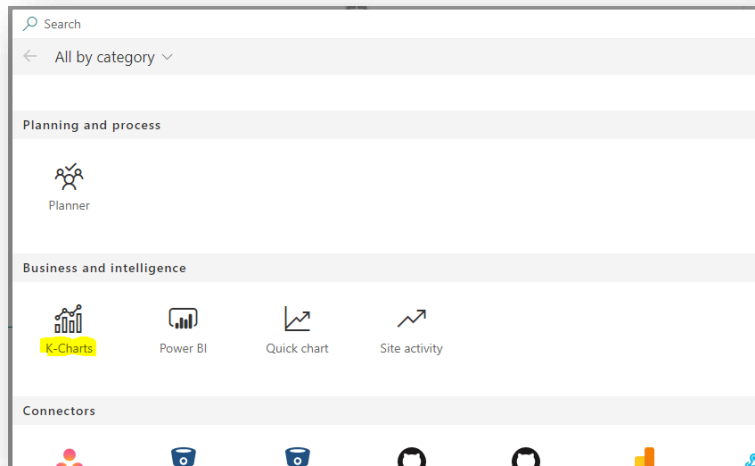
This section assumes that K-Charts has been globally deployed and so the K-Chart web part will be available to all sites in the tenancy without the need of any further action. If K-Charts has not been deployed globally, it will first be necessary to add the K-Chart App to each and every site which is intending to use the capability.

The process of installing an app is not detailed in this document but it is exactly the same method as that used to install any app in SharePoint. Simply go to the site contents page and click the Add an App link and click on the K-Chart application icon to begin the installation process. Installing apps can sometimes take a little while and the app icon will appear greyed out while the solution is being installed on a site. When the process is complete, the app icon will no longer appear greyed out, indicating that the installation was successful and that the app is ready for use.

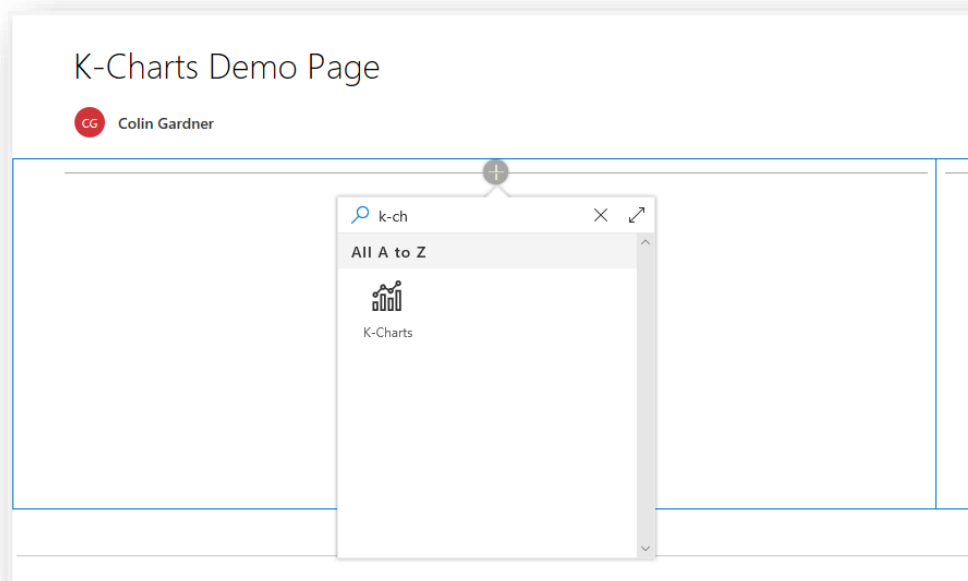
⁷ Note that you will likely need to be logged on as a Global Administrator or a Team Administrator in order to have the permissions necessary to synchronise K-Charts with Teams.

To add a K-Chart web part instance to a SharePoint Modern site page simply access the page and switch to page edit mode.

From an appropriate section and column on the site page, click the add a web part link, in the usual way, to access the web part picker dialog. K-Charts is located in the Business Intelligence group.

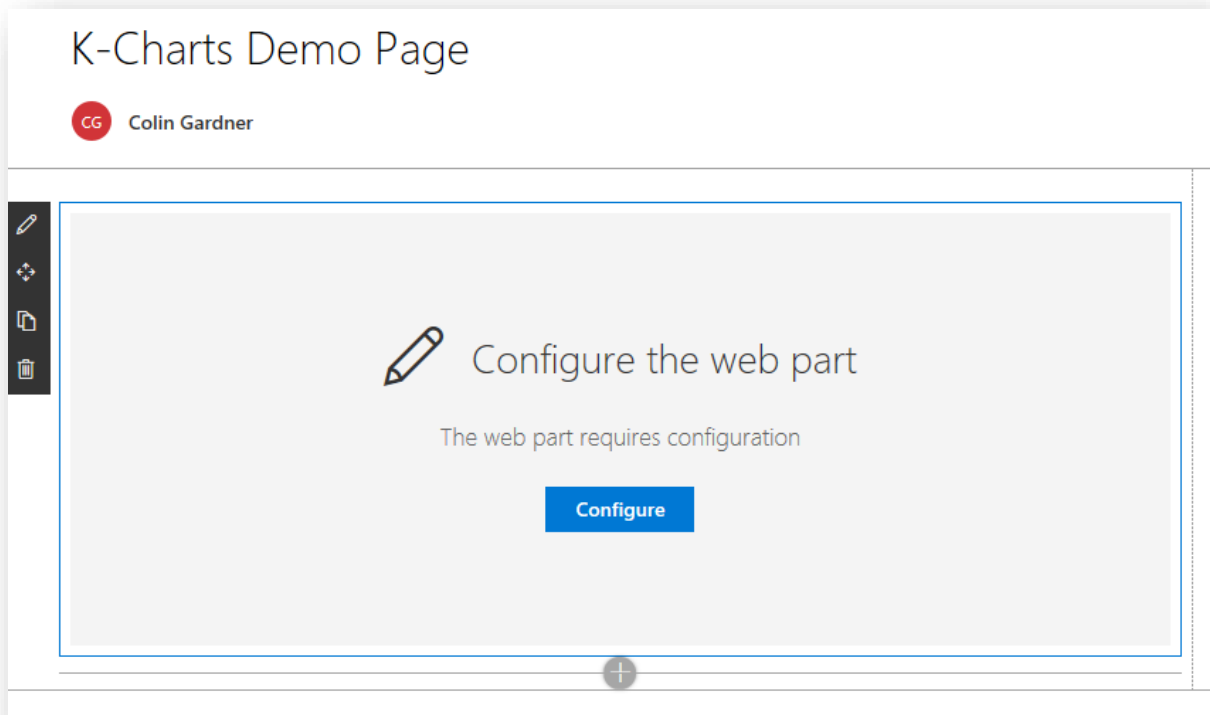


However, the easiest way to locate it, is to start typing 'K-Charts' or just 'chart' into the web part picker dialog.



Then click on the K-Charts item icon to add a new K-Chart web part instance to the page. The web part will then be added to the page and display a message that it needs to be configured⁸.

⁸ This is default behaviour when a license has been configured. If a license for your domain cannot be found the web part will instead invite you to start a free 30-day trial. See the Product Trials section later in this document.



When in page edit mode, clicking the Configure button will open the property pane for the web part which will enable web part properties to be set with appropriate values.

A Sample Data List

In order to show how K-Charts is configured and to demonstrate the capabilities of the solution it is necessary to have access to a suitable list that will act as the data source. This section provides a simple scenario for using a list and explains how such a list has been configured.

This list will then be populated with some sample data items and then used to demonstrate how K-Charts is configured and how it operates.

Use Case Scenario

This sub-section outlines a simple use-case scenario that results in the provision of a SharePoint list that can then be used as the data source for generating K-Chart visualisations.

The senior management team of our fictitious organisation have decided that they need to maintain a high-level log of potential risks to the business. Risks could be from any area of the business such as IT, Operations, HR, Sales, Procurement etc. and someone from that functional area is assigned as the Risk Manager with responsibilities to monitor and manage that risk, on behalf of the business.

All risks should be subject to a quarterly periodic review, where exposure is assessed to ensure that it is always an accurate reflection of risk. Exposure is calculated, based on:

- **Severity Assessment:** An assessment of the severity that the risk poses to the organization if manifested. Severity is measured on a scale of 1 to 10 (1 being that if the risk is manifested, it will have a slight impact on operations, whereas an assessment value of 10 will result in a total shut down).

- **Likelihood:** A percentage assessment of the probability that the risk will manifest to a real issue.

The Exposure to the business, posed by each risk item, is calculated simply by multiplying the Severity Assessment by the Likelihood. So, a low-severity/low-likelihood risk will present a minimal Exposure but a high-severity/high-likelihood risk presents a clear threat to ongoing operations.

Risk Log Structure

The risk log has been developed using a simple SharePoint custom list, which consist of the following data columns⁹.

Column	Type	Comments
Severity Value	Number (1-10)	User assessment of the severity of the risk
Likelihood	Number (%)	User assessment of how likely this risk will actually arise
Exposure	Calculated (num)	Indicates the exposure the risk presents worked out as - Severity * Likelihood
Severity	Calculated (text)	Based on the value of Exposure returns either High, Medium or Low
Risk Colour	Calculated (text)	Returns a colour value based on Severity as either Red, Orange, Navy
Status	Choice (single value)	User set choice value to indicate the current status of the risk
Active	Calculated (yes/no)	Based on the Status value return a Y/N value to indicate if the risk is Active
Next Review	Date	User set date to indicate when the risk should next be reviewed
Assigned To	User (Person)	The person currently assigned to manage the risk
Business Function	Managed Metadata	The functional area(s) of the business relevant to the risk

The Risk Log has been populated with 12 high-level risks to the business, though 3 of these have already been closed out as being “Resolved” or “No Longer Relevant”.

Risk Log										
Active ▾	Title ▾	Business Fu... ▾	Severity Val... ▾	Likelihood ▾	Exposure ▾	Severity ▾	Risk Colour ▾	Status ▾	Next Review ▾	Assigned To ▾
Yes	Risk 1	Logistics	3	30%	0.9	Low	Navy	Evaluation	20/09/2019	Colin Gardner
Yes	Risk 2	Logistics	7	60%	4.2	High	Red	Delayed Mitigation	21/10/2020	Emil Obst
No	Risk 3	Logistics	4	20%	0.8	Low	Navy	Resolved	12/09/2019	Colin Gardner
Yes	Risk 4	Operations	5	60%	3	Medium	Orange	Evaluation	4/10/2019	Colin Gardner
Yes	Risk 5	Administration	6	80%	4.8	High	Red	Active Mitigation	20/12/2019	
Yes	Risk 6	Administration	6	25%	1.5	Low	Navy	Active Mitigation	30/09/2019	Emil Obst
No	Risk 7	Operations	9	50%	4.5	High	Red	Resolved	20/10/2019	Emil Obst
No	Risk 8	Marketing	4	30%	1.2	Low	Navy	No Longer Relevant	20/02/2020	Colin Gardner
Yes	Risk 9	Marketing	4	85%	3.4	Medium	Orange	Active Mitigation	4/10/2019	
Yes	Risk 10	Finance Human Resour...	2	75%	1.5	Low	Navy	Delayed Mitigation	25/09/2019	Greg Clothier
Yes	Risk 11	Finance Sales	3	80%	2.4	Low	Navy	Evaluation	20/10/2020	
Yes	Risk 12	Human Resour...	3	25%	0.75	Low	Navy	Active Mitigation	1/11/2019	Emil Obst

⁹ A real Risk Log would obviously contain additional columns such as Description and Mitigation Approach etc.

Please note the following:

- Not all risks have been assigned a Risk Manager.
- Some risks belong to more than one Business Function.
- Some risks are late for their quarterly review.

A couple of useful views have been defined on the list:

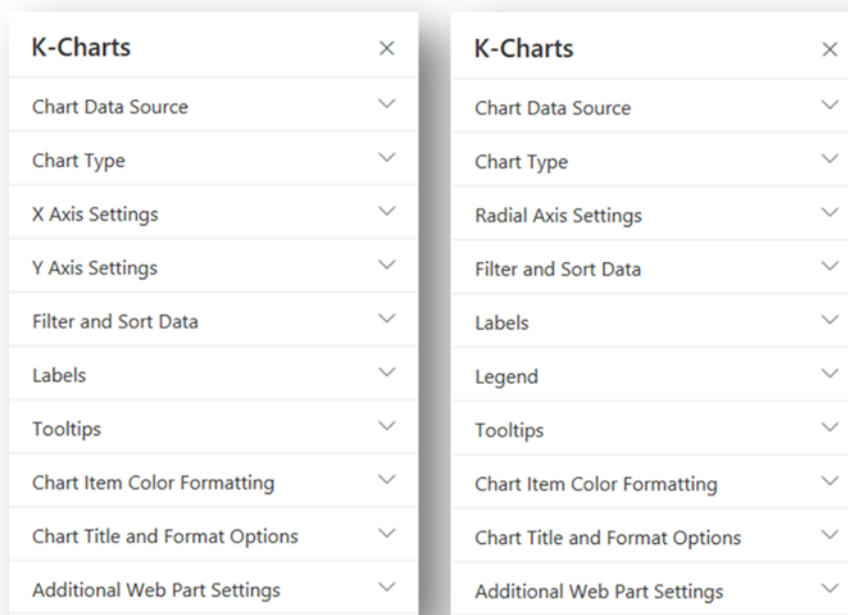
- **All Items:** Shows all items in the risk log (as shown in the screenshot above).
- **Active Risks:** Shows only those items where the Active column returns Yes. Note that Active is a Calculated column which simply returns No when the Status is set to “No Longer Relevant” or “Resolved”, otherwise Yes is returned.

The Risk Log has also been configured with an additional view which has been configured to return no items. We shall be using this view later to demonstrate how K-Charts can behave when the selected view returns no results.

The task before us, is to provide a data visualisation for the Risk Log using K-Charts.

Web Part Configuration

After clicking the Configure button, on an unconfigured K-Chart web part, the web part property pane can be accessed.



Cartesian

Radial

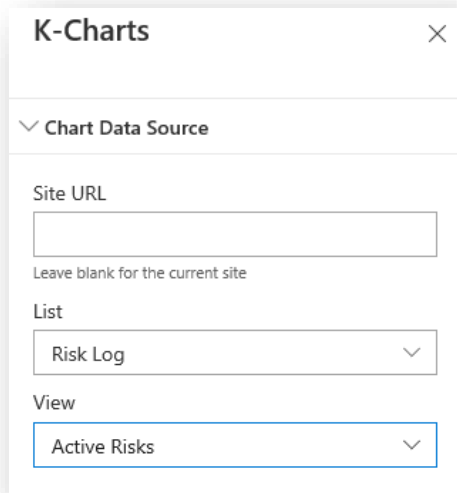
The property pane is split over 2-pages but all the web part configuration settings are presented on the first page which consist of the 10 groups as shown in the above screenshots.

Note that the set of property groups varies slightly depending whether the selected chart type is Radial (Pie, Doughnut, Polar Area or Radar) or Cartesian (Bar, Column, Line, Scatter or Bubble). Radial charts have a Radial Axis Settings group where Cartesian charts have X Axis and Y Axis Settings groups.

Radial charts can also be configured to show a legend and so have a Legend group. Legends are not currently available in Cartesian charts.

The sub-sections which follow, will guide you through the purpose and function of the controls and property settings within each of these control groups.

Chart Data Source

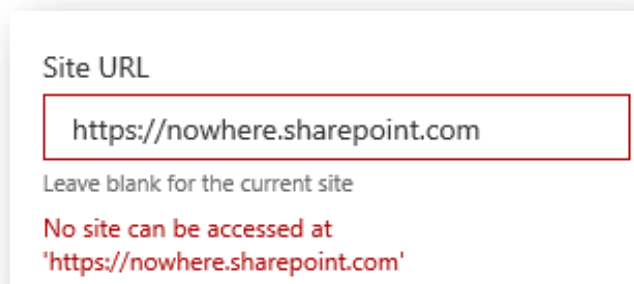


The screenshot shows a configuration window titled "K-Charts" with a close button (X). Under the "Chart Data Source" section, there are three controls:

- Site URL:** A text input field. Below it, a note says "Leave blank for the current site".
- List:** A dropdown menu currently showing "Risk Log".
- View:** A dropdown menu currently showing "Active Risks".

This groups consist of 3 controls:

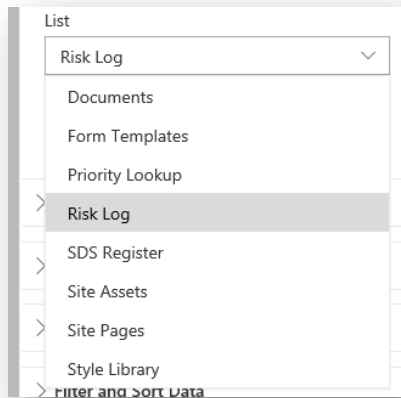
- **Site URL Textbox:** This textbox can be used to set with the full URL of any other site in your SharePoint tenancy. This means that data visualisations presented in a K-Chart web part do not rely on the data source necessarily being in the same SharePoint site. When a URL is specified, a check is made to ensure that the location is valid. If the site cannot be accessed at the specified URL a red error message is displayed as shown below:



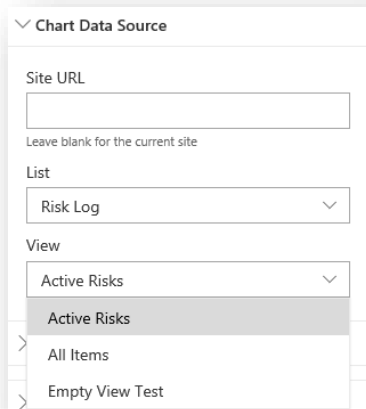
The screenshot shows the "Site URL" control with the text "https://nowhere.sharepoint.com" entered in the input field. Below the field, a red error message is displayed: "No site can be accessed at 'https://nowhere.sharepoint.com'". The note "Leave blank for the current site" is also visible.

Note that there is deliberate time delay of 3 seconds before the URL is evaluated. This allows enough time for a URL to be manually typed, without an enforced validation on every key stroke. If the specified URL is valid, the lists and libraries of the site will be loaded into the **List Picker** control.

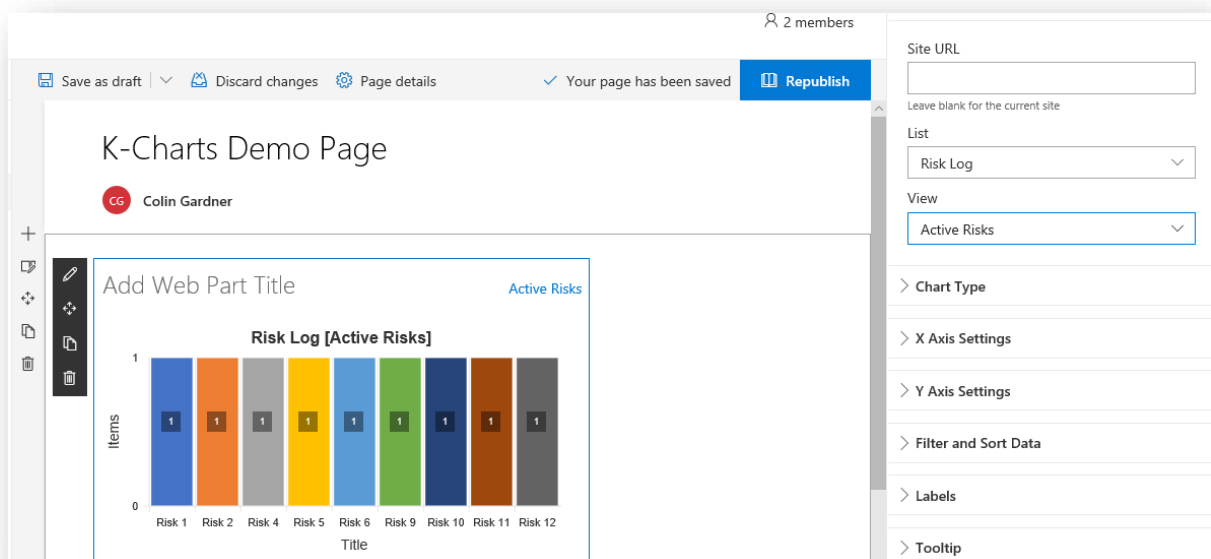
- **List Picker:** The **List Picker** enables the selection of any visible list or library in the site, for use as the data source for the visualisation. If a valid value has been specified in the **Site URL Textbox**, the lists and libraries at that remote site will be loaded into the picker. If the **Site URL Textbox** is left blank, the lists and libraries of the local site will be loaded. The screenshot below shows the lists and libraries available for selection in the demonstration Risk Management site.



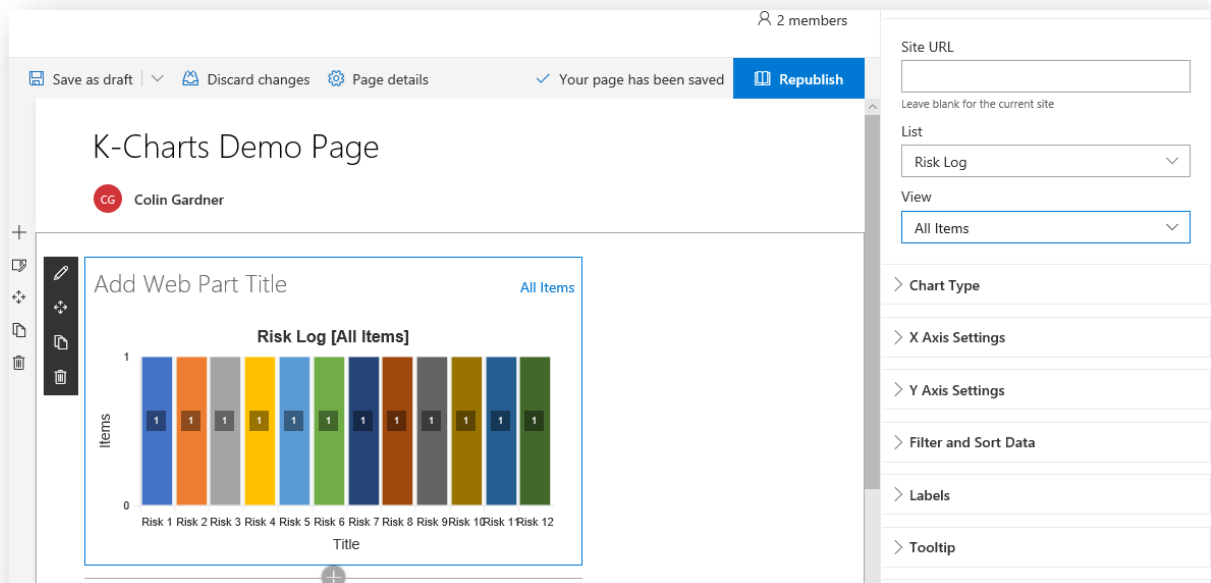
- **View Picker:** The **View Picker** is dynamically loaded with all public views defined on the list or library selected in the **List Picker**, as can be seen in the screenshot below:



Selection of an appropriate source list and view are the only properties that need to be provided in order to render an output in K-Charts.

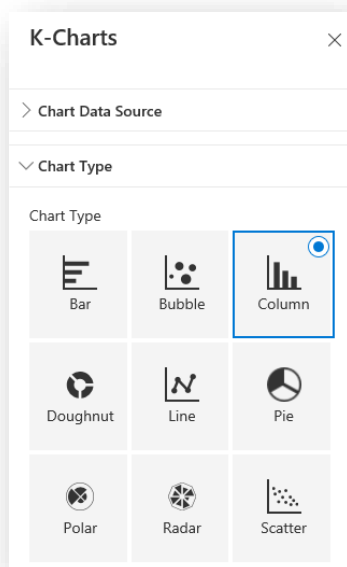


Notice how changing the selected the view will change the number of items shown in the K-Chart Visualisation. In the screenshot below, the web part is now hooked up with the All Items view and as such returns all items in the list.



Without making any adjustments in the web part, K-Chart will render items returned by the view, in the sort order specified by the view.

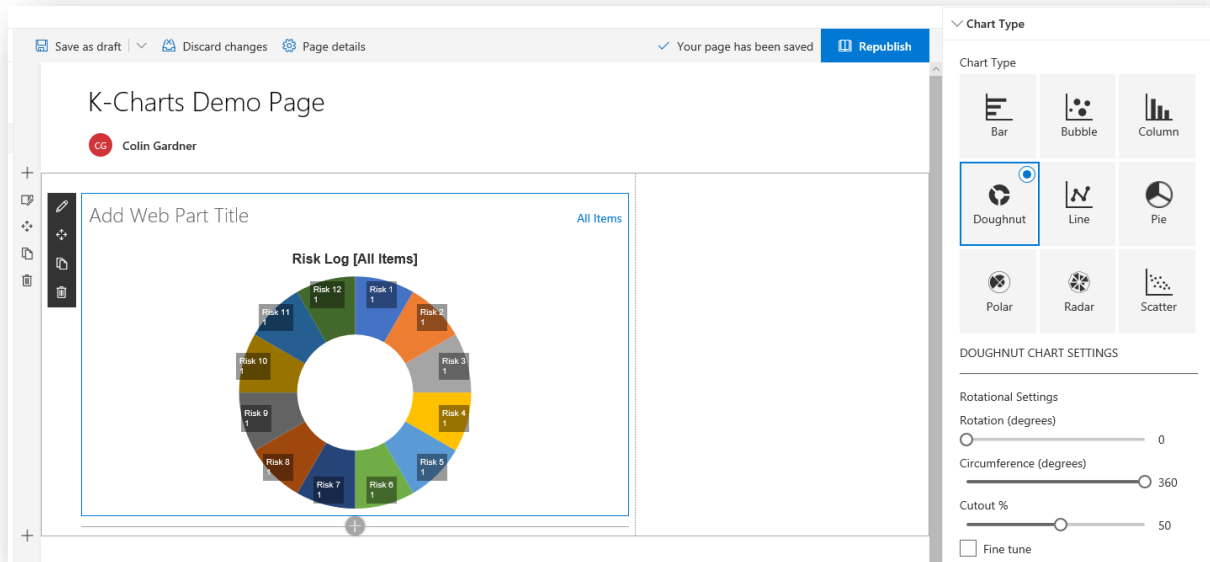
Chart Type



This version of K-Charts supports 9 chart types as shown above and briefly described in the features table presented in the Key Features section of this document. You can switch between chart types at any time, just by selecting a different option using the **Chart Picker** control, although other web part

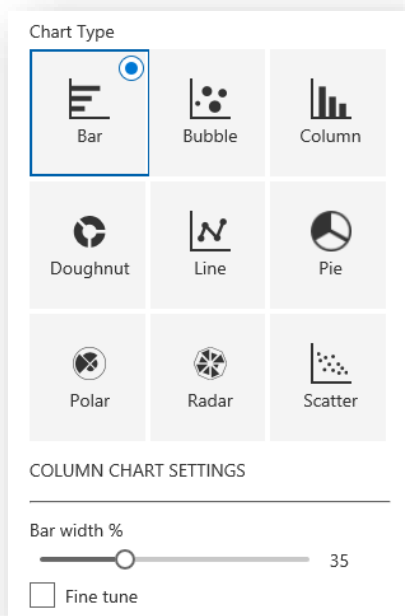
properties will likely need to be adjusted in order for the visualisation to present something useful to users.

The screenshot below shows the same example web part but where the Doughnut Chart type has been selected.



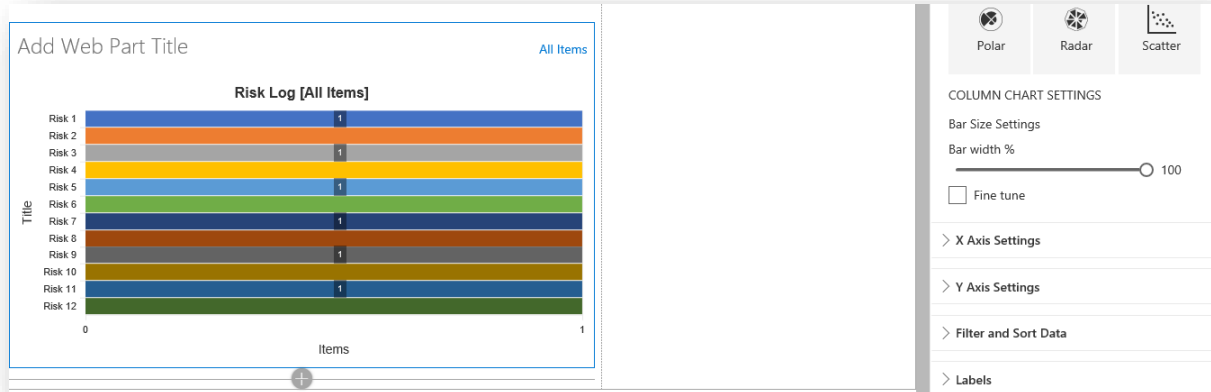
Beneath the Chart Picker, a number of additional controls will be made available. These controls allow you to apply chart type specific settings and so the number and type of these controls will vary depending on the type of chart that has been selected.

Bar and Column Charts

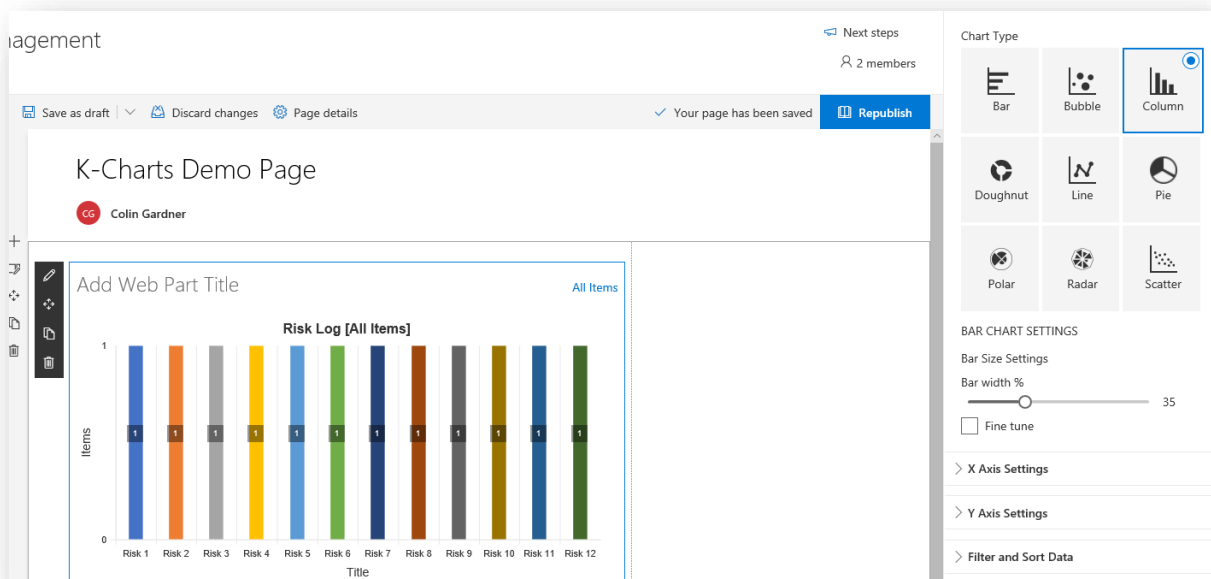


When a Bar or Column chart is selected the **Bar Width Slider** control is shown. This control is used to adjust the width allocated to each bar or column in the chart as a percentage of the available width. The default value is 90% meaning that there will be a 10% gap between columns/bars.

Setting the width value to 100% results in no spacing as can be seen below.



Whereas setting a smaller value will result in skinner bars/columns and greater space between them.

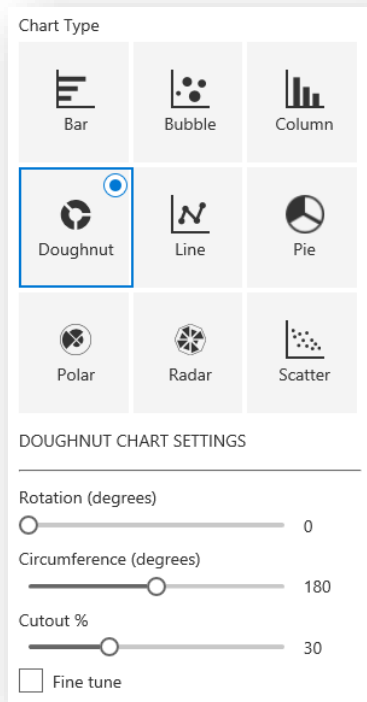


The column/bar width cannot be less than 5%. By default, the slider is set to step with increments of 5% but if you need to fine tune things, clicking the **Fine Tune Checkbox** will enable you to set the width to any whole number % between 5 and 100.

Note that because K-Charts is responsive, the exact width of each bar/column will depend on the screen space available to the chart and that will depend on section configuration and the page column selected to host the web part i.e. 100%, 66%, 50% or 33% width of the section. It will also depend on the browser window size which is usually determined by the user's device (desktop, laptop, table or smart phone).

In order to make K-Charts usable in all of these scenarios we dynamically control the size of chart elements rather than specifying fixed dimensions and as such, configuration settings such as the bar/column width are often specified as relative values (expressed as a % in this case) rather than absolute values i.e. a fixed number of pixels.

Doughnut and Pie Charts

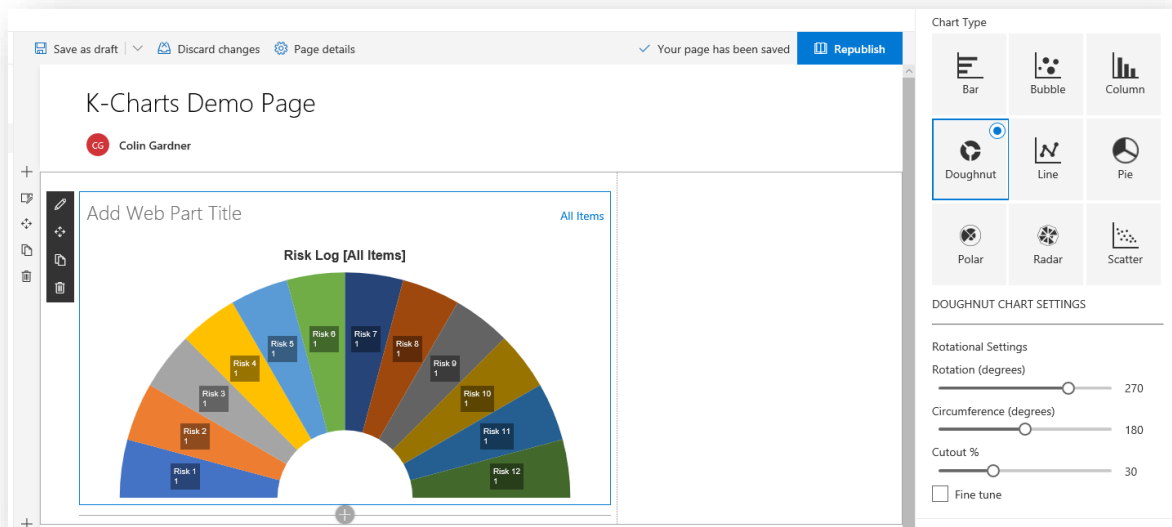


Pie and Doughnut charts are essentially the same except that a Doughnut is a Pie with a hole in the middle! There are a few controls which can be used to configure how Pie and Doughnut charts are rendered:

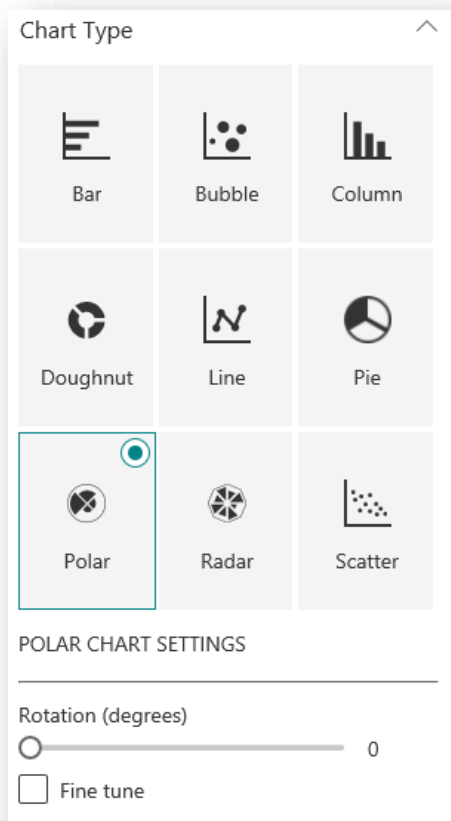
- **Rotation Slider:** By default, chart data is rendered in a clockwise direction from 12 O'clock but you can use the **Rotation Slider** to change the start angle. The slider step value is set to 45 (degrees) but if the **Fine Tune Checkbox** is selected you can set the rotation angle to the nearest whole degree in the range 0 (no rotation) to 360 (full rotation which is also the equivalent of zero rotation)¹⁰.
- **Circumference Slider:** By default, a Pie or Doughnut will be configured to use an arc of a full 360 degrees but you can use the **Circumference Slider** to change the arc from between 0 (where no chart data will be shown) through any angle to a full circle with 360 degrees.
- **Cutout % Slider:** This control is only shown for Doughnut charts and is used to set the size of the centre cutout as a % of the chart radius. The Cutout % Slider control can be set to a value between 0 (no cutout and so the chart will be the same as a Pie) to 95% (where the chart will be displayed as a ring of colored arcs).

¹⁰ The **Fine Tune** checkbox control is shown many times in the web part configuration interface and is used to allow for the more precise setting of values, mainly in slider controls. As the **Fine Tune** checkbox serves this purpose in a consistent way it will no longer be referred to in the remainder of this documentation.

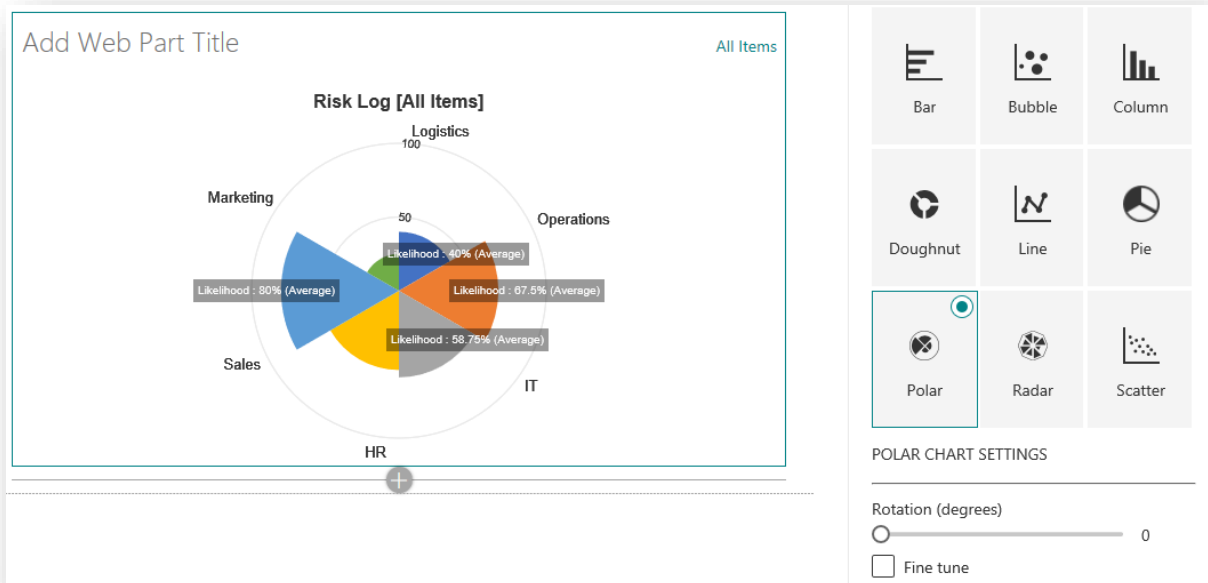
Setting the rotation and the circumference can generate some interesting visualisations, like the fan chart shown below.



Polar Area Chart

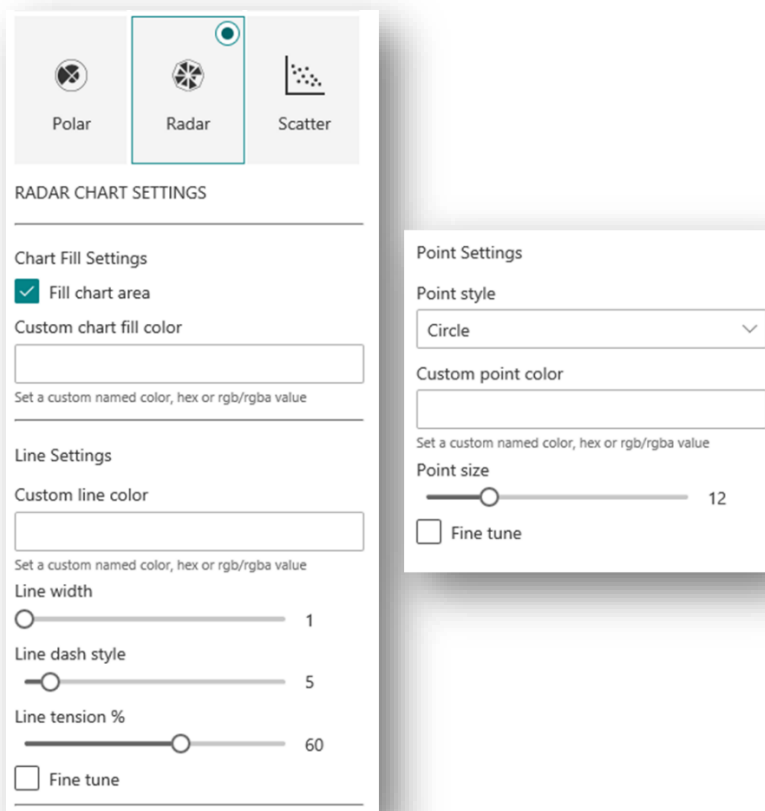


Until a Polar Area chart is configured to use list data it will appear much like a Pie chart, so in order to demonstrate the chart settings, the radial axis has been configured to use the value in the Likelihood column of the source data list. Configuration of chart data columns is described later in this document.

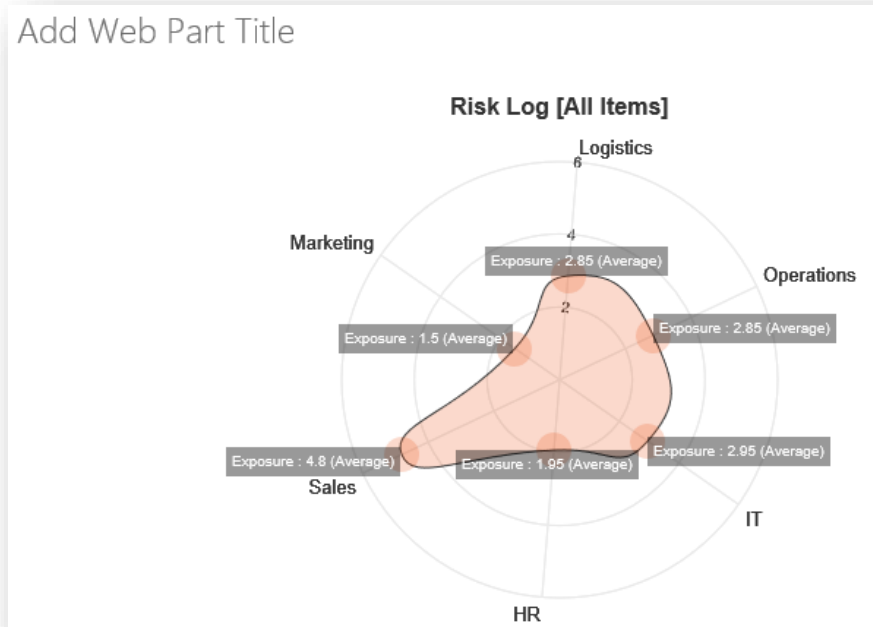


For a Polar Area chart there is only one additional control, the **Rotation Slider**: This works in the same way as for a Pie or Doughnut chart and is used to control the start angle from which data is presented (which will be zero degrees by default).

Radar Chart



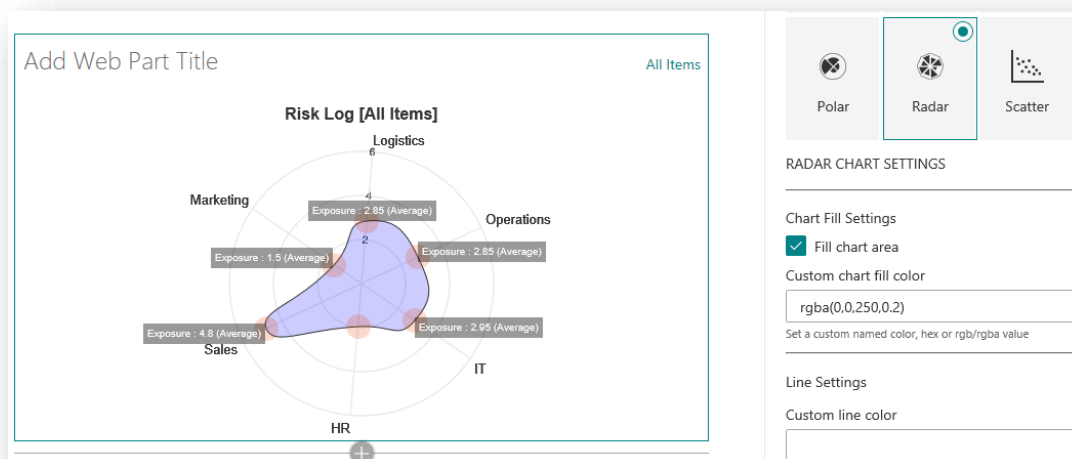
A Radar chart is more complex than other radial chart types and like Polar Area charts, they require configuration with data, to display anything useful. The screenshot below shows a Radar chart that has been configured to show the average risk Exposure value, grouped by the business area. Configuring chart data is described later in this document.



The controls that are used to configure Radar charts are described in the following sub-sections:

Chart Fill Settings

- **Fill Chart Area Checkbox:** When checked the radar chart area will be filled with a fill color. When not checked, no fill color is applied and the **Custom Chart Fill Color Textbox** is disabled.
- **Custom Chart Fill Color Textbox:** When left blank, the fill color will be automatically derived from the theme color applied to the site but this textbox can be used to specify a custom color to fill the chart area.



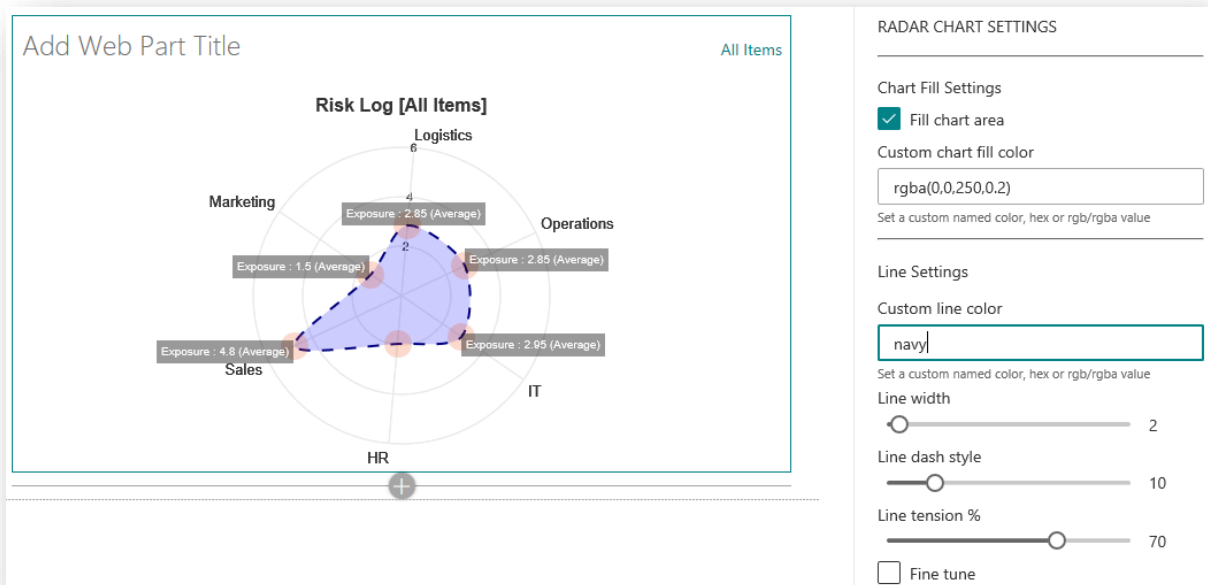
In the above screenshot, the fill area has been set to a blue colour with an opacity value (alpha channel) of 0.2. Using transparency will allow the radial grid lines to show behind the fill area.

Line Settings

This section provides controls which govern how the line segment around the radar plot area is rendered.

- **Custom Line Color Textbox:** Used to specify a custom color for the radar plot boundary line. If you do not want to show the plot line, set the color value to “transparent”.
- **Line Width Slider:** Used to set the width, in pixels, of the radar plot line. A value in the range 1 to 20 can be applied.
- **Line Dash Style Slider:** Used to make the plot line dashed. The value set in the slider specifies the number of pixels for each alternating line and space. The slider can accept values in the range 0 (no spacing and so a solid line) to 50 (each line/space segment will be 50 pixels).
- **Line Tension Slider:** Used to control the line tension as a % value. When the control is set to 100%, full tension is applied so that points in the radar plot will appear as sharp angles. Reducing the tension value will result in a more rounded (less angular) plot area. The default value is 80%.

The screenshot below shows a Radar chart with some custom line setting applied:



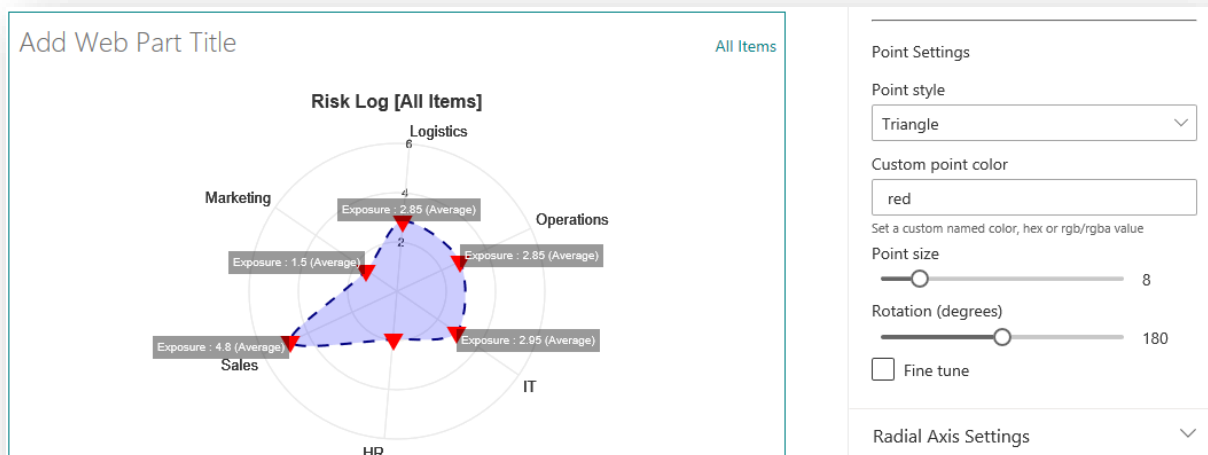
Point Settings

This section provides controls that govern how points are displayed on the chart.

- **Point Style Picker:** This dropdown control allows you to select the type of point that is shown on the chart. The options are:
 - Circle
 - Cross
 - X Mark
 - Dash
 - Line
 - Rectangle
 - Diamond

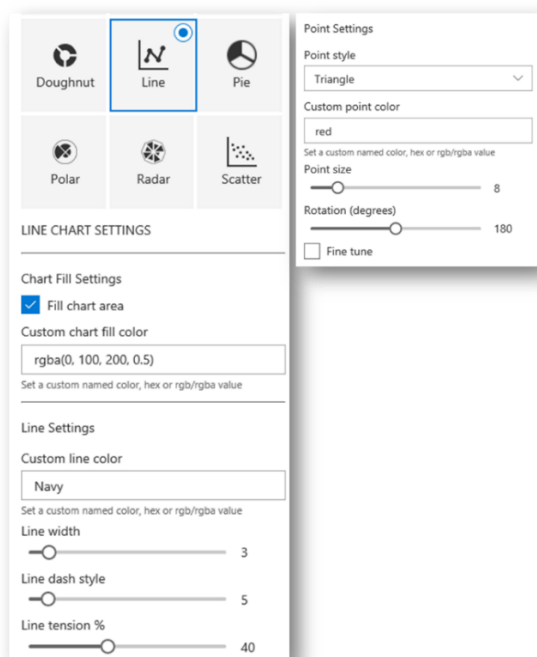
- Rounded Rectangle
- Star
- Triangle
- **Custom Point Color Textbox:** Used to specify a custom color to be used for data points.
- **Point Size Slider:** Used to control the size of the data point in the range 0 to 50.
- **Rotation Slider:** Certain point styles, such as Cross and Triangle support rotation whilst others such as Circle do not. The **Rotation Slider** control is only shown when a point style that supports rotation is selected in the **Point Style Picker**.

By default, the Circle point style is selected with a size of 3 pixels, using a theme color. The screenshot below shows the chart when custom point settings have been applied.



If you do not wish to show data points, simply set the Point Size to zero or set the custom point color to “transparent”.

Line Chart



To display anything meaningful a Line chart must also be configured to use a list data column. A Line chart has controls grouped in the following sub-sections:

Chart Fill Settings

Contains the same set of controls used to control the fill of a Radar chart as previously described.

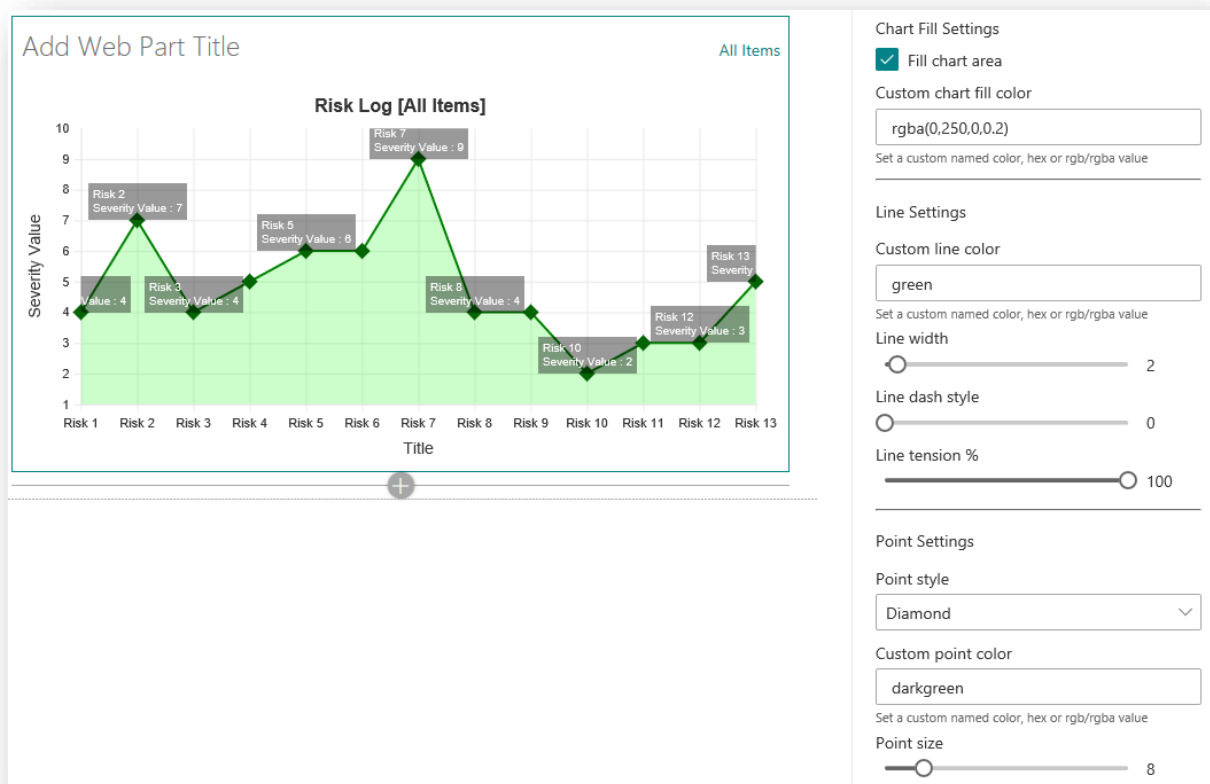
Line Settings

Contains the same set of controls used to govern the plot line of a Radar chart as previously described.

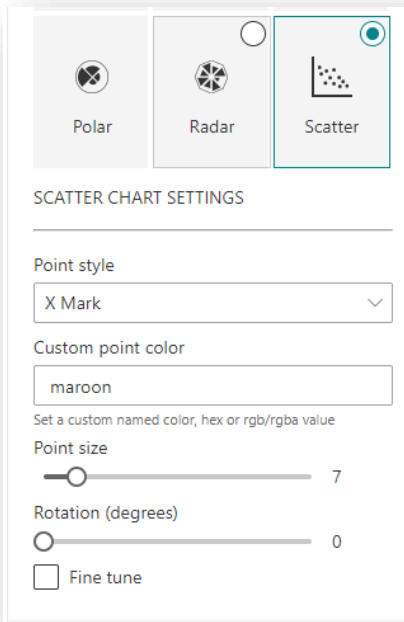
Point Settings

Contains the same set of controls used to govern the point settings of a data point in a Radar chart as previously described.

The screenshot below shows an example of a Line chart configured with a different set of color, line and point style options.



Scatter Chart



Panel showing Scatter Chart settings. The Scatter chart type is selected. Settings include: Point style (X Mark), Custom point color (maroon), Point size (7), Rotation (degrees) (0), and a Fine tune checkbox.

SCATTER CHART SETTINGS

Point style
X Mark

Custom point color
maroon

Set a custom named color, hex or rgb/rgba value

Point size
7

Rotation (degrees)
0

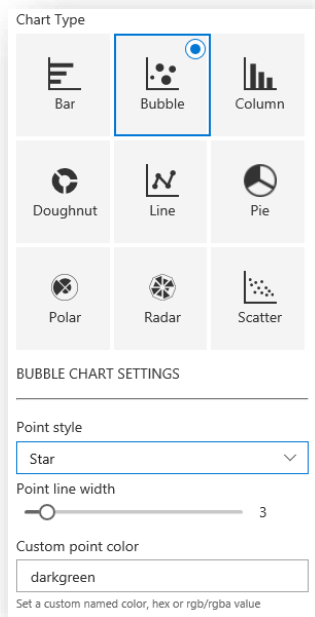
☐ Fine tune

A scatter chart requires 2 data sets, one each for the X and Y axis. In order to demonstrate the configuration a scatter chart the X and Y axis have been linked to data columns in the data source list. The X axis has been configured to show the Severity Value and the Y Axis to show the Likelihood.

A scatter chart offers the same set of controls for configuring data points as those used in a Radar chart and a Line chart, described previously. The screenshot below shows a scatter chart with a different the set of point configuration settings as shown the screenshot above.



Bubble Chart



A bubble chart is similar to scatter chart in that data values need to be assigned to both the X and Y axis. However, with a bubble chart, a 3rd set of data values can be passed in and the size (normally the radius) of the data point can be used to visualise that extra data dimension.

Most often, a circle is used as the datapoint and their size will vary in accordance with the 3rd data dimension and so the data points look like bubbles, hence the name. The visualisation in the screenshot below use the Exposure value as this 3rd data dimension to give an indication of where the greatest risks reside.

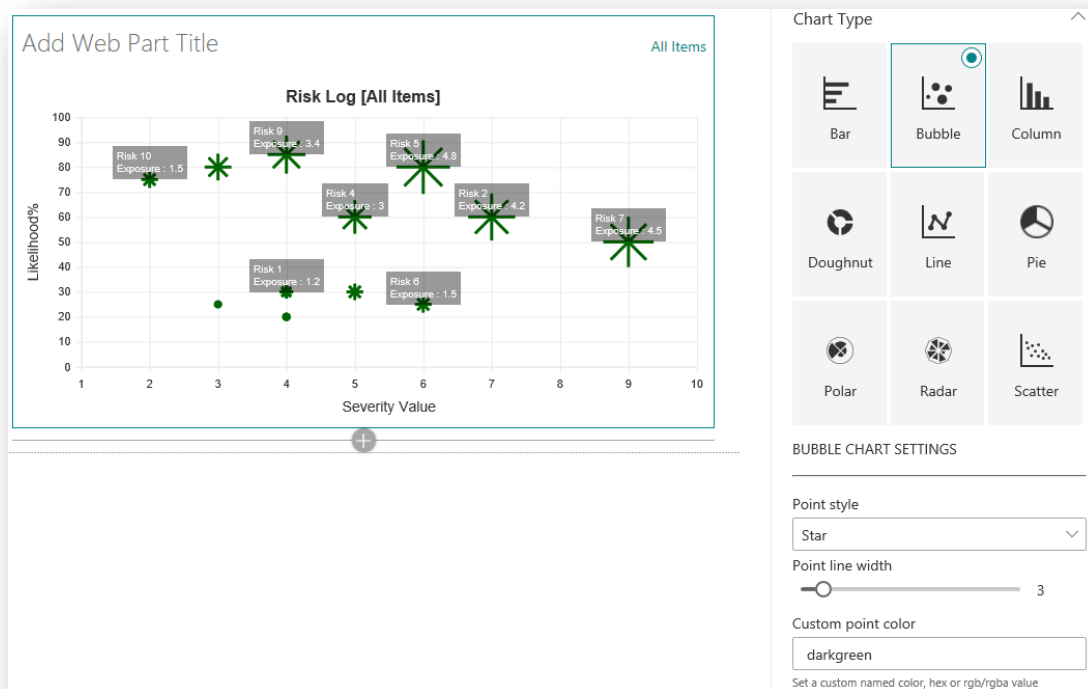


However, K-Charts allows you to use any of the previously listed point styles and so you are not restricted to using bubbles.

It should be noted that point styles come in 2 distinct types, namely:

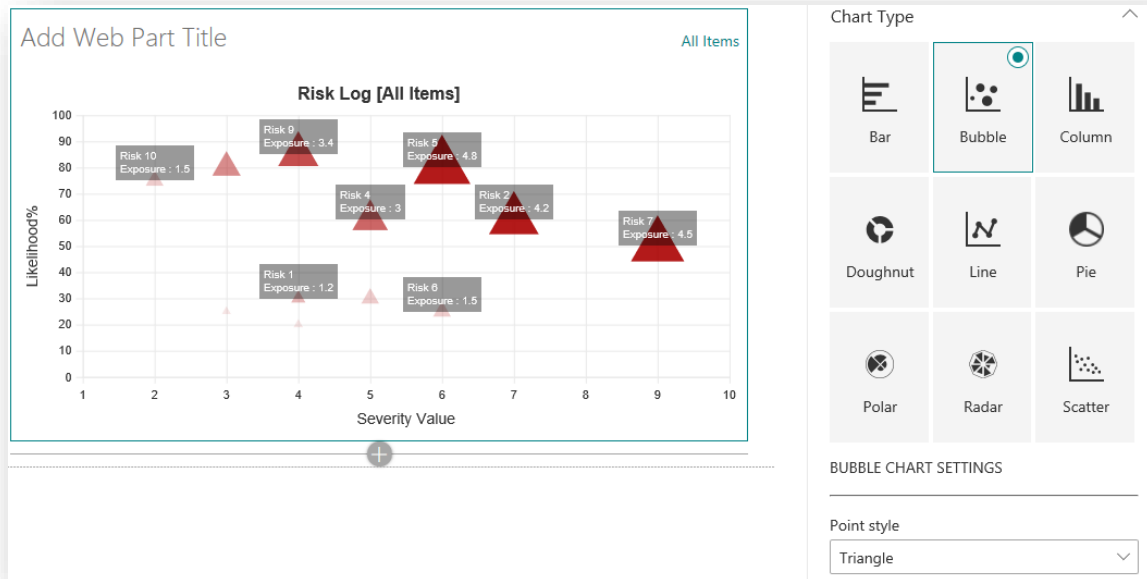
- **Line Based Points:** Those data points which are rendered using line segments which are Cross, X Mark, Dash, Line and Star.
- **2-Dimensional Points:** Those data points which are represented by a 2-dimensional element namely: Circle, Rectangle, Rounded Rectangle and Triangle.

When a Line Base Point is selected you can control the color and line width of the point as shown in the screenshot below:



When a 2-Dimensional Point style is selected the color of the bubble is controlled separately and can be based on conditional business logic. So, for example, any risk that is overdue its quarterly review might be coloured red and those due for review this month might be yellow whilst the others are green. The means by which chart elements can be conditionally formatted is described later in this documentation.

The screenshot below shows a bubble chart which uses the Triangle data points and a heat map as the means to control data point coloring (described later in this document).



Note that data point rotation is not supported in bubble charts.

Understanding Chart Data

In the Chart Data Source section of this document, it was explained that a K-Chart web part is first hooked up to a specific view on the source data list or library. The selected view provides a logical and convenient way to filter and sort the set of list items on which a data visualisation can be based but in itself, does not provide any data values to generate a chart.

To display a chart that adds business value requires data that can be visualised. With K-Charts, that data comes from the values assigned to SharePoint column for the items or documents returned by the selected view in specified list or library.

This section explains some important concepts behind how column data can be used to drive K-Chart visualisation.

Metadata

SharePoint columns are often referred to as metadata attributes and the set of columns for a list item or document is known as its metadata profile. Some metadata is provided by SharePoint automatically but it is likely that you will need additional columns in order to generate meaningful visualisations.

In the use-case scenario, of an organisational Risk Log, presented earlier in this document, there were several additional columns added to the Risk Log list (please refer to the sub-section titled Risk Log Structure).

A K-Chart web part is connected to the appropriate metadata columns by means of picker controls that are displayed in the Axis Settings groups of the web part properties pane.

Data Axis Control Groups

Depending on the types of chart selected, there can be one or two different Axis Settings control groups displayed in the web part property pane:

- **Radial Charts:** Radial Charts are Pie, Doughnut, Polar Area and Radar and these only require a single data axis, known as the Radial Axis.
- **Cartesian Charts:** All other chart types are known as Cartesian Charts and require 2 axes, namely:
 - **X Axis:** For data values and items to be presented in the horizontal plane.
 - **Y Axis:** For data values and items to be presented in the vertical plane.

Categorical and Numeric Data

The data to be presented in an axis can be:

- **Categorical:** Is used to identify an item or a collection of items.
- **Numeric:** Provides numeric values that can be used to plot data values.

In SharePoint, certain column types are **Categorical** whilst others are **Numeric**:

- **Categorical Columns:** The following are **Categorical** column types that can be used in K-Charts:
 - Single Line Text
 - Choice
 - Managed Metadata
 - Yes/No
 - Lookup
 - User or Group
 - Content Type
 - Approval Status (on document libraries where content approval has been enabled)
 - Date and Time
 - Calculated (where the column is configured to return a text, date or yes/no value)
- **Numeric Columns:** The following are **Numeric** column types that can be used in K-Charts:
 - Number
 - Currency
 - Calculated (where the column is configured to return a number value)

Categorical columns can be used to group items and K-Charts can use that grouping to bundle the collection of list items or documents within that group and present them as a single chart element (a bar in a Bar chart or a slice of a Pie chart for example).

Note that although Date and Time columns do contain a numerical value, they are primarily considered **Categorical**. This is because we would normally want to group date values into useful time slices such as to show a set of controlled documents by the year and month in which they are due for their next review, for example.

Note also that some **Categorical** columns in SharePoint can be configured to accept multiple values, namely:

- Choice
- Managed Metadata
- User or Group
- Lookup

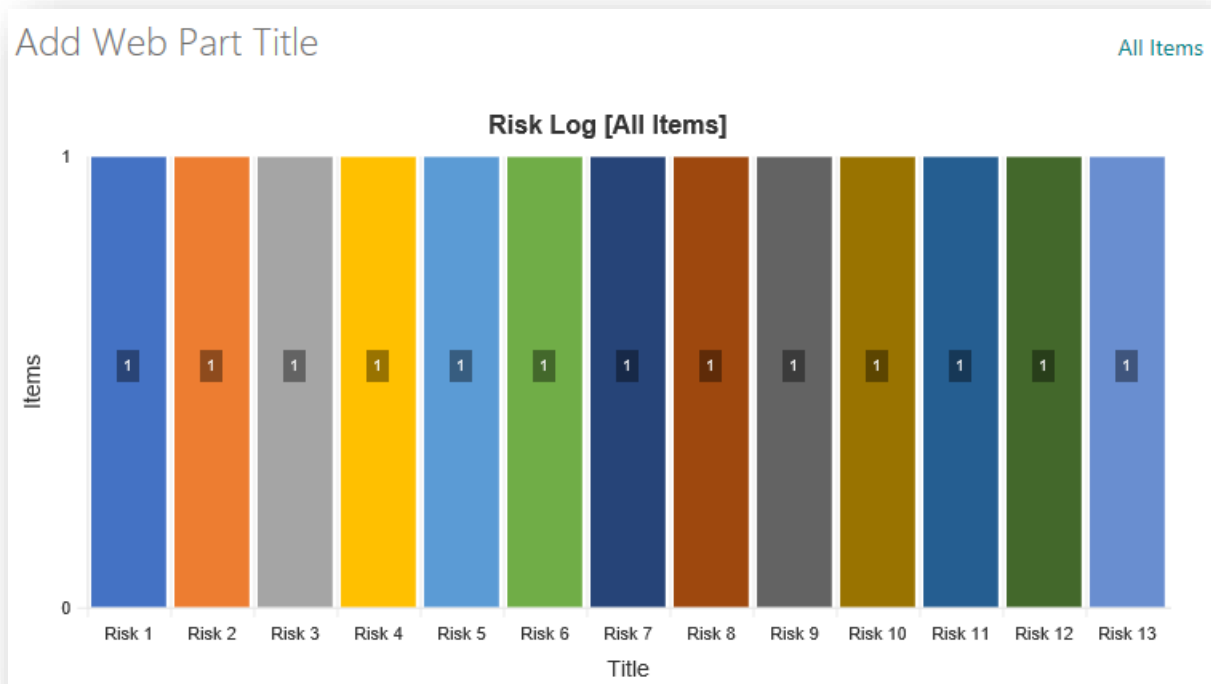
K-Charts fully supports the use of **Categorical** columns that have been configured to accept multiple values.

The data to be shown on axes of a chart depends on the type of chart selected, as shown in the table below:

Chart Type	R Axis	X-Axis	Y-Axis
Pie, Doughnut, Polar Area and Radar	Categorical & Numeric		
Bar		Numeric	Categorical
Column		Categorical	Numeric
Line		Categorical	Numeric
Scatter		Categorical & Numeric	Numeric
Bubble		Categorical & Numeric	Numeric & Secondary Numeric

The axes of a K-Chart web part do not necessarily need to be configured with either a **Categorical** column or a **Numeric** column.

When a **Categorical** column is not specified, items returned by the view will not be grouped but rather they will be represented as individual chart elements. This is why, when you first connect a web part to a view, all items in that view will be shown as individual chart elements as can be seen from the screenshot below.



Even though the items returned by the view are not grouped they are identified individually, by their title as all list items have a Title column.

Although most SharePoint list types make the Title column required, it is possible to configure a list so that an item can be created without a Title. In which case, K-Charts will display the item as Unassigned but with the item Id value also shown, as can be seen in the screenshot below:



In the case where a web part is connected to a document library, you can choose whether to use the document's file name in preference to any title that may (or may not) have been applied.

It can also be seen that because a **Numeric** column has yet to be specified (in the Y axis in this case) all chart elements are the same height because the web part does not yet know which values it should be using to vary the column heights.

Data Aggregation

When a **Numeric** column has been applied to an axis in a chart which has also been grouped, it is necessary to specify an **Aggregation Function** which is simply a mathematical method of combining the data values within each group into a value for the group as a whole.

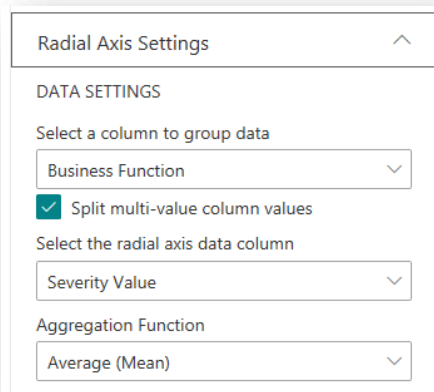
The following **Aggregation Functions** are available:

- **Count**: The number of SharePoint items within the group.
- **Sum**: The sum of all data column values in the group.
- **Average (Mean)**: The mean value of grouped items.
- **Median**: The median value of grouped items.
- **Standard Deviation**: The SD value of group values.
- **Variance**: The variance of group values.
- **Max**: The maximum value in the group.
- **Min**: The minimum value in the group.
- **First**: The first value in the group.
- **Last**: The last value in the group.

The default **Aggregation Function** is **Count**.

Configuring Chart Data

Depending on the type of chart and which **Categorical** and **Numeric** columns have been selected, there may be up to 4 controls shown in the Data Settings section of the Axis Settings group:



Radial Axis Settings

DATA SETTINGS

Select a column to group data

Business Function

☒ Split multi-value column values

Select the radial axis data column

Severity Value

Aggregation Function

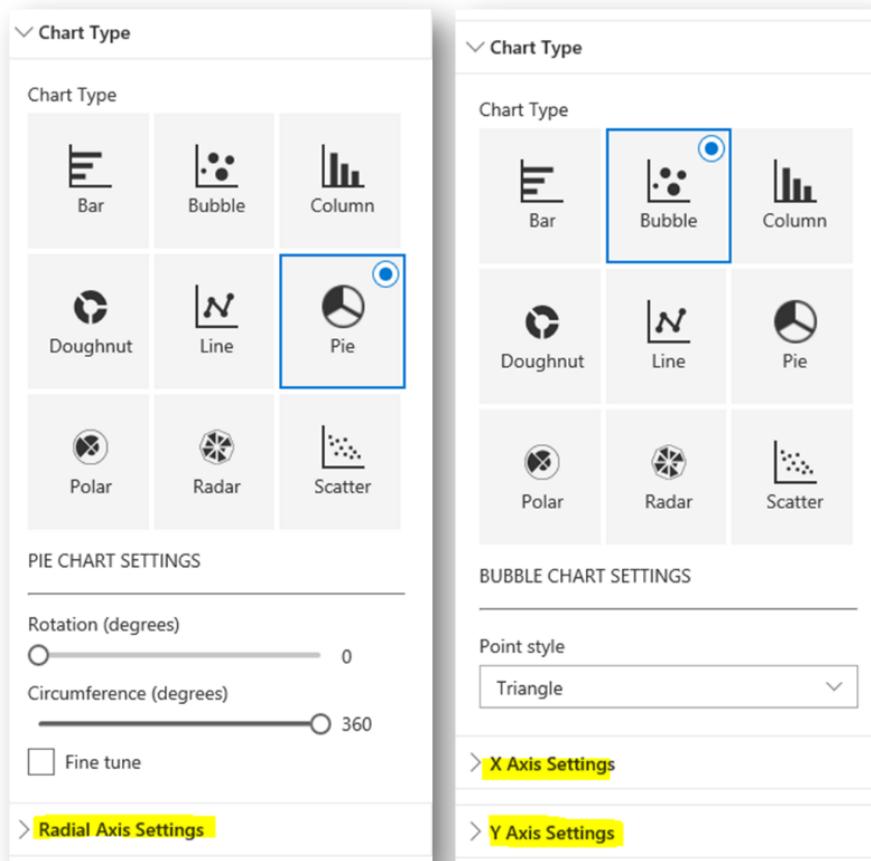
Average (Mean)

- **Group-by Column Picker:** This control is used to select a **Categorical** column that will be used to group items returned from the view.
- **Split Multi-Values Checkbox:** This checkbox is only displayed when the column selected in the **Group-by Column Picker** supports multiple values. When checked, and the column value for an item does contain multiple values, the SharePoint item will effectively be considered as separate chart items. So, a SharePoint list item tagged with say the business functions Operations and IT will be included in both the Operations and IT chart elements. When not checked, the set of multiple values will be considered as their own group¹¹.
- **Axis Data Column Picker:** Used to select a **Numeric** column on the SharePoint list that should be used as a data set for the visualisation. If a group-by column is specified but no data column is selected then the chart will be based on the number (the Count) of items within each group.
- **Aggregation Function:** This control is only shown when a column has been used to group items and when a numeric column has been specified for use as axis data. The choice of aggregation function will determine how the values in the data column for each group of items are combined into a single data value. The most commonly used aggregation functions are **Sum** (the total of all the values of items in the group) and **Average (Mean)** (the arithmetic mean of values).

Axis Configuration

When a radial chart type is selected (Doughnut, Pie, Polar or Radar), the Radial Axis control group is displayed. For other chart types, two control groups, one each for the X and Y axis are shown, as can be seen from the screenshot below.

¹¹ In order to cut down the permutations of multiple values being in their own unique group, item properties are first ordered alphabetically so the order in which a user happened to apply tags in the SharePoint UI will not result in multiple groups just because items happen to have been tagged in a different order.



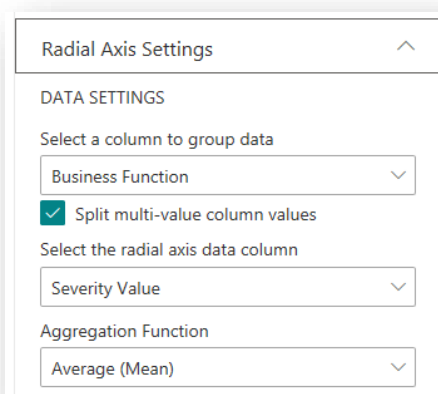
The following sub-sections explain the options for configuring each axis.

Radial Axis Settings

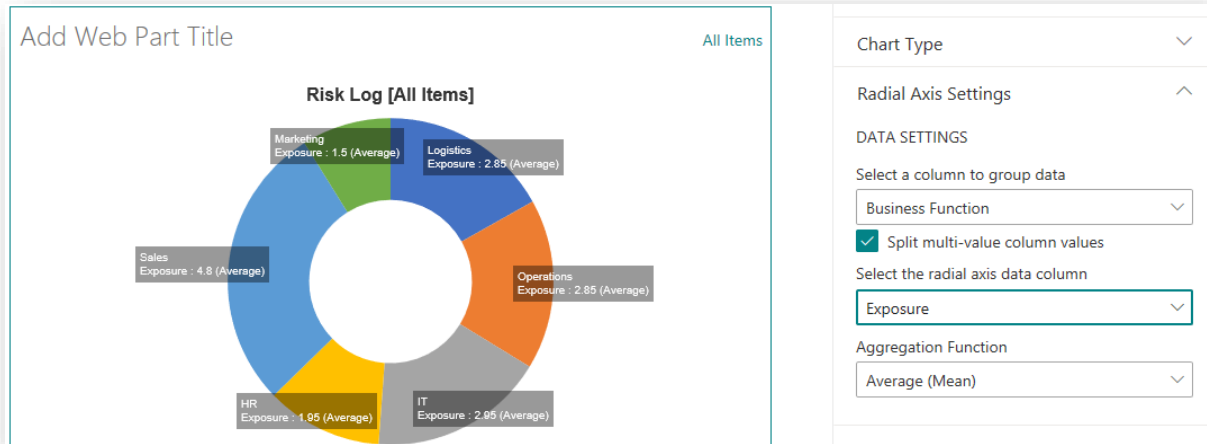
This section describes the use of the controls found in the Radial Axis Settings group of the web part property pane. This control group is only displayed when a radial chart type is selected.

Radial Axis Data Settings

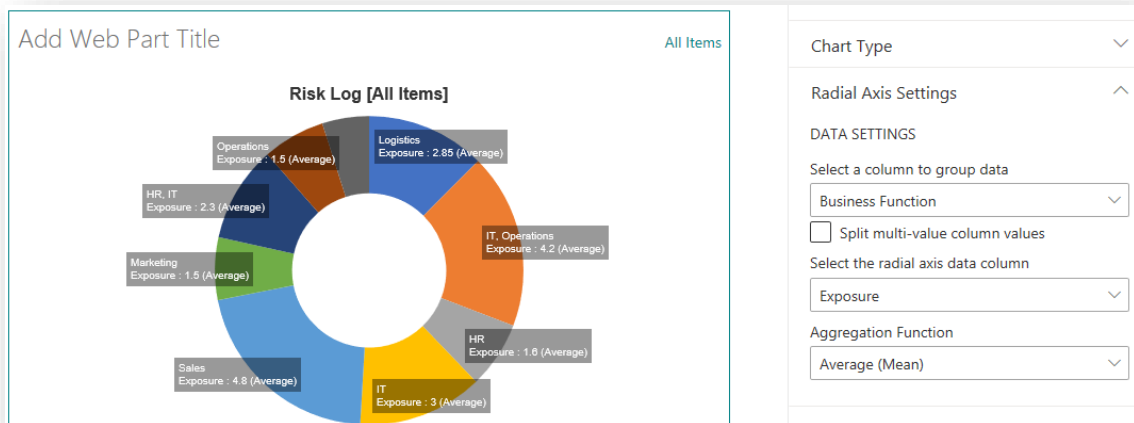
Although the set of controls available in the Radial Axis Settings group differs depending on the specific radial chart type selected, all radial charts share the same set of controls to connect the axis with SharePoint columns, as shown and described in the previous section.



The screenshot below shows a Doughnut chart, grouped by Business Function and configured to show the average Exposure value for each group.



When the **Split multi-value column values** checkbox is unchecked, notice how the chart automatically adapts to show additional groups for items that have been tagged with multiple values. Specifically, there are 2 new combined groups, one for items tagged as relating to both HR and IT and the other for items tagged as being related to both IT and Operations.



Configuration Settings for Document Libraries

When the web part is connected to a document library a **Use file names in preference to titles** checkbox is displayed. When checked, the web part will display document file names instead of a title value, even if a title has been set on the document.

When not checked, the web part will first look at the title column and use that value if it exists. If a title value is not found the web part will revert to using the document's file name.

CONFIGURATION SETTINGS

☐ Use file names in preference to titles

Configuration Settings for Polar Area and Radar Chart

When a Polar Area or Radar chart is selected, the Radial Axis Settings group shows a Configuration Settings section which contains several controls that govern if and how elements of the axis are rendered. These configuration settings are not needed for Pie and Doughnut charts.

CONFIGURATION SETTINGS

☒ Show axis
 ☒ Advanced Settings

Point Label Text and Tick Marks

☒ Show point labels
 ☒ Show tick marks

Custom font color

Set a custom named color, hex or rgb/rgba value

Set the font size

14

Grid Lines

☒ Show angle grid lines
 ☒ Show radial grid lines
 ☒ Circular grid

Custom grid line color

Set a custom named color, hex or rgb/rgba value

Line width

2

Ring density

5

Custom maximum value

Set a positive number to specify the maximum range value

In the Configuration Settings section, 2 checkbox controls are available:

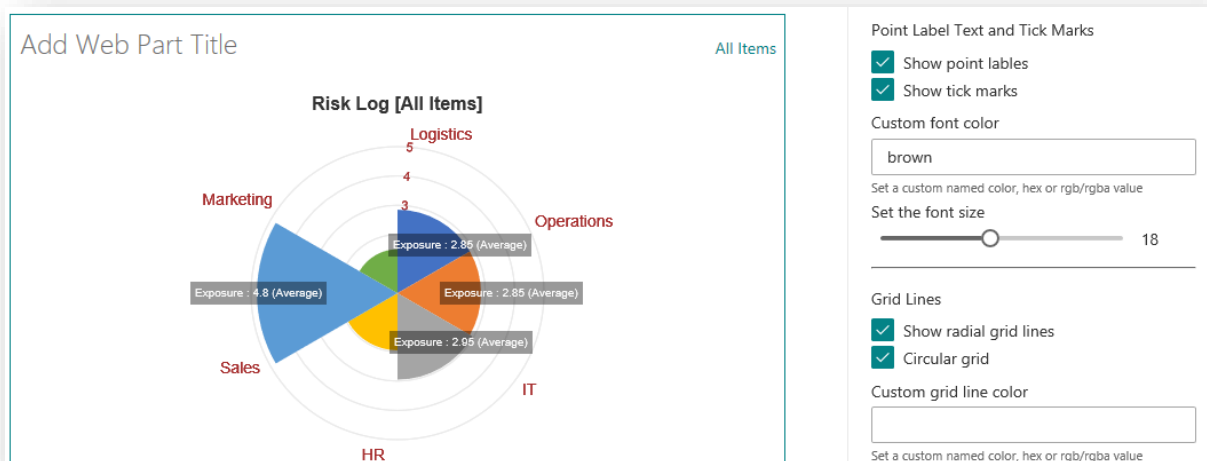
- **Show Axis Checkbox:** When unchecked, no elements of the radial axis are rendered in the chart area and the **Advanced Settings Checkbox** is hidden.
- **Advanced Settings Checkbox:** When checked, several additional configuration sub-sections and controls are made available

Point Label Text and Tick Marks

The controls in this sub-section are used to configure if and how point labels and tick marks are shown on the radial axis.

- **Show Point Labels Checkbox:** When checked, point labels will be displayed. Point labels are the item title or group name, displayed at the perimeter of the radial axis area.
- **Show Tick Marks Checkbox:** When checked, a numeric tick mark value will be displayed inside the chart area.
- **Custom Font Color Textbox:** This textbox is used to set a custom font color for the point labels and tick marks. This textbox is only enabled if either the **Show Point Labels Checkbox** or the **Show Tick Marks Checkbox** is enabled. If left blank, the point labels and tick marks will use a font color based on the theme used by the SharePoint site.
- **Font Size Slider:** This slider is used to set a custom font size for both the point labels and tick marks if they are shown.

The screenshot below shows a Polar Area chart configured with some custom settings for point labels and tick marks.



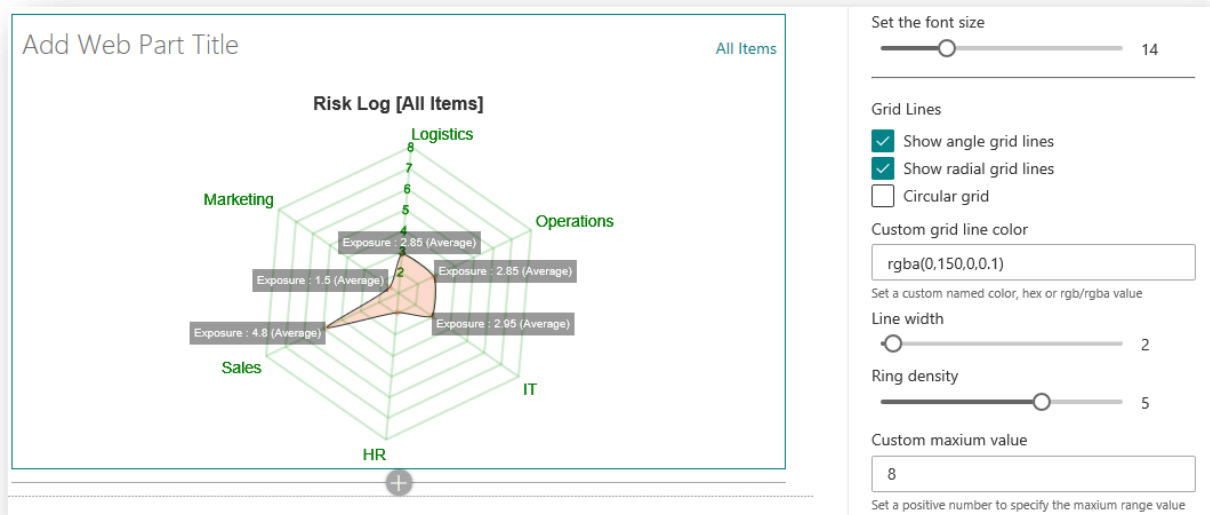
Grid Lines

This sub-section contains controls which govern how grid lines are displayed on the axis:

- **Show Radial Grid Lines Checkbox:** This checkbox is used to control if angle grid line (straight lines radiating from the center of the chart) are shown. Note that this control is only shown for Radar charts as Polar Area charts do not support angle lines.
- **Show Radial Grid Lines Checkbox:** This checkbox is used to control if radial grid lines (the concentric circles radiating from the chart center) are displayed. As the other controls in this sub-group are used to configure grid line settings, they are only displayed when the checkbox is checked.
- **Circular Grid Checkbox:** By default, a Polar Radar will use a circular grid pattern but you can opt for a linear (spider-web like) grid by un-checking this checkbox.
- **Custom Grid Line Color Textbox:** When a radial grid line is shown, an appropriate theme color will be used by default, but this textbox can be used to set any named color, hex or rgb/rgba color code for the grid lines.
- **Line Width Slider:** Used to set the width of grid lines. By default, grid lines will be a single pixel wide but the slider can be used to set a value in the range 1 to 20.

- **Ring Density Slider:** Used to set the density of radial grid lines. Note that the value set by the slider is not the number of radial grid lines but the density in which grid lines will appear.
- **Custom Maximum Value Textbox:** This textbox is used to set an upper limit for the radial axis. If this textbox is left blank, the upper limit will be automatically calculated based on the values in the data set.

In the Radar chart below shows the effect of applying some custom settings to controls in the Grid Lines sub-group.



In most cases you will want to leave the Custom Maximum Value textbox empty so that the axis and chart area adapts dynamically to size of the data set. However, if you were setting a page to show a dashboard with multiple web parts, all of which might be showing similar information but from different data sources, you might want to set a fixed maximum value. This way the size of the axis and plot area will be consistent across all web parts so that they can easily be compared without distortion.

X and Y Axis Settings

When a non-radial chart type is selected the Radial Axis control group is hidden and in its place the X and Y axis control groups are displayed.

X and Y Axis Data Settings

The controls shown in both the X Axis Settings and Y Axis Settings groups, used to select **Categorical** (Group by) and **Numeric** (Data value) columns, will depend on the type of chart selected and the configuration of the columns in the source data list in SharePoint, as summarised in the following table, where:

- **Numeric Data Column Picker** controls are used to select **Numeric** columns.
- **Group by Column Picker** controls are used to select **Categorical** columns.
- **Split multi-value column values** checkboxes is used to indicate how items tagged with multiple values are to be processed.
- **Aggregation Function Picker** controls are used to specify how data is to be aggregated when items are grouped.

Chart Type	X-Axis	Y-Axis
Bar	<ul style="list-style-type: none"> — Numeric Data Column Picker — Aggregation Function Picker (when grouped in the Y axis) 	<ul style="list-style-type: none"> — Group by Column Picker — Split multi-value column values checkbox (when the selected group by column supports multiple values)
Column	<ul style="list-style-type: none"> — Group by Column Picker — Split multi-value column values checkbox (when the selected group by column supports multiple values) 	<ul style="list-style-type: none"> — Numeric Data Column Picker — Aggregation Function Picker (when grouped in the X axis)
Line	<ul style="list-style-type: none"> — Group by Column Picker — Split multi-value column values checkbox (when the selected group by column supports multiple values) 	<ul style="list-style-type: none"> — Numeric Data Column Picker — Aggregation Function Picker (when grouped in the X axis)
Scatter	<ul style="list-style-type: none"> — Group by Column Picker — Split multi-value column values checkbox (when the selected group by column supports multiple values) — Numeric Data Column Picker (for the x axis) — Aggregation Function Picker (when grouped in the X axis) 	<ul style="list-style-type: none"> — Numeric Data Column Picker (for the y axis) — Aggregation Function Picker (when grouped in the X axis)
Bubble	<ul style="list-style-type: none"> — Group by Column Picker — Split multi-value column values checkbox (when the selected group by column supports multiple values) — Numeric Data Column Picker (for the x axis) — Aggregation Function Picker (when grouped in the X axis) 	<ul style="list-style-type: none"> — Numeric Data Column Picker (for the y axis) — Aggregation Function Picker (when grouped in the X axis) — Numeric Data Column Picker (for the r axis – for the radius of bubbles) — Aggregation Function Picker (when grouped in the X axis and a numeric data column is selected for the r axis) — Bubble Scaling Slider (when a numeric data column has been selected for the r axis)

Bubble Chart Scaling

With a Bubble Chart, a tertiary set of data values can be specified and used to set the size of each data point or the radius of each bubble when a circle data point is used. Bubble Charts provide up to 3 additional controls in the Y Axis Settings group:

Y Axis Settings ^

DATA SETTINGS

Select the Y axis data column

Likelihood

Aggregation Function

Average (Mean)

Select a bubble size data column

Exposure

Aggregation Function

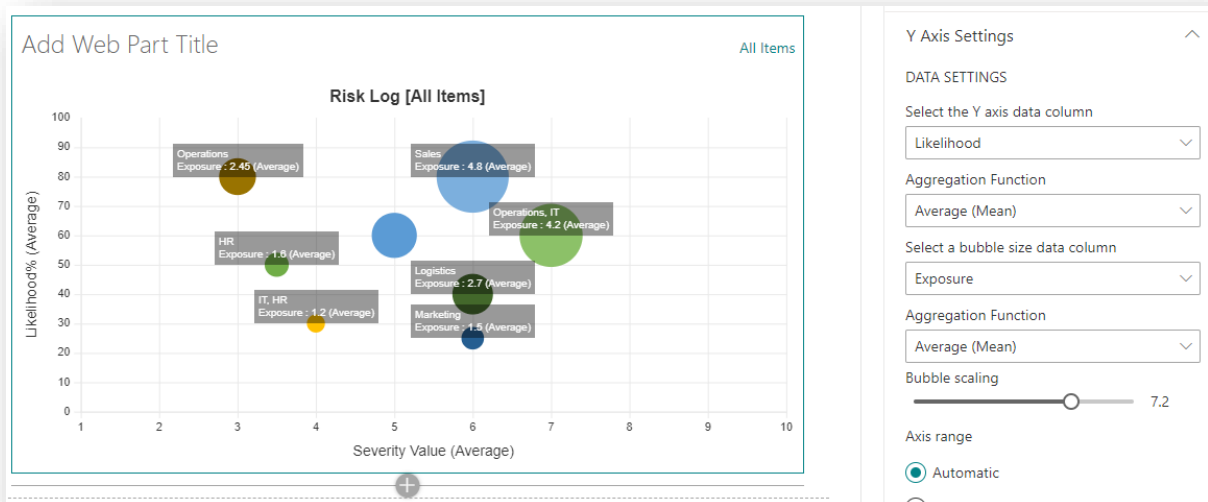
Count

Bubble scaling

1

- **Bubble Size Data Column Picker:** This is used to select a column that will provide the tertiary data column to control the size of the bubble (usually the radius).
- **Bubble Aggregation Picker:** This control is used to specify the aggregation function to be applied to the tertiary data set. This control is only shown if the data is grouped.
- **Bubble Scaling Slider:** This control can be used to scale the bubble size so to show the difference between values in a more marked way. This control is only shown when a valid bubble data column has been selected to specify the tertiary data set.

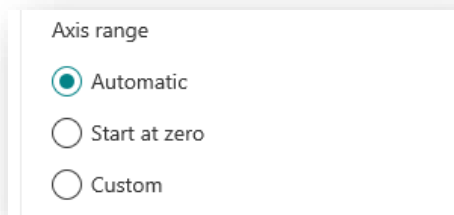
The Bubble Chart below is grouped by Business Function and uses the Average of Exposure column values to generate the bubble size where the average of the Severity Value and Likelihood values are used on the X and Y axis, respectively.



A bubble scaling value of 7.2 is set so that differences between bubbles is more pronounced. Note that bubbles are for indicative purposes only and the data that is used to drive their size is applied to the radius of the bubble and not the bubble's area.

Axis Range Controls

Whenever setting a numeric data column for an X or Y axis, the **Axis Range Choice Group** control is also made available:



Axis range

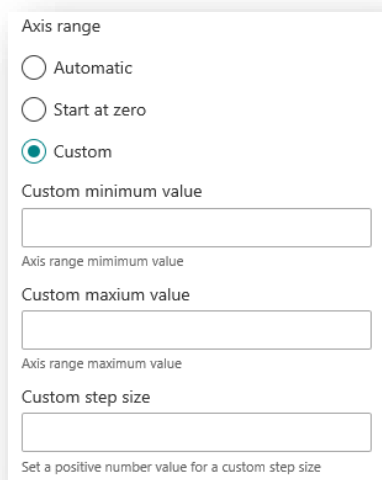
☒ Automatic

☐ Start at zero

☐ Custom

Axis Range Choice Group is used to set the mode for the axis range of values, and can be set to one of the following values:

- **Automatic:** The axis range is determined automatically based on the set of values in the data set.
- **Start at zero:** This option forces the axis to start at zero but values for axis range maximum and step size will be automatically calculated.
- **Custom:** A custom range can be applied to the axis. When Custom mode is selected the following 3 additional controls will be displayed:



Axis range

☐ Automatic

☐ Start at zero

☒ Custom

Custom minimum value

Axis range minimum value

Custom maximum value

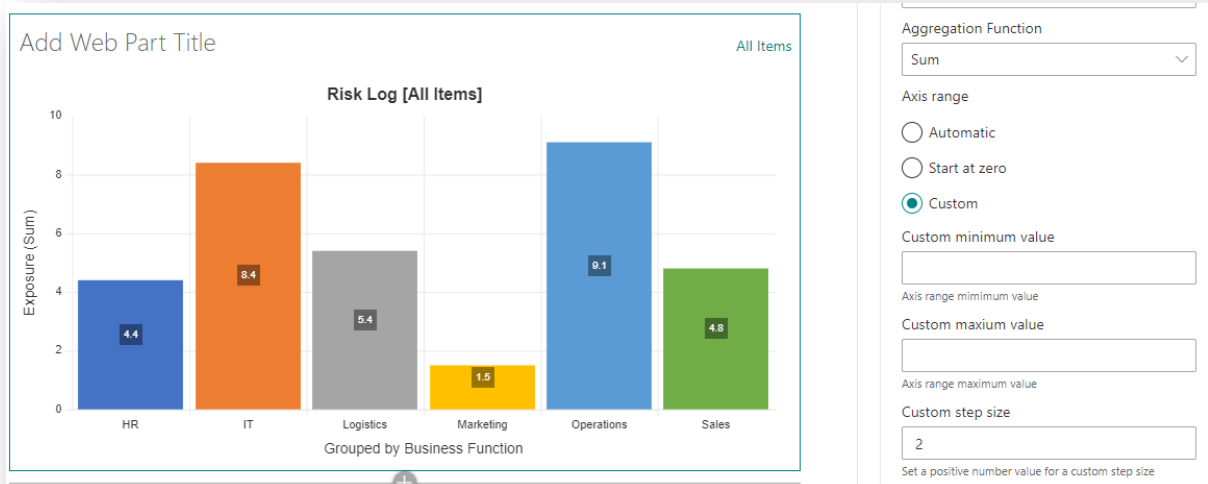
Axis range maximum value

Custom step size

Set a positive number value for a custom step size

- **Minimum Range Value Textbox:** Can be used to specify the minimum value to be shown on the axis.
- **Maximum Range Value Textbox:** Can be used to specify the maximum value to be shown on the axis.
- **Custom Step Size Textbox:** Can be used to specify a custom step size, which is the interval between grid lines and/or tick marks shown on the axis.

If you select the Custom option for the axis range, values do not necessarily need to be applied to all the other textbox controls. If a value is not set (left blank) then the corresponding Automatic mode value will be used by default. So, for example, if you just wanted to change the Step value to say 2, but leave the maximum and minimum values at their default settings then you would only need to set the value 2, in the **Custom Step Size Textbox**, as shown in the screenshot below.



When setting custom range values in Line, Scatter and Bubble charts, be aware that if a chart element (data point or bubble) lies outside of the specified range, it will not be shown in the chart area.

Similarly, for other chart types, elements which would usually extend beyond the specified custom range settings for the axis, will be cut off.

The screenshot below uses the same data set as above, but this time the maximum value for the axis has been set at 3.



Although the chart element labels show values higher than 3 for all items other than the Marketing group, the chart is misleading, as a quick glance would suggest that the total risk exposure is the same across all functional areas of the business (except Marketing) when the previous screenshot clearly shows that this is not the case.

Consequently, care should be taken when manually setting axis range values as the values specified are statically set as web part properties and whilst these values may be fine when initially configured, they may not be fine if the data set is updated subsequently and so may contain unexpected outlier values.

For this reason, we recommend leaving the axis in the default, Automatic mode, unless you have a good reason not to.

X and Y Axis Configuration Settings

In addition to providing controls, used to configure the data for each axis, the X and Y axis control groups also provide Configuration Setting controls which govern other aspects of how each axis is rendered.

As with radial charts, when a web part is connected to a document library a **Use file names in preference to titles** checkbox is displayed.

CONFIGURATION SETTINGS

☐ Use file names in preference to titles

When checked, the web part will use a document's file name in preference to a title value, even if a title value has been set.

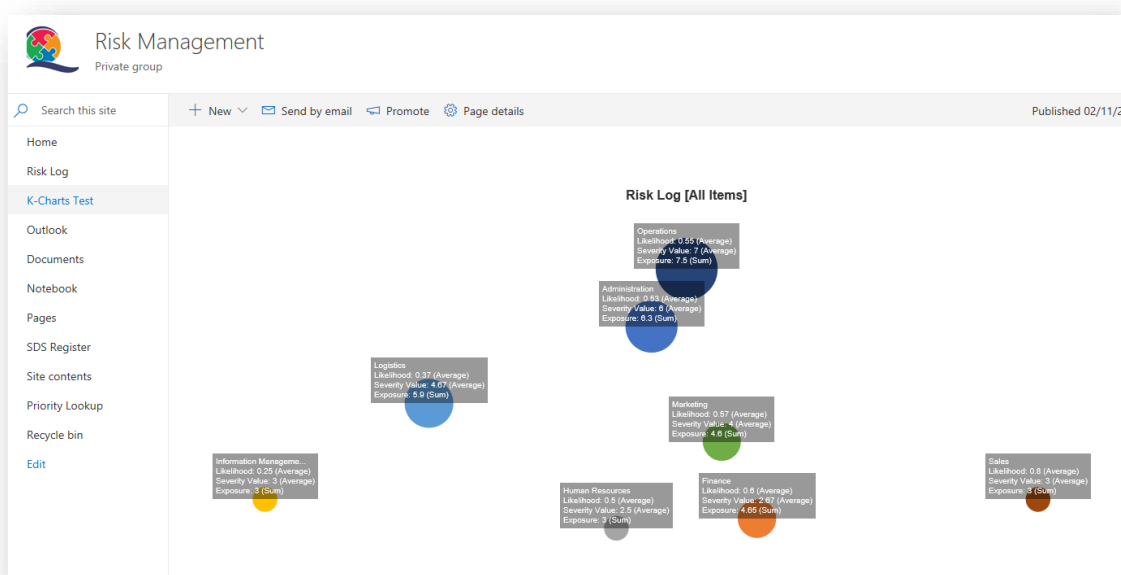
The **Show Axis Checkbox** control is used to determine if the axis is shown on the chart or if it is to be hidden.

CONFIGURATION SETTINGS

☒ Show axis

☐ Advanced Settings

Whilst it would be unusual to hide both the X and the Y axis it is most certainly possible as shown in the screenshot below where the bubbles appear to be free floating on the page.



When the **Show Axis Checkbox** is checked the **Advanced Settings Checkbox** will be displayed.

When the **Advanced Settings Checkbox** is checked several additional controls, grouped into sub-sections, are shown and can be used to format different aspects of the axis, as detailed below:

Item Text

Item Text

Set the font size

11

Max label text length

10

Text angle

0

Custom font color

Set a custom named color, hex or rgb/rgba value

The controls in the Item Text sub-section, are used to govern how the labels for each chart item are displayed on the axis, as follows:

- **Font Size Slider:** Used to control the font size and can be set to a value in the range 8 to 30.
- **Max Label Text Length Slider:** Used to control the maximum number of characters to be displayed before the axis label is truncated.
- **Text Angle Slider:** Used to control the angle of axis labels in the range 0 to 90 degrees.
- **Custom Font Color Textbox:** Used to set a custom color to use for axis labels.

The screenshot below shows a chart where the X axis labels have been displayed in a larger than normal font size (17) set to a custom angle (35°) and displayed in a custom font color (grey).



Label Text

Label Text

☒ Show axis label

Axis custom label text

Leave blank to use an auto-generated value

Set the font size
 14

Custom font color

Set a custom named color, hex or rgb/rgba value

The label text collection of controls governs if, and how, an axis label is added to the chart.

- **Show Axis Label Checkbox:** When checked an axis label is shown. If not checked, no label for the axis is rendered and the other controls in the label text section are hidden.
- **Custom Axis Label Textbox:** By default, K-Charts will add an automatically generated axis label text based on how the web part is configured.
- **Label Text Font Size:** Used to set the font size of the axis label in the range 8 to 30.
- **Custom Font Color Textbox:** Used to set a custom font color of the axis label.

The screenshot below shows the X axis of a chart configured with customised values.



When configuring a web part, it is usual for many different settings to be tried out, in order to determine what configuration best suits your purpose. This often means trying out different columns for data, data aggregation and grouping, and maybe selecting a different chart type altogether.

The automatically generated axis label is based on the following:

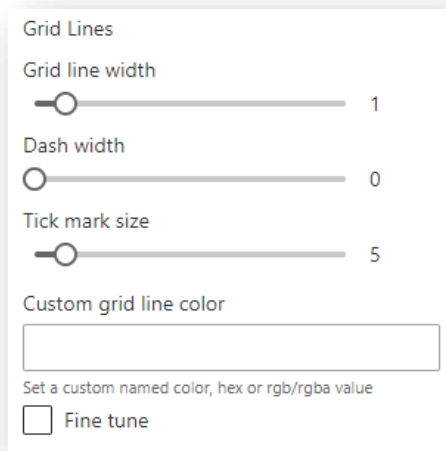
- The data column or grouping selected for use with the axis.
- The data aggregation method specified when the axis data column is grouped.
- Any custom sort ordering which may have been applied.
- How numeric columns used for the axis are configured in the SharePoint list or library, specifically:
 - A % symbol will be added to the label when the selected axis column has been configured to show data as a percentage.
 - The relevant currency symbol will be added when the axis column is a currency column type.

Where the data is grouped, the % or currency symbol is only shown when it makes sense to do so for the selected aggregation function. For example, if the aggregation function is Average then it makes sense to show these symbols but it makes no sense to do so when the aggregation function is Count.

If you set a custom axis label value then it is likely that you will need to update that axis label text to reflect changes made in the web part configuration. It is very easy to forget to update a static label value which might no longer reflect how the web part is configured resulting in confusion for end users.

For that reason, we recommend using the automatically generated axis label, at least until such time that experimentation with different axis settings is over.

Grid Lines



Grid Lines

Grid line width 1

Dash width 0

Tick mark size 5

Custom grid line color

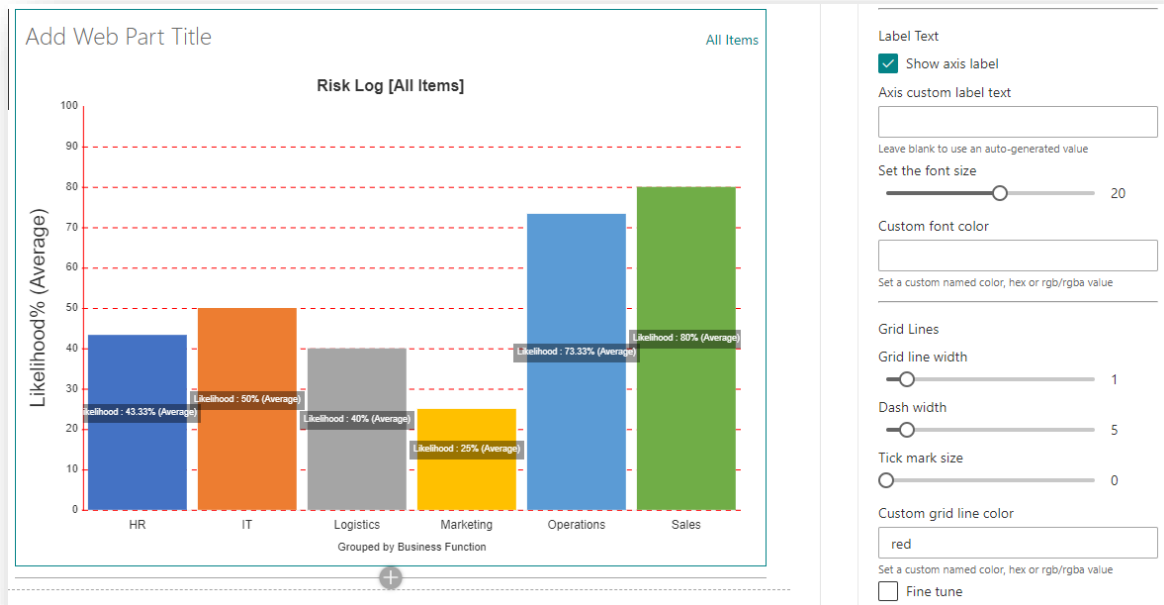
Set a custom named color, hex or rgb/rgba value

☐ Fine tune

The Grid Line controls are used to configure if, and how, axis grid lines are displayed:

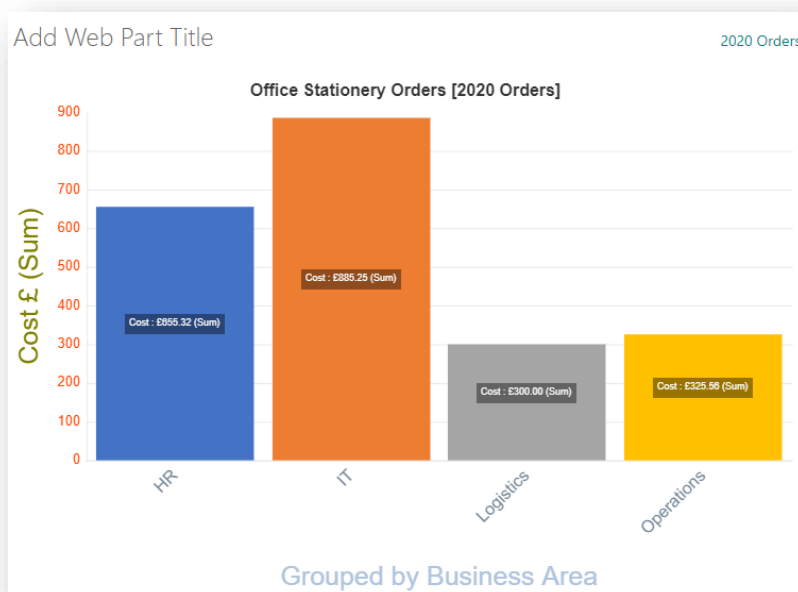
- **Grid Line Width Slider:** Used to set the width of the axis grid line in pixels. Values in the range zero to 10 are accepted. If a value of zero is set, the gridlines will be hidden and the other controls in this section will be disabled.
- **Dash Width Slider:** Used to set the dashed line style of the grid line. The dash line width can be set in the range zero (a solid line) to 50 (line dash segments and spaces will be 50px).
- **Tick Mark Size:** Controls if, and the extent to which, tick marks extend beyond the axis baseline. By default, the tick mark will extend 5 pixels beyond the baseline but this control allows that to be adjusted in the range 0 to 50px. A value of zero will mean that the grid line touches the baseline but does not extend beyond it.
- **Custom Grid Line Color Textbox:** Used to set a custom color for the grid line.

The screenshot below shows a custom configuration for grid lines on the chart's Y Axis, with the X axis grid lines hidden.



Notice also, how the Y Axis has been set to use a numeric column that has been configured in SharePoint, to show values as a percentage and the data is grouped (by business function) using the Average aggregation function. As such, the selected column, the % symbol and aggregation function are all used to construct the automatically generated Y axis label.

The following screenshot is of a K-Chart web part which is linked to a different list, the Office Stationery Orders list. This list is a simple data structure that records the procurement cost of stationery orders by Business Area.

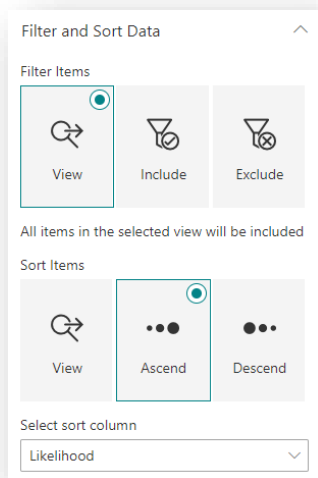


It can be seen that the axis labels and item text have been configured to use different font sizes, angles and colors. We make no comment on the aesthetics of such a configuration but rather use it simply as a vehicle to demonstrate what is possible.

Notice how the automatically generated X axis label indicates that the chart items (columns in this case) are grouped by the Business Area column and that the Y axis label (also automatically generated) indicates that the Cost column is used.

As the Cost column is a currency column, configured to use UK Pounds, the £ symbol has been added to the Y axis label. Similar, because the data is grouped, and the Sum aggregation function has been selected, that information is also included in the default axis label.

Filter Data/Filter and Sort Data



As Scatter and Bubble charts plot data items based on values in both the X and Y axis, then it makes no sense for these items to be sorted as their position is determined by x and y coordinate values. For that reason, the group title is set to “Filter Data” whenever a Scatter or Bubble chart is specified and the sort item controls are hidden.

For all other chart types, custom sorting can be applied and so the title of the section is set to “Filter and Sort Data” and the sort controls are available.

This group of controls are optionally used to provide additional item filter and/or sort options.

Filter Items

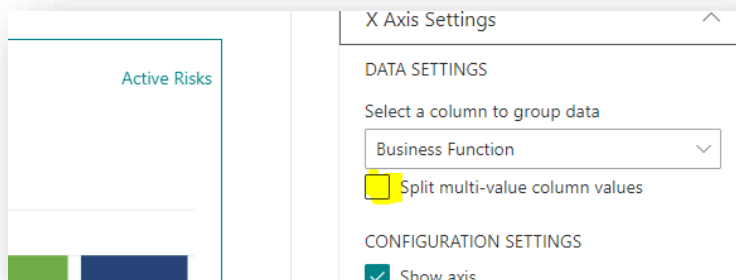
The **Filter Item Choice Picker** control is used to set the filter mode and can be set to one of the following values:

- **View:** This is the default setting and means that the all items returned by the selected view will used in the visualisation.
- **Include:** This mode is used to explicitly include a sub-set of items or groups and to apply a custom sort order on those included items.
- **Exclude:** This mode is used to explicitly exclude items from the chart.

In the chart below, risks are grouped by business function and the Filter Mode is set to View, which means that all items returned by the selected view are included in the chart.



Notice how the web part is configured not to split items assigned to more than one business function i.e. the **Split multi-value column values** checkbox is unchecked in the X axis.



As at least one risk item has been assigned to both the Operations and IT business functions, this has resulted in the chart automatically constructing a new grouping for just those items which have been assigned to both Operations and IT i.e. the “IT, Operations” group.

Similarly, at least one item is assigned to both HR and IT and so we have second combined group HR, IT.

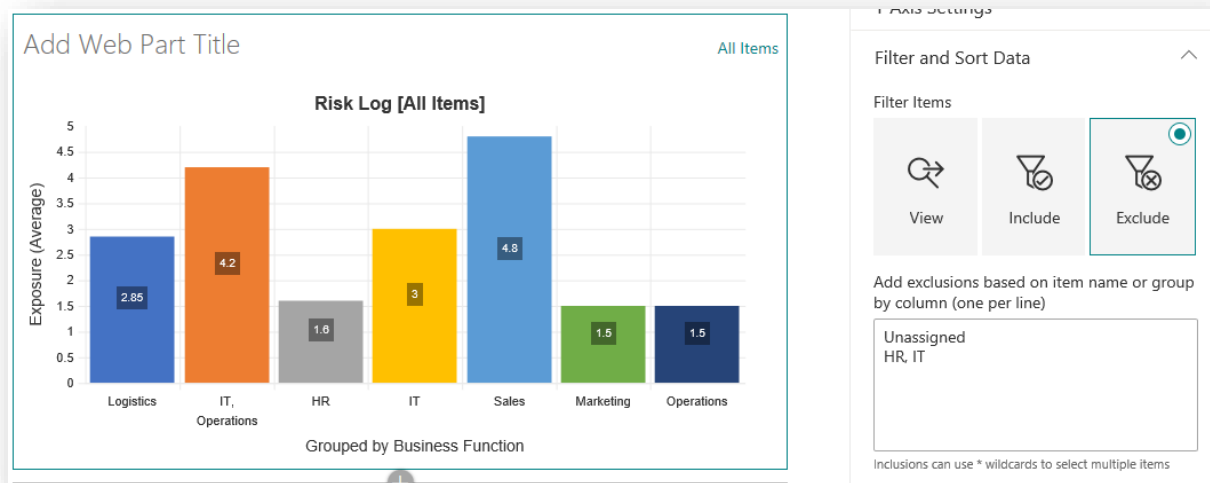
The elements that make up this combined group name are listed alphabetically and separated by a comma and a space. This avoids the possibility of creating multiple combined groups which are essentially the same but with the items tagged by users in a different order. So, items tagged Operations; IT and IT; Operations will be placed in the same group with the combined group name IT, Operations.

Suppose we wanted to exclude all unassigned items from the chart. To do this, select the Exclude option from the **Filter Item Choice Picker** and simply type the name of the item to be excluded into the exclusion text box.



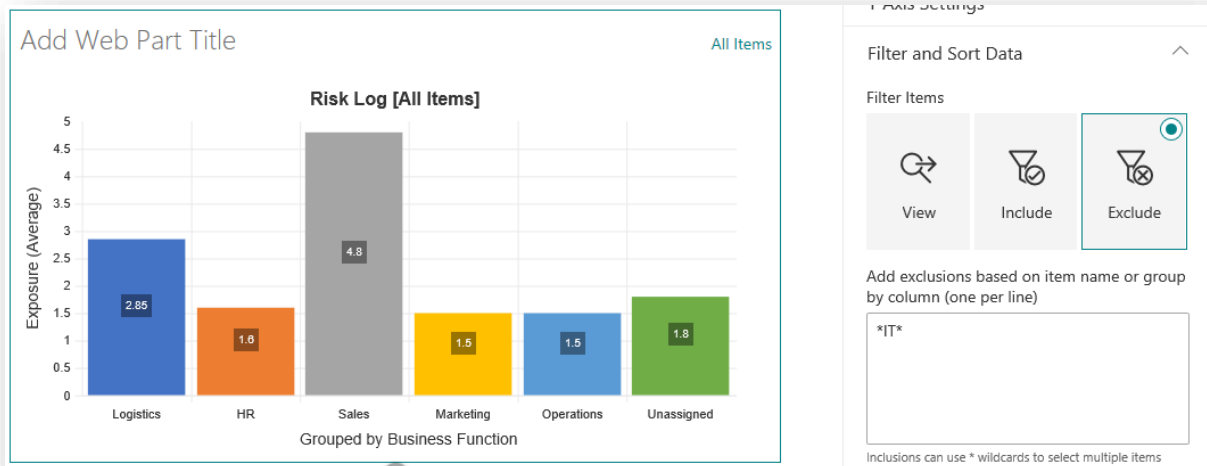
Note that the text is matched exactly to the name of the chart item and is case sensitive. To exclude multiple items simply add new text values with each item on a new line.

The chart in the screenshot below has now been configured to exclude both unassigned items and those items tagged with both the HR and IT business functions.

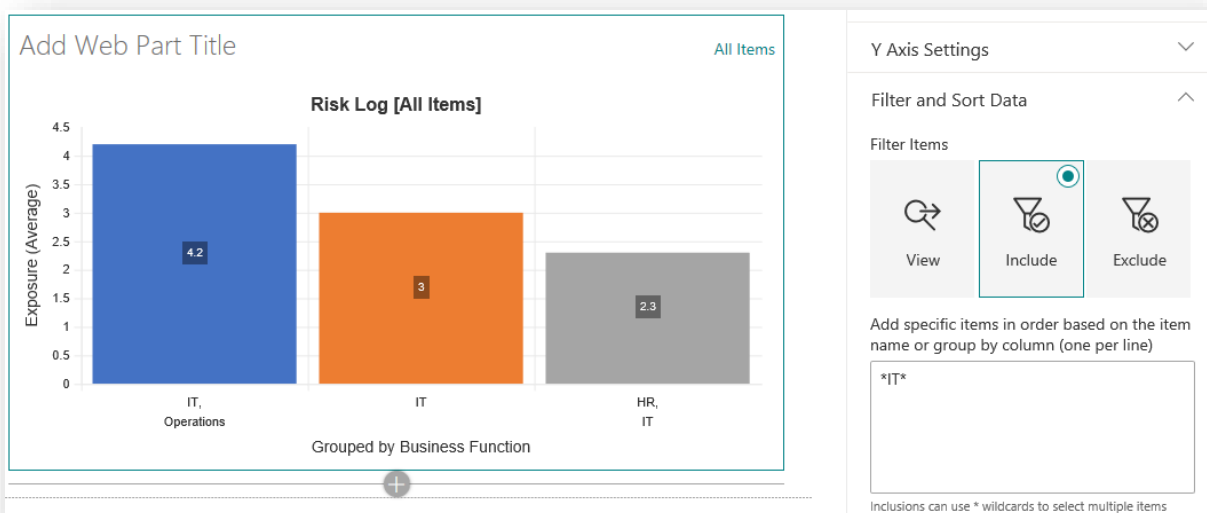


Note that to exclude items that are assigned to combined groups the elements need to be separated by a comma and a space character or else an exact match will not be made.

It is also possible to use * wildcards to match to potentially match with multiple items. In the screenshot below, the chart has been filtered to exclude anything from the IT business function.



Rather than excluding items it is sometimes more convenient to explicitly include items from the chart. In the screenshot below, the **Filter Item Choice Picker** has been set to Include mode and this time the chart has been configured to return just items that relate to the IT business function.



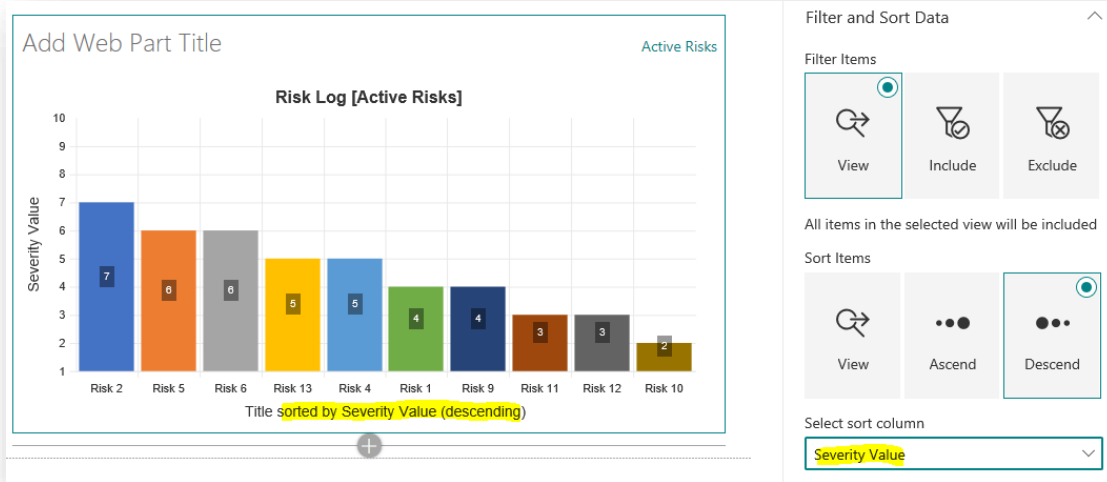
Sort Items

The **Sort Items Choice Picker** control is only shown when the filter mode is set to View or Exclude. When the filter mode is set to Include, the order in which the included terms are entered into the textbox will determine the sort order.

When the Filter Mode is set to either View or Exclude, the **Sort Items Choice Picker** control is displayed and is used to set the Sort Mode value. The Sort Mode is set to one of the 3 following values:

- **View:** The order is determined by the selected view. In the case of grouped items, the order is set alphabetically based on the alphabetically first item in the group.
- **Ascend:** The sort order is ascending.
- **Descend:** The sort order is descending.

There may be other controls displayed beneath the **Sort Items Choice Picker** control depending on how the web part is configured. If the chart is not grouped then the **Sort Column Picker** control will be displayed, and will enable you to select a column to determine the sort order. In the screenshot below, risk items are presented in descending order based on their Severity Value.

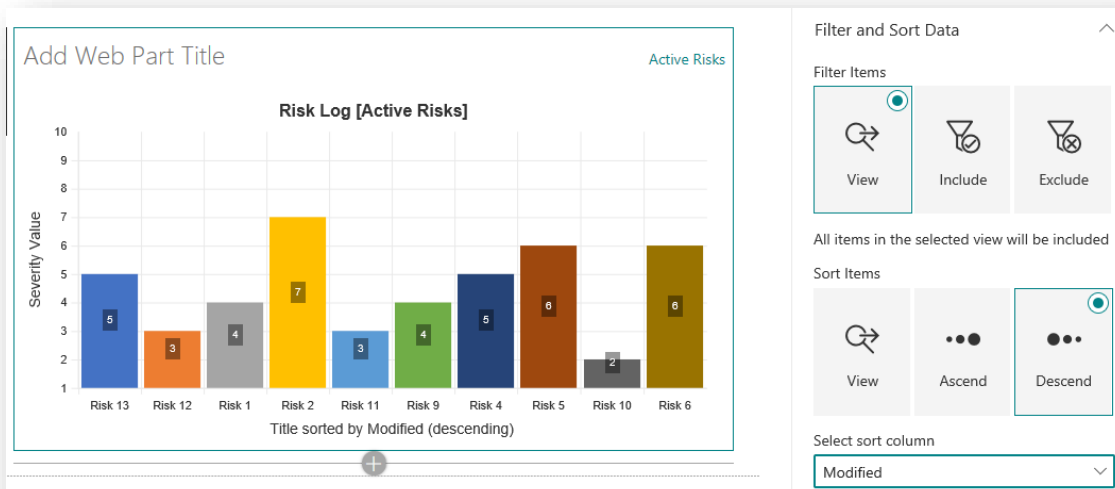


Where items have the same value, they will be ordered alphabetically within that cohort (regardless of whether the sort mode is ascending or descending).

In the above screenshot, the selected sort order column is the same as the primary data column (on the Y axis for a Column chart) and so items will be nicely arranged such that chart items will descend from larger values to smaller ones (in this case).

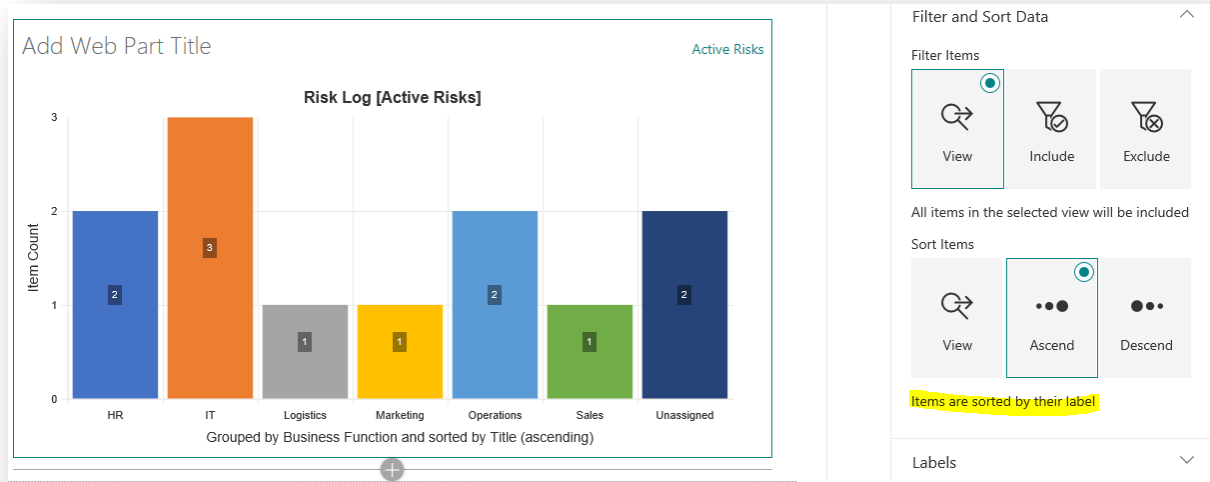
Notice how the automatically generated X axis label now reports that the chart shows the item Titles sorted by the Severity Value column in a descending direction.

However, it is entirely possible to pick a sort order column that is different to the that of a data axis. Below, you will see the same chart but this time ordered by the Modified date/time value.



Again, it can be seen that the X axis label now indicates the change in the sort order.

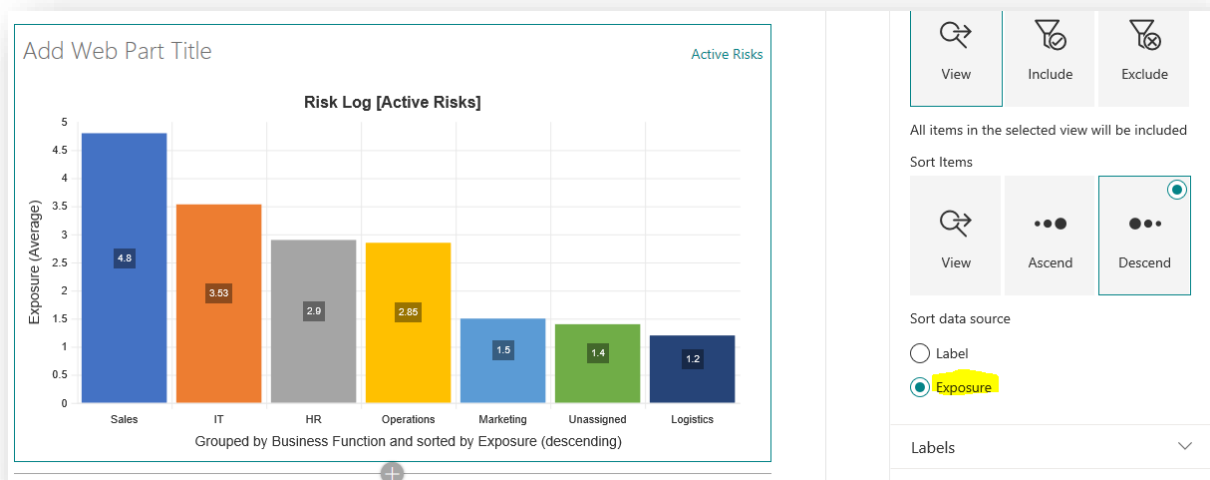
When the Sort Mode is set to either Ascend or Descend and a **Numeric** data column has not been set the order is determined alphabetically (ascending or descending) based on the item title or the group name if the chart data is grouped as can be seen in the example screenshot below:



When a numeric data column has been assigned to the primary axis (the X axis in Line and Column charts, the Y axis in Bar charts and the R axis in radial charts) and items have been grouped, you can choose to order the items by either their label or by the value in the primary axis, which will be the value returned by the selected aggregation function applied to items in each group

In cases where items return the same value, secondary ordering will be based alphabetically on the item title or group name.

The screenshot below shows the same set of grouped items but now sorted by their average Exposure value in descending order.



In summary:

- Sorting items is not relevant for Scatter and Bubble charts as these chart types plot items in a Cartesian plane using 2 data sets for the X and Y axes.
- For all other chart types, by default items are sorted in the order they are returned by the list view used by the web part. When items are grouped, the group order is determined by the first item assigned to each group.
- You can choose to change the default sort order by switching the Sort Mode to either Ascending or Descending but the controls available to sort items depends on whether the items are grouped or not.
- When items are not grouped:
 - You can select a **Numeric** or **Categorical** column from the list to specify the sort order.
 - When a **Numeric** column is selected the column value will be used to sort items.
 - When a **Categorical** column is selected, chart items will be ordered alphabetically based on the category value.
 - When items have the same numeric or category value, they will be ordered in ascending order based on their title value.
- When items are grouped:
 - Items can be sorted alphabetically using the label value of the chart item (the group name) or by the primary data set if one has been specified in the relevant data axis.
 - Where no primary data set has been specified, chart items can only be sorted by their group name.
 - Where a primary data set has been specified, chart items can be sorted based on the value of the group which is determined by applying the specified aggregation function to the data values within each group.
 - If chart group items share the same value, they are then ordered in ascending or descending alphabetical order, depending on the selected sort mode.

Labels

This group of controls govern how chart labels are shown.

The image shows a configuration panel for chart labels. It is split into two main sections: 'CHART ITEM LABEL SETTINGS' on the left and 'CONFIGURATION SETTINGS' on the right.

CHART ITEM LABEL SETTINGS

- Label data:** A group of radio buttons with the following options:
 - ☐ Auto
 - ☐ Hide
 - ☐ Title
 - ☐ Data
 - ☒ Title and Data

CONFIGURATION SETTINGS

- Show data column prefix:** ☒
- Show data aggregation method:** ☒
- Allow labels to overlap:** ☒
- Allow multi-line labels:** ☒
- Label anchor point:** A dropdown menu currently set to 'Center'.
- Label font color:** A text input field containing 'white'. Below it, a small text label says 'Set a custom named color, hex or rgb/rgba value'.
- Label background color:** A text input field containing 'rgba(0,0,0,0.4)'. Below it, a small text label says 'Set a custom named color, hex or rgb/rgba value'.
- Label font size:** A slider control ranging from 0 to 10, currently set at 10.
- Label offset:** A slider control ranging from 0 to 0, currently set at 0.
- Max label text length:** A slider control ranging from 0 to 20, currently set at 20.
- Text angle:** A slider control ranging from 0 to 0, currently set at 0.
- Data precision:** A slider control ranging from 0 to 2, currently set at 2.
- Fine tune:** An unchecked checkbox.

Chart Item Label Settings

This sub-section contains just the **Label Data Choice Picker**: This control is used to select the Label Data Mode and will be set to one of the following values:

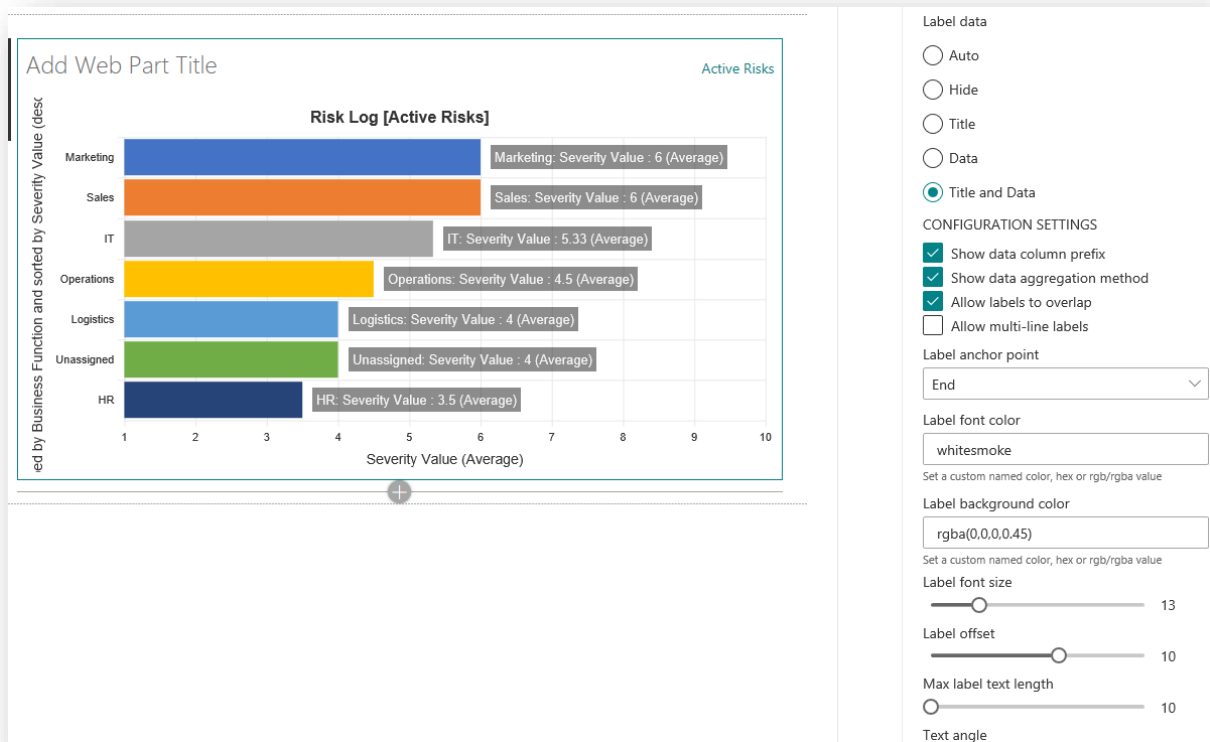
- **Auto**: Label data is automatically configured based on chart type, layout and other settings applied in the web part.
- **Hide**: No label data information is displayed. When the label data mode is set to Hide, all other label data controls are hidden in the property pane.
- **Title**: Only the item title or group-by name is displayed on the chart item.
- **Data**: Only data values are displayed on the chart item.
- **Title and Data**: Both the item title/group name and the data values are displayed.

Configuration Settings

The controls available in this sub-section will vary depending on the selected Label Data Mode.

- **Show Data Column Prefix Checkbox**: This checkbox is only shown when the Label Data Mode is set to either Data or Title and Data. When checked the name of the data column will be used in the label data as a prefix to the data value itself.
- **Show Data Aggregation Method Checkbox**: This checkbox is only shown when the chart data is grouped and the Label Data Mode is set to either Data or Title and Data. When checked, the aggregation function used for grouped items will be shown in brackets as a suffix to the data value.
- **Allow Labels to Overlap Checkbox**: This checkbox is only shown when the Label Data Mode is set to either Title or Title and Data. The chart area can get crowded and it can look messy if too many overlapping labels are shown. When this control is checked any overlapping labels will be hidden.
- **Allow Multi-Line Labels Checkbox**: Again, this checkbox is only shown when the Label Data Mode is set to either Title or Title and Data. When checked, labels may be split over multiple lines, for example the title might be shown on one line and the data value shown beneath. When unchecked, the label will be displayed as a single line of text.
- **Label Anchor Point Picker**: Used to set the anchor point for the label and can be set to one of the following values:
 - **Center**: The label will be anchored in the center/middle of the chart item
 - **Start**: The label will be anchored to the start/bottom of the chart item
 - **End**: The label will be anchored to the top/end of the chart item.
- **Label Font Color Textbox**: Used to set the font color used for label data items.
- **Label Background Color Textbox**: Used to set the background color for label data items.
- **Label Font Size Slider**: Used to set the font size of label data items in the range 8-30.
- **Label Offset Slider**: Used to set a positive or negative offset from the selected anchor point for label data items.
- **Max Label Text Length Slider**: Used to set the maximum number or characters that can be displayed on a label data item before the text is truncated.
- **Text Angle Slider**: Used to set a custom angle of the label data text.
- **Data Precision Slider**: Used to set precision of numeric data values. By default, the precision is set to 2 decimal places but must be set to a value in the range 0 to 8.

The screenshot below shows a Bar chart with some custom settings applied.



Legend

Legends are currently only available for Radial chart types and so the Legend control group is only display when a Radial chart type has been selected.

Legend

☒ Display legend

Legend position

Right

Set the font size

14

Custom font color

Set a custom named color, hex or rgb/rgba value

The Legend control group contain the following controls:

- **Display Legend Checkbox:** When checked a chart legend will be displayed. When not checked, no legend will be displayed and all the other controls in the group will be disabled.
- **Legend Position Picker:** Used to indicate where in the web part area the legend will be displayed and can be set to one of the following values:
 - **Top:** The legend will be displayed across the top of the chart area but below the chart title (assuming the chart title is configured to be displayed at the top) and web part title.

- **Bottom:** The legend will be displayed across the bottom of the chart area but above where the chart title would be if configured to be displayed at the bottom.
- **Left:** The legend is shown to the left of the chart area.
- **Right:** The legend is shown to the right of the chart area.
- **Legend Font Size Slider:** Used to control the font size of the legend text and can be set in the range 8 to 30.
- **Legend Custom Font Color Textbox:** Used to set a custom font color that can be applied to the legend text.

The screenshot below shows the legend of a Polar Area chart, with some custom settings applied.



Tooltips

Tooltips can be configured to display additional information when a user hovers their mouse/pointer over a chart item.

The Tooltips group has 2 checkboxes:

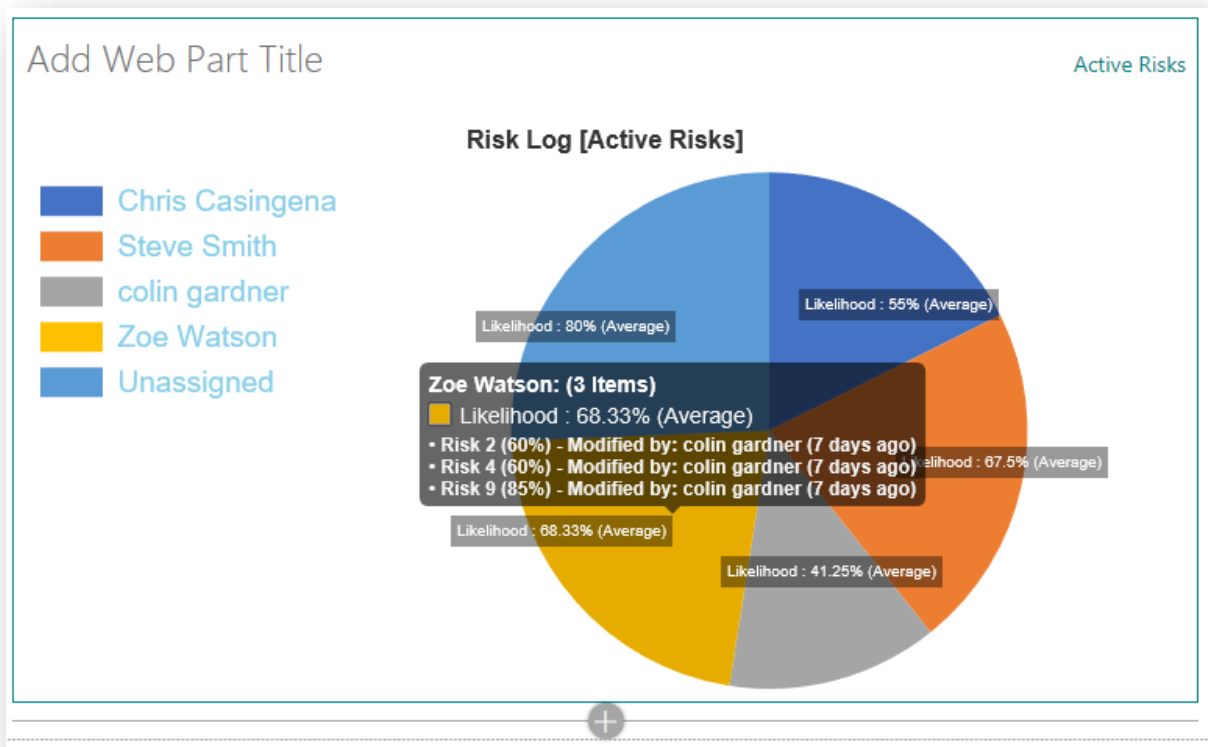
- **Show Tooltips Checkbox:** When checked, the chart will be configured to display tooltips and the Tooltips Advanced Settings checkbox has been displayed.
- **Tooltips Advanced Setting Checkbox:** When checked additional controls are displayed which allow for a detailed configuration of tooltips.

A tooltip consists of 3 areas:

- **Title:** A single line of text to be displayed as the title header for the tooltip. When a chart is grouped, the title text will be set as the group name. When the chart is not grouped, the tooltip title is set to the Title or Filename of the corresponding list item or document.
- **Body:** The tooltip body is also a single line of text but prefixed with a color cue, the same as the chart item being hovered over, so there can be no ambiguity about which tooltip belongs to which chart item. The text content of the tooltip body depends on how the web part has been configured:
 - When the chart data is not grouped or if a primary data column has not been specified, the tooltip body is not displayed at all.
 - When the chart data is grouped but no data column have been specified the body text will be the group name but will also indicate how items are in the group.

- When the chart data is grouped and data columns have been specified, the body text will not only indicate how many items are in the group but the data values of group as combined using the relevant aggregation function. The tooltip body will show the aggregated value for each **Numeric** column used as chart data. For most chart types there will be just a single aggregated data value for the group but for Scatter charts and Bubble charts up to 2 or 3 **Numeric** columns may have been specified, respectively.
- **Footer:** The footer is used to provide information about the list item. When the chart is not grouped, this will be a single line of text. However, when the chart is grouped, the footer will consist of a line of text for each list item in the group.

In the screenshot below, a Pie chart has been grouped by the assigned risk manager and configured to show the average Likelihood of active risks.



Notice how the body section of the tooltip shows the aggregated value (by average In this case) of all items in the group but that the footer section lists the item title and specific data value for each item in the group, together with details of when the item was last modified and by whom.

How tooltips are displayed can be refined further by apply settings using the controls in the Tooltip Data and Tooltip Formatting control sub-groups, when the Advanced Settings checkbox is selected.

Tooltips

✓

Show chart tooltips

✓

Advanced Settings

TOOLTIP DATA

Select an additional tooltip column

▼

☐

Show created

☐

Show created by

☒

Show modified

☒

Show modified by

TOOLTIP FORMATTING

Tooltip title font color

white

Set a custom named color, hex or rgb/rgba value

Tooltip title font size

14

Tooltip font color

whitesmoke

Set a custom named color, hex or rgb/rgba value

Tooltip font size

12

Tooltip background color

rgba(0,0,0,0.6)

Set a custom named color, hex or rgb/rgba value

Tooltip Data

The Tooltip Date sub-group of controls are used to specify what data that is shown in the tooltip.

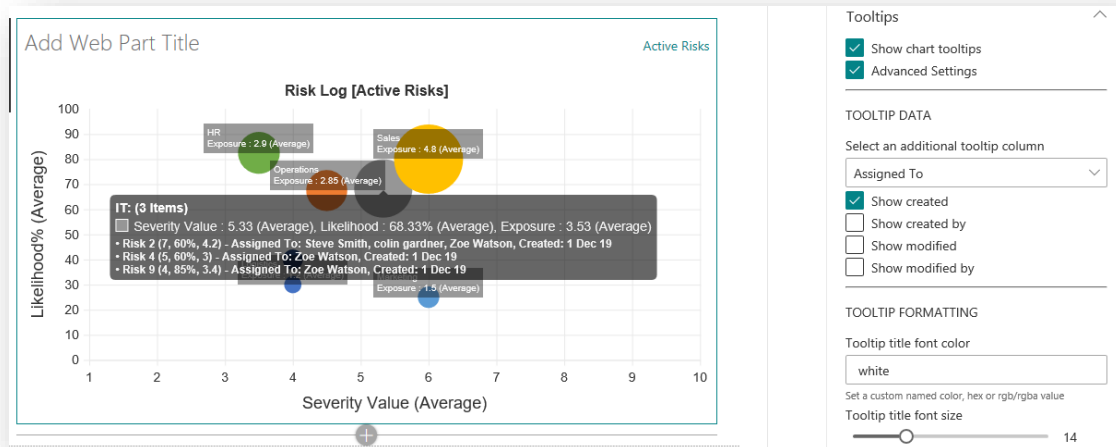
- **Additional Tooltip Column Picker:** This control can be used to select a column that can be used to provide additional tooltip information. Whilst only one column can be selected it is possible to use a calculated column which might construct a text value that concatenates other column values, if required.
- **Date Time Format Picker:** When the column selected in the **Additional Tooltip Column Picker** is a date/time column, this control is used to select the format in which the date/time value will be displayed. When the additional tooltip column is not a date/type column, this control is hidden.
- **Show Created Checkbox:** When checked the date when the item was created will be shown in the tooltip.
- **Show Created by Checkbox:** When checked, the user who created the item will be included in the tooltip

- **Show Modified Checkbox:** When checked, the date when the item was last modified will be shown.
- **Show Modified by Checkbox:** When checked the user who last updated the item will be indicated.

By default, Modified and Modified by data is included in tooltips but Created and Created by information is not.

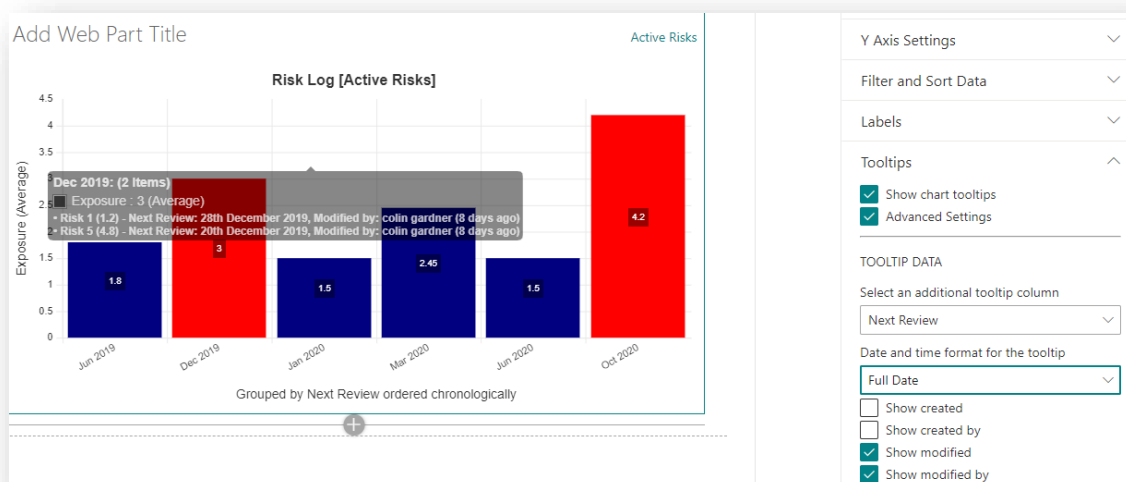
The Modified and Created date values are shown using the friendly date format and so are expressed as an offset of the current date.

The screenshot below shows the tooltip for a Bubble chart with some custom data settings.



The chart has been configured to show the average of Severity Value, Likelihood and Exposure in the A, Y and R axes, respectively. The Assigned To column has been specified as the additional tooltip column and the created date is also shown.

The following screenshot shows risk items, grouped by the month and year of their next review date and ordered chronologically. Notice how the **Date Time Format Picker** has been used to set the format of the Next Review Date column assigned as the additional tooltip column in the web part.



Tooltip Formatting

This sub-group of controls can be used to customise how tooltips are rendered:

- **Tooltip Title Font Color Textbox:** Used to specify a custom font color to be used for the tooltip title text.
- **Tooltip Title Font Size Slider:** Used to specify the font size of the tooltip title in the range 8-30.
- **Tooltip Font Color Textbox:** Used to specify a custom color to be used for both the tooltip body and footer text.
- **Tooltip Font Size Slider:** Used to specify a custom font size to use for both the tooltip body and footer text. The body font size will actually be 2 point-sizes larger than the value specified using the control and so will be slightly larger than the footer font.
- **Tooltip Background Color Textbox:** Used to specify the background color of the tooltip.

The screenshot below shows a web part with some custom tooltip formatting properties assigned.

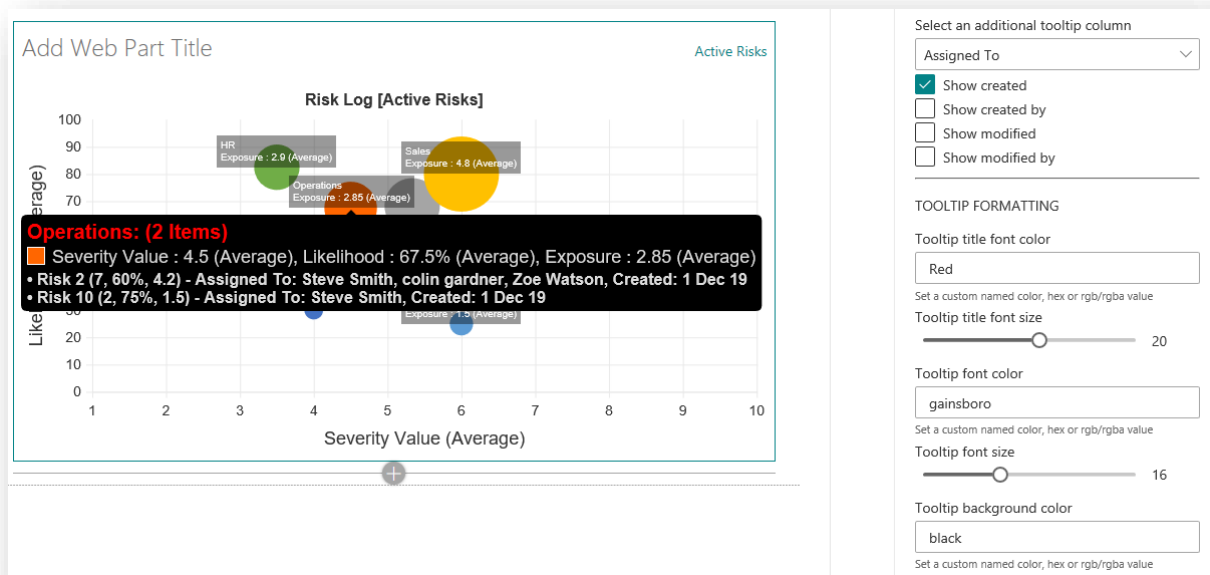
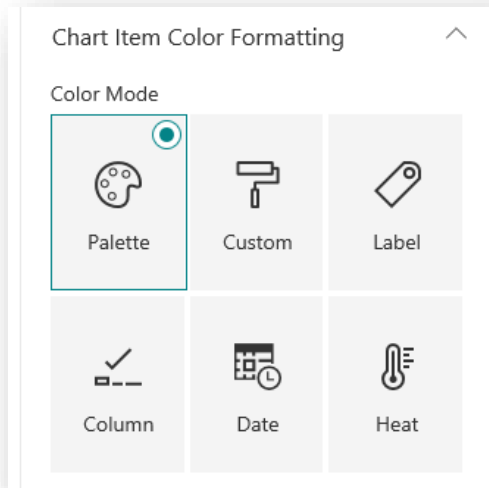


Chart Item Color Formatting

Some chart types allow for the assignment of different colors to different chart elements. Specifically, the assignment of colors on an individual chart item basis is supported in Bar, Bubble, Column, Doughnut, Pie and Polar Radar charts but not supported in the other chart types which data items are represented as plot points.

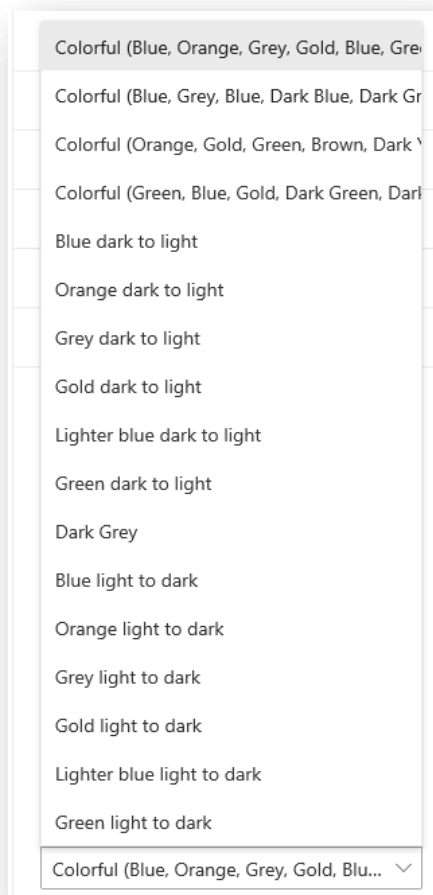
For chart types that do support custom color assignments to different chart items, K-Charts allows you to control the color in 6 main ways, or Color Modes. The **Color Mode Picker** control in the Chart Item Color Formatting group is used to set the Color Mode.



The sub-sections which follow explain the purpose and function of each color mode.

Palette Mode

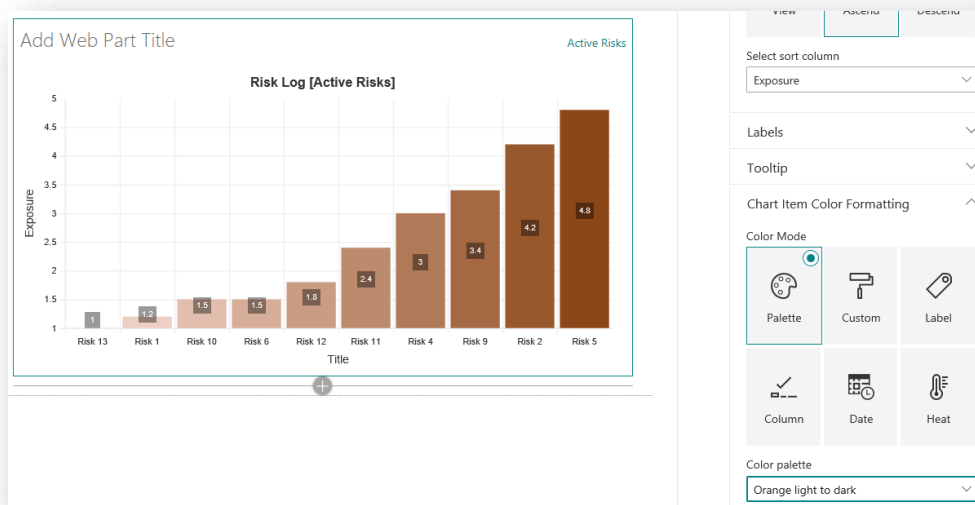
This is the default and probably the simplest color mode. When this mode is selected the **Palette Picker** control is shown and allows you to select one of 17 pre-defined color schemes, as can be seen below:



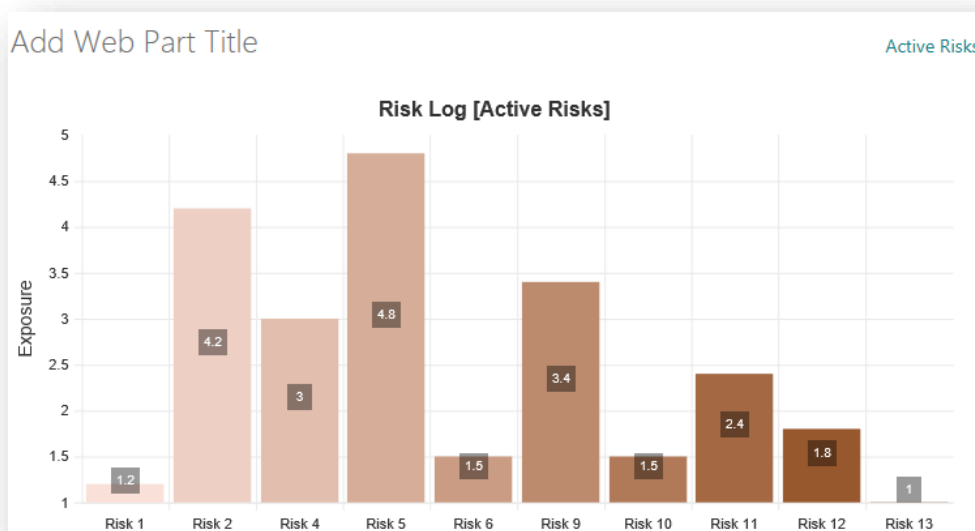
The first 4 color schemes are called Colourful as they each consist of a collection of 6 contrasting colours that will be applied to chart items sequentially, in the order listed in the picker. If there are more than 6 chart items to show the pattern starts over so the 7th item will be colored the same as the first item etc.

The other color schemes start with a base color and progress from a dark shade to a light shade or vice versa. The shade is controlled by setting the opacity of the color.

Most of the screenshots so far presented in this document have used the default Palette Color Mode with a Colourful theme. The screenshot below shows a chart based on risk exposure using an “Orange light to dark” palette.



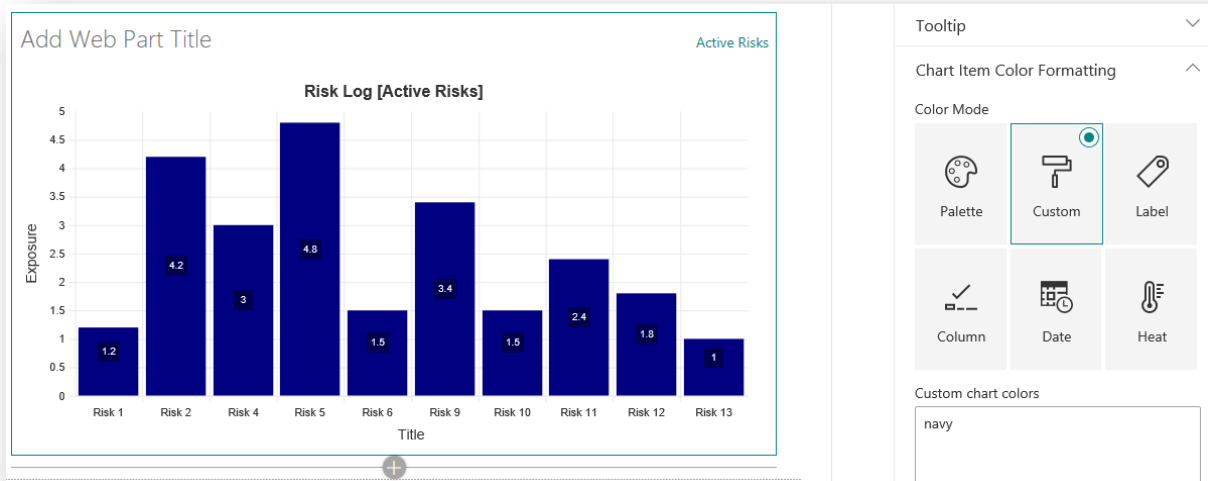
This may look like a heat map, where the color intensifies based on value but this is not a true heat map because the items just happened to be ordered in an ascending direction based on the Y axis data values. When the items are returned in the order specified by the view, it becomes clear that the shading is not based on a data value but rather just the order in which chart items appear in the chart.



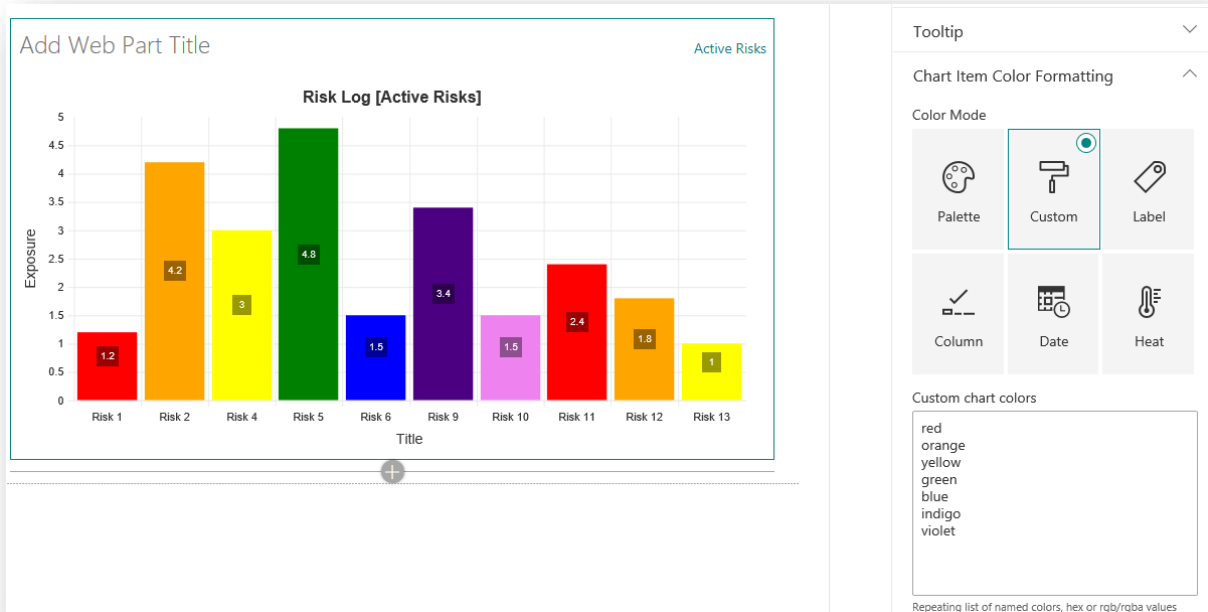
Palette Color mode may be perfectly acceptable in many scenarios but it does not provide you with a means to set chart item colors based on business logic unless you order the data to coincide with the color assignment.

Custom Mode

When Custom Color mode is selected, the **Custom Chart Colors Textbox** is displayed. If the **Custom Chart Colors Textbox** is empty, the Palette Color mode will be used but if a valid color value is added to the textbox this will then be used to color all chart items, as can be seen below:



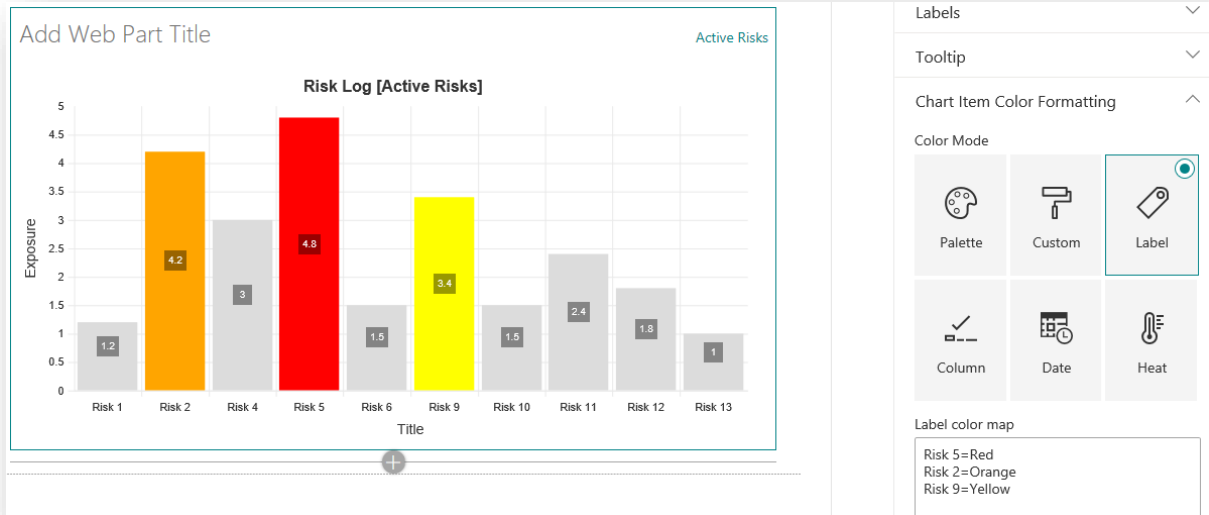
If you add multiple custom colors, one on each line in the **Custom Chart Colors Textbox**, then the chart items will be colored on a repeating pattern based on the number of color values you provide. Using Custom Color mode, you can create a chart that uses a veritable rainbow of custom colors!



Label Mode

When Label Color mode is selected you can use the **Label Color Map Textbox** to explicitly map chart items by their label value to a specific color. Just add each mapping on a separate line in the format:

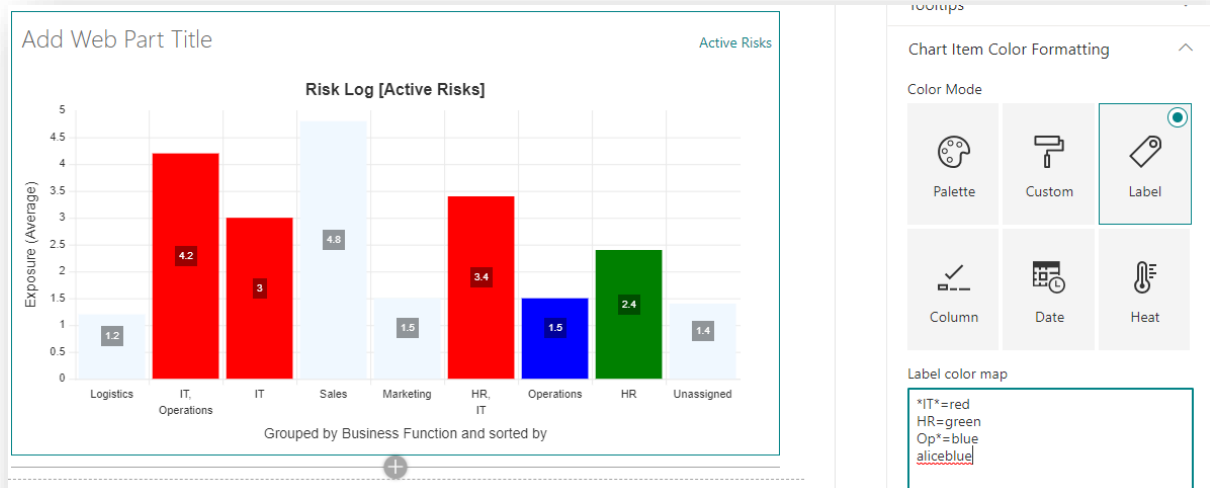
{Label}={Color}



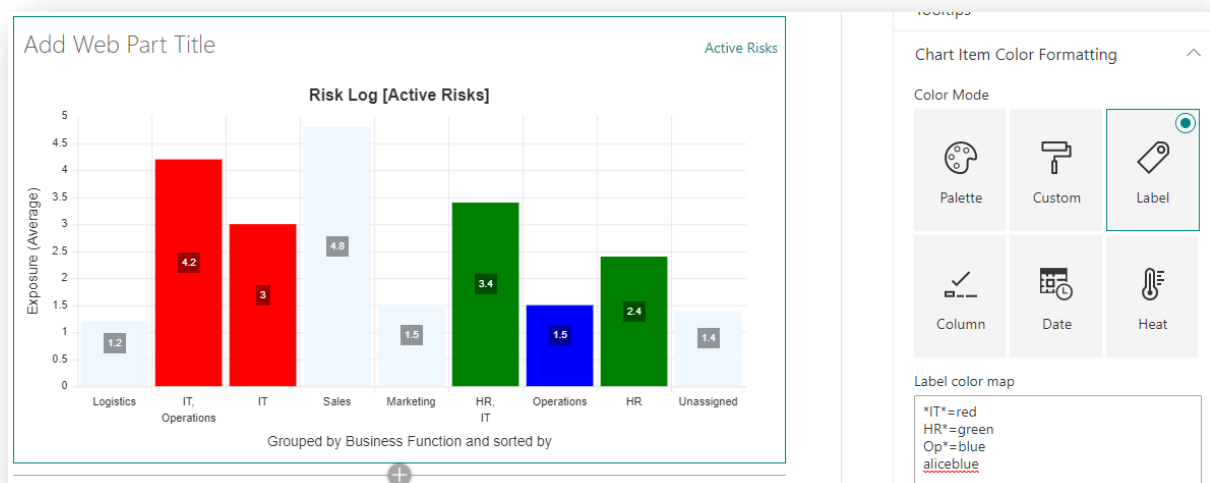
Items not explicitly assigned a color value will be shaded according to the theme used in the site. Alternatively, you can provide a default color by adding it as the last item in the textbox.



You can also use wildcards in the color mapping. The following will map anything with IT in the title as red, the HR title as green and anything starting with "Op" as blue and anything else that can't be matched, is colored Alice Blue.



Be aware that label color mappings are applied sequentially so that mappings applied later in the list will take precedence. In the updated mapping below, the second item now includes a wildcard for HR so the item tagged with both HR and IT (HR, IT) now appears green instead of the red color it was allocated previously.



Column Mode

When Column Color Mode is set, the color of chart items will be determined by a SharePoint column value defined in the list item. This column can be of any type that returns a text value which can be evaluated as a color.

In the risk log example, we created a new calculated column called Risk Colour with the formula as shown below:

Column name:
Risk Colour

The type of information in this column is:
Calculated (calculation based on other columns)

Description:

Formula:
=IF(Severity="High","Red",IF(Severity="Medium","Orange","Navy"))

Insert Column:

- Active
- Compliance Asset Id
- Created
- Exposure
- Likelihood
- Modified
- Next Review
- Severity Value
- Severity
- Status

Add to formula

This formula simply returns an appropriate color value (Red, Orange or Navy) based on the value in the Severity column. The Severity column is itself a calculated column which returns a text value High, Medium or Low based on the value in the Exposure column.

Column name:
Severity

The type of information in this column is:
Calculated (calculation based on other columns)

Description:

Formula:
=IF(Exposure>4,"High",IF(Exposure>2.5,"Medium","Low"))

Insert Column:

- Active
- Compliance Asset Id
- Created
- Exposure
- Likelihood
- Modified

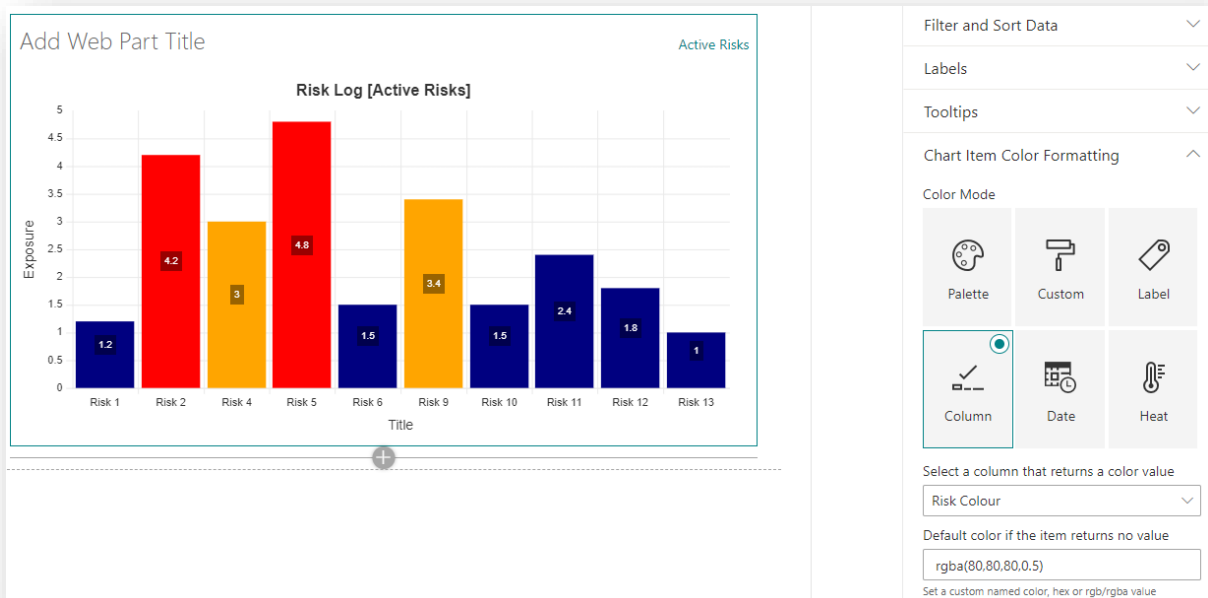
And, as explained earlier in this document, the Exposure is yet another calculated column, this time based on values set by users in the Likelihood and Severity Value columns.

The screenshot below shows the first 3 items in the list, where it can be seen that Severity values of Low, Medium and High map to Risk Colour values of Navy, Orange and Red respectively.

Risk Log

Title ▾	Severity Value ▾	Likelihood ▾	Exposure ▾	Severity ▾	Risk Colour ▾
Risk 1	4	30%	1.2	Low	Navy
Risk 2	7	60%	4.2	High	Red
Risk 4	5	60%	3	Medium	Orange

Now that we have the SharePoint list able to return a value that can be evaluated as a chart color, in Column Color Mode we can simply connect the web part to the correct column using the **Color Column Picker** control.



The **Default Color Textbox** can be used to define a color that should be used for chart items that are empty or do not return a value that can be evaluated as a color.

If the chart is grouped, it should be understood that the aggregated value for the group cannot be used to drive chart item color¹². Instead, the color of grouped chart items is generally taken from the first item assigned to the group.

Column Mode works well when chart items are not grouped as each chart item represents a SharePoint list item or document and so may have a discrete color value. When chart items are

¹² Whilst it might technically be possible to reverse apply a SharePoint column formula to an aggregation of grouped column values, such a process could only work for calculated columns and could not work for a text column or a choice column, where the color value is explicitly set the user.

grouped, Color Mode is less useful as the color of the chart element may not necessarily be same for all items in the group.

Date Mode

When in Date Mode, the value of a date/time column can be used determine the color of chart items based on an offset from the current date and time. When in Date Mode, a **Date Color Column Picker** control is displayed, along with 6 Color Textbox controls. The **Date Color Column Picker** control is used to select the SharePoint date/time column that should be used as the basis for the calculated difference between that date value and the current date/time i.e. the data and time when the web part was rendered on the page.

These controls, along with their default color values, are shown below:

The screenshot shows the 'Date' mode selected in the top navigation bar. Below the navigation bar, the 'Date Color Column Picker' control is displayed. It includes a dropdown menu to 'Select a column for date based formatting' with 'Next Review' selected. Below this are six color textboxes, each with a label and a default color value in rgba format. The labels and values are: 'Default color if the item returns no value' (rgba(80,80,80,0.5)), 'The color when date is before today' (rgba(255,0,0,0.5)), 'Color when date is today' (rgba(255,50,0,0.5)), 'Color when date is within the next 7 days' (rgba(255,102,0,0.5)), 'Color when date is within the next 30 days' (rgba(255,165,0,0.5)), and 'Color when date is after the next 30 days' (rgba(0,160,0,0.5)). Each textbox has a small instruction below it: 'Set a custom named color, hex or rgb/rgba value'.

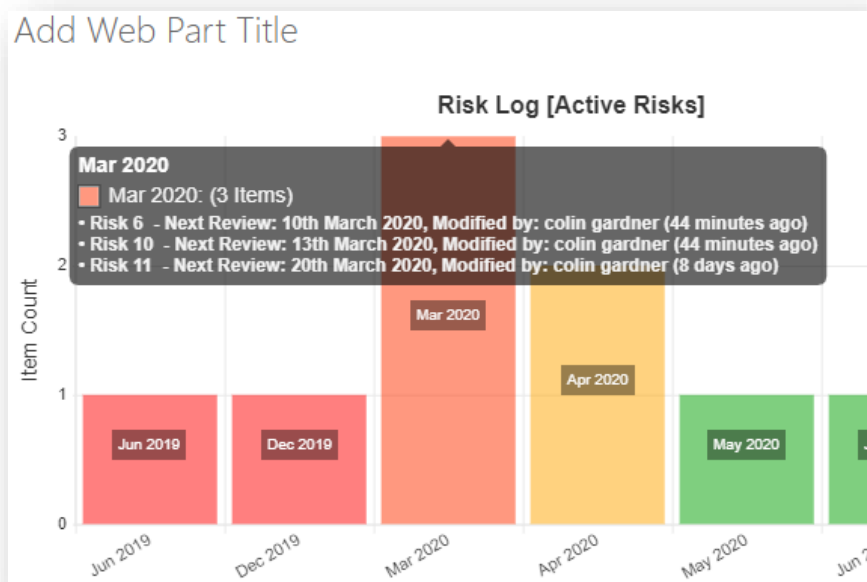
The color textbox controls allow you to set different colors according to the date/time difference calculation. You can set different colours for the following:

- When the SharePoint item has no date value
- When the date value is in the past
- When the date value is the current day
- When the date value is within the next 7 days
- When the date value is within the next 30 days
- When the date value is more than 30 days in the future.

The screenshot below shows the risk items grouped by their next review date (using the month and year values – so that items are effectively grouped by month) and ordered chronologically.

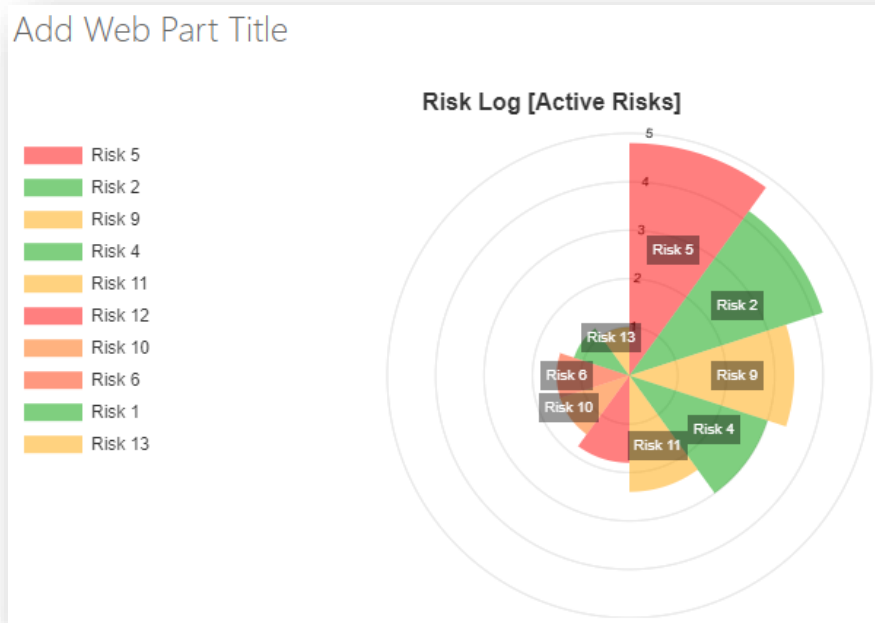


Date Mode behaves slightly differently to Column Mode in that when the chart is grouped, the chart item takes the color of the earliest item in the group. Hovering over the Mar 2020 group shows that the group takes the color of Risk 6, which is due today¹³ and not Risk 10 (due in the next 7 days) nor Risk 11 (due within the next 30 days).



¹³ Today being the 10th March 2020, the date on which the screenshot was taken.

However, as with Column Mode, Date Mode probably works best when items are not grouped. The following is a Polar Area chart, ordered by Exposure in descending order but color coded by Next Review Date, such that overdue and nearly due items can easily be picked out.



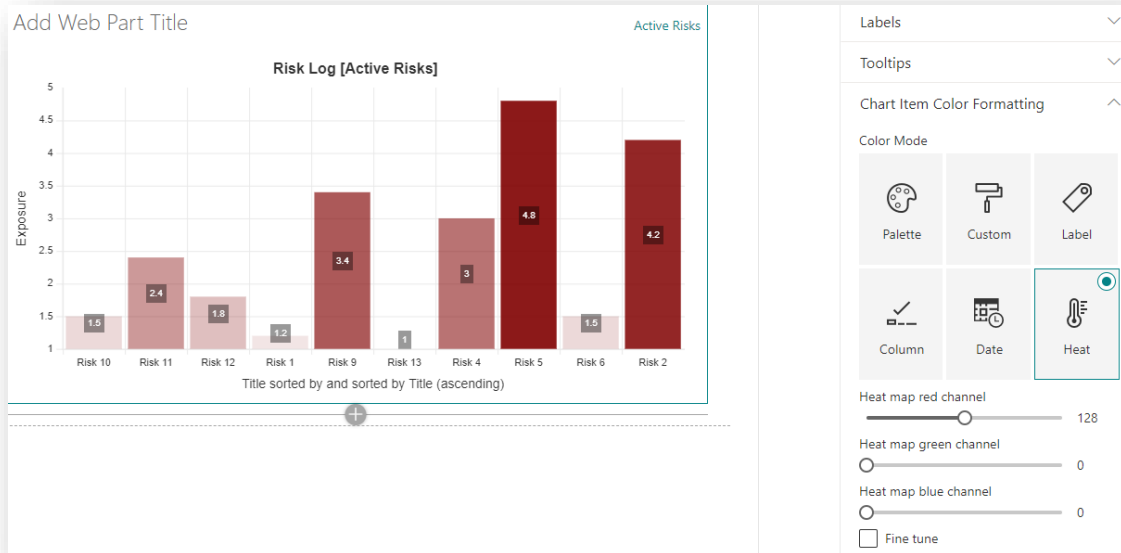
Heat Map

Heat Map mode generally works by examining the range of values in a data set and setting the opacity of chart item based on where the data value for that item lies within the range of data values. Chart items with data values closer to the upper end of the range are rendered more opaquely than chart items with data values that reside at the lower end of the data range, which appear more translucent. Or, to put more simply, items become progressively more transparent when they have a lower value.

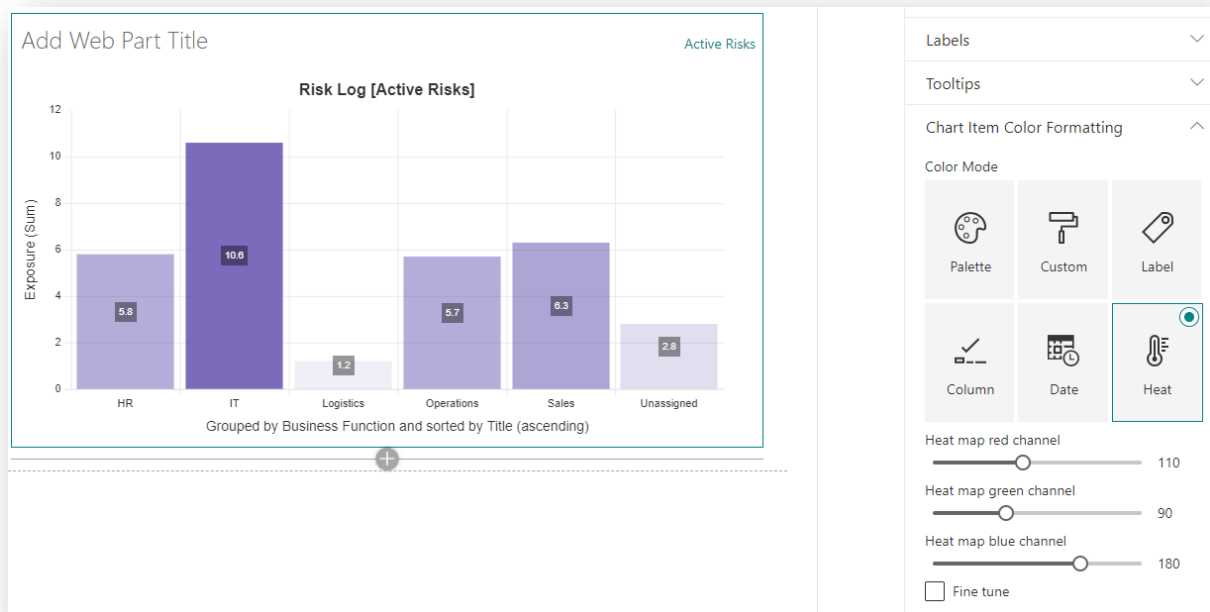
Heat Map mode can only work if the chart has been configured to use a numeric data column.



As Heat Map mode works on setting the alpha channel (transparency) value, it is not possible to use named colors but instead you specify the heat map color using the 3 slider controls which allow you to set values in the Red, Green and Blue color channels as can be seen in the screenshot below, which shows items based on their Exposure value.



You can use the color channel slider controls to set any appropriate base color. When data is grouped the color-coding is based on the aggregated group value.



If the **Numeric** column used for the heat map is constrained between a set of possible values then the maximum and minimum value set in the SharePoint column will be used as the logical extremities of the data set for the purposes of setting opacity, rather than the bounds which would otherwise be set by the values in the items being rendered in the chart.

For example, in the Risk Log scenario, both the Likelihood and the Severity Value column are constrained within limits defined by settings applied to the SharePoint column.

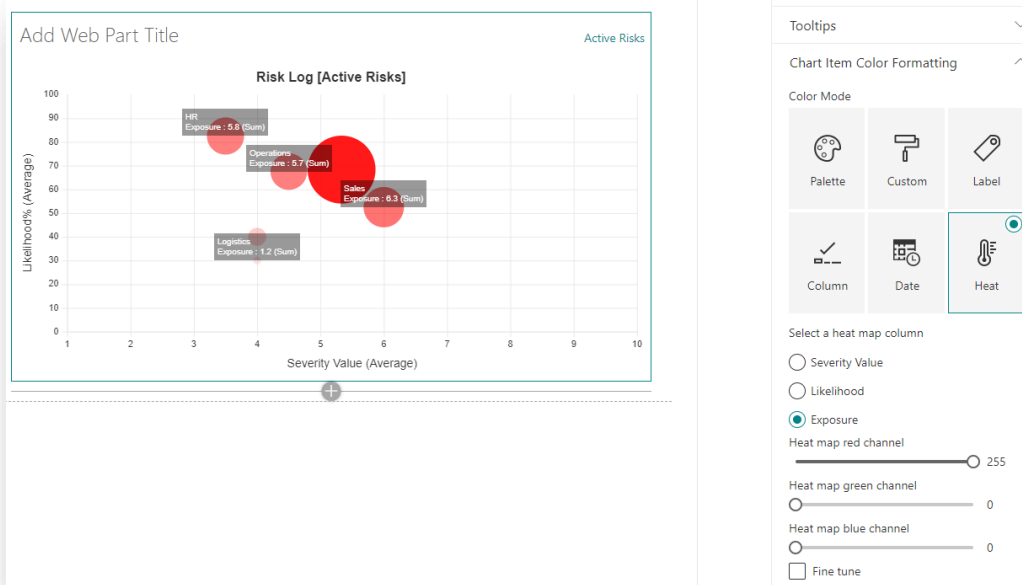
The screenshot shows the 'Column settings' dialog for a column named 'Severity Value'. The 'The type of information in this column is:' section has 'Number (1, 1.0, 100)' selected. The 'Description:' field contains the text 'Provide a severity assessment value of this risk in the range 1 to 10'. The 'Require that this column contains information:' section has 'Yes' selected. The 'Enforce unique values:' section has 'No' selected. The 'You can specify a minimum and maximum allowed value:' section has 'Min: 1' and 'Max: 10' entered. The 'Number of decimal places:' dropdown is set to '0'.

The screenshot above shows how the Severity Value column can only accept value in the range 1-10. Similarly, the Likelihood Column can only accept values in the range 0-100 (and is expressed as a %). Therefore, for these columns, the extreme values used for the color map will be 1 and 10 and 0 and 100 for the Severity Value and Likelihood columns, respectively.

For columns where only one limit has been set i.e. either the minimum value or a maximum value has been set, but not both, this will be used as either upper or lower boundary value for the color map. When no limits have been set in the SharePoint column, the maximum and minimum values of the items in the chart will be used to set the bounds for the heat map.

Where possible, it is recommended to set Numeric columns with bounds. Not only will this result in better performance as there is less processing involved but it will also result in a more accurate heat map which avoids unexpected shading when data is tightly clustered and has no outlying values to set the realistic set of bounds from which the heat map can be rendered.

When you select a Bubble chart, the numeric column used to determine the heat map color will need to be selected. Note that a heat map column is not set automatically and so initially the bubble will be rendered in a default color based on the selected theme for the site.



Selecting the same data column for the heat map as is used for the r-axis (the bubble radius) will amplify high value items in 2 dimensions, namely the size of the bubble and its color intensity (opacity).

However, you are not mandated to keep these data sets aligned. In the example above, if the heat map column is changed to the Severity Value column or the Likelihood column, that will result in bubbles being rendered more vividly in the X or the Y axis respectively, as can be seen in the screenshot below.

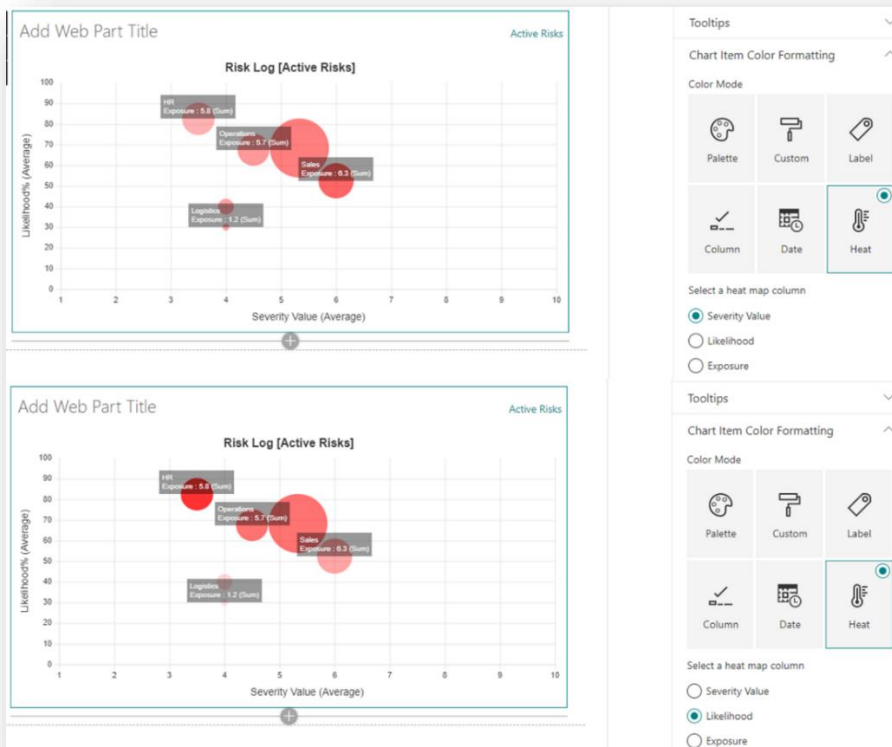


Chart Title and Format Options

The controls in this group allow you to configure how, and if, a chart title is shown and also set a custom background color for the chart area.

Chart Title and Format Options ^

TITLE SETTINGS

☒ Show chart title

☒ Advanced Settings

Custom chart title

A custom title will always be shown in preference to an auto-generated value

Title position

Top

Set a custom color for the chart title

Set a custom named color, hex or rgb/rgba value

Set the font size of the chart title

16

CHART AREA FORMAT SETTINGS

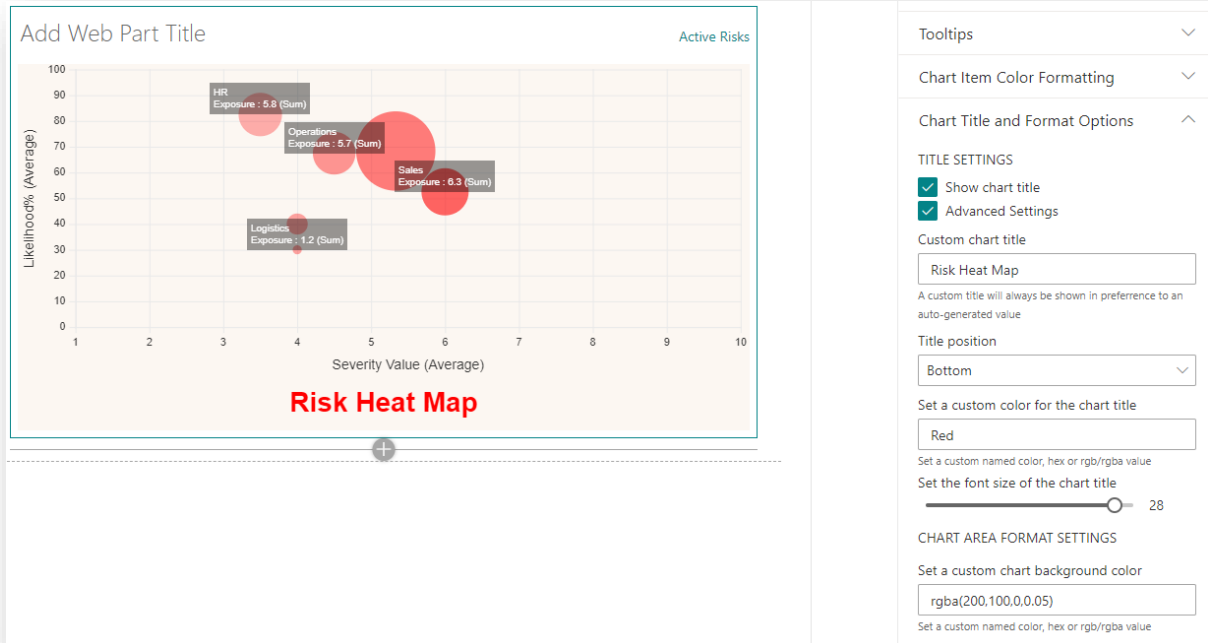
Set a custom chart background color

Set a custom named color, hex or rgb/rgba value

- **Show Chart Title Checkbox:** When checked, a chart title will be displayed, otherwise a title for the chart will not be rendered. You may choose to use to set a value in the web part title in lieu of the chart title or you can use both (or indeed neither).
- **Advanced Settings Checkbox:** When checked, other controls are displayed which allow further control of how the chart title and area can be configured. When not checked, the other controls in this group are hidden.
- **Custom Chart Title Textbox:** K-Charts will construct a default value for the chart title which is simply the concatenation of the selected list and view (appended in square brackets). However, you can override this default and set a custom chart title, simply by typing a value in this textbox.
- **Title Position Picker:** Used to select where in the chart area, the title will be rendered. The title position can be set to one of the following values:
 - **Top:** The title will be horizontally displayed and centrally aligned at the top of the chart area.
 - **Bottom:** The title will be horizontally displayed and centrally aligned at the bottom of the chart area.
 - **Left:** The title will be vertically displayed and centrally positioned on the left of the chart area.
 - **Right:** The title will be vertically displayed and centrally positioned on the right of the chart area.
- **Title Font Color Textbox:** Used to set a custom font color for the chart title.
- **Title Font Size Slider:** Used to set the font size of the chart title in the range 8 to 30 with the default value being 16.
- **Chart Area Background Color Textbox:** By default, the chart area will be transparent and so will adopt the background color of the section in which the web part is hosted. There may be

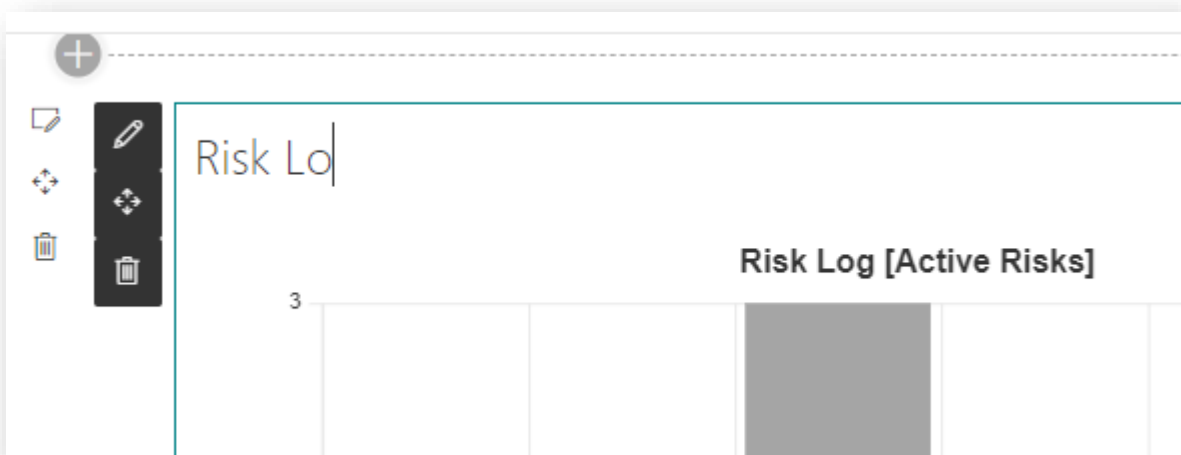
some scenarios in which the chart area should be colored differently and so a custom color value can be applied in this textbox. Note that any custom background color is only applied to the chart area and not to entire canvas area of the web part.

The screenshot below shows a web part instance with some custom settings applied.



Web Part Title

In addition to, or in place of the chart title, you can set a custom text value as the title of the web part. The web part title is not set from a control on the property pane but rather a value can simply be typed in web part title area, directly.



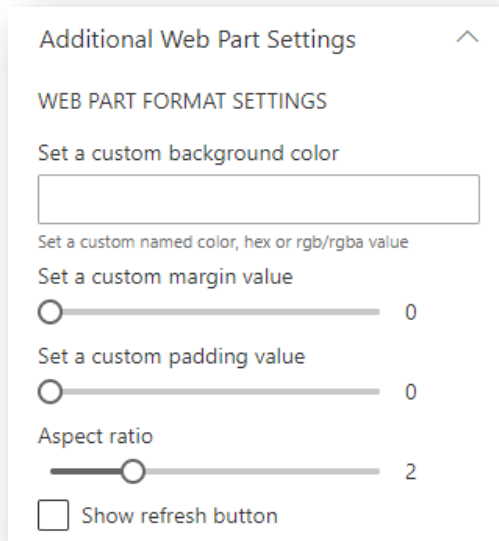
By default, the web part title is rendered in the same font color as other web part titles, based on the theme used with the site. However, if a custom color is set for the web part background (see next section) the font color used depends on whether the specified custom color is dark or light. If the

custom color is light then the web part title will be black. Conversely, when the custom color is dark, the font color used for the title will be white.

Additional Web Part Settings

This group contains controls that allow for the configuration of other miscellaneous web part settings. The group is divided into 5 sub-groups of controls.

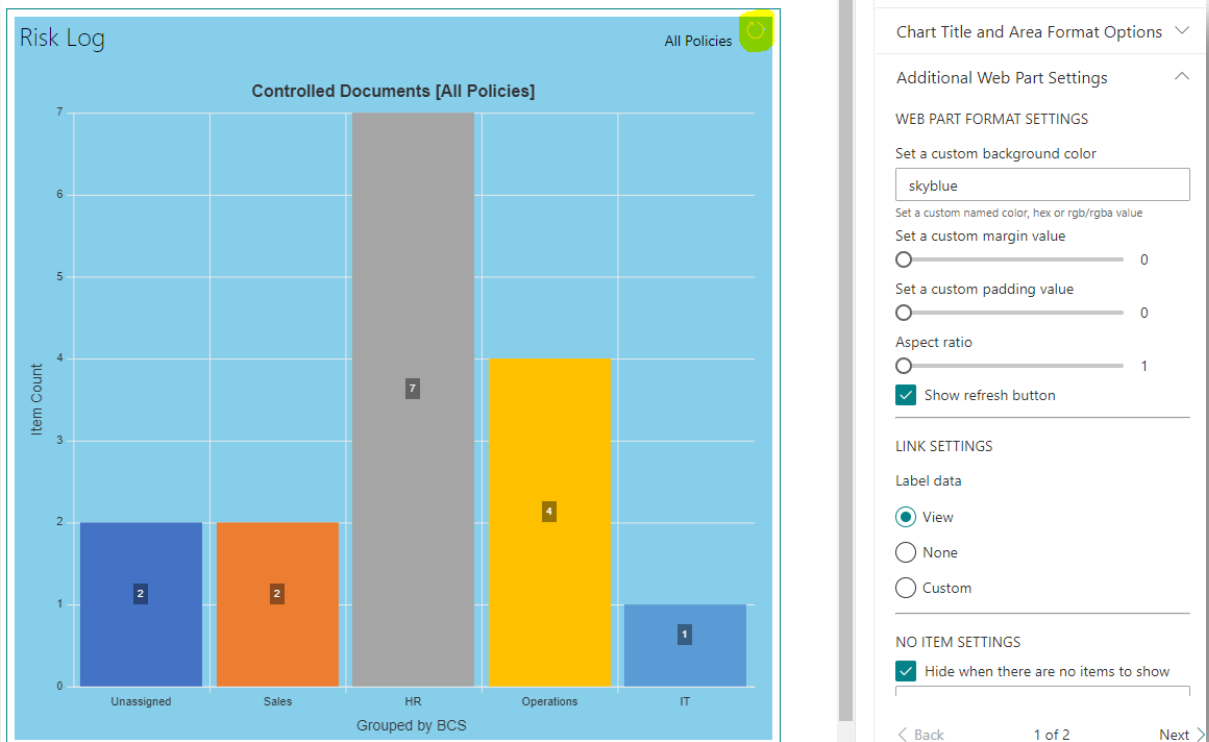
Web Part Format Settings



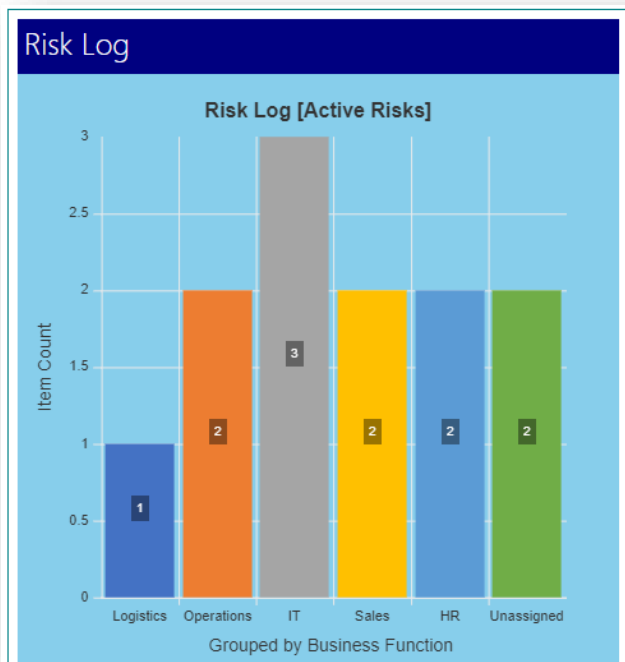
This sub-section contains the following controls:

- **Custom Background Color Textbox:** By default, the background color of the web part is transparent, which means that the color applied to the section in which the web part resides will show through. You can use this control to set a custom background for the web part.
- **Margin Slider:** This control allows you to set a custom margin, in the range 1-20, around all borders of the web part.
- **Padding Slider:** This control allows you to set a custom padding value between the web part canvas and the chart area.
- **Aspect Ratio Slider:** By default, charts are rendered in an aspect ratio of 2:1, meaning that the chart area is twice as wide as it is high. This default setting works well when the web part is placed in a wide column but can make the chart look a little squashed if the web part is hosted in a narrow column (1/3rd width or in a vertical section). By adjusting the aspect ratio, in the range 1 to 5, you can effectively control the height of the chart area. An aspect ratio of 1 will make the chart area as tall as it is wide and will make the chart area square. A value of 5 will make the chart area short and wide, which might be useful if you have wanted a visualisation to report some KPI values across the top of a page.
- **Show Refresh Checkbox:** When checked, a refresh button will be shown on the right side of the title area. Clicking the **Refresh Button** will force the web part to reload data from SharePoint and re-render itself.

The screenshot below shows a web part with the **Refresh Button** displayed, the aspect ratio set to 1 and a sky-blue color used for the web part background color.



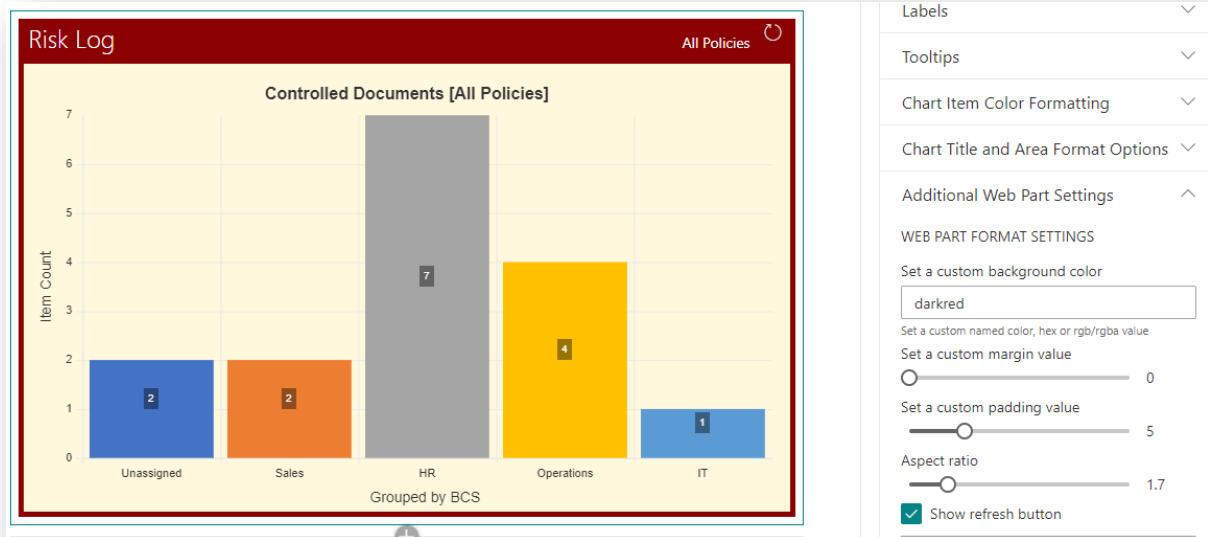
In this next screenshot we have set the chart area background color to sky-blue but the web part background to navy. This has the effect of making the web part header area a different color from the chart area.



It is important to set the chart area color to a specific value as it is transparent by default, which would result in the entire web part having a navy background, in this case.

Notice how the font color used for the web part title is now white. This is because a dark color (navy) was used for the web part background. When a custom color is set for the web part background the web part title (where set) will use a contrasting color, regardless of the site color theme.

If you use different custom colors for both the chart area and the web part background and set a padding value greater than 0, this will result in a border effect around the chart area.



Link Settings

This sub-section contains controls that govern how and if a link is displayed in the top right of the web part title area.

LINK SETTINGS

☐ View
☐ None
☒ Custom

Custom link URL

Provide a full URL to a linked resource

Custom link text

- **Label Data Picker:** This control is used to set the link mode and can be set to one of 3 values:
 - **View:** A link to the selected view will be displayed.
 - **None:** No link is shown.

- **Custom:** Allows you to specify a custom link. The Custom Link URL and Custom Link Text textbox controls are displayed.
- **Custom Link URL Textbox:** Used to set the URL that will be accessed when the link is clicked. When in custom mode, a link will only be rendered in the title area if a value is set in this control.
- **Custom Link Text Textbox:** Used to set the link text. If a value is not assigned in this control the text “More” will be used for the link.

The screenshot below shows a web part configured with a custom link.

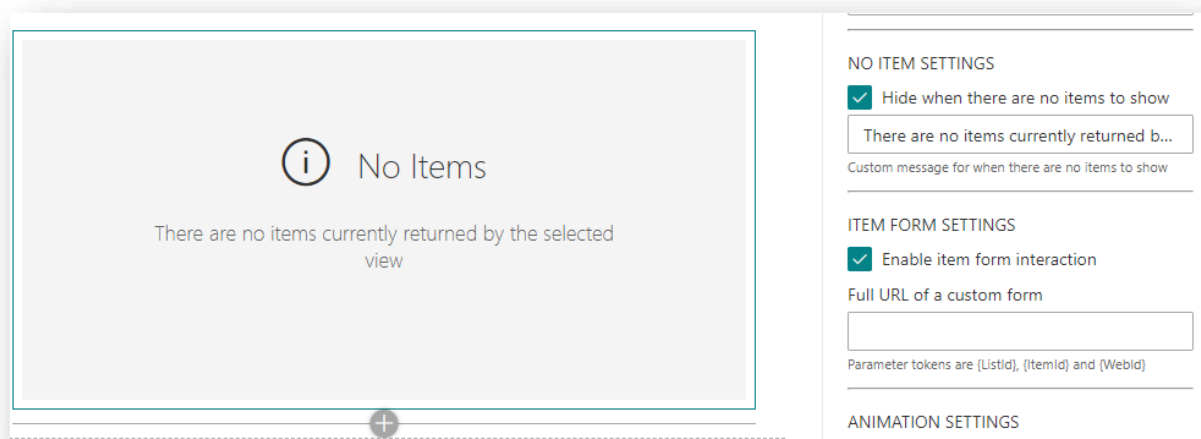


No Items Settings

The controls in this sub-group govern how the web part behaves when the specified view returns no list items.

- **Hide when no items checkbox:** When checked and not in page edit mode, the web part will not be rendered on the page if the referenced view returns no list items.
- **Custom message textbox:** When the **Hide when no items checkbox** is unchecked the text set in this control will be displayed to users on the page, when the specified view returns no list items.

The screenshot below shows a web part connected to a view that returns no list items.

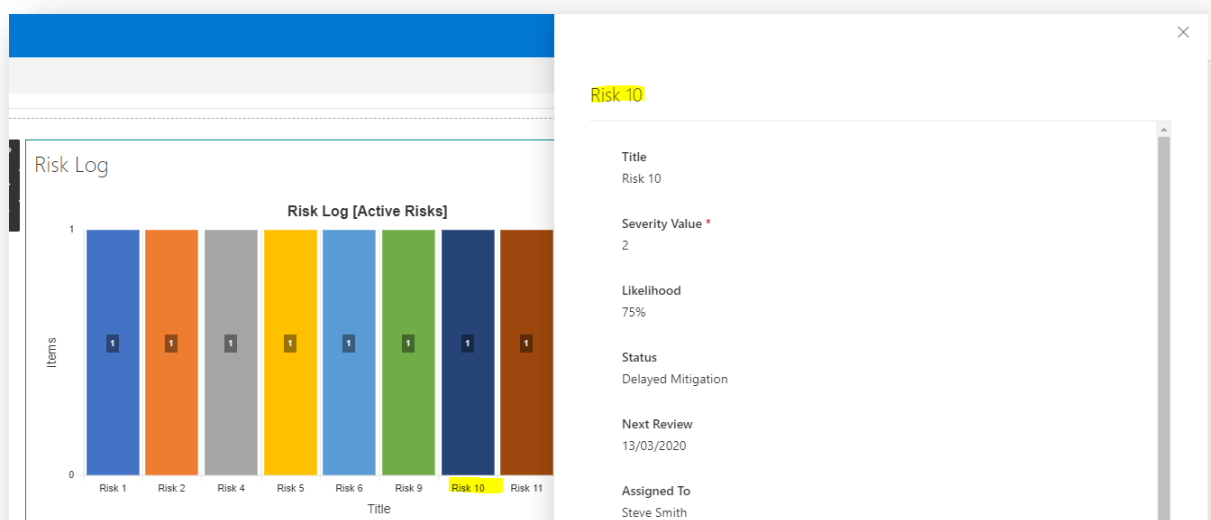


Note that in the screenshot above, the custom message is displayed even though the **Hide when no items checkbox** is checked. This is because the page is currently in page edit mode. When in normal read mode, the web part will not render any output until such time as the view returns items which can be rendered.

Item Form Settings

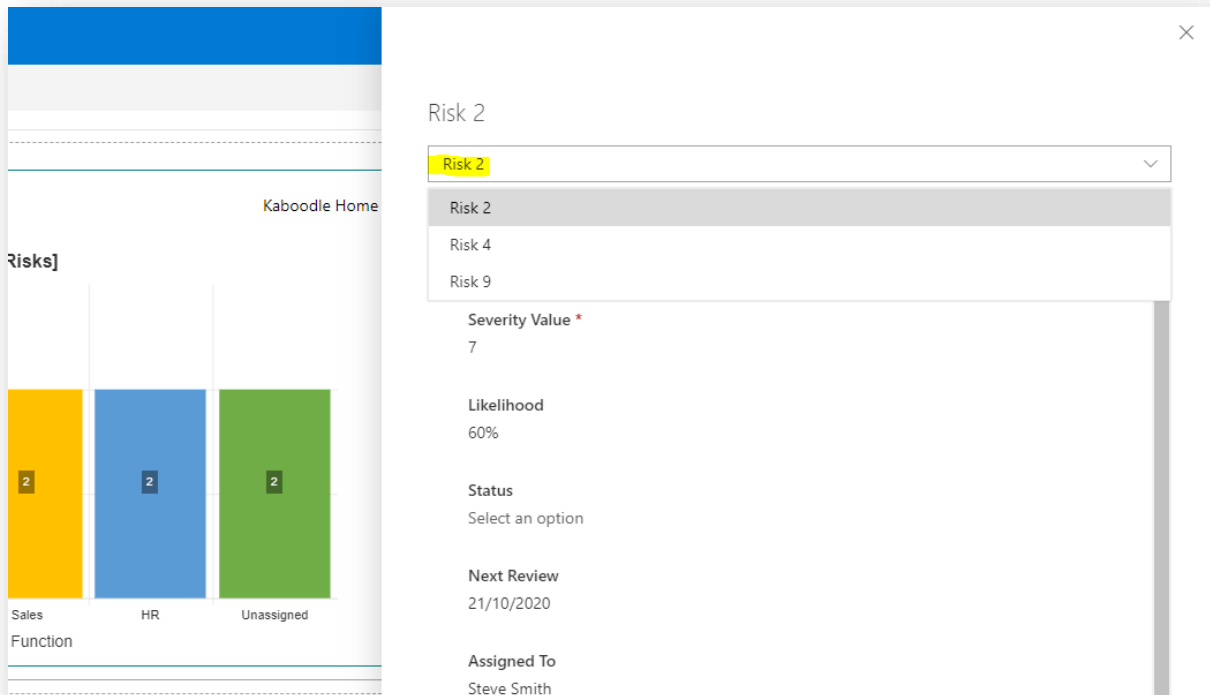
Unlike many other charting tools, K-Charts was designed to be integrated within the SharePoint environment and the **Enable item form interaction** checkbox can be used to specify if SharePoint list items can be accessed from the chart directly. When checked, clicking on a chart element which represents a SharePoint list item will cause a side panel to appear on the right side of the screen. This panel can be used to view and update item properties (if the user has the necessary permissions).

The screenshot below shows the properties panel when a specific chart item is clicked.



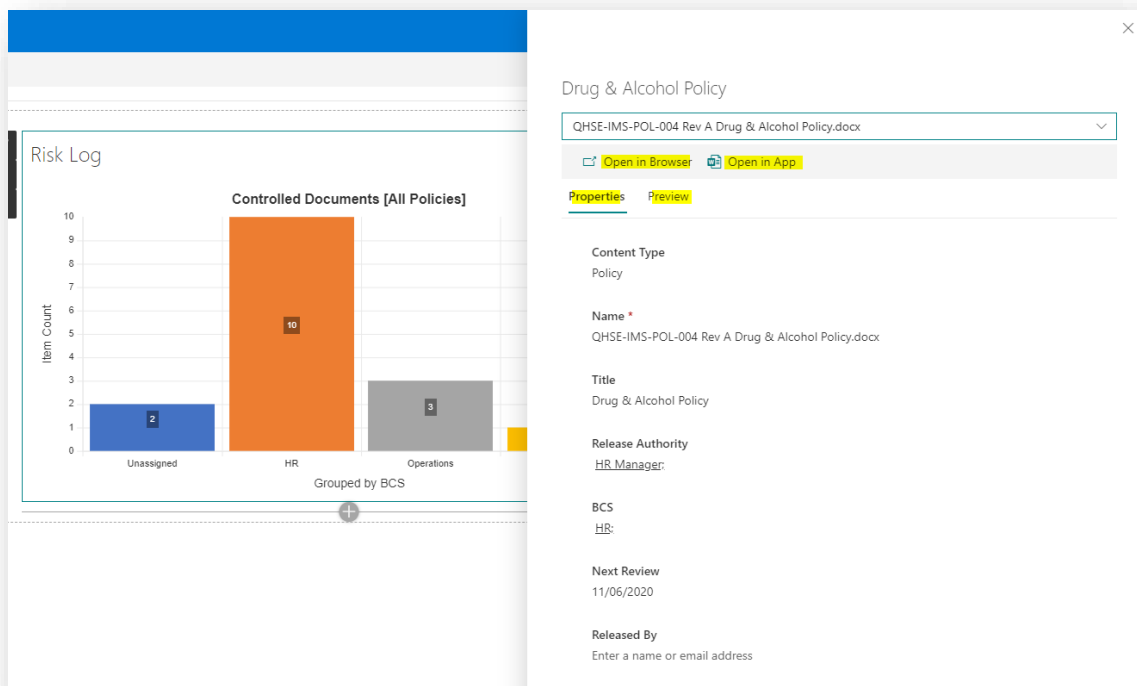
The information panel will continue to be displayed until the panel is explicitly closed by clicking on the close button in the top right corner. When the panel is open, clicking a different chart item will load the properties of the newly selected item.

When the chart groups data, the information panel provides a drop-down picker control to allow users to select a specific item within the group.

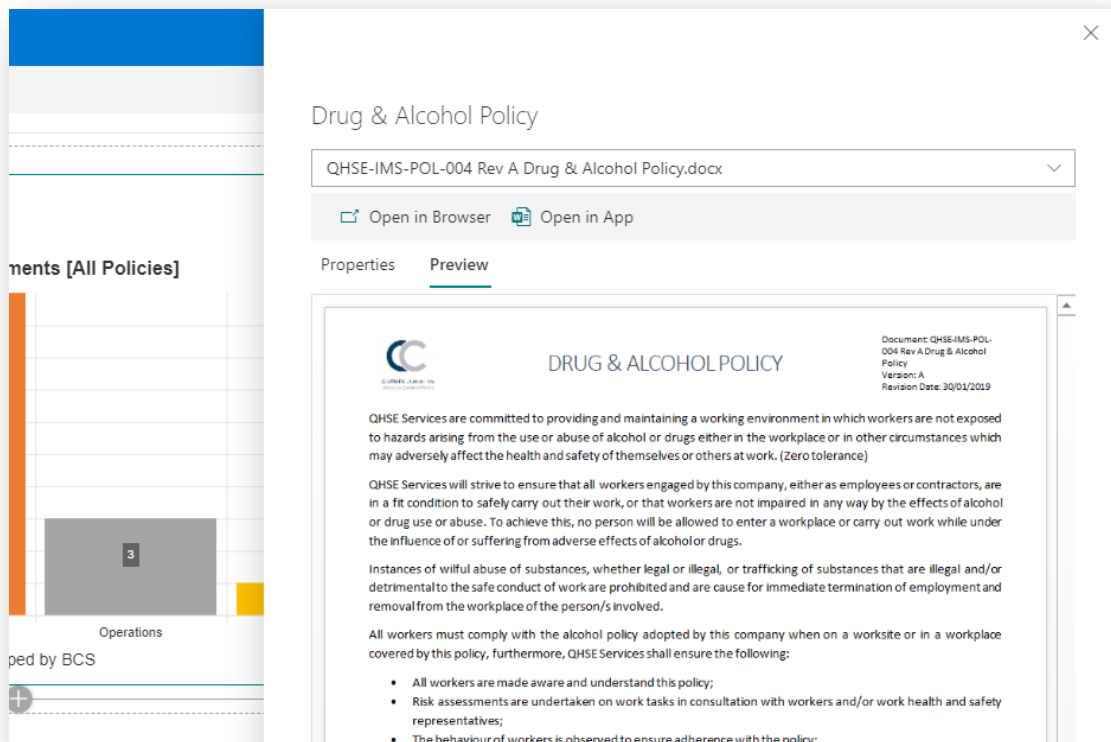


When an item is selected using the picker, the properties for that item are loaded into the information panel.

When you generate a visualisation based on a document library rather than a list, the information panel adapts.



The properties are shown as before but now the information panel has 2 tabs. You can select the preview tab to view a web-based version of the document.



A command bar is also shown which will enable users to open up the document in its own browser window or in the relevant MS Office client application¹⁴.

We think that this integration with SharePoint is one of the product's coolest features but there are a couple of things to note.

First, when initially setting up a web part the information panel may not show list information. This is a conscious design decision to improve performance. Simply switch out of page edit mode and refresh the screen and everything will work as it should.

A similar issue may occur when changing an existing web part to access a different list. Again, just refresh the page to force a reload on the correct data items.

If users have the necessary permissions, they can use the property panel to update the properties of SharePoint list items. However, changing properties does not automatically reload the chart data immediately. The chart data is only refreshed when the information panel is closed down or when the Refresh Button (if shown) is clicked.

The **Custom Form Textbox** can be used to set the URL to a custom form that can be used to view and/or edit items. If the list uses the standard SharePoint forms to display or edit item data or uses forms which have customised by Power Apps there should be no need to use this control. However, if you are using a 3rd party forms technology such as Nintex Forms or Plumsail Forms then you have the option to set a custom URL. The URL can be constructed with URL token parameters as follows:

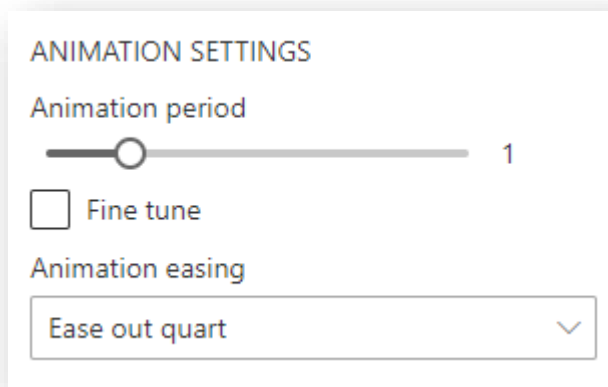
¹⁴ When the document is in an MS Office compatible format or is a PDF.

- {ListId}
- {ItemId}
- {WebId}

When constructing a custom URL, you can use these tokens which will get replaced with actual values at run time. Be sure to include the brace { } characters as part of the parameter. For example, if your custom form technology requires the item Id to be passed in as a web parameter then your URL will look something like:

`https://[path to form]?itemId={ItemId}`

Animation Settings



ANIMATION SETTINGS

Animation period

1

☐ Fine tune

Animation easing

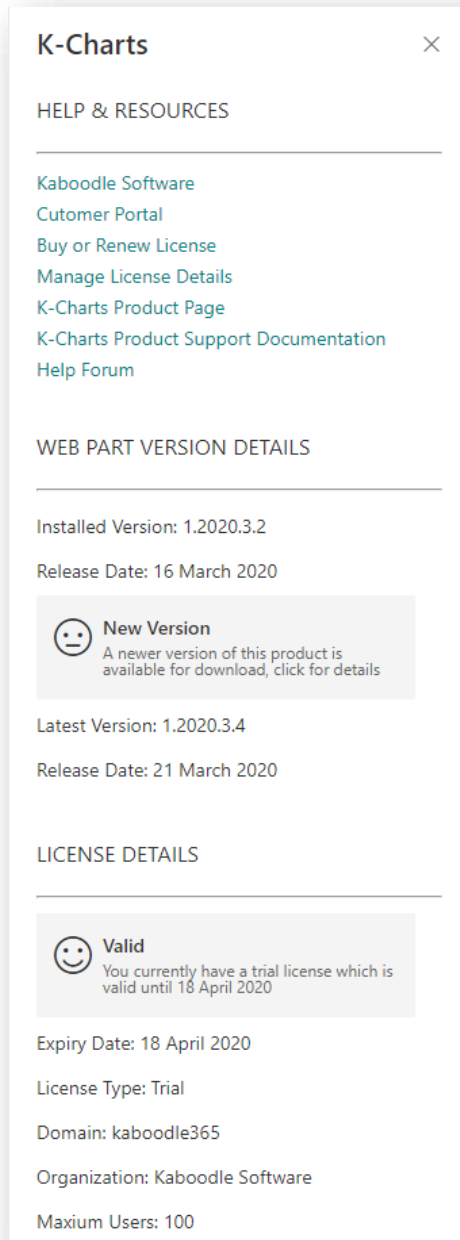
Ease out quart

The controls in this sub-group are used to govern chart animations:

- **Animation Period Slider:** Used to set the time period over which chart animations will be executed. By default, animations will take 1 second but you set a value in the range 0 to 5. Setting the value to 0 will effectively mean that no animations will occur and chart elements will just appear on the page.
- **Animation Easing Picker:** Used to set the animation function that is applied. There are over 30 animation functions to pick from so some experimentation may be required to see what works well with your data set. The default animation function is **Ease out quart**.

Web Part Information

The web part configuration pane has a second page which provides links to resources and additional information about the version of the web part installed on your tenancy and your Kaboodle Software product license.



Help & Resources

The help and resources group contains links to the following resources:

- **Kaboodle Software:** A link to the homepage of the Kaboodle Software Internet site.
- **Customer Portal:** A link to the customer portal site.
- **Buy or Renew License:** A link to the license purchase and renewal page where you can buy a new license or renew an existing one.

- **Manage License Details:** A link to the manage license page where some license details, such as customer contact details, can be self-managed.
- **K-Charts Product Page:** A direct link to the K-Charts product support page on the Kaboodle Software Internet site
- **K-Charts Product Support Documentation:** A direct link to the latest version of this document in PDF format, hosted on our CDN.
- **Help Forum:** A link to the Kaboodle Software help site and discussion forum where you can ask for help, report any issues and make suggestions for product improvements.

Web Part Version Details

This group provides information about the version of K-Charts currently installed on your tenancy and about the latest version available for download:

- **Installed Version:** The version number of the version of K-Charts currently installed in your tenancy.
- **Release Date:** The date when the currently installed version of K-Charts was released.
- **Product Status Button:** A short message reporting whether you are using the latest product version or if a newer version is available.
- **Latest Version:** The version number of the most recent publicly available version of K-Charts
- **Release Date:** The date on which the latest version of K-Charts was released.

Note that the **Latest Version** and the associated **Release Date** is only shown if there is a newer product version available for download.

You can access the latest product version from the **K-Charts Product Page** link in the Help & Resources section or you can simply click the **Product Status Button** which will open the same product page.

License Details

This group provides information about your product license.

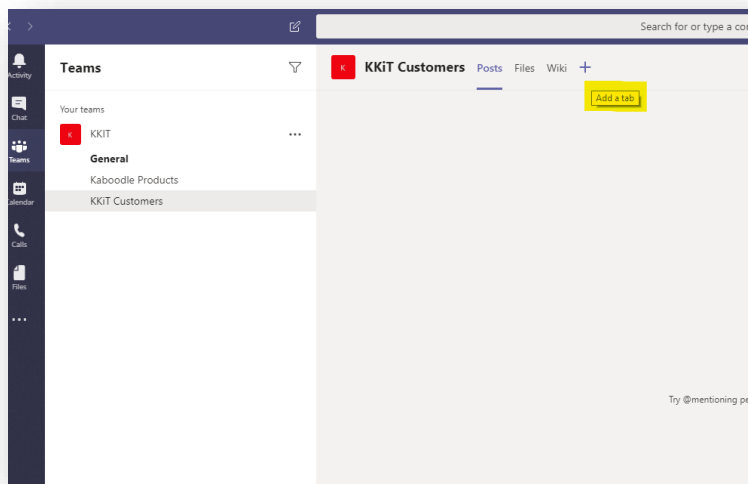
- **License Status Button:** Reports on the current status of your Kaboodle Software license, which can be one of the following values:
 - **Valid:** The license is valid.
 - **Expired:** The license has expired.
 - **Nearly Expired:** The license is due to expire within the next 7 days.
 - **Issue:** Some kind of issue or error occurred when attempting to retrieve license information.
 - **Disabled:** The license has been disabled by us.
 - **Missing:** A license for your domain could not be found.
- **Expiry Date:** Reports when your current software license is due to expire.
- **License Type:** The type of license that is associated with your tenancy and can be one of the following:
 - **Trial:** Indicates that you are currently using a trial license. User trials are free of course but are limited in time, to 30 days from activation, after which an annual license will need to be procured in order to continue using our products.
 - **Annual:** Your license requires renewal on an annual basis.
 - **Perpetual:** A perpetual license is only available to specific partner organisations.
 - **Disabled:** When your license has been disabled by us.
 - **No Found:** When no license for your tenancy could be found
- **Domain:** The domain name of your tenancy.
- **Organization:** The name of your organization as recorded in the license (or undefined if no license was found).

- **Maximum Users:** The maximum number of users covered by the license (or undefined if no license was found).

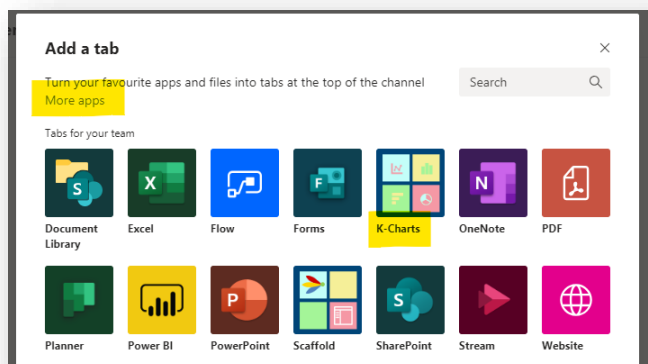
Adding K-Charts to Microsoft Teams

K-Charts has been designed to work with Microsoft Teams as well as SharePoint online. This section explains how to add a K-Chart web part to a Teams Channel. It is assumed that solution package has already been synchronised with Teams via the Tenancy App Catalog site as described in the section entitled Downloading and Installing K-Charts.

To set up K-Charts in Teams, access a suitable channel and click the Add a tab link.

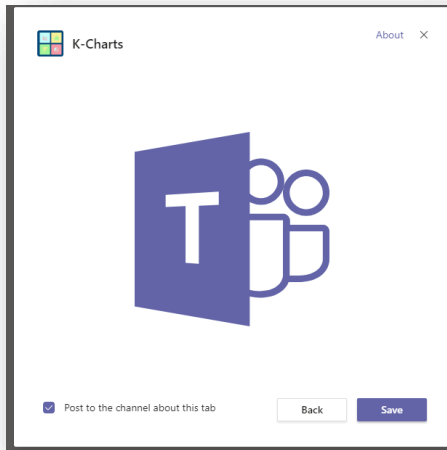


From the Add a tab dialog select the K-Charts tile.

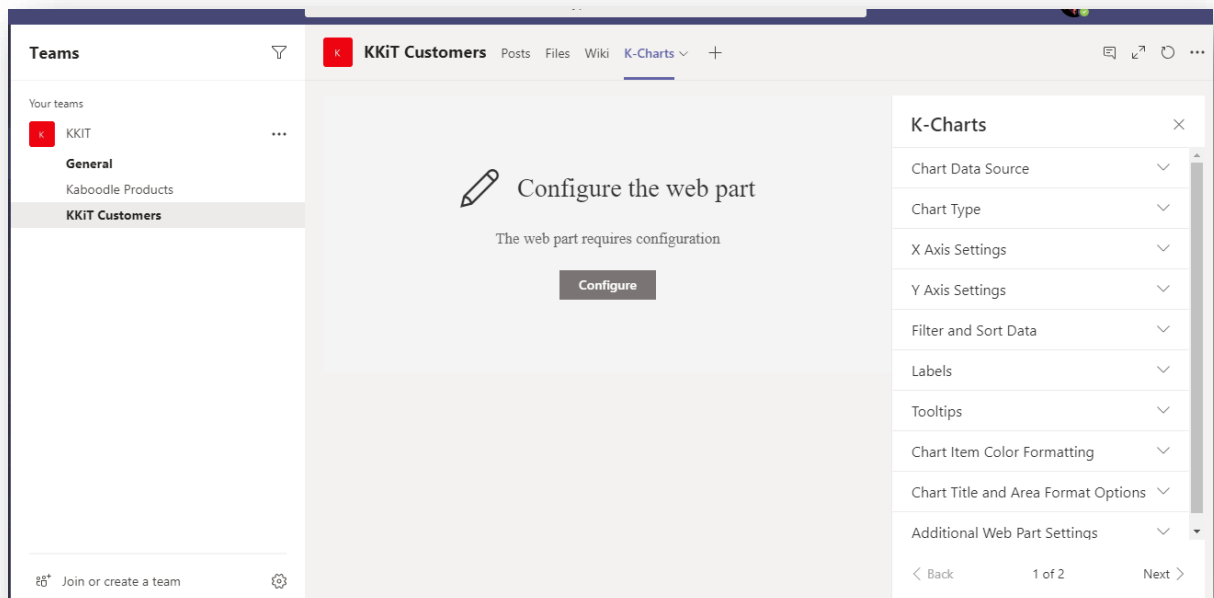


If K-Charts is not listed you may have to select the More apps link and then look in the “Built for {your tenancy name}” link on the left and then add the app to a Team site that way.

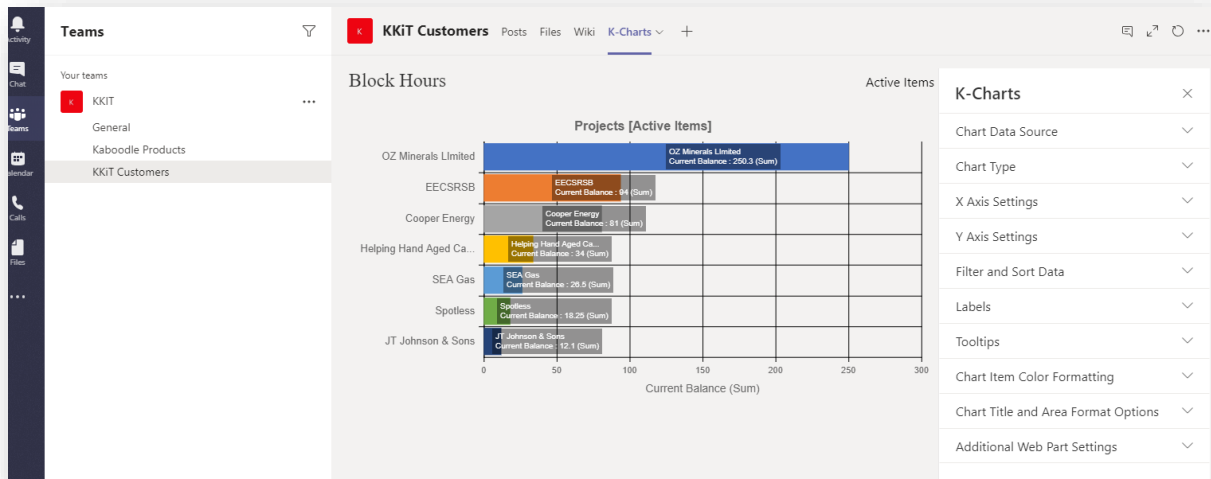
Then click the Save button to add the app to the Teams site channel.



A web part instance will then appear in page edit mode.



The web part can now be configured in the same way as in SharePoint.



Product Trials

We encourage all our customers to trial our products for free, for a 30-day period. This allows you to evaluate our products without risk and make sure that they live up to your expectations – which we are sure they will.

Requesting a Trial

You can request a trial by visiting our customer portal at <https://kaboodle.online/TrialRequest> and complete the simple registration form with your details.

Kaboodle Software Customer Portal Products **Trial** Buy Manage Support

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Kaboodle®

Request a Trial License

Enter registration details for a free 30 day trial

Domain Name:* .sharepoint.com

Organization:*

Organization Size:*

First Name:*

Last Name:*

Email:*

An activation email will be sent to this address

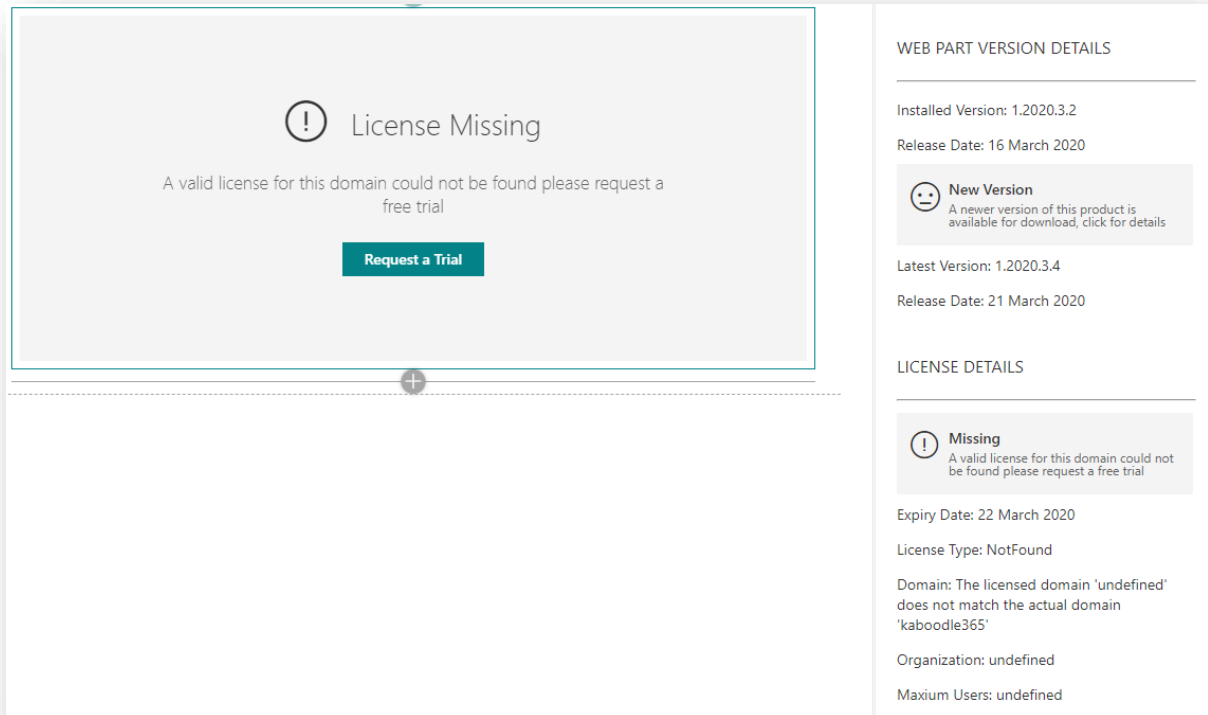
Not For Profit: ☐ Not for profit organizations qualify for a 10% discount

Add to mailing list: ☒ You can opt out of the mailing list at any time

Registration is only required if you want to trial our license paid solutions for the SharePoint Online. Please review our [products page](#) for more details.

Word to Wiki (On-Premises) can be trialled without registration from [Word to Wiki product page](#).

If you have installed K-Charts (or one of our other products) before requesting a trial, the web part will report that a license is missing.



In this case, you can request a trial either by clicking on the **Request a Trial** button in the web part canvas area or by clicking the **License Status** button in the web part properties. Either action will open up the same trial request page in our customer portal.

When you request a trial this way, some default values get carried through to the trial request form.

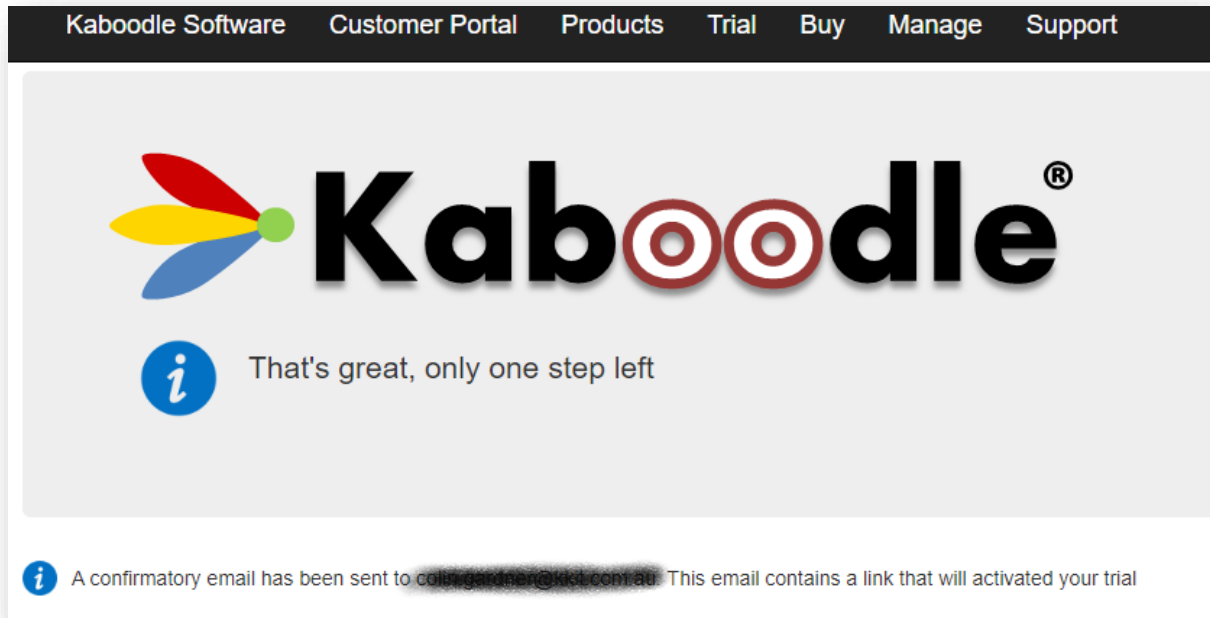
Trial Registration

When registering for a trial we require you to provide the following details:

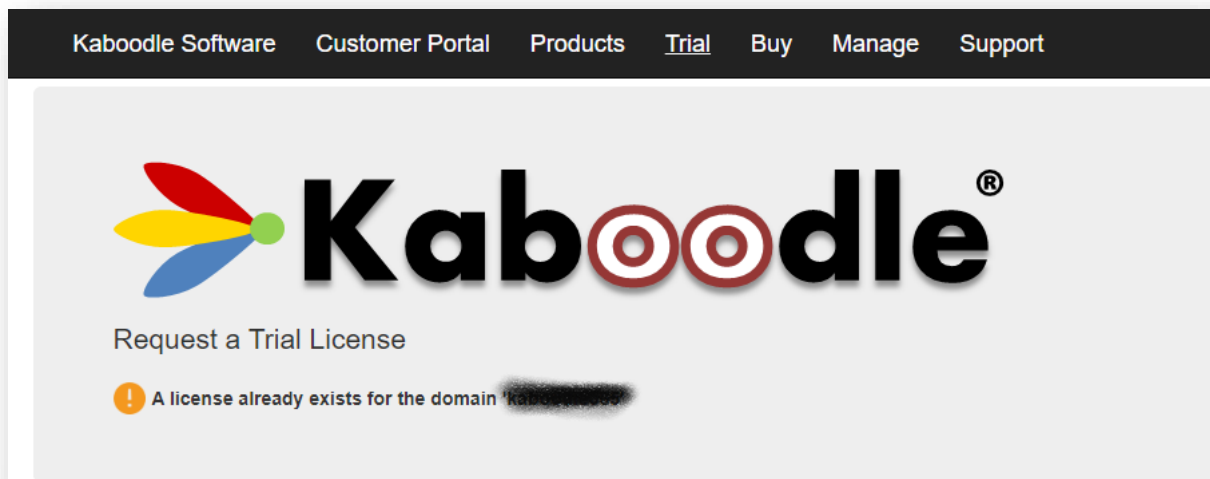
- **Domain Name:** The name of your SharePoint tenancy domain, i.e. the text come after the **https://** protocol header and before the **.sharepoint.com** suffix.
- **Organization:** The name of your organization.
- **Organization Size:** The size of your organization, in terms of licensed users within your tenancy, and can be set to one of the following values:
 - Less than 10
 - More than 10 but less than 50
 - More than 50 but less than 100
 - More than 100 but less than 250
 - More than 250
- **First Name:** The first name of the organization's point of contact for the trial.
- **Last Name:** The last name of the point of contact.
- **Email:** The email address to which the trial activation link should be sent.
- **Not for Profit:** Used to indicate if your organization is not for profit.
- **Add to mailing list:** Used to indicate if the point of contact is to opt in or out of being on our email mailing list. Please note that we do not share email or contact information with any 3rd

party organization nor do we send spam. We do send out a monthly newsletter regarding product updates, and the like, to subscribers.

After clicking the Submit button you will normally be redirected to the trial acknowledgement page which will inform you know that a confirmatory email has been sent to the specified email address.

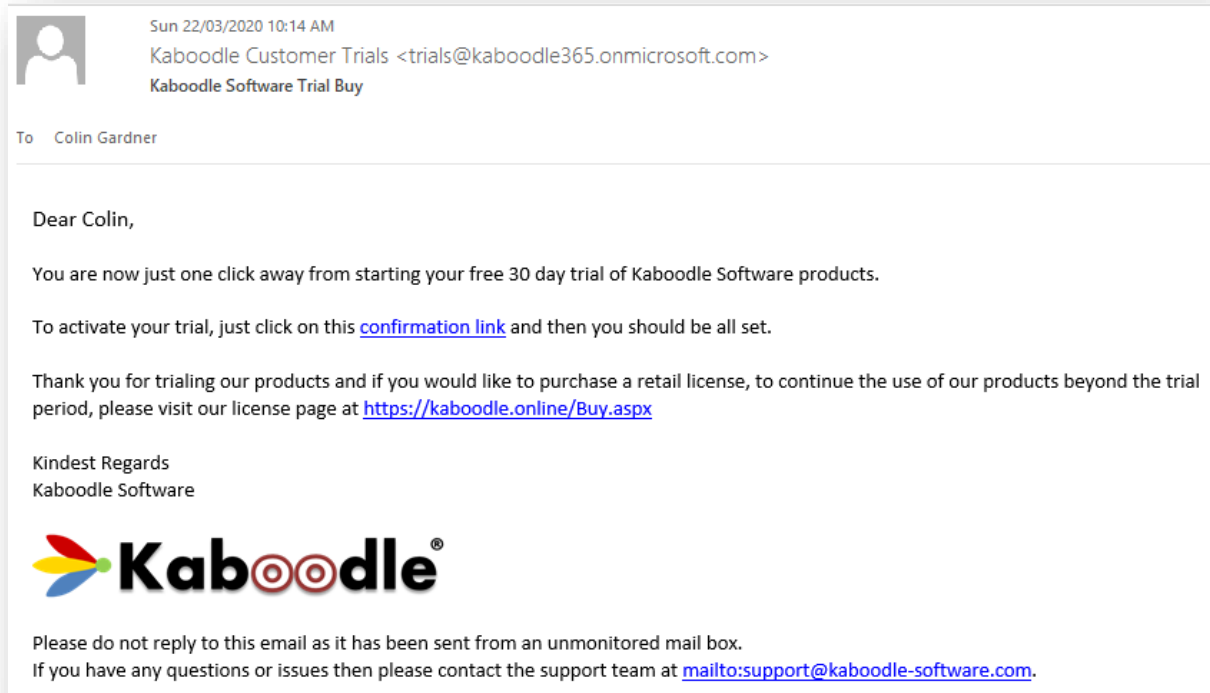


However, if a license already exists for your tenancy, you will not be redirected but instead informed that a license already exists.



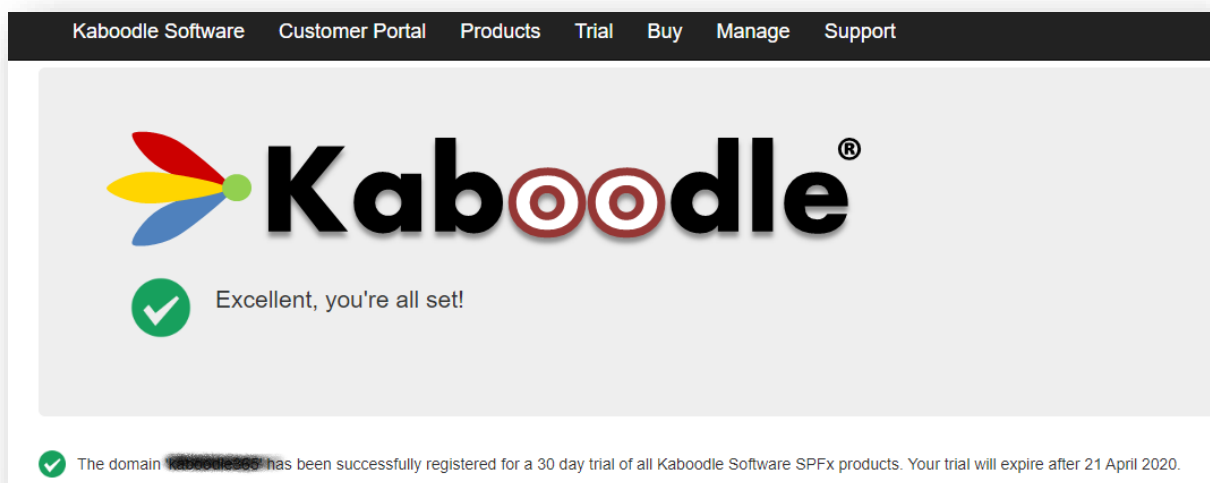
Trial Activation

Please note, it is vitally important to provide a monitored email address during trial registration as our system will send out an activation email to this address.




Your trial period does not start until the confirmation link in this email has been accessed.

Clicking on the link will open the trial acknowledgement page in our customer portal and will activate your 30-day trial.



Managing License Details

Once you have a license you can self-manage some of your license details by visiting the License and Organization Management page in our customer portal at <https://kaboodle.online/ManageLicense>



License and Organisation Management

Manage Organisation and Contact Settings

Please enter your tenancy domain name and the contact email address used with the current license so we can retrieve your details

Domain Name: * .sharepoint.com

Contact Email: * [Load license details](#)

To retrieve license details, you will need to provide your tenancy domain name and the email address currently associated with the license and then click the **Load license details** button.

Kaboodle Software Customer Portal Products Trial Buy Manage Support

Manage Organisation and Contact Settings

Please enter your tenancy domain name and the contact email address used with the current license so we can retrieve your details

Organisation

Domain Name: * .sharepoint.com

Contact Email: *

Organisation: *

Organisation Size: Small (more than 10 but less than 50)

Preferred Currency:

Point of Contact

First Name: *

Last Name: *

Not For Profit: ☐

On Mailing List: ☒

License

License Type: Trial

Status: Valid

License Valid From: 22 Mar 2020

Expires: 21 Apr 2020

[Cancel](#) [Update](#)

If you want to buy or renew a license please visit the [Buy License page](#).

If you need to change your domain name or organisation size or want to apply for a trial extension then please [contact us](#).

Note that you do not need a password to access the management page but you will need to know the email address currently associated with your tenancy license.

From the management page you can:

- Change the email address associated with the license
- Change the organization name
- Change your preferred payment currency
- Update the point of contact details for the license

You can also view the current type and status of the license and when it is due to expire.

There are certain properties which cannot be self-managed. Specifically, you cannot change the domain associated with the license, nor can you change the organization size. If you need to update either of these properties you will need to contact us using the contact form at <https://kaboodlesoftware.com/contact/> or you can email us directly at support@kaboodle-software.com

Purchase a License

This section explains how to purchase or renew a license.

License Expiry Notifications

When you are nearing the end of your trial or when your license comes up for annual renew, our licensed web parts will let you know that action is required.



Seven days before your license is due to expire a yellow warning message will be displayed, alerting you to how many days it is before your license will expire.

If you have less than a day before your license expires the banner color intensifies.



If your license expires, web parts will not render in the normal way but rather they will report that the license has expired.

! License expired

Your current license has expired

[Buy or Renew](#)

[Buy or Renew License](#)

[Manage License Details](#)

[K-Charts Product Page](#)

[K-Charts Product Support Documentation](#)

[Help Forum](#)

WEB PART VERSION DETAILS

Installed Version: 1.2020.3.5

Release Date: 22 March 2020

Latest Version
The latest public release of this product is installed in your tenancy

LICENSE DETAILS

Expired
Your current license has expired please renew or buy a license

Expiry Date: 20 March 2020

To purchase or renew a license you can:

- Click the Buy or Renew link in the web part header, or
- Click the Buy or Renew button in the canvas area of an expired web part
- Click the Buy or Renew Link in the web part properties pane, or
- Click the License Status button in the web part properties pane, or
- Visit the Buy or Renew license page at <https://kaboodle.online/Buy> directly in our customer portal



Simplified Licensing

It is important to understand that we license our products on a customer seat basis rather than as separate individual products. This means that all your users can use all of our products by acquiring a single license. The license cost is based on the number of users in your tenancy, as explained in the next section.

This makes license renewal really simple, as you only have to take action once a year. Everything is driven from the license and so there is no need to apply any updates to web parts individually. So long as your license has not expired, everything will be fully functional.

The Buy or Renew License Page

At the Buy or Renew license page, simply complete the online order form and review your quote.

Kaboodle Software Customer Portal Products Trial **Buy** Manage Support

Buy or renew a license

If you are wanting to procure or renew a license for the on premises version of Word to Wiki or you would prefer to get a formal quote, or to pay by international bank transfer then please use the [contact form](#) and we will be happy to help.

Customer Details

Domain Name: .sharepoint.com

Organization:

Not for Profit: ☒

Promo Discount: ☐ Congratulations, as a trial customer you qualify for a 25% discount off your first year subscription

Note that promotion codes are tied to your domain name

Quotation

Users	Currency	Normal Price	Total Discount	Your Price	
More than 10 but less than 50	US Dollars	\$1024 (USD)	35%	\$666 (USD)	Proceed to checkout

Please take care to select the correct number of users. We reserve the right to disable licenses when we believe them to be inaccurate.

You can just proceed to purchase an initial annual license or renew an existing license without having a trial license first but you must provide a domain and organization name in order to get a quote.

If you click the Not-for-profit (NFP) checkbox you will be claiming that your organisation is not for profit and this will entitle you to a 10% discount on your license fee.

We consider NFP organizations to be those that provide services to the community and do not operate to make a profit for its members (or shareholders, if applicable). A few examples are childcare centres, art centres, neighbourhood associations, medical centres, charities and sports clubs. **We do not consider governmental organizations to be NFP.**

We suggest that you always click the **Promo Discount** button as you may well be rewarded with additional discounts, specifically:

- **On time renewal:** If you renew your license on time (before it expires), we reward you with a 10% discount.
- **New customer:** If you are a new customer, we reward you with a whopping 25% discount on your first-year license!

So, if you are a new NFP customer you will be entitled to a discount of 35% on your first year's license!

Make sure to select the correct number of users for your organisation. The user count should be based on the number of users within your tenancy for whom you manage an O365 license. You can exclude service and administrator accounts and external users.

We think that it is fair that larger organisations should pay more than those with just a few users and have scaled our license costs accordingly.

We take it on trust that you will select the correct licensing level but **we reserve the right to disable your license if we believe you have been deliberately inaccurate in either your user count or your NFP status.**

When reviewing your quote, you can select your preferred payment currency as either:

- **USD:** US Dollars
- **AUD:** Australian Dollars
- **NZD:** New Zealand Dollars
- **GBP:** Great British Pounds
- **EUR:** Euros

Our online payment gateway will accept transactions in other currencies but the transaction can only be processed in one of the above currencies.

Payment Gateway

When happy with the quote, click on the **Proceed to checkout** button which will redirect you to [Paymate](#), our payment gateway provider.

Then complete the transaction form as required.



Payment Details

Payment

* Merchant Email:

Kaboodle Software

Order id:

* Credit Card Number:

* Name on the card:

* Expiry:

* CVV: ?

* Currency: ▼

* Amount:



Buyer

* Buyer's Email:

* First Name:

* Last Name:

* Phone:

* Address:

* City:

* Postcode:

* State:

* Country: ▼

* By pressing Pay Now you accept our [Terms and Conditions](#)

Paymate only accept transactions from Visa and Mastercard.

Request for Quotation

If you require a formal quotation or would prefer to pay by international bank transfer then please contact us using the contact form at <https://kaboodlesoftware.com/contact/> or email us directly at quotations@kaboodle-software.com and we will be happy to help.