Tableau Online Help

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Get Started

Tableau Online is a secure, cloud-based solution for authoring, sharing, distributing, and collaborating on content created in Tableau.

What’s New in Tableau Online

This topic contains an overview of some of the key new features added in Tableau Online.

Tableau Online Release Notes | Known Issues

What's new in March 2021

See new comment and share notifications in redesigned notification center

Users can now see notifications for new comments and shares by selecting the bell icon in the top right corner of their Tableau site. The redesigned notification center also displays updates for flows and extract jobs. With this update, old notifications will continue to be sent by email, but will not appear in the notification center. To continue receiving older notifications via email, navigate to site settings. Under Manage Notifications, select Email for each notification type. For more information, see Tour Your Tableau Site. For settings information, see Site Settings Reference.

Tableau Catalog - part of the Data Management Add-on

Automated data quality warning - You can set Tableau to monitor for extract refresh failures and for flow run failures. When a failure occurs, Tableau generates a data quality warning that displays to users. For more information, see Set a Data Quality Warning.

Quick search results expanded - Quick search results now include tags on external assets.

Web authoring and interaction with views

New features and enhancements related to web authoring and interacting with views on the web are listed in What's New in Tableau Desktop and Web Authoring. For topics related to web authoring and interacting with views, see Using Tableau on the Web.

Add Einstein Discovery predictions to Tableau dashboards

With the new Einstein Discovery dashboard extension, as users select marks in a view, they see dynamic updates to predictions and suggestions to improve predicted outcomes. Authors can drag the Extension object onto the dashboard canvas, select Einstein Discovery from the extensions gallery, and then configure the extension in Tableau Online. For more information, see Explore Predictions in Tableau with the Einstein Discovery dashboard extension.

For information on required licenses, access, and permissions in Salesforce and Tableau, see Requirements for access.

For an introduction to Einstein Discovery in Tableau, see the Einstein Discovery in Tableau page and demo on tableau.com.

For details on configuration steps required in order to enable the Einstein Discovery dashboard extension, see Configure Einstein Discovery Integration.

Features Introduced in Previous Versions of Tableau Online

Browse summaries of features for previously released versions.

All Tableau Online Release Notes | All Known Issues

Added in previous versions

Added in December 2020

Create extracts on the web

Now you can create extracts directly in web authoring, without using Tableau Desktop. For more information, see Create Extracts on the Web . You can extract new workbooks in addition to existing workbooks. Optionally, the extract creation can run in the background and you can be notified when it's completed. This will let you close your authoring session while the extract is being created, which can be helpful with large extracts that might take a long time.

Create and interact with flows on the web

You can now create flows to clean and prepare your data using either Tableau Prep Builder, Tableau Server, or Tableau Online. Connect to your data, build a new flow, or edit an existing flow and your work is automatically saved every few seconds as you go. Create draft flows that are only available to you or publish your flow to make it available for others. Run your individual flows right from the web or run your flows automatically on a schedule using Tableau Prep Conductor if you have the Data Management Add-on. For more information, see Create and Interact with Flows on the Web.

Organize items in a collection (limited preview)

Collections are like playlists that let you organize your Tableau content. Create a private collection for personal reference, or make a public collection that can be viewed by other users on your site. For more information, see Organize Items in a Collection.

As a Tableau administrator, you can control whether users can set collections to public by changing the site setting **Allow public collections**.

Collections are available as a limited preview for Tableau Online. You won't see collections unless your site is part of the preview. If you're a Tableau administrator who would like to join the preview, sign up here.

Tableau Catalog updates - part of the Data Management Add-on

Tableau Catalog is included in the separately licensed Data Management Add-on for Tableau Server and Tableau Online. For more information, see About Tableau Catalog.

The following features are included in this release:

Data Quality Warning History admin view - Site administrators can see how data quality warnings are being used on the site using the pre-built admin view, Data Quality Warning History. For more information see Data Quality Warning History.

See quality warning details in Tableau Desktop - Tableau Desktop users can hover over the warning icon on the Data tab to see details about the data quality warnings affecting the data in their workbook. For more information, see Set a Data Quality Warning.

Metrics appear in lineage and show data quality warnings - Data quality warnings now appear on metrics affected by a warning. Metrics also appear in the Lineage tool, enabling you to see how a metric might be affected by data changes when performing impact analysis. For more information, see Create and Troubleshoot Metrics.

Tableau Prep Conductor updates - part of the Data Management Add-on

Now, the Data Management Add-on is only needed to schedule and monitor flows with Tableau Prep Conductor. Other flow-related tasks no longer require you to license the add-on. For more information, see Tableau Prep Conductor.

Analytics extensions

Analytics extensions allow you to extend Tableau dynamic calculations in a workbook with languages like R and python, and with other tools and platforms. These settings endpoints enable you to configure analytics extensions on your site in Tableau Online. See Configure Connection with Analytics Extensions.

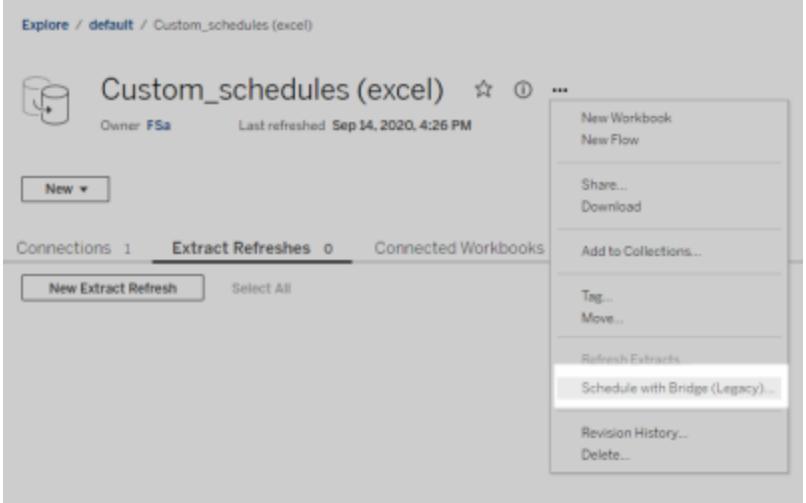
Ask Data Usage and Adoption admin view

You can now see how users engage with Ask Data on a site, using the new Ask Data Usage admin view. The dashboard highlights the top Ask Data users, data sources, and data source owners, along with headline value metrics. For more information, see Ask Data Usage.

Added in September and October 2020

Bridge (legacy) schedules have moved to a new location

For an extract data source that needs to use a Bridge (legacy) schedule to keep data fresh, you can find and configure a Bridge (legacy) schedule from its new location in the actions menu on the data source page. For more information, see Set Up a Bridge Refresh Schedule.



Note: Recommended schedules have not changed location and continue to be integrated with Online refresh schedules. However, Recommended schedules is no longer labeled as "Recommended" to better reflect the integration. All the Bridge-related updates described here have been made to support the new Online scheduling experience.

Custom Extract Refresh schedules

Extract refresh scheduling is now fully customizable and no longer need to be selected from an pre-populated list of schedules. You now have the ability to create and manage customized hourly, daily, weekly, and monthly schedules for the extract refreshes.

For more information, see Schedule Refreshes on Tableau Online.

Turn off Web Page objects

To prevent Web Page objects in dashboards from displaying target URLs, deselect **Enable Web Page Objects** in the site settings.

Added in August 2020

Set the Site Time Zone for Extracts

The default time zone for extract-based data sources in a site is Coordinated Universal Time (UTC). Site administrators can now choose to set a different time zone.

For more information, see Set the Site Time Zone for Extracts.

Automatically Suspend Extract Refreshes for Inactive Workbooks

To save resources, Tableau can automatically suspend extract refresh tasks for inactive workbooks. This feature applies to full extract refreshes only, not to incremental extract refreshes. This feature only applies to refresh schedules that run weekly or more often.

For more information, see Automatically Suspend Extract Refreshes for Inactive Workbooks.

Manage Licenses for User Groups with Grant Role on Sign In

Administrators can set a minimum site role for user groups and choose **Grant role on sign in** when creating or modifying that user group. Enabling Grant role on sign in reduces manual work to manage licenses, since administrators can designate site role capabilities by group, and provision licenses when a user actually needs it. By waiting to grant licenses until users sign in, administrators can streamline license provisioning, without granting licenses to inactive users. For more information, see Grant License on Sign In.

Tag Stale Content for Archiving

The Stale Content Admin view that was introduced in 2020.2, now has an added functionality that allows you to tag content as stale. You can then choose to archive the tagged content. For more information, see Stale Content.

Tableau Catalog updates - part of the Data Management Add-on

Tableau Catalog is included in the separately licensed Data Management Add-on for Tableau Server and Tableau Online. For more information about Tableau Catalog, see About Tableau Catalog.

The following features are included in this release:

See data quality warnings in Tableau Desktop - When you open a workbook in Tableau Desktop that has a data quality warning, the warning icon (either a blue circle or a yellow triangle with an exclamation point) appears on the Data tab on the sheet page of the workbook. For more information, see Set a Data Quality Warning

'Sensitive data' warning type added - You can use this new warning type to set a data quality warning for sensitive data in your organization. For more information, see Set a Data Quality Warning

Embedded assets are listed in External Assets - You can now see embedded assets listed in the External Assets page. For more information, see Use Lineage for Impact Analysis.

Tag external assets - Add tags to databases, tables, and columns, which enables you to, among other things, tag tables and columns with personally identifiable information (PII). For more information, see Tag Items in Tableau Desktop and Web Authoring Help.

Web authoring and interaction with views

New features and enhancements related to web authoring and interacting with views on the web are listed in What's New in Tableau for Users and Web Authoring and Tableau Desktop Feature Comparison. For topics related to web authoring and interacting with views, see Using Tableau on the Web.

Added in June 2020

Tableau Bridge

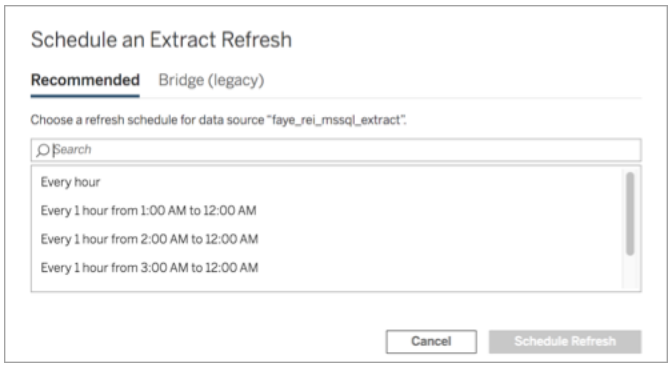
No Bridge upgrade or installation required – for publishers

For publishers working exclusively with data sources that connect to on-premises relational data, you no longer need to maintain your current client or upgrade to the latest. As long as you migrate your refresh schedules using Recommended schedules (next bullet), and your admin has installed and set up at least one Bridge 2020.2 client, you're all set. For more information, see Set Up a Bridge Refresh Schedule.

Integrated refresh schedules

Refresh schedules for Bridge are now integrated with Tableau Online refresh schedules. For publishers, integrated refresh schedules, called **Recommended** schedules, mean:

- You have more control and flexibility to manage your own data sources.
- Your dependence on site admins is reduced for certain data source management tasks like updating connections credentials.



For more information, see Online refresh schedules versus Bridge (legacy) schedules.

Keep private cloud data fresh

Use Bridge to keep cloud data, accessible only from inside a private network, fresh. For more information, see Use Bridge for Private Cloud Data.

Pooling enabled for extract refreshes

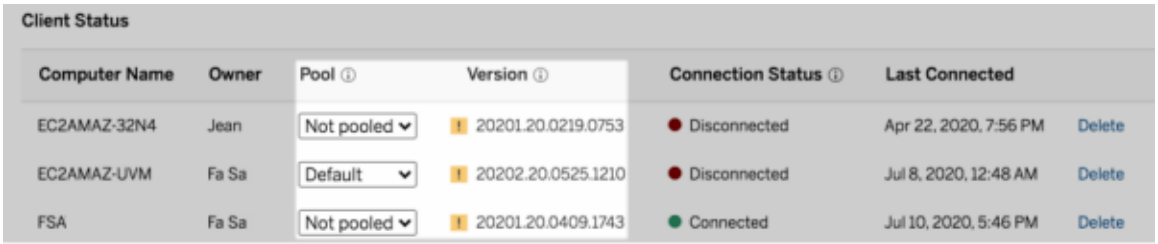
Clients can pool extract refreshes, in addition to live queries, across all 2020.2 clients in the network. For site admins, pooling of extract refreshes means:

- You can focus on providing availability, throughput, and latency.
- You can optimize the composition of your client pool to match the characteristics of your live query and extract refresh workloads.

For more information, see Configure and Manage the Bridge Client Pool.

Updated Settings page

For site admins, the simplified Bridge Settings page allows you to configure which clients to include or exclude from the pool and displays a warning icon to make it easier to know which clients need to be upgraded to the latest version. For more information, see Manage registered clients.



Note: The warning icon shows only when there is a newer client available for download. The warning icon is not an indication that there are issues with the client or related Bridge data sources.

Added in May 2020

Site Capacity Updates for Extract Refreshes

To improve site performance and ensure a consistent scheduling experience, sites are allocated daily and concurrent extract refresh capacity. For more information, see Tableau Online Site Capacity.

Use relationships to combine data for multi-table analysis

Relationships are a new, flexible way to combine data for multi-table analysis in Tableau. Data sources now support multi-table data models in a new logical layer. Tableau

recognizes the separate tables in your data source and performs aggregations at the native level of detail for each table.

Creators can combine tables using relationships. Using relationships between logical tables makes it easier explore and analyze multi-table data at the right level of detail, without having to write specialized calculations to control aggregations like averages and totals.

You do not need to specify join types for relationships; during analysis Tableau automatically selects the appropriate join types based on the fields and context of analysis in the worksheet.

Note: Your workbook must use an embedded data source for you to be able to edit relationships in the Data Source page in web authoring in Tableau Server or Tableau Online. You cannot edit the data model of a published data source.

In support of multi-table analysis, several parts of the Tableau interface have changed. The Data Source page (canvas, data grid), View Data window, and the Data pane in the worksheet have all been updated to support a multi-table analysis experience. For more information, see Changes to different parts of the interface.

Note: View Data column order has changed in Tableau 2020.2 and later. This change is required to support relationships and logical tables. For details, see View Data column order changes in Tableau 2020.2 and later.

For more information about relationships and changes to data sources, see these topics:

- What's Changed with Data Sources and Analysis in 2020.2
- Questions about Relationships, the Data Model, and Data Sources in 2020.2
- The Tableau Data Model
- Relate Your Data and Optimize Relationships Using Performance Options
- How Analysis Works for Multi-table Data Sources that Use Relationships
- Troubleshoot Multi-table Analysis
- Walkthrough: Don't Be Scared of Relationships

Also see this Tableau blog post: Relationships, part 1: Introducing new data modeling in Tableau

Create metrics to track data

Metrics help users track changes to their data. Users can create metrics from a view and use them to monitor key numbers like daily sales. For information on how users create metrics, see Create and Troubleshoot Metrics.

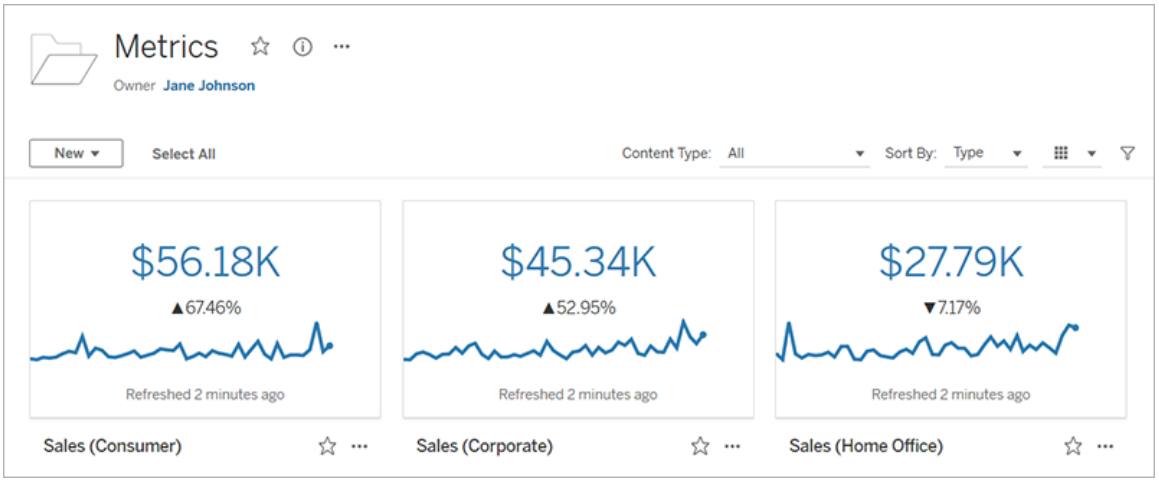
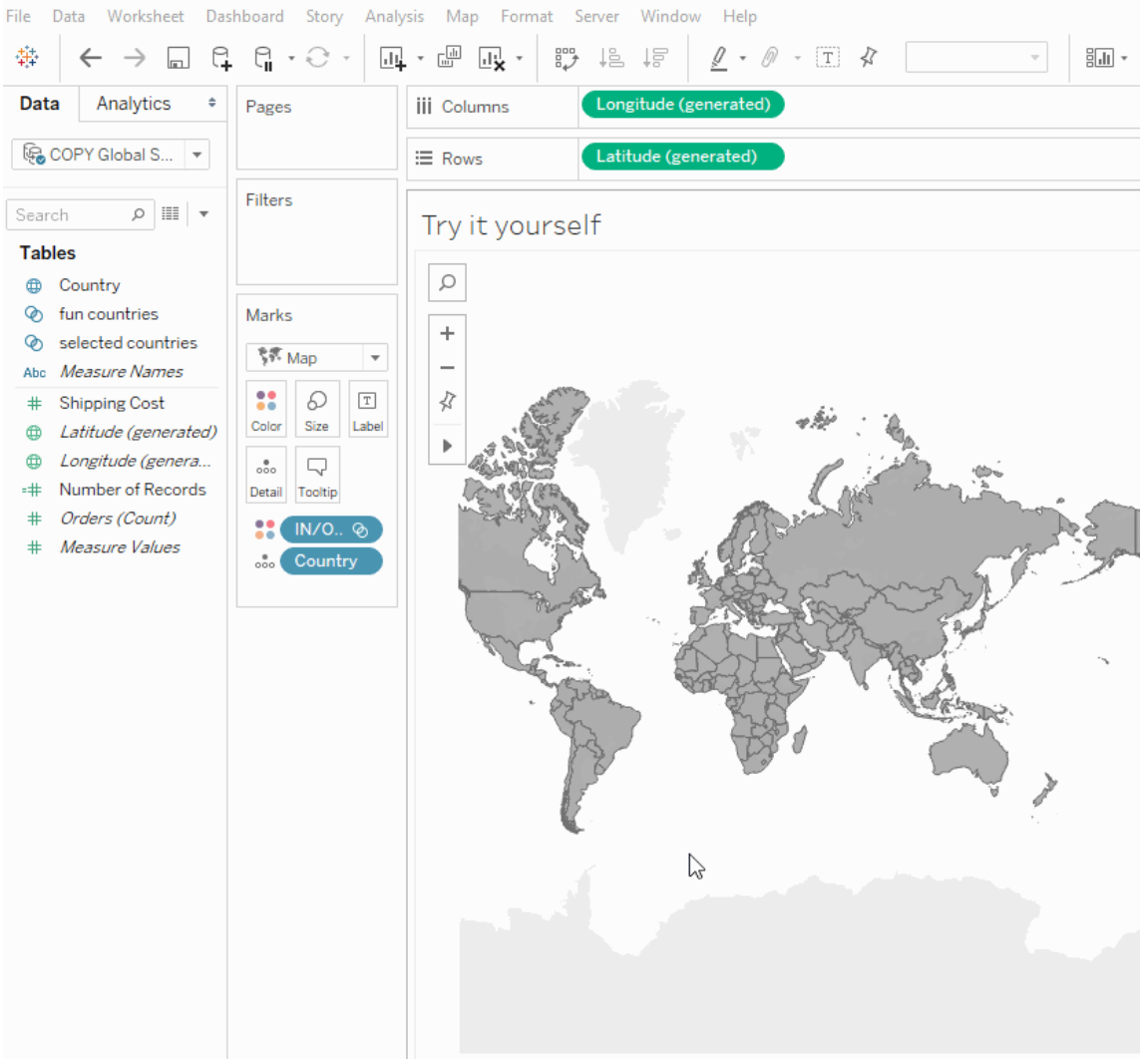


Tableau Online administrators can ensure that users are able to create metrics or disable metrics for the site. For more information, see Set Up for Metrics.

Add a Set Control to let users quickly modify the members of a set

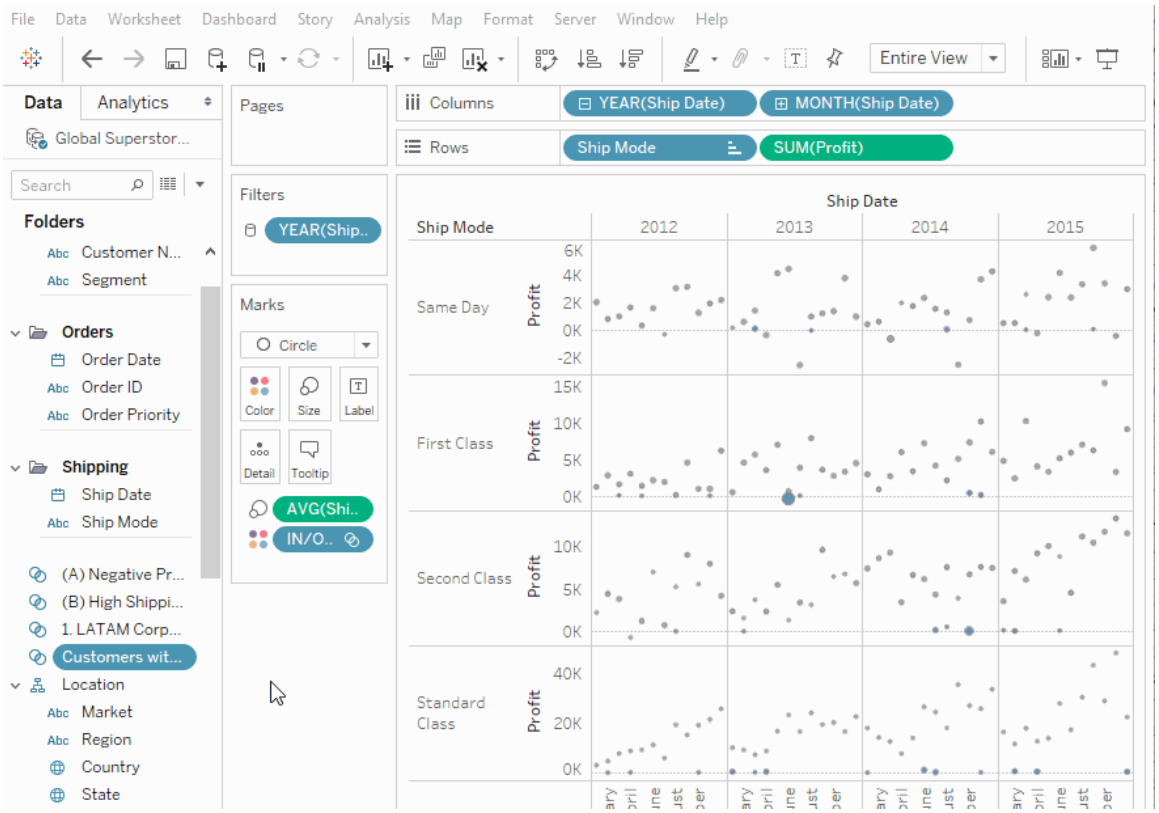
With a Set Control, your audience can select the members of a set without necessitating edit mode. Users can simply add or remove set members by interacting directly with the card in the view. Coupled with Set Actions, you have two powerful, complementary features that make it easy to visualize the set you're interested in.



For more information, see Create Sets, or check out this blog post, Powerful analytics in a user-friendly package with the set control.

Add or remove values from a set by interacting directly with the viz

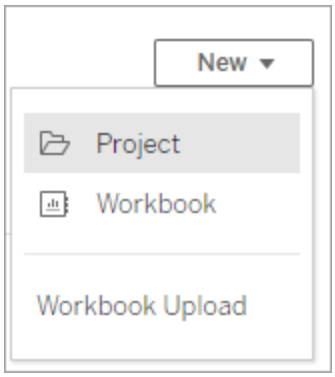
Now, using Set Actions, you and your audience can use the viz itself to incrementally add values to or remove values from a set. Simply interact with the viz and choose which marks to include or exclude. Coupled with the new Set Control feature, you have two powerful ways to gain deeper insights into your data.



For more information, see Set Actions.

Upload and open workbooks with a browser

Users can now upload a Tableau workbook to your Tableau site without publishing through Tableau Desktop, the REST API, or TabCmd. In a Tableau site, users with a Creator or Explorer (can publish) site role can select **New** > **Workbook Upload** to upload a .twb or .twbx file (up to 50 MB) to a project. For more information, see Upload Workbooks to a Tableau Site.



Access Dashboard Starters from Home in Tableau Online

Site Administrator Creators can now access Dashboard Starters from the Home page in Tableau Online. Use these pre-designed dashboards to quickly visualize data from common business applications like Salesforce or ServiceNow ITSM. For more information, see Dashboard Starters for Cloud-based Data.

Tableau Catalog updates - part of the Data Management Add-on

Tableau Catalog is included in the separately licensed Data Management Add-on for Tableau Server and Tableau Online. For more information about Tableau Catalog, see About Tableau Catalog.

The following features are included in this release:

Raise the visibility of important warnings - You can set a data quality warning to be highly visible, so that users of a visualization that's affected by the warning see a notification, and the warning displays in a more prominent yellow color elsewhere in Tableau. For more information, see Set a Data Quality Warning and "Use Data Details to see visualization information" in Explore and Analyze Data in a View in the Tableau Desktop and Web Authoring Help..

Dashboards appear in the Lineage pane - When you select the Dashboards item in the lineage, you can see a list of downstream dashboards. For more information, see Use Lineage for Impact Analysis.

Filter external assets on Certified and data quality warnings - In addition to using search to narrow down your choices on External Assets, you can now filter databases, files, and tables by Certified and by data quality warnings.

More filters when connecting - When you connect to data, you can filter databases and table on connection type.

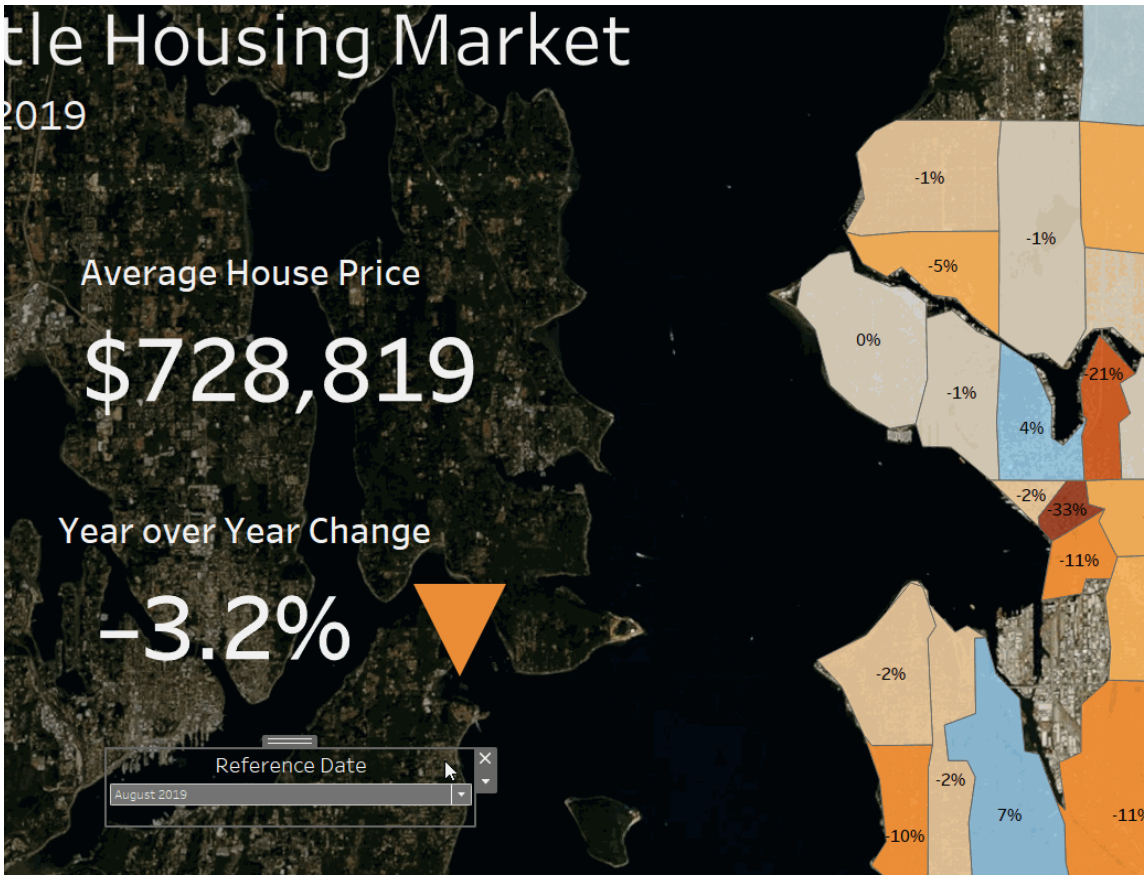
More information on what's new

Other new features and enhancements related to web authoring and interacting with views on the web are listed in What's New in Tableau for Users and Web Authoring and Tableau Desktop Feature Comparison. For topics related to web authoring and interacting with views, see Using Tableau on the Web.

Added in February 2020

Refresh parameters automatically with dynamic parameters

Now you can set a parameter's current value to be the result of a single-value, view-independent calculation. In addition, you can refresh a parameter's list of values (or domain) based on a data source column. This means that each time the workbook is opened and Tableau connects to the data source referenced by the parameter, every place in the workbook that references the parameter will use the latest value or domain.



For more information, see Create Parameters.

Automate user provisioning and group synchronization through an external identity provider

You can automate adding or removing users from Tableau Online or adding or removing members from groups using your identity provider (IdP). Tableau Online IdP user management uses the System for Cross-domain Identity Management (SCIM) standard, which is an open standard for automating the exchange of user identity information. Currently we support SCIM with the following IdPs:

- Okta
- OneLogin

SCIM is used to provision users in cloud applications such as Tableau Online. Cloud IdPs centrally manage user identities, including assigning users to applications and groups. The IdP uses the SCIM standard to ensure that “downstream” applications are kept in sync with

the provisioning assignments set up with the IdP. Managing users in this way improves security, and can greatly reduce the amount of manual work that Tableau Online site administrators need to do to manage site users and group membership.

For more information, see Automate User Provisioning and Group Synchronization through an External Identity Provider.

Support for login-based license management

Login-based license management, helps you manage licensing for users with Creator roles on Tableau Server and Tableau Online. Users with Explorer or Viewer roles cannot use this feature. If you're using Role Based Subscriptions with Tableau Server or Tableau Online, you can simplify your license management using login-based license management to eliminate separate Tableau Desktop and Tableau Prep Builder product keys. You only need to manage one or more product keys for on-premises Tableau Server, or in the case of Tableau Online, you don't need to manage any product keys at all.

For more information, see Activate Tableau using Login-based license management.

Updates for Permission Dialog

Set permissions faster with the new permissions dialog. New permission templates and capability groupings match common user scenarios. Editing permission rules is easier than ever with direct editing—double click to enter edit mode. Search for groups and users simultaneously without preselecting your choice. Copy a custom permission rule and paste it for another group or user. And hand off project management to Project Leaders more intuitively with the new setting. For more information on permissions, see Permissions.

Lock nested projects

Regulating permissions is now more flexible. Project permissions can be locked independently for nested projects. Top-level projects can act as organizational containers for projects with different permission models. Non-admins can create new locked projects. For more information, see Lock content permissions.

Run Now Setting

This new setting allows Administrators to configure whether to allow or block users from manually running extract refreshes, flows runs, and subscriptions. The Run Now settings are on the General settings page, and by default, is selected to allow users to run jobs manually.

Tableau Catalog updates - part of the Data Management Add-on

Tableau Catalog is included in the separately licensed Data Management Add-on for Tableau Server and Tableau Online. For more information about Tableau Catalog, see About Tableau Catalog.

The following features are included in this release:

Added connectors - Connect to more data from external assets. We've added support for the following connectors: Google Big Query, Google Drive, Google Sheets, Box, Dropbox, and OneDrive.

Create workbooks - Create a workbook from the External Assets page or from a database or table page for Catalog-supported connections. For more information, see "Tableau Catalog users create workbooks from external assets" in Creators: Get Started with Web Authoring in the Tableau Desktop and Web Authoring Help.

Filter on Certified and data quality warnings - Filter data sources, databases, files, and tables by Certified, filter data sources by connections, and filter databases and tables by data quality warnings. For more information, see "Open the Connect to Data page" in Creators: Connect to Data on the Web, or "Connect from Tableau Desktop" in Connect to Data by Using Tableau Server or Tableau Online in the Tableau Desktop and Web Authoring Help.

Enhanced Data Details pane -

- See a sparkline with the number of times a sheet or dashboard was viewed over the last 12 weeks.
- Easily see that there are Warnings on a view.

- Expand a field to see its metadata, such as a description or calculation.
- When a field in a workbook inherits its description, see where the description comes from.

  For more information, see "Use Data Details to see visualization information" in Explore and Analyze Data in a View in the Tableau Desktop and Web Authoring Help.

Added in October 2019

Web authoring and interaction with views

For a comprehensive list of new features and enhancements related to web authoring and interacting with views on the web, see the features listed under "Prepare, Author, and View Data on the Web" in What's New in Tableau for Users and Web Authoring and Tableau Desktop Feature Comparison. For topics related to web authoring and interacting with views, see Using Tableau on the Web.

Recommendations for views

Tableau Online now provides recommendations for views to help users discover relevant content. To learn more about these recommendations, see Discover Recommended Views.

You can control whether recommendations appear on your site, or whether user names appear on recommendation tooltips, by adjusting the options under **Recommendations for Views** on the Settings page.

Table visualization enhancements

Authors can now create wide tables with up to 50 columns. Wide tables with discrete fields can also now be scrolled horizontally. For more details, see Define Table Structure. Also, see this post on 50-column tables from Tableau Public Ambassador Marc Reid on the datavis.blog.

Create extracts on the web

Now you can create extracts in the browser, without using Tableau Desktop. For more information, see Create Extracts on the Web . You can also use the new `cre-ateextracts` and `deleteextracts` commands in tabcmd to create or delete extracts for a published workbook or data source. For more information, see tabcmd Commands.

Get view load times with Admin Insights (beta)

Included with the latest version of Admin Insights, is the **Viz Load Time Drilldown** dash-board and the **TS Web Requests** data source. You can use both resources to help users who are authoring views better understand the experience of the users who are consuming those views. For more information, see Explore the pre-built workbook and Explore the data sources.

The dashboard and data source are available to you as in-release beta features *by request*. To join the beta or provide thoughts and ideas about the new Admin Insights content, sign in to the Early Feedback site.

Disable email notifications when Tableau Bridge clients aren't running

If scheduled refreshes appear to be running outside of schedule or if you want to stop noti-fications you receive about clients not running, you can disable email notifications. For more information, see Change the Bridge Client Settings.

Request access

Users can now request access to see a project, workbook, or view when they don’t have viewing permission. When someone requests access to content, Tableau routes an email to the person who controls permissions for that content with information about the request and instructions on making access changes. For information on managing permissions, see Per-missions.

Limit visibility of user information

The User Visibility site setting lets administrators manage if users with Viewer and Explorer site roles see other users and groups on the site, which can be important for sites used by multiple clients. When User Visibility is set to **Limited**, Explorers and Viewers cannot see information about other users, including aliases, project ownership, comments, and more. Creators and administrators (including Site Administrator Explorers) can still view user information. By default, User Visibility is set to Full. For more information, see Manage Site User Visibility.

Enable or disable Ask Data for a site

As a site administrator, you can control the availability of Ask Data in the **General** area of site settings. For more information, see Enable Ask Data for Sites and Data Sources.

Manage Sandboxed Extensions

Tableau now supports Sandboxed extensions, which are a new type of dashboard extension that run in a protected environment hosted by Tableau. Like Network-enabled extensions, Sandboxed extensions are web applications that run in custom dashboard zones and can interact with the rest of the dashboard using the Tableau Extensions API. While Network-enabled extensions have full access to the web, Sandboxed extensions can't share data or make network calls outside of Tableau. Sandboxed extensions provide a new level of security for Tableau users and administrators.

To learn more about controlling extensions, see Manage Dashboard Extensions in Tableau Online. To learn more about extension security and strategies for deployment, see Extension Security in Tableau Server Help.

Added in September 2019

Support for Italian added

Tableau has added support for Italian. You can now set Tableau to display the user interface in one of eleven languages:

- Chinese (Simplified)
- Chinese (Traditional)
- English (United Kingdom)
- English (United States)
- French
- German
- Italian
- Japanese
- Korean
- Portuguese
- Spanish

For more information, see Change language and locale in the Tableau User Help.

In addition to supporting Italian in all Tableau products, the Help is also available in these languages. To read the help in your preferred language, navigate to the bottom of the Tableau Help page on the Tableau website, and select the language from the footer.

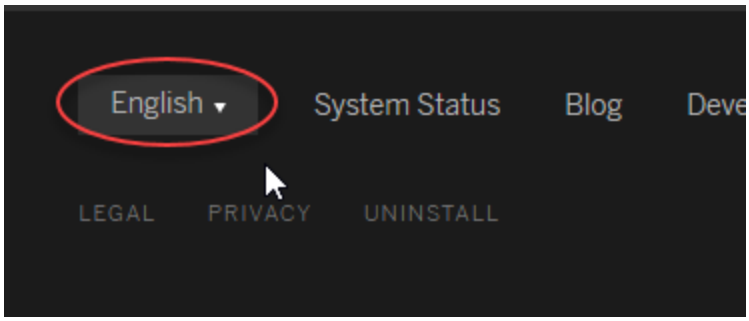


Tableau Data Management Add-on

The Data Management Add-on is a new license that helps customers manage Tableau content and data assets in their Tableau Server or Tableau Online environment. Tableau Prep Conductor and Tableau Catalog are included in the Data Management Add-on. For more information, see About Data Management Add-on.

Tableau Prep Conductor—part of the Data Management Add-on

Tableau Prep Conductor is included in the separately licensed Data Management Add-on for Tableau Server and Tableau Online. Tableau Prep Conductor leverages the scheduling

and tracking functionality of Tableau Online so you can automate running flows to update the flow output instead of logging into Tableau Prep to manually run individual flows as your data changes. For more information, see Tableau Prep Conductor.

Tableau Catalog features—part of the Data Management Add-on

Tableau Catalog is included in the separately licensed Data Management Add-on for Tableau Server and Tableau Online, making a variety of features available to you in the data management space. You can use Tableau Catalog to discover data, curate data assets, communicate data quality, perform impact analysis, and trace the lineage of data used in Tableau content. For more information, see About Tableau Catalog.

Tableau Metadata API

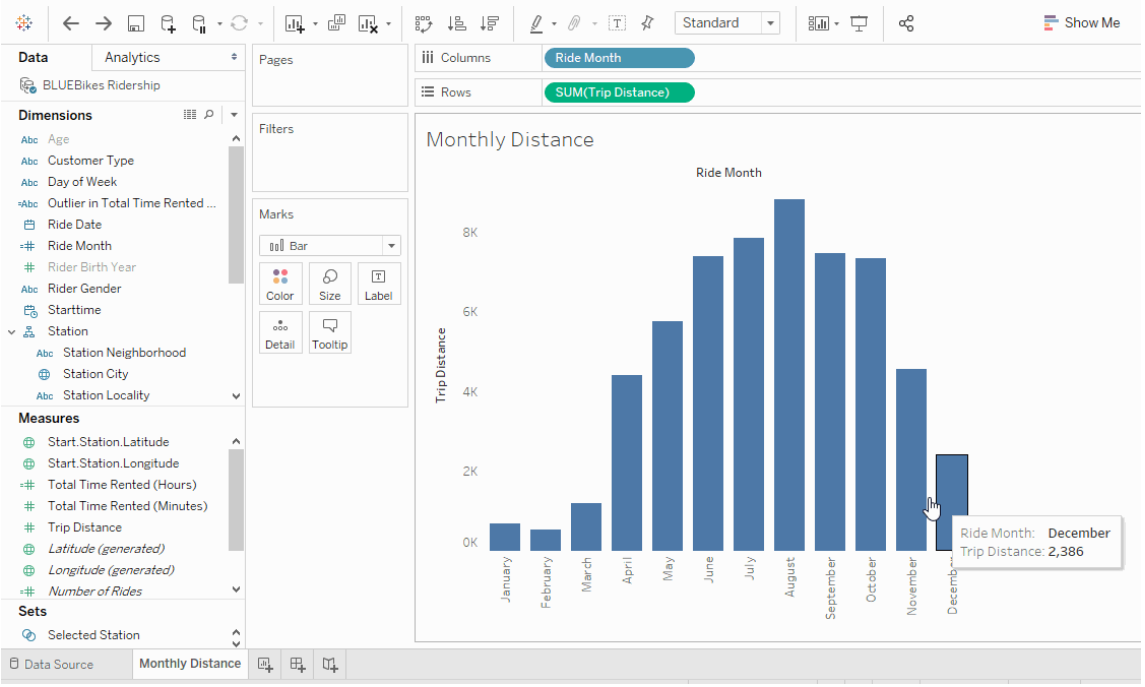
If you're a developer and interested in accessing metadata indexed by or surfaced through Tableau Catalog, see the Tableau Metadata API Help.

Explore and inspect views with Explain Data

Inspect, uncover, and dig deeper into marks in a viz using Explain Data. Explain Data gives you a new window into your data by proposing statistical explanations for a selected mark, including potentially related data from the data source that isn't in the current view.

Creators and Explorers with editing permissions can use Explain Data when editing a view in Desktop, or editing a view on the web in Tableau Online or Tableau Server.

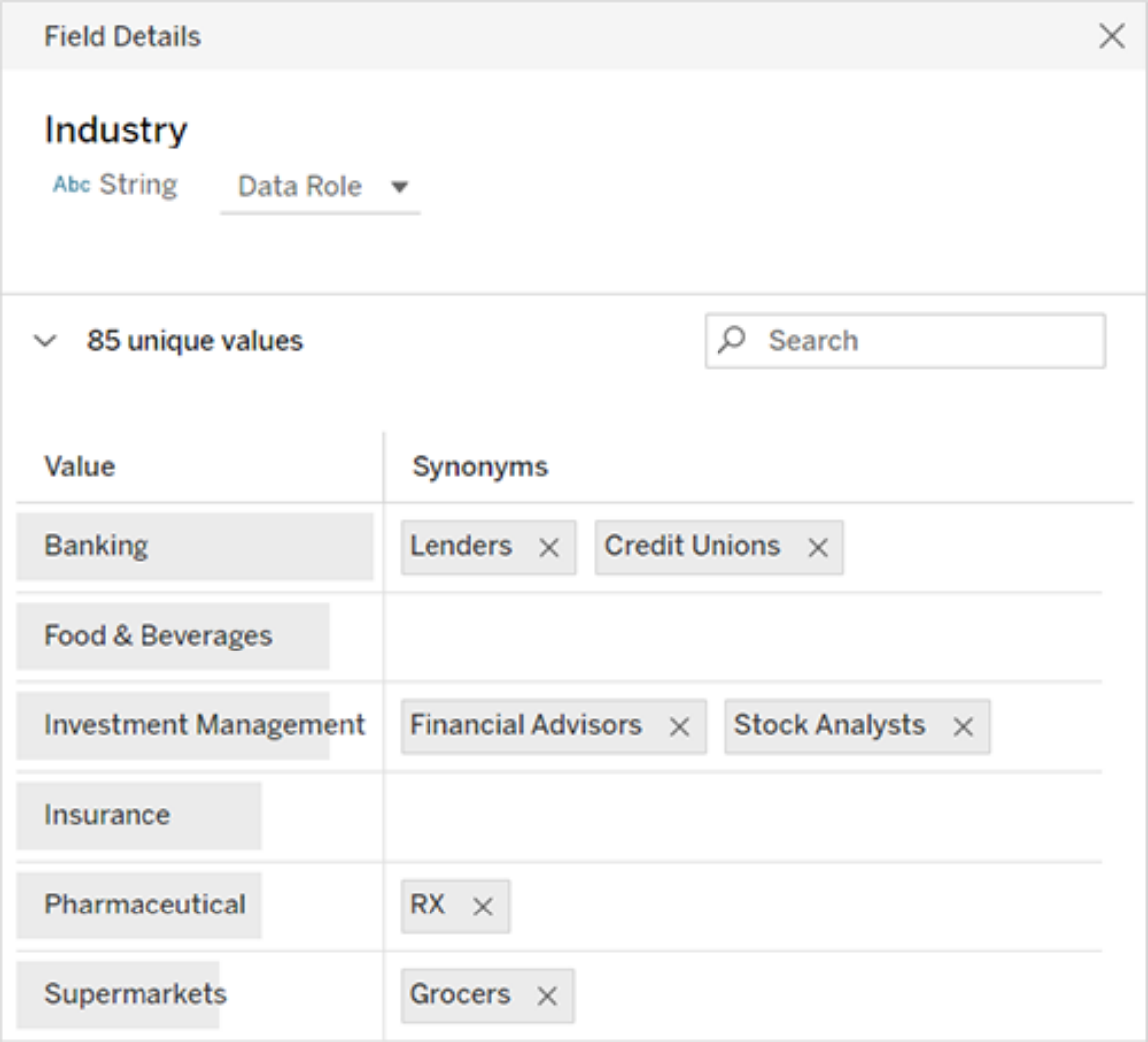
Explanations give you information and visualizations on the data points might be affecting the mark value. You can then open visualizations for further exploration. For more information, see Inspect a View using Explain Data in Tableau User help.



Ask Data improvements

Users can now embed Ask Data into HTML pages, adjust relative date filters, and see top and bottom outliers in context. For more information, see Automatically Build Views with Ask Data in the Tableau User Help.

Data source owners and Tableau administrators can now add synonyms for field values, in addition to field names. For more information, see Optimize Data for Ask Data in the Tableau User Help.



Job Management

Site administrators can now view, monitor, and manage jobs. For more information, see Managing Background Jobs in Tableau Online.

Added in May 2019

Select from ten different languages for Tableau

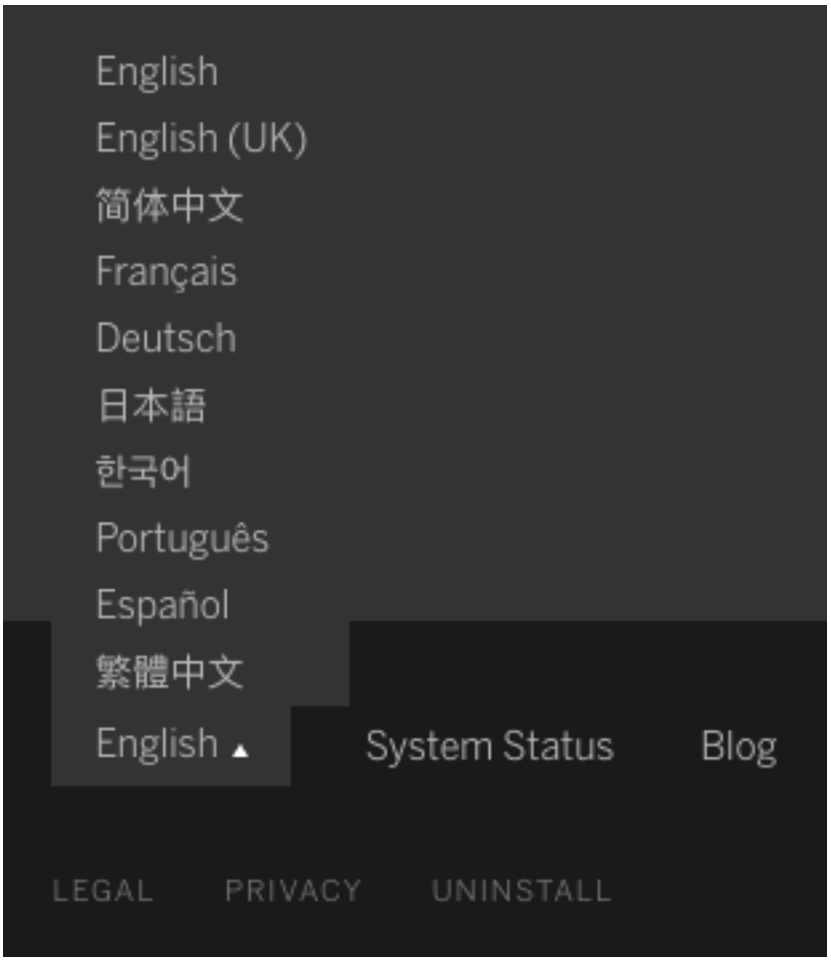
Tableau has added support for two new languages, Chinese (Traditional) and English (United Kingdom). You can now set Tableau to display the user interface in one of ten languages:

- Chinese (Simplified)
- Chinese (Traditional)
- English (United Kingdom)
- English (United States)
- French
- German
- Japanese
- Korean
- Portuguese
- Spanish

For more information, see Change language and locale in the Tableau User Help.

In addition to supporting two new languages in all Tableau products, the Help is also available in these languages. To read the help in your preferred language, navigate to the bottom of the Tableau Help page on the Tableau website, and select the language from the footer.

Tableau Online Help



Help Design

A blue **Send feedback** icon is displayed in the bottom right corner of every Help page to make it easier for you to send feedback about the content in a topic. Click the icon to let us know if a topic is helpful to you, and also to comment on what needs improvement.

Use Admin Insights to create custom admin views

Enable the Admin Insights project for your site to create custom admin views about Tableau Online adoption, site traffic, license allocation, and more. For more information, see Use Admin Insights to Create Custom Views.

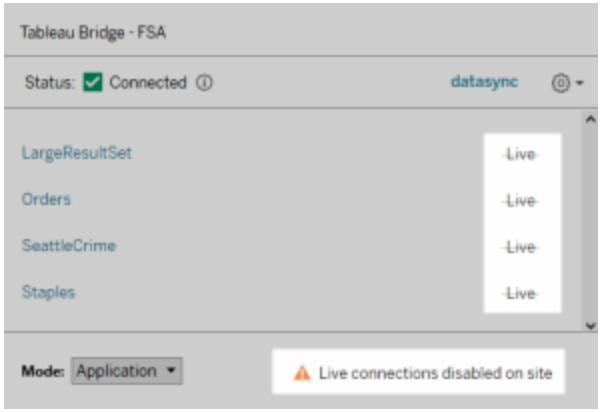
Configure email alerts for incomplete extract refreshes

As an extract data source owner whose scheduled refreshes are performed by Tableau Bridge, you can configure Tableau Online to send you email alerts for incomplete refreshes. For more information, see Change the Bridge Client Settings.

Tableau Bridge improvements

Here are some additional improvements made to the Tableau Bridge client and workflow.

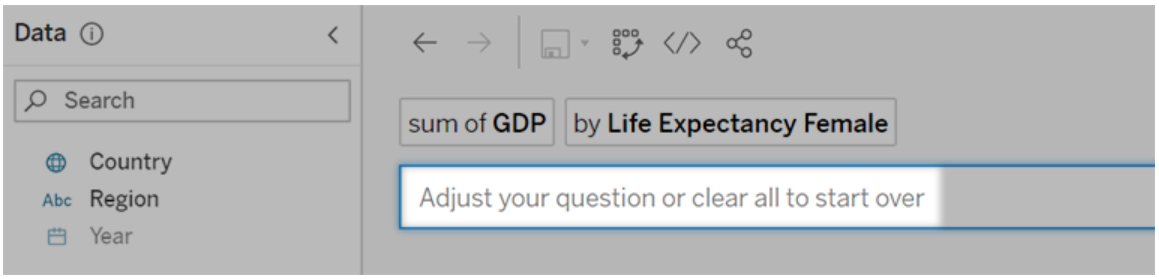
- Access Tableau Bridge-related admin views from the client menu.
- Quickly identify whether live queries are supported directly from the client.



- Receive email alerts when a scheduled refresh cannot start because the client is not running.
  Note: After Tableau Online's upgrade to 2019.2, some data source owners might see an influx of notifications about Tableau Bridge clients not running. For more information, see Scheduled refreshes appear to be running outside of schedule:.

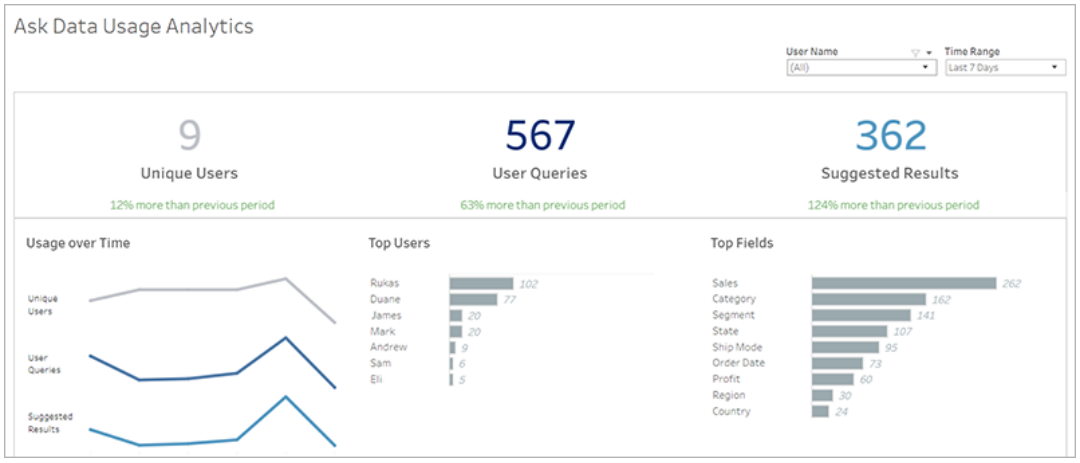
Ask Data improvements

For users, Ask Data now lets you ask questions in a conversational style, apply simple calculations, and create multiple sheets. For more information, see Automatically Build Views with Ask Data in the Tableau User Help.



For data managers and site administrators:

- Words like "year" and "date" are reserved for analytical functions and should be avoided in field names.
- The ability to add synonyms for field names is now limited to data source owners and Tableau administrators, providing a more consistent experience for users.
- A Usage Analytics dashboard reveals the most popular queries, top users, and other helpful information.

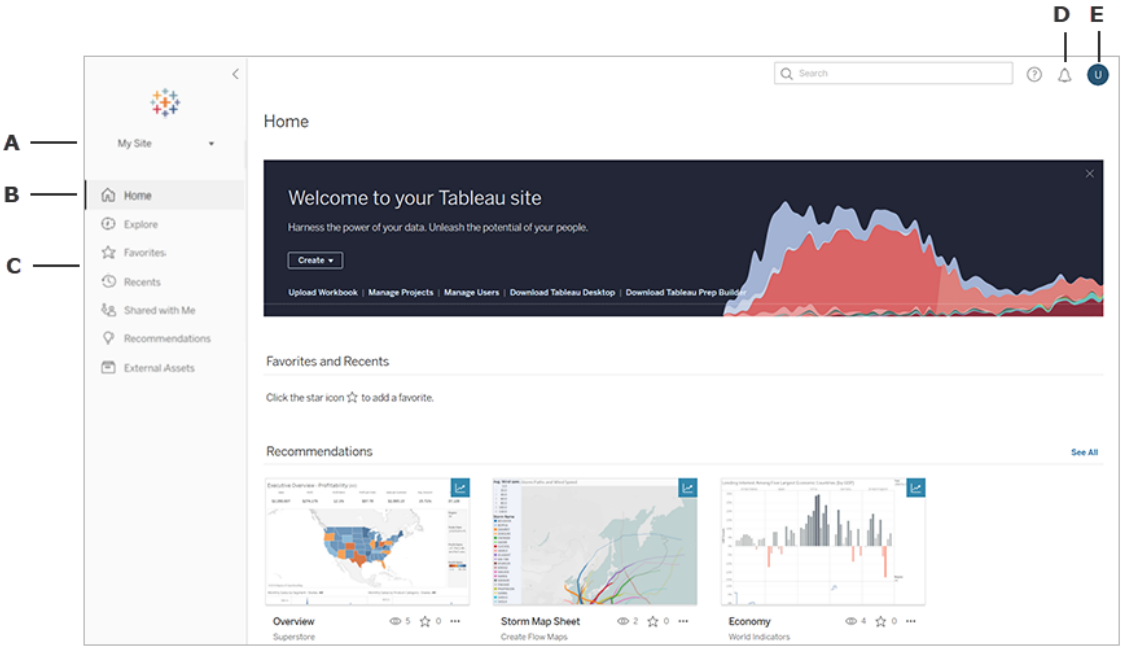


For more information, see Optimize Data for Ask Data in the Tableau User Help.

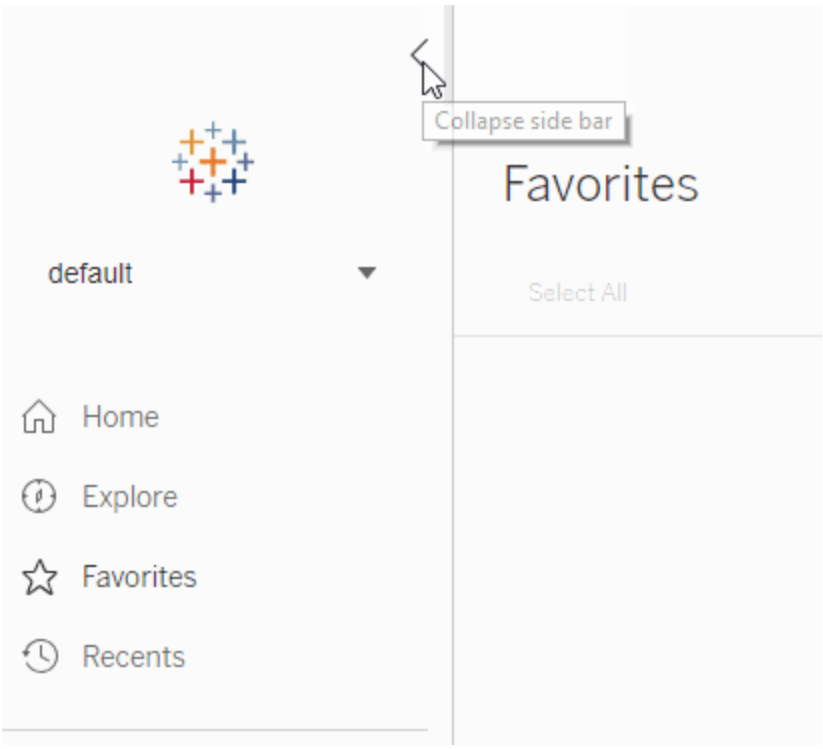
Home page and navigation improvements

For users and administrators, new navigation changes and pages make it easier to get started and locate relevant content:

- Use the new Home page to access recent views, find favorite content, and see what's popular on the site. The welcome banner and actions are tailored by site role to help users get started.



- Dedicated **Favorites** and **Recents** pages give users access to all of their most-important content. Use the sort and filter options on the right side of each page to find relevant content.
- New left navigation panel lets users quickly jump between important pages on the site, including the **Explore** page, where they can see all site content in one place. The panel is responsive to screen sizes and can be collapsed.



- When users are viewing or creating a visualization, the left navigation panel disappears to make more room for analysis. The compact header makes it easy to navigate through project hierarchy, search the site, and access favorites as needed.

To learn more, see Tour Your Tableau Site in the Tableau User Help.

Alert side panel

When users select **Alerts** in any view, a new panel shows alerts that already exist for the viz. To create an alert that is visible for others, select **Make visible to others** when creating the alert. Alerts created prior to 2019.2 are not visible to others, but can be updated to be. To learn more, see Send Data-Driven Alerts from Tableau Online or Tableau Server in the Tableau User Help.

Custom views supported for Viewer role

Previously, creating custom views required a Creator or Explorer license, but now Viewers can create them too. For more information, see Use Custom Views in the Tableau User Help.

Set a default site start page

Administrators can set a default start page for everyone on a site. When a site user signs into Tableau Online, they will land on the start page set by an administrator. For more information, see Set the Default Start Page for All Users.

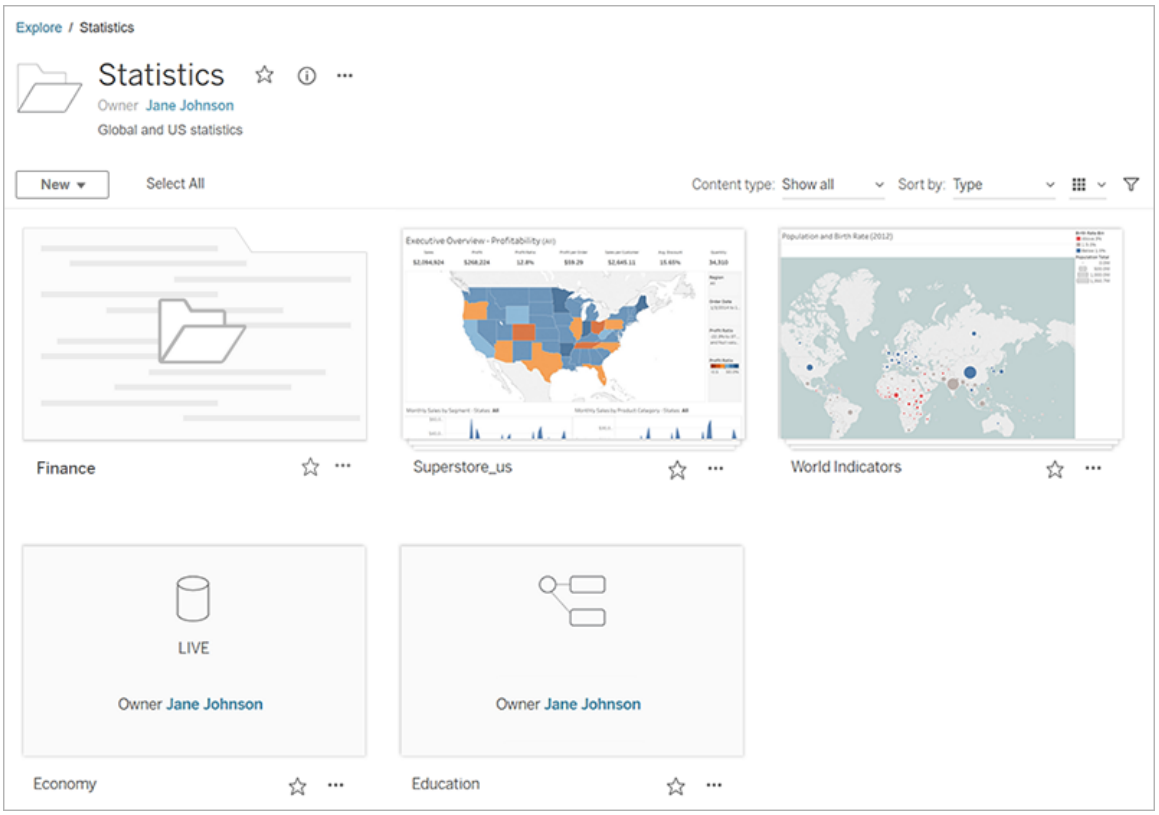
Web authoring improvements

- Add a stored procedure with parameters when creating a data source.
- See the status bar in web authoring to find information about your view, including selected marks compared to total marks, rows and columns, and aggregations. For more information on the status bar, see Status Bar Information in the Tableau User Help.
- Change aggregation of a field using the drop field menu. Right-click+drag (on macOS, left-click+Option+drag) a field on any card or shelf and select an aggregation type. This drops the field onto the card or shelf with the aggregation selected.
- Create, edit, and remove parameters.

Added in February 2019

Improved content browsing

You have a new way to browse shared content. When you open a project, you will be able to see all the content that project contains—workbooks, views, data sources, flows, and nested projects—in a single grid or list. Locating content is easier, because you no longer need to navigate separate pages for different content types. For more information, see Tour Your Tableau Site.



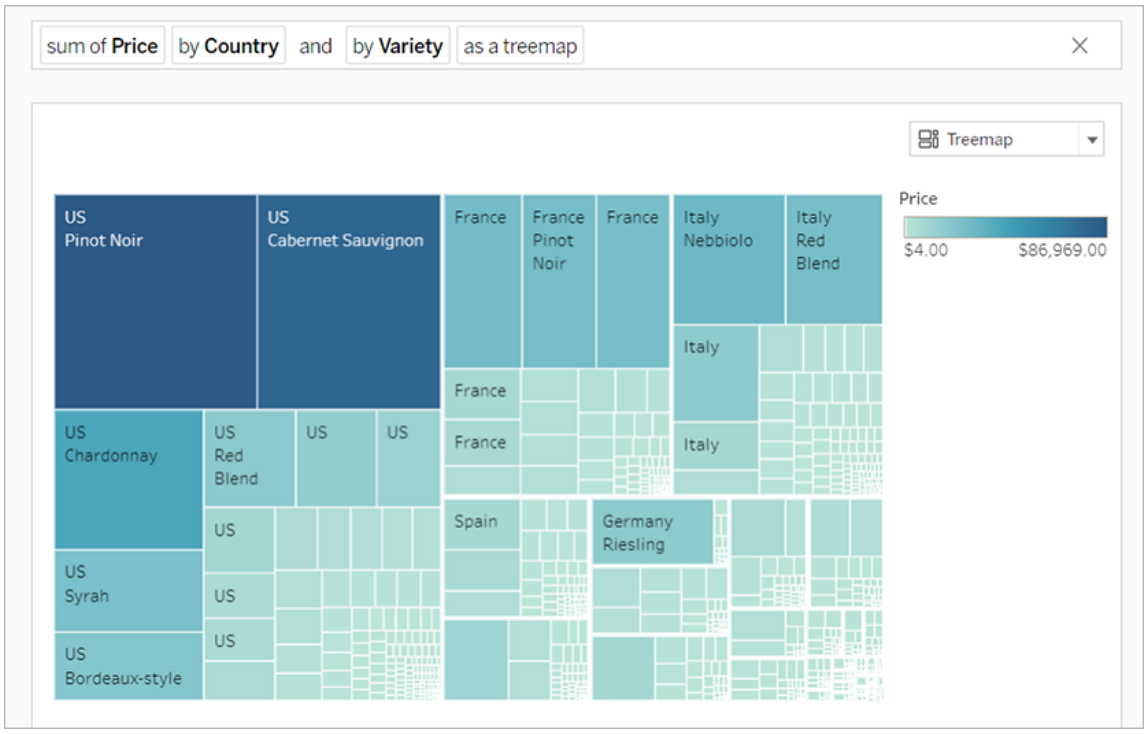
Ask Data to automatically create a viz

Ask Data introduces an entirely new way to interact with your data, letting you type a question and instantly get a response right in Tableau. Answers come in the form of automatic data visualizations, with no need to manually drag-and-drop fields or understand the nuances of your data's structure.

Ask Data lets you ask sophisticated questions naturally, with support for key analytical concepts like time series and spatial analysis, and an understanding of conversational phrases like "last year", "earliest", and "most popular".

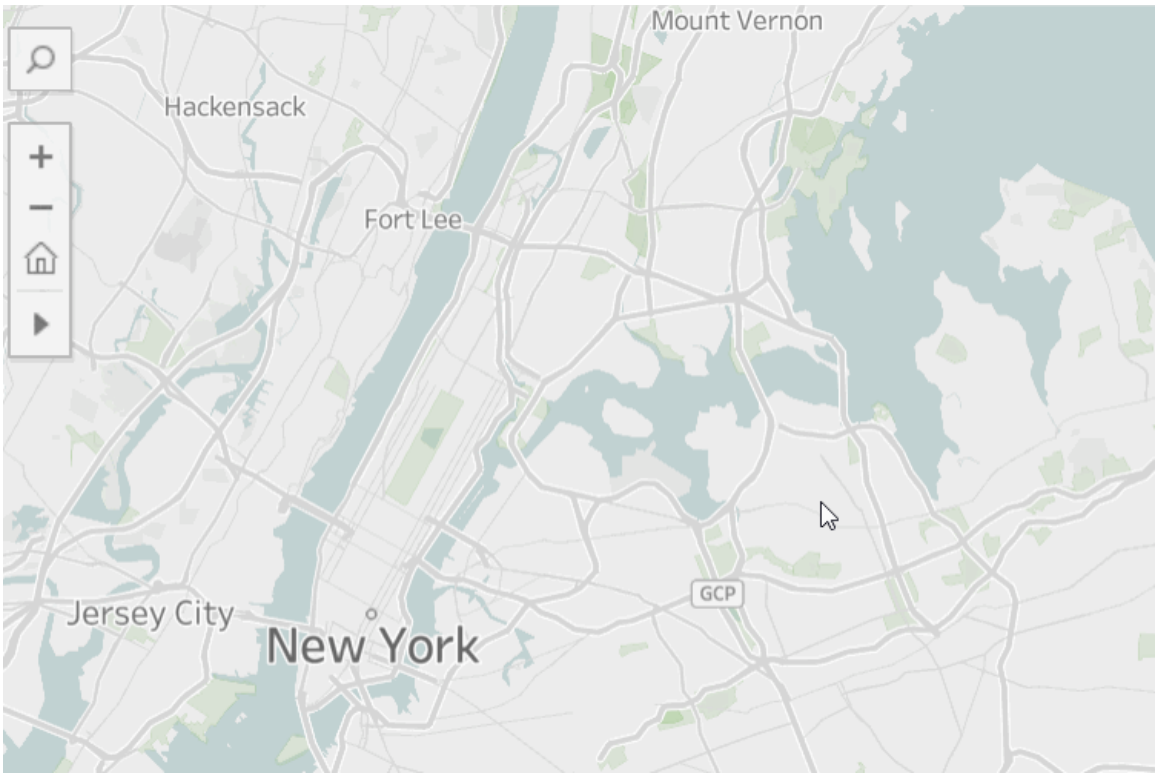
Ask Data is available for all user roles with direct access to data sources: Creators, Explorers, and Interactors.

For more information, see Automatically Build Views with Ask Data in Tableau User Help.



Vector tile background maps

Maps created on or published to Tableau Online or Tableau Public now use vector tiles for quicker geographic data exploring. Maps now appear sharper and smoother when you pan and zoom, and labels and icons dynamically resize or reshape to fit your view. The new vector tile maps replace the underlying technology that powers Tableau background maps for a smoother and crisper experience. The background cartography for Tableau maps has also been updated.



New cloud connectors for web authoring

Use the Box, Dropbox, Google Drive, Google BigQuery, and OneDrive connectors to connect Tableau Online or Tableau Server to your data. For more information, see Creators: Connect to data on the web.

Project card images

Project card images will no longer appear on the project card unless they are added as the last item in the project description and encapsulated with **!** (exclamation marks). For more information, see Add a Project Image.

Suspended subscription notifications

When you subscribe to a view or a workbook, you receive an email snapshot of that content at regular intervals. Now, you'll receive an email notification if something caused your subscription to fail, with links to resume or delete the failing alert. For more information, see Create a Subscription to a View or Workbook.

See new demographic data in Tableau Online and Tableau Public

Tableau Online and Tableau Public have a new, different source of demographic data than Tableau Desktop. If your map uses a demographic data layer in Tableau Desktop, you may notice some slight differences when that map is published to Tableau Online or Tableau Public, including the time period and value breaks in a legend. In addition, maps that use the “Block Group” Data Layer option in Tableau Desktop will be automatically updated to “Census Tract” when published to Tableau Online or Tableau Public. Six demographic data layers that appear in Tableau Desktop will be absent when maps are published to Tableau Online or Tableau Public:

- Population growth projections
- Household growth projections
- Housing units growth projections
- Effective Buying Income (median)
- Year structure built (median)
- Length of Residence (average in years)

Publishing maps from Tableau Desktop to Tableau Server will not result in any discrepancies.

Filter improvements

Use Ctrl-click (control-click on a Mac) to select multiple values in a multi-value filter in the view. The selected values can be non-contiguous and are indicated with a gray highlight. When the values are selected, you can then click any one of their check boxes to clear or choose the values at the same time.

Web authoring enhancements

- New cloud connectors for web authoring: Use the Box, Dropbox, Google Drive, Google BigQuery, and OneDrive connectors to connect Tableau Online or Tableau Server to your data.

- Data improvements: Authors connecting to a new data source in Tableau Online or Tableau Server can now Run Initial SQL, connect to a custom SQL query, and add a

join calculation to resolve mismatches between fields in a join.

- To better distinguish between dashboard items, you can now rename them using the **Item hierarchy** area of the Layout pane or the drop-down menu for each object on the canvas.
- After publishing to the web, click **Preview device layouts** in the browser to see how your designs look on desktop computers, tablets, and phones.

For related information on new features, also see What's New in Tableau Desktop and Web Authoring Help.

Review and monitor Tableau Bridge extract refresh tasks using admin views

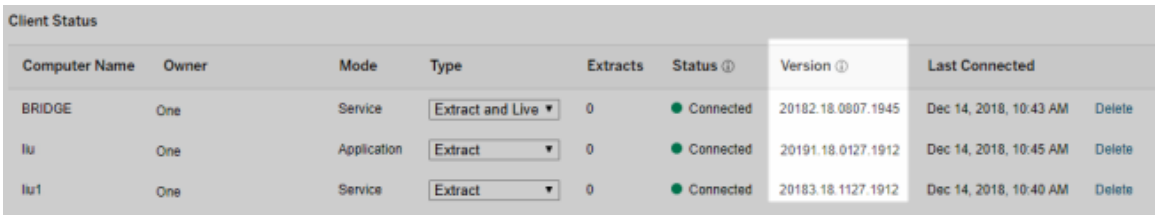
Review and monitor extract refresh tasks performed by Tableau Bridge using admin views. For more information, see Bridge Extracts.

Configure a timeout limit for extract refreshes in Tableau Bridge

To ensure that long running refresh tasks don't prevent other extracts from refreshing, you can enforce a timeout limit for refresh tasks performed by a Tableau Bridge client. For more information, see Configure a timeout limit for refreshes.

Find the Tableau Bridge client version number on Tableau Online

As a site admin, you can check Tableau Online for the version numbers of the Tableau Bridge clients associated with your site.



Note: If the version number for a client is missing, log on to the computer where the client is installed and sign in to Tableau Online from the client. If the version number doesn't display after that, consider upgrading to the latest client.

Help Design

Updates have been made to help you navigate our content, including a new right-hand menu to quickly scan and select different topics on a page.

Added in October 2018

Web authoring enhancements

- Build density maps and charts. Use the density mark to create maps and charts that can help you identify "hot spots" in your data.
- Add image objects to your dashboards. Easily adjust your image, add a target URL, and add alt-text to improve the accessibility of your dashboard.
- Add navigation buttons to dashboards. Buttons can help users navigate to another dashboard, a sheet, or a story. Optionally customize the button with an image of your own, or add guiding tooltip text.
- Make worksheets transparent by setting the worksheet background color to **None**.
- Select **Duplicate as Crosstab** to insert a new worksheet into your workbook and populate the sheet with a cross-tab view of the data from the original worksheet.
- Create, move, and resize point, mark, and area annotations.

For related information on new features, also see What's New in Tableau Desktop and Web Authoring Help.

Tableau Online Help

Product help search, navigation, and layout improvements

Search results within the product help have been expanded to include results for all Tableau products and help articles. Help layout and navigation, such as table of contents placement and breadcrumbs, have been updated to create a more consistent cross-product help experience.

Secure extract data at the row level

Secure your extract data at the row level using existing approaches for implementing row-level security in Tableau. For more information, see Restrict Access at the Data Row Level in the Tableau User Help.

Added in July 2018

Tableau Online migrated to Linux servers. For more information, see Tableau Online Pod Migrations on the Tableau website.

Changes to Tableau Help

Search results within the product help have been expanded to include results for all Tableau products and help articles. Help layout and navigation, such as table of contents placement and breadcrumbs, have been updated to create a more consistent cross-product help experience.

Install Tableau Bridge separately from Tableau Desktop

Beginning with the 2018.2 release, you can install Tableau Bridge separately from Tableau Desktop. For more information about Tableau Bridge requirements, compatibility with previous version of Tableau Desktop, and Tableau Bridge client installation, see Install Tableau Bridge.

No auto-restart for Tableau Bridge

The standalone Tableau Bridge client does not use an auto-restart interval to restart itself automatically. For more information about the auto-restart interval required by previous ver-

sions of Tableau Bridge, see Tableau Bridge Frequently Asked Questions in the Tableau Knowledge Base.

Note: If you upgrade from Tableau Bridge 2018.1 and earlier to Tableau Bridge 2018.2, the auto-restart interval that remains in the configuration file is ignored.

Font support in Tableau Online

Tableau Online includes the following "web safe" fonts: Arial, Courier New, Georgia, Tableau, Times New Roman, Trebuchet MS, and Verdana.

If a visualization uses a font that is not available on Tableau Online, Tableau Online displays the visualization using a default system font instead. For more information, see Fonts Not Displaying as Expected After Publishing knowledge base article on the Tableau website.

Validate live connections in Tableau Bridge using Application mode

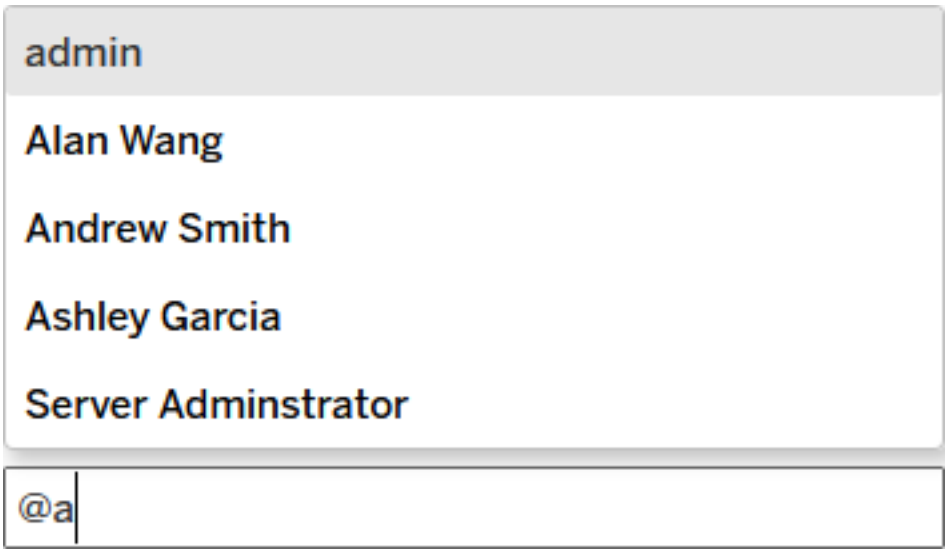
You can now quickly validate live connections in Tableau Bridge using **Application** mode. This means you can also choose to run live queries only when you are logged on to Windows if the site administrator has enabled the option. For more information, see How Tableau Bridge Works.

Manage dashboard extensions in Tableau Online

Dashboard extensions are web applications that provide users new ways to interact with data from other applications directly in Tableau. You can control the dashboard extensions that you allow to run in Tableau and can manage the extension's access to data. To learn more about controlling extensions, see Manage Dashboard Extensions in Tableau Online.

Include colleagues on data conversations with @mentions

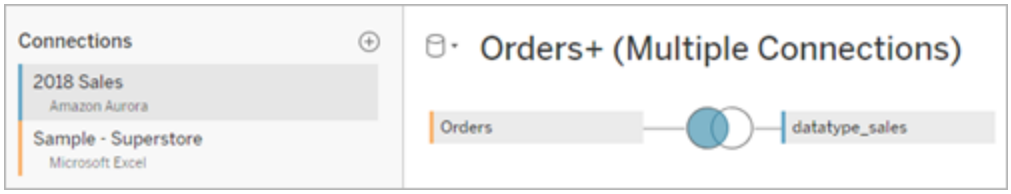
To engage people in a conversation about compelling data you find in a view, @mention them in comments. As you begin to type a name, matching people with Tableau accounts at your organization appear in a list you can choose from. For more information, see Comment on Views in Tableau User Help.



Site administrators can disable @mentions in the General section of site settings.

Web authoring enhancements

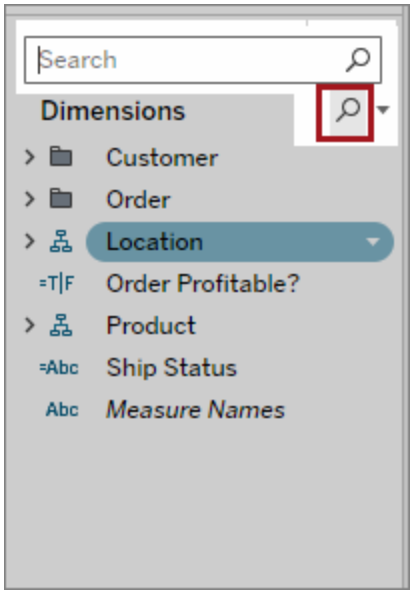
- Enhance dashboard functionality by connecting to external applications with dashboard extensions. See Use Dashboard Extensions in Tableau User Help.
- Align dashboard items with a visual grid. See Size and Lay Out Your Dashboard in Tableau User Help.
- Use keyboard shortcuts to quickly create and edit views on the web. See Keyboard Shortcuts in Tableau User Help.
- Create multi-connection data sources and join data from different databases (cross-database joins). See Join Your Data in Tableau User Help.



- Union data from the same data connection on the web. See Union Your Data in

Tableau User Help.

- When working with file-based data sources, you can pivot data from crosstab format into columnar format. See Pivot Data from Columns to Rows in Tableau User Help.
- Copy selected values in your data grid by pressing Ctrl+C (Windows) or (Command+C) (macOS). Alternatively, to copy selected values in the metadata grid, right-click, and select **Copy**.
- Find fields in the **Data** pane using schema search.

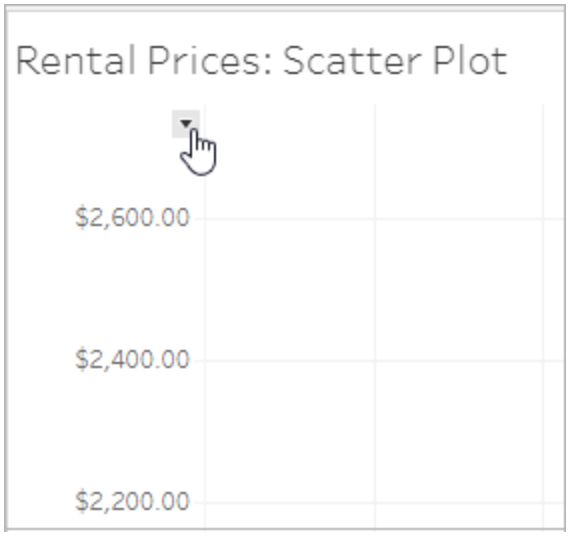


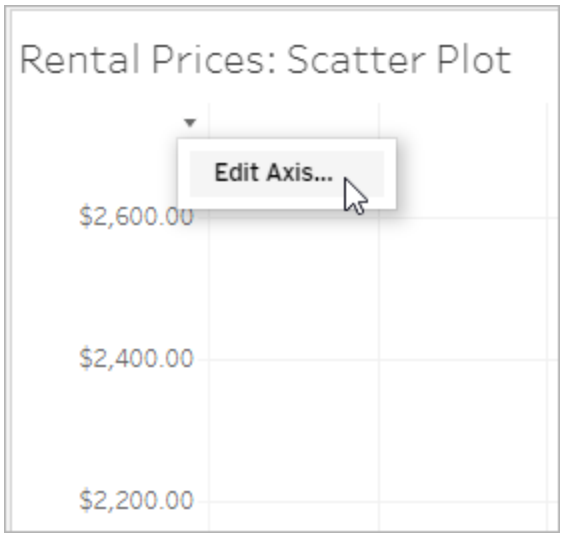
- Better control over sorting. Use nested sort to sort dimension values within the context of each pane. You no longer need to create calculated fields or combine dimensions. For more information, see Sort Data in a Visualization in Tableau User Help.

  Also, you can now access the **Sort** dialog box by right-clicking a dimension field on the Rows or Columns shelves in a view.

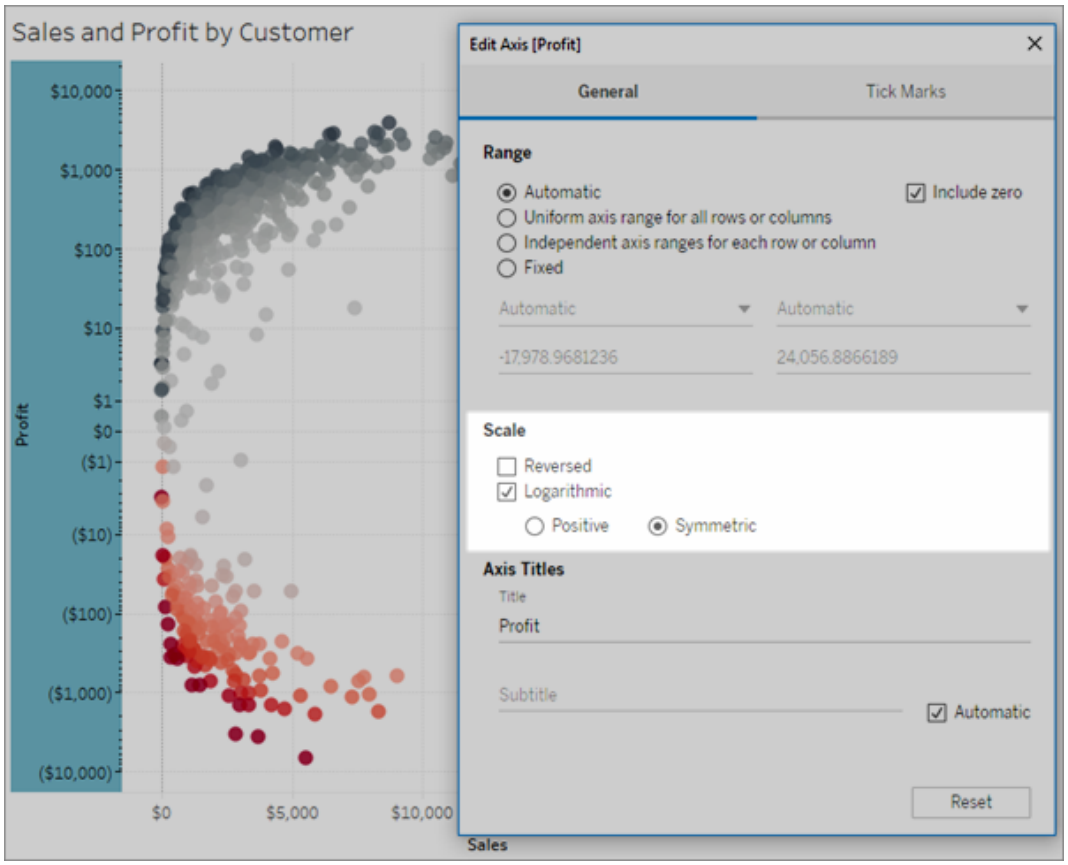
- If you've changed a view (for example, by adjusting filters), you can now create data alerts without first saving a custom view.
- You now have two ways to open the **Edit Axis** dialog box. Hover near the top of the

axis (vertical axis) or to the right (horizontal axis) and click the drop-down arrow that appears. Or, double-click the axis.

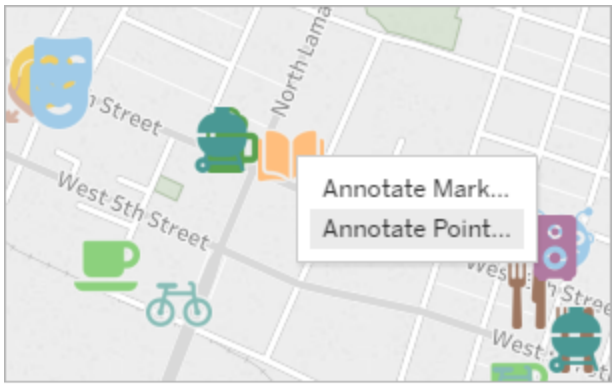


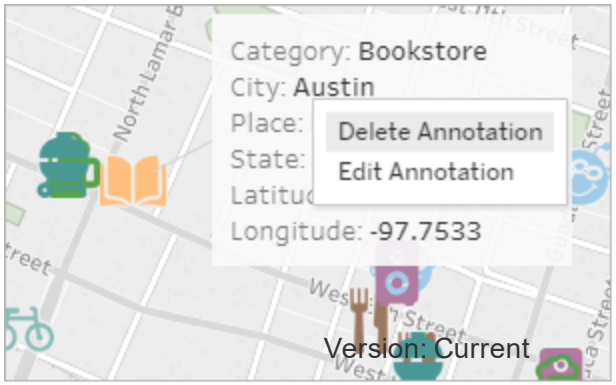


- When you select **Logarithmic** scale for an axis, you now have the option to specify **Symmetric** to display data that contains 0 or negative values on a log scale axis. For details, see Edit Axes in Tableau User Help.



- Create and delete annotations by right-clicking the view (in a worksheet or dashboard), and then selecting point or mark annotation. Right-click the annotation again to edit or remove the annotation.





Materialize calculations in extracts already published to Tableau Online

If you need to retroactively materialize calculations in extracts that have already been published to Tableau Online, you can use tabcmd to refresh the published extract with the `--addcalculations` option. For more information about materializing calculations in extracts, see Materialize Calculations in Your Extracts in the Tableau User Help. For more information about the tabcmd option, see refreshextracts workbook-name or datasource-name.

Added in April 2018

New user-based term licenses are now available

Tableau now offers different types of user-based term licenses that grant a range of web authoring and other capabilities at various price points. This gives organizations more flexibility to fit licenses to the data analysis and visualization needs of different users. To learn more, see User-based licenses, or to see the capabilities of each license, see Tableau Pricing.

Quickly analyze cloud-based data with Dashboard Starters

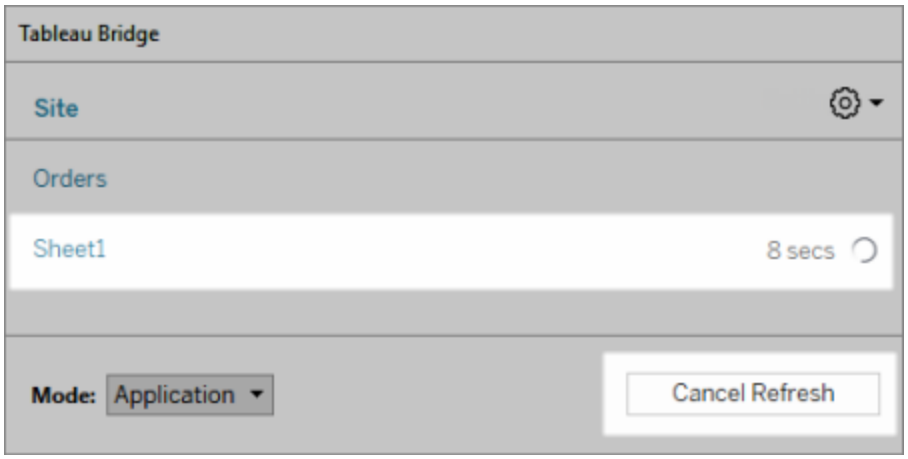
Dashboard Starters help you quickly author and analyze data from cloud-based systems like Salesforce, ServiceNow, Oracle Eloqua, and Marketo. Simply create a new workbook and choose from several beautiful, informative designs that are tailor-made for key business metrics. For more information, see Dashboard Starters for Cloud-based Data in Tableau User Help.

Configure additional Tableau Bridge clients to load balance live connections

Site administrators can configure additional Tableau Bridge clients on different computers to load balance live queries. For more information, see Allow Publishers to Maintain Live Connections to On-Premises Data.

Cancel a scheduled extract refresh that's in progress using Tableau Bridge

There may be situations where you need to cancel an in-progress extract refresh. You can cancel an in-progress extract refresh if you have configured the extract to refresh on a schedule using Tableau Bridge. For more information, see Create a Schedule for a Tableau Bridge Data Source.



Connect to data on the web

With a Creator user license, you can connect to data directly in your browser. Upload Excel or text-based data sources, connect to data housed in a cloud database or on a server in your enterprise, or connect to published data saved to your site. For more information, see Creators: Connect to data on the web.

Prepare your data on the web

With a Creator user license, use the Data Sources tab to prepare your data for analysis. Create joins, add new data sources, clean your data using the Data Interpreter, and more. For more information, see Creators: Prepare Data on the Web.

Add an accessible toolbar to an embedded view

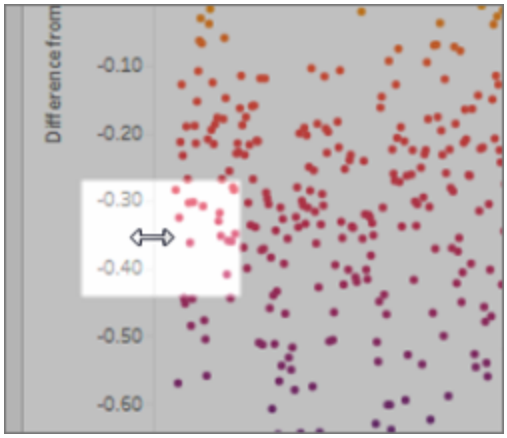
Authors can enable an accessible toolbar so that all users can add comments, download the view, or share it with others. For more information, see Publish and embed the view in Author Views for Accessibility.

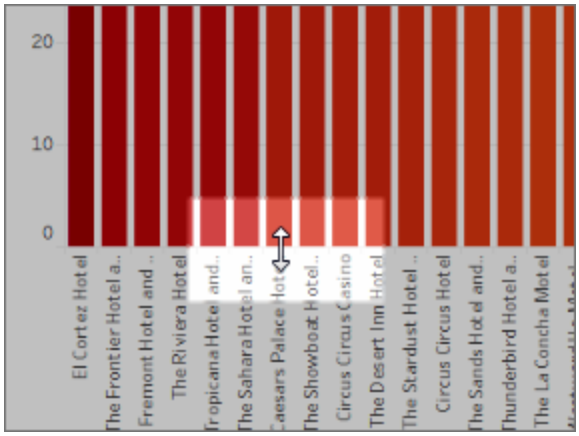
Download your workbook in an earlier version of Tableau

You may need to download your workbook to a different version of Tableau, for example, if the workbook needs to be opened in an earlier version of Tableau Desktop. You have the option of downloading your workbook in its current version, or downgrading it to an earlier version. For more information about version compatibility, see Make Workbooks Compatible Between Versions.

Web Authoring Enhancements

- When editing a view on the web, you can resize the width of row headers and the height of column headers.





- Show Me is now available for dashboards.
- Double-click an annotation to edit its text.
- Hide or show a Viz in Tooltip worksheet. In the target worksheet that is the Viz in Tooltip, click **Hide**. To show the Viz in Tooltip worksheet again, in the source worksheet, click **Unhide All Sheets**.
- Filter hierarchical data in views by using the **All Values in Hierarchy** filter option.
- Change the Line mark type to a step line or a jump line by clicking the Path property in the Marks card.
- Double-click an axis to edit axis settings.

Added in February 2018

Streamline discussion threads by deleting comments

If a comment is unnecessary or inaccurate, you can quickly delete it. Just click the **X** in the upper-right corner. For more information, see Comment on Views in Tableau User Help.

Added in January 2018

Tableau Online servers were upgraded to version 10.5.

Recommended data sources

Recommended data sources show Tableau Desktop users relevant data sources published to Tableau Server and Tableau Online. These recommendations are based on published data sources used by other users in your organization with similar usage behavior as the current user.

To keep the recommendations accurate and up to date, the server checks for the following each day:

- New content - for example, new or updated data sources.
- New usage information - for example, Laura Rodriquez used the Food Catering data source and Henry Wilson used the Monthly Sales data source.

For information on recommended data sources, see Use Certified and Recommended Data Sources and Tables in Tableau User Help.

Nested projects

You can now create project hierarchies when you want to segment content into sub-sections within a larger area. For example, you might create a project for each department. In each of those top-level projects, you can separate content based on how the audience uses it, such as connecting to certified data versus in-progress collaboration. For more information, see the following articles:

- Use Projects to Manage Content Access
- **Navigate projects** in the article Navigate Tableau on the Web

Extracts use the new .hyper format

When you create an extract, it uses the new .hyper format. Extracts in this new format take advantage of the improved data engine, which supports the same analytical and query performance as the data engine before it, but for even larger extracts. Similarly, when you perform an extract task on a .tde extract, the extract is upgraded to a .hyper extract. For more information, see Extract Upgrade to .hyper Format.

Changes to the way values are computed

To improve data source efficiency and scalability, and produce results that are consistent with commercial databases, values in your data source can be computed differently in version 10.5. In some cases, these changes can cause differences with the values and marks in your view between version 10.4 (and earlier) and version 10.5 (and later). This applies to extract data sources, and can apply to multi-connection data sources, data sources that use live connections to file-based data, data sources that connect to Google Sheets data, cloud-

based data sources, extract-only data sources, and WDC data sources. For more information, see Changes to values and marks in the view in the Tableau User Help.

Desktop operating system requirements (64-bit replaces 32-bit)

Starting with version 10.5, Tableau Desktop, Tableau Reader, and Tableau Public (desktop) run only on 64-bit operating systems. Version 10.4 is the last version of Tableau Desktop, Tableau Reader, and Tableau Public to support 32-bit Windows operating systems.

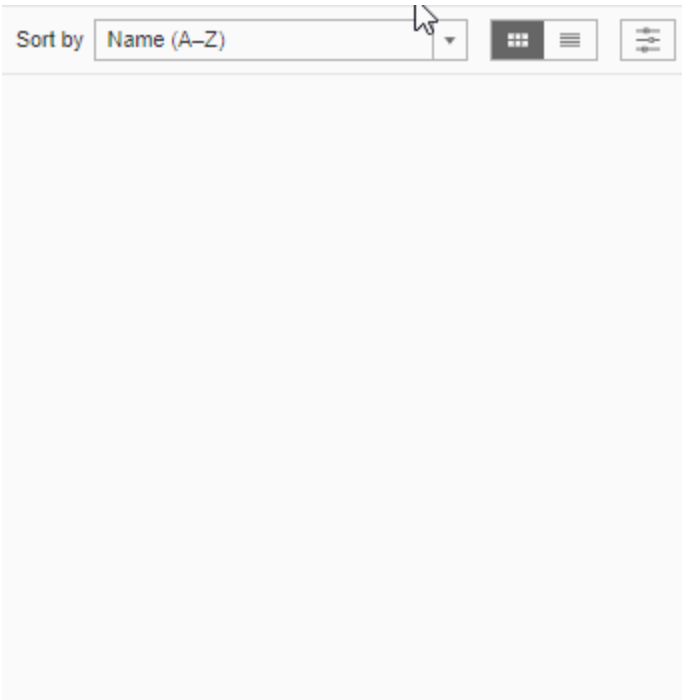
New in Web Authoring

- Add text objects to dashboards and edit them.
- Edit worksheet and dashboard titles. Double-click the title to open the **Edit Title** dialog box.
- Edit trend lines and view a description of the trend model. To view the trend model, hover over any part of the trend line. To edit a trend line on the web, click a trend line and hold the cursor in place, and then click the **Edit** menu.
- Trend lines now include a Power option.
- Create hierarchies by dragging one dimension onto another in the Data pane.
- Set the default color property for a field.
- For quantitative color legends, advanced settings are available (dates not included).
- Edit axes on the web. To open the Edit Axis dialog box on the web, double-click an axis in the view. Options available from the Edit Axis dialog box include **Synchronize dual axes**, clearing the axis range (**Reset**), and editing tick marks. You can also enable or disable **Dual axis** in a field context menu (right-click a measure field on Rows or Columns shelf).

Filtered search hidden by default

Filtered search options are now located on the right side of pages, and are hidden by default. The toggle is a dark icon ( ) when the Filters pane is open and a light icon ( ) when the Filters pane is closed. For details on searching, see Search Content.

To use filtered search, click .



Added in 2017

Added in September 2017

Tableau Online servers were upgraded to version 10.4.

Data-driven alerts

When data reaches important thresholds for your business, data-driven alerts automatically send email notifications to key people users specify. For information on how to create and manage these alerts, see Send Data-Driven Alerts in Tableau User Help.

Data source certification

Certification offers a way to promote data sources through curation. Site administrators and project leaders can certify data sources that meet your organization's security and compliance standards, or any other standards you define. For more information, see User Certification to Help Users Find Trusted Data.

Tableau Bridge support for live connections

Live query functionality in Tableau Bridge can now be enabled by site administrators without requesting access from Tableau. Use Tableau Bridge to maintain live connections to on-premises relational data, and to perform scheduled extract refreshes. For more information, see Use Tableau Bridge to Expand Data Freshness Options.

Enhanced commenting on views

Commenting has been completely redesigned to inspire conversations about data discoveries. The new Comments pane appears to the right of views, rather than at the bottom, so you can see the discussion and the data at the same time. Profile images automatically appear too, helping you quickly identify other users. To share filtered views with them, add interactive snapshots along with your comments to highlight the data you're describing.

Any comments you add in a desktop browser also appear in Tableau Mobile, and vice versa, so you can easily communicate with colleagues on the go. Comments remain with a view even if you revise the containing workbook (as long as the view name remains the same). For more information, see Comment on Views.

Learn who has seen a view

If you own a view, you can quickly find out who at your organization has seen it. At the top of a main site page, click **Views**. Then hover over the specific view you're interested in, and

select **Who Has Seen This View?** from the menu at upper-right.

WCAG-conformant drop-down filters in embedded views

Single Value (drop-down) and Multiple Values (drop-down) filters are now WCAG-conformant when accessed in embedded views. For more information, see Build Data Views for Accessibility and Author Views for Accessibility.

New to Web Authoring

Precise dashboard spacing, with border and background color controls

If you previously used blank objects to refine dashboard layouts, you'll really appreciate the new spacing controls. Padding lets you precisely position items on dashboard, while borders and background colors let you visually highlight them. For more details, see Add padding, borders, and background colors around items.

Turn on the View Toolbar on the web

In prior releases, when authoring on the web, you could only see and use the View Toolbar when working with map views. Now you can turn on the View Toolbar for any view or dashboard in your workbook in web authoring. From the top menu, select **Worksheet** > **Show View Toolbar** and select an option.

Edit groups

Starting with Tableau version 10.4, you can edit groups. To edit a group, in the Data pane, right-click a group field and select **Edit Group**. In the Edit Group dialog box that opens, you can add or remove members from an existing group, as well as create new groups in the group field. You can also choose to Include an Other group. For more information, see Group Your Data.

Create aliases

Starting with Tableau version 10.4, you can create aliases for members in a dimension so that their labels appear differently in the view. To create aliases for a field, in the **Data** pane, right-click a dimension and select **Aliases**. In the Edit Aliases dialog box, under **Value**

(Alias), select a member and enter a new name. For more information, see Create Aliases to Rename Members in the View.

Format lines

When you are authoring on the web, you can quickly change all the lines in your workbook. Select **Format** > **Workbook**, then expand the **Lines** section on the **Format Workbook** and make your selections. For more information, see Format at the Workbook Level.

Added in July 2017

User-specific time zones for subscription schedules

Subscription schedules were previously limited to one time zone, but now users can choose any time zone. At the top of the browser window, click your name, and select **My Account Settings**. Then, under **Subscription time zone**, select the time zone for schedules you create.

Added in June 2017

Default task priority for all extract refreshes

To ensure fair distribution of processing for all Tableau Online customers, we're removing the ability for site administrators to set task priority for scheduled extract refreshes. All previously set priorities will return to the default value.

Added in May 2017

Tableau Online servers were upgraded to version 10.3.

Tableau Online sync client evolves into Tableau Bridge

Limited release, by request. The Tableau Online sync client has gained some new functionality and a new name to go with it. Use Tableau Bridge to maintain live connections to on-premises relational data. Bridge also takes on all of the functionality that was provided in the sync client for scheduling extract refreshes. Your existing schedules will continue to run as previously defined in the sync client.

Live query functionality is currently available to site administrators by request only. For more information, see Use Tableau Bridge to Expand Data Freshness Options.

Encrypted SAML assertions from Identity Providers

Tableau Online now supports encrypted SAML assertions from Identity Providers. To learn more about configuring SAML single-sign-on, see Enable SAML Authentication on a Site.

Site access for support users

Tableau Online administrators can allow approved Tableau support technicians to access their Tableau Online site to help troubleshoot a customer support case. To learn more, see Enable Support Access.

Help Redesign

Starting with version 10.3, Tableau Desktop Help is now known as Tableau Help. Tableau Help contains all help topics related to analyzing and consuming data in Tableau Desktop, Tableau Server, and Tableau Online. This help is for people who create workbooks or data sources and publish them, and for people who want to see, interact with, and share views in Tableau.

We welcome your feedback on this change, as well as any feedback or ideas you might have on how to make our content better. Please use the feedback bar on the top of any page ("Was this page helpful?") to open the comment field and submit your feedback.

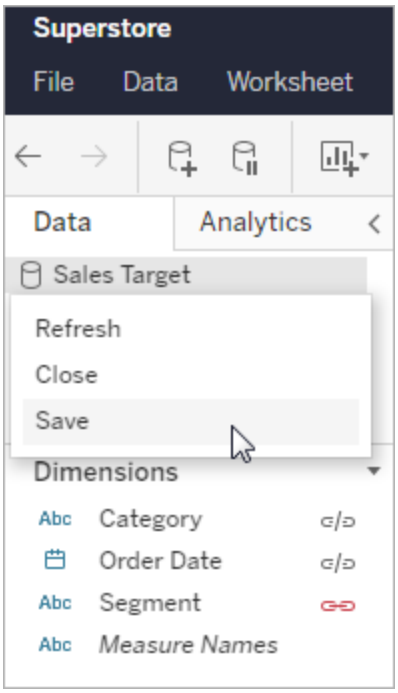
Using Tableau on the Web provides links to the topics that used to be located in Tableau Server and Tableau Online help.

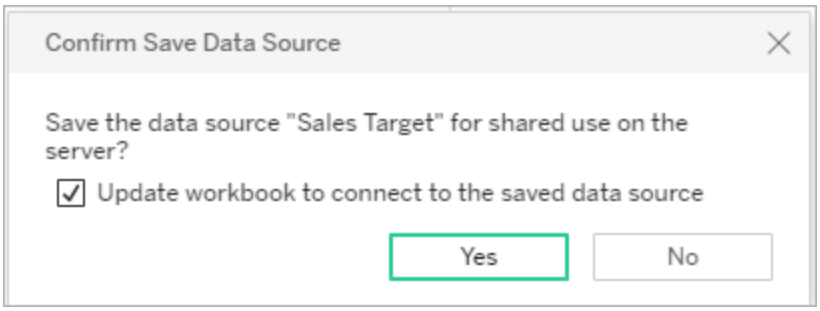
New to Web Authoring

Web authoring topics for Tableau Server and Tableau Online are now located in Tableau Help, starting with version 10.3.

Save data source

You now have the option to save a data source that is embedded with a published workbook, as a separate, published data source on Tableau Server and Tableau Online that other users can connect to. When you save the data source, you can choose to update the workbook to connect to the newly saved data source.

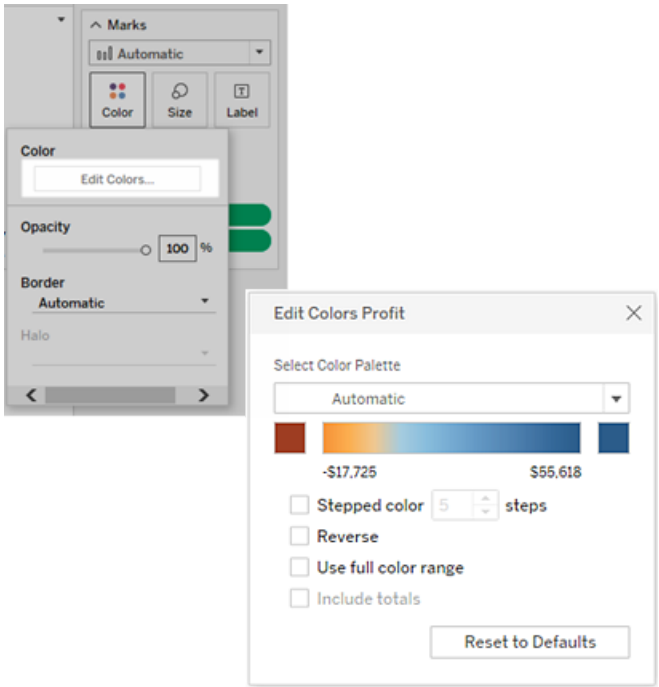




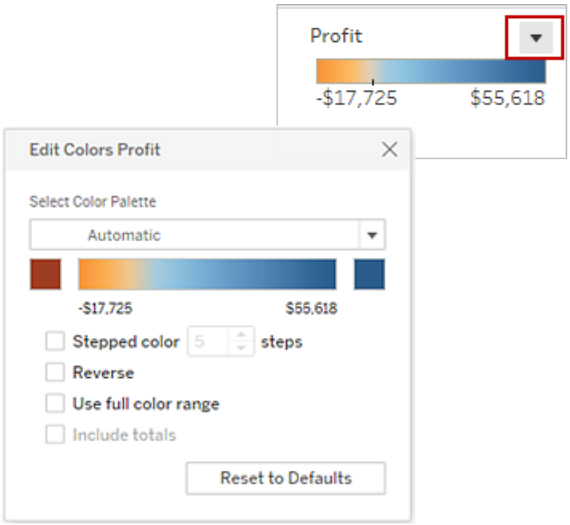
Edit quantitative color legends

You can now edit the color palette for continuous color legends in web authoring. You can open the Edit Colors dialog box from the Marks card or by clicking the drop-down arrow on the legend.

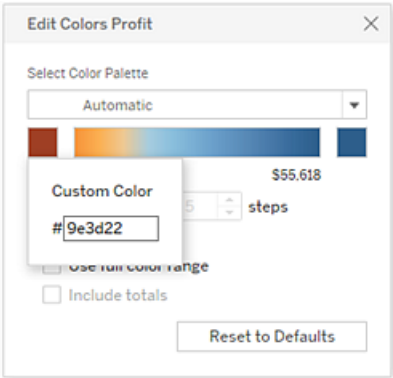
Marks card:



Legend:



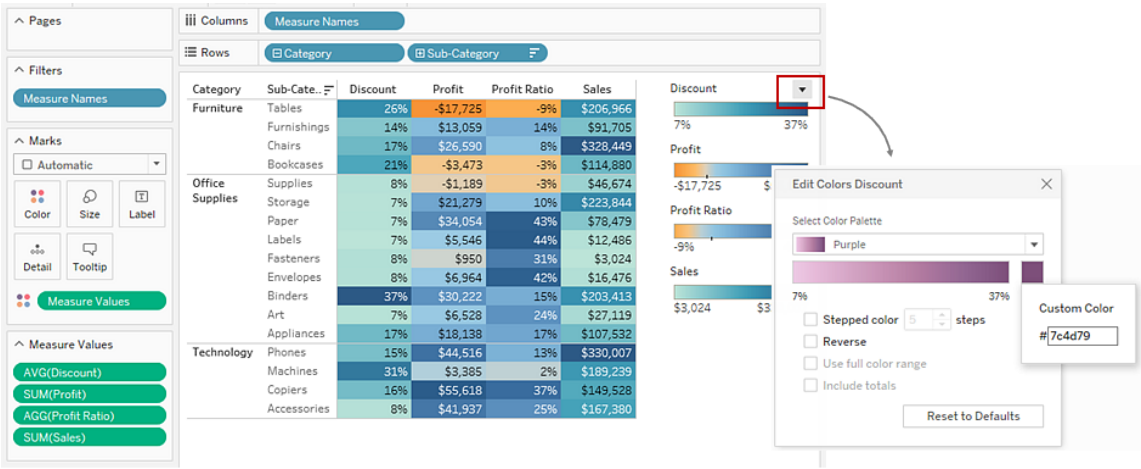
You can also set a custom color for the start and end colors by entering the Hex value.



Edit colors on separated legends

When you create separate color legends for measures in your view, you are no longer restricted to using only the default color palette or the color palette assigned to each color legend when the view was published from Tableau Desktop.

In web authoring mode, you can now select different color palettes for each legend. Click the drop-down arrow on the legend to open the Edit Colors dialog box and then select the color palette. You can also set custom start and end colors using Hex values.



Customize how people interact with your map

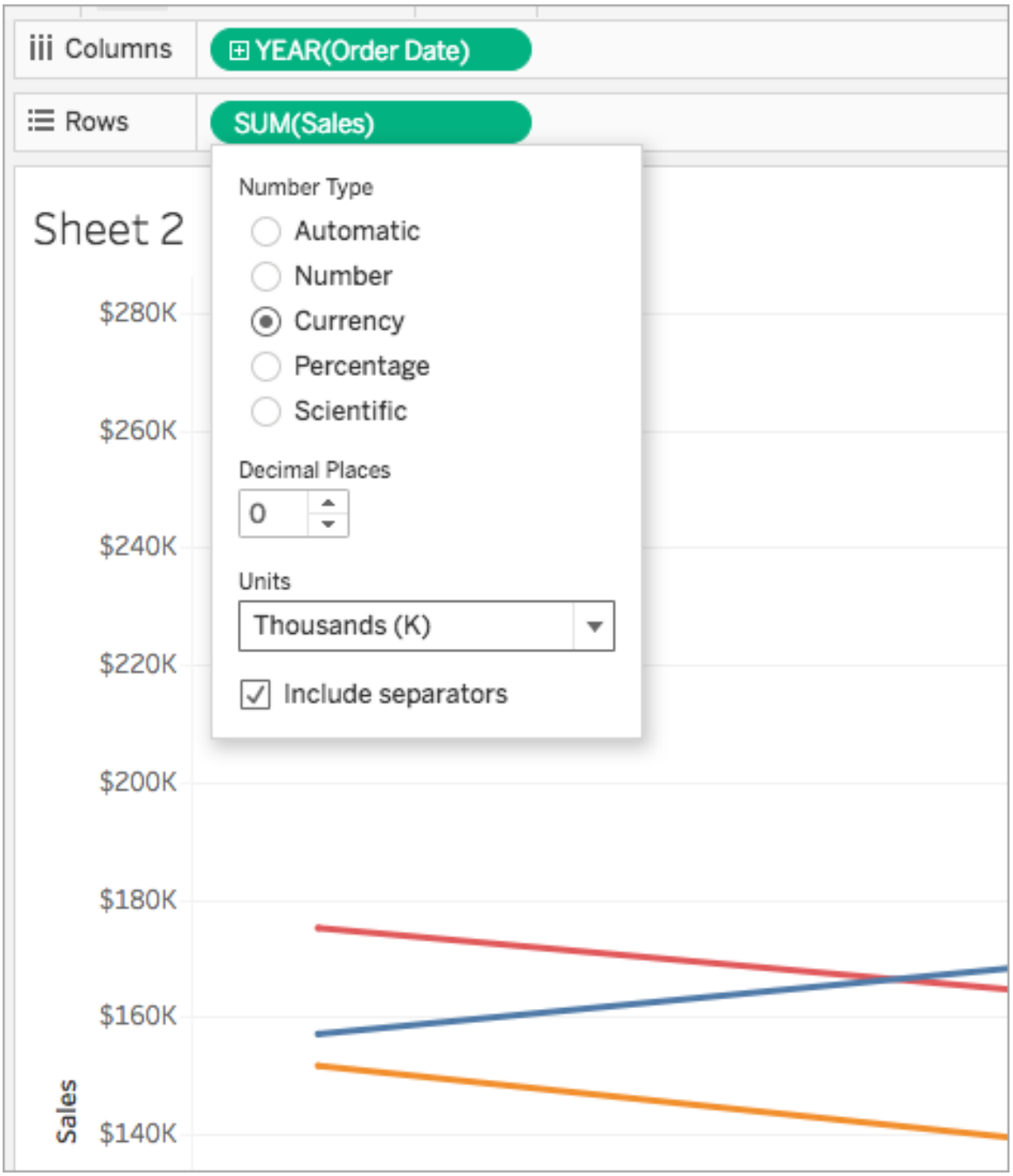
In web authoring mode, you can now customize how your audience interacts with your map view in the following ways using the **Map Options** dialog box:

- Show a map scale
- Hide map search
- Hide the view toolbar
- Turn off pan and zoom

For more information, see Customize How People Interact with your Map.

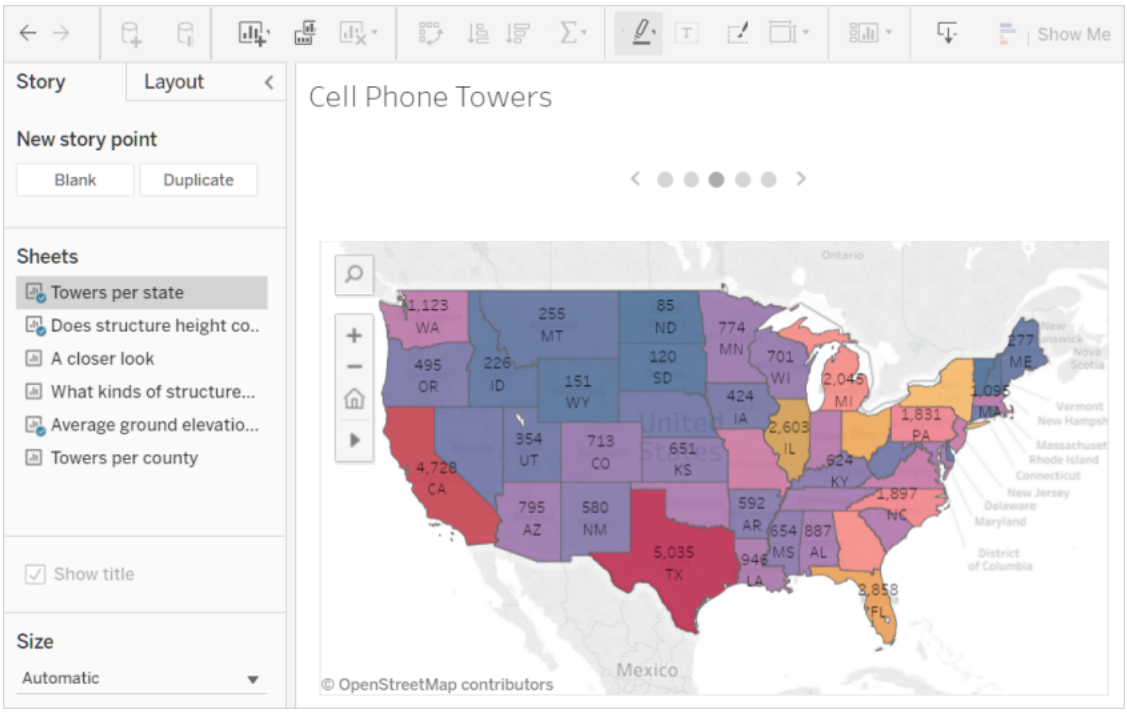
Format numbers on the web

You can now specify basic number formatting for measures in the view on Tableau Server and Tableau Online. For more information, see Format Numbers and Null Values on Tableau Server or Tableau Online.



Create stories

In web authoring, you can now create a story to tell a data narrative, provide context, demonstrate how decisions relate to outcomes, or to simply make a compelling case. See Create a Story for details.

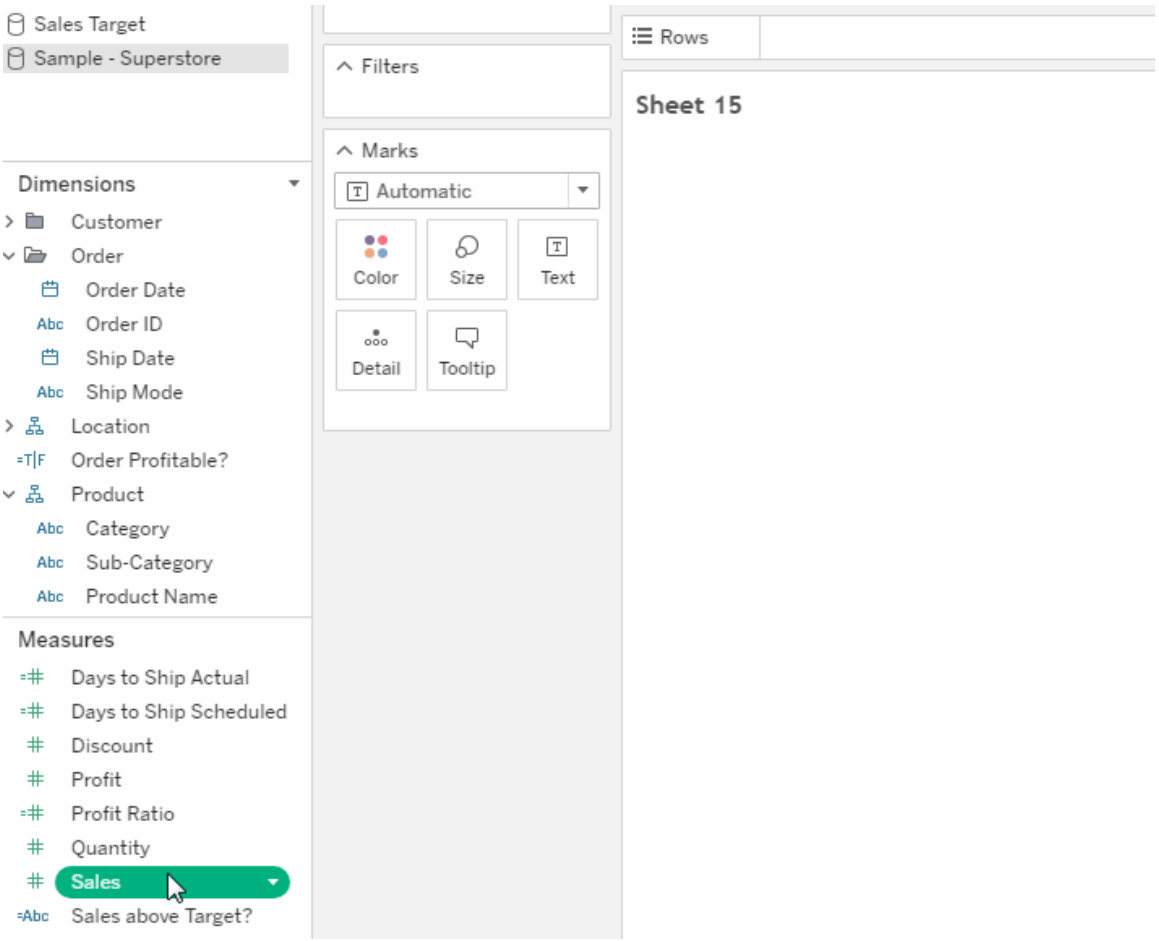


Create and edit bins

Create bins from continuous measures and edit them in Tableau Server and Tableau Online, similar to how you do it in Tableau Desktop. For details, see Create Bins from a Continuous Measure.

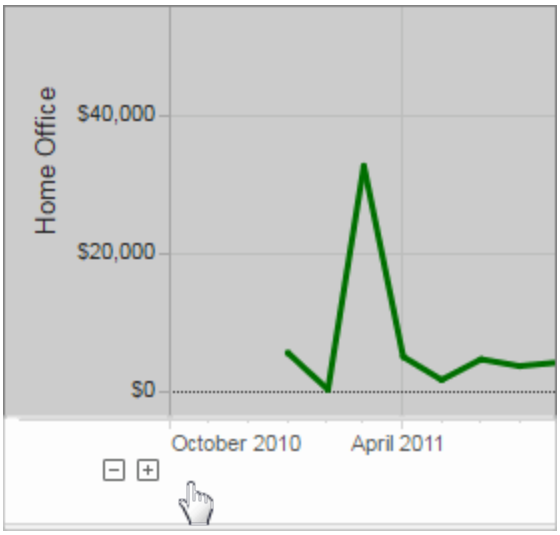
Drag fields to Show Me in the view

Select and drag dimensions and measures of interest to the view area. A "Show Me" view is automatically created. You can then click other Show Me options to try different view types.



Drill up and down a continuous hierarchy in the view

In a view with a continuous hierarchy, hover near the headers on a continuous axis to display the + and - controls. Click to drill down or up.



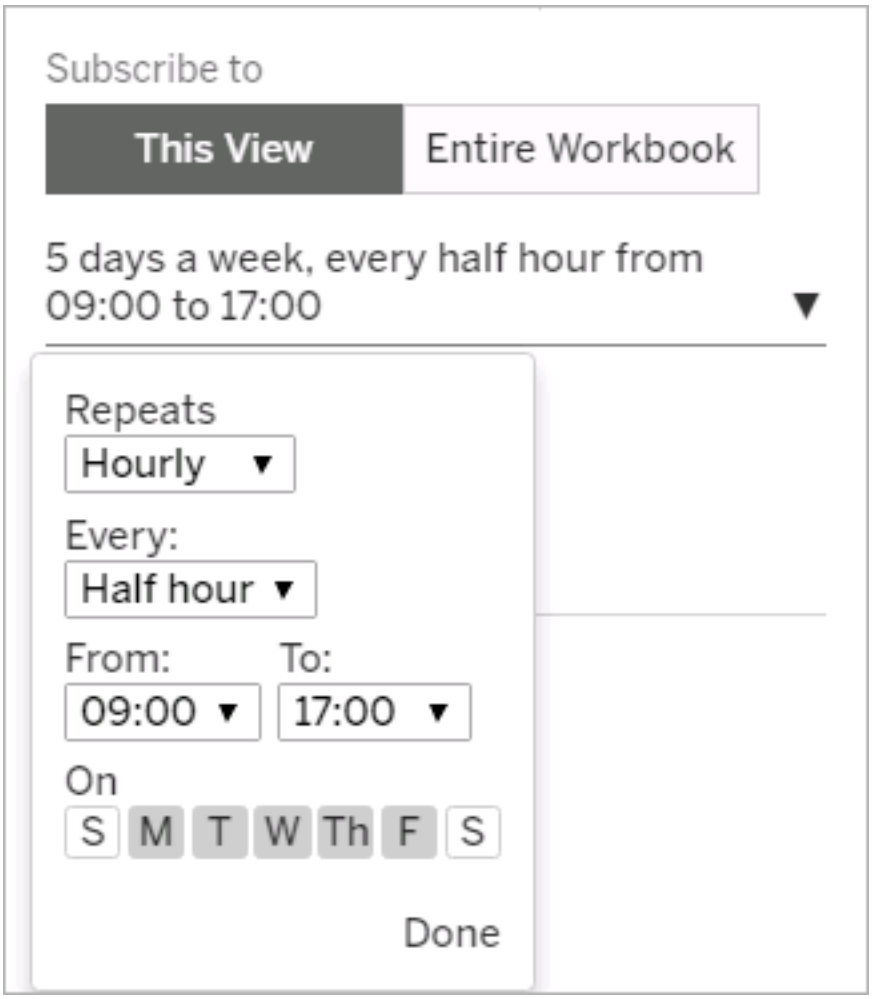
Added in March 2017

Google authentication

Google authentication gives you the convenience of using your Google ID and password with Tableau Online, thus reducing the number of sign-in prompts when accessing Tableau Online. Your site administrator can manage these credentials in a central location so that you no longer need to reset multiple passwords. For more information about Google authentication, see Authentication.

Custom schedules for subscriptions

Subscription schedules used to be limited to a set of standard options, but now you can receive emails on whatever schedule works best for you. To learn more, see Subscribe to Views.



Added in February 2017

Tableau Online servers were upgraded to version 10.2.

The following items in What's New in Tableau Server also apply to Tableau Online.

- Support for accessibility compliance

  The functionality referred to in this item is for Tableau Desktop authors who want to create accessible views that they publish to Tableau Online or Tableau Server.

- Web authoring enhancements

Added in 2016

Added in November 2016

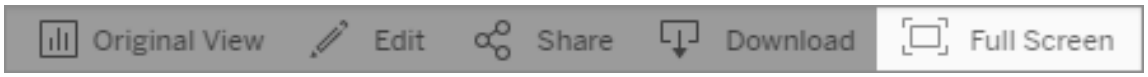
Tableau Online servers were upgraded to version 10.1.

Web authoring enhancements

- Show or hide headers in a view.
- View read-only device layouts for dashboards.

Full-screen views

To expand a view, click **Full Screen** at the far right of the toolbar. To return to the view to its previous size, press Esc.



Send subscriptions for high-priority alerts

If you've configured a view to contain data only when high-priority information exists, select the new subscription option, **Don't send if view is empty**. For more information, see Subscribe to Views and Manage Your Subscription Settings.

New location for downloading tabcmd

The tabcmd installer is now available from the Tableau Server Releases page on the Tableau website. In this location, you can always find the latest version of tabcmd.

The tabcmd download is on the release notes, under the version number.

The link from the Tableau Online Help has changed, too. If you bookmark this link, you can update it at Install tabcmd.

Sign In to Tableau Online

You can sign in to Tableau Online from a Tableau *client*. Examples of clients include a web browser, Tableau Desktop, Tableau Bridge, and Tableau Mobile. You can sign in to your

site directly, or from a Tableau view embedded in a web page.

Sign-in options and steps

Depending on how your site administrator set up your Tableau Online site, you will use one of the following ways to sign in (these are also referred to as *authentication* types):

- **Single sign-on**

  Single sign-on means that your administrator has set up the Tableau Online site so that you can use the same user name and password (*credentials*) you use for other applications in your company.

  When you use single sign-on, your credentials are managed outside of Tableau Online by a third-party *identity provider*. When you enter your credentials to sign in to Tableau Online, it's the identity provider that lets Tableau Online know you are an approved user.

- **TableauID**

  TableauID credentials are made up of an email address and password that you use for accessing your Tableau Online site. These credentials also give you access to other content on the Tableau website, such as on-demand training videos and white papers.

How to know which type of credentials your site uses

If your site administrator has set up the site to use TableauID, you will receive an email invitation to the site. When you click the link in the email, you can create your password. That email address and password become your TableauID.

If the site is set up for single sign-on credentials, generally your site administrator will notify you, and you use the same user name and password you do for signing in to other programs in your organization.

If you are not sure how the site is set up or which credentials to use, check with your Tableau Online site administrator.

To sign in (includes Tableau Online URL)

1. Do one of the following, depending on where you're signing in:

When signing in from:	Do this:
A web browser	Enter the Tableau Online URL into the address bar: **https://online.tableau.com**
Tableau Desktop, to publish or access content	Select **Server** > **Sign In**, and enter the Tableau Online URL: http://online.tableau.com
Tableau Desktop, to sign in to Tableau Bridge	Select **Server** > **Start Tableau Bridge Client**.
Tableau Mobile app	Tap **Sign In**, and then tap **Connect to Tableau Online**.

2. On the Tableau Online sign-in page, do one of the following:

   - If your site is set up to use single sign-on, enter your user name.

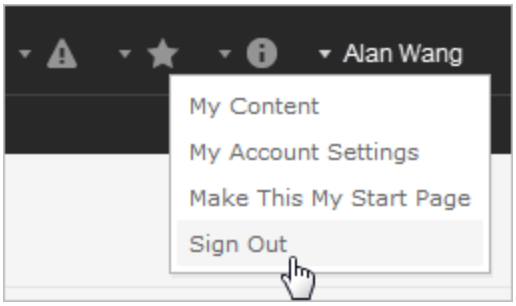
     You are directed to the sign-in form for the identity provider. Enter your user name again and your password. The third party will authenticate you and direct you back to Tableau Online.

   - If your site is set up to use TableauID authentication, enter the user name (email address) and password you use for Tableau Online.

   If your administrator has added you to multiple Tableau Online sites, you are prompted to select a site.

To sign out

To sign out, select your display name in the upper-right corner of any page, and then select **Sign Out**.



If your site uses single sign-on, and you do not see a Sign Out link, close the browser tab or window. The Sign Out link does not appear if your site and the identity provider that manages your company's user information are not configured to support single log-out.

Remembering your sign-in credentials

If you want Tableau Online to remember your user name, select the **Remember me** check box when you sign in. The next time you sign in, Tableau enters your user name. You still need to type your password.

To make Tableau forget your user information, remove cookies using your web browser.

> **Tip:** If your organization uses single sign-on, you don't need to click Remember Me. If you don't sign out and return to the site using the same browser, you'll continue to have direct access.

Connected clients

Your site administrator has the option to allow direct sign-in from approved Tableau clients. For examples of clients, see this topic's introduction.

After you sign in successfully from a recognized client, Tableau stores your credentials in a secure token that remembers your connection with Tableau Online. When this token is in place, you can access your Tableau Online site directly, without having to sign in.

Clearing saved sign-ins

- If you want to disconnect from your site, you can explicitly sign out from the connected client. For example, in Tableau Desktop, select **Server** > **Sign Out**.
- To remove all existing server connections from Tableau Desktop, select **Help** > **Settings and performance** > **Clear saved server sign-ins**.

Note: Site administrators can disallow secure tokens that store users' connections to the site.

Signing in to an embedded view in Internet Explorer

When you browse to a web page that has an embedded view, you see a sign-in button in the frame where the view will appear. If you use Internet Explorer (IE), and after entering your credentials, the sign-in button is not replaced with the view, the browser security settings might be blocking access to the view.

IE uses security zones to determine access levels to websites. To display Tableau embedded views in IE, you can add the website you visit and Tableau Online addresses to the correct security zone.

Add web addresses to IE security zones

1. In Internet Explorer, browse to the website that contains the Tableau view.
2. Click the **Tools** button, and then select **Internet Options**.
3. On the **Security** tab, add the website to the appropriate security zone as follows:

- If the site that contains the Tableau view is internal to your organization, select **Local intranet**, click **Sites**, and click **Advanced**. If the site is not already there, add it to the **Websites** list.
- If the site is external to your organization, select **Trusted sites**, click **Sites**, and add it to the **Websites** list.

4. Add Tableau Online:

   Select **Trusted sites**, and in the **Add this website to the zone** box, enter ***.online.tableau.com**.

5. Click **Add**, and then click **Close**.

These steps were taken from the Microsoft Windows page Security zones: adding or removing websites.

> **Note:** The link provided will take you away from the Tableau website. Although we make every effort to ensure these links to external websites are accurate, up-to-date, and relevant, Tableau cannot take responsibility for the accuracy or freshness of pages maintained by external providers. Contact the external site for answers to questions regarding its content.

Activate Tableau using Login-based License Management

Login-based license management is the preferred license management and activation option for Creator roles within Tableau Online, and is enabled by default on your site. Login-based license management allows authorized users to activate and unlock Tableau Desktop and/or Tableau Prep Builder by signing in to Tableau Online. Login-based license management eliminates the need to distribute and manage product keys for Tableau Desktop and Tableau Prep Builder.

You only need one Tableau Online site to authorize an individual Tableau Desktop or Tableau Prep Builder. You can assign Creator roles to users who use Tableau Desktop, and Tableau Prep Builder for license activation and centralized license management. In addition, login-based license management gives you more visibility into license usage.

You can use administrative views on Tableau Online to see the assignment and use of Creator seats in one place. Administrative views provide information about who is using your Creator licenses, and shows the most recent license lease and version of both Tableau Desktop and Tableau Prep Builder, which helps you to monitor your Tableau deployments.

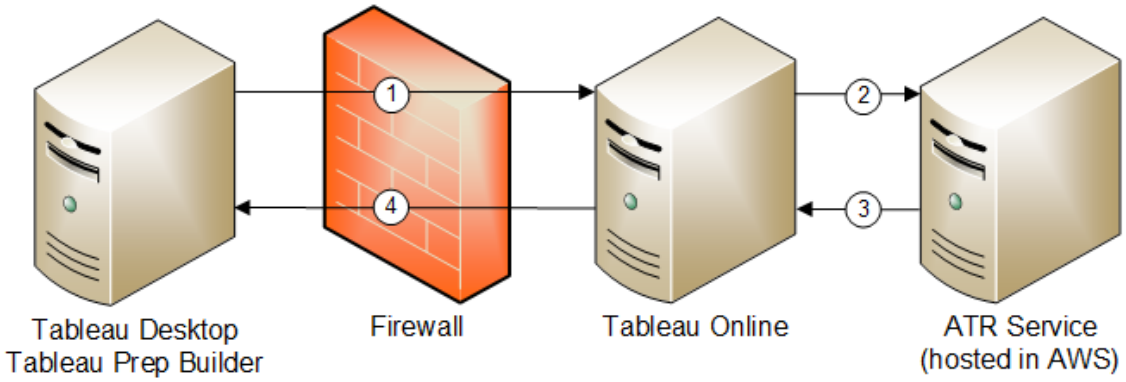
The following Tableau products support login-based license management:

- Tableau Online
- Tableau Server 2020.1+
- Tableau Desktop 2020.1+
- Tableau Prep Builder 2020.1.3+

How login-based license management works

When login-based license management is in use, Tableau Desktop or Tableau Prep Builder periodically contacts Tableau Online in order to verify that the user is a Creator and to obtain an authorization to run. Tableau Online contacts the Tableau-hosted authorization-to-run (ATR) service to verify that the Tableau Desktop client is allowed activation. The ATR service, hosted on AWS, verifies and manages the license and the length of the authorization window. The diagrams below show the communication process between the client, Tableau Online, and the licensing service.

Login-based license management with Tableau Online



1. You install Tableau Desktop or Tableau Prep Builder and select **Activate with your credentials**. You sign into your Tableau Online site.
2. Tableau Online verifies that you are a Creator. If not, you get an error. If yes, Tableau Online communicates with the ATR service.
3. The ATR service returns an ATR lease to Tableau Online.
4. Tableau Online provides an ATR lease to Tableau Desktop or Tableau Prep Builder to finalize activation.

Use login-based license management

To use login-based license management, you need to install Tableau Desktop and use it with Tableau Online.

Step 1: Enable login-based license management

Login-based license management is enabled by default for Tableau Online and Tableau Desktop starting with version 2020.1. To use login-based license management, you need to install Tableau Desktop and use it with Tableau Online. If you're using Tableau Desktop version 2020.1 and later, skip to Step 3: Activate Tableau Desktop.

If you're using version 2019.4.4 of Tableau Desktop, you must enable login-based license management. Previous versions do not support login-based license management.

Change login-based license management settings on Tableau Desktop or Tableau Prep Builder at install

To change login-based license management settings at the command line, you can run the installer .exe file from your computer's command line as an administrator. If you need to extract the .msi files, follow the instructions to Extract and run the Windows (MSI) installer.

To use a duration length other than the default of 14 days, include the `ATRREQUESTEDDURATIONSECONDS` switch. For example:

```
tableauDesktop-64bit-2020-1-0.exe /quiet /norestart
ACCEPTEULA=1 ATRREQUESTEDDURATIONSECONDS=43200
```

You must run the command from the directory where the .exe file is located or specify a full path to the location of the .exe file on the computer. Do not run the setup program from a shared directory on your network. Instead, download the .exe file to a directory on the computer where you're installing.

The following example shows the Windows installer command that disables login-based license management:

```
tableauDesktop-64bit-2020-1-0.exe /quiet /norestart
ACCEPTEULA=1 LBLM=disabled
```

or

```
tableauPrepBuilder-64bit-2020-1-0.exe /quiet /norestart
ACCEPTEULA=1 LBLM=disabled
```

To set the default URL for the Tableau Server you want users to use for activation when

using login-based license management, add the `ACTIVATIONSERVER` option:

```
tableauDesktop-64bit-2020-1-0.exe /quiet /norestart ACCEPTEULA=1
ACTIVATIONSERVER=http://<tableau_online_site_url>
```

> **Note:** The `ACTIVATIONSERVER` option is only intended for first time activation. If you have previously signed-in to this version of Tableau, you cannot specify the activation server using this option. For example, if you are using Tableau Desktop version 2019.4 and have previously signed-in successfully, you cannot use the `ACTIVATIONSERVER` option to specify an activation server. However, if you install a different Tableau version or you are signing-in to Tableau for the first time on a new computer, you can use the `ACTIVATIONSERVER` option to specify the activation server.

Change login-based license management settings on Tableau Desktop by editing the registry

If Tableau Desktop is already installed, you can change login-based license management settings by editing the Windows registry.

To turn off login-based license management:

```
reg.exe add HKEY_LOCAL_MACHINE\SOFTWARE\Tableau\ATR /f /v LBLM
/d disabled
```

To make login-based license management the only login option:

```
reg.exe add HKEY_LOCAL_MACHINE\SOFTWARE\Tableau\ATR /f /v LBLM
/d required
```

Or, you can enable, disable, or require login-based license management by editing the registry directly:

1. As an administrator on the computer running Tableau Desktop, make a backup of the registry file before you make any changes to it.
2. Edit the registry, and in `HKEY_LOCAL_MACHINE\SOFTWARE\Tableau`, find the hive named ATR and modify the LBLM value to reflect the desired setting:
   a. Name: LBLM.
   b. Data: enabled, disabled, or required.
3. Restart Tableau so the changes take effect.

Change login-based license management settings on Tableau Desktop on macOS

To change login-based license management settings on macOS, run the following commands in a terminal window to update the preferences file, and then install or restart Tableau Desktop.

To turn off login-based license management:

```
sudo defaults write /Library/Preferences/com.tableau.ATR LBLM
"disabled"
```

To make login-based license management the only login option:

```
sudo defaults write /Library/Preferences/com.tableau.ATR LBLM
"required"
```

Login-based license management settings

You use the following settings to change login-based license management, set the ATR duration, and set the activation server URL.

Setting	Value	Description

`LBLM`	enabled, disabled, or required	Set to `enabled` (the default), the licensing screens will present the two options for activation (product key, or credentials). Set to `disabled`, login-based license management will not appear on the licensing screens. Set to `required`, login-based license management is the only way to activate the Tableau Desktop (when the licensing screen appears, it will offer only the credentials option for activation). **Note:** When `LBLM` is set to enabled or required, reporting is also enabled.
`ATRREQUESTEDDURATIONSECONDS`	1209600	Sets the authorization to run (ATR) duration (in seconds), which is the length of time that an instance of Tableau Desktop and Tableau Prep Builder is authorized to run. The default is 1209600 seconds (14 days). Do not use commas as separators in the value.
`ACTIVATIONSERVER`	http://<t-	Sets the default URL for the

	ableau_ online_site_ url>	Tableau Online site you want users to use for activation.
`REPORTINGFREQUENCYSECOND-S`	3600	Sets the default (in seconds) for how often the login-based license management report is sent to Tableau Server or Tableau Online. The minimum setting is 60 seconds, and the default is 3600 seconds (one hour). Change this setting to reduce the load on Tableau Server or to reduce network traffic. No matter what the authorization-to-run (ATR) lease duration is set to, `REPORTINGFREQUENCYSECONDS` sets the time interval that the Tableau Desktop or Tableau Prep Builder client report login-based license management activations back to Tableau Server or Tableau Online.

Note: If you need to reclaim your Tableau Desktop product key, you can use the `RECLAIMLICENSES` option when uninstalling Tableau Desktop. For more information, see Deactivate the product key.

Additional configuration for virtual deployments

Tableau Desktop and Tableau Prep Builder periodically contact Tableau Online or Tableau

Server to verify that Tableau is authorized to run, based on its license. Tableau Online or Tableau Server then contacts the ATR service to verify the license and the length of the authorization window.

When configuring a virtual (non-persistent) deployment of Tableau Desktop or Tableau Prep Builder, the duration time should be set to one of the lower values such as 4 or 8 hours in order to avoid an over-use activation error message. After the virtual machine (VM) is returned, the ATR service will handle the activation monitoring.

The following flags should be used on a master image prior to publishing Tableau Desktop to end users. Each end user will be activating the software by logging into Tableau Server or Tableau Online with each new VM delivered. No product keys need to be entered if the end user is a Tableau Creator on Tableau Server or Tableau Online.

If you are using login-based license management for Tableau Desktop or Tableau Prep Builder on a VM, you may get an error message that your license information has changed whenever you launch a new VM for Tableau Desktop or Tableau Prep Builder. This error forces a restart, which then asks you to register Tableau Desktop again. This error occurs because the ATR service sends a new token that doesn't match the license cache.

To prevent this from occurring, you can use the `SYNCHRONOUSLICENSECHECK` and `SILENTLYREGISTERUSER` options with the Windows installer. For example:

```
tableau-setup-std-tableau-2020 SYNCHRONOUSLICENSECHECK="true"
SILENTLYREGISTERUSER="true" ATRREQUESTEDDURATIONSECONDS=14400
```

or

```
tableauDesktop-64bit-2020-1-0.exe /quiet /norestart ACCEPTEULA=1
ATRREQUESTEDDURATIONSECONDS=14400 ACTIVATIONSERVER-
R=http://<tableau_online_site_url> SYNCHRONOUSLICENSECHECK-
K="true" SILETYLYREGISTERUSER="true"
```

If Tableau Prep Builder and Tableau Desktop are being delivered on one Virtual Desktop, `ATRREQUESTEDDURATIONSECONDS` only needs to be set during Tableau Desktop

installation. However, if you plan to install Tableau Prep Builder as a stand-alone, you'll need to set `ATRREQUESTEDDURATIONSECONDS` during Tableau Prep Builder installation.

Or, you can edit the following registry keys on the master image:

```
Reg key path: HKLM\SOFTWARE\Tableau\<Tableau version>\Settings\

Reg key (String value, need to set to true to make that feature
enabled)

SynchronousLicenseCheck

SilentlyRegisterUser
```

(Optional) Step 2: Change the authorization to run (ATR) duration

The login-based license management default settings for the authorization to run (ATR) duration are appropriate for most environments, but you can change these default settings if needed. Login-based license management uses the default authorization to run (ATR) duration of 1,209,600 seconds (14 days), which is the length of time that an instance of Tableau Desktop and Tableau Prep Builder is authorized to run. This means that after the initial authorization, you could use Tableau without any network connection for 14 days before the activation expired.

The default duration value for login-based license management is not appropriate for delivering a non-persistent VM delivery solution to end users. The ATR duration should be lowered to 4 or 12 hours depending on VM use. When a new VM is delivered to an end user, a new authority to run token will be created. When the VM is returned, this token is also returned and is able to be used on the new VM authorization to run request.

Note: Login-based license management uses the following hierarchy when determining ATR duration.

1. **ATR Service** – Establishes the minimum (4 hours) and maximum (3 months) ATR durations applicable to all users/installations. It specifies the default ATR duration (2

weeks) if nothing is specified by Tableau Server or Tableau Desktop.

2. **Tableau Desktop** – Can optionally specify the ATR duration (`ATRREQUESTEDDURATIONSECONDS`) for the computer on which it is installed. This setting must be within the ATR Service minimum (4 hours) and maximum (3 months). This local ATR duration overrides any durations set by the ATR Service or Tableau Server. However, this default ATR duration cannot be more than the maximum ATR duration set on Tableau Server.

Change the ATR duration on Tableau Desktop by editing the registry

To use a duration length other than the default of 14 days, update the `ATRRequestedDurationSeconds` registry setting. For example:

1. As an administrator on the computer running Tableau Desktop, make a backup of the registry file before you make any changes to it.
2. Edit the registry, and in `HKEY_LOCAL_MACHINE\SOFTWARE\Tableau\ATR`, update the ATRRequestedDurationSeconds as follows (0 uses the default setting):
   a. Name: Find the string value named `ATRRequestedDurationSeconds`.
   b. Data: Update the number of seconds the duration should last. For example, add 43200 to set a duration of 12 hours.
3. Restart Tableau so that the changes take effect.

Change the ATR duration on Tableau Desktop on macOS

To use a duration length other than the default of 14 days, include the `ATRRequestedDurationSeconds` preferences setting. For example:

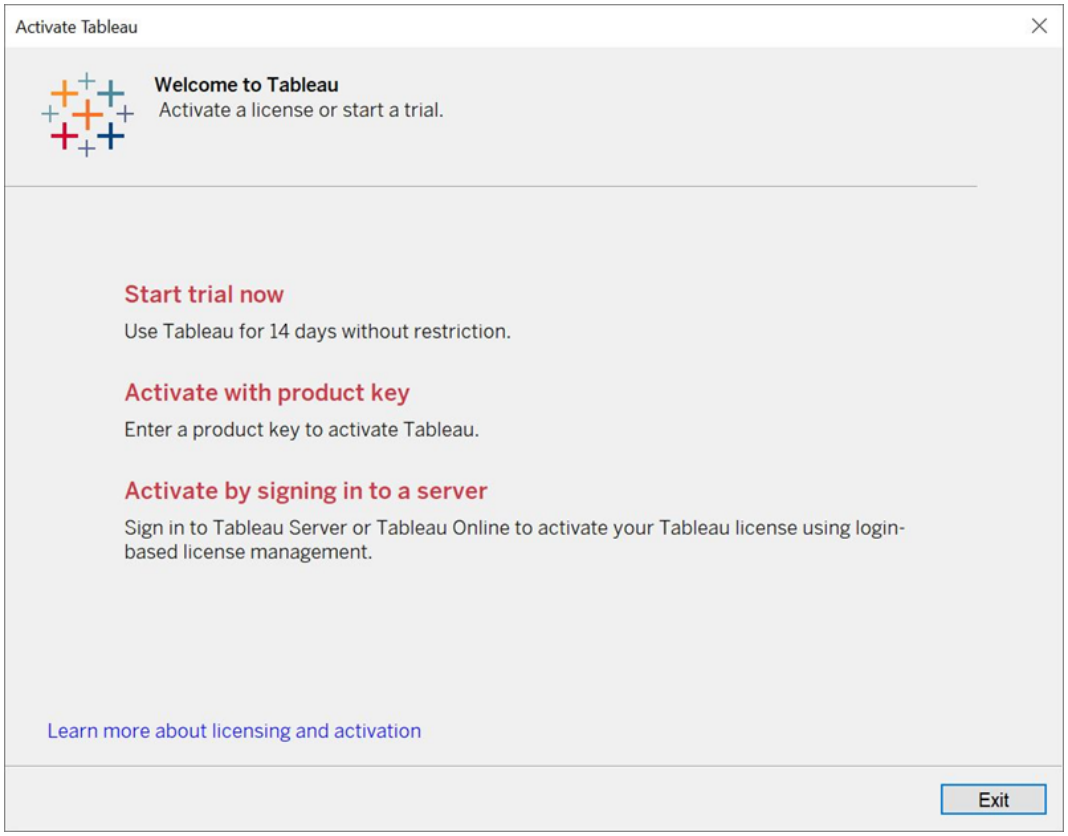
```
sudo defaults write /Library/Preferences/com.tableau.ATR
ATRRequestedDurationSeconds -string "43200"
```

Step 3: Activate Tableau Desktop

The 2021.1 version of both Tableau Desktop for Windows or macOS support login-based license management.

1. Run Tableau Desktop setup.

2. The Activate Tableau screen will include the **Activate by signing in to a server** option.



3. Click **Activate by signing in to a server** and then click the Tableau Online link.

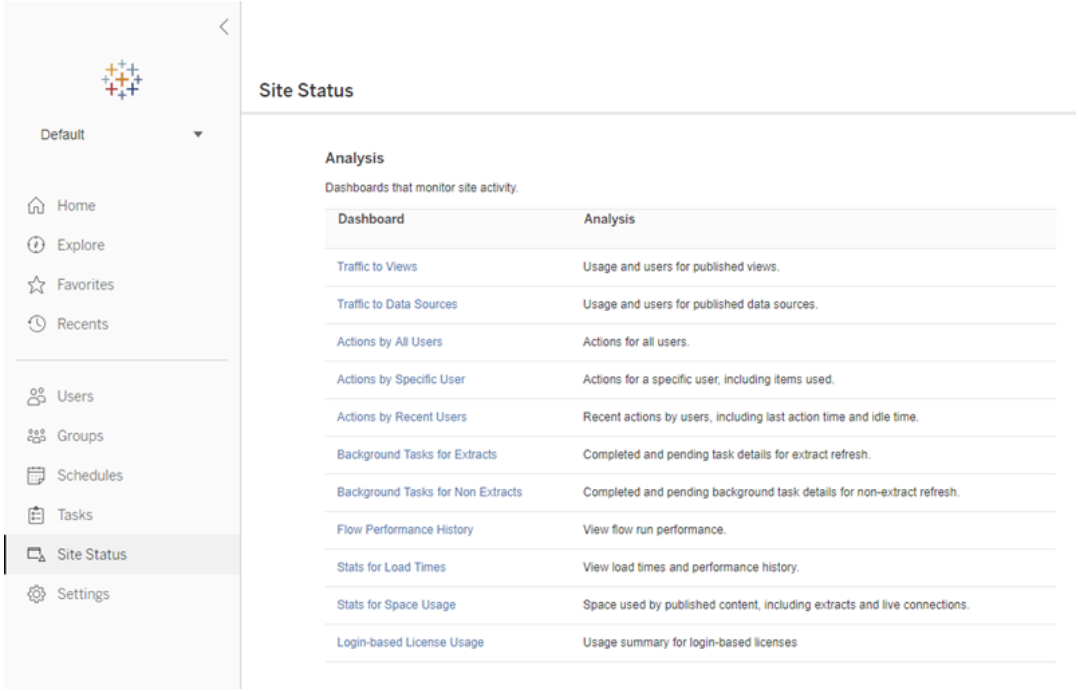
   When prompted, enter valid credentials to sign in to a Tableau Online site as a user with a Creator role subscription, and then click **OK**.

View login-based license usage

You can view login-based license usage for Tableau Online or Tableau Server. The report shows users, hosts, user role, product, version, activations, Creator seats in use, Creator seats not in use, and when a Creator seat was last used. You can view data for the past 30 days up to a maximum of 183 days.

To view the Login-based license management License Usage administrative view:

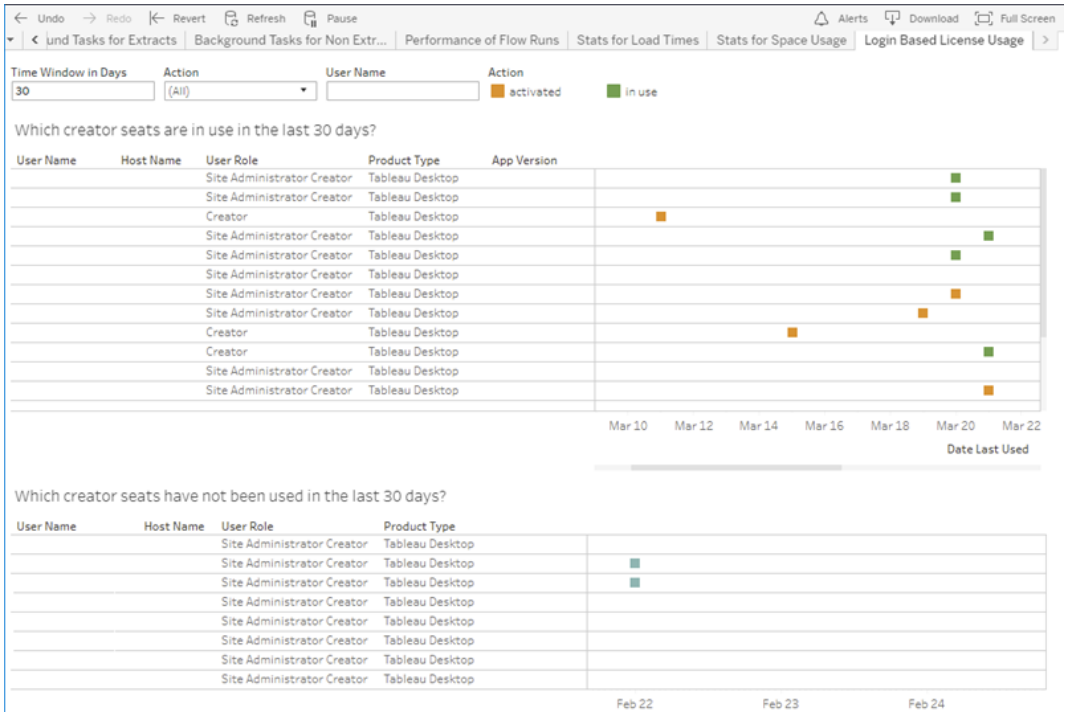
1. In Tableau Online or Tableau Server, in the navigation pane, click **Site Status**.



2. On the Site Status page, click **Login-based License Usage**.

3. Optional. On the report screen, you can change the time window to show when seats

were last used, filter on actions, filter on user name, and sort by columns.



Troubleshooting

You may encounter one of the following error messages while using login-based license management. Use the information below to resolve the issue.

If login-based license management is available as an activation option on Tableau Desktop, but not enabled on your Tableau Online site, the following error message may be displayed:

Login-based license management is not enabled on the server you connected to. Select a different server to connect to, use a product key to activate your license, or start a trial to begin working immediately.

Contact your administrator and/or Tableau account manager to ensure that your Tableau Online site is enabled for login-based license management.

Login-based license management is not enabled on Tableau Desktop

If login-based license management is not enabled on Tableau Desktop, you will not have the option to activate Tableau using your credentials. Prior to version 2020.1, the ability to use login-based license management on Tableau Desktop is not turned on as a default. Check the Tableau Desktop version to ensure the correct version is being used.

If the login-based license management option has been turned off during installation or with an update, see Step 1: Enable login-based license management.

You do not have a Creator license

When attempting to activate from Tableau Desktop, the following error message may be displayed:

You do not have a Creator license. Contact your administrator to obtain one.

This error is displayed if you have not been assigned a Creator role. If you belong to multiple sites on Tableau Online or Tableau Server, you need to sign in to the site where you have the Creator role when using login-based license management. Otherwise you'll also get this error.

To verify that the product key you have activated on the server includes Creator licenses, navigate to:

```
http://<tableau_server>/#/server/licenses
```

You have activated the maximum number of computers

When attempting to activate from Tableau Desktop, the following error message may be displayed:

You have activated Tableau the maximum number of times allowed under your account. You must wait for the license activation on another computer to expire before you can activate Tableau again.

This error is displayed when you activated Tableau from multiple computers with the same Creator user credentials and exceeded the maximum number of activations. You must wait until the authorization-to-run (ATR) token expires on one of the existing computers before attempting to activate a new computer. If you are using non-persistent virtual machines (VMs), you can shorten the ATR duration to prevent this error from occurring again.

To shorten the ATR token duration for maximum activation

If you encounter this maximum use error when using a non-persistent virtual deployment, it is possible to shorten the ATR duration to 4 hours (14400) seconds to avoid the error in the future.

1. Open a Command Prompt as an administrator.
2. Navigate to the Tableau binaries (\bin) directory, using the following command.

   ```
   cd Program Files\Tableau\Tableau <version>\bin
   ```

3. Run the following command to obtain the current **ATR requested duration seconds**, and write it down. You will restore this setting in step 8 below.

   ```
   atrdiag.exe
   ```

4. Run the following command to set the duration to 4 hours, in seconds (e.g., 14400).

   ```
   atrdiag.exe -setDuration 14400
   ```

5. Next, overwrite the existing ATR token. In Tableau Desktop, select **Help** > **Manage Product Keys**.
6. In the **Manage Product Keys** dialog box, reactivate Tableau Desktop through Tableau Server using login-based license management (which will overwrite the existing token).
7. Close Tableau Desktop and wait for the ATR duration to elapse (e.g., 4 hours) so that the ATR token expires and frees-up a user seat.

8. After the ATR token expires and you can successfully sign in to Tableau Server, use the following command to set the ATR duration back to the original value. Otherwise you'll be prompted to sign in to Tableau Server every day in order to use Tableau Desktop.

```
atrdiag.exe -setDuration <original value>
```

To return your computer to an unlicensed state

1. Open a Command Prompt as an administrator.
2. Navigate to the Tableau binaries (\bin) directory, using the following command:

```
cd Program Files\Tableau\Tableau <version>\bin
```

3. Run the following command:

```
atrdiag.exe –deleteAllATRs
```

Note: This removes only the ATR token from the computer. It does not free-up any of the user seats. The user seat is only freed-up after the deleted ATR token expires.

Your Tableau credentials are invalid

When attempting to activate from Tableau Desktop, the following error message may be displayed:

Your Tableau credentials are invalid. Contact your administrator to reset your account.

This error is displayed when your Tableau license is not recognized. Contact your administrator..

Your computer’s clock is not synchronized to the current time

When attempting to activate from Tableau Desktop, the following error message may be displayed:

Your computer’s clock is not synchronized to the current time. Synchronize your computer’s clock to the current time and then try to activate Tableau.

This error is displayed when your computer's clock is not synchronized with the current time. Synchronize your computer’s clock with a time server on the internet or enable automatic time synchronization.

Site Administrator Role and Tasks

This topic describes the typical role of the Tableau Online site administrator, and how it differs from the related data manager role. It then lists the core tasks that the site administrator completes to set up your Tableau Online site. Additional topics in this section provide more information about each of the steps.

How we define the site administrator role

We define the site administrator as the person who is in charge of creating and maintaining the framework that enables Tableau Desktop users in your organization to publish, share, manage, and connect to data sources and workbooks. For example, a site manager works with site users and their permissions, in contrast to working directly with content that is published to the site.

The Tableau Online site administrator is typically part of the IT team at your organization. If your organization doesn't have a formal IT team, the site administrator might be a savvy Tableau Desktop user who takes on this role (the *accidental admin*, so to speak).

Tasks that are typically outside the site administrator's realm

In this documentation, we make a distinction between the roles of site administrator and data manager, which is the role for the person who creates and publishes data sources to Tableau Online. Even so, in your organization, the same person might cover both roles. In practice, you'll divide these responsibilities in the way that works best in your environment. To learn more about the data manager's realm, see Publish Data Sources and Workbooks.

Steps for setting up your site

The table below shows a loose sequence of steps for setting up a site. You can complete the steps in any order that makes sense for you. At the bottom of this topic you'll find a list of links to more resources for each of the steps.

Before you configure the site, we recommend getting acquainted with the site authentication options, users' site roles, projects, and permissions. Create and document a plan for your projects, groups, and overall permissions strategy. Setting up a test project to experiment with different settings is a good way to iron out these issues. You can change many site settings after your users are working with the site, but try to go in with the intention of minimizing post-production changes.

Upload your logo	This simple first step helps you get familiar with the environment while you incorporate your organization's branding into your site. Sign in, go to the **Settings** page, and upload your logo where indicated.
Configure site access	If your organization uses single sign-on, you can configure your site to use Google or SAML authentication. Otherwise, you can use the default Tableau ID authentication, where each user signs in using an email address and password that is unique to Tableau Online. In addition to the authentication type, you can determine whether to allow users to sign in directly from Tableau *clients* after signing in the first time. This is enabled by default.
Create projects	Projects help you manage users' access (permissions) to data sources and workbooks that are published to your site. You can set default groups and permissions for all content on the **Default** project, lock the project, and then use it as a template for additional projects you create. Projects can also serve as staging environments.
Set up the permissions structure	In Tableau, permissions work with site roles to make up a user's access to the site and its content.

Upload your logo	This simple first step helps you get familiar with the environment while you incorporate your organization's branding into your site. Sign in, go to the **Settings** page, and upload your logo where indicated.
Add users	Each user who accesses Tableau Online must sign in. Determine the users you want to be able to sign in to the site. If you enabled Google or SAML authentication, determine which of those users will sign in with their single sign-on credentials, and which will use TableauID credentials. Add or import multiple users at a time based on their authentication type.
Get your data to Tableau Online	We recommend that you designate a Tableau Desktop user who will publish vetted data sources to the site (that is, who will serve in the data manager role mentioned earlier). These will be the shared data sources that other Tableau users can connect to. As the site administrator, you can centrally manage data source permissions. Other attributes that either you or the data manager can maintain centrally are connection information (credentials, access tokens) and refresh schedules for cloud data sources. For more information, see Keep Data Fresh.
Analyze site usage and performance	You can monitor usage of published data sources and workbooks, the success of extract refresh tasks, user activity, and so on.

Navigate the Admin Areas of the Tableau Web Environment

As an administrator on Tableau Server or Tableau Online, you can access admin settings that aren't available to other users to configure sites, users, projects, and to do other content-related tasks.

Access based on site role and number of sites

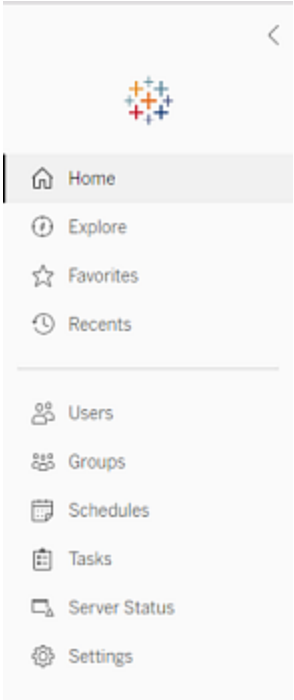
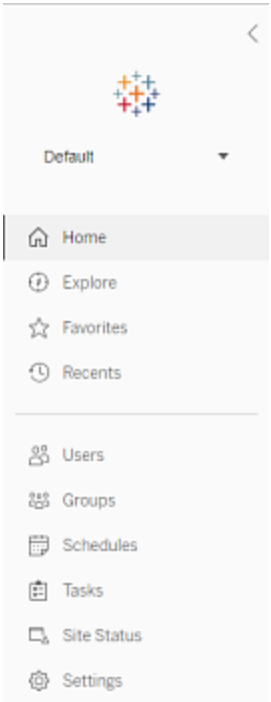
The menus you get when you sign in to Tableau Server or Tableau Online depend on the following conditions:

- Whether you're a site or server administrator.

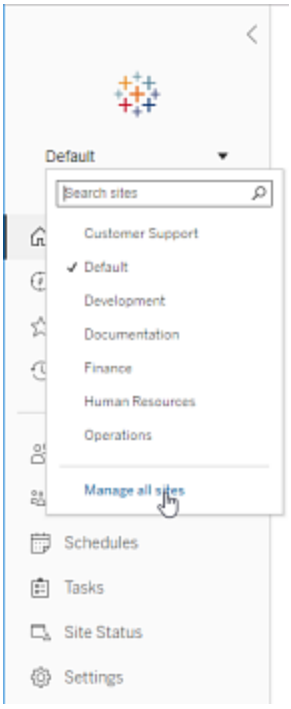
  Site administrator access is available on Tableau Online and Tableau Server. Server administrator access is only on Tableau Server.

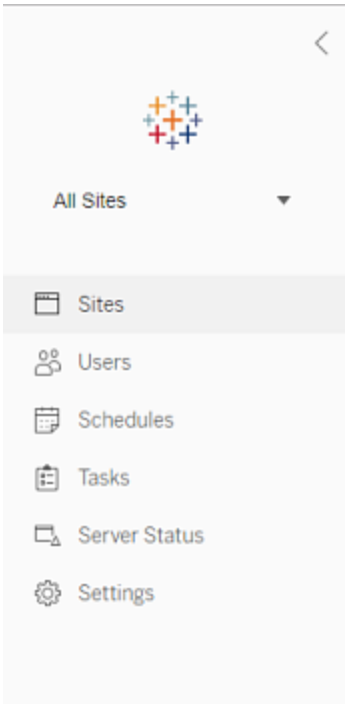
- Whether you have access to only one site or to multiple sites.

Server administrator

On a **single-site** server, the site selector does not appear, and all other menus are the same.	
In a **multi-site** environment, menus along the left enable you to modify a specific site or all sites, and to configure users, groups, schedules, tasks, and server settings. To access server administrator settings that affect all sites, open the site menu by clicking the arrow next to the current site name, and then select **Manage all sites**. The **Content** and **Group** tabs go away, and the site menu text changes to **All Sites** to let you know you are managing server-wide settings, and options like **Server Status** reflect the server-wide view.	

To return to the site administration menus, select **All Sites**, and the select the site you want to manage.



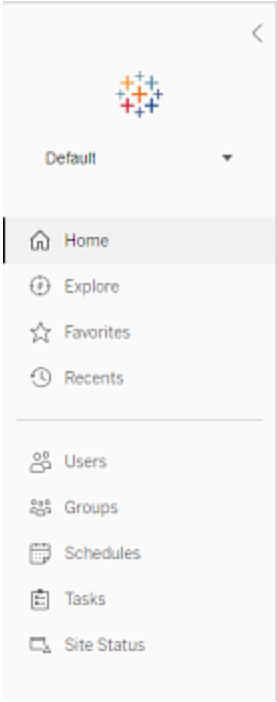


Site administrator

If you are a site administrator for Tableau Online or Tableau Server, and you have access to multiple sites, you'll get menus for selecting which site to manage, and for managing that site's content, users, groups, schedules, and tasks, and for monitoring its status.

The site selector displays the name of the current site. To go to another site, select the site menu, and then select the site name.

If you have access to only one site, the site selector does not appear, but all other menus are the same.



Server administrator tasks

Server administrators (available with Tableau Server Enterprise only) can do the following:

- Monitor server status and activity.
- Generate log files.
- Add sites and edit site settings. Only server administrators can add sites to the server.
- Add users to the server, and assign users to sites.
- Add and manage site groups.

To manage settings only for a specific site, you must first navigate to the site. Within each site, you can do the following:

- Administer content: Create projects, move content from one project to another, assign permissions, change ownership of a content resource, and so on.
- Manage schedules for extract refreshes and subscriptions.
- Monitor site activity and record workbook performance metrics.
- Manage storage space limits for content published by users.
- Allow web authoring.
- Enable revision history.
- Allow site administrators to add and remove users.
- Set the maximum number of licenses that site can consume for each license type (Creator, Explorer, Viewer).
- Allow users to subscribe to workbooks and views, and allow content owners to subscribe others to workbooks and views.
- Enable offline snapshots for favorites (iOS only).

Site administrator tasks

A site administrator on Tableau Online or Tableau Server can do the following tasks:

- Administer content: Create projects, move content from one project to another, assign permissions, change ownership of a content resource, and so on.
- View, manage, and manually run schedules for extract refreshes and subscriptions.
- Add and manage site users.
- Add and manage site groups.
- Monitor site activity.

Customize the Site and Content Settings

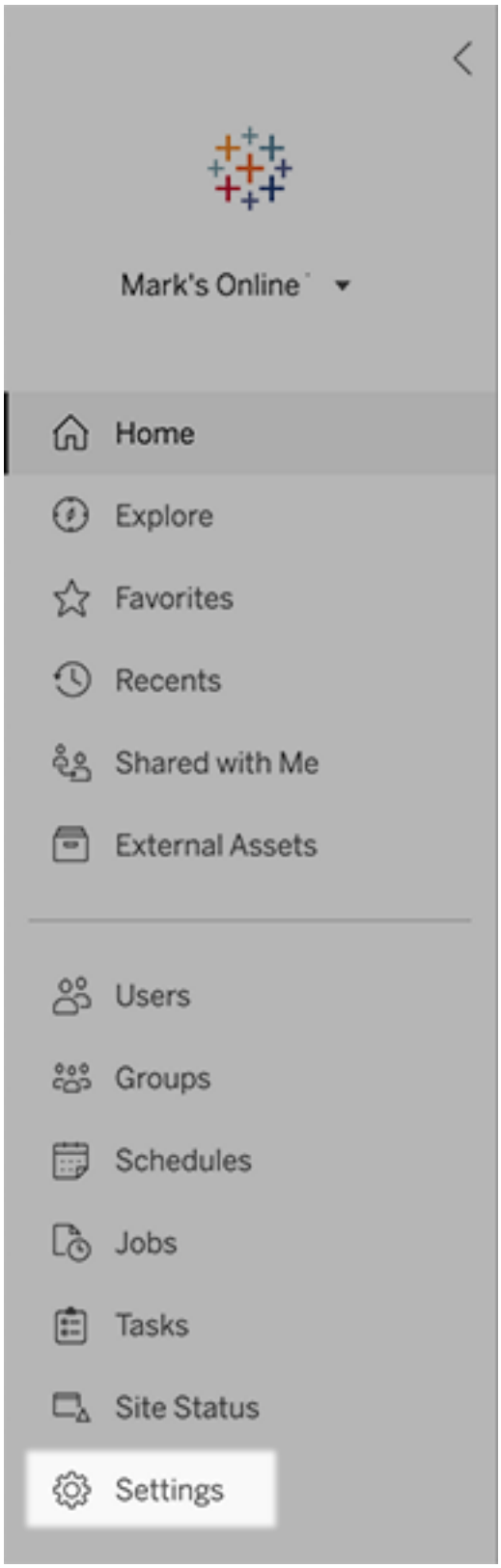
Site Settings Reference

As a Tableau site administrator, you can customize a site for your organization using the settings below. The settings available to you depend on your site configuration, and whether you use Tableau Online or Tableau Server.

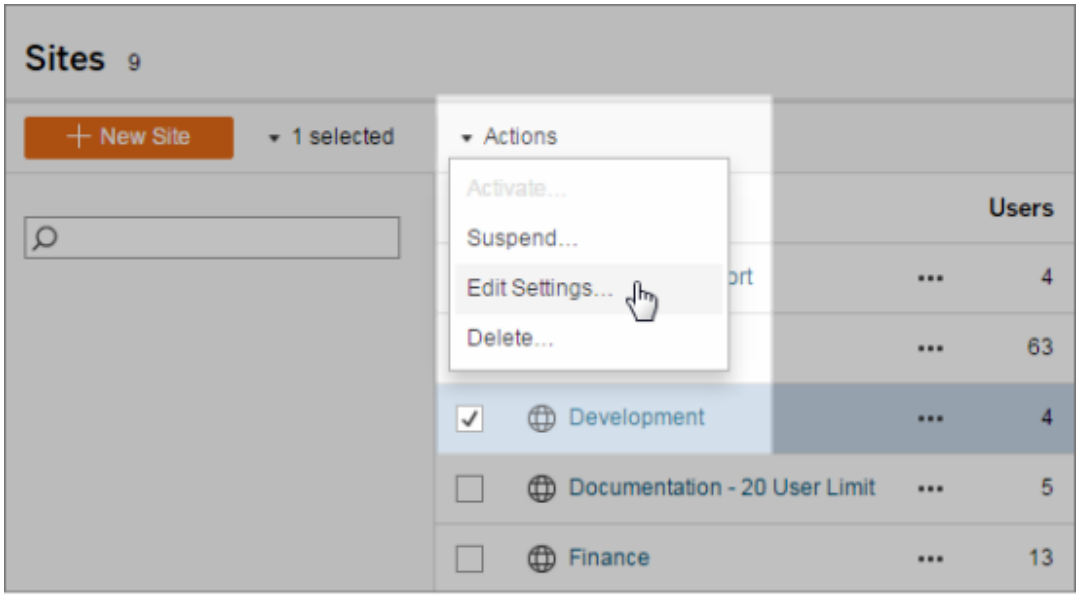
> **Note:** To find a specific setting below, press Ctrl+F (Windows) or Command+F (macOS). Tableau Online and Tableau Server present these settings in a different order.

Accessing site settings

- (Tableau Online) From the Home page, expand the side pane, and click **Settings** at bottom.


Mark's Online
Home
Explore
Favorites
Recents
Shared with Me
External Assets
Users
Groups
Schedules
Jobs
Tasks
Site Status
Settings

- (Tableau Server) If you're editing an existing site, select it on the Sites page, and then select **Edit Settings**. Or, in a single-site deployment, click **Settings** at the bottom of the side pane.



General section

Setting	Description
Site Name and ID (Tableau Server Administrators only)	Specifies the site name seen in the user interface and the ID seen in the site URL. (If you are editing the Default site, you cannot change the ID.) You can't change the “#/site” portion of the URL (for example, http://-localhost/#/site/sales). In multi-site server environments, these segments appear in the URL for sites other than the Default site.
Storage (Tableau Server Administrators only)	Select either **Server Limit** or **GB**, and for the latter enter the number of gigabytes you want as a limit for storage space for published workbooks, extracts, and other data sources. If you set a server limit and the site exceeds it, publishers will be prevented from uploading new content until the site is under the limit again. Server administrators can track where the site is relative to its

	limit using the Max Storage and Storage Used columns on the Sites page.
Revision History (Tableau Server Administrators only)	Specifies the number of previous versions of workbooks, flows, and data sources that are stored on the server.
Tableau Prep Conductor	Controls whether users with appropriate permissions can schedule and monitor flows. Tableau Prep Conductor is part of the Tableau Data Management Add-on. For more information, see About Tableau Prep Conductor.
Web Authoring	Controls whether browser-based authoring is enabled for the site. When web authoring for workbooks is disabled, users can't create or edit published workbooks from the server web environment but instead must use Tableau Desktop to republish the workbook. When web authoring for flows is disabled, users can't create or edit published flows from the server web environment but instead must use Tableau Prep Builder to re-publish the flow. For more information, see Set a Site's Web Authoring Access and Functions in Tableau Online Help.
Managing Users (Tableau Server Administrators only)	Determines whether only server administrators can add and remove users and change their site roles, or whether site administrators can too. If you allow site administrators to manage users, specify how many users they can add to the site by selecting one of the following: • Server Limit adds the number of available server seat licenses. For a server with core-based licensing, there is no limit. • Site Limit lets site administrators add users up to a limit you specify. • Site Role Limit lets site administrators add users of each site

	role up to the license limit you specify for the site. For more information, see View Server Licenses.
Guest Access	Lets people who lack a Tableau Server account see views that have guest access permissions. **Note:** If you use Tableau Server, your administrator can disable Guest Access.
Tableau Catalog	Turns off Catalog capabilities when Tableau Server or a Tableau Online site is licensed with the Data Management Add-on. For more information, see Disable Catalog.
Workbook Performance after a Scheduled Refresh (Tableau Server Administrators only)	Pre-computes recently viewed workbooks with scheduled refreshes to open them faster. For more information, see Configure Workbook Performance after a Scheduled Refresh.
Workbook Performance Metrics (Tableau Server Administrators only)	Lets site users collect metrics on how workbooks perform, such as how quickly they load To initiate recording, users must add a parameter to the workbook's URL. For more information, see Create a Performance Recording.
Managed Keychain Clean Up	Lets site administrators manage saved credential keychains for OAuth connections on the site. For more information, see OAuth Connections.
Automatically Suspend Extract Refresh Tasks	To save resources, Tableau can automatically suspend extract refresh tasks for inactive workbooks. This feature applies only to refresh schedules that run weekly or more often. For more information, see Automatically Suspend Extract Refreshes for Inactive

	Workbooks in Tableau Online Help.
Email Settings (Tableau Server Administrators only)	Specifies the From address and message footer seen in automatic emails for alerts and subscriptions.
Site Invite Notification (Tableau Online only)	For sites with single-sign-on authentication, sends an invite email when new users are added to the site.
Site Logo	Specifies the image that appears with the site name.
Start Page	Controls which site page appears when users sign in. By default, the Home page appears, but you can instead open All Projects, All Workbooks, or other pages. For more information, see Set the Default Start Page in Tableau Online Help. **Note:** If you use Tableau Server, your administrator can override this site setting.
User Visibility	Controls what user and group names are visible to other users. For more information, see Manage User Visibility in Tableau Online Help.
Availability of Ask Data	Controls whether Ask Data is enabled or disabled by default for data sources. Ask Data lets users query data using conversational language and automatically see visualizations. For more information, see Automatically Build Views with Ask Data in Tableau user Help.
Automatic Access to Metadata about Databases and Tables	Automatically grants users certain capabilities to external assets using derived permissions. For more information, see Turn off derived permissions in Tableau Online Help.
Sensitive Lineage	Specifies whether sensitive lineage data should be obfuscated or

Data	filtered when users don't have the appropriate permissions to related metadata. For more information, see Sensitive lineage data.
Cross-Database Joins	Determines where the join process happens when joining data from multiple sources. For more information, see Combine Tables from Different Databases in Tableau user Help.
Notifications for Extract Jobs and Flow Runs	Sends email notifications to inform data source, flow, and workbook owners when there are updates to extract jobs or scheduled refreshes. Also sends encryption failure notices if the site encryption mode is set to Enable. For more information, see Notify Owners When Extract Refreshes Fail in Tableau Online Help and Enable Extract Refresh Scheduling and Failure Notification in Tableau Server Help.
Extract Encryption at Rest (Tableau Server Administrators only)	Lets you encrypt .hyper extracts while they are stored on Tableau Server. Server administrators can enforce encryption of all extracts on their site or allow users to encrypt all extracts associated with particular published workbooks or data sources. For more information, see Extract Encryption at Rest.
Tableau Mobile - Enable offline favorites (Tableau Server Administrators only)	Controls whether offline previews of users' favorite views are generated for display when users access the site on Tableau Mobile. For more information, see Manage Tableau Mobile Data on Devices in the Tableau Mobile Deployment Guide.
Tableau Mobile - Enable app lock (Appears under Authentication tab for Tableau Online)	Requires a biometric method or device passcode for users to open the site on Tableau Mobile. For more information, see Enable App Lock for Added Security in the Tableau Mobile Deployment Guide.
Tableau Support Access (Tableau	Allows Tableau Support technicians access to the site to help troubleshoot support cases. By default, this feature is disabled. For

Online only)	more information, see Enable Support Access.
Sharing	Allows users to share items directly with other users. When an item is shared, the recipients get a notification and the item is added to their Shared with Me page. If this is not enabled, users can only copy a link to share. For more information, see Share Web Content in Tableau user Help.
Comments	Controls whether users can add remarks in a Comments side pane for each view and @mention other Tableau users to notify them via email. For more information, see Comment on Views in Tableau user Help.
Data-Driven Alerts	Lets users automatically receive emails when data reaches key thresholds. For more information, see Send Data-Driven Alerts in Tableau user Help.
Subscriptions	Lets site users subscribe to views and receive regular emails of them. On Tableau Server, these options are available only if you first configure subscription settings.
Recommendations for Views	Controls whether recommendations show on the site and whether the names of users who have looked at recommended items show on recommendation tooltips. **Note:** If you use Tableau Server, your administrator can disable Recommendations.
Request Access	Lets users send access requests to content or project owners. For more information, see Let Site Users Request Access to Content in Tableau Online Help.
Metrics Content Type	Controls whether metrics are available on the site. When enabled, users can create metrics from views and metrics appear as a content type. When disabled, metrics won't appear on the site or con-

	tinue to sync; however, you can re-enable the feature to bring back previously created metrics. For more information, see "Set Up for Metrics" in Tableau Online Help or Tableau Server Help.
Web Page Objects	Controls whether these dashboard objects can display target URLs. For more information, see Security for Web Page objects in Tableau user Help.
Set Time Zone for Extracts	The default time zone for extract-based data sources in a site is Coordinated Universal Time (UTC). Site administrators can set a different time zone. For more information, see Set the Site Time Zone for Extracts in Tableau Online Help.
Extract Quota Limit Notifications	Sends email alerts to all site administrators when extract refresh jobs are canceled because of extract job capacity issues.
Run Now	Controls who can run jobs manually using the Run Now option from the web, Rest API, and Tabcmd. By default, this option is selected to allow users to run jobs manually. Clear the check box if only administrators should be allowed to run jobs manually. **Note:** If you use Tableau Server, your administrator can disable this site setting.
Manage Notifications	Controls how site users can receive notifications for events such as extract jobs, flow runs, or when another user shares content with them. Notifications can be seen in their Tableau site via the notification center or by email. When a notification is enabled, users can configure their notification preferences on their Account Settings page. **Note:** If you use Tableau Server, your server administrator can

disable this site setting.

Authentication section (Tableau Online)

Setting	Description
Authentication Types	Specifies how users can sign in to the site, and how they access it after signing in the first time. Authentication verifies a user's identity. For more information, see Authentication.
Default Authentication Type for Embedded Views	Specifies how users can sign in to embedded views. By default, Tableau authentication is selected.
Manage Users	Lets you add new users to the site or change the site role and authentication method for existing users.
Automatic Provisioning and Group Synchronization (SCIM)	Allows you to manage users on the site through a third-party identity provider (IdP). When enabled, the Base URL and Secret boxes are populated with values to use in the IdP SCIM configuration. For more information, see Automate User Provisioning and Group Synchronization through an External Identity Provider.
Connected Clients	Allows Tableau clients such as Tableau Mobile, Tableau Bridge, and others to stay authenticated to the server after a user provides sign-in credentials the first time. When turned off, users are required to sign in explicitly each time they visit Tableau Online. For more information, see Access Sites from Connected Clients.
App Lock for Tableau Mobile	Requires a biometric method or device passcode for users to open this site on Tableau Mobile. For more information, see Enable App Lock for Added Security in the Tableau Mobile Deployment Guide.

Bridge section (Tableau Online)

Setting	Description
Client Not Running Notifications	Sends email alerts to data source owners when a client appears to be disconnected from the site.
Allow Load Balancing (Pooling)	Distributes live queries and refresh jobs across all clients in a pool. For more information, see Enable pooling.

Extensions section

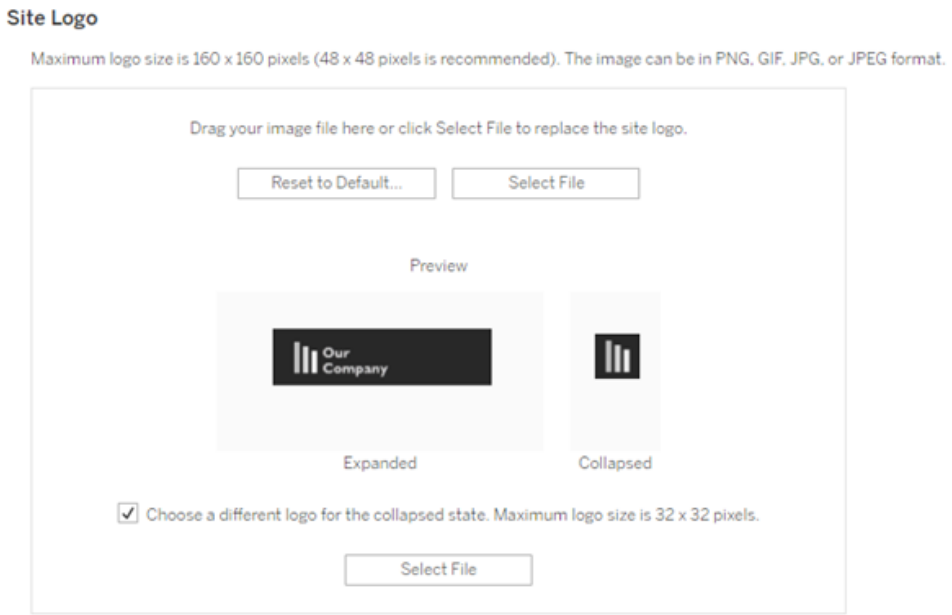
Setting	Description
Dashboard Extensions	Manage and control dashboard extensions. Dashboard extensions are web applications that run in custom dashboard zones and can interact with the rest of the dashboard. For more information, see "Manage Dashboard Extensions" in Tableau Online Help or Tableau Server Help.
Analytics Extensions	Enables a set of functions that your users can use to pass expressions to analytics extensions for integration with R and Python. For more information, see "Configure Connection with Analytics Extensions" in Tableau Online Help or Tableau Server Help.

Upload a Custom Logo for your Site

To incorporate brand identity into your site header, you can change the Tableau logo to your own logo.

1. Sign in to Tableau Online as a site administrator.
2. On the site you want to show your logo, click **Settings**.
3. In the **Site Logo** section, do either of the following:

- Drag the image file from your computer to the area indicated on the **Settings** page.



- Click **Select File** to open a dialog box where you can browse to and select the image file.

The preview area updates to show how your image will look in the space provided in the header.

4. (Optional) If your logo doesn't fit quite right in the available space, and you want to make adjustments outside of Tableau before uploading it, you can do either of the following:

   - Click **Reset to Default** to show the original Tableau logo.
   - Click **Revert** to go back to the last saved settings. This is useful if you already have a custom logo in place but want to try a different one.

5. Click **Save**.

Image file tips

- The recommended image size is 48 x 48 pixels, up to 160 x 160 pixels (the maximum).
- Images that have a transparent background and light colors work best against the near-black background of the Tableau Online site.

Dashboard-based Custom Portals

Note: This overview was inspired by the work of Tableau Zen Master Mark Jackson. For more details about the process, check out Mark's blog.

The standard Tableau Online or Tableau Server interface works great for many organizations, but if you want to create a company-branded experience and don't have API developer skills, consider creating a custom portal based on a Tableau dashboard. A custom portal lets you organize content around specific departments or job roles, and you can even incorporate training that helps people interact with data more fully. As the volume of Tableau content grows, a custom portal guides your users directly to the data they need, while providing ready access to related views and Tableau Online search so they can easily explore further.

Sketch out a portal design

Begin outside of Tableau, on paper or in a wireframing application. Consider the structure of your organization and the number of Tableau views that apply to each group of users. Do you simply need one level of navigation that points immediately to content? Or might you need to start with a main page that provides navigational links for separate groups of users or report types, followed by a second level with related dashboards and views?

After you get buy-in on your design from key stakeholders and data consumers, you're ready to move on to the next phase.

Gather images for logos and navigation elements

Start thinking about images while refining your initial mockup, and then gather them from libraries of clip-art or approved brand graphics, or create them from scratch in an application like Photoshop or SnagIt. PowerPoint can also be a good source if you plan to create navigation thumbnails of common chart types.

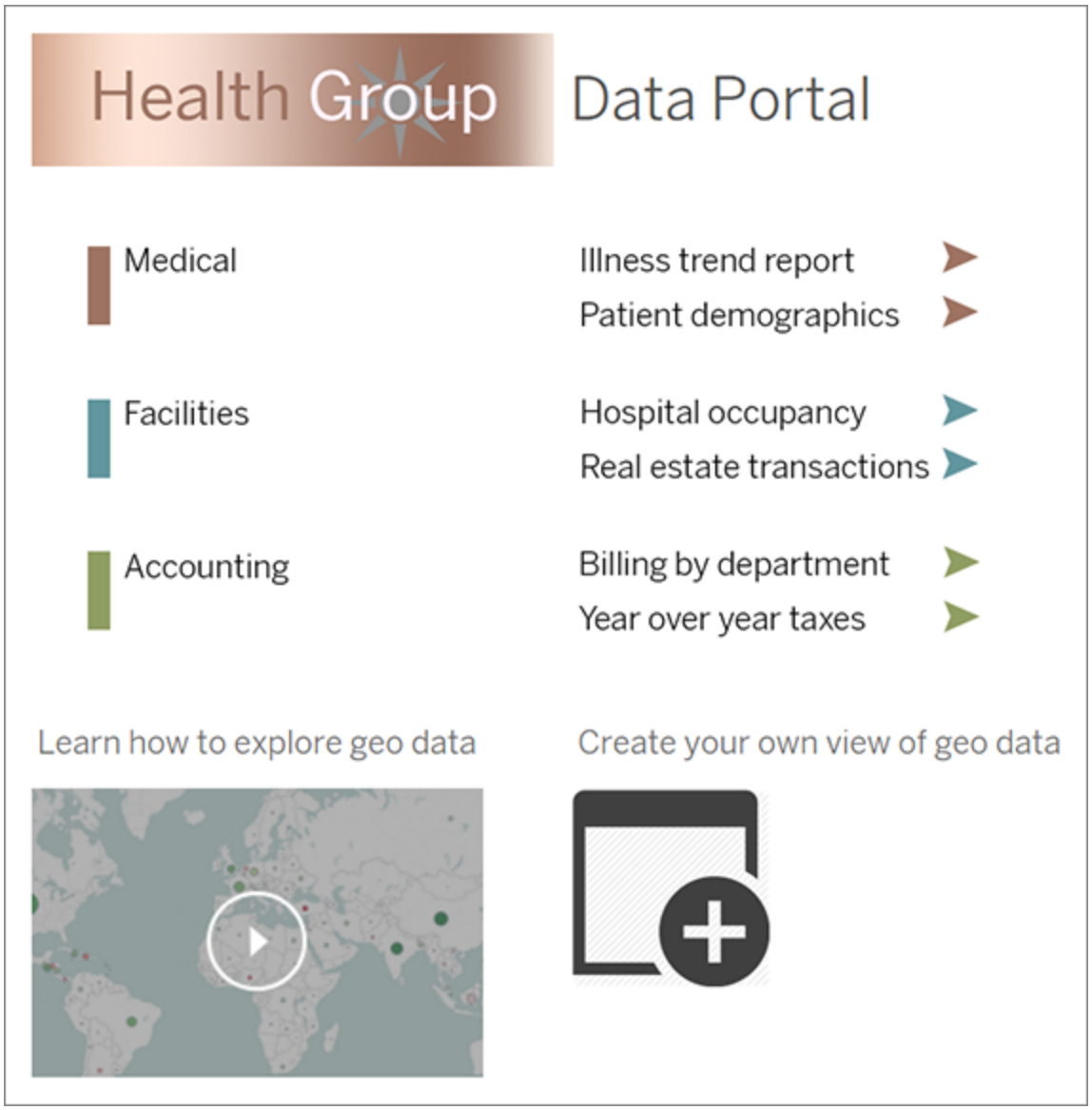
Lay out text, images, and selected sheets on a dashboard

Create a workbook with a dashboard for the portal, using a tiled layout for more predictable positioning and scaling of elements on different devices. Then start adding Text and Image objects, as well as any sheets for data views you want to highlight right up front in your portal. To refine spacing between these dashboard elements, insert Blank objects and adjust their size. For more information, see Create a Dashboard.

Link dashboard elements to content

If you have a second level of navigation in your portal, use filter actions to point to a secondary dashboard from the main one. To create links that directly open data views, right-click Image objects and choose Set URL. (In our example below, each colored arrow and accompanying text is an image that links to a view URL.) You can even point to empty views with preloaded data sources, encouraging users to create new Tableau content in the web-authoring workspace.

Tip: To add hyperlinks to text objects, include the full URL (for example, `http://www.tableau.com`).



Publish, test, and refine your portal

Publish the workbook to your server and distribute the dashboard URL to your users. Portal design, like data analysis itself, is a cyclical process. Now that your portal is out in the wild, start gathering user feedback so you can continuously improve the experience

> **Tip:** As a finishing touch, hide the Tableau toolbar to give your portal a custom feel. After the question mark at the end of the dashboard URL, add `:embed-d=y&:toolbar=n`

Set the Default Start Page for All Users

In a new site, when users sign in to the Tableau Online web authoring environment, they are taken to the Home screen, which displays a role-based welcome banner. Home also displays recent views, favorites, and the site's most-viewed content. As the administrator, you can change users' default landing page at the site level. For example, you can show all workbooks, and when the user signs in, they see the workbooks they have access to.

To set the default start page for all users

1. Display the page or filtered view you want to be the default page users see when they sign in to the site.
2. Select your profile icon in the upper right area of the page.
3. To set the start page for all users on a site, click **Set as Start Page** and **For Users on this Site**.

User-set start pages and hierarchy

Users can set their own start pages from their profile icon, and can reset their start pages in their account settings (for information, search for "Access Your Profile and Account Settings" in the online Tableau Server Help for your operating system).

If a user sets their own start page, it will override any start page set for the site. The next time that user signs into Tableau Online, they will land on the start page that they've set. If neither a user or an administrator has set a start page, users will default to Home.

Set the Site Time Zone for Extracts

The default time zone for extract-based data sources in a site is Coordinated Universal Time (UTC). Site administrators can set a different time zone.

To set the site time zone for extracts:

1. Sign in as a site administrator.
2. On the site you want to configure, click `Settings`.
3. In the `Site Time Zone for Extracts` section, select a time zone and then click `Save`.

In calculated fields, functions such as NOW() or TODAY() look at the time zone. For more information about Extracts, see Extract Your Data in the Tableau Desktop help.

The timezone setting, in addition to being used for extract-based data sources, also affects internal extracts. One example is when Tableau connects to file-based data sources like text files, it automatically creates an extract in the backend. Another example is data integration, where Tableau uses an extract in the backend to integrate data from different sources.

Tableau Online Site Capacity

Your Tableau Online site comes with capacity to support all your users' analytic needs. A site's capacity includes capacity for storage and tasks that need to be performed on the site for extracts, metrics, subscriptions, and flows.

Summary

The following table summarizes the capacity allowances for your site by feature. You can find more capacity information by the features listed below.

	Capacity Type	Capacity Allowance

	Capacity Type	Capacity Allowance
Storage	Site	100 GB
	Individual workbook, published data source, or flow size	15 GB
Extract refreshes	Daily refreshes	Up to 8 backgrounder hours per Creator license
	Concurrent refreshes	Up to 10 jobs
	Individual refresh runtime	2 hours
Metrics	Daily refreshes	Up to 8 backgrounder hours per Creator license
	Concurrent refreshes	Up to 10 jobs
	Individual runtime	2 hours
Subscriptions	Concurrent subscriptions	Up to 10 jobs
	Individual subscription runtime	2 hours
	Individual email size	2 MB
Flows	Concurrent flows	1 per Resource Block
	Individual flow runtime	See Job runtime capacity.
Visualizations	Load time	Up to 5 minutes
	Query usage size	20 GB

	Capacity Type	Capacity Allowance

Storage capacity

A Tableau Online site comes with site and individual content storage capacities.

- **Site storage:** A site comes with 100 GB of storage capacity. Workbooks, published data sources, and flows count toward this storage capacity.
- **Individual workbook, published data source, and flow size:** An individual workbook, data source (live or extract), or flow published to your site can have a maximum size of 15 GB.

  Note: If your extract data source exceeds 10 GB in size, we recommend that you consider either using live connection to the database or aggregate the data in the extract to reduce its size. Frequently republishing or refreshing large extracts can be time intensive and usually indicates that more efficient data freshness strategies should be considered.

Visualization capacity

Each site comes with designated capacity to load and query individual visualizations, also known as views. You can find more information about each capacity type below.

- **Load time:** A site has capacity to spend up to 5 minutes to load a view.
- **Query usage size:** A site has capacity to use no more than 20 GB of memory to query a view that uses an extract data source. The amount of memory needed to query a view can vary depending on the complexity of the data manipulations that Tableau needs to perform to generate the marks in the view.

  Note: Only queries against extract data sources count toward query usage capacity. Queries against data sources that use live connections to the underlying data do not.

However, queries against data sources that use live connections might be subject to other query usage capacity enforced by underlying databases.

Views that exceed one or both capacity types might be canceled to ensure enough system resources are available so that other views on the site can load.

Tips for optimizing visualization capacity

Views that exceed visualization capacity can indicate the queries that Tableau must run in order to generate the view might be too complex. In such cases, you can use the following tips to help optimize queries thereby minimizing the time it takes to load views on Tableau Online. Most tips require that you edit the data source or workbook and republish to Tableau Online for changes to take effect.

For more tips, see the Workbook Performance topic in the Tableau Help.

- **Use data source filters**: When you add a filter on a data source, you reduce the amount of data that needs to be generated in the view. Reducing the amount of data can help minimize load times of views. For more information, see Filter Data from Data Sources in the Tableau Help.
- **Use context filters**: Similar to data source filters, context filters reduce the data in the data source but at the sheet level. Context filters work independently of other filters and can significantly reduce the amount of data that needs to be generated in the view. Reducing the amount of data can help minimize load times of views. For more information, see Improve View Performance with Context Filters in the Tableau Help.
- **Decrease date ranges**: As a rule, dates require more computing power than other types of data like numbers and Booleans. If the view contains date filters, you can reduce the date ranges or the number of dates that need to be generated to help minimize the load times of views.
- **Reduce marks**: Because Tableau must calculate the marks in order to generate the view, the number of marks can impact how quickly the view can load. There are several ways you can reduce marks, including using some of the filters listed above or

using sets to filter, custom SQL to aggregate data, and more. For more information, see Reduce the number of marks in the view.

Job runtime capacity

Job runtime capacity is the period of time that a job, or an instance of a task type, is allowed to run before it's canceled to help protect available system resources. Each site comes with job runtime capacities for the following job types:

- Extract refreshes
- Subscriptions
- Flows
- Metrics

Each extract refresh, subscription, or metrics job type has a maximum runtime of two hours (120 minutes or 7,200 seconds).

Note about flows: For sites that don't have the Data Management Add-on, the maximum runtime for flows jobs for a site is 60 minutes times the number of creator licenses up to a maximum of 24 hours. If your site has large flows workloads, consider purchasing the Data Management Add-onto get more capacity. For sites with the Data Management Add-on, you can run flows for up to 24 hours per day per Resource Block. If you exceed the time limit no new jobs can be started until the next day. Additional capacity for concurrent flow jobs can be purchased. For more information, see Resource Blocks.

Note about extract refreshes: If a refresh job reaches its maximum runtime, you see a timeout error. For more information about the error and ways you can modify extracts to keep refresh jobs within the runtime capacity, see Time limit for extract refreshes.

Concurrent jobs capacity

Concurrent jobs capacity is the number of jobs, or instances of a task type that can run at the same time. Each site comes with concurrent capacities for the following job types:

- Extract refreshes
- Subscriptions

- Flows
- Metrics

You can find more information about the concurrent jobs capacity for each job type below.

- **Extract refreshes:** A site has the capacity to refresh up to 10 extracts concurrently. Depending on available system resources, refresh jobs can run sequentially or in parallel. Jobs that count toward concurrent refresh capacity include scheduled refreshes, manual refreshes, extract creation, and command line or API calls that trigger refreshes, including appending data incrementally.

- **Subscriptions:** A site has the capacity to run up to 10 subscriptions concurrently. Jobs that count toward concurrent subscriptions capacity include generating emails from subscriptions created through Tableau Online directly or API calls that generate the email subscriptions.

- **Flows:** If licensed with the Data Management Add-on, a site has a default capacity of 1 concurrent flow job per Resource Block. Resource Blocks support flow jobs. If not licensed with the Data Management Add-on, a site has a default capacity of 1 concurrent flow job, which is the equivalent of having one resource block. If there are no resource blocks available when a flow job starts, the job goes into a queue to wait for a resource block to be available. Additional capacity for concurrent flow jobs can be purchased. For more information, see Resource Blocks. Each user can have a maximum of 4 active flow web editing sessions at one time. If more sessions are opened, the oldest session will be closed.

- **Metrics**: Each site has the capacity to refresh up to 10 metrics concurrently. For more information about how metrics refresh, see Create and Troubleshoot Metrics.

Note: If a site exhausts its concurrent capacity for a job, other jobs that are in the queue remain in a pending state until one or more jobs have completed.

Daily jobs capacity

Daily jobs capacity is the number of shared hours each site can spend per Creator license a day to perform all jobs on the site. A server process, called backgrounder, initiates and performs these jobs. A site with more Creator licenses gets more daily jobs (backgrounder) capacity to meet the needs of a larger site population.

Each site comes with daily jobs (backgrounder) capacity to perform both extract refresh and metric refresh jobs.

For example:

If your site has...	multiplied by the default time	Daily jobs capacity
10 Creator licenses	8 hours	Up to **80 hours/day**
50 Creator licenses	8 hours	Up to **400 hours/day**

Daily jobs capacity resets each day at 24:00:00 UTC (coordinated universal time).

About extract refreshes

Refresh jobs that count toward daily jobs capacity include full and incremental refreshes and extract creation, which can be initiated by scheduled refreshes, manual refreshes, and certain command line or API calls.

Notes:

- As long your site has time remaining in its daily refresh capacity, a refresh job will run regardless of the time it takes for that refresh job to complete.
- Site admins receive email notifications when a site reaches 70%, 90%, and 100% of its daily refresh capacity.
- If a site exhausts its daily refresh capacity, any future extract refreshes are canceled and email notifications are sent to content owners alerting them of the refresh cancellation.

Tips for optimizing extract refreshes capacity

If you're managing an extract-heavy environment, Tableau recommends following some best practices to make the most efficient use of your site capacity.

- **Stop refreshing unused extracts**. One of the best ways to reclaim capacity for your site is to stop automatic refreshes, either through schedules on Tableau Online or through scripts of extracts that aren't being used. For more information about deleting a refresh schedule, see Manage Refresh Tasks.

- **Reduce the frequency of refreshes**. Another method of reclaiming capacity for your site is to reduce the frequency of extract refreshes. For example, instead of refreshing an extract hourly, consider refreshing an extract daily or only during business hours when fresh data is most useful. For more information about changing a refresh schedule, see Manage Refresh Tasks.

- **Use incremental refreshes instead of full refreshes**. To decrease the amount of time an extract takes to refresh, consider performing an incremental refresh of the extract instead a full refresh. For more information, see Schedule Refreshes on Tableau Online.

  Note: Changing from a full to an incremental refresh can be done from Tableau Online only if the extract was configured for incremental refresh in Tableau Desktop before the extract was published. For more information about incremental refreshes, see Configure an incremental extract refresh in the Tableau User Help.

- **Use live connections instead of extract connections**. For views, dashboards, and workbooks whose data needs to be updated frequently, consider setting up the data source to use a live connection instead of an extract connection.

- **Optimize the data in the extract**. Improving the performance of an extract can also help reduce the amount of time an extract takes to refresh. There are a number of changes you can make to the extract's data to help its overall performance, such as removing unused fields, using filters to remove unused rows, changing date ranges, etc.

About metric refreshes

Metrics that rely on extract data sources refresh when their extract counterparts refresh and therefore count toward daily job capacity.

Note: Metrics that rely on live data sources refresh every 60 minutes and don't count toward daily job capacity.

Jobs initiated by command line and API calls

In addition to daily jobs capacity described above, a site comes with designated jobs capacity for command line and API calls.

- **Initiate extract refresh jobs:** A site comes with designated capacity for tabcmd (refreshextracts), REST API (Run Extract Refresh Task), and Tableau Client (Python) library calls to initiate extract refresh jobs. A site allows 20 total calls per one-hour period.
- **Query or cancel jobs:** A site comes with a designated capacity for REST API (Query Job and Cancel Job), and Tableau Client (Python) library calls that query status information for asynchronous jobs, or cancel pending and in-progress jobs. A site allows 20000 calls per 24-hour period.
- **Initiate publish, update, or refresh jobs:** A site comes with designated capacity for tabcmd (publish), REST API (Publish Workbook, Publish Data Source, Update Workbook, Update Data Source, Update Data Source Now), and Tableau Client (Python) library calls that initiate publish, update, or refresh jobs for workbooks and data sources. A site allows 4000 calls per 24-hour period.

Note: If the number of calls exceed the command line or API calls capacity described above, you see one of the following errors: *Unknown 429* or *ApiCallError: 429000: Too Many Requests – Too many requests for <job type> 'api.rest.refresh_extracts'. Please retry after 146 second(s)*.

Monitor capacity

There are a few tools you can use to help you monitor your site's capacity: Jobs page and Admin views.

Jobs page

The Jobs page gives you detail about the unique instances of backgrounder tasks, called jobs, within the past 24 hours. You can use the jobs page to monitor extract refreshes, subscriptions, and flow jobs.

1. Sign in to Tableau Online using your site admin credentials.
2. In the left navigation pane, click **Jobs**.
3. From the filter drop-down menu, under **Task Type**, select the job type you want to monitor.

For more information on the Jobs page, see Managing Background Jobs in Tableau Online topic.

Admin views

Admin views help you monitor different types activity on your site. You can find more capacity usage information, using admin views, for the features listed below.

- **Storage:** You can monitor your site's storage capacity and check which workbooks, data sources, and flows take up the most space on your site using the "Stats for Space Usage" admin view. Select **Site Status** > **Stats for Space Usage**.
    - Next to **How Is Space Used on This Site**, see the total storage capacity used on your site.
    - Below **What Workbooks, Data Sources and Flows Use the Most Space**, see a list of your site's content and their sizes.

  For more information on this admin view, see Stats for Space Usage topic.

- **Flows:** You can monitor the performance of flow runs. Select **Site Status** > **Flow Performance History**. Using the dashboard, under **Flow History**, click on a mark to see details about the flows job.

  For more information about this admin view, see Performance of Flow Runs in the Tableau Prep Help.

- **Metrics:** You can monitor your site's metrics jobs by using the "Background Tasks for Non Extracts" admin view. Select **Site Status** > **Background Tasks for Non Extracts**, and then from the **Tasks** filter drop-down, select **Update all metrics on a view** check box.

  For more information about this admin view, see Background Tasks for Non Extracts.

Tableau Online System Maintenance

Tableau Online undergoes periodic maintenance to sustain the infrastructure supporting Tableau Online services and deliver enhanced features and functionality. As a Tableau Online administrator, you don't have to worry about managing updates to your site. But we recommend reviewing the reserved maintenance schedule to plan for scheduled downtime and to avoid service interruptions.

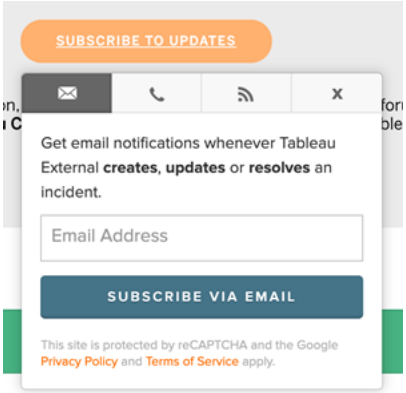
Maintenance Communication

Tableau communicates system maintenance through the Tableau Trust page and notification emails to site administrators.

Tableau Trust notifications

Tableau Trust is where all Tableau Online status updates are posted. Status updates include system maintenance, as well as reported incidents that may affect the use of Tableau Online. You can quickly check the status of your Tableau Online instance by visiting the Tableau Trust page, or by subscribing to Trust to stay informed.

To subscribe to Trust, simply go to https://trust.tableau.com, and click **Subscribe to updates**. You can receive updates by email, SMS message, or RSS notifications whenever Tableau creates, updates, or resolves an incident.



Site Administrator emails

Tableau Online users with the Site Administrator role will automatically receive notification emails about their site. Emails include system maintenance and reported incidents that may affect the use of Tableau Online.

Notification emails will include the date and time, name of the Tableau Online instance, type of maintenance scheduled, impact to users, and estimated time to completion.

Reserved Tableau Online Maintenance Schedule

Tableau has reserved system maintenance windows for sustaining the security, availability, and performance of the infrastructure supporting Tableau Online services. The reserved maintenance schedule will help you plan for scheduled downtime and avoid service interruptions to your Online site. While there is a pre-defined window in which maintenance can occur, there may be months when maintenance is not required.

When maintenance is scheduled, we publish the dates and times of the maintenance windows on the Tableau Trust site. For maintenances that impact an entire Tableau Online instance, Trust notifications are sent to subscribers and site administrators via email. Notifications are sent when the maintenance schedule is posted to Trust and 14-days before the

maintenance will occur. Trust notifications will also be sent at the start and end of each maintenance and 48 hours prior as a reminder. In the event that we need to reschedule maintenance, the maintenance record will be updated on the Trust site, and an email will be sent to Trust subscribers.

> **Note:** If priority maintenance is required, Trust subscribers and Tableau Online site administrators may be notified less than one week in advance.

Whenever possible, and only as maintenance is necessary, Tableau will schedule system maintenance the **first and third weekends of the calendar month** during the windows listed in the table below. Plan the maintenance activities for your organization (software upgrades, integration changes, etc.) outside of the Tableau system maintenance windows for your instance(s). In extreme circumstances, there may be times when system maintenance is scheduled outside of these windows to maintain system availability, performance, and security of the Tableau Online infrastructure.

Reserved System Maintenance Windows				
Region	**Instance**	**Interval**	**Local Time**	**UTC**
United States - West	10ay, 10az, us-west-2b	1st monthly weekend 3rd monthly weekend	Saturday, 08:00 - 14:00 PST	Saturday, 16:00 – 22:00
United States - East	prod-us-east-a, prod-us-east-b, us-east-1	1st monthly weekend 3rd monthly weekend	Sunday, 11:00 - 17:00 EST	Sunday, 16:00 – 22:00
Europe - West	dub01, eu-west-1a, prod-uk-a	1st monthly weekend	Saturday, 02:00 - 08:00 CET	Saturday, 01:00 – 07:00

		3rd monthly weekend		
Asia Pacific - Japan	prod-apnorth-east-a	1st monthly weekend 3rd monthly weekend	Sunday, 01:00 - 07:00 JST	Saturday, 16:00 – 22:00
Asia Pacific - Australia	prod-apsouth-east-a	1st monthly weekend 3rd monthly weekend	Sunday, 03:00 - 09:00 AEST	Saturday, 16:00 – 22:00

Note: Local maintenance windows use Standard Time. The local time may change +/- 1 hour seasonally during Daylight Savings.

Authentication

Authentication refers to the options for how users can sign in to their Tableau Online site, and how they access it after signing in the first time. Authentication verifies a user's identity.

Tableau Online supports the following authentication types, which you can configure on the **Authentication** page.

- **Tableau:** This is the default authentication type, available on all sites, requiring no additional configuration steps before you add users. Tableau credentials are made up of user name and password, which are stored with Tableau Online. Users enter their credentials directly on the Tableau Online sign-in page.
- **Google:** If your organization uses Google applications, you can enable Tableau

Online to use Google accounts for single sign-on (SSO) via OpenID Connect. When you enable Google authentication, users are directed to the Google sign-in page to enter their credentials, which are stored by Google.

- **SAML:** Another way to use SSO is through SAML. To do this, you use a third-party identity provider (IdP), and configure the site to establish a trust relationship with the IdP. When you enable SAML, users are directed to the IdP's sign-in page, where they enter their SSO credentials, already stored with the IdP.

If you enable Google or SAML authentication on your site, you can select which users you want to sign in using external credentials, and which to use Tableau credentials. You can allow TableauID and one external provider on a site, but each user must be set to use one or the other type. You can configure user authentication options on the **Users** page.

Important: In addition to these requirements, we recommend that you dedicate a site administrator account that is always configured for Tableau authentication. In the event of an issue with SAML or the IdP, a dedicated TableauID account ensures that you always have access to your site.

Allowing direct access from Tableau connected clients

By default, after users provide their credentials to sign in to a site, they can subsequently access the Tableau Online site directly from a *connected* Tableau client. To learn more, see Access Sites from Connected Clients.

Access Sites from Connected Clients

By default, Tableau Online allows users to access their sites directly from a Tableau *client*. It allows this access after the user provides credentials the first time they sign in from the client. A client in this case is a Tableau application or service that can exchange information with Tableau Online. Examples of Tableau clients include Tableau Bridge, Tableau Mobile 9.2 and later, and Tableau Desktop 9.2 and later.

Tableau Online establishes a *connected client* by creating a secure access token that uniquely identifies a user when the user signs in from the client.

Opt out of allowing connected clients

Site administrators can turn off this functionality, to require users to sign in explicitly each time they visit Tableau Online.

Opting out is recommended if SAML is enabled on your site, and you want to ensure that users do not have access to Tableau Online when they are removed from the IdP's SAML directory.

1. Sign in to your Tableau Online site with site administrator credentials.
2. Select **Settings**, and then select the **Authentication** tab.
3. Under **Connected clients**, clear the **Let clients automatically connect to this Tableau Online site** check box.

If you opt out of connected clients, keep the following points in mind:

- Some clients provide a Remember Me check box, which users can select to remember their user name. Users always need to provide their password.
- For sites configured for single sign-on using SAML authentication, users have direct access to the site after they sign in the first time. They can do this if they do not sign out explicitly by selecting the Sign Out link.

Remove a user's connected clients

Site administrators can remove clients (access tokens) associated with a particular user, for example, if the user is no longer a member of the site or is seeing a message about exceeding the maximum number of clients in their account.

1. Select **Users**, and on the Site Users page, select the link on the user's display name.
2. On the user's page, select the **Settings** tab.

3. In the **Connected clients** section, remove the appropriate clients.

Users also can go to their own account settings page to remove specific clients.

See also

Sign In to Tableau Online

OAuth Connections

Stay Connected with Automatic Sign-In (Tableau User Help)

SAML

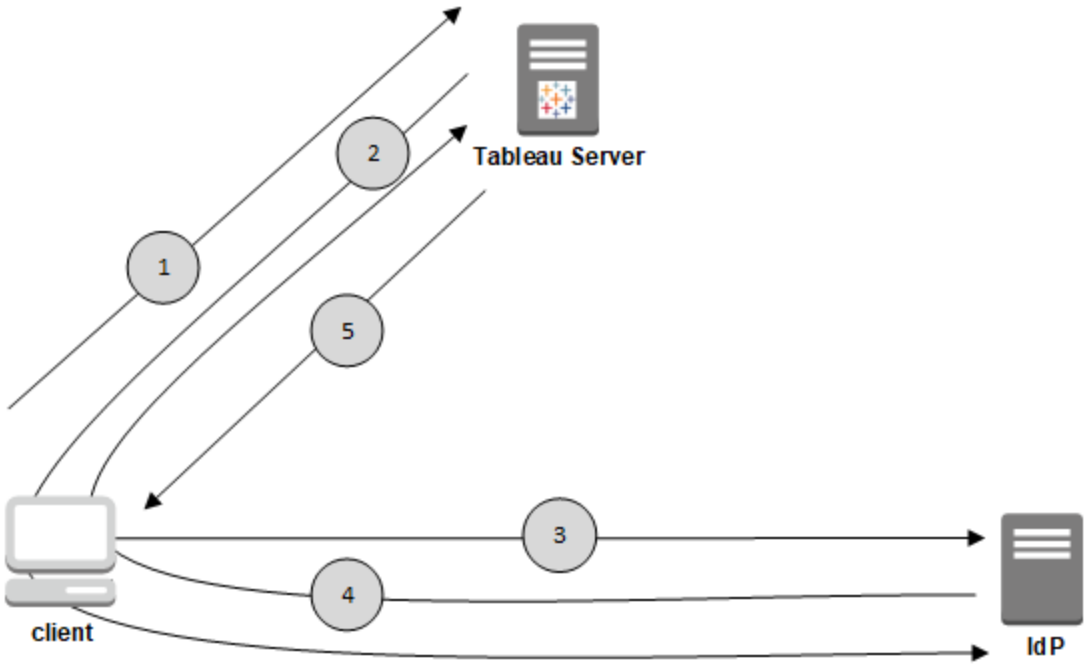
SAML (Security Assertion Markup Language) is an XML standard that allows secure web domains to exchange user authentication and authorization data. You can configure Tableau Online to use an external identity provider (IdP) to authenticate users over SAML 2.0. No user credentials are stored with Tableau Online, and using SAML enables you to add Tableau to your organization's single sign-on environment.

If you want to use site-specific SAML, you must configure server-wide SAML before you configure individual sites. Server-side SAML does not need to be enabled for site-specific SAML to function, but it must be configured.

User authentication through SAML does not apply to permissions and authorization for Tableau Online content, such as data sources and workbooks. It also does not control access to underlying data that workbooks and data sources connect to.

> **Note:** Tableau Online supports both service provider initiated and IdP initiated SAML in browsers and in the Tableau Mobile app. SAML connections from Tableau Desktop must be service provider initiated.

The following image shows the steps to authenticate a user with single sign-on in a typical service provider initiated flow:



1. User navigates to the Tableau Online sign-in page or clicks a published workbook URL.
2. Tableau Online starts the authentication process by redirecting the client to the configured IdP.
3. The IdP requests the user's username and password from the user. After the user submits valid credentials, the IdP authenticates the user.
4. The IdP returns the successful authentication in the form of a SAML Response to the client. The client passes the SAML Response to Tableau Online.
5. Tableau Online verifies that the username in the SAML Response matches a licensed user stored in the Tableau Server Repository. If a match is verified, then Tableau Online responds to the client with the requested content.

SAML Requirements for Tableau Online

Before you configure SAML for Tableau Online, obtain what you need to meet the requirements.

Identity provider (IdP) requirements for Tableau configuration

SAML compatibility notes and requirements

Using SAML SSO in Tableau client applications

Effects on Tableau Bridge of changing authentication type

XML data requirements

Identity provider (IdP) requirements for Tableau configuration

To configure Tableau Online for SAML, you need the following:

- **Administrator access to your Tableau Online site.** You must have administrator access to the Tableau Online site on which you want to enable SAML.
- **List of users who will use SSO to access Tableau Online.** You should gather the email addresses for the users you want to allow single-sign-on access to Tableau Online.
- **IdP account that supports SAML 2.0.** You need an account with an external identity provider. Some examples are PingFederate, SiteMinder, and Open AM. The IdP must support SAML 2.0. You must have administrator access to that account.
- **SHA256 is used as signing algorithm.** As of May 2020, Tableau Online blocks IdP assertions and certificates that are signed with the SHA-1 algorithm.
- **IdP provider that supports import and export of XML metadata.** Although a manually created metadata file might work, Tableau Technical Support cannot assist with generating the file or troubleshooting it.
- **IdP provider that enforces a maximum token age of 24 days or less (2073600 seconds).** If the IdP allows a maximum age of tokens that is a greater length of time than the maximum age setting on Tableau Online (2073600 seconds), then Tableau Online will not recognize the token as valid. In this scenario, users will receive error

messages (*The sign-in was unsuccessful. Try again.*) when attempting to log in to Tableau Online.

Important: In addition to these requirements, we recommend that you dedicate a site administrator account that is always configured for TableauID authentication. In the event of an issue with SAML or the IdP, a dedicated TableauID account ensures that you always have access to your site.

SAML compatibility notes and requirements

- **SP or IdP initiated**: Tableau Online supports SAML authentication that begins at the identity provider (IdP) or service provider (SP).
- **tabcmd and REST API**: To use tabcmd or the REST API, users must sign in to Tableau Online using a TableauID account.
- **Cleartext assertions**: Tableau Online does not support encrypted assertions.
- **Tableau Bridge reconfiguration required**: Tableau Bridge supports SAML authentication, but an authentication change requires reconfiguring the Bridge client. For information, see Effects on Tableau Bridge of changing authentication type.
- **Required signature algorithm**: For all new SAML certificates, Tableau Online requires the SHA256 (or greater) signature algorithm.

Using SAML SSO in Tableau client applications

Tableau Online users with SAML credentials can also sign in to their site from Tableau Desktop or the Tableau Mobile app. For best compatibility, we recommend that the Tableau client application version matches that of Tableau Online.

Connecting to Tableau Online from Tableau Desktop or Tableau Mobile uses a service provider initiated connection.

Redirecting authenticated users back to Tableau clients

When a user signs in to Tableau Online, Tableau Online sends a SAML request (`AuthnRequest`) to the IdP, which includes the Tableau application's **RelayState** value. If the user has signed in to Tableau Online from a Tableau client such as Tableau Desktop or Tableau Mobile, it's important that the RelayState value is returned within the IdP's SAML response back to Tableau.

When the RelayState value is not returned properly in this scenario, the user is taken to their Tableau Online home page in the web browser, rather than being redirected back to the application they signed in from.

Work with your Identity Provider and internal IT team to confirm that this value will be included as part of the IdP's SAML response.

Effects on Tableau Bridge of changing authentication type

When you change the site's authentication type, publishers who use Tableau Bridge for scheduled extract refreshes will need to unlink their Bridge client and re-authenticate using the new method.

Unlinking the Bridge client removes all data sources, so users will also need to set up all of their refresh schedules again. The change in authentication type does not affect Bridge live queries or refreshes that run directly from the Tableau Online site (such as for underlying data in the cloud).

We recommend that you alert Bridge users to changes in their site authentication before you make it. Otherwise, they will become aware through authentication errors they get from the Bridge client, or when the client opens with a blank data source area.

XML data requirements

You configure SAML using XML metadata documents that are generated by Tableau Online and by the IdP. During the authentication process, the IdP and Tableau Online exchange authentication information using these XML documents. If the XML does not

meet the requirements, errors can occur when you configure SAML or when users try to sign in.

Tableau Online only supports HTTP POST requests for SAML communications. HTTP Redirect is not supported. In the SAML metadata XML document that is exported by the IdP, the **Binding** attribute must be set to **HTTP-POST**.

Enable SAML Authentication on a Site

This topic explains how to enable SAML on the site and select single sign-on users. It also provides steps for switching from SAML to the default TableauID authentication. Before you enable SAML, we recommend that you review the SAML Requirements for Tableau Online, including Effects on Tableau Bridge of changing authentication type.

This topic assumes you are familiar with the information in Authentication and How SAML Authentication Works.

IdP-specific configuration information

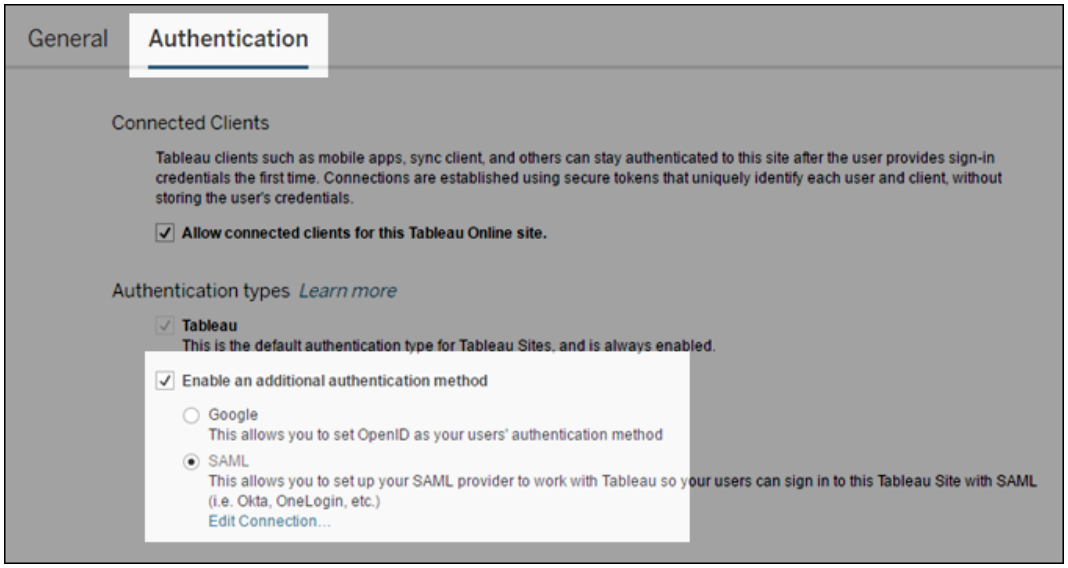
The steps in the sections later in this topic provide basic steps that you can use with your IdP's documentation to configure SAML for your Tableau Online site. You can get IdP-specific configuration steps for the following IdPs:

- Configure SAML with Azure Active Directory
- Configure SAML with OneLogin
- Configure SAML with PingOne
- Configure SAML with Okta
- Configure SAML with Bitium (links to Bitium Support Center)
- Configure SAML with Salesforce

Enable SAML

1. Sign in to your Tableau Online site as a site administrator, and select **Settings** > **Authentication**.

2. On the **Authentication** tab, select **Enable an additional authentication method**, select **SAML**, and then select **Edit connection**.



SAML configuration steps

This section takes you through the configuration steps that appear on the **Authentication** page in the Tableau Online web UI. In a self-hosted Tableau Server installation, this page appears only when support for site-specific SAML is enabled at the server level. It is enabled by default in Tableau Online.

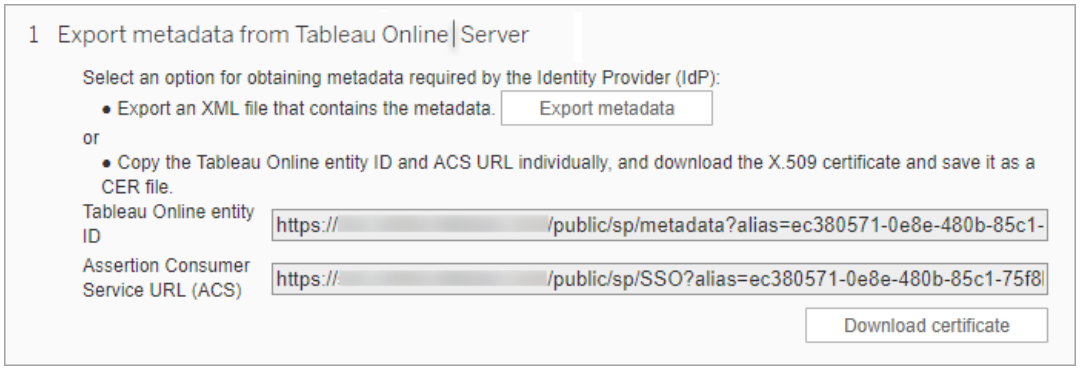
> **Note:** To complete this process, you will also need the documentation your IdP provides. Look for topics that refer to configuring or defining a service provider for a SAML connection, or adding an application.

Step 1: Export metadata from Tableau

To create the SAML connection between Tableau Online and your IdP, you need to exchange required metadata between the two services. To get metadata from Tableau Online, do either of the following steps. See the IdP's SAML configuration documentation to confirm the correct option.

- Select **Export metadata** to download an XML file that contains the Tableau Online SAML entity ID, Assertion Consumer Service (ACS) URL, and X.509 certificate.
- Select **Download signing and encryption certificate** if your IdP expects the required information in a different way. For example, if it wants you to enter the Tableau Online entity ID, ACS URL, and X.509 certificate in separate locations.

  The following image has been edited to show that these settings are the same in Tableau Online and Tableau Server.



Steps 2 and 3: External steps

For Step 2, to import the metadata you exported in step 1, sign in to your IdP account, and use the instructions provided by the IdP's documentation to submit the Tableau Online metadata.

For Step 3, the IdP's documentation will guide you also in how to provide metadata to a service provider. It will instruct you to download a metadata file, or it will display XML code. If it

displays XML code, copy and paste the code into a new text file, and save the file with a .xml extension.

Step 4: Import IdP metadata to the Tableau site

On the **Authentication** page in Tableau Online, import the metadata file that you downloaded from the IdP or configured manually from XML it provided.

Step 5: Match attributes

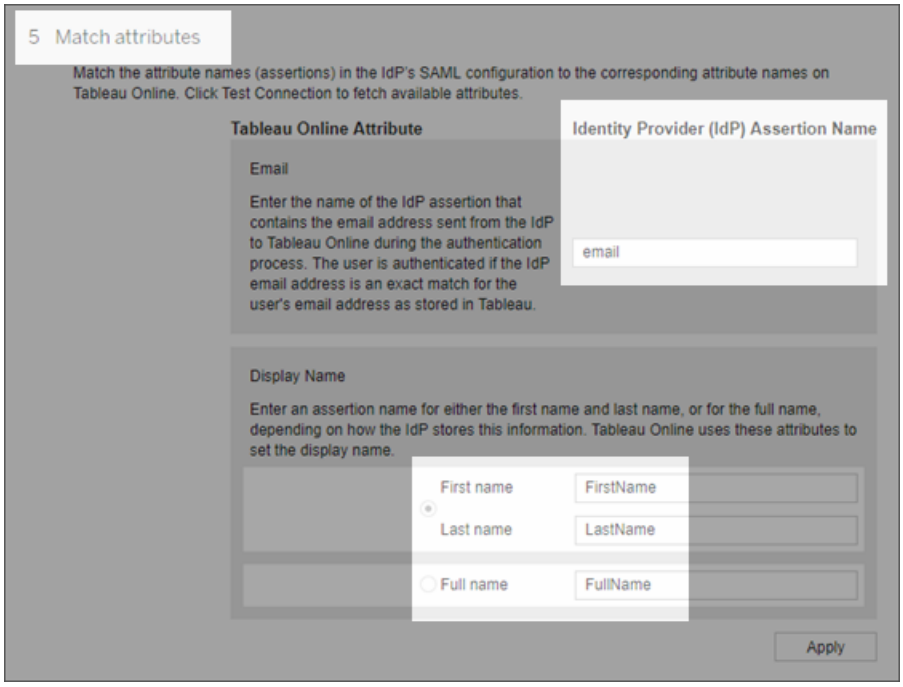
Attributes contain authentication, authorization, and other information about a user. In the **Identity Provider (IdP) Assertion Name** column, provide the attributes that contain the information Tableau Online requires.

- **Email:** (Required) Enter the name of the attribute that stores users' email addresses.

- **Display name:** (Optional but recommended) Some IdPs use separate attributes for first and last names, and others store the full name in one attribute.

  Select the button that corresponds to the way your IdP stores the names. For example, if the IdP combines first and last name in one attribute, select **Display**

name, and then enter the attribute name.



Step 6: Embedding options

Select the method by which users sign in to embedded views. The options are to open a separate pop-up window that displays the IdP's sign-in form, or to use an inline frame (iframe).

> **Caution:** Because iframes can be vulnerable to *clickjacking* attacks, not all IdPs support signing in through an iframe. With clickjacking, the attacker tries to lure users into clicking or entering content. They do this by displaying the page to attack in a transparent layer over an unrelated page. For Tableau Online, an attacker might try to capture user credentials or to get an authenticated user to change settings. For more information, see Clickjacking on the Open Web Application Security Project website.

If your IdP doesn't support signing in through an iframe, select **Authenticate in a separate pop-up window**.

See also Default authentication type for embedded views

Step 7: Troubleshooting

Start with the troubleshooting steps suggested on the Authentication page. If those steps do not resolve the issues, see Troubleshoot SAML.

Manage users

Select existing Tableau Online users, or add new users you want to approve for single sign-on.

When you add or import users, you also specify their authentication type. On the Users page, you can change users' authentication type any time after adding them.

Default authentication type for embedded views

Part of enabling SAML on your site is to specify how users access views embedded in web pages.

- **Allow users to choose their authentication type**

  When you select this, two sign-in options appear where a view is embedded: a sign-in button that uses single sign-on authentication and a link to use TableauID as an alternative.

> **Tip:** With this option, users need to know which alternative to choose. As part of notification you send your users after you add them to the single sign-on site, let them know which type of authentication to use for a variety of sign-in scenarios. For example, embedded views, Tableau Desktop, Tableau Bridge, Tableau Mobile, and so on.

- **Tableau**

  This option requires users to sign in using a TableauID even if SAML is enabled on the site. Generally it's reserved for administrators for troubleshooting issues with embedded views and SAML.

- **SAML**

  With this option, the way SAML users can sign in to embedded views is determined by the setting you select in step 6 above.

Use TableauID authentication

If a site is configured for SAML, you can change the site settings to require some or all users to sign in using TableauID credentials.

- If you no longer want an identity provider to handle authentication for a site, or require all users to sign in with their TableauID credentials, you can change authentication type at the site level.

- If you want to keep SAML enabled for some users, but require others to use TableauID, you can change authentication type at the user level.

  For more information, see Set the User Authentication Type.

Change the site's authentication type

1. Sign in to Tableau Online as a site administrator and select the site.

2. Select **Settings** > **Authentication**.

3. For **Authentication Type**, select **TableauID**.

After you make the SAML configuration inactive, the metadata and IdP information are preserved, so that if you want to enable it again, you do not need to set up the SAML connection with the IdP again.

See also

Access Sites from Connected Clients

Configure SAML with Azure Active Directory

If you've configured Microsoft Azure Active Directory (Azure AD) as your SAML identity provider (IdP), use the information in this topic alongside the Azure AD documentation to add Tableau Online to your single sign-on applications. Completing the steps in this topic requires Azure AD Premium edition.

> **Note:** These steps reflect a third-party application and are subject to change without our knowledge. If the steps described here do not match the screens you see in your IdP account, you can use the general SAML configuration steps, along with the IdP's documentation.

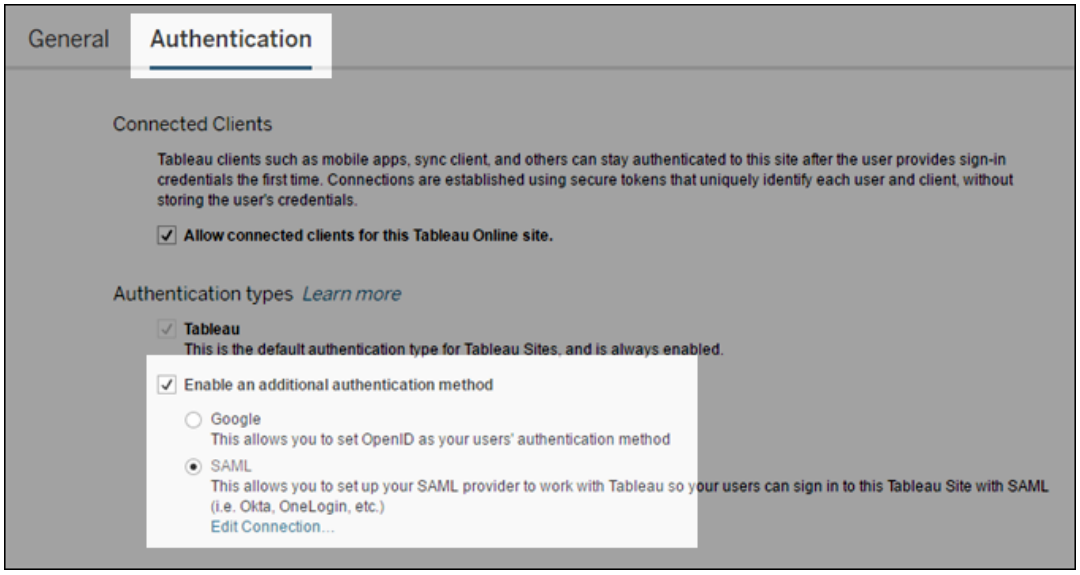
Open the Tableau Online SAML settings

To use Azure AD with Tableau Online, you configure a custom application in the Azure AD management portal. For this you'll need to use information from the Tableau Online SAML settings.

1. Sign in to your Tableau Online site as a site administrator, and select **Settings** > **Authentication**.

2. On the **Authentication** tab, select **Enable an additional authentication method**,

select **SAML**, and then select **Edit connection**.



Add Tableau Online to your Azure AD applications

Taking information from the Tableau Online SAML settings page, complete the steps in the following Microsoft Azure article:

Configuring single sign-on to applications that are not in the Azure Active Directory application gallery.

Use the following table and list for specific values and settings.

For this setting in page 2, Configure App Settings…	…paste this value from the Tableau Online SAML settings
Identifier	The URL specified for the entity ID in step 1.
Reply URL	The Assertion Consumer Service URL in step 1.
Check box settings labeled optional	Clear both check boxes

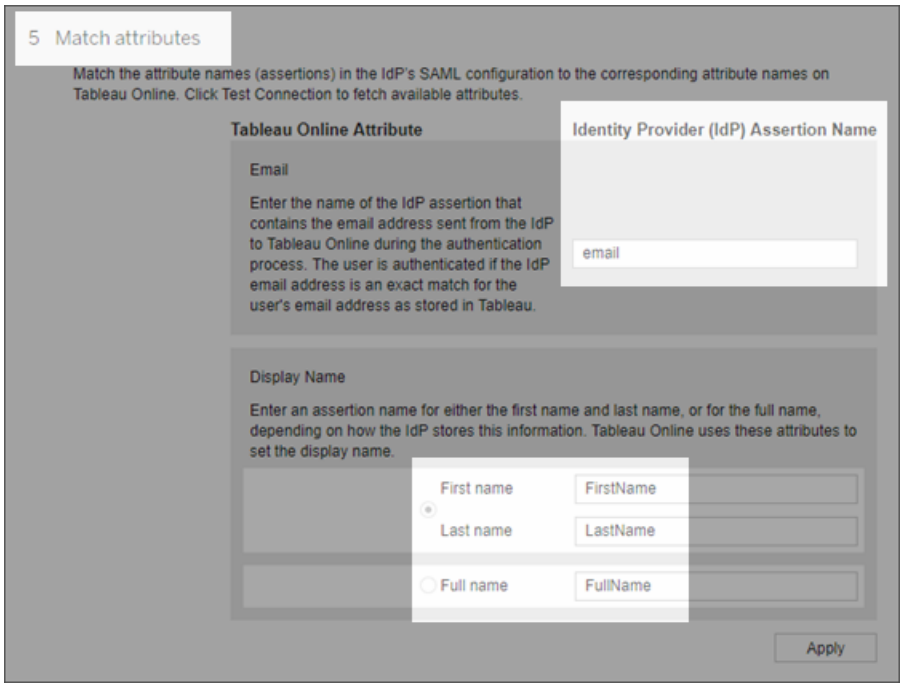
Page 3 of the Azure single sign-on configuration is titled **Configure single sign-on at Tableau Online**. On this page, do the following:

1. Under step 1, download the certificate file.
2. Back in the Tableau Online settings, import the certificate file where indicated in step 4, and click **Apply**.

In the Azure AD configuration, you can ignore step 2, **Configure the certificate and values…**

Match assertions

For step 5 of the Tableau Online SAML settings, you need to change text box values in the **Identity Provider (IdP) Assertion Name** column to show the attributes that Azure AD provides.



1. In the Azure AD management portal, navigate to the **Applications** tab.
2. Select the **Tableau Online** application and then select the **Attributes** tab.

You will plug some of the attributes shown here into the Tableau Online SAML settings.

3. In the Azure AD portal, copy the attribute name given for the email address, and then in the **Identity Provider (IdP) Assertion Name** column in Tableau Online, paste it into the text box for **Email**.

   - If all accounts you're giving access to are sourced from **Microsoft accounts** :this will be `http://s-chem-as.xmlsoap.org/ws/2005/05/identity/claims/emailaddress`
   - If all accounts are sourced from Microsoft Azure Active Directory, use the following value:

     `http://s-chemas.xmlsoap.org/ws/2005/05/identity/claims/name`.
   - If you have a mix of account types, you might need to define a special attribute for all users, and use it instead.

4. Repeat the above step for **First name** and **Last name**, or for **Full name**. These are

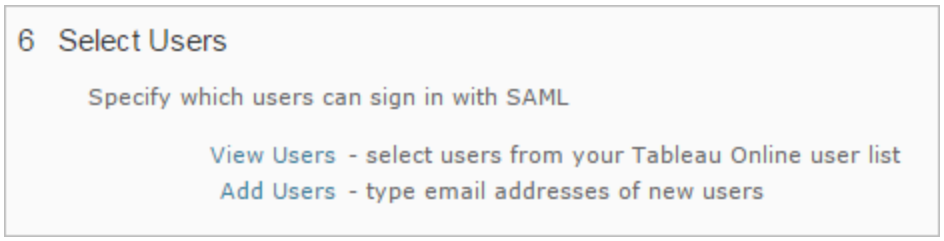
   - `http://s-chemas.xmlsoap.org/ws/2005/05/identity/claims/givenname`
   - `http://s-chemas.xmlsoap.org/ws/2005/05/identity/claims/surname`
   - `http://s-chemas.microsoft.com/identity/claims/displayname`

5. Click **Apply**.

Add users to the SAML-enabled Tableau site

After you complete the Azure AD configuration steps, continue to the Microsoft Azure steps for assigning users to the SAML application.

Then return to your Tableau Online site and complete step 6 to add users.



Configure SAML with AD FS

You can configure Active Directory Federation Services (AD FS) as a SAML identity provider, and add Tableau Online to your supported single sign-on applications. When you integrate AD FS with SAML and Tableau Online, your users can sign in to Tableau Online using their standard network credentials.

> **Note:** These steps reflect a third-party application and are subject to change without our knowledge. If the steps described here do not match the screens you see in your IdP account, you can use the general SAML configuration steps, along with the IdP's documentation.

Prerequisites

Before you can configure Tableau Online and SAML with AD FS, your environment must have the following:

- A server running Microsoft Windows Server 2008 R2 (or later) with AD FS 2.0 (or later) and IIS installed.
- We recommend that you secure your AD FS server (for example, using a reverse

proxy). When your AD FS server is accessible from outside your firewall, Tableau Online can redirect users to the sign in page hosted by AD FS.

- A site administrator account that uses TableauID authentication. If SAML single sign-on fails, you can still sign in to Tableau Online as a site administrator.

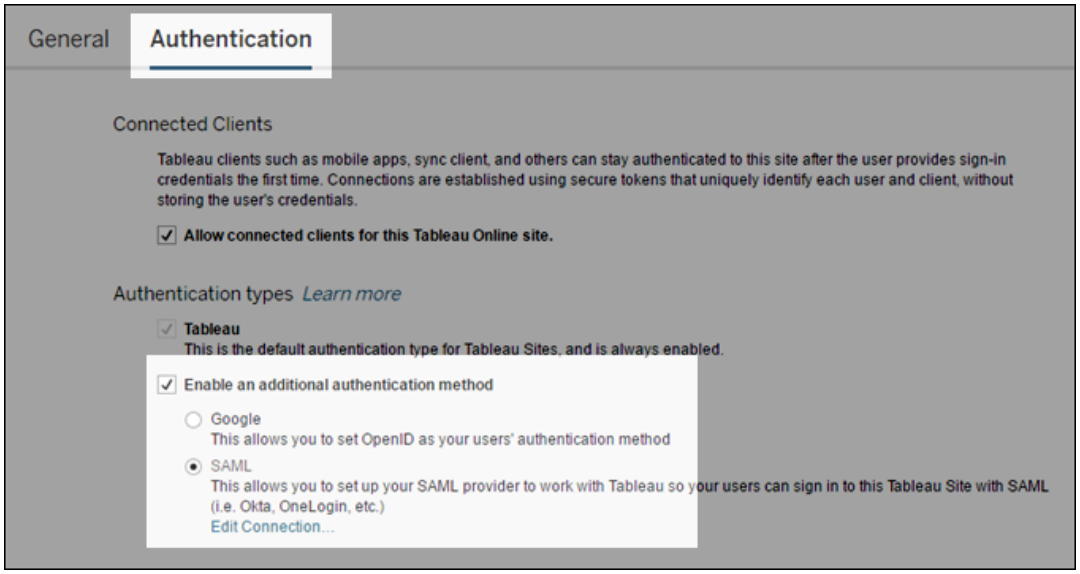
Step 1: Export metadata from Tableau Online

1. Sign in to Tableau Online as a site administrator.

   If you have more than one site for Tableau Online, select the site for which you want to enable SAML in the sites drop-down.

2. Select **Settings** > **Authentication**.

3. On the **Authentication** tab, select **Enable an additional authentication method**, select **SAML**, and then click **Edit Connection**.



4. Under step 1, **Export metadata from Tableau Online**, click **Export metadata** to download an XML file that contains the Tableau Online SAML entity ID, Assertion Consumer Service (ACS) URL, and X.509 certificate.

Step 2: Configure AD FS to accept sign-in requests from Tableau Online

Configuring AD FS to accept Tableau Online sign-in requests is a multi-step process, starting with importing the Tableau Online XML metadata file to AD FS.

1. Do one of the following to open the **Add Relying Party Trust Wizard**:

   Windows Server 2008 R2:

   a. Select **Start menu**> **to Administrative Tools**> **AD FS 2.0**.

   b. In **AD FS 2.0**, under **Trust Relationships**, right-click the **Relying Party Trusts** folder, and then click **Add Relying Party Trust**.

   Windows Server 2012 R2:

   a. Open **Server Manager**, and then on the **Tools** menu, click **AD FS Management**.

   b. In **AD FS Managment**, on the **Action** menu, click **Add Relying Party Trust**.

2. In the **Add Relying Party Trust Wizard**, click **Start**.

3. On the **Select Data Source** page, select **Import data about the relying party from a file**, and then click **Browse** to locate your Tableau Online XML metadata file. By default, this file is named **samlspmetadata.xml**.

4. Click **Next**, and on the **Specify Display Name** page, type a name and description for the relying party trust in the **Display name** and **Notes** boxes.

5. Click Next to skip the **Configure Multi-factor Authentication Now** page.

6. Click Next to skip the **Choose Issuance Authorization Rules** page.

7. Click Next to skip the **Ready to Add Trust** page.

8. On the **Finish** page, select the **Open the Edit Claim Rules dialog for this relying party trust when the wizard closes** check box, and then click **Close**.

Next, you'll work in the **Edit Claim Rules** dialog, to add a rule that makes sure the assertions sent by AD FS match the assertions Tableau Online expects. At a minimum, Tableau Online needs an email address. However, including first and last names in addition to email will ensure the user names displayed in Tableau Online are the same as those in your AD account.

1. In the **Edit Claim Rules** dialog box, click **Add Rule**.
2. On the **Choose Rule Type** page, for **Claim rule template**, select **Send LDAP Attributes as Claims**, and then click **Next**.
3. On the **Configure Claim Rule** page, for **Claim rule name**, enter a name for the rule that makes sense to you.
4. For **Attribute store**, select **Active Directory**, complete the mapping as shown below, and then click **Finish**.

   The mapping is case sensitive and requires exact spelling, so double-check your entries. The table here shows common attributes and claim mappings. Verify attributes with your specific Active Directory configuration.

LDAP Attribute	Outgoing Claim Type
User-Principal-Name	email
Given-Name	firstName
Surname	lastName

If you are running AD FS 2016 or later, then you must add a rule to pass through all claim values. If you are running an older version of AD FS, skip to the next procedure to export AD FS metadata.

1. Click **Add Rule**.
2. Under **Claim rule template,** choose **Pass Through or Filter an Incoming Claim.**
3. Under **Claim rule name**, enter Windows.

4. On the **Edit Rule - Windows** pop-up:
    - Under **Incoming claim type**, select **Windows account name**.
    - Select **Pass through all claim values**.
    - Click **OK**.

Now you will export AD FS metadata that you'll import to Tableau Online later. You will also make sure the metadata is configured and encoded properly for Tableau Online, and verify other AD FS requirements for your SAML configuration.

1. Export AD FS Federation metadata to an XML file, and then download the file from **https://<*adfs server name*>/FederationMetadata/2007-06/FederationMetadata.xml**.

2. Open the metadata file in a text editor like Sublime Text or Notepad++, and verify that it is correctly encoded as UTF-8 without BOM.

   If the file shows some other encoding type, save it from the text editor with the correct encoding.

3. Verify that AD FS uses forms-based authentication. Sign-ins are performed in a browser window, so you need AD FS to default to this type of authentication.

   Edit **c:\inetpub\adfs\ls\web.config**, search for the tag **,** and move the line so it appears first in the list. Save the file so that IIS can automatically reload it.

   > **Note:** If you don't see the **c:\inetpub\adfs\ls\web.config** file, IIS is not installed and configured on your AD FS server.

4. Configure an additional AD FS relying party identifier. This allows your system to work around any AD FS issues with SAML logout.

   Do one of the following:

   Windows Server 2008 R2:

a. In **AD FS 2.0**, right-click on the relying party you created for Tableau Online earlier, and click **Properties**.

b. On the **Identifiers** tab, in the **Relying party identifier** box, enter **https://<tableauservername>/public/sp/metadata** and then click **Add**.

Windows Server 2012 R2:

a. In **AD FS Management**, in the **Relying Party Trusts** list, right-click on the relying party you created for Tableau Online earlier, and click **Properties**.

b. On the **Identifiers** tab, in the **Relying party identifier** box, enter **https://<tableauservername/public/sp/metadata** and then click **Add**.

> **Note**: AD FS can be used with Tableau Server for a single relying party to the same instance. AD FS cannot be used for multiple relying parties to the same instance, for example, multiple site-SAML sites or server-wide and site SAML configurations.

Step 3: Import the AD FS metadata to Tableau Online

1. In Tableau Online, go back to the **Settings** > **Authentication** page.
2. Under **4 Import metadata file into Tableau Online**, in the IdP metadata file box, specify the name of the file you exported from AD FS (FederationMetadata.xml).
3. Skip **5. Match attributes**.

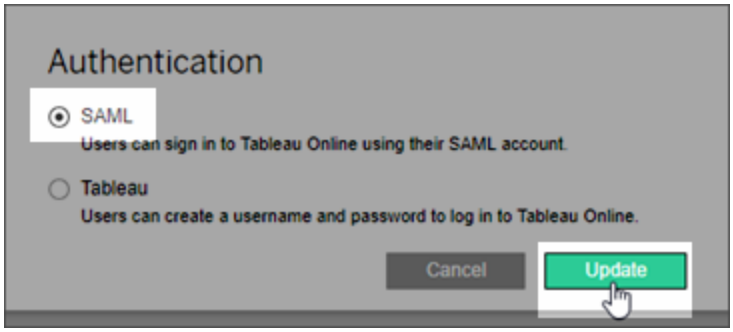
   You’ve already created a claim rule in AD FS to match the attribute names to what Tableau Online expects.
4. Under **6. Manage users**, do one of the following:

- If you haven't added Tableau Online users yet, click **Add users**.

  You can then add users manually using the form, or import a CSV file that contains user information.

- If you have added users to your site already, click **Select users**.

  Select the check box next to the users you want to allow to use SAML sign-in, and then on the **Actions** menu select **Authentication**. Change the authentication method to SAML.



5. (Optional) Test SAML sign in, using the following steps:

   a. Open a private window or session in your web browser.

      For example, in Google Chrome, in the upper right corner of the window click **Customize and control Google Chrome** > **New incognito window**, and then navigate to **https://online.tableau.com**.

   b. Enter the email address of the user. Tableau Online will remove the password field if the user's account is correctly set up for SAML authentication.

   c. Click **Sign in**, and on the AD FS sign-in page, enter your AD credentials.

      After you're authenticated AD FS redirects you to Tableau Online.

Your Tableau Online site is now ready for users to sign in using AD FS and SAML. They still navigate to **https://online.tableau.com**, but after entering their email address, the page

redirects to the AD FS sign-in page (as in the optional test step above), and prompts users for their AD credentials.

> **Note:** If you get errors testing SAML sign-in, in step **7. Troubleshooting single sign-on (SSO)** of the Tableau Online SAML configuration steps, click **Download log file**, and use the information there to troubleshoot the error.

Additional requirements and tips

- After you set up SAML integration between AD FS and Tableau Online, you must update Tableau Online to reflect particular user changes you make in Active Directory. For example, adding or removing users.

  You can add users automatically or manually:

  - **To add users automatically:** Create a script (using PowerShell, Python, or batch file) to push AD changes to Tableau Online. The script can use tabcmd or the REST API to interact with Tableau Online.
  - **To add users manually:** Sign in to the Tableau Online web UI, go to the **Users** page, click **Add Users**, and enter users' email addresses or upload a CSV file that contains their information.

  > **Note:** If you want to remove a user but keep content assets they own, change the owner of the content before you remove the user. Deleting a user also deletes content they own.

- In Tableau Online, a user's email address is their unique identifier. As described in the steps for configuring AD FS to accept sign-in requests from Tableau Online, users' Tableau Online email addresses must match the email address stored in AD.
- In Step 2: Configure AD FS to accept sign-in requests from Tableau Online, you

added a claim rule in AD FS to match the first name, last name, and email address attributes between AD FS and Tableau Online. Alternatively, you can use step **5. Match attributes** in Tableau Online to do the same.

Configure SAML with OneLogin

If you use OneLogin as your SAML identity provider (IdP), you can use the information in this topic to set up SAML authentication for your Tableau Online site.

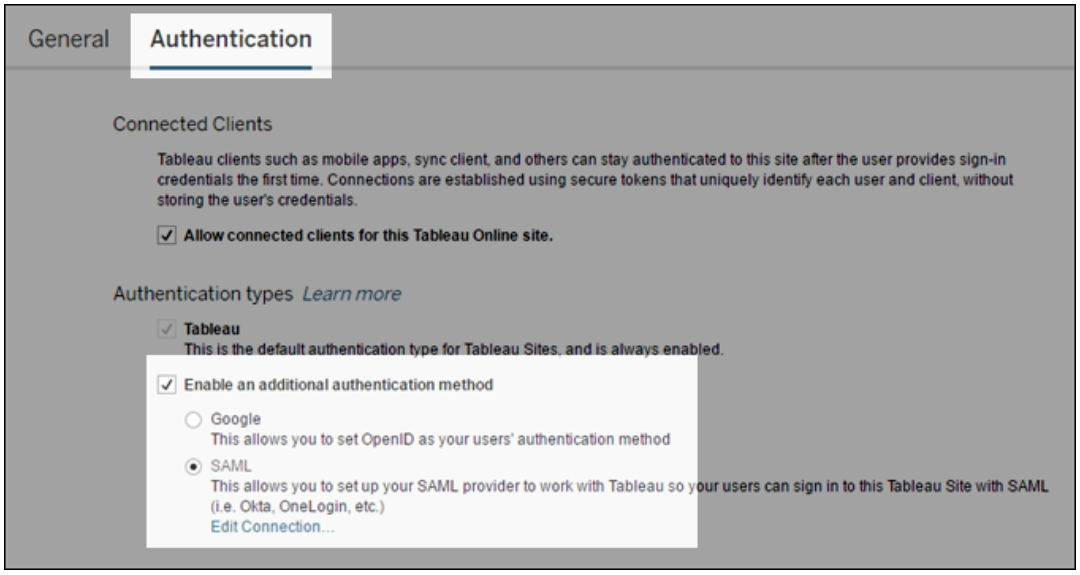
These steps assume that you have permissions for modifying your organization's OneLogin portal, and you are comfortable reading XML and pasting values into attributes.

> **Note:** These steps reflect a third-party application and are subject to change without our knowledge. If the steps described here do not match the screens you see in your IdP account, you can use the general SAML configuration steps, along with the IdP's documentation.

Open the Tableau Online SAML Settings

1. Sign in to your Tableau Online site as a site administrator, and select **Settings** > **Authentication**.
2. On the Authentication tab, select **Enable an additional authentication method**,

select **SAML**, and then select **Edit connection**.



Add Tableau Online to your OneLogin applications

1. Open a new browser tab or window, and sign in to your OneLogin administrator portal.

2. On the **Applications** page, select **Add Apps**. Search for Tableau, and in the results, select **Tableau Online SSO**.

   In this area you configure the SAML connection.

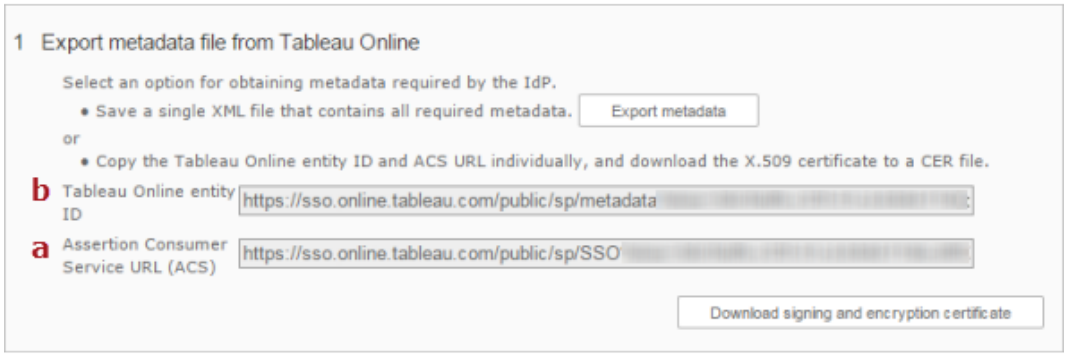
3. On the **Info** page, set up your portal preferences. If you have more than one Tableau Online site, include the site name in the **Display Name** field to help users know which site to select.

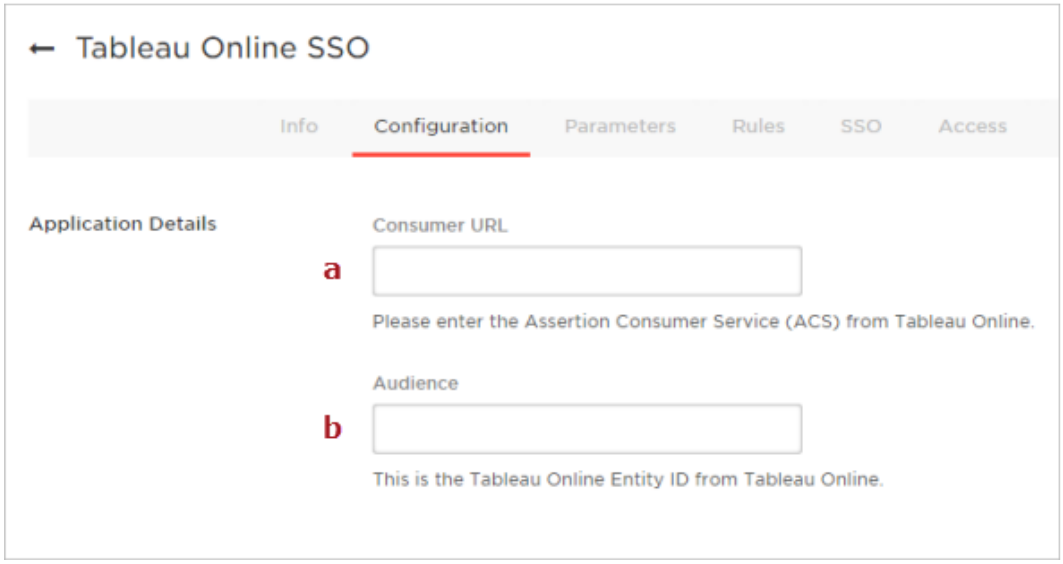
4. On the **Configuration** page, you will use information from **Step 1** on the **Settings** > **Authentication** page in Tableau Online.

   a. For **Consumer URL**, on the **Authentication** page, select and copy the **Assertion Consumer Service URL (ACS)**.

      Return to OneLogin and paste the URL into the **Consumer URL** field.

b. For **Audience**, copy and paste the **Tableau Online Entity ID** from the Authentication page.





5. On the **SSO** page, select **SHA-256** for the **SAML Signature Algorithm**.

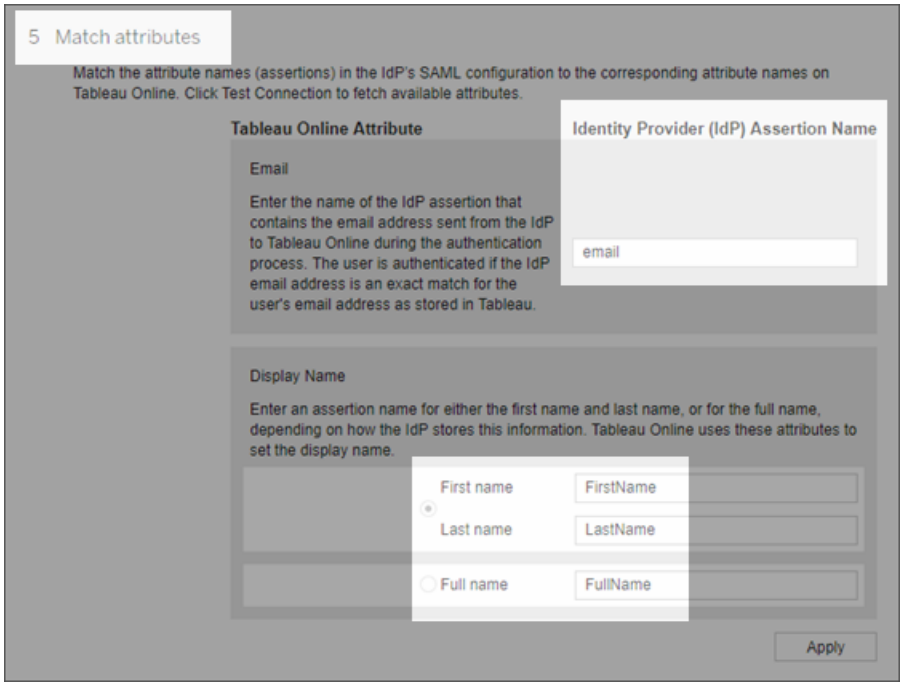
6. On the **Parameters** page, make sure the values appear as follows:

Tableau Online field	Value
Email	Email
Email (attribute)	Email

Tableau Online field	Value
First Name	First Name
Last Name	Last Name

7. Return to the Tableau Online **Authentication** page, and for step 5 Match assertions, set the values in the IdP Assertion Name column as follows:

   - **Email:** Email
   - Select the **First name**, **Last name** radio button.
   - **First name:** FirstName
   - **Last name:** LastName



Configure OneLogin metadata for Tableau Online

For these steps you will find and configure OneLogin information that you will take back to Tableau Online to complete the SAML configuration.

1. On the **SSO** page, select and copy the URI shown in the **SLO Endpoint (HTTP)** field.

   > **Note:** Although the label indicates HTTP, the URI provided is an **https** address, because the SLO (single logout) endpoint uses SSL/TLS encryption.

2. On the same page, select **More Actions** > **SAML Metadata**, and save the file to your computer.

3. Open the metadata file in a text or XML code editor, and within the **IDPSSODescriptor** element, add the following new element:

   ```
   <SingleLogoutService Bind-
   ing="urn:oasis:names:tc:SAML:2.0:bindings:HTTP-Redir-
   ect" Location="slo-endpoint-https-uri-goes-here"/>
   ```

   For the **Location** attribute of the new element, within the quotation marks, paste the SLO endpoint value you copied in step 1 of this procedure.

   The following image shows a sample, with the new element highlighted in yellow, and using a placeholder `123456` in the **Location** value.

```
<?xml version="1.0"?>
<EntityDescriptor xmlns="urn:oasis:names:tc:SAML:2.0:metadata"
entityID="https://app.onelogin.com/saml/metadata/123456">
  <IDPSSODescriptor xmlns:ds="http://www.w3.org/2000/09/xmldsig#"
protocolSupportEnumeration="urn:oasis:names:tc:SAML:2.0:protocol">
    <KeyDescriptor use="signing">
      <ds:KeyInfo xmlns:ds="http://www.w3.org/2000/09/xmldsig#">
        <ds:X509Data>
          <ds:X509Certificate>
          </ds:X509Certificate>
        </ds:X509Data>
      </ds:KeyInfo>
    </KeyDescriptor>
    <NameIDFormat>urn:oasis:names:tc:SAML:2.0:nameid-format:transient</NameIDFormat>
    <SingleLogoutService Binding="urn:oasis:names:tc:SAML:2.0:bindings:HTTP-Redirect"
Location="https://app.onelogin.com/trust/saml2/http-redirect/slo/123456"/>
    <SingleSignOnService Binding="urn:oasis:names:tc:SAML:2.0:bindings:HTTP-Redirect"
```

4. Save the metadata file.

   You will import this file to Tableau Online in the next section.

Complete the SAML configuration

1. On the Tableau Online **Authentication** page, for step 4, import the OneLogin metadata file you saved in the previous section.

2. Because you completed step 5 earlier, you can skip to steps 6 and 7, adding SAML users to your site and testing the connection.

(Optional) Enable iFrame embedding

When you enable SAML on your site, you need to specify how users sign in to access views embedded in web pages. These steps configure OneLogin to allow your OneLogin dashboard to be embedded into an inline frame (iFrame) on another site. Inline frame embedding may provide a more seamless user experience when signing-on to view embedded visualizations. For example, if a user is already authenticated with your identity provider and iFrame embedding is enabled, the user would seamlessly authenticate with Tableau Server when browsing to pages that contain an embedded visualizations.

Caution: Inline frames can be vulnerable to a clickjack attack. *Clickjacking* is a type of attack against web pages in which the attacker tries to lure users into clicking or entering content by displaying the page to attack in a transparent layer over an unrelated page. In the context of Tableau Online, an attacker might try to use a clickjack attack to capture user credentials or to get an authenticated user to change settings. For more information about clickjack attacks, see Clickjacking on the Open Web Application Security Project website.

1. Open a new browser tab or window, and sign in to your OneLogin Administrator Portal.

2. On the **Settings** menu, click **Account Settings**.

3. On the **Basic** page, in **Framing Protection**, select the **Disable Framing Protection (X-Frame-Options)** checkbox.

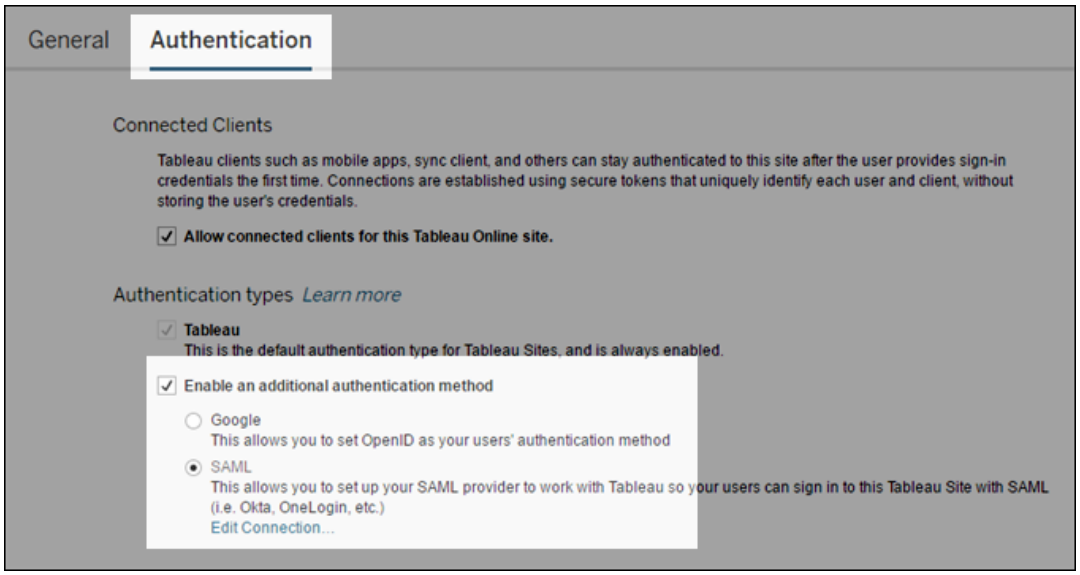
Configure SAML with PingOne

If you use PingOne as your SAML identity provider (IdP), you can use the information in this topic to set up SAML authentication for your Tableau Online site.

> **Note:** These steps reflect a third-party application and are subject to change without our knowledge. If the steps described here do not match the screens you see in your IdP account, you can use the general SAML configuration steps, along with the IdP's documentation.

Get the Tableau Online metadata

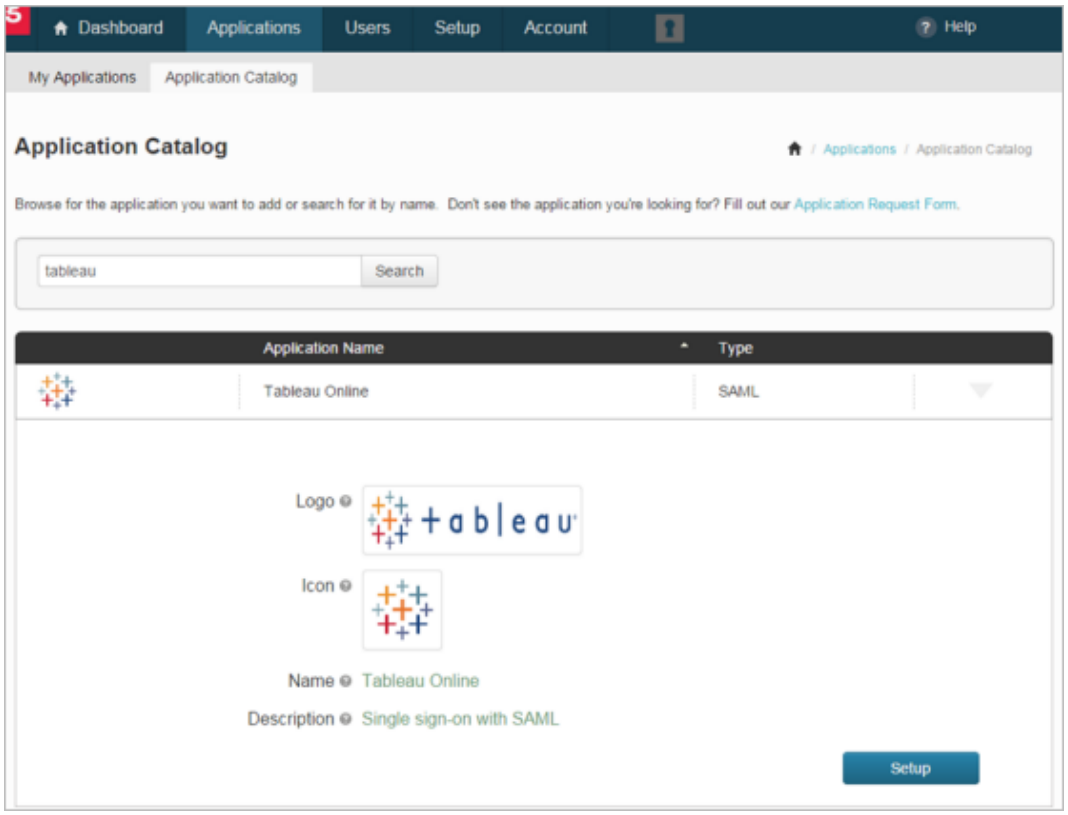
1. Sign in to your Tableau Online site as a site administrator, and select **Settings** > **Authentication**.
2. On the Authentication tab, select **Enable an additional authentication method** > **SAML**.



3. In Step 1, click **Export metadata** and save the metadata file to your computer.

Configure the PingOne connection

1. Sign in to your PingOne account, and click the **Applications** tab.
2. In the **Application Catalog** search for Tableau Online.
3. On the Tableau Online item, click the arrow to expand the item, and then click **Setup**.



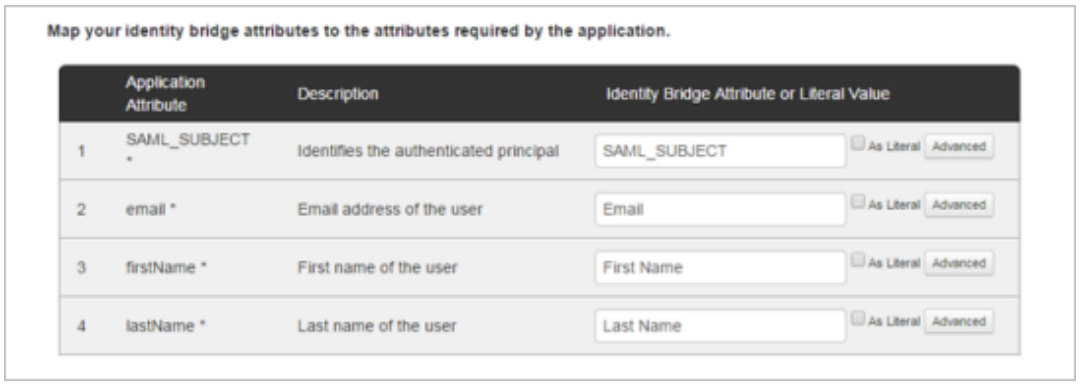
4. On the **1. SSO Instructions** page, click **Continue to Next Step**.

5. On the **2. Configure your connection** page, for **Upload Metadata**, click **Select File**, and upload the metadata file you saved from Tableau Online. Click **Continue to Next Step**.

6. In the table on the **3. Attribute Mapping** page, map attributes as follows:

Application Attribute	Identity Bridge Attribute
email	Email
firstName	First Name
lastName	Last Name

You can ignore the other settings in the table.



Map your identity bridge attributes to the attributes required by the application.

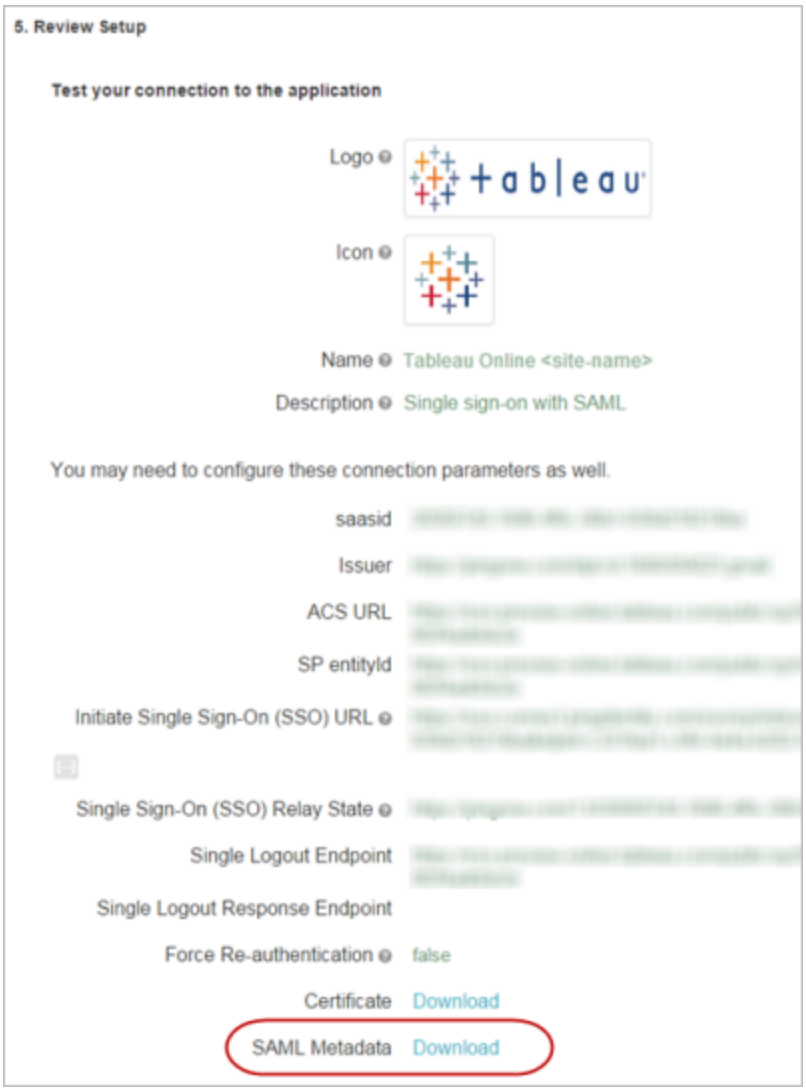
	Application Attribute	Description	Identity Bridge Attribute or Literal Value
1	SAML_SUBJECT *	Identifies the authenticated principal	SAML_SUBJECT As Literal Advanced
2	email *	Email address of the user	Email As Literal Advanced
3	firstName *	First name of the user	First Name As Literal Advanced
4	lastName *	Last name of the user	Last Name As Literal Advanced

Click **Continue to Next Step**.

7. On **4. PingOne App Customization**, consider adding your Tableau Online site name in the **Name** field. This is not required.

   Click **Save & Publish**.

8. On **5. Review Setup**, after reviewing the information you provided, click the **Download** link next to **SAML Metadata**, and save the metadata file to your computer.



Support for single logout

When you import the Tableau Online metadata as part of the PingOne SAML configuration, the certificate embedded in the metadata is not applied to the IdP application definition. This can cause the following error when people sign out of the SAML site:

It looks like the signing certificate has not been configured.

Configure the certificate for the IdP

To resolve the sign-out error, you can download the certificate from Tableau Online, convert it from DER encoded to Base-64 encoded, and then upload it to PingOne.

These steps for converting the certificate are specific to Windows.

1. Return to the **Settings** > **Authentication** page in your Tableau Online site, and make sure the **Single sign-on with SAML** box is checked.

2. In **Step 1, Export metadata file**, click Download signing and encryption certificate and save the .cer file to your computer.

3. Double-click the file you downloaded, click **Open**.

4. In the **Certificate** dialog box, select the **Details** tab and click **Copy to File**.

5. In the Certificate Export Wizard, do the following:

   a. Click **Next** on the opening screen, and then select **Base-64 encoded X.590 (.CER)**.

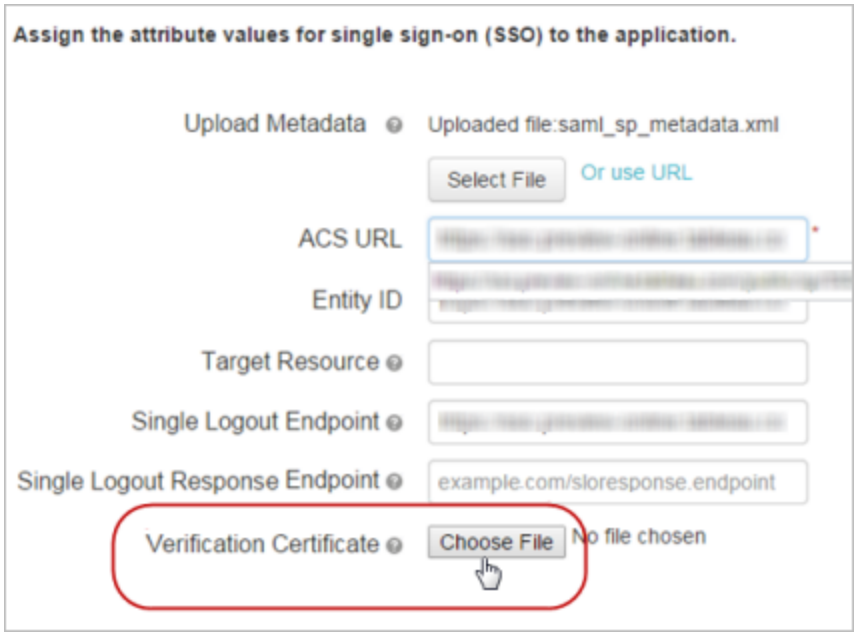
   b. Click **Next**, and specify the name and location of the file you are exporting.

   c. Click **Next**, review the summary information, and then click **Finish**.

6. In your PingOne account, return to the application setup pages for Tableau Online.

7. In **Step 2. Configure your connection**, for **Verification Certificate**, click **Choose**

File, and upload the new .cer file you created.



Complete the Tableau Online site configuration

Complete the following steps after you configure your PingOne account and download the SAML metadata file from PingOne, as described in Configure the PingOne connection earlier in this topic.

1. Return to the **Settings** > **Authentication** page in your Tableau Online site.
2. For SAML configuration step 4, for **IdP metadata** file, click **Browse** and import the metadata file you downloaded from your PingOne account.
3. Continue to Step 5: Match attributes , and complete the remaining steps as described.

Configure SAML with Okta

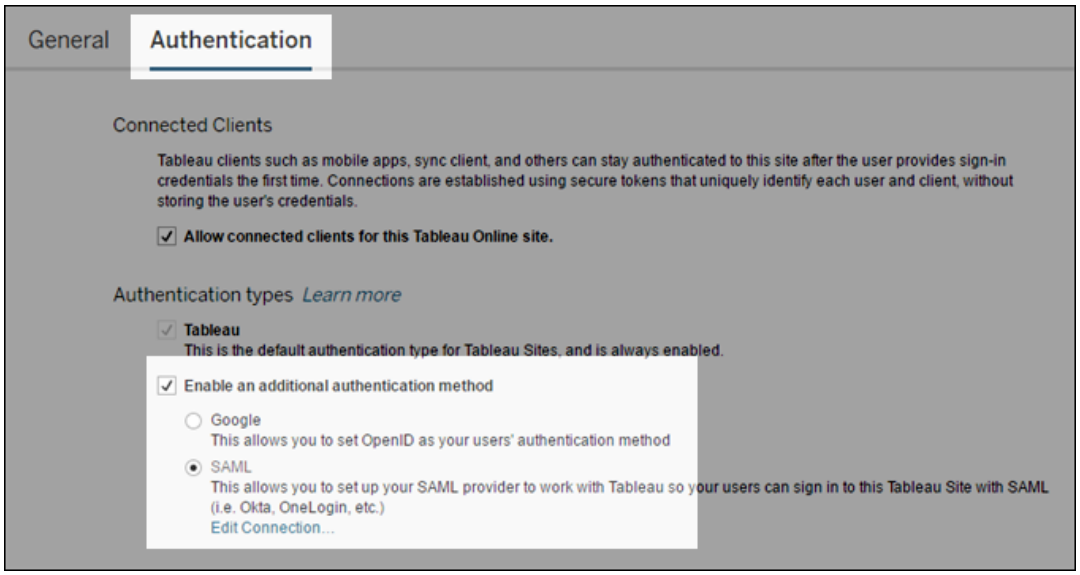
If you use Okta as your SAML identity provider (IdP), you can use the information in this topic to set up SAML authentication for your Tableau Online site.

> **Note:** These steps reflect a third-party application and are subject to change without our knowledge. If the steps described here do not match the screens you see in your IdP account, you can use the general SAML configuration steps, along with the IdP's documentation.

Open the Tableau Online SAML settings

To configure the Okta application, you will need to use information in the Tableau Online SAML settings.

1. Sign in to your Tableau Online site as a site administrator, and select **Settings** > **Authentication**.
2. On the **Authentication** tab, select **Enable an additional authentication method**, select **SAML**, and then select **Edit connection**.



Add Tableau Online to your Okta applications

1. Open a new browser tab or window, and sign in to your Okta administrator console.
2. On the **Applications** tab, click the **Add Application** button. Search for Tableau, and

then add the Tableau Online application.

This opens the **General Settings** tab.

3. (Optional) If you have more than one Tableau Online site, include the site name in the **Application label** field, to help users know which site to select when they sign in.
4. Click **Done** to open the **Assignments** tab.
5. Click **Assign > Assign to People** and click the **Assign** button beside each user you want to approve for single sign-on access to Tableau Online.
6. Click **Done**. Make sure users' email addresses appear in the **Username** field.
7. Select the **Sign On** tab. In the Settings section, click **Edit**.
8. Switch to the tab or window where you opened the Tableau Online SAML configuration settings, and in Step 1 of those settings, select and copy the **Tableau Online entity ID**.

   Note: The Tableau Online SAML configuration settings appear in a different order than on the Okta settings page. To prevent SAML authentication issues, make sure that the **Tableau Online entity ID** and **Assertion Consumer Service (ACS) URL** are entered into the correct fields in Okta.

9. Return to the Okta admin console general settings, and paste the URL into the corresponding field.
10. Repeat the previous two steps for the **Assertion Consumer Service (ACS) URL**. Click **Save**.
11. Right-click **Identity Provider Metadata** and click **Save link as** to download the metadata XML file.
12. Click **View Setup Instructions** and complete the steps to import the IdP metadata,

provide the IdP entity ID and SSO service URL, and match email and display name attributes. Switch to the tab or window where you opened the Tableau Online SAML configuration settings. Note: When importing the Okta metadata file into Tableau Online, it might be necessary to refresh the page after clicking **Apply** to see the changes.

(Optional) Enable iFrame embedding

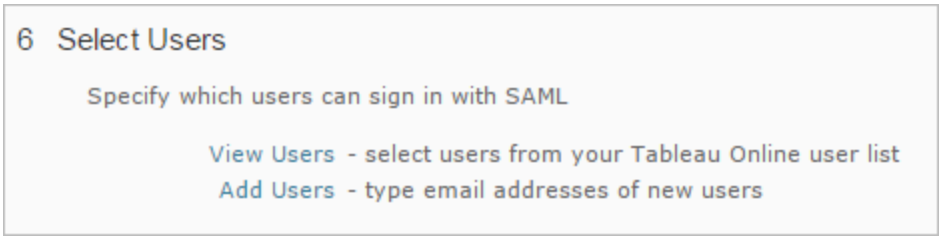
When you enable SAML on your site, you need to specify how users sign in to access views embedded in web pages. These steps configure Okta to allow authentication using an inline frame (iFrame) for embedded views. Inline frame embedding may provide a more seamless user experience when signing-on to view embedded visualizations. For example, if a user is already authenticated with your identity provider and iFrame embedding is enabled, the user would seamlessly authenticate with Tableau Server when browsing to pages that contain an embedded visualizations.

Caution: Inline frames can be vulnerable to a clickjack attack. *Clickjacking* is a type of attack against web pages in which the attacker tries to lure users into clicking or entering content by displaying the page to attack in a transparent layer over an unrelated page. In the context of Tableau Online, an attacker might try to use a clickjack attack to capture user credentials or to get an authenticated user to change settings. For more information about clickjack attacks, see Clickjacking on the Open Web Application Security Project website.

1. Open a new browser tab or window, and sign in to your Okta administrator console.
2. On the **Home** page, click **Admin** to open the **Administrator Dashboard**.
3. On the **Settings** menu, click **Customization**.
4. Under **iFrame Embedding**, select **Allow iFrame embedding**.

Add users to the SAML-enabled Tableau site

1. After you complete the Okta configuration steps, return to your Tableau Online site.
2. Complete the SAML connection by adding the users you assigned in the Okta admin console to Tableau Online.



Configure SAML with Salesforce

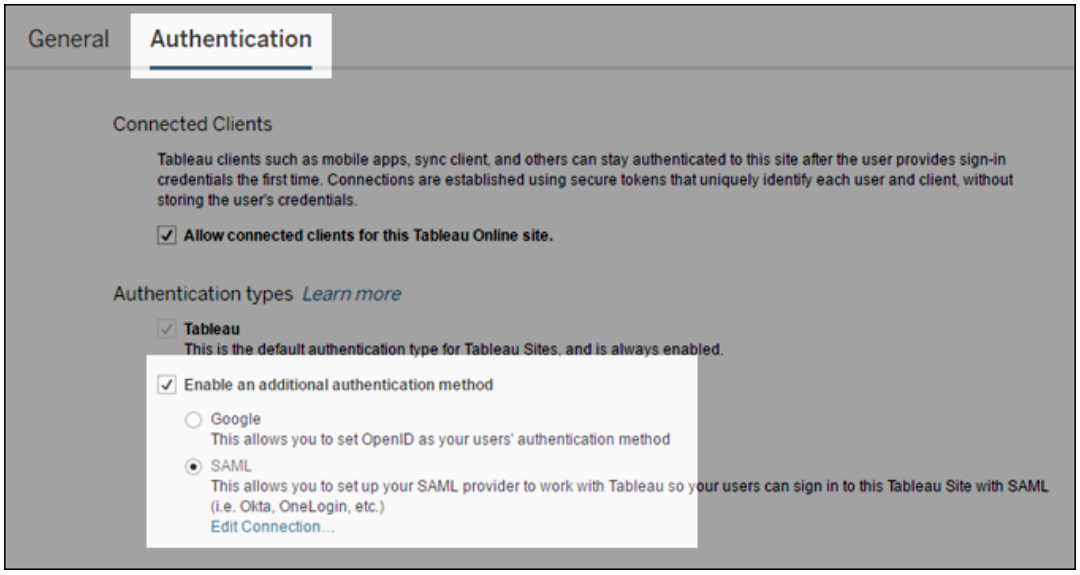
If you've configured Salesforce as your SAML identity provider (IdP), use the information in this topic alongside the Salesforce documentation to add Tableau Online to your single sign-on applications.

Open the Tableau Online SAML settings

To configure the Salesforce application, you will need to use information in the Tableau Online SAML settings.

1. Sign in to your Tableau Online site as a site administrator, and select **Settings** > **Authentication**.
2. On the **Authentication** tab, select **Enable an additional authentication method**,

select **SAML**, and then select **Edit connection**.



Configure SSO from Salesforce to Tableau Online

See the Salesforce documentation, Configure SSO from Salesforce to Tableau Online.

Add users to the SAML-enabled Tableau site

1. After you complete the Salesforce configuration steps, return to your Tableau Online site.

2. Complete the SAML connection by adding the users you assigned in the Salesforce Application Profile Assignment page to Tableau Online. On the Authentication page, scroll down to **Manage users** to add or select users.

Configure SAML for Tableau Viz Lightning Web Component

Tableau provides a Lightning Web Component (LWC) for embedding a Tableau visualization within a Salesforce Lightning page.

This topic describes how to enable a SSO experience for embedded Tableau visualizations in a Salesforce Lightning page. SSO for the Tableau Viz LWC scenario requires SAML

configuration. The SAML IdP used for Tableau authentication must be either the Salesforce IdP or same IdP that is used for your Salesforce instance.

In this scenario, Salesforce administrators can drag-and-drop Tableau Viz LWC into the Lightning page to embed a visualization. Any view that is available to them on Tableau Online can be displayed in the dashboard by entering the embedded URL to the view.

When single sign-on (SSO) is configured for Tableau Viz LWC on Tableau Online, the user experience is seamless: after the user signs into Salesforce, embedded Tableau views will work without further authentication to Tableau Online.

When SSO is not configured, then users will need to reauthenticate with Tableau Online to view embedded visualizations from Tableau Online.

Requirements

- The SAML IdP used for Tableau authentication must be either the Salesforce IdP or same IdP that is used for your Salesforce instance.
- SAML must be configured on Tableau Online. See Enable SAML Authentication on a Site.
- SAML must be configured for Salesforce.
- Install the Tableau Viz Lightening Web Component. See Embed Tableau Views into Salesforce.

Configuring the authentication workflow

You may need to make additional configurations to optimize the sign-in experience for users who access Lightning with embedded Tableau views.

If a seamless authentication user experience is important, then you will need to make some additional configurations. In this context, “seamless” means that users who access the Salesforce Lightning page where Tableau Viz LWC SSO has been enabled, will not be required to perform any action to view the embedded Tableau view. In the seamless scenario, if the user is logged into Salesforce, then embedded Tableau views will be displayed with no additional user action. This scenario is enabled by *in-frame authentication*.

For a seamless user experience you will need to enable in-frame authentication on Tableau Online and at your IdP. The sections below describe how to configure in-frame authentication.

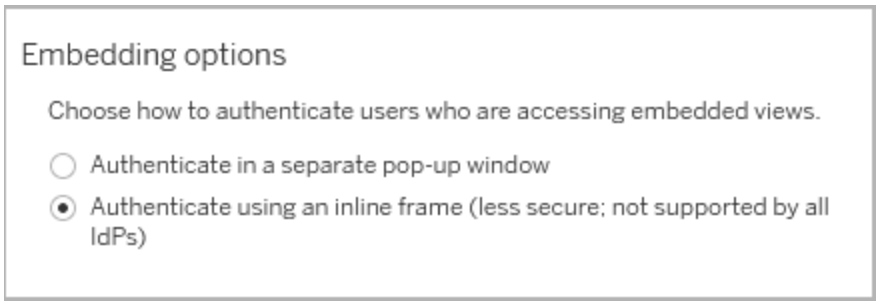
On the other hand, there are scenarios where users are interacting with the Lightning page that will require them to click a “Sign in” button to view the embedded Tableau view. This scenario, where a user must take another action to view the embedded Tableau view, is called pop-up authentication.

Pop-up authentication is the default user experience if you do not enable in-frame authentication.

Enable in-frame authentication on Tableau Online

Before you enable in-frame authentication on Tableau Online, you must have already configured and enabled SAML.

1. Sign in to your Tableau Online site as a site administrator, and select **Settings** > **Authentication**.
2. On the **Authentication** tab, select **Enable an additional authentication method**, select **SAML**, and then select **Edit connection**.
3. Scroll down to **Embedding options** and select **Authenticate using an inline frame**.



Caution: Inline frames can be vulnerable to a clickjack attack. *Clickjacking* is a type of attack against web pages in which the attacker tries to lure users into clicking or entering content by displaying the page to attack in a transparent layer over an unrelated page. In the context of Tableau Online, an attacker might try to use a clickjack attack to capture user credentials or to get an authenticated user to change settings. For more information about clickjack attacks, see Clickjacking on the Open Web Application Security Project website.

Enable in-frame authentication with your SAML IdP

As described above, a seamless authentication user experience with Salesforce Mobile requires IdP support for in-frame authentication. This functionality may also be referred to as “iframe embedding” or “framing protection” at IdPs.

Salesforce safelist domains

In some cases, IdPs only allow enabling in-frame authentication by domain. In those cases, set the following Salesforce wildcard domains when you enable in-frame authentication:

```
*.force

 *.visualforce
```

Salesforce IdP

Salesforce IdP supports in-frame authentication by default. You do not need to enable or configure in-frame authentication in the Salesforce configuration. However, you must

configure Tableau Online for in-frame authentication as described above.

Okta IdP

See *Embed Okta in an iframe*, in the Okta Help Center topic, General customization options.

Ping IdP

See the Ping support topic, How to Disable the "X-Frame-Options=SAMEORIGIN" Header in PingFederate.

OneLogin IdP

See *Framing protection*, in the OneLogin Knowledge Base article, Account Settings for Account Owners.

ADFS and Azure AD IdP

Microsoft has blocked all in-frame authentication and it cannot be enabled. Instead, Microsoft only supports pop-up authentication in a second window. As a result, pop up behavior can be blocked by some browsers, which will require users to accept pop ups for the `force.com` and `visualforce.com` sites.

Salesforce Mobile App

If your users primarily interact with Lightning on the Salesforce Mobile App, then you should be aware of the following scenarios:

- The Salesforce Mobile App requires that you configure SSO/SAML to view embedded Tableau.
- The Salesforce Mobile App requires in-frame authentication. Pop-up authentication does not work. Instead, users on the Salesforce Mobile App will see the Tableau sign-in button but will not be able to sign to Tableau.
- Mobile App will not work on ADFS and Azure AD IdP.
- Users with Android devices will be required to sign-in to view the embedded Tableau visualization the first time, then SSO will work as expected.

Troubleshoot SAML

This topic provides information about resolving issues that can occur when you configure SAML authentication.

Required assertions and metadata do not map correctly

Most issues occur because metadata that you import from the IdP, or assertion names that you enter, do not match the corresponding IdP attributes. To troubleshoot SAML issues, start by making sure the information shown in Steps 1–5 of the Authentication page matches the IdP's SAML configuration settings.

Tableau Online requires the IdP assertion that contains user email address. In addition to checking Steps 1–5, make sure that users' email addresses match between Tableau Online and the IdP.

Identity provider does not display sign-in page

A user provides his or her user name on the Tableau Online sign-in page, Tableau Online redirects the request to the identity provider (IdP), but the IdP does not return its SAML sign-in page. The IdP can fail to return the sign-in page for any of the following reasons:

- SSO service URL is not valid.

  When you import the IdP metadata, make sure the SSO Service URL field shows the correct URL.

- The IdP does not recognize the authentication request received.

  For example, the Tableau Online entity ID may be incorrect. This can occur if SAML configuration settings on the Authentication page have become corrupted or inadvertently changed.

To resolve the issue, repeat Steps 3–4 of the SAML configuration:

1. Sign in to your IdP account and export the IdP metadata
2. Sign in to Tableau Online, display the **Authentication** page, and in Step 4, re-import the metadata.

Nothing happens after IdP sign-in

If a user provides incorrect credentials on the IdP's sign-in page, or if the user is not authorized to use SAML, some IdPs will not return control to Tableau Online when authentication fails.

In Tableau Online, on the **Users** page, you can see whether a user is authorized for SAML authentication.

	Full Name		Username	Site Role	Groups	Authentication
☐	SAMLUser1	•••	saml-user1@email.com	Site Administrator	1	Single sign-on
☐	SAMLUser2	•••	saml-user2@email.com	Interactor	1	TableauID

Full Name field shows users' email addresses

For a SAML site, the Full Name field is populated with the email address if the assertions for first and last name or full name are not provided in Step 5 of the Authentication page.

Unable to authenticate users when using single sign-on

SAML authentication takes place outside Tableau Online, so troubleshooting authentication issues can be difficult. However, login attempts are logged by Tableau Online. You can create a snapshot of log files and use them to troubleshoot problems.

If a user is having trouble being authenticated on Tableau Online, you should examine the log file to ensure that email attribute values returned by the IdP match the email addresses of users.

To download the log file:

1. Sign in to Tableau Online.
2. Display the **Authentication** page, and then under Step 7, click **Download log file**.

Signing In through Command Line Utilities

SAML is not used for authentication when you sign in to Tableau Online using tabcmd or the Tableau Data Extract command line utility (provided with Tableau Desktop), even if Tableau Online is configured to use SAML. These tools require TableauID authentication configured when Tableau Online was originally provisioned.

Automate User Provisioning and Group Synchronization through an External Identity Provider

You can automate adding or removing users from Tableau Online or adding or removing members from groups using your identity provider (IdP). Tableau Online IdP user management uses the System for Cross-domain Identity Management (SCIM) standard, which is an open standard for automating the exchange of user identity information. Currently we support SCIM with the following IdPs:

- Okta
- OneLogin

We intend to support additional IdPs as the functionality evolves. If you have questions about future plans, email our SCIM pre-release team.

> **Note:** If you are using Microsoft Azure Active Directory, you can automatically provision users and groups with steps in the following Microsoft article: Configure Tableau Online for automatic user provisioning.

SCIM is used to provision users in cloud applications such as Tableau Online. Cloud IdPs centrally manage user identities, including assigning users to applications and groups. The

IdP uses the SCIM standard to ensure that “downstream” applications are kept in sync with the provisioning assignments set up with the IdP. Managing users in this way improves security, and can greatly reduce the amount of manual work that Tableau Online site administrators need to do to manage site users and group membership.

Prerequisites

To enable SCIM integration with your Tableau Online site, you’ll need the appropriate levels of access:

- Site administrator access to the Tableau Online site.
- Ability to modify your IdPs configuration settings for Tableau Online

Steps for enabling SCIM support with your IdP

The following sections provide IdP-specific steps for enabling SCIM support for your Tableau Online site.

> **Note:** Some of these steps reflect a third-party IdP interface. These IdP settings are subject to change without our knowledge.

Enable support for SCIM with Okta

Use the following steps to enable SCIM support. See also Notes and known limitations for SCIM support with Okta.

1. The SCIM functionality requires that you configure your site to support SAML single sign-on. If you have not done this, complete the following sections in Configure SAML with Okta:

- Open the Tableau Online SAML settings
- Add Tableau Online to your Okta applications

After you finish the steps in these two sections, remain signed in to both the Okta console and Tableau Online, with the following pages displayed:

- In Tableau Online, the **Settings** > **Authentication** page.
- In the Okta Developer Console, **Applications** > **Tableau Online** > **Provisioning**.

2. On the **Authentication** page in Tableau Online, under **Automatic Provisioning and Group Synchronization (SCIM)**, select the **Enable SCIM** check box.

   This populates the **Base URL** and **Secret** boxes with values you will use in the IdP's SCIM configuration.

   > **Important:** The secret token is displayed only immediately after it is generated. If you lose it before you can apply it to your IdP, you can select **Generate New Secret**. In addition, the secret token is tied to the Tableau Online user account of the site administrator who enables SCIM support. If that user's site role changes or the user is removed from the site, the secret token becomes invalid, and another site administrator must generate a new secret token and apply it to your IdP.

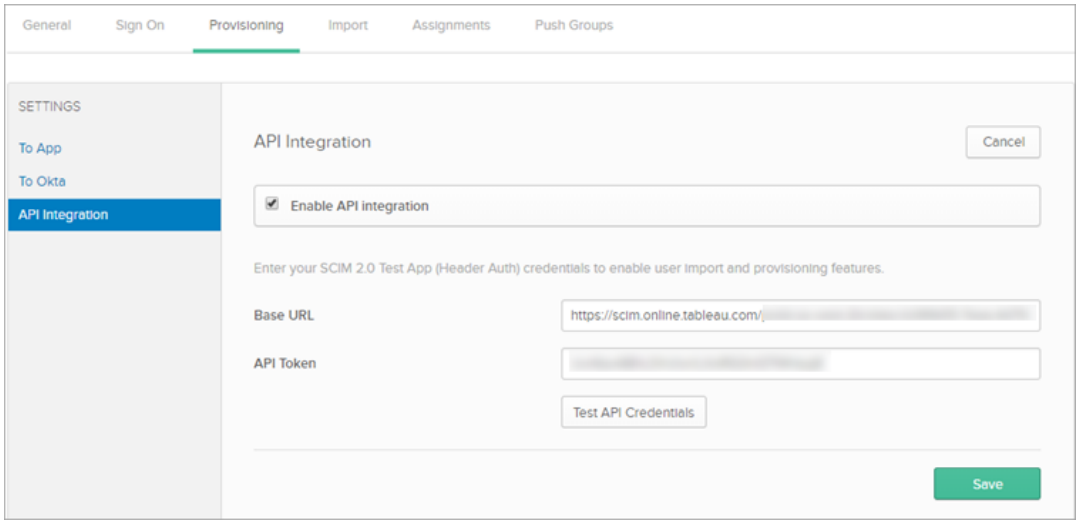
3. Copy the secret token value, and then on the **Provisioning** page in your Okta administrator console, select **API Integration** in the **Settings** column.

4. Select **Edit**, and then do the following:

   - Select the **Enable API integration** check box.
   - For **API Token**, paste the Tableau Online SCIM secret token you copied in the

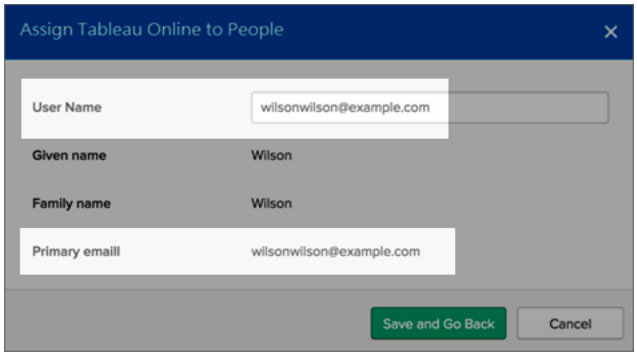
previous step.

- For **Base URL**, copy and paste the **Base URL** shown in the Tableau Online SCIM settings.



Notes and known limitations for SCIM support with Okta

- In the Okta user assignment settings, the values for **User Name** and **Primary email** must be identical.



- You must add a separate Tableau Online Okta app for each site you want to manage using SCIM.
- If you want to migrate a site, you will need to re-configure SCIM provisioning for the

new site.

- When provisioning new users, first name and last name attributes in Okta are not synced to Tableau Online. New users must set those fields when they sign in to Tableau Online for the first time.
- You can set a user's site role (such as Creator, Explorer, or Viewer) in Okta at either the user or the group level. We recommend assigning the site role at the group level. If the user is assigned a site role directly, it will override any group settings.
- A user can be a member of many groups. Groups can have different site roles. If a user is assigned groups with different site roles, the user will receive the most permissive site role in Tableau Online. For example, if you choose Viewer and Creator, Tableau will assign the Creator site role.

  Site roles are listed below in order from most permissive to least permissive:

  - Site Administrator Creator
  - Site Administrator Explorer
  - Creator
  - Explorer (Can Publish)
  - Explorer
  - Viewer
- You can update the site role attribute for a user in Okta and this change will propagate to Tableau Online. Other attributes, such as User Name and Primary email, cannot be updated. To change these attributes, remove the user, change the attribute, and then add the user again.
- Use of SCIM with Grant License on Sign In is unsupported and may result in incorrectly provisioned site roles for users or groups.

Enable support for SCIM with OneLogin

You can configure user management through OneLogin, provision groups, and assign Tableau Online site roles. If you're not yet familiar with Tableau site roles and the capabilities each allows, see Set Users' Site Roles.

As you complete the following steps, it might help also to have the OneLogin documentation at hand. Start with Introduction to User Provisioning.

1. The SCIM functionality requires that you configure your site to support SAML single sign-on. If you have not done this yet, complete the following sections in the article "Configure SAML with OneLogin":

   - Open the Tableau Online SAML Settings
   - Add Tableau Online to your OneLogin applications

   After you finish the steps in these two sections, remain signed in to both the OneLogin portal and Tableau Online, with the following pages displayed:

   - In Tableau Online, the **Settings** > **Authentication** page.
   - In the OneLogin portal, the **Configuration** page.

2. On the **Authentication** page in Tableau Online, under **Automatic Provisioning and Group Synchronization (SCIM)**, select the **Enable SCIM** check box.

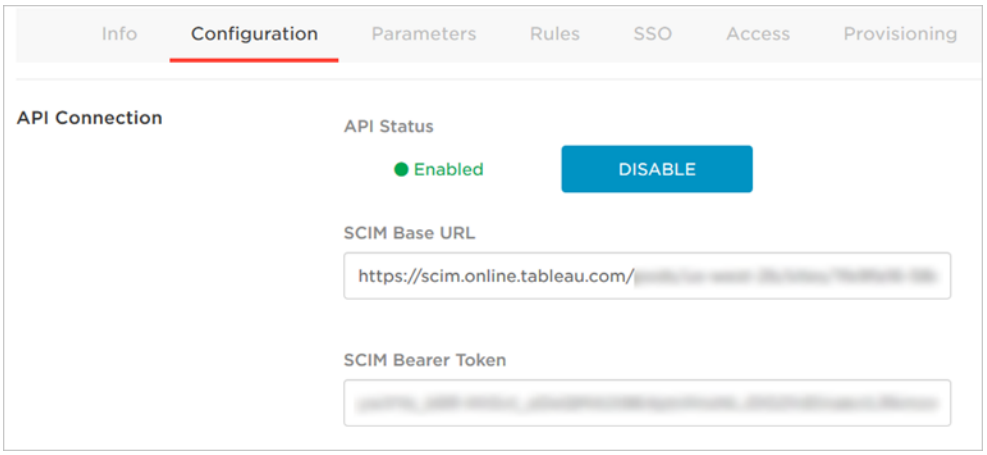
   This populates the **Base URL** and **Secret** boxes with values you will use in the IdP's SCIM configuration.

   > **Important:** The secret token is displayed only immediately after it is generated. If you lose it before you can apply it to your IdP, you can select **Generate New Secret**. In addition, the secret token is tied to the Tableau Online user account of the site administrator who enables SCIM support. If that user's site role changes or the user is removed from the site, the secret token becomes invalid, and

another site administrator must generate a new secret token and apply it to your IdP.

3. Copy the secret token value, and then on the **Configuration** page in your OneLogin portal, do the following:

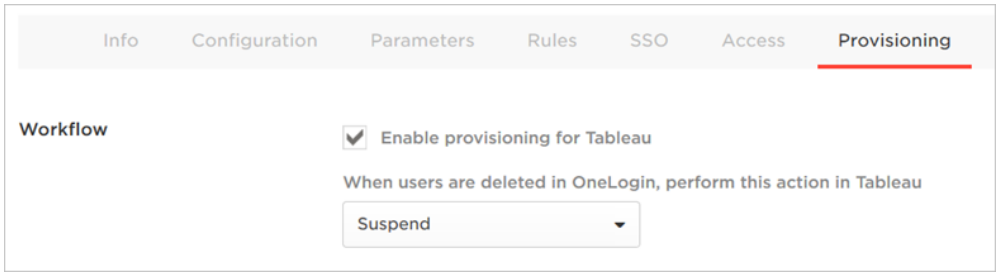
   - For **API Status**, click **Enable**.
   - For **SCIM Bearer Token**, paste the Tableau Online SCIM secret token you copied earlier.
   - For **SCIM Base URL**, copy and paste the **Base URL** shown in the Tableau Online SCIM settings.



4. On the **Provisioning** page:

   - Select the **Enable Provisioning for Tableau** check box.
   - Select **Suspend** for **When users are deleted in OneLogin, perform this**

action in Tableau.



5. Click **Save**. If you want to complete the steps for provisioning groups, stay signed in to the OneLogin portal and proceed to the next section.

Enable group provisioning and assign Tableau site roles

OneLogin gives you a number of ways by which you can assign user attributes such as groups or site roles. You can apply them at the Tableau Online app level, create mapping rules, or apply them manually to individual users.

The following steps continue where you left off in the previous section, and they assume you are signed in to the OneLogin portal and Tableau Online app. These steps provide some Tableau-specific information that you can use with the OneLogin documentation for mapping group and site role attributes to users.

Provision groups

Import Tableau Online groups into OneLogin and specify the groups you want to be selected by default in the user provisioning dialog.

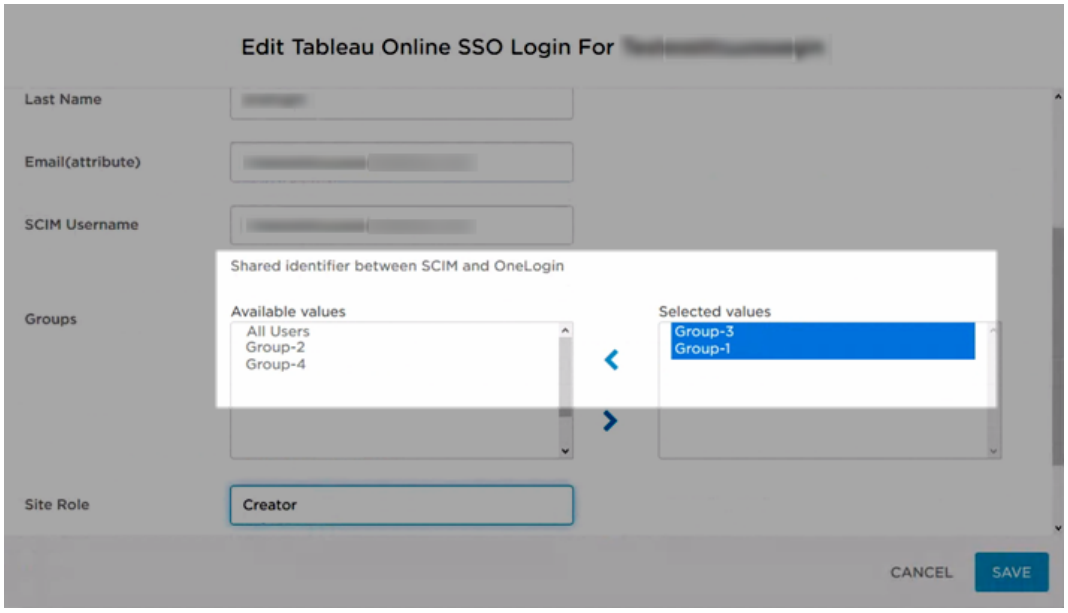
1. On the **Parameters** page, click **Groups**, and select the **Include in User Provisioning** check box.

2. Go to the **Provisioning** page, and in the **Entitlements** section, click **Refresh**.

   This imports the groups from Tableau Online.

3. Go back to the **Parameters** page, and then select the groups that you want to show

as selected values in the user provisioning dialog.



4. To change group membership, go to the **Users** page, select a user, and in the **Groups** section, modify the available and selected values.

You can also create mappings that put users into groups automatically, based on conditions you define. To get started, see the OneLogin article Mappings.

Assign Tableau site roles

By default, users are assigned the **Viewer** site role, which occupies a **Viewer** license type.

Whatever method you use in OneLogin to assign site roles, at some point you need to enter the site role name into a text box. For the allowed values you can type, see Valid Tableau site role values below the steps.

Here are some of the ways you can assign site roles:

- **For individual users:** On the **Users** tab, select the user, and then in the user settings, type the site role name in the text box.
- **For a set of users:** On the **Parameters** page, click **Site Role**, and then, for Value,

select one of the options for assigning the site role attribute. For example:

- If all users have the same site role, select **Macro** and enter the site role name.
- If the OneLogin user directory contains the site role, select the corresponding attribute.

When you're done assigning the site role, click **Save**.

Valid Tableau site role values

On the **Provisioning** page in your OneLogin portal, the Site Role values you can enter are based on current or legacy license roles.

- **Current license roles** include the following site role values:

  Creator, Explorer, ExplorerCanPublish, ReadOnly, ServerAdministrator, SiteAdministratorExplorer, SiteAdministratorCreator, Unlicensed, or Viewer.

- **Legacy (pre-v2018.1) license types** come with the following site roles:

  Interactor, Publisher, ServerAdministrator, SiteAdministrator, Unlicensed, UnlicensedWithPublish, Viewer, or ViewerWithPublish

See also

To learn the effects of changing user attributes, or how to reset individual user attributes you changed manually, see the OneLogin article Provisioning Attributes: the Effect of Defaults, Rules, and Manual Entry.

Replace a SCIM secret token

When you need to replace your SCIM (system for cross-domain identity management) secret token, you can do one of the following:

- In Tableau Online, on the **Settings** > **Authorization** page, under **Automatic Provisioning and Group Synchronization (SCIM)**, click **Generate New Secret** to generate a new secret token to replace your old one. When you generate a new secret

token, you must reconfigure SCIM to use the new secret token.
- An administrator can revoke a secret token that belongs to another user by deleting that user from the Tableau Online site and then adding them back to the site.

Notify Owners When Extract Refreshes Fail

A scheduled extract refresh can fail to complete for a variety of reasons, such as outdated embedded credentials or file path. For scheduled refreshes that run directly from Tableau Online, after a refresh has failed five consecutive times, Tableau Online suspends the schedule until a site admin or the data source owner takes an action to address the cause.

A site admin can enable Tableau Online to send email to the owner of a data source when its scheduled extract refresh does not complete successfully. The data source owner can then opt out individually in their account settings.

The email contains the following information:

- Extract or workbook name.
- The date and time of the last successful refresh. Or, if the last refresh was longer than 14 days ago, the email shows “not in the last *N* days.”
- The number of consecutive times the refresh has failed.
- A suggested action to take to address the cause of the failure, such as updating embedded credentials or a file path, and a link to Tableau Online to take the action.

When receiving email about data sources refreshed by Tableau Bridge, there will be some differences. For more information, see Differences for Tableau Bridge refreshes later in this topic.

Enable refresh failure emails

As a site admin, you have the ability to enable (or disable) refresh failure emails for your site using the procedure below. If you opt in, each user can potentially opt out from receiving refresh failure emails from his or her individual account.

1. Sign in to Tableau Online as a site admin and click **Settings**.
2. Under **Notifications for Extract Jobs and Flow Runs**, select or clear the **Send notifications to data source, flow, and workbook owners** check box.

Differences for Tableau Bridge refreshes

For data sources that are refreshed through Tableau Bridge, notifications will vary. For more information, see Manage Email Alerts for Bridge.

Manage Users and Groups

You can add users to your Tableau Online site and set their site roles, which determines each user's level of access. To make it easier to manage multiple users, you can organize users into groups.

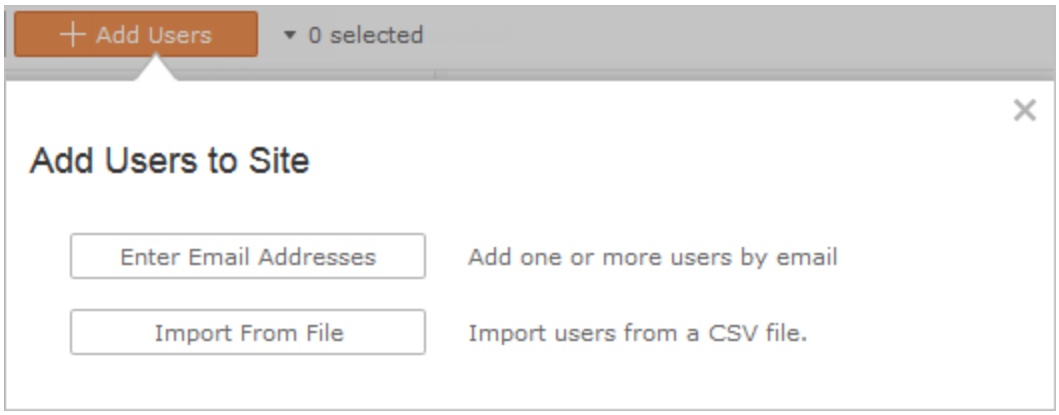
Add Users to a Site

Everyone who needs to access Tableau Online—whether to browse, publish, edit content or administer the site—must be added as a user. Administrators have the following options for adding users:

- Enter users' email addresses individually.
- Import Users via a CSV file that you create using the CSV Import File Guidelines.

Add users

1. When you're signed in to the Tableau Online site, select **Users**.
2. On the **Users** page, click **Add Users**, and then click **Enter Email Addresses**.



3. If Google or SAML authentication **is not** enabled on this site, skip to the next step.

   If Google or SAML authentication is enabled on this site, you can select the authentication type for the new users.

   - Select **Add users for [Google/SAML] authentication** if you enabled your site for Google or SAML authentication and want the imported users to sign in to the site through an external identity provider.
   - Select **Add users for Tableau authentication** if you want these users to have the default email address and password authentication.

     You can go to the **Users** page to change users' authentication type any time after you add them.

     > **Note:** To work with Tableau Online by way of tabcmd, the Tableau Data Extract Utility, or the Tableau APIs, users must authenticate with a TableauID account.

4. In the **Enter email addresses** box, enter the users' email addresses. If you add more than one user, separate each address with a semicolon.

For example, *tdavis@example.com; jjohnson@example.com; hwilson@example.-com*

5. Select a site role from the drop-down list, to assign that site role to all users you're adding.

   For site role definitions, see Set Users' Site Roles.

6. Click **Add Users**.

If a new user's email address is already associated with an account on tableau.com, the user is prompted to sign in using the existing email address and password for that account.

If a new user's email address is not already associated with an account on tableau.com, the user is prompted to provide a first and last name and password.

Until the user provides these values, their entry in the Tableau Online user list shows the email address preceded by a period. For example:

```
.snguyen@example.com
```

After the user signs in, the entry is updated to show the full name. For example:

```
Susan Nguyen
```

Set Users' Site Roles

When you add users to a site on Tableau Online, independent of their license type, you must apply a *site role* to them. The site role signifies the maximum level of access a user can have on the site. Along with content permissions, the site role determines who can publish, interact with, or only view published content, or who can manage the site's users and administer the site itself.

How user licenses, site roles, and content permissions work together

The intersection of a user's license type, site role, and content permissions determines the level of access a user has on the Tableau site.

1. The license type is associated with the user. The site role you want to assign to the user determines the license type they will require.

   If a user is a member of multiple Tableau Online sites, they must have a license for every site they belong to.

2. The site role is also set at the user level. If a user is a member of multiple Tableau Online sites, they will have independent site roles. For example, the same user can have the Site Administrator Creator site role on one site and the Viewer site role on another site.

   The site role defines the maximum capabilities the user can have.

3. Whether the site role's maximum capabilities are available to the user depends on the permissions set on the content resources (projects, data sources, workbooks).

For example, let's say that a user has the following access on a site:

- Creator license
- Explorer site role
- Save permission capability on a project

In this scenario, even though the license allows connecting to and creating new data sources in the web editing environment or Tableau Desktop, and a permission rule allows them to save in a project, their site role prevents them from being able to save so their effective permissions do not include the save capability. The user can't publish content to the site.

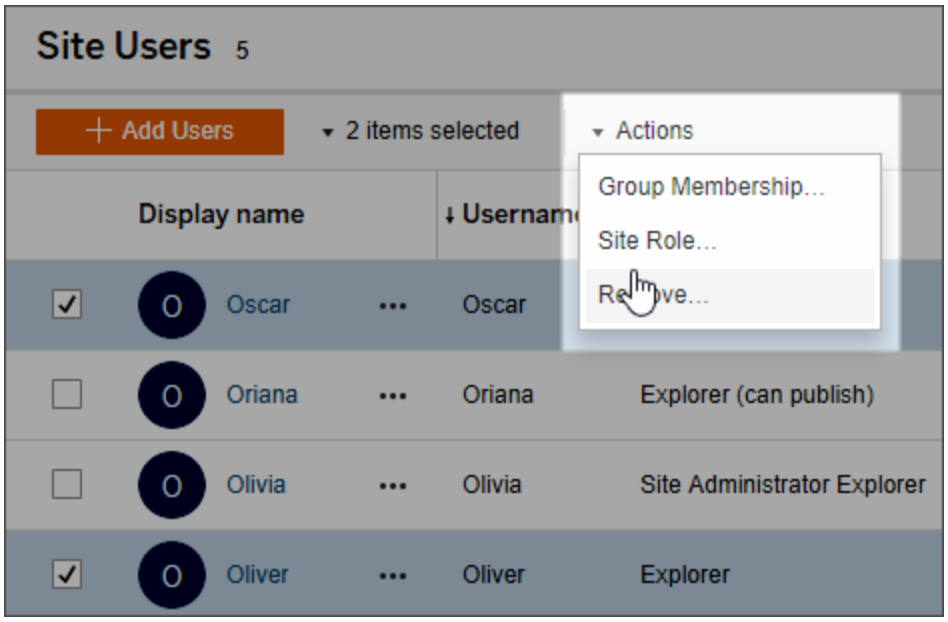
Similarly, even if a user has a creator license and a creator site role, if they do not have the save capability on at least one project, they can't publish anything to the site.

For more information, see Permissions.

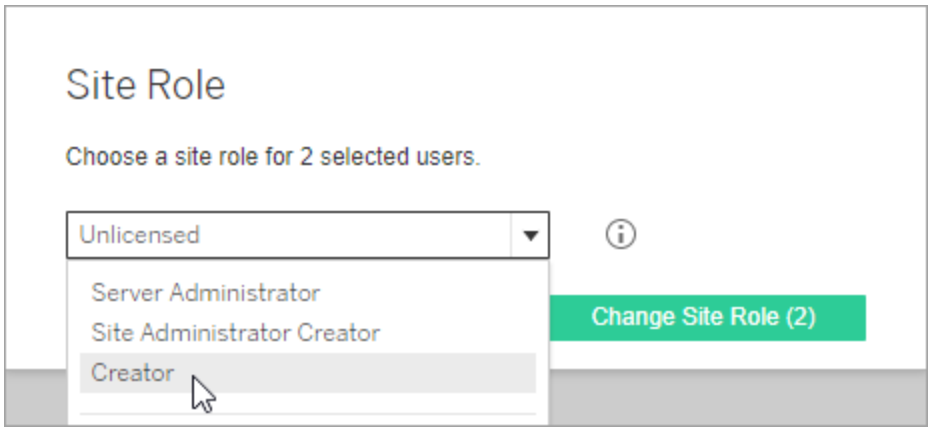
Change a user's site role

1. Sign in to the site as a site administrator, and go to the **Users** area.

2. Select the users, and then select **Actions** > **Site Role**.



3. Select the new site role, and then click **Change Site Role**.



You can hover the pointer over the information icon to display a matrix that shows the maximum level of general capabilities each site role allows. For more information, continue to General capabilities allowed with each site role.

General capabilities allowed with each site role

The following table lists the license types as of version 2018.1, the highest level of site role allowed with each, how each site role maps to its pre-2018.1 equivalent; and summarizes

the maximum capabilities each site role allows.

> **Note:** This information focuses on *site* roles and is more generalized. For a list of common specific tasks available per *license* role, see the matrix on the For Teams & Organizations tab on the Tableau pricing page.

Tableau site roles as of version 2018.1

Site role name as of version 2018.1	Previous site role name	Maximum capabilities this site role allows
Site roles that use a Creator license		
—Users with these site roles have access to Tableau clients such as Tableau Prep, Tableau Desktop, Tableau Bridge, and Tableau Mobile.		
Server Administrator	Server Administrator	Available on Tableau Server only; not applicable to Tableau Online. This site role always occupies the highest license activated on the server between Creator and Explorer. It allows unrestricted access to the configuration settings for the Tableau Server browser environment, all sites on the server, users and groups, and all content assets, such as flows, projects, data sources (including connection information), and workbooks. Connect to Tableau published data sources or external data, from the browser, Tableau Desktop, or Tableau Prep; create and publish new data sources; author and publish workbooks.

Site role name as of version 2018.1	Previous site role name	Maximum capabilities this site role allows
Site Administrator Creator	--	This is the highest level of access for Tableau Online. Unrestricted access to content as described above, but at the site level. Connect to Tableau or external data in the browser, Tableau Desktop, or Tableau Prep; create new data sources; build and publish content. On Tableau Server, server administrators can determine whether or not to allow site administrators to manage users and assign site roles and site membership. By default, on Tableau Server, and always on Tableau Online, site administrators are allowed these capabilities.
Creator	--	This is similar to the former Publisher site role, but allows new features. This site role offers non-administrators the maximum level of *content* access. Connect to Tableau or external data in the browser, build and publish flows, data sources and workbooks, have access to Dashboard Starters, and use interaction features on published views. Can also connect to data from Tableau Prep or Tableau Desktop, publish (upload/save) and download flows, workbooks and data sources.
Site roles that use an Explorer license		
—Users with these site roles can access the server from the browser or Tableau Mobile.		

Site role name as of version 2018.1	Previous site role name	Maximum capabilities this site role allows
Server Administrator	N/A	Tableau Server only; not applicable to Tableau Online. If Explorer is the highest license type activated on the server when a new server administrator user is created, the user's site role is Server Administrator; however, the user will not have the full connecting and publishing capabilities that come only with the Creator license. With the Explorer license a Server Administrator has unrestricted access to the configuration settings for the Tableau Server browser environment, all sites on the server, users and groups, and all content assets, such as projects, flows, data sources (including connection information), and workbooks. However, with the Explorer license, a Server Administrator can't connect to external data from the browser to create a new data source. They can author or publish workbooks and data sources from Tableau Desktop. (they function as an Explorer (can publish) site role with regards to publishing).
Site Administrator Explorer	Site Administrator	Same access to site and user configuration as Site Administrator Creator, but can't connect to external data from the web editing environment. Can connect to Tableau published data sources to create new workbooks, and edit and save existing

Site role name as of version 2018.1	Previous site role name	Maximum capabilities this site role allows
		workbooks.
Explorer (can publish)	Publisher	Can publish workbooks from the web using existing data sources, browse and interact with published views, and use all interaction features. In the web editing environment, can edit and save existing workbooks. Cannot save new standalone data sources from data connections embedded in workbooks, and cannot connect to external data and create new data sources.
Explorer	Interactor	Can browse and interact with published views. Can subscribe to content, create data driven alerts, connect to Tableau published data sources and open workbooks in the web authoring environment for ad-hoc queries, but they can't save their work.
Read Only	Viewer	This site role is available only in version 2018.1, for transitioning users to the user-based Viewer (or other) license and site role. Any users in the Read Only site role prior to upgrading to version 2018.2 or later are reassigned to the Viewer site role. In 2018.1 versions, Read Only users can see and subscribe to published views others have created. Can't use other interaction features or save custom views.
Site roles that use a Viewer license		

Site role name as of version 2018.1	Previous site role name	Maximum capabilities this site role allows
Viewer	N/A	Can see published views others have created and use most interaction features. Can subscribe to views and download as images or summary data. Can't connect to data, create, edit, or publish content, or set data alerts. For a list of specific capabilities, see the **Viewer** column in the matrix on the Tableau pricing page. **Note:** Although the Viewer site role existed in previous versions, the new Viewer site role has additional capabilities.
Other site roles		
Unlicensed	Unlicensed	Unlicensed users can't sign in to Tableau Server or Tableau Online. Users are assigned the Unlicensed role in the following circumstances: • You import users from a CSV file and their license level is set to unlicensed. • The number of available licenses is reached at the time you add or import users. • You remove a user who owns content on the site. The user will still own the content but not be able to do anything with it.

Who can publish content

The following site roles allow the specified level of publishing access.

- **Server Administrator** (Tableau Server only); **Site Administrator Creator**; and **Creator** allow full connecting and publishing access.

  This includes connecting to data and publishing new flows, new workbooks and new data sources from Tableau Desktop and the web editing environment. The site roles also allow editing and saving existing published workbooks, or publishing updates to existing data sources.

- **Explorer (Can Publish)** and **Site Administrator Explorer** have limited publishing capabilities, as described in General capabilities allowed with each site role.

- **Explorer**, **Viewer**, **Read Only**, and **Unlicensed** do not allow publishing.

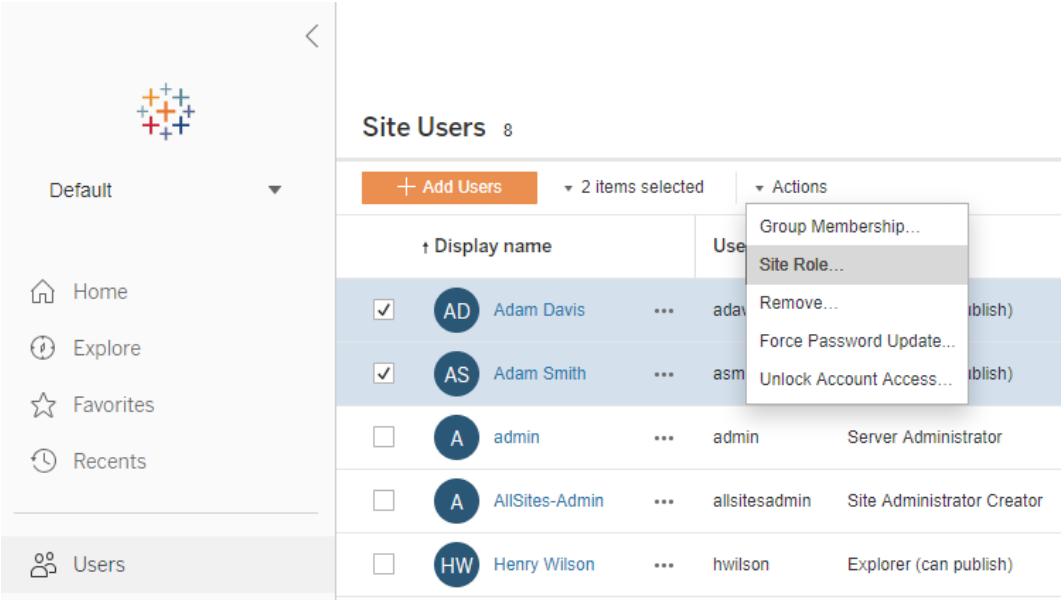
View, Manage, or Remove Users

Administrators can manage a site's users such as adding and removing users, setting the groups they're members of, setting their site roles, and so on. On Tableau Server, server administrators can manage users on multiple sites at a time on the **All Sites** page.

View and manage users on a site

Sign in to a site as an administrator, and then select **Users**. On this page you can do any of the following to manage users:

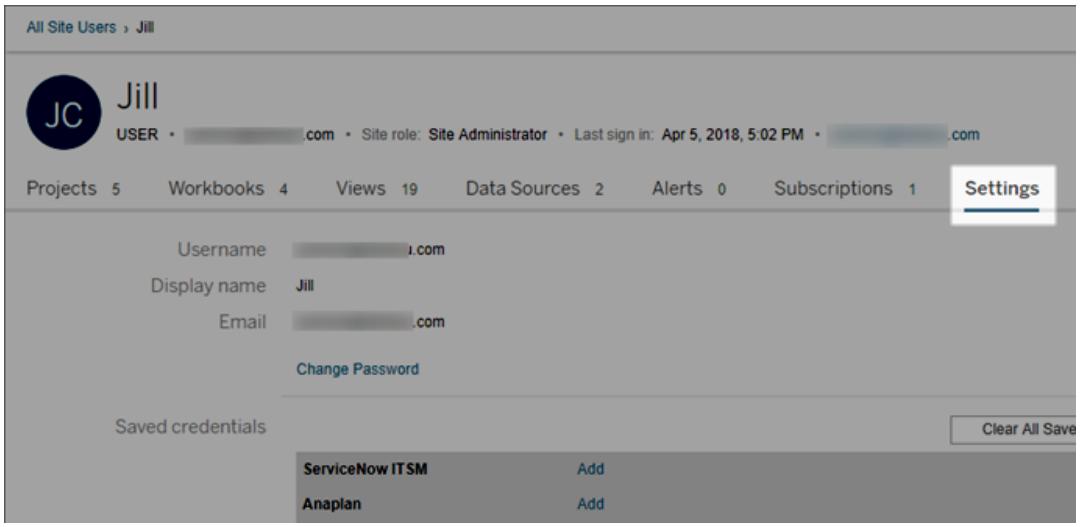
- Set group membership, set site role, or remove the user from the site. If you've configured the site for SAML single sign-on, you can set the selected users' authentication type. If your server is configured for password policies and account access lockout, you can unlock access to a user's locked out account.



- Select a user name to see details about them, such as content they own, views they subscribe to, and their account settings.

  The user **Settings** page is available when the following conditions are true:

  - The user is a member only of sites that the site administrator controls
  - Site administrators can manage users. This is always the case for Tableau Online and is the default for Tableau Server; Tableau Server administrators can change this access for site admins.



Manage users' site membership

By default, server and site administrators can manage users at the individual site level. Server administrators can also manage users and their site roles on multiple sites. You do this at the **All Sites** level (at the server level).

1. In the site menu, select **Manage All Sites**, and then select **Users**.
2. On the Server Users page, select the check boxes next to the users, and then select **Actions** > **Site Membership**.
3. Select one or more sites, and a site role for each site, and then click **Save**.

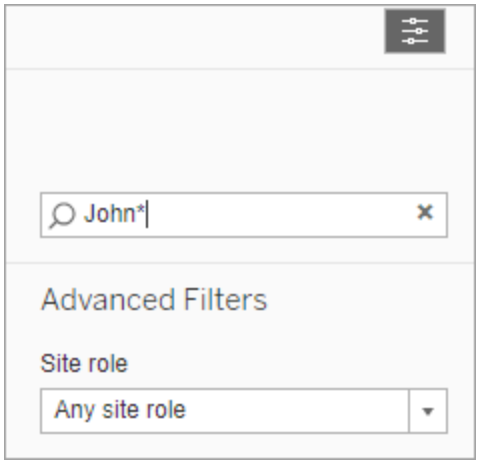
Search for users

To search for a specific user

Use the filter toggle in the upper right to display the search box and site role filter. Then use the search box or filters to find the users you want.

The search operation checks the display name and user name attributes.

You can use the asterisk (*) character as a search wildcard. For example, searching for `John*` will return all user names that start with *John*.



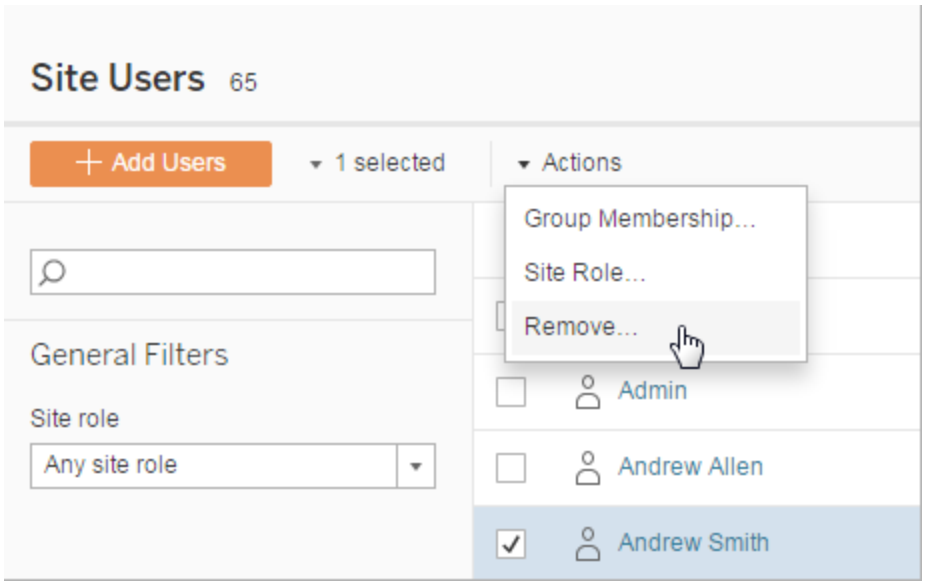
Remove users from a site

You can remove a user only if the user does not own any content (projects, workbooks, views, or data sources). If you attempt to remove a user who owns content, the user site role will be set to Unlicensed, but the user will not be removed.

If the default All Users group has enabled Grant site role on sign in, that user's content must be reassigned to another user or removed before they can be unlicensed or removed. For more information on Grant role on sign in, see Removing users affected by Grant role on sign in. For more information on changing content ownership, see Manage Content Ownership

Note: On Tableau Server, when an administrator removes a user from a site (and the user belongs only to that one site), the user is also deleted from the server.

1. Sign in to a site as an administrator, and go to the **Users** area. Select one or more users to remove, and then select **Actions** > **Remove**.



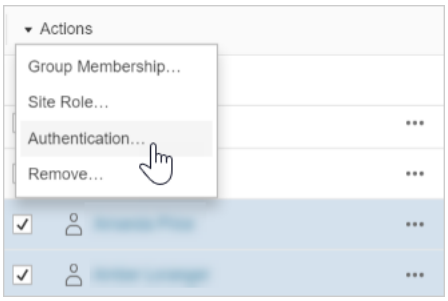
2. Click **Remove** in the confirmation dialog.

Set the User Authentication Type

On a Google or SAML-enabled site, administrators can specify users' authentication type. For example, which users can access Tableau Online using their single sign-on credentials.

You can assign authentication type at the time you add users to Tableau Online, as well as any time afterward.

1. When you're signed in to the Tableau Online site, select **Users**.
2. On the **Site Users** page, select the check boxes next to the users you want to assign an authentication type.
3. On the **Actions** menu, select **Authentication**.



4. In the Authentication dialog box, select **Google** or **Tableau**.

Notes

- If you change users' authentication from Tableau (default) to Google, the next time they sign in, they will be directed to your identity provider's site to provide their credentials.
- If users were signing in using their external Identity Provider credentials, and you change their authentication type to Tableau, if they do not have existing Tableau credentials, they will receive email from Tableau with instructions for creating new Tableau credentials.
- Tableau recommends that you dedicate a site administrator account that is always configured for Tableau authentication. In the event of an issue with your Identity Provider, a dedicated Tableau account ensures that you always have access to your site.

Import Users

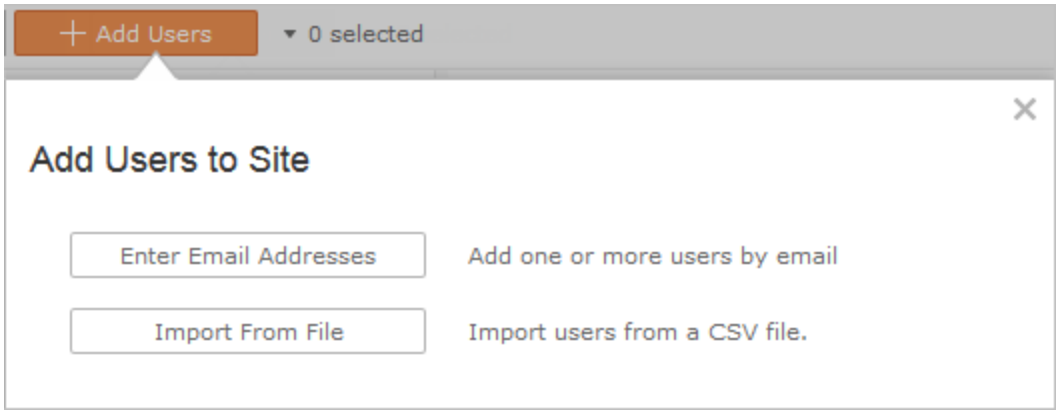
To automate the process of adding users to a site, you can create a CSV file that contains user information, and then import the file. When you import the CSV file, you also specify the users' authentication type.

Site administrators can import users to a particular site; server administrators (Tableau Server only) can import users at the server level, to later add them to multiple sites.

Note: This topic contains the steps for importing, assuming that you have already created the CSV file. If you have not created the file yet, see CSV Import File Guidelines for a list of file format requirements and import options.

Add users from a CSV file

1. When you're signed in to the Tableau Online site, select **Users**.
2. Click **Add Users**, and then click **Import From File**.



The options you have in the Import Users dialog box depend on how users sign in to the site.

3. If Google or SAML authentication **is not** enabled on the site, skip to the next step.

   If Google or SAML authentication is enabled on the site, you can select the authentication type for the new users.

   - Select **Add users for Google authentication** if you enabled your site for Google or SAML authentication and want the imported users to sign in to Tableau Online through an external Identity Provider.

- Select **Add users for Tableau authentication** if you want these users to have the default email address and password authentication.

4. For **File name**, click **Browse**, navigate to the CSV file, and click **Open**.

5. To see account-specific information, select **View Details**.

   To continue, click **Import Users**, and then click **Exit** in the final dialog box.

   If a user already exists in the Tableau Online site, and the import file defines a different site role for them, they will get the new site role as defined in the CSV file, even if it is more restrictive than their current site role. This includes existing site administrators.

CSV Import File Guidelines

You can automate adding users by creating a comma-separated values (CSV) file with user information and then importing the file. You can include attributes in the CSV file, such as license level and the publishing access, to apply to the users at the same time you import them.

To import users, you can use the site administration page or the `tabcmd` utility. Using `tabcmd` provides an option for assigning a site role to all users in the CSV file. For information, see Import Users or createsiteusers filename.csv.

CSV file format requirements

When you create the CSV file for importing users, make sure that the file meets the following formatting requirements:

- The file does not include column headings. Tableau Online assumes that every line in the file represents a user.
- The file is in UTF-8 format, and includes the byte-order mark (BOM).
- Character encodings such as BIG-5 have been converted to UTF-8. You can do this

by opening the file in a text editor and using the **Save As** command.

- If a user name includes an @ character that represents anything other than a domain separator, you need to refer to the symbol using the hexadecimal format: `\0x40`

  For example, `user@fremont@mycompany.com` should be `user-\0x40fremont@mycompany.com`

Required columns in the CSV file

The following value is required for each user:

- User name: The user's email address.

Additional CSV column options

For each user, the CSV file can contain the following fields. Where indicated, Tableau Online does not use the field, but it must be accounted for in the file.

- User name. The user's email address. This is the only required column.
- Password. Tableau Online does not use this field, but you need to delimit it in each row to position the subsequent fields correctly.
- Display name. Tableau Online does not use this field, but you need to delimit it in each row to position the subsequent fields correctly.
- License level. This can be **Creator**, **Explorer**, **Viewer**, or **Unlicensed**.
- Administrator level. This can be **Site** or **None**.
- Publishing capability. Acceptable values are **Yes/True/1** or **No/False/0**.

CSV file sample entries

The following example shows a user who will be granted the **Explorer** site role, will not be a site administrator, and will be able to publish to projects on which they have the appropriate content permissions.

```
user1@domain.com,,,Explorer,None,true
```

By changing the administrator-level column, you can import the following user as a site administrator with the Site Administrator Explorer site role.

```
adminuser@domain.com,,,Explorer,Site,true
```

Notes

- If the CSV file contains only user name values (email addresses), the users will receive an email invitation to the site. Users can join the site to create their accounts, but the accounts remain unlicensed until an administrator configures the accounts (display name, license level, and so on).
- The password (second value) and display name (third value) fields are not used by Tableau Online. Values you do specify for those fields are ignored.

  However, if you want to set the license and publish access for the users, your file still needs to include delimiters for these fields, as shown in the example earlier.
- New users must select a password and a display name when they first sign in to Tableau Online. If users already have a Tableau account, such as for the Tableau Community forums, they already have passwords.
- The CSV file does not include a field for setting authentication type (Tableau, Google, or SAML). You specify this in Tableau Online when you import the file. The setting applies to all imported users, and you can change authentication type for individual users afterward.

  Note: Alternatively, you can use `tabcmd` to import users and set the authentication type and site role that applies to all users in the CSV file. For information, see createsiteusers filename.csv.

CSV settings and site roles

The license level, administrator, and publishing settings for a user determine how the user's site role is set during the import process. The following table shows how the settings are converted to site roles.

CSV settings	Site role
License level=(any) Administrator=System Publisher=true	Server Administrator. This setting applies to Tableau Server only, and it is valid only if you are importing users while managing the server (that is, not signed in to a specific site).
License level=Creator or Explorer Administrator=Site Publisher=true	Site Administrator Creator or Site Administrator Explorer. This setting is valid only if you are importing users while signed in to a specific site.
License level=Creator Administrator=None Publisher=true	Creator
License level=Explorer Administrator=None Publisher=true	Explorer (Can Publish)
License level=Explorer Administrator=None Publisher=false	Explorer
License level=Viewer	Viewer

CSV settings	Site role
Administrator=None Publisher=false	
License level=Unlicensed Administrator=None Publisher=false	Unlicensed

Manage Site User Visibility

By default, all site users can see aliases, project ownership and comments by other users when permissions allow. The User Visibility setting lets administrators manage if users with Viewer and Explorer site roles see other users and groups on the site, which can be important for sites that are used by multiple clients. To learn more about site roles, see Set Users' Site Roles.

Limit user visibility

Setting User Visibility to **Limited** impacts certain collaboration tools and hides user information in Tableau Online and Tableau Server. Limited User Visibility either disables the feature for Viewers and Explorers (excluding Site Administrator Explorers), or removes user information from other areas. Note that Creators and administrators will still see user information when User Visibility is set to Limited.

To limit user visibility for Explorers and Viewers (excluding Site Administrator Explorers):

- Navigate to the site's **Settings** page
- Select **Limited** in the **User Visibility** setting

The following is a list of site areas impacted when User Visibility is set to Limited. Unless noted that the feature is disabled for all users, only non-administrator Explorers or Viewers are impacted.

Area	Impact
Search	User information not displayed
Content owners	User information not displayed (Explorers and Viewers can't see themselves, but can see their content in My Content)
Profile pictures	User information not displayed
Subscriptions	User information not displayed
Recommendations	Similar users not displayed (all users)
Add/Edit Tags	Explorers and Viewers can see tags but cannot delete or modify them
"Who has seen this view?"	Disabled
Ask Data usage analytics	Disabled
Permissions dialogs	Disabled
Named sharing	Disabled (all users)
Alerts	Disabled (all users)
	Existing alerts paused
Comments	Disabled (all users)
Public Custom Views	Disabled (all users)
	Existing public custom views appear as private
Request Access	Disabled (all users)
Tableau Desktop	Publishing workbooks disabled from Desktop

	User information not displayed on user filters
Tableau Catalog (with Data Management Add-on)	User information not displayed

When User Visibility is set to Limited, Tableau Server REST API and Metdata API calls behave as described in the table above.

Users on a site can interact with views and modify them, such as applying filters. If that user shares their modified view with others, or if the user creates something from that modified view (like a metric or a private custom view), then that user's name appears in the URL. Make sure that the URL for this modified view is only distributed to users who are permitted to see that person's name.

> **Note**: If a user is a member of multiple sites, entering an email on the sign in page for Tableau Online will return the names of all sites the user is a member of.

Best practices for limiting user visibility

Administrators can also check that user and group information is not visible in these ways:

- Configure permissions to only provide content to appropriate parties. For more information, see Permissions.
    - Limited User Visibility hides user identification information from search, but might return content that the user published, including when searching by owner name, if the person searching has viewing permission to that content.
    - A user publishing a workbook with a duplicate title in the same project might see a warning that a workbook with that title already exists.
- Apply row-level security when necessary.
- Check that metadata within dashboards does not contain user information.
- Check that calculations accessible to users don't contain user metadata (e.g., user filters).

Restore Full User Visibility

When administrators set User Visibility back to Full, features disabled for all users by Limited User Visibility (such as comments and alerts) remain off. Administrators can re-enable these features through the site's Settings page.

Any previous feature settings are not retained when User Visibility is set to Full, and affected features are not automatically turned on.

Enable Support Access

Tableau Online administrators can allow approved Tableau Support technicians to access their Tableau Online site to help troubleshoot a customer support case. By default, this feature is disabled for all sites. Enable the feature to allow support access.

1. In a web browser, sign in to Tableau Online as a site administrator and go to the site in which you want to enable support access.
2. From the navigation panel, click **Settings**.
3. Under **Tableau Support Access**, select **Let Tableau Support access your site**.
4. Click **Save**.

When enabled, Tableau Support technicians are assigned the **Support User** role and granted administrator-level access to your site and its content. Tableau Support technicians use this access to gather information to diagnose and reproduce issues. Tableau Support technicians do not make changes to your site unless you authorize them to do so.

Only Tableau Support technicians can be assigned the Support User role. You cannot add this role to new or existing site users. Users assigned the Support User role do not count against the site's user limit. To view users who have the Support User role on the site, click the **Users** tab.

Disable Support Access

When you disable support access, users with the Support User role who are signed on to the site are automatically signed out. If you do not disable support access, users with the Sup-

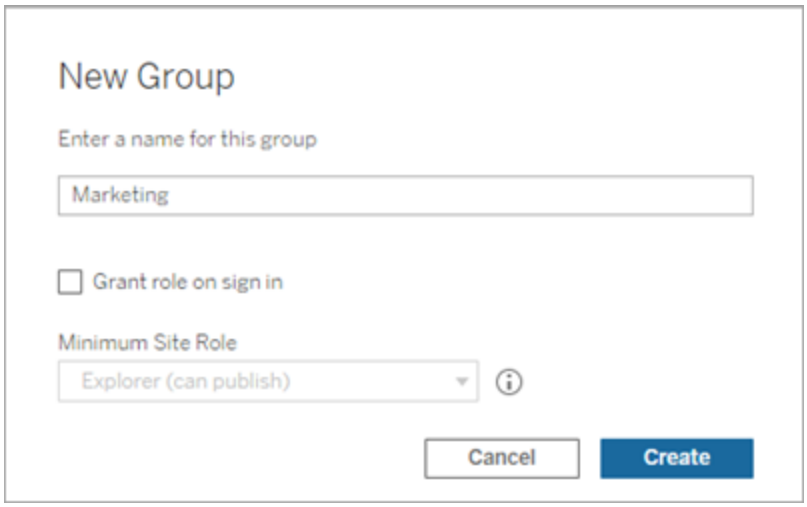
port User role will be automatically deleted after 16 days. Any content owned by the Support User will be reassigned to the longest-tenured site administrator.

Create a Group and Add Users to It

You can organize Tableau Online users into groups to make it easier to manage multiple users.

Create a group

1. In a site, click **Groups**, and then click **New Group**.
2. Type a name for the group.



   Optionally, select **Grant role on sign in** and select a minimum site role for the group. For more information, see Grant License on Sign In.

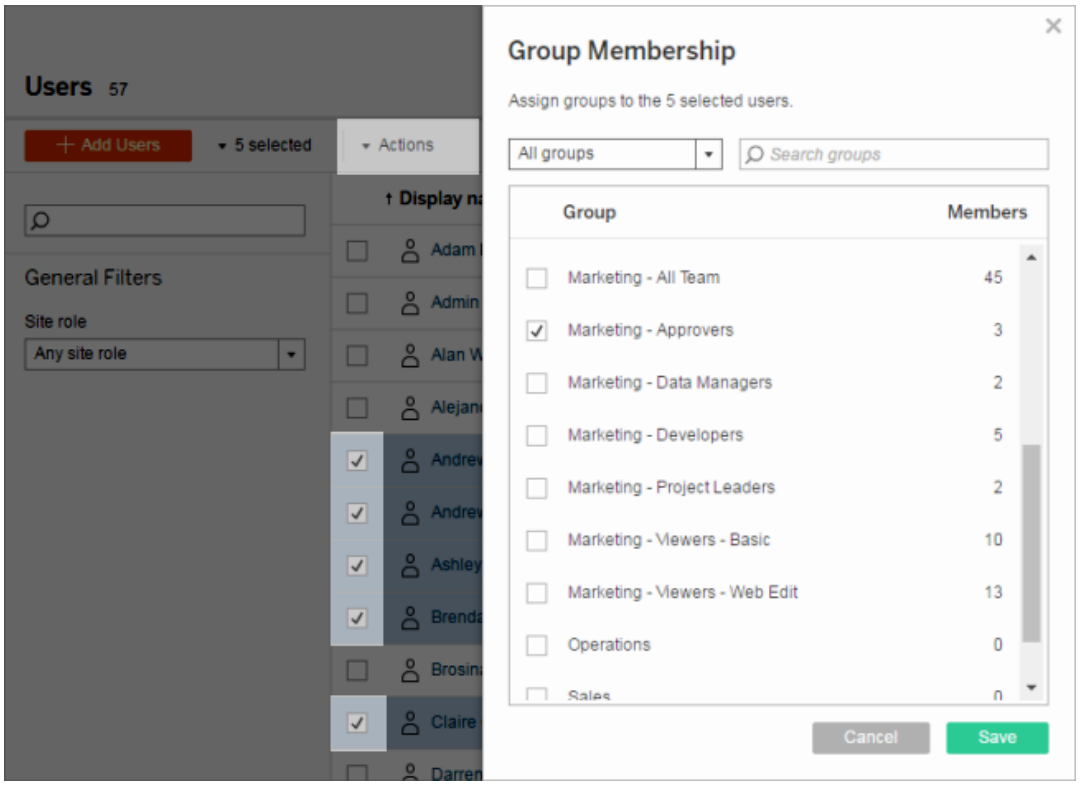
3. Click **Create**.

Note: The All Users group exists in every site by default. Every user added to the server becomes a member of the All Users group automatically. You cannot delete this group, but you can set permissions for it.

Add users to a group (Users page)

1. In a site, click **Users**.

2. Select the users you want to add to the group, and then select **Actions** > **Group Membership**.

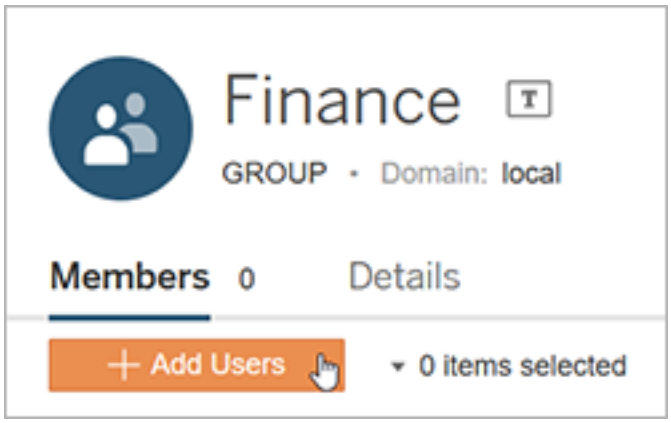


3. Select the groups and then click **Save**.

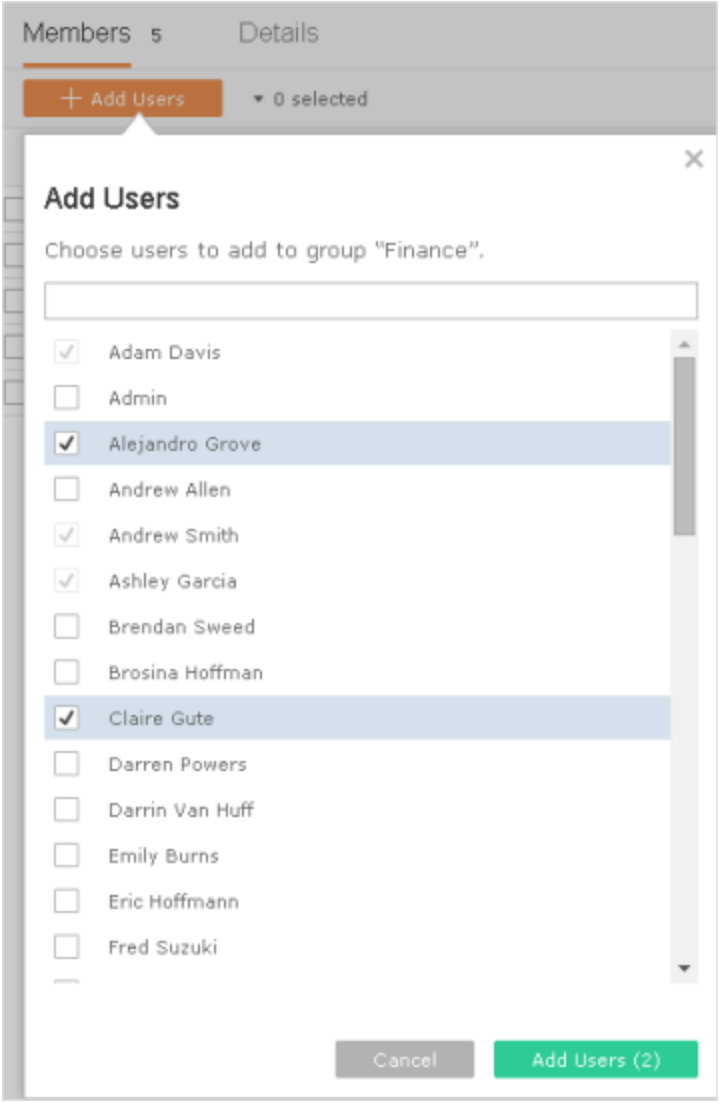
Add users to a group (Groups page)

1. Click **Groups**, and then click the name of the group.

2. In the group's page, click **Add Users**.



3. Select the users to be added, and then click **Add Users**.



Grant License on Sign In

Grant license on sign in (Grant role on sign in) lets unlicensed users in specific groups become licensed when they sign into a Tableau site. This streamlines license provisioning for administrators and removes the user's need to request a license before using Tableau.

For more information about site role capabilities and minimum site roles, see Set Users' Site Roles.

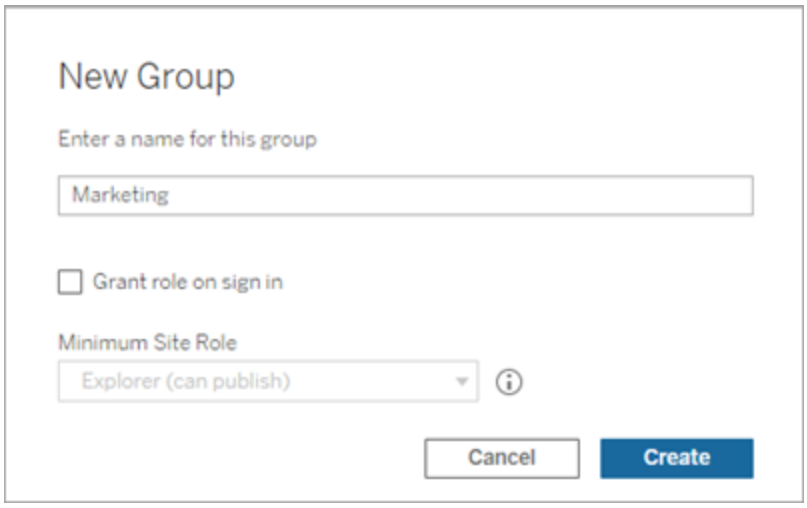
For example, imagine that your company has 100 people in the Marketing group, but only 25 members need to access Tableau Online. The Tableau Online administrator isn't sure which 25 need Tableau. That administrator can create a Marketing user group with an Explorer minimum site role, select **Grant role on sign in**, and add all 100 Marketing members to the group. Instead of provisioning licenses to the entire group, the 25 Tableau users in Marketing are provisioned Explorer licenses when they sign in to their Tableau Online site. Those who don't need Tableau Online remain unlicensed unless they sign in.

Note: For more information about benefits and best practices, see Grant Role on Sign In in Tableau Blueprint, Tableau's planning tool for data-driven organizations.

Activate Grant role on sign in

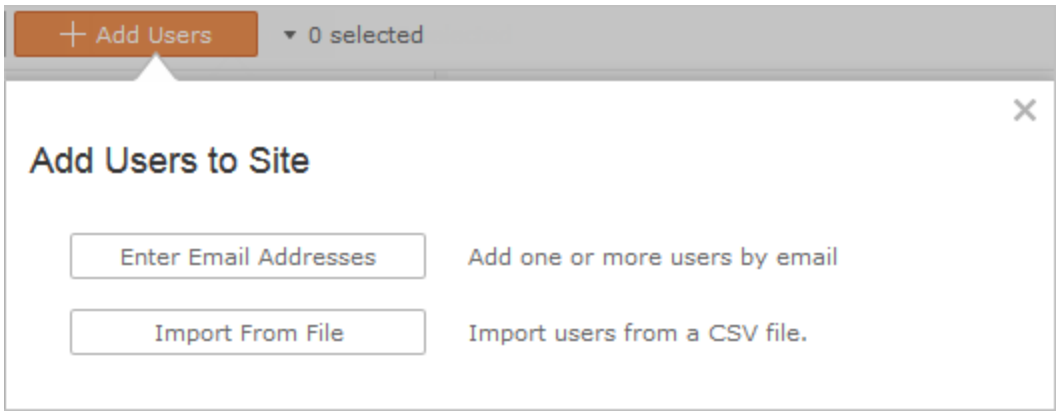
You can enable Grant role on sign in on new or existing groups. The following steps walk through how to use Grant role on sign in to add new users that are eligible for a license but may not consume one. This may be the case when your company has a lot of eligible users, but limited Tableau licenses.

1. In a site, add a new group:
    - Click **Groups**, and then click **New Group**.
    - Add a group name.



- Select **Grant role on sign in** and select a minimum site role for the group. This setting means licenses and site roles will only be provisioned to group users who sign into this Tableau Online site.
- Click **Create**.

2. Add users to a site, either by entering users' email addresses individually, or Import Users via a CSV file that you create using the CSV Import File Guidelines.



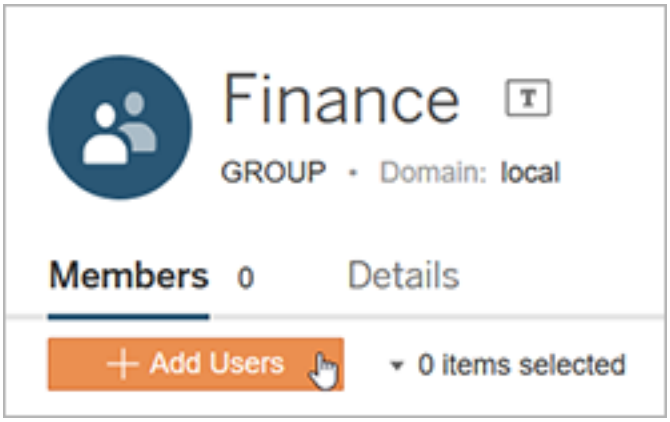
- Enter email addresses if adding individually. For information on using Google or SAML authentication when adding users, see Add Users to a Site.

  If you add more than one user, separate each address with a semicolon.

For example, *tdavis@example.com; jjohnson@example.com; hwilson@example.com*

- Set the site role for those users to **Unlicensed**.
- Click **Add Users**.

3. Add those new, unlicensed users to the new group.
   - Click **Groups**, and then click the name of the group.
   - In the group's page, click **Add Users**.



   - Select the users to be added, and then click **Add Users**.

For more information, see Create a Group and Add Users to It.

Modifying user roles with Grant role on sign in

If a user is part of a group using Grant role on sign in, then that user role can't be set to unlicensed or downgraded to a role lower than the minimum site role set for the group, whether or not they sign in. Administrators can upgrade a user's site role manually, however.

To downgrade a user's site role, or unlicense the user from the site, remove the user from the group(s) that have Grant role on sign in enabled.

In accordance with the terms of the End User License Agreement, licenses granted on an Authorized User basis may be permanently reassigned to new users. Users may only be

downgraded to a lower site role (including Unlicensed) when they will permanently discontinue access to Server Software at the higher role.

Removing users affected by Grant role on sign in

You can remove a user from a site only if the user does not own content. If you attempt to remove a user who owns content, the user site role will be set to Unlicensed and removed from all groups, but the user will not be removed from the site. To remove content owners, remove owners from group with Grant site role enabled or reassign content ownership to another user. For more information, see Remove users from a site in the View, Manage, or Remove Users help topic.

If the default All Users group has Grant site role enabled, users who own content can't be removed from the site or unlicensed. To remove or unlicense these users, reassign content ownership to another user, then remove or unlicense the user.

REST API can be used to reassign content ownership of a workbook. For more information, see Update Workbook in the REST API documentation. REST API can also be used to remove users from the site and transfer content ownership to another user. For more information, see Remove User from Site in the REST API documentation.

For more information on reassigning content ownership in Tableau Online, see Manage Content Ownership.

Buy More Licenses

You can scale your Tableau Online deployment at any time by purchasing additional licenses through the Tableau Webstore.

What accounts are eligible?

To buy more licenses through the Webstore, you must meet the following requirements:

- Customer Portal account administrator.
- Standard contract terms.

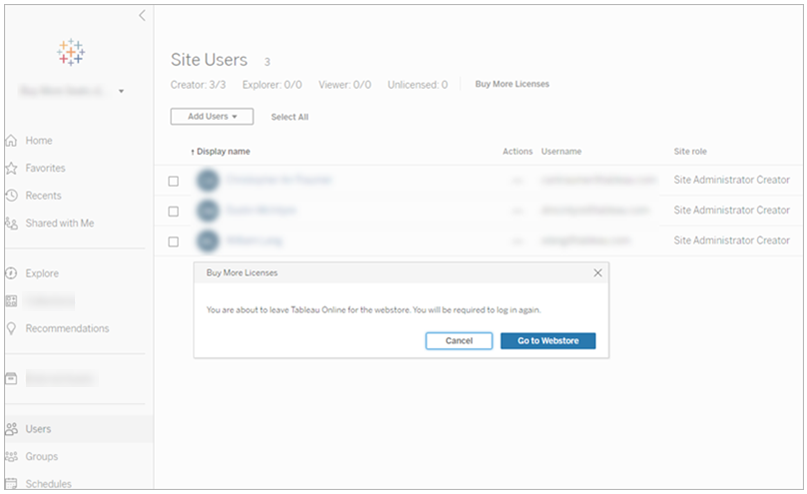
- Not a Government or Non-Profit account.

If you are not currently eligible, contact our sales team to complete a transaction.

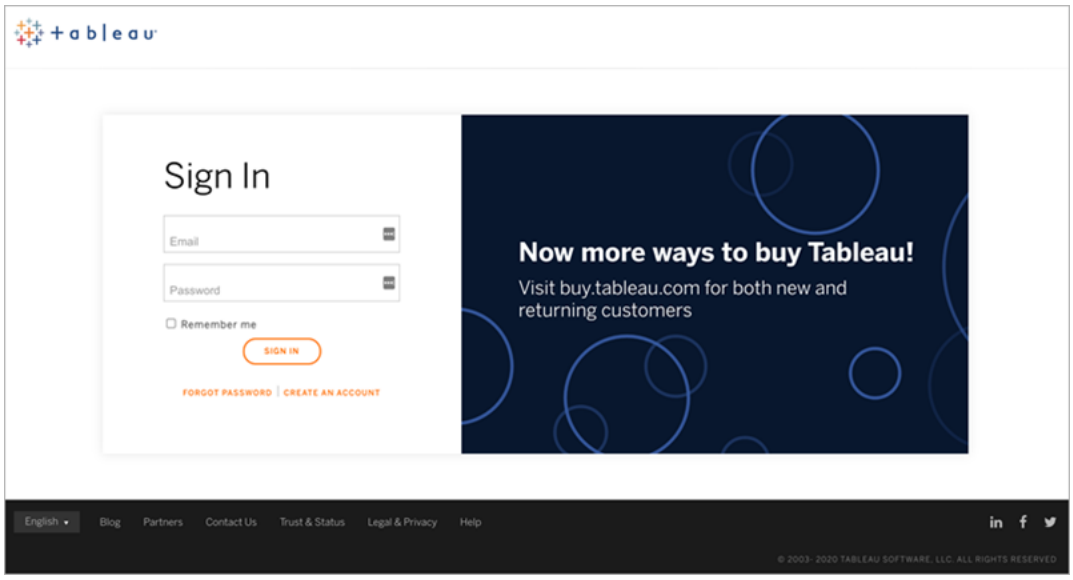
Access the Tableau Webstore

Complete the following steps to redirect and buy more licenses through the Tableau Webstore:

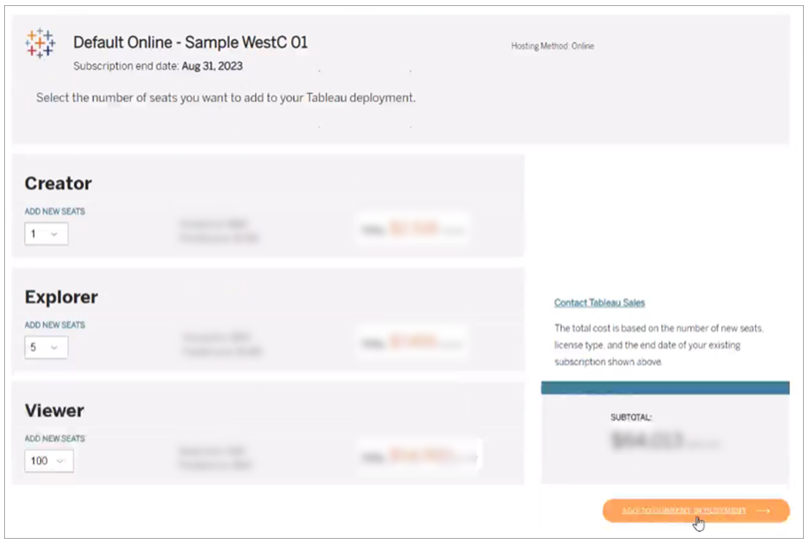
1. Sign in to the Tableau Online site as a site administrator and go to the **Users** page.
2. On the Users page, click **Buy More Licenses**, and then click **Go to Webstore**. The Webstore will open in a separate browser tab.



3. Sign in to the Webstore using your Tableau account. You may not be prompted to sign in if you previously authenticated to the Customer Portal.



4. Select the number of **Creator**, **Explorer**, and **Viewer** licenses to add using the drop-down menus.



5. Click **Add to Current Deployment** and continue to the **Contact & Billing** and **Summary & Payment** sections of the Webstore.

You should receive order confirmation and information about your new licenses within 10 minutes. The new licenses will appear in your Tableau Online site shortly after payment.

Manage Content Access

You can manage who can access content on your site and set the permissions that govern content ownership.

Set Web Edit, Save, and Download Access on Content

If you're enabling web authoring functionality on your site, you can configure more precisely which users on the site have access to this functionality. Using site roles and permissions rules at the content level, you can grant or deny **Web edit**, **Save**, or **Download** capabilities on projects, workbooks, and data sources.

> **Note:** This document strives to use the phrase *Web edit* to specify the name of the capability in permissions rules, and *web authoring* to refer to the general functionality of creating and modifying workbooks on the server. However, you might otherwise see these two phrases used interchangably.

Why allow users to work on the site directly

As an administrator, your initial thought about allowing people to populate a site with content, seemingly indiscriminately, might be one of skepticism. However, with a few controls, you can limit where this is done, while providing important benefits that centralized content management offers both you and your users.

Web authoring pros and cons

For publishers and business users, some benefits of web authoring include the following:

- It provides analyst teams who work collaboratively with a central location in which to provide input.
- It enables people who do not have Tableau Desktop to connect to data sources and create workbooks.

- It enables people to access content when they are away from their Tableau Desktop computer or VPN, whether on a computer or a hand-held device.
- It can provide a framework for enabling consistency across Tableau reports.(By making template workbooks available on the site, analysts can download or create new workbooks with data connections, branding, and formatting already in place.

For administrators, benefits can include the following:

- Fewer Tableau Desktop deployments to manage and support.
- Fewer computers that need to have database drivers installed.
- Capacity to govern content.
- More accurate monitoring of what people are doing with Tableau.

Some disadvantages to web editing include the following:

- For analysts, web editing functionality is not as extensive as in Tableau Desktop (although it continues to evolve toward that parity).
- For administrators, more people working on the server might mean upgrading systems.
- Without publishing guidelines, content proliferation on the site is expected.
  This can confuse the people who rely on published Tableau dashboards and data sources, degrade server performance and data quality, and potentially affect data security.

Managing permissions to help users avoid content proliferation

To help users to avoid content proliferation on the site, many Tableau administrators use projects to allow varying levels of access to content. For example, one project can be configured to allow all users to edit and save workbooks; another can allow only approved publishers to save new content.

To get a better idea how this works, see the following resources:

- Configure Projects, Groups, and Permissions for Managed Self-Service
- Projects and Content Permissions in *Everybody's Install Guide*
- Governed Self-Service at Scale, a Tableau whitepaper by Rupali Jain.
  To view the PDF, you might need to provide your Tableau website credentials. These are the same ones you use for the community forums or to submit support cases.

Coordinate edit and save capabilities with site roles for the appropriate level of access

To edit, save, and download workbooks, users must have a site role that allows those actions, along with the capabilities—defined in permissions rules—that grant or deny editing-related access.

Site role access

- When the appropriate permissions are set at the content level, the **Creator** or **Explorer (can publish)** site role allows both **Save** (overwrite) and **Save As/Download**.

  Note that **File > Save** is only available to the workbook owner. When the **Save** permission capability has been granted at the project and workbook level, a non-owner user can overwrite the existing workbook in web authoring by selecting **File > Save As** and using the same workbook name. This overwrites the existing content and they become the owner and gain full access to the content.
- The **Explorer** site role can be granted the **Web Edit** and **Save As/Download** capabilities, but they will not be able to save (neither overwriting existing nor saving changes to a new workbook).

For more information, see Web Editing and Web Authoring.

Configure Projects, Groups, and Permissions for Managed Self-Service

Tableau Online and Tableau Server each provide an environment for easy open publishing and collaborative analysis of visualizations created in Tableau Desktop or web authoring. With that flexibility comes the challenge of making sure the *right* content is easy to find for the people who rely on it for their work. Likewise, making sure the access you allow doesn't create performance or management nightmares on the site.

To address these challenges, many administrators set up their Tableau sites for what we'll refer to as *managed self-service*. This is just a way of saying that the site allows areas of

open collaboration and web editing, alongside areas in which access to data and reports is more controlled. As the site administrator, you put guidelines in place to help users figure out where to go for the type of work they need to do.

To get started with a managed self-service approach, the following sections discuss how you as the site administrator can meet the following objectives:

- Create projects on the Tableau Server or Tableau Online site to match the ways people need to work with content.
    - For example, some projects are open to all for collaboration; others are visible only to authorized publishers.
- Create user groups based on the type of access users need to the content.
- Create a clear and scalable permissions strategy.

Note: The information provided here is adapted and simplified from practices of existing Tableau Zen Masters and customers who have shared their experiences. Links to their talks are available at the bottom of this page.

Create a project team and adopt a permissions strategy

Although changing the project structure on your site after your users are publishing to it is not impossible, it's difficult and can be daunting. So before you make any lasting decisions or take definitive actions on your Tableau site, we recommend that you recruit users from various segments of your Tableau population, to create a project team of people who have differing uses for Tableau content.

Your permissions strategy will help your environment scale as you add new Tableau users. Make sure it incorporates two important practices: manage permissions only for groups, and set permissions only at the project level. Setting permissions at the individual user level and on individual content resources becomes unmanageable quickly. If you need to deviate from this practice, make sure you document and communicate your strategy to other administrators and project leaders.

Important: We strongly recommend familiarizing yourself with Tableau's Permissions before proceeding.

Steps to coordinate projects and groups

To get projects and permissions (content) to work together with groups (people) in a managed self-service environment, you generally take the following steps:

1. 1. Plan your permissions: Find common themes in the type of access users need. This helps determine projects and groups.
2. 2. Remove permissions that will cause ambiguities
3. 3. Create groups
4. 4. Assign permissions to the groups
5. 5. Create projects and adjust permissions
6. 6. Lock permissions in each project

If you decide to follow the guidelines described here, you might want to Automate working with groups and projects.

1. Plan your permissions

Before you create groups and start assigning permissions, create a list of people who need access to content, and arrange them in groups according to what they'll want to do.

For example, someone who publishes or moves a data source to a *certified* content project would need different level of access than someone who only consumes published reports. (We use the term "certified" to mean "trusted" — these are the data sources or reports that your Tableau community can trust to be a source of truth for your organization.)

Keep in mind also that you can set permissions differently for each project. So someone who is a data steward for the Ops department might not get the equivalent access to the Marketing content.

This exercise, done outside of the Tableau environment, can be the most challenging part of setting up a site.

Use a closed permissions model for managed content

General models for setting permissions are *open* or *closed*. In an open model, users get a high level of access, and you explicitly deny capabilities. This model can work when your organization is very small, and everyone has a similar level of responsibility.

In a closed model, users get only the access they need to do their jobs. This is the model security professionals advocate, and the examples in this article will attempt to show.

2. Remove permissions that will cause ambiguities

Every site has a **Default** project and an **All Users** group. Any user added to the site becomes a member of the All Users group automatically. The Default project works as a template for new projects in the site and cannot be deleted, but you can change the permissions. Creating groups and setting baseline permissions here helps you to know and manage exactly who gets what level of access for each new project.

In the managed self-service context, setting baseline permissions means *removing* the permissions from the **All Users** group, so that the permissions are enabled only on groups you create and have control over.

1. Select the **Content** tab to open the top-level projects on the site.
2. On the **Default** project's **Action** (**…**) menu, select **Permissions**.
3. Next to the **All Users** group name, select **…**, and then select **Edit**.
4. For the tabs for **Project**, **Workbooks**, and **Data Sources**, use the template drop down and select **None**.
5. Select **Save** to apply the changes.

3. Create groups

You create groups to match what people need to do with a set of content. In this case "a set of content" refers to the workbooks and data sources in a project.

When you create your groups, use descriptive names that make sense for your organization. For example, one possible set of groups might be as follows:

- **Project leaders.** You might also think of these as project-level administrators. Users who can perform all available capabilities on data sources, with the possible exception of setting permissions on them. People in this group can be site administrators, or users whose job it is to approve or certify data models or reports. To grant administrator capabilities at the project level, you can assign the **Project Leader** setting to users with the appropriate site roles. For more information, see Permissions.
- **Analysts/Publishers.** This group is for users who can publish workbooks to production and other open projects, use web editing on some projects, and connect to data sources certified by the data stewards. This group is not allowed to set permissions on content or move it between projects.
- **Business Users.** This group is the most likely to include people who do not use Tableau Desktop, but use data to answer questions and make business decisions. They can view and interact with workbooks only in specific projects, and they can't publish, edit, save, or delete anything.
- **Administrators.** Depending on the size of your deployment, managing site or server administrators as a group helps you keep track of who has that level of access.

> **Note:** Users with the Server Administrator or Site Administrator Creator site role have access to everything on the site, regardless of the groups you add them to.

If you have multiple Tableau roles per department, creating corresponding groups manually can be labor intensive. For alternatives, see Automate working with groups and projects later in this article.

Learn more: Create a Group and Add Users to It

4. Assign permissions to the groups

After you create groups, you can assign permissions in one of the following ways:

- In the Default project, apply a core set of permissions on each group that will stay more or less the same for all projects. You can then make minor adjustments in

specific projects.

Or

- Keep the Default project clean, and apply permissions only on projects you create.

For more information, see Permissions.

For the example we're using, it makes more sense to set permissions templates in the Default project. You will want to explicitly deny some capabilities across the board, and then allow them on only a few projects where you want to allow more open access.

Create permission rules

1. While you have the Default project open, on the **Actions** menu (...), select **Permissions**.
2. Create a permission rule for each group as follows:
   a. Click **+ Add Group/User Rule** and start typing to search for a group or user.
   b. For each tab, choose an existing template from the drop-down or create a custom rule by clicking the capabilities.
      i. Templates are predefined sets of capabilities that make setup easier.
      ii. One click sets the capability to **Allowed**, two clicks sets it to **Denied**, and a third click clears the selection (**Unspecified**).
   c. When finished, click Save.
3. Lock permissions to the project.

Remember, a capability is only granted to a user if they are expressly allowed it. Leaving a capability as Unspecified will result in it being denied. For more information, see Permissions.

Example

For the groups defined above, here is one way you might set default permissions.

	Project tab	Workbooks tab	Data Sources tab

Project Leader group		Permissions	
Analyst Publisher group	Publish template	Publish template	Publish template
Business User group	View template	Explore template Set **Web Edit** and **Download Full Data** to **Unspecified***	Explore template

* This assumes you want to allow web editing and downloading data only on select projects. You can allow those capabilities on specific projects or workbooks.

5. Create projects and adjust permissions

After the Default project is set with your custom permissions template, you can create projects that allow the content use cases you identified. For each project, you can adjust the default permissions as appropriate.

Example project structure

One way to structure projects could be to reflect the following use cases:

Workbooks shared for open collaboration on the server

Anyone in the department can publish to the open-collaboration project while their content is in development. Colleagues can collaborate using web editing on the server. Some people call this a sandbox, some call it staging, and so on. On this project you can allow web editing, saving, downloading, and so on.

Here you want not only to enable collaboration, but also to enable people who don’t have Tableau Desktop to contribute and provide feedback.

Shared reports that cannot be edited

This could be a project that people who create workbooks and data sources (Analysts and Data Stewards) could publish to when they want to make content available to business users for viewing, with confidence that their work cannot be “borrowed” or modified.

For this type of project, you would deny all capabilities that allow editing or getting the data off of the server for reuse. You would allow viewing capabilities.

Vetted data sources for Analysts to connect to

This would be where Data Stewards publish the data sources that are meet all of your data requirements and become the “source of truth” for your organization. Project leaders on this project can certify these data sources, so that they rank higher in search results and are included in recommended data sources.

You would allow authorized Analysts (that is, the Publishers group described earlier) to connect their workbooks to data sources in this project, but not download or edit them. You would deny the view capability to the Business Users group for this project, so those users would not even see this project.

Inactive content

Another possibility is to segregate workbooks and data sources that the site’s administrative views show haven’t been used for a period of time. You could give content owners a time limit before their content is removed from the server.

Whether you do this or delete directly from the working projects is up to your organization. In an active environment, don’t be afraid to be intentional about removing content that is not being used.

Source for workbook templates

This is a project that people can download from but not publish or save to, where authorized publishers or project leaders make template workbooks available. Templates that have your organization’s approved fonts, colors, images, and even data connections built in can save authors a lot of time and keep your reports looking consistent.

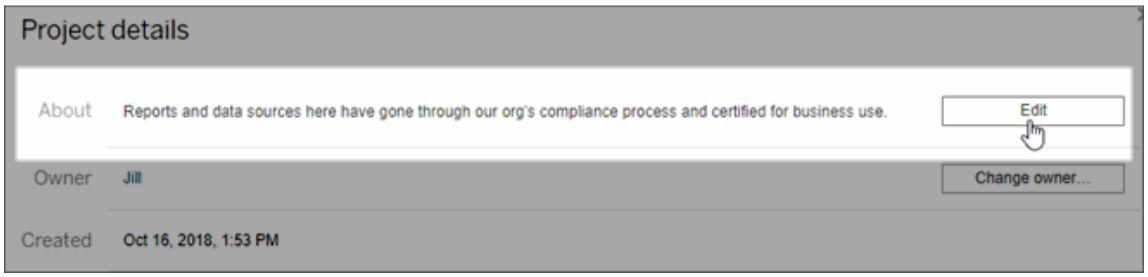
Help project leaders manage content and users find it

- Devise a scalable project-naming scheme that makes sense in your organization.

  For example, basic structure might be **<Department> - <ContentUse>**; such as **Ops - Production**.

- Use the project's **Description** field.

  The description you enter when you create a project appears when you hover the pointer over the project thumbnail, as well as on the **Project details** page.



6. Lock permissions in each project

After you refine the capabilities for each group in a project, you can lock the project's permissions, either for the project itself or all projects in the hierarchy. Do this on the Default project, too.

To configure the **Content Permissions**:

1. You must be logged into the site as an administrator, project owner, or project leader
2. Open the permissions dialog box for a project
3. Click the Content Permissions **Edit** link in the upper left and select the desired option in the Content Permissions dialog box

Locking permissions prevents publishers from setting permissions explicitly as part of the publishing process in Tableau Desktop. Instead, content inherits permissions set on the project it's published to, and only administrators and project leaders can set permissions.

For more information, see Permissions.

Automate working with groups and projects

Creating multiple groups and projects and setting permissions manually can get a little tedious. To automate these processes, as well as make them repeatable for future updates, you can perform these tasks using REST API commands.

You can use tabcmd commands for tasks such as adding or deleting a single project or group and adding users, but not for setting permissions.

Next steps

Besides projects, groups, and permissions, other data governance themes include:

User education

Help *all* of your Tableau users become good data stewards. The most successful Tableau organizations create Tableau user groups, have regular training sessions, and so on.

For a common approach to orienting users to the site, see Dashboard-based Custom Portals.

For publishing and data certification tips, see the following topics:

- Use Certification to Help Users Find Trusted Data
- Prepare for Publishing a Workbook (links to Tableau Help)
- Best Practices for Published Data Sources (links to Tableau Help)

Optimize extract refresh and subscription activity

If you use Tableau Server, create policies for extract refresh and subscription schedules, to avoid them dominating the site's resources. The TC customer presentations by Wells Fargo and Sprint address this subject in detail. In addition, see the topics under Performance Tuning.

If you use Tableau Online, see the following topics to become familiar with the ways people can refresh extracts:

- Keep Data Fresh
- Use Tableau Bridge to Expand Data Freshness Options

Monitoring

Use administrative views to keep an eye on the site's performance and content use.

Administrative Views

Learn how Tableau and some of our customers address governance and self-service

The following list contains links to data governance and Center of Excellence (COE) presentations given at the Tableau Conference over recent years. Even if Tableau versions have evolved, the principles remain the same. You can explore the playlists for other videos related to COE, managing Tableau at scale.

Creating a Centre of Excellence in Tableau (TC Europe 2018)

Server Admins: Don't Fear Web Authoring (Sprint, TC16)

The Past, Present, & Future at Charles Schwab (TC 17)

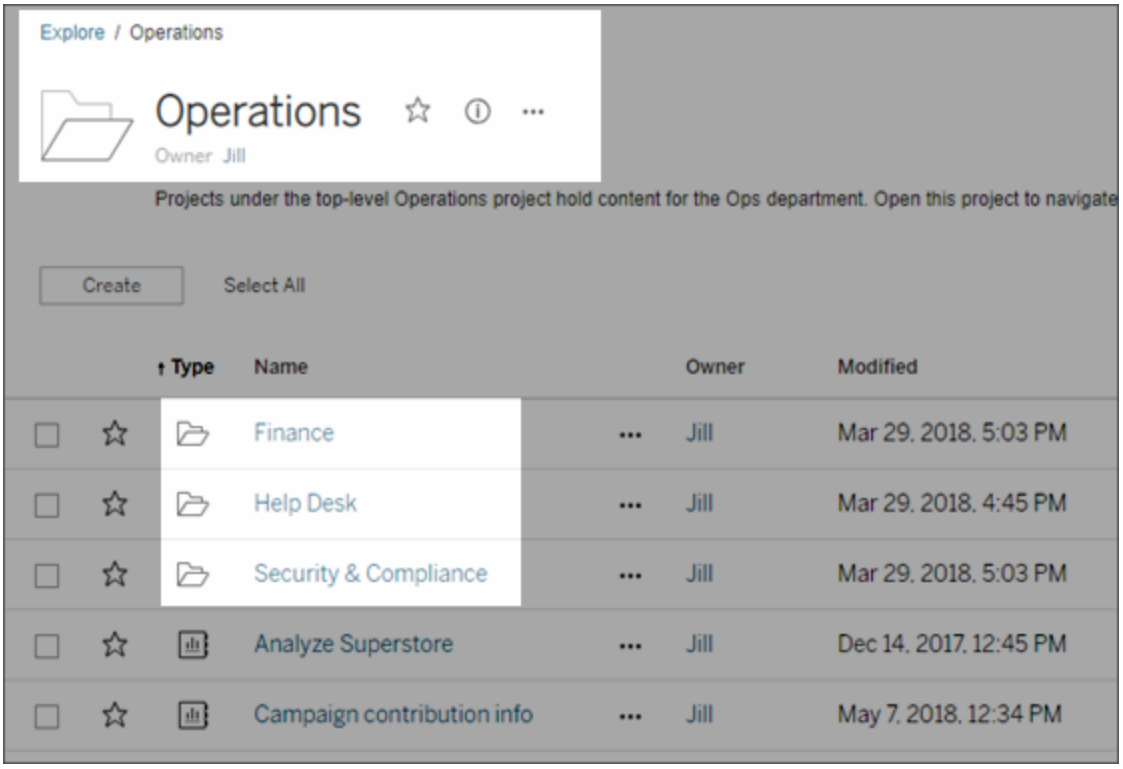
Content Strategies in Tableau (TC 17)

Use Projects to Manage Content Access

When Tableau Desktop users publish a workbook or data source to a site on Tableau Online, they can select a *project* to publish it to. If they don't specify a project, their content is published to the **Default** project.

As an administrator, you can create projects to hold and organize related *content*, or to delegate content management. Content on Tableau Online are workbooks, views, and data sources, and the projects that hold them. If the Data Management Add-on is present, content types also include Flows and Data Roles.

The following image shows content within the top-level Operations project in the web authoring environment. The Operations project contains a few child projects (highlighted) and published workbooks. A project can also contain other content types, such as data sources and flows.



Why use projects

Projects help you to create a scalable process for managing access to the content published to Tableau Online. Advantages they have include:

- They enable administrators to delegate content management to project leaders who work with the content more closely, without having to give them administrator access to site or server settings.

    - Project leaders can create nested projects under their top-level project, enabling them to maintain their team's content within a single hierarchy.
    - **Note:** Project owners can delete top-level projects they own. Project leaders cannot delete top-level projects.
- They can make the site easier to navigate for self-service users.
    - They segment the Tableau Online site into areas that give users access based on how they use the data published to those areas, or on the Tableau user group they work with.
    - You can hide projects from groups who don't need to use them, create a distinguishable project-naming scheme, and take advantage of project descriptions to clarify how to use the project.
- They enable you to track permissions effectively.
    - You can create groups based on the level of content access users in the group need, and set default permissions on projects. This enables you to know exactly which capabilities new users get by default, and likewise which capabilities all users get when a new project is created.

When to create project hierarchies (example)

Many organizations have several or more distinct groups of Tableau users, each with its own priorities and leaders. These groups might share some organization-wide content (or even draw from an org-wide pool of data sources), but primarily they use data and reports that are specific to their team. In this or similar scenario, an example for using project hierarchies might look as follows:

1. You, as a site or server administrator, can create top-level projects for each of your distinct Tableau teams.
2. On each top-level project, you assign the Project Leader status to team leads, and change project ownership. Project leaders effectively are the content administrators, so it's important that they understand how permissions work in Tableau, along with Tableau content management best practices.
3. Each project leader can manage their project, creating the structure within the project that works for their team. That is, they can create child projects they need, based on how their team members collaborate and share data and reports.

The benefit to you as the site administrator is that you can focus on system health. The benefit to your Tableau users is that people who know the best practices for working with

Tableau and data can manage these things for their teams, without having to submit IT requests to change permissions or add projects.

Project-level administration

As a server or site administrator, you can delegate administration of projects and their content, without exposing access to your site or server settings. You can do this by changing the ownership of a project or granting a group or user project leader status on a project.

The **project owner** is always one individual user. By default, the user who creates a project is its owner. The project owner has administrative access to the project and content in it—including making someone else the owner and assigning Project Leader permissions.

The **project leader** setting provides a way to allow multiple users administrative access to a project, its child projects, and all workbooks and data sources in those projects.

A project leader does not have to be a project owner or administrator. In addition to server and site administrators, the full scope of Project Leader permissions is available to users with a **Creator** or **Explorer (can publish)** site role.

Project ownership and project leader access in project hierarchies

In a multi-level project hierarchy, a user or group that is set as a project leader, at any level within the hierarchy, is implicitly given project leader access to all of that project's child projects and their content items.

To remove the project leader access, you must do so at the parent level in the hierarchy on which the ownership or setting was explicitly assigned.

Similarly, the owner of a project at any level has project leader access to all content in that project, as well as to any of its child projects, even if they do not own the child projects.

Only a project owner or administrator can change ownership of a content resource, and this can be done regardless of whether the project permissions are locked.

Actions project-level administrators can take on projects

Project leaders and owners can perform the tasks in the following list, as can server or site administrators.

- Create and delete projects as follows:
  - Server or site administrators can create or delete top-level or nested projects anywhere on the site.
  - Project owners and project leaders can create and delete child (nested) projects in projects they own, or on which they have project leader status.
- Project owners can change ownership of their projects. Both project owners and project leaders can assign the project leader status to groups or users.
  - As a project leader or owner, if you assign the project leader status to someone else, remember that full access to this role's capabilities depends on the user's site role, as specified earlier in this section.
- Set permissions for a project, as well as the child projects, workbooks, and data sources in it.
- Lock permissions to apply the project's default settings to all workbooks, data sources, and optionally child projects and their content. For information, see Permissions.
  - Permissions can be modified only from the project they're locked on. Only admins, the owner, or project leaders can change permissions.
- Move workbooks and data sources to another project to which they have project leader or owner access. Moving the project can affect permissions. For information, see Move content.
- Run, add, or remove extract refresh schedules.

See also Permissions.

How the Default project acts as a permissions template

Tableau creates a **Default** project with every site.

The Default project serves as a template for new top-level projects you create on the site. When you create a new top-level project, settings and permissions from the Default template are applied to the new project, including permissions set on content within the project.

> **Note:** Nested projects (projects you create within other projects) take the permissions set at their parent project, not the Default project.

Before you create other top-level projects, you can take steps to set up the Default project, to help you to know exactly:

- Which type of user gets what level of access for each new project.
- How you might need to modify permissions for each new project.

For more information, see Steps to coordinate projects and groups in the topic Configure Projects, Groups, and Permissions for Managed Self-Service.

Prevent publishers from changing permissions on content they own

Administrators and project leaders can prevent users from changing the permissions for workbooks and data sources in a project hierarchy. For example, you can disable the option to set permissions during the publishing process, and prevent publishers and content owners from changing them after publishing. To do this, you *lock* content permissions to the project. For more information, see Permissions.

Add Projects and Move Content Into Them

A content resource (workbooks and data sources) can live in only project. Server and site administrators can add or remove top-level projects on a site, and move published content from one project to another. Project leaders with appropriate site roles can add or remove child projects and move content between projects on which they have Project Leader access.

This article contains the steps for creating and moving projects. We recommend becoming familiar with the following related content as well:

- To learn about projects and when or why to use them, see Use Projects to Manage Content Access.
- Before you create project hierarchies, become familiar with Permissions.

- To see the specific site roles that allow full Project Leader access, see Project-level administration.

Add a top-level or child (nested) project

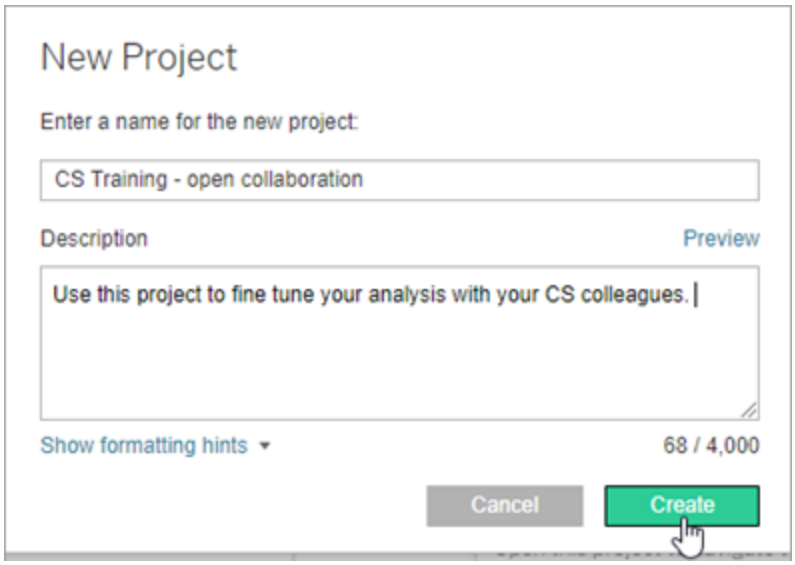
1. While you're signed in to Tableau Online as an administrator or project leader, select the **Content** tab, and then do one of the following:

    - Select **Create** > **Project** to create a new top-level project (only administrators can do this).

    - Navigate to and open the project in which you want to create a sub-project, and then select **Create** > **Project**.

      If you're not sure where to find a child project, display filters, and select **Show all projects**.

2. Enter a name and description for the project, and then click **Create**.



You can include formatting and hyperlinks in the project description. Select **Show formatting hints** for syntax.

> **Note:** To edit a project description later, select it to open it, select the information icon next to its name, and then click **Edit**.

Move a content resource to another project

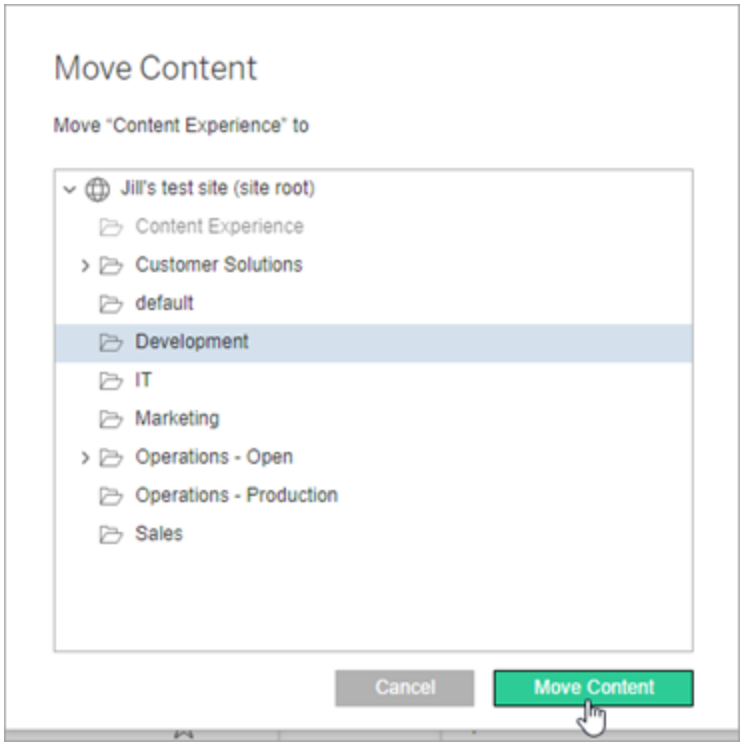
1. On the **Content** tab, find the content resource you want to move.

   If you're not sure where to find a child project, display filters, and select **Show all projects**.

   For other content types, you can navigate through its project hierarchy, or by selecting the content type on the **Explore** menu.

2. On the workbook's **Actions**(**...**) menu, select **Move**.

3. Select the new project for the workbook, and then click **Move Content**.



Moving a project includes moving everything in it, including child projects and their content.

How moving projects affect permissions

When you move a project, Project Leader permissions adapt to the new project environment.

- When the target project hierarchy is **locked**, previous Project Leader permissions are removed, and new Project Leader permissions are granted according to those set at the top-level of the target hierarchy.
- When the target project hierarchy is **unlocked** (managed by owner), previous implicitly granted Project Leader permissions are removed, explicitly set Project Leader permissions are retained, and new Project Leader permissions are granted according to those set at the top-level of the target hierarchy.

When you move project and content, permissions may be impacted. For more information, see Permissions.

Delete a project

When you delete a project, all of the workbooks and data sources in the project are also deleted from the site. If you want to delete a project but not its content, move the content to another project, and then delete the project.

Important

- You cannot undo deleting a project.
- Deleting a project deletes all content in it, including child projects and their content.
- You cannot delete the **Default** project.

To delete a project:

1. On the **Content** tab, find the project you want to remove.

   If you're not sure where to find a child project, display filters, and select **Show all projects**.

2. On the project's **Actions** (**…**) menu, select **Delete**.

3. Confirm that you want to delete the project.

Required access level for moving content

Moving content is effectively like removing it from one project and publishing it to another. For non-administrators, the permissions needed on the source project are different than those needed on the destination project.

Required site role

To move content, users must have one of the following site roles:

- Server Administrator (Tableau Server only)
- Site Administrator Creator or Site Administrator Explorer
- Creator or Explorer (Can Publish)

Users with a Server Administrator or Site Administrator site role do not need any additional capabilities.

Required permissions for the project that users move content *to*

Non-administrators must have the **Publish** permission capability for the project that is the move destination.

Required permissions for the project that users move content *from*

Non-administrator users must

- Be the project owner, project leader, or content owner

  OR

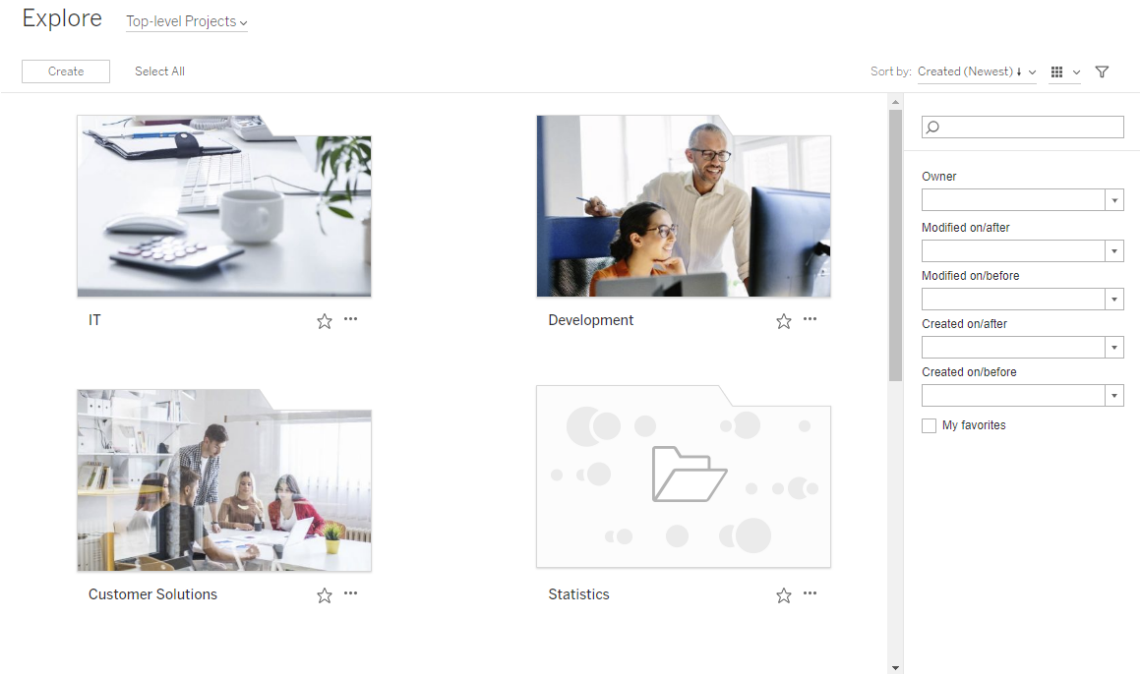
- Have the **Move** permission capability for the content (or, for data sources, be the data source owner).

For more information, see Move content.

Add a Project Image

To help distinguish projects you manage on Tableau Online (and help your users find them), you can add an image that appears in the thumbnail. Your image must meet the following requirements:

- The image must be accessible using HTTPS protocol. Shared network directory and related protocols (UNC, SMB, AFP, NFS, etc) are not supported. HTTP protocol for project images is not supported by Google Chrome.
- All users who access the project must have, at a minimum, "read-only" permission on the target image.
- The image must be common internet format: .jpg, png, or gif.

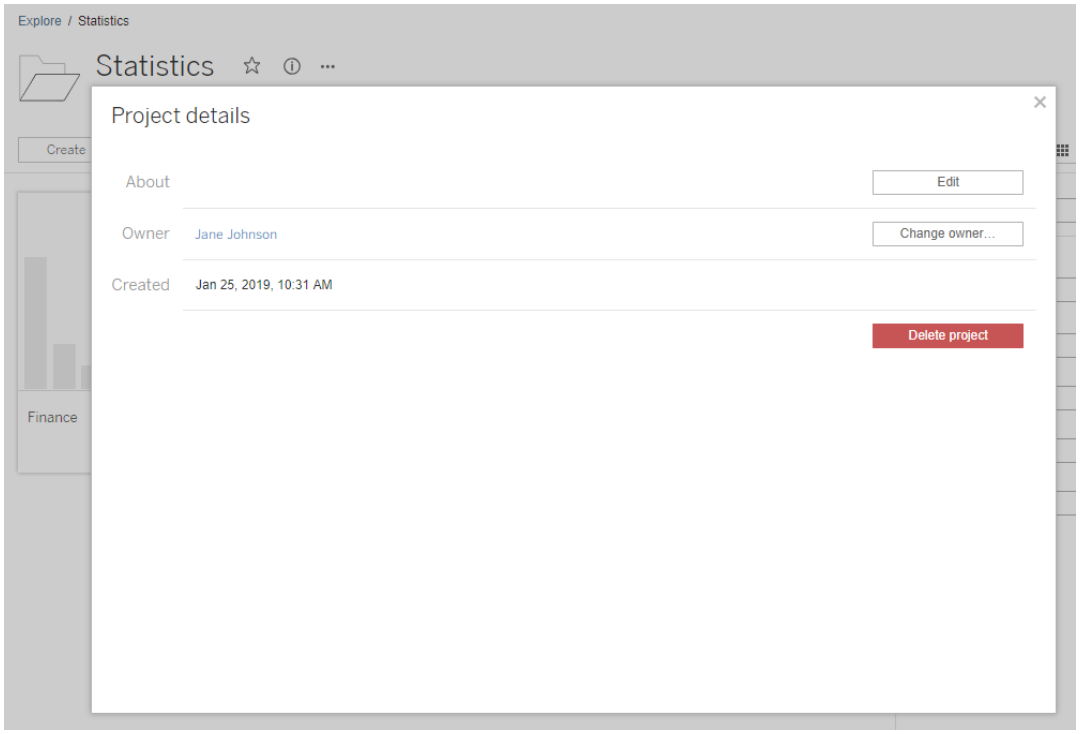


Set a project image

1. Sign in to a site on Tableau Online. In the list of **Top-level Projects** you have access to, select or navigate to the project you want to update. In this example, we'll add an image to the Statistics project folder.

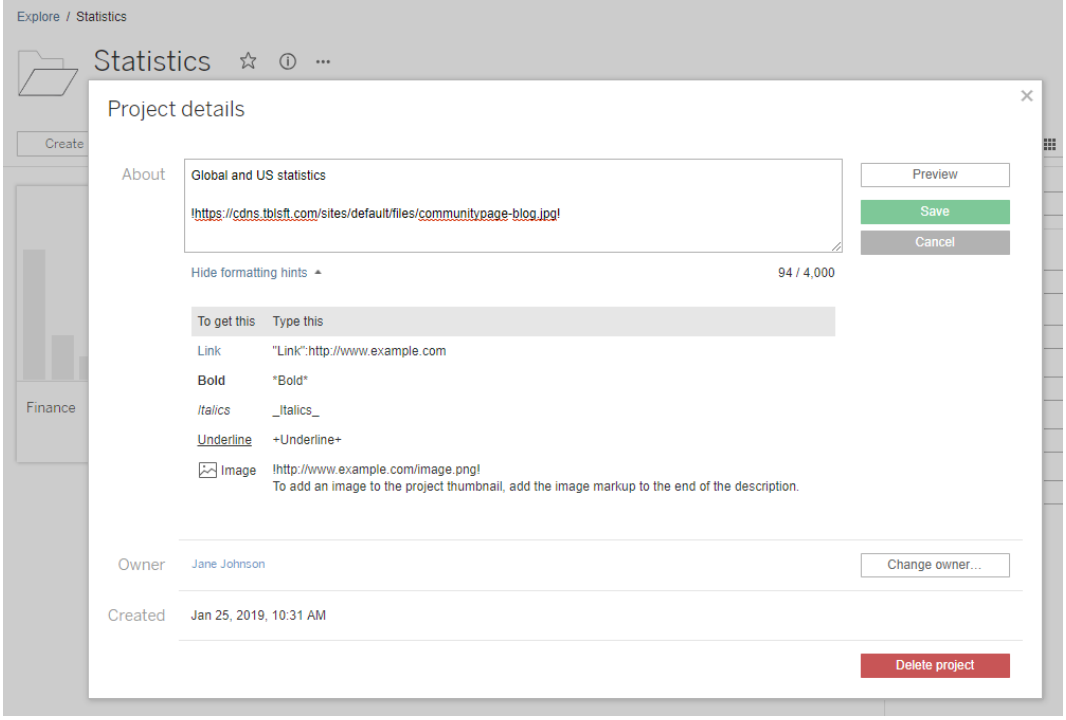
   If you're not sure where to find a child project, use the **Explore** drop-down list and select **All Projects**.

2. Click the **Details** icon (i), to open the **Project details** dialog box, and then click **Edit**.



3. In the **About** field, you can enter a description for your project (optional), for example "Global and US statistics." At the end of the project description, add the URL for your image using the following syntax:

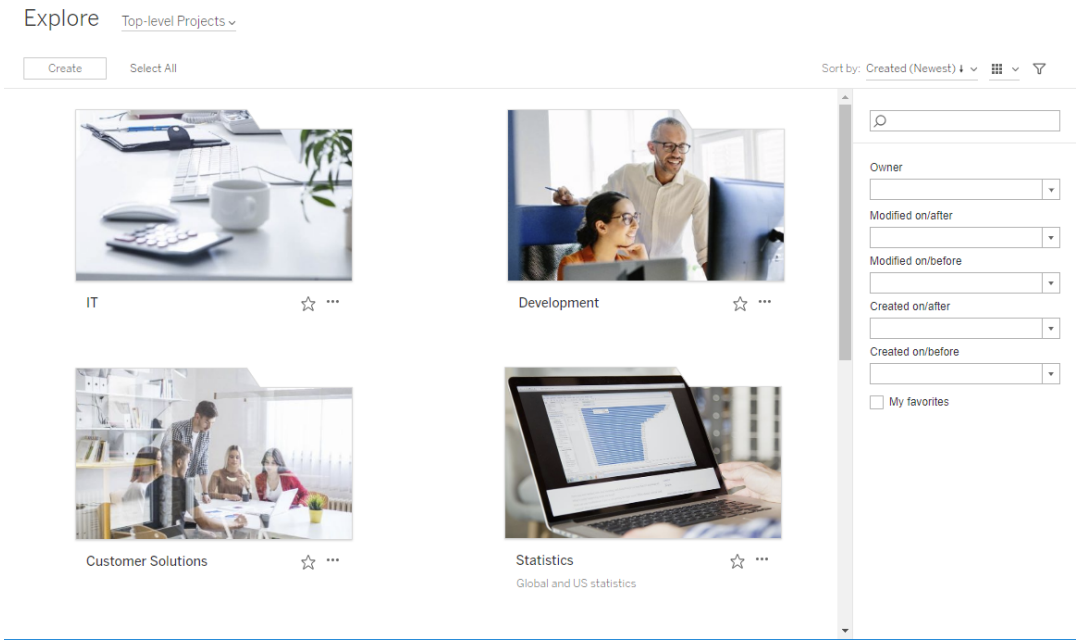
```
!http://www.example.com/image.png!
```



Select **Show formatting hints** to see how you can format description text.

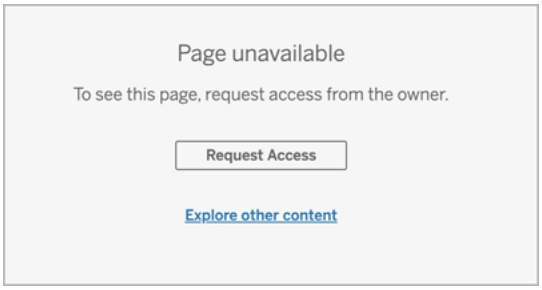
> **Note:** Images embedded in project descriptions cannot be resized or positioned. Recommended size is (300 x 184 pixels). Images that are not 300 x 184 pixels may be stretched, shrunk, or cropped to fit the width of the thumbnail. In addition, they must be added at the end of the project description and be enclosed in **!** (exclamation marks), otherwise they will not be displayed as the thumbnail.

4. Click **Save**.



Let Site Users Request Access to Content

Permissions determine if a user has viewing access to workbook, view, or content inside a project. If an existing site user clicks on content or a project they don't have access to, they can select Request Access to send a request to the owner controlling permissions for that piece of content.



When someone requests access, the owner who controls permissions for that content (either at the project or workbook level) receives an email with the name and email of the requester, the content or project requested, and a link to the project or content controlling permissions on the requested item.

For example, if a user requests access to a workbook and content permissions are locked to the project, then the project owner receives the request. Likewise, if a user requests access to a workbook and project permissions are managed by the workbook owner, then the workbook owner receives the request.

Once permission is granted, the owner can email the requester to let them know they have view capability to the project or workbook.

Default settings

The Request Access setting is enabled by default on a new site. To enable the setting if it's been disabled:

1. Go to the General tab of the Settings page for your site.
2. On the General tab, scroll down to Request Access and select **Let users request access to projects, workbooks, and views**.
3. Click **Save**.

Configure project permissions

You can control who will receive the access request by adjusting the project's content permissions. If content permissions are:

- Locked to the project: the project owner receives the request.
- Managed by the owner: The workbook owner receives the request.

To manage content access using projects, see Use Projects to Manage Content Access and Permissions.

For more information about how permission rules are evaluated, see Permissions: Evaluate permission rules.

Change project permissions

For administrators and project leaders

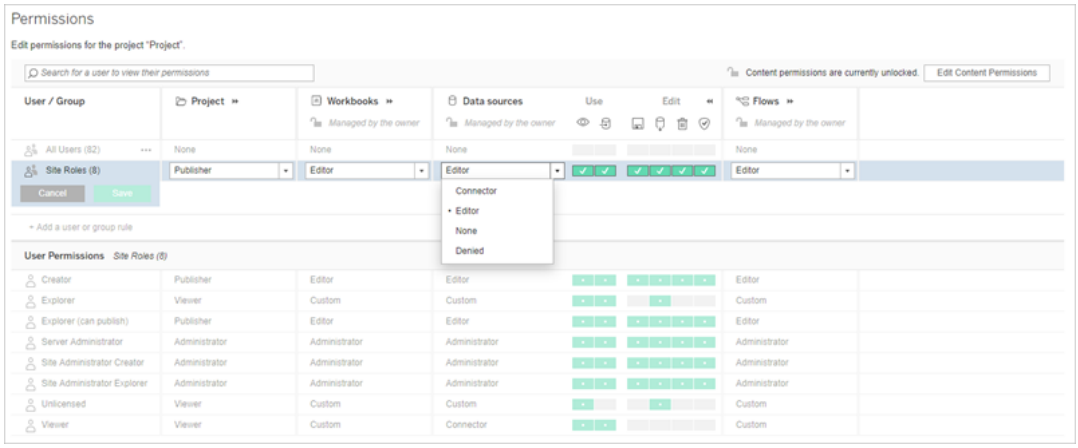
Permissions can be set at the project level for both the project itself and for any content in the project. For example, if workbook permissions are configured at the project level, all

workbooks published into that project inherit those default permissions. However, the Creator can choose to change the permissions during publishing, or certain users can change the permissions on published content. To enforce the permissions established at the project level, **Content Permissions** can be locked to the project. For more information, see Let Site Users Request Access to Content.

To set permissions at the project level:

1. Navigate to the project
2. Open the Actions menu (...) and click **Permissions**. The permissions dialog box opens.

   This dialog box has two main areas: permission rules at the top and the effective permissions grid below. Each section (Project, Workbooks, Data Sources, Flows, Data Roles) can be expanded (⏩) to reveal the capabilities for that type of content.



   With a row selected at the top, the effective permissions grid populates. Use this to verify permissions. Hovering over a capability square provides information about why the capability is allowed or denied for that specific user.

3. To modify an existing permission rule, open the Actions menu (...) for that row and click **Edit**.

4. To create a new rule,
   a. Select **+ Add a user or group rule**.
   b. If necessary, use the drop-down box to the right to change between groups and users.
   c. Select a group or user from the drop-down box. This creates a row where you can configure the permission rule.
5. In the row for the permission rule, choose an existing permission role template from the drop-down box for each section, or create a custom rule by expanding a section (⏩) and clicking the capabilities.

   One click sets the capability to **Allowed**, two clicks sets it to **Denied**, and a third click clears the selection (**Unspecified**).
6. When finished, click **Save**.

Change content permissions

For administrators, project leaders, and content owners

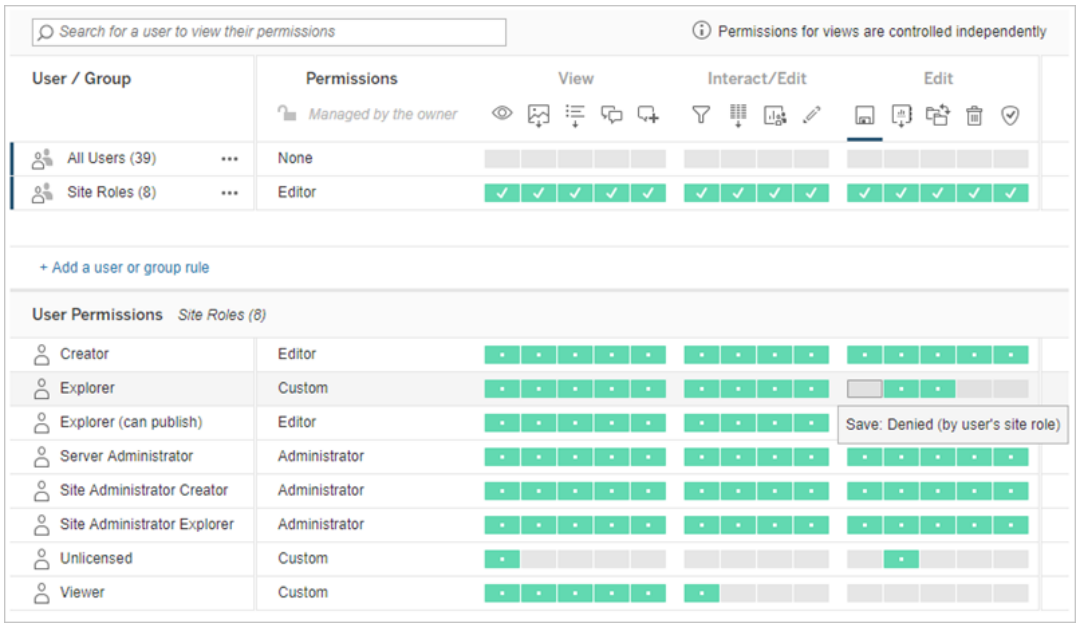
If project permissions are not locked, permissions for individual pieces of content can be modified.

Warning: Tableau recommends managing permissions at the project level within the Tableau site. These steps are relevant only for content in projects where permissions are managed by the owner.

Set permissions on content

1. Navigate to the content (workbook, data source, flow, data role)
2. Open the Actions menu (...) and click **Permissions**. The permissions dialog box opens.

   This dialog box has two main areas: permission rules at the top and the effective permissions grid below.



With a row selected at the top, the effective permissions grid populates. Use this to verify permissions. Hovering over a capability square provides information about why the capability is allowed or denied for that specific user.

3. To modify an existing permission rule, open the Actions menu (...) for that row and click **Edit**.
4. To create a new rule,
   a. Select **+ Add a user or group rule**.
   b. If necessary, use the drop-down box on the right to change between groups and users.
   c. Select a group or user from the drop-down box. This creates a row where you can configure the permission rule.
5. In the row for the permission rule, choose an existing permissions role template from the drop-down box or create a custom rule by clicking the capabilities.

   One click sets the capability to **Allowed**, two clicks sets it to **Denied**, and a third click clears the selection (**Unspecified**).

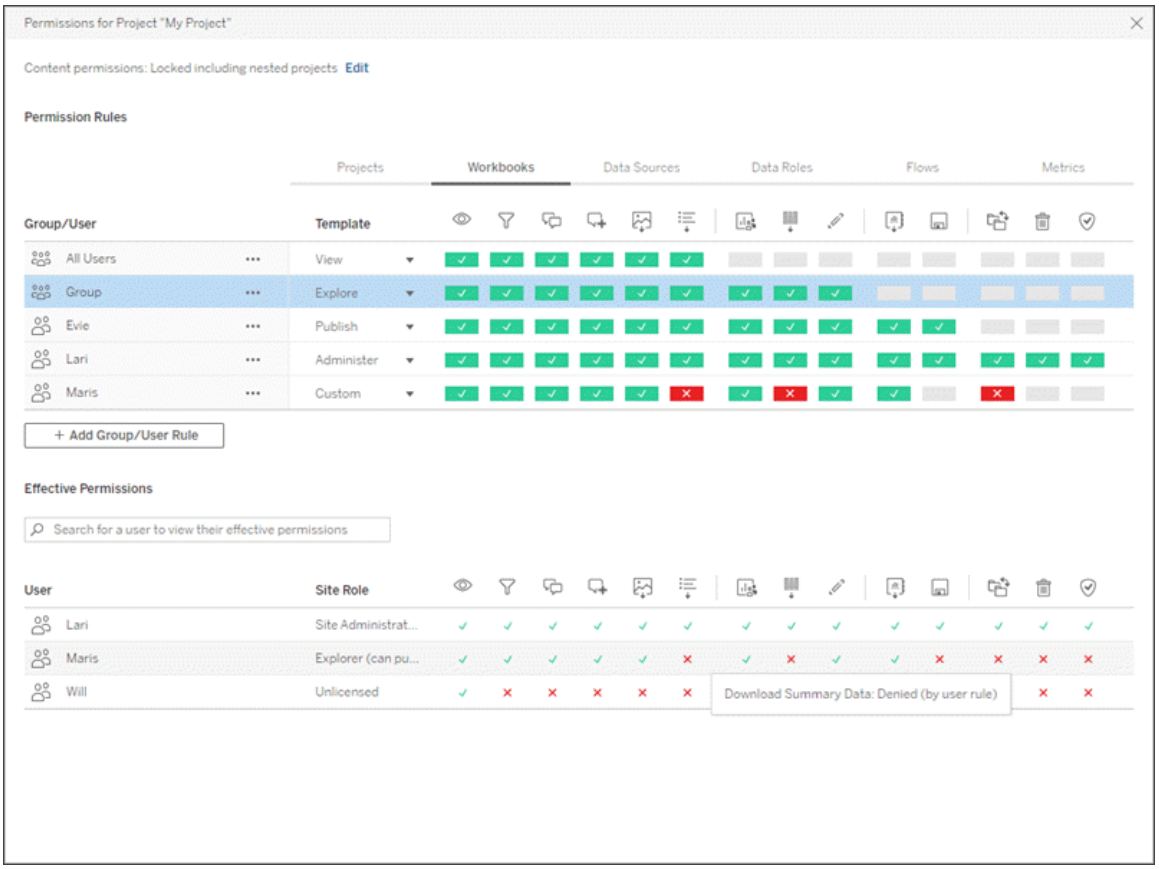
6. When finished, click **Save**.

In some situations, it may be valuable to specify permissions on a view independently from the workbook that contains it. To set permissions on a published view, navigate to the view within a published workbook and follow steps above.

Warning: While it is possible to set view-level permissions within a workbook, we strongly recommend managing permissions at the project (or workbook) level as much as possible. For views to inherit permissions, the project must be locked or the workbook must be published with **Show Sheets as Tabs**. See Let Site Users Request Access to Content for more information.

Permissions

Permissions determine how users can interact with content such as workbooks and data sources. Permissions are set in the permission dialog or via the REST API. At the top of the dialog, permission rules configure capabilities for groups or users. Below, the permissions grid displays the effective permissions for users.



There are several interrelated topics that discuss how to think about, set, and manage permissions. The main topics are:

- This topic, which covers the fundamentals, how to set permission rules for projects and other content, and permission considerations for specific scenarios.
- Permission Capabilities and Templates, which covers in detail the various capabilities that are used to build permission rules.
- Manage Permissions with Projects, which covers using projects to manage permissions and how nested and locked projects impact permissions.
- Effective permissions, which covers how permission rules are evaluated and how final permissions are determined.
- Permissions, Site Roles, and Licenses, which covers how permissions interact with site roles and licenses to determine what a user can do on a site.

Additionally, if the Data Management Add-on is present, permissions for external assets have additional considerations. For more information, see Manage Permissions for External Assets.

Permissions fundamentals

Projects and groups

Tableau sites use *projects* to organize content and *groups* to organize users. Managing permissions is easier when permission rules are:

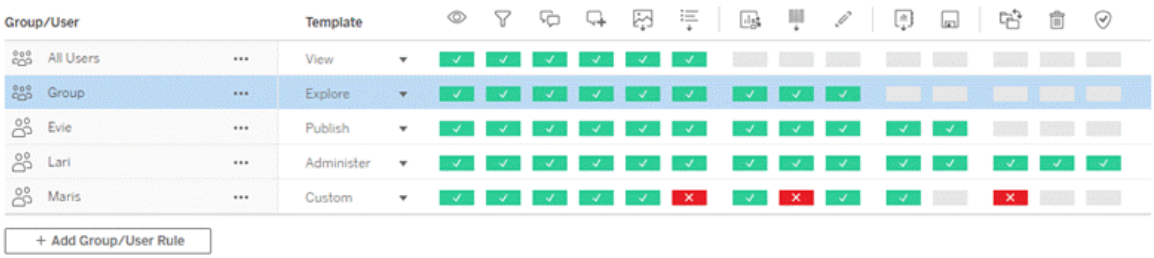
- Set at the project level instead of on individual pieces of content.
- Established for groups instead of individuals.

Permissions can only be established for users, groups, projects, or content that already exist. For more information about creating users and groups, creating projects, and publishing content, see Manage Users and Groups, Use Projects to Manage Content Access , and Publish Data Sources and Workbooks.

Capabilities and permission rules

Permissions are made up of *capabilities*—the ability to perform actions like view content, web edit, download data sources, or delete content. *Permission rules* establish what capabilities are allowed or denied for a user or group on a piece of content.

> **Note:** When talking about permissions in general, it's common to see a phrase like "a user must have the delete *permission*." This is easy to understand in a broad context. However, when working with permissions at a technical level like in this article, it's more accurate to say "the delete *capability.*" In this topic we'll use the more precise term *capability*, but you should be aware that you might see *permission* in other places.



The interplay between license level, site role, and potentially multiple permission rules factor into the final determination of what a user can or can't do. For each user this becomes their *effective permissions*. For more information, see Effective permissions.

Some tasks such as creating new workbooks from a browser (web authoring) or moving content might require specific configurations of several capabilities rather than being captured in a single capability. For more information, see Permission settings for specific scenarios.

Set permissions

Permission rules are set differently at the project level, at the content level, or when publishing content from Tableau Desktop.

> **Note**: The phrase "project permissions" can have two meanings. There are the permission capabilities for a project itself—View and Publish—that control how a user can interact with a project. There is also the concept of project-level permission rules for other content types. In this article "project-level permissions" means permission rules for workbooks, data sources, and the other content that are configured in the permission dialog for a project. This is in contrast to "content-level" permission rules that can be set on a specific workbook, data source, etc.

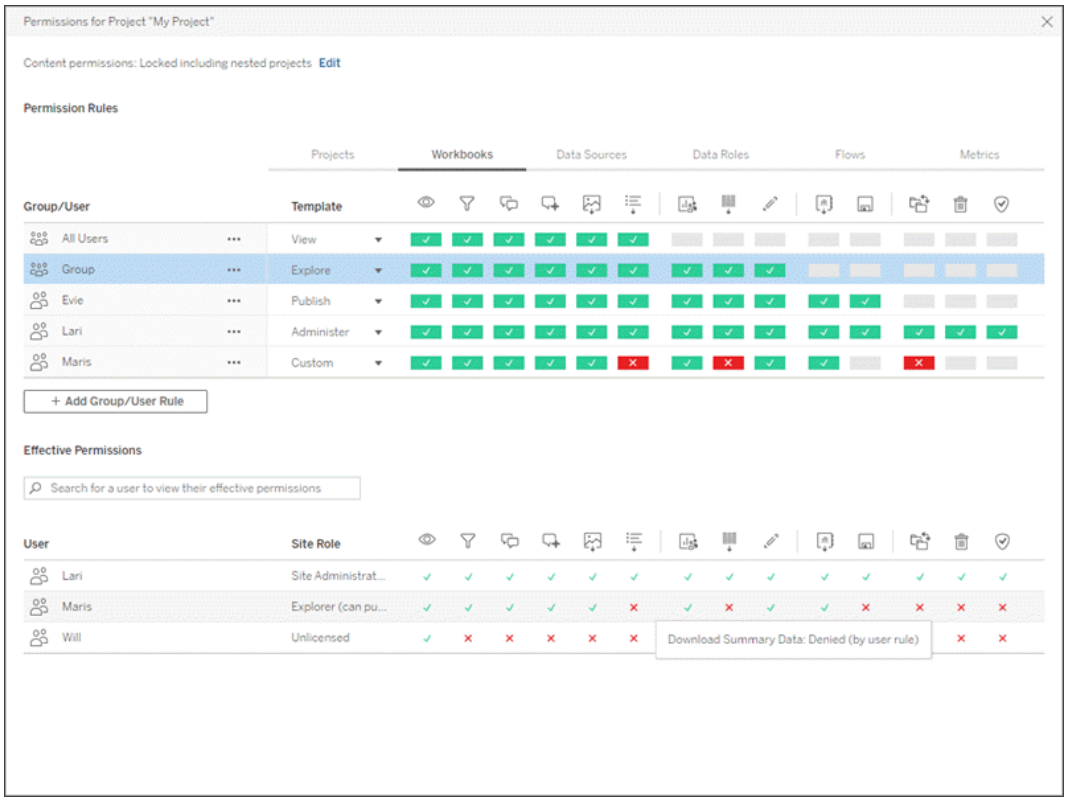
Project-level permissions

For administrators, project owners, and project leaders

To set permissions at the project level:

1. Navigate to the project
2. Open the Actions menu (...) and click **Permissions**. The permissions dialog opens.

   This dialog has two main areas: permission rules at the top and the effective permissions grid below. Each content type (Project, Workbooks, Data Sources, Flows, Data Roles, Metrics) has a tab. The image below shows the Workbook tab.



   With a row selected at the top, the effective permissions grid populates. Use this to verify permissions. Hovering provides information about why the capability is allowed or denied for that specific user.

3. To modify an existing permission rule, select the appropriate tab for that content type and click a capability.
4. To create a new rule, click **+ Add Group/User Rule** and start typing to search for a group or user. For each tab, choose an existing template from the drop-down box or create a custom rule by clicking the capabilities.

One click sets the capability to **Allowed**, two clicks sets it to **Denied**, and a third click clears the selection (**Unspecified**).

5. When finished, click **Save**.

Tip: Permission rules set at the project level act as a default for content saved in that project and any nested projects it contains. Whether those project-level default rules are enforced or only preliminary depends on the **content permission** setting. This setting can be configured in two ways, either **Locked** or **Customizable**. For more information, see Lock content permissions.

Content-level permissions

For administrators, project leaders, and content owners

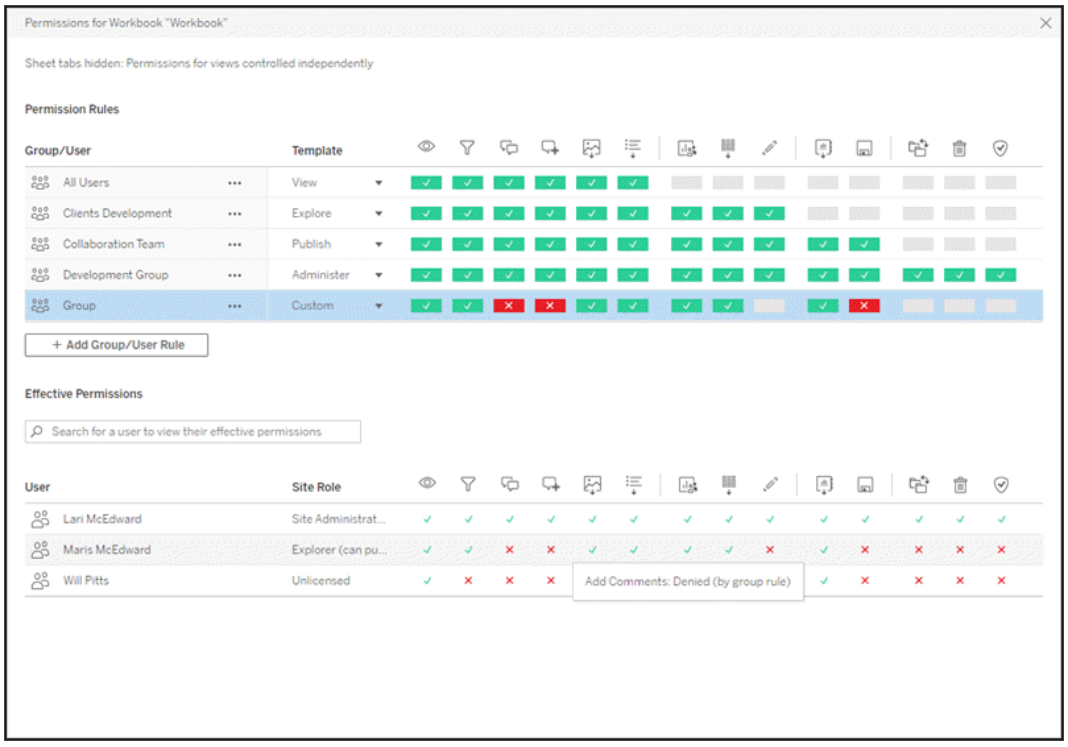
If project content permissions are customizable, permissions for individual pieces of content can be modified. The information below is not relevant to content in locked projects. For more information, see Lock content permissions.

Tip: While it is possible to set permissions on individual content in customizable projects, we recommend managing permissions at the project level.

Set permissions on content

1. Navigate to the content (workbook, data source, flow, data role)
2. Open the Actions menu (...) and click **Permissions**. The permissions dialog opens.

   This dialog has two main areas: permission rules at the top and the effective permissions grid below. (Note the lack of tabs across the top—a content-level permissions dialog has no tabs.)



With a row selected at the top, the effective permissions grid populates. Use this to verify permissions. Hovering over a capability square provides information about why the capability is allowed or denied for that specific user.

3. To modify an existing permission rule, click a capability.
4. To create a new rule, click **+ Add Group/User Rule** and start typing to search for a group or user. Choose an existing template from the drop-down or create a custom rule by clicking the capabilities.

   One click sets the capability to **Allowed**, two clicks sets it to **Denied**, and a third click clears the selection (**Unspecified**).

5. When finished, click **Save**.

Set permissions on a view

Tip: While it's possible to set view-level permissions within a workbook, we strongly recommend managing permissions at the project or workbook level.

If a workbook is published with **Show Sheets as Tabs** checked, the views in that workbook will inherit all permissions set for the workbook. The permission dialog for a view will be read-only.

In some situations, it may be valuable to specify permissions on a view independently from the workbook that contains it. If the workbook is published with **Show Sheets as Tabs** unchecked, the views will start with the workbook permissions but will be independent thereafter and can be set independently. Note that this means if the permission rules are modified for the workbook, those changes won't be applied to the views—each view's permissions will need to be managed individually.

See Show or Hide Sheet Tabs for more information.

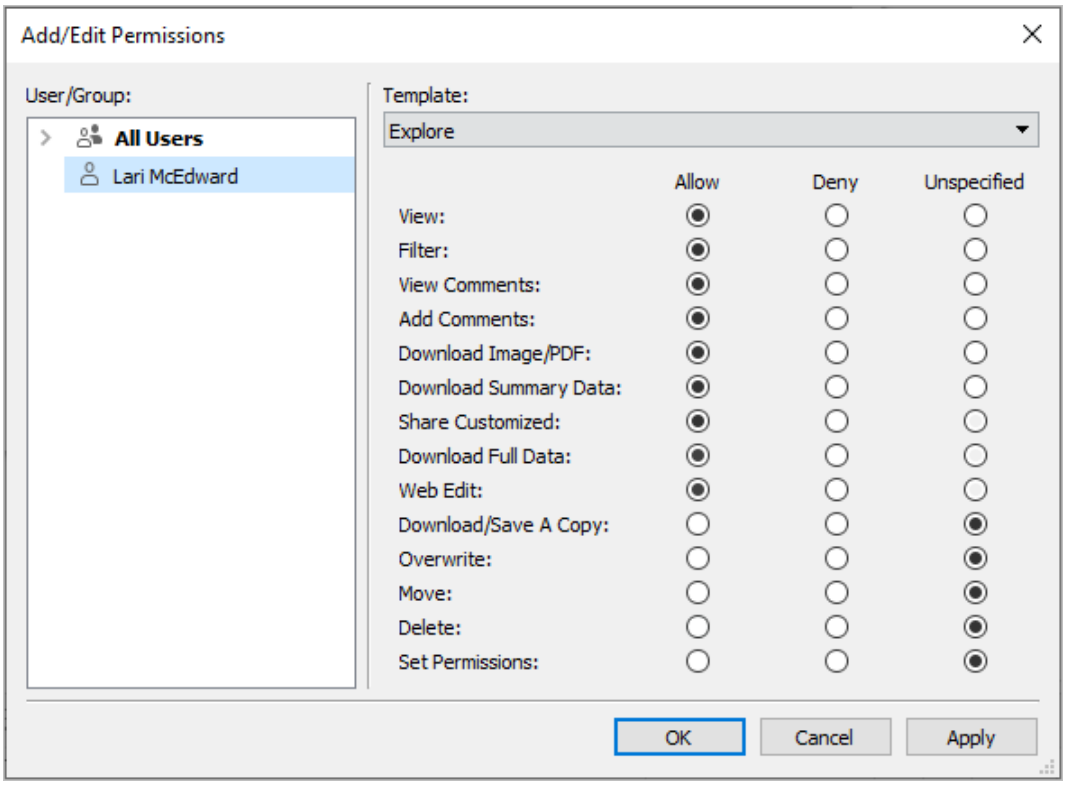
Set permissions at publish

For content publishers

If project content permissions are customizable, permissions for individual content can be set when publishing from Tableau Desktop. The information below is not relevant for content in locked projects. For more information, see Lock content permissions.

Tip: While it's possible to set permissions on individual content in customizable projects, we recommend managing permissions at the project level.

1. From the publishing dialog , click the Edit link for **Permissions**.
   If the Edit link is unavailable, permissions are locked to the project and can't be modified except by the project owner, project leader, or an administrator.
2. The Add/Edit Permissions dialog shows any existing permission rules. Click **Add** to add a new permission rule or **Edit** to modify an existing permission rule
   a. Select the group or user from the left pane. You can expand a group to see which users it contains.
   b. Use the selector at the top of the right pane to choose an existing template, or use the radio buttons to create a custom rule.



Note that effective permissions can't be inspected from the publishing dialog.

3. When finished, click **OK** and resume publishing.

Note: Permissions can't be set while publishing flows from Tableau Prep Builder. To set permissions on a flow, refer to the steps for Project-level permissions or Content-level permissions.

Tip: By default, all users are added to an "All Users" group that has basic permissions for content. To start with a clean slate when building your own permission rules, we recommend that you delete the rule entirely or edit the rule for All Users to remove any permissions (set the permission role template to None). This will help prevent any ambiguity down the road by reducing the number of rules that applies to any given user and therefore making effective permissions easier to understand.

Permission settings for specific scenarios

Certain actions require combinations of permission capabilities and possibly site roles. The following are some common scenarios and their necessary permission configurations

Saving, publishing, and overwriting

In the context of permissions, saving is essentially publishing. As such, the **Overwrite** and **Save a Copy** capabilities can only be given to users with a site role that allows publishing: Administrator, Creator, or Explorer (can publish). Explorer or Viewer site roles can't publish, overwrite, or save a copy.

(Prior to version 2020.1, the *Publish* and *Overwrite* capabilities were called *Save*, and the *Download Workbook/Save a Copy* capability was called *Download Workbook/Save As*.)

- The **Publish** capability for a project allows a user to publish content into that project.
- The **Overwrite** capability allows a user to save over an existing piece of content; they become the owner.
- The **Save a Copy** capability allows a user to save a new copy of the content. This is usually done in conjunction with web authoring and means the user can save their modifications.

It's important to note that users aren't able to Save or Save As a piece of content unless they have the **Publish** capability for at least one project, because all content must be published into a project. Without the **Publish** capability at the project level, the content can't be published.

In web editing, the **Save** option in the File menu only appears to the content owner. If a user who is not the owner has the **Overwrite** capability (allowing them to save the content), they must use **File > Save As** and name the workbook the exact same name. This prompts a warning that they are about to overwrite the existing content, which they can do. Conversely, a user with only the **Save a Copy** capability trying to use the same name gets an error stating they don't have permission to overwrite the existing content.

If a user who is not the content owner overwrites content, they become the owner, with all the permissions that entails. The original owner's access to the content is then determined by their permissions as a user rather than the owner.

> **Note**: **Download Workbook/Save a Copy** is a joint capability for workbooks. Explorers can be given this capability but they are only able to download the workbook, not save a copy. Giving the capability to Explorer (can publish), Creator, or Administrator site roles gives them both the ability to download workbooks *and* save a copy.

Web Editing and Web Authoring

Web editing and web authoring refer to the general ability for users to edit or create workbooks directly in the browser. The permission capability is called *Web Edit* and the site setting is called *Web Authoring*. This section will refer to any web-based editing or publishing action as *web authoring*.

To enable this functionality, there are several requirements.

- **User site role**: The user must have the appropriate site role.
  - Viewers can never web edit.
  - Explorers can be given the web edit capability but can't publish. Essentially, they can use web editing to answer deeper questions based on existing content on the fly, but can't save their edits.
  - Explorers (can publish) or Site Administrator Explorers can publish, but they can only use data that is already published to the site.
  - Creators, Site Administrator Creators, and Server Administrators can publish and create new data sources.
- **Permission capabilities**: The user must have the necessary permission capabilities based on the desired functionality.

Required Permission Capability Settings

Desired functionality	Minimum Site Role	Web Edit	Download/ Save a Copy	Overwrite *(workbook)*	Publish *(project)*	Connect (*data*

						source)
Web author without being able to save	*Explorer*	✓ Allow	✗ Deny	✗ Deny	Optional	✓ Allow
Web author and save as new content	*Explorer (can publish)*	✓ Allow	✓ Allow	✗ Deny	✓ Allow	✓ Allow
Web author and save (overwrite) content	*Explorer (can publish)*	✓ Allow	✓ Allow	✓ Allow	✓ Allow	✓ Allow
Web author with new data and save new content	*Creator*	✓ Allow	Optional	Optional	✓ Allow	Optional

Optional indicates this capability is not involved in the desired functionality

Data access for published Tableau data sources

Data sources published to a Tableau site can have native authentication as well as permissions within the Tableau environment.

When the data source is published to the Tableau site, the publisher can choose how to Set Credentials for Accessing Your Published Data which addresses how data source credentials are handled (such as requiring users to log into a database or enter their credentials for Google Sheets). This authentication is controlled by whatever technology holds the data. This can be embedded when the data source is published, or the data source publisher can choose to prompt the user for their credentials to the data source. For more information, see Publish a Data Source.

There are also data source capabilities that allow or deny users the ability to see (**View**) and connect to the published data source (**Connect**) in the context of Tableau. These capabilities are set like any other permissions in Tableau.

When a workbook is published that uses a published data source, the author can control how the Tableau authentication will behave for someone consuming the workbook. The author sets the workbook's access to the published data source, either as **Embed password** (using the author's Connect access to the data source) or **Prompt users** (using the Connect access of the person viewing the workbook), which may require data source authentication as well.

- When the workbook is set to **Embed password**, anyone who looks at the workbook will see the data based on the author's access to the data source.
- If the workbook is set to **Prompt users**, the Tableau-controlled access is checked for the data source. The person consuming the workbook must have the Connect capability for the published data source to see the data. If the published data source is also set to Prompt user, the viewer must also enter their credentials for the data source itself.

Workbook authentication to the data source	Data source authentication to the data	How data access is evaluated for someone consuming the workbook
Embed password	Embed password	User sees the data as if they were the workbook author
Embed password	Prompt user	User sees the data as if they were the workbook author. (The author is prompted for data source authentication, not the user.)
Prompt user	Embed password	User must have their own **Connect** capability to the published data source
Prompt user	Prompt user	User must have their own **Connect** capability to the published data source and are prompted for their credentials to the underlying data

Note that this applies to consuming a workbook, not web editing. To web edit, the user must have their own Connect capability.

Move content

To move an item, open its Action menu (...) and click **Move**. Select the new project for the item, then click **Move Content**. If Move is unavailable or there are no available destination projects, verify the appropriate conditions are met:

- Administrators can always move content and projects to any location.
- Project leaders and project owners can move content and nested projects among their projects.
    - Note that non-administrators can't move projects to become top-level projects
- Other users can move content only if all three of the following requirements are met:
    - Creator or Explorer (Can Publish) site role.
    - Publishing rights (**View** and **Publish** capabilities) for the destination project
    - Owner of the content, or—for workbooks and flows—having the **Move** capability.

When a project is moved, the permissions for its content might change.

- Project leaders or project owners always gain permissions for items moved into their projects.
- When a project is moved into a **locked (including nested)** project, the permission templates for the locked project are enforced on the moved project and all its content and nested projects. (Note that this might strip the user moving the project of their ability to move it again if they don't have the correct permissions in the locked project.)
- When a project is moved into an **unlocked** project (customizable), the existing permissions are retained for the moved project and its content. If the project leader status has only implicitly been granted (from a higher-level project), that status is removed, though any explicitly set project leader status is retained.

Metrics

Metrics are created from views in published workbooks. A user can create metrics if they:

- Are a Creator or Explorer (can publish) site role
- Have the **Publish** capability on a project
- Have the **Download Full Data** capability for the relevant view or workbook

For more information, see Create and Troubleshoot Metrics and Set Up for Metrics.

Permissions for metrics

Because metrics are independent content, it's important to note that the permissions for metrics are managed independently from the view they were created from. (This is unlike data-driven alerts and subscriptions, where the content of the alert or subscription can only be seen if the user has the correct permissions for the view itself.)

Although the capabilities for metrics are straightforward, the **View** capability should be considered carefully. It may be possible for a workbook with restricted permissions to be the basis for a metric with more open permissions. To protect sensitive data, you might want to prevent metric creation for specific workbooks.

Prevent metric creation

The ability to create a metric cannot be directly disabled on a per-workbook level (only per-site), but permissions can regulate access between metrics and workbooks.

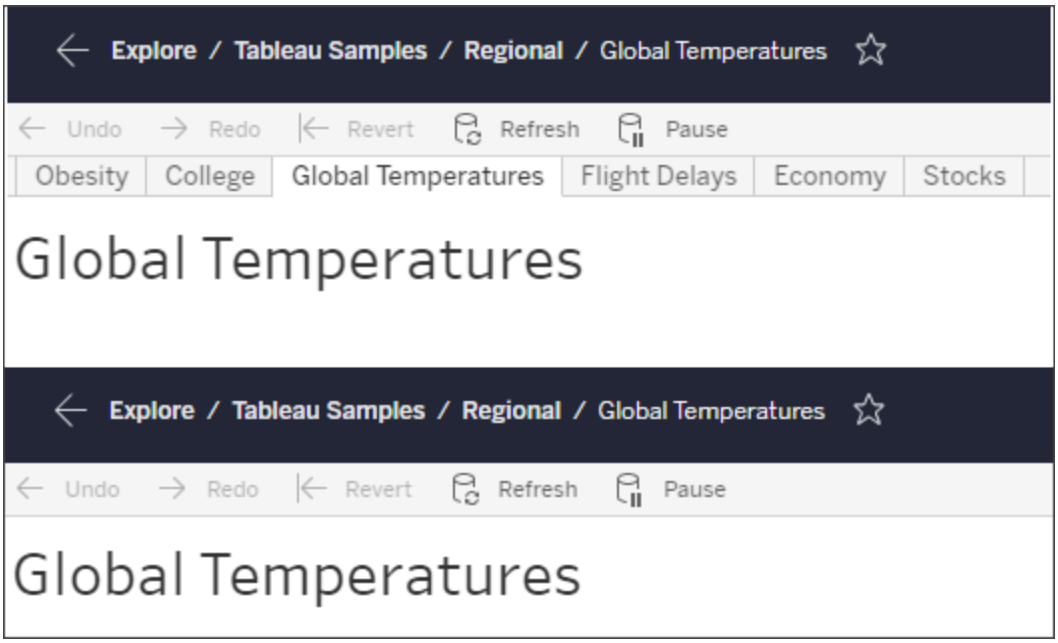
To prevent metrics for a specific workbook, deny the **Download Full Data** capability on the workbook.

To ensure this capability cannot be changed , deny **Download Full Data** at the project level for all workbooks in the project, and lock the content permissions for the project.

Show or Hide Sheet Tabs

In the context of published content, sheet tabs (also referred to as tabbed views) is a distinct concept from sheet tabs in Tableau Desktop. Showing and hiding sheet tabs in Tableau Desktop refers to hiding sheets in the authoring environment. For more information, see Manage Sheets in Dashboards and Stories.

Showing and hiding sheet tabs (turning tabbed views on or off) for published content refers to navigation in a published workbook. When sheet tabs are shown, published content has navigational sheet tabs along the top of each view.



This setting is also impacts how permissions function and may have security implications (see note).

> **Note:** It is possible to have the **View** capability for a view without the **View** capability for the workbook or project that contain it. Normally if a user lacks the View capability for a project and workbook, they would not know those assets exist. If they have the View capability for a view, however, a user may be able to see the project and workbook name when looking at the view, such as in the navigational breadcrumb. This is expected and accepted behavior.

Turn off tabbed views to allow independent view permissions

Although it is not recommended as a general practice, there are times when it can be useful to set permissions on views independently of the workbook that contains them. To do so, three conditions must be met:

1. The workbook must be published—there is no way to set view permissions during publishing.

2. The workbook must be in a customizable project.
3. The workbook can't show sheets as tabs (tabbed views must be hidden).

When a workbook shows sheets as tabs, all views inherit the workbook permissions and any changes to the workbook permissions affect all of its views. **When a workbook in a customizable project does not show tabbed views, all views assume the workbook permissions upon publication, but any subsequent changes to the workbook's permission rules *will not be inherited by the views*.**

Changing the configuration of sheets as tabs on a published workbook will also impact the permission model. Show Tabs will override any existing view-level permissions and reinstate the workbook-level permissions for all views. Hide Tabs will break the relationship between the workbook and its views.

- To configure sheets as tabs on a published workbook, open the Actions menu (...) for the workbook and select **Tabbed Views**. Choose **Show Tabs** or **Hide Tabs** as desired.
- To configure sheets as tabs during publishing, refer to Show sheets as tabs.
- To set view-level permissions, see Set permissions on content.

Important: In a customizable project, any modifications to the workbook-level permissions will *not* be applied if navigational sheet tabs are hidden (aka tabbed views are off). Changes to permissions must be made on individual views.

Permission Capabilities and Templates

Permissions are made up of capabilities, or the ability to perform a given action on a piece of content, such as view, filter, download, or delete. Each row in the Permission Rules area of the dialog is a *permission rule*. Permission rules are the setting for each capability (allowed, denied, or unspecified) for the group or user in that row. Permission rules have *templates* available that make it easier to assign capabilities quickly. Permission rules can also be copied and pasted.

> **Note**: In the permission dialog for projects, there are tabs for each content type (Projects, Workbooks, Data Sources, and—if you have the Data Management Add-on—Data Roles and Flows). When a permission rule is added, the default for all capabilities across all content types is Unspecified. To allow or deny capabilities for each content type, you must go to each tab in turn. In the permission dialog for a specific piece of content, there are no tabs and the permission rules only apply to that piece of content.

Templates

Templates group sets of capabilities that are often assigned together based on common user scenarios, **View**, **Explore**, **Publish**, and **Administer**. Assigning a template sets its included capabilities to **Allowed**, with the rest left as **Unspecified**. The templates are cumulative, so the Explore template includes everything from the View template plus additional capabilities. All content also has a template for **None** (which sets all capabilities to unspecified) and **Denied** (which sets all capabilities to denied).

Templates are meant to be a starting point and can be adjusted after they are applied. Capabilities can also be granted or denied without using a template at all. In both cases, the template column will then show **Custom**.

Copy and paste permissions

If there is a permission rule that needs to be assigned to multiple groups or users, you can copy and paste from one rule to another. You can't copy from or paste onto a rule that involves Project Leader status.

1. Open the action menu (...) for the existing rule you want to copy from and select **Copy Permissions**. This will only be available when the rule is not in edit mode.
2. Select an existing rule you want to paste over. You can also create a new rule by clicking **+ Add Group/User Rule** and selecting a group or user.
3. Open the action menu (...) and select **Paste Permissions**.

Capabilities

Each content type has specific capabilities:

Projects

Projects only have two capabilities and two templates. Prior to 2020.1, Project Leader was treated as a permission capability rather than a setting. For more information about project leaders and how to assign them in 2020.1 and later, see Project administration.

View template

View allows a user to see the project. If a user hasn't been granted the view capability, the project won't be visible to them. Granting the view capability for a project does not mean a user can see any content in the project, just the existence of the project itself.

Publish template

Publish allows a user to publish content to the project from Tableau Desktop or Tableau Prep Builder. The publish capability is also required to move content into the project or save content to the project from web authoring. Prior to 2020.1, this capability was called Save.

Workbooks

View template

View allows a user to see the workbook or view. If a user hasn't been granted the view capability, the workbook won't be visible to them.

Filter allows a user to interact with filters in the view, including keep only and exclude filters. Users lacking this capability won't see filter controls in the view.

View Comments allows a user to view the comments associated with the views in a workbook.

Add Comments allows a user to add comments to views in a workbook.

Download Image/PDF allows a user to download each view as a PNG, PDF, or PowerPoint.

Download Summary Data allows a user to view the aggregated data in a view, or in the marks they've selected, and download that data (as a CSV).

Explore template

Share Customized allows a user to save customizations made to the view (such as filters and selections) as custom views. For users with a site role of Explorer or above, they can share these customizations, which makes them appear as options for other users. For more information, see Use Custom Views.

Download Full Data allows a user to view the underlying data in a view, or in the marks they've selected, and download that data (as a CSV).

Web Edit allows a user to edit the view in a browser-based authoring environment.

- Note: Creating new content in the browser or saving views from the web edit interface requires a specific combination of capabilities. For more information, see Web Editing and Web Authoring.
- The Web Editing feature must also be enabled for the entire site or even users with this capability allowed won't be able to web edit. For more information, see Set a Site's Web Authoring Access.

Publish template

Download Workbook/Save a Copy allows a user to download a packaged workbook (as a TWBX). Allows a user to save (publish) a copy from the web edit interface as a new workbook. Prior to 2020.1, this capability was called Download Workbook/Save As.

Overwrite allows a user to overwrite (save) the content asset on the server. Prior to 2020.1, this capability was called Save.

- When allowed, the user can re-publish a workbook, data source, or flow, or save a workbook in web authoring, thereby becoming the owner and gaining access to all permissions. Subsequently, the original owner's access to the workbook is determined by their permissions just like any other user.

Administer template

Move allows a user to move workbooks between projects. For more information, see Move content.

Delete allows a user to delete the workbook.

Set Permissions allows a user to create permission rules for the workbook.

Views

In a workbook that is not in a locked project and does not show sheets as tabs for navigation, views (sheets, dashboards, stories) inherit the workbook permissions at publication, but any changes to permission rules must be made on individual views. View capabilities are the same as those for workbooks, except for **Overwrite**, **Download Workbook/Save a Copy**, and **Move** which are only available at the workbook level. We recommend showing navigational sheet tabs whenever possible so views continue to inherit their permissions from the workbook.

Data Sources

View template

View allows a user to see the data source on the server

Connect allows a user to connect to a data source in Tableau Desktop, Tableau Prep Builder, Ask Data, or web editing.

- If a workbook author embeds their credentials to a published data source in a published workbook, they are essentially embedding their **Connect** capability. Therefore, users can see the data in the workbook regardless of their own **Connect** capability for that data source. If the workbook author doesn't embed their credentials to the published data source, the user needs their own **Connect** capability to the data source in order to consume the workbook. For more information, see Data access for

published Tableau data sources.

- A user must have the **Connect** capability for a data source in order to use Ask Data. For more information, see Enable Ask Data for Sites and Data Sources.

Explore template

Download Data Source allows a user to download the data source from the server (as a TDSX)

Publish template

Overwrite allows a user to publish data sources to the server and overwrite data sources on the server. Prior to 2020.1, this capability was called Save.

Administer template

Delete allows a user to delete the data source

Set Permissions allows a user to create and edit permission rules for the data source

Other content types

	View template	Explore template	Publish template	Administer template
Flows	**View** allows a user to view the flow.	**Download flow** allows a user to download the flow (as a TFLX).	**Run** allows a user to run the flow. **Overwrite*** allows a user to publish flows and overwrite published flows.	**Move** allows a user to move content between projects. For more information, see Move content. **Delete** allows a user to delete

				the content.
Data Roles	**View** allows a user to view data roles.	n/a	**Overwrite*** allows a user to publish data roles and overwrite published data roles.	**Set Permissions** allows a user to create permission rules for the content.
Metrics	**View** allows a user to view metrics.	n/a	**Overwrite*** allows a user to publish metrics and overwrite published metrics.	

*Prior to 2020.1, the Overwrite capability was called Save.

Manage Permissions with Projects

Using projects can simplify permission management through features such as nested project hierarchies, hiding projects from certain users or groups, authorizing project leaders, and locking permissions.

Tip: How permissions are set at the project level is very important, especially for the Default project. When a new top-level project is created it inherits its default permission rules (for all content types) from the Default project. When a new project is created nested inside another project, the child project inherits its default permission rules from the parent project.

Project administration

Projects are containers used to organize and manage access to content. By giving non-administrators privileges to manage projects, certain content administration tasks can be handled at the project level.

Project Leaders: Projects can have project leaders, users who have been set as a **project leader**. This setting automatically grants a user their maximum capabilities—

depending on their site role—for that project and all content in that project. Project leaders with site role of Explorer (can publish) and above will therefore have all capabilities. Project leaders are essentially local admins for the project without access to site or server settings.

Hierarchy: Only administrators can create top-level projects. Project owners and project leaders can create nested projects inside their projects. Project owners and leaders have full administrative access to the project and its content, as well as any nested projects it contains. In a hierarchy, project leaders are implicitly given project leader access to all child content. To remove project leader access, you must do so at the level in the hierarchy where the role was explicitly assigned.

Ownership: A project can have multiple project leaders, but each project has exactly one owner. By default, a project is owned by the user who created it. A project's owner can be changed (by the existing owner or an administrator, but not a project leader) to any user with a site role of Explorer (can publish) or Creator, or an administrator site role. Project ownership can be changed regardless of whether the project permissions are locked. Note that this refers to project ownership. Content ownership can be changed by project owners, project leaders, and administrators.

Deleting: Content can only exist inside a project. Only administrators can create and delete top-level projects, but project leaders can create or delete nested projects. Deleting projects also deletes all the content and nested projects they contain. To delete a project without losing its content, move the content to another project first. Deleting projects can't be undone.

For a deeper dive into project administration, see Use Projects to Manage Content Access and Add Projects and Move Content Into Them.

Set a project leader

Project leaders are users who have administrator-like access for a specific project or project hierarchy. Prior to 2020.1, **Project Leader** was a capability that could be set to allowed, denied, or unspecified like any other capability. Starting in 2020.1, project leaders are now assigned through the action menu and function as a setting rather than a capability.

To assign project leader status to a group or user

1. Open the permission dialog for the appropriate project.
2. Select an existing permission rule, or click **+ Add Group/User Rule** and chose the desired group or user.
3. Open the action menu (...) for that permission rule and select **Set Project Leader...**.

> **Note**: If the action menu includes an option for **Enable "Set Project Leader"**, this will need to be selected before the group or user can be set as a project leader. This option only appears when that group or user was denied the Project Leader capability (prior to 2020.1). That denied capability needs to be removed before they can be set as a project leader.

Once a permission rule has been used to establish a group or user as a project leader, the templates and capabilities are no longer editable because all capabilities are allowed for project leaders. If a project leader is established on a project that contains nested projects, they will have inherited project leader status on all nested projects and their content.

Project leader status is always applied downward through the entire project hierarchy and can only be removed from the level where it was set. To remove project leader status, follow the same steps as above but select **Remove as Project Leader** from the action menu. Once a group or user has been removed as project leader, that permission rule will have all capabilities set to Unspecified. This may mean their access to and capabilities for that project will be removed if there is no other permission rule giving them permissions to the content. To keep their access to the project and its content, they will need to have capabilities set like any other group or user.

Lock content permissions

Permission rules set at the project level act as a default for content saved in that project and any nested projects it contains. Whether those project-level default rules are enforced or only preliminary depends on the **content permission** setting. This setting can be configured in two ways, either **Locked** (recommended) or **Customizable**. Locking a project removes the ability for content owners to modify the permission rules on their content. Locking permissions can be applied to nested projects or just to the parent project itself.

- When the content permissions are **locked (including nested projects)**, permission rules set at the project level are enforced for all content in the project and all nested projects. (This was the default behavior for locking projects prior to 2020.1)
- When the content permissions are **locked** (not including nested projects), permission rules set at the project level are enforced for content in the project, but nested projects can be configured independently with their own permission rules and as locked or customizable. (This is new behavior for locking projects as of 2020.1)
- When the content permissions are **customizable**, permission rules set at the project level are applied to all content in the project by default. However, permission rules can be modified for individual pieces of content during or after publishing. (This was called **Managed by the owner** prior to 2020.1)

> **Note**: Whether permission rules are locked or customizable, the permissions on content are always applied. *Locked* and *customizable* refer only to how project-level permissions are inherited by content in the project and who can change them. Even in a project with customizable permissions, only specific users can modify permissions (content or project owner, project leader, admins, or those with the Set Permission capability).

In a locked project:

- The project permission rules per content type are applied to all content.
- Only administrators, project owners, and project leaders can modify permissions.
- Content owners lose the Set Permission capability but retain all other capabilities on their content.
- Permissions are predictable for all content in the project.

In a customizable project:

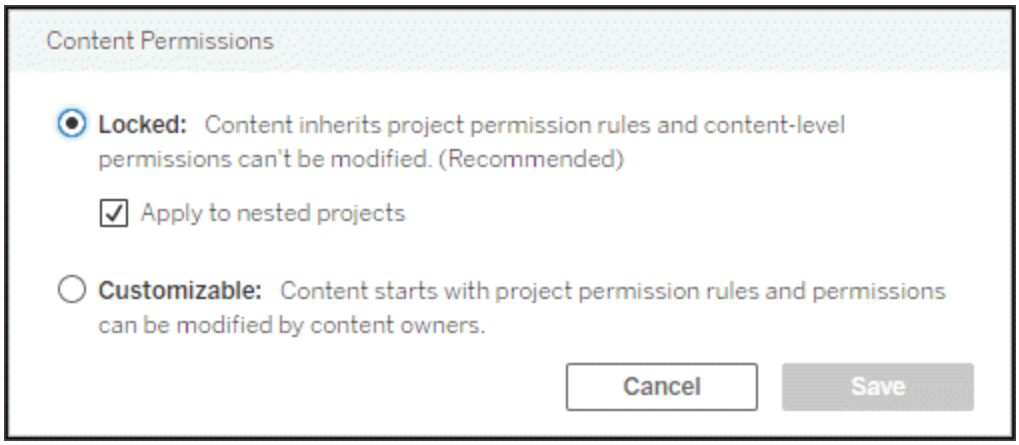
- The project permission rules are applied by default when content is published into the project or nested projects are created, but permissions can be modified during publication or after the content is created.
- Any user with the Set Permissions capability can modify permission rules for that content.
- Content owners have all capabilities on their content.
- Permissions can be different across content in the project.

Set content permissions (lock a project)

New top-level projects inherit all initial permission rules from the Default project but not the content permissions setting, which is set to **Customizable**. This can be changed to **Locked** if desired.

To configure the **Content Permissions**:

1. You must be logged into the site as an administrator, project owner, or project leader
2. Open the permissions dialog for a project
3. Click the Content Permissions **Edit** link in the upper left and select the desired option in the Content Permissions dialog



Note: If the upper left corner doesn't show an **Edit** link in step 3 above, you may be on the permissions dialog for (a) a nested project or a piece of content in a locked project, in which case the link should bring you to the managing project, (b) a piece of content in a customizable project, which won't show anything, or (c) a view, which will indicate how the view permissions are tied to the workbook. For more information on the interplay of permissions for views and workbooks, see Show or Hide Sheet Tabs.

Change content permissions

When the content permission setting for a project is changed, the outcome depends on the new setting. Changes to permission rules in a locked hierarchy must be done at the level of

the managing project.

Changing from	Changing to	Outcome
Locked (including nested projects)	Locked	Doesn't modify existing permission rules. Any nested projects become customizable.
	Customizable	Doesn't modify existing permission rules, though they become customizable. Any nested projects become customizable.
Locked	Locked (including nested projects)	Overwrites existing custom permission rules for all nested projects and their content. This can't be undone.
	Customizable	Doesn't modify existing permission rules, though they become customizable. Any nested projects retain their content permission settings and permission rules.
Customizable	Locked (including nested projects)	Overwrites existing custom permission rules for content in the project, as well as all nested projects and their content This can't be undone.
	Locked	Overwrites existing custom permission rules for content in the project. This can't be undone. Any nested projects retain their permission rules and remain customizable.

When a project is moved into another project, the permissions settings on the project being moved are maintained unless the destination project is scoped to include nested projects.

- If the destination project is set to **locked (including nested projects)**, the permissions for the project being moved are overwritten.
- If the destination project is set to **locked** (not including nested projects), the permissions for the project being moved are not overwritten. Whether or not the moved project is locked or customizable is preserved from its original setting.
- If the destination project is set to **customizable**, the permissions for the project being moved are not overwritten but they are now editable.
    - If the project being moved was previously nested under a parent that was *locked (including nested projects)*, when moved, the project takes on the setting of *locked (including nested projects)* and becomes the managing project for any projects it contains. Note: This is the same outcome if a project is moved to become a top-level project.

Effective permissions

A permission rule establishes who is impacted (a group or user) and what Capabilities they are **Allowed**, **Denied**, or **Unspecified**. While it seems straightforward to simply set a permission rule and have that be the whole story, whether a user has a capability may be unclear because of membership in multiple groups and the interplay of site roles and ownership with permission rules.

Multiple factors are evaluated in a specific order, yielding *effective permissions* on a piece of content.

Tip: To help keep things as straightforward as possible, we recommend (1) setting permission rules for groups instead of users, (2) managing permissions locked at the project level instead of setting permissions on individual content, and (3) deleting the All User group's permission rule or setting all capabilities to None.

A capability is allowed for a user if and only if the following three conditions are all met:

- The capability is within the scope of their site role.
- They have that capability:
  - based on a specific user scenario (such as being the content owner or a project leader, or they're an administrator site role),
    OR
  - because they have been allowed the capability as a user,
    OR
  - because they are both in a group that has been allowed the capability and no rules deny them the capability as a user or member of another group.
- There is no conflicting permissions settings at another content level that takes precedence.

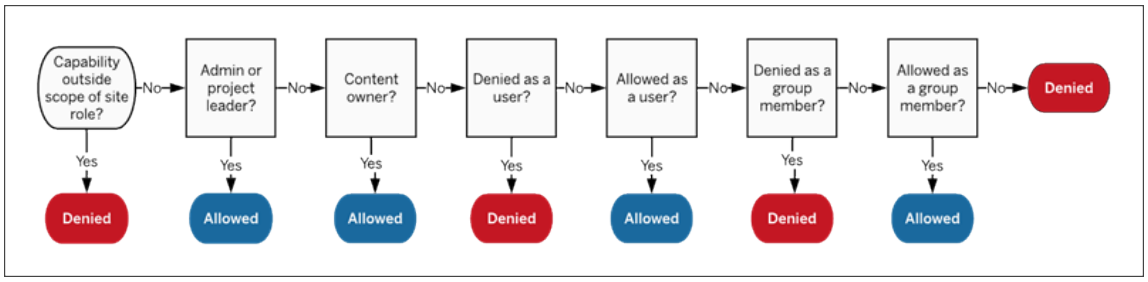
Any other situation denies the user the capability.

Hovering over a capability brings up a tooltip that explains the effective permission. Here are some common examples of why effective permissions—what the user can or can't do in actuality—might appear different than what a given permission rule states:

- A user might have a capability they are denied in a permission rule because their site role includes it (administrators).
- A user might have a capability they are denied in a permission rule because their user scenario allows it (because they own the content or are a project owner or leader).
- A user might lack a capability they are allowed in a permission rule because their site role doesn't allow it.
- A user might lack a capability they are allowed in a permission rule because a conflicting group or user rule denied it.
- A user might lack a capability they are allowed in a permission rule at one level of content (such as a workbook) because another level of content denied it (such as a view).

Evaluate permission rules

Permissions in Tableau are restrictive. Unless a capability is granted to a user, they are denied permission. The following logic evaluates if a capability is allowed or denied for an individual:



1. **Site role:** If a site role doesn't permit a capability, the user is denied. If the user's site role does permit the capability, then specific user scenarios are evaluated.
   - For example, a Viewer site role can't web edit. See General capabilities allowed with each site role for more information on what each site role can do.
2. **Specific user scenarios:**
   - If the user is an admin they have all capabilities on all content.
   - If the user is a project owner or project leader, they have all capabilities on all content in their projects.
   - If the user is the content owner, they have all capabilities* on their content.
   - If these scenarios do not apply to the user, then user rules are evaluated.

   *Exception: Content owners won't have the **Set Permissions** capability in projects where permissions are locked. Only administrators, project owners, and project leaders can set permission rules in locked projects.
3. **User rules:** If the user is denied a capability, it is denied. If they are allowed a capability, it is allowed. If a capability is unspecified, then group rules are evaluated.
4. **Group rules:** If the user is in *any* group that is denied a capability, it is denied. If the user is in a group that is allowed a capability (and not in any groups that are denied that capability), it is allowed.
   - That is to say, if a user is a member in two groups, and one is allowed a capability and one is denied the same capability, the denial takes precedence for that user and they are denied.
5. If none of the above conditions apply, the user is denied that capability. In effect, this means that capabilities left as unspecified will result in denied.

A final effective permission of **Allowed** therefore occurs in three circumstances:

- Allowed by site role (Server Administrator, Site Administrator Creator, Site Administrator Explorer)

- Allowed because the user is the content owner, project owner, or project leader
- Allowed by a group or user rule (and not denied by a rule of higher precedence)

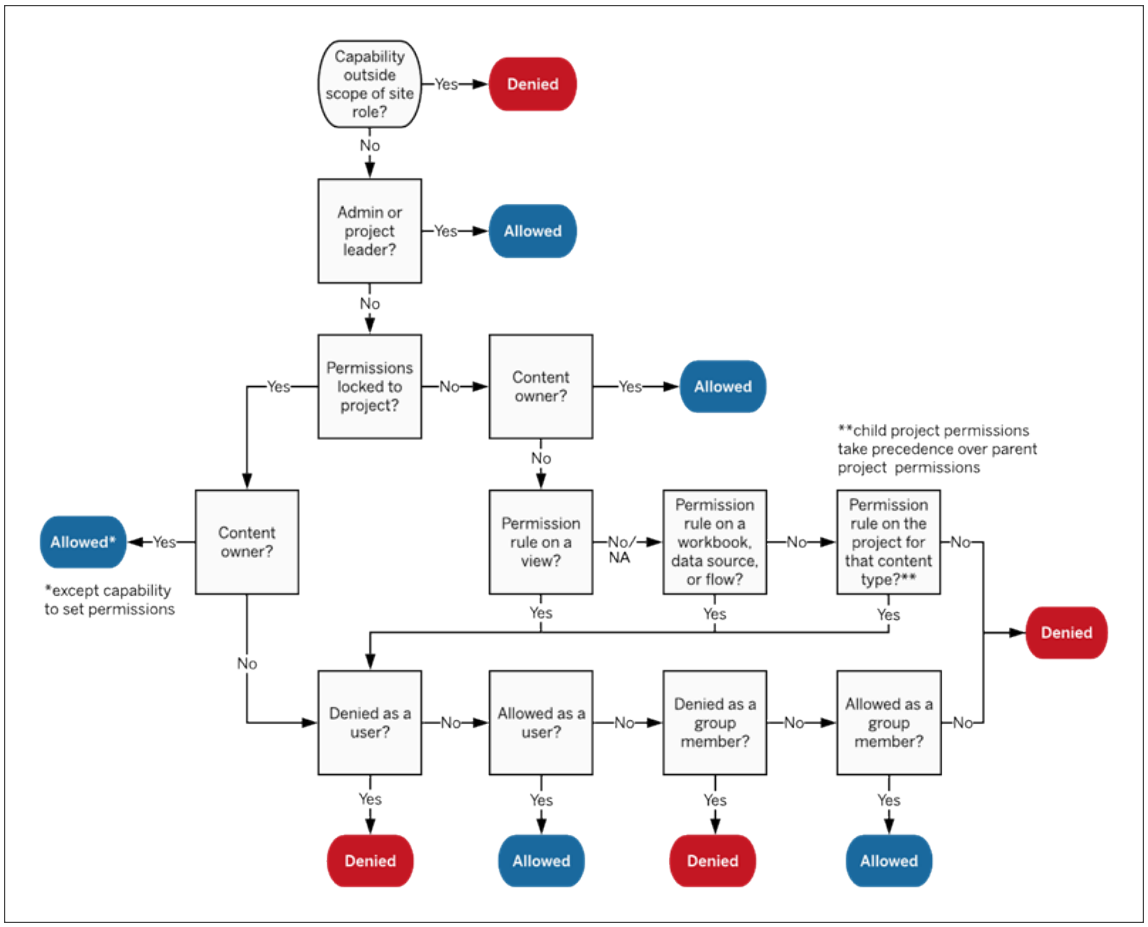
Denied occurs in three circumstances:

- Denied by site role
- Denied by a rule (and not allowed by a rule of higher precedence)
- Not granted by any rule

Evaluate permissions set at multiple levels

If project content permissions are *customizable*, it's possible to configure permission rules in multiple places. There are specific rules that determine what permissions are applied on the content.

- If there are nested projects, permissions set at the child level take precedence over permissions set at the parent level.
- Changes to permissions at the project level are not enforced for existing content.
- If there are permissions set on content (workbook, data source, or flow) during or after publication, these take precedence over rules set at the project level.
- If a workbook doesn't show navigational sheet tabs, any changes to the workbook-level permissions *won't* be inherited by the views and any changes to permissions must be done on the view.
- Configuring the workbook to show navigational sheet tabs will override existing view-level permissions and sync them with the workbook-level permissions. See Show or Hide Sheet Tabs.



This image shows how capabilities are evaluated through multiple levels of content.

Permissions on views

In a workbook that is not in a locked project and does not show sheets as tabs for navigation, views (sheets, dashboards, stories) inherit the workbook permissions at publication, but any changes to permission rules must be made on individual views. View capabilities are the same as those for workbooks, except for **Overwrite**, **Download Workbook/Save a Copy**, and **Move** which are only available at the workbook level.

We recommend showing navigational sheet tabs whenever possible so views continue to inherit their permissions from the workbook. For more information, see Effective permissions.

Permissions, Site Roles, and Licenses

Adding a user to a Tableau Server requires a license. (Users can also be added as unlicensed and configured so they will consume a license only when they first sign in. For more information, see Grant License on Sign In.) For each site the user belongs to they have exactly one site role, restricted by their license. A user has permissions for content on the site, restricted by what their site role allows.

Licenses and site roles apply to users. Permission capabilities apply to content.

Licenses are assigned to a user when they are created (or sign in for the first time) on the Tableau Server or Tableau Online site. Users are licensed as a **Creator**, **Explorer**, or **Viewer**.

- License levels are consumed based on the maximum *site role* a user can have on that server.
    - Server Administrator, Site Administrator Creator, and Creator site roles use a Creator license.
    - Site Administrator Explorer, Explorer (can publish), and Explorer site roles use at least an Explorer license.
    - Viewer site role uses at least a Viewer license.
    - An unlicensed user can exist on the server but they cannot log in unless they were added with grant site role on sign in.
- For Tableau Online, a user consumes a license per site and has only one site role.

Site roles are assigned to a user for each site they are a member of.

- Site roles determine the maximum capabilities a user can have in that site. (For example, a user with a site role of Viewer will never be able to download a data source even if that capability is explicitly granted to them on a specific data source.)
- Site roles do not inherently grant any capabilities in and of themselves—with the exception of the administrator site roles. Administrators always have all capabilities applicable to their license level.

Permissions consist of *capabilities*, like the ability to save to a project, web edit a workbook, connect to a data source, etc. They apply to group or user on a specific piece of content (project, data source, workbook, view, or flow).

- Permission capabilities are not given to a group or user in a vacuum but rather in the context of content. A user can have different capabilities for different content assets.
- Permissions are evaluated based on the interplay of a user's site role and the permission rules for that user or any groups they are members of.
- Some actions such as web authoring might require combinations of capabilities. For more information, see Permission settings for specific scenarios.

Site roles and their maximum capabilities

These tables indicates what capabilities are available to each site role. There may be other ways for a user with a site role to perform an action. For example, although Viewers can't be given the **Share Customized** capability, they can share views by copying the URL. See General capabilities allowed with each site role for more information on what each site role can do.

Projects

Capability	Creator	Explorer (can publish)	Explorer	Viewer
View	✓	✓	✓	✓
Publish	✓	✓	✗	✗

Workbooks

Capability	Creator	Explorer (can publish)	Explorer	Viewer
View	✓	✓	✓	✓
Filter	✓	✓	✓	✓
View Comments	✓	✓	✓	✓

Add Comments	✓	✓	✓	✓
Download Image/PDF	✓	✓	✓	✓
Download Summary Data	✓	✓	✓	✓
Share Customized	✓	✓	✓	✗
Download Full Data	✓	✓	✓	✗
Web Edit	✓	✓	✓	✗
Download Workbook/Save a Copy	✓	✓	✓	✗
Overwrite	✓	✓	✗	✗
Move	✓	✓	*	✗
Delete	✓	✓	✗	✗
Set Permissions	✓	✓	✗	✗

Data Sources

Capability	Creator	Explorer (can publish)	Explorer	Viewer

View	✓	✓	✓	✓
Connect	✓	✓	✓	✓
Download Data Source	✓	✓	✓	✗
Overwrite	✓	✓	✗	✗
Delete	✓	✓	✗	✗
Set Permissions	✓	✓	✗	✗

Data Roles

Capability	Creator	Explorer (can publish)	Explorer	Viewer
View	✓	✓	✓	✓
Overwrite	✓	✓	✗	✗
Move	✓	✓	*	✗
Delete	✓	✓	✗	✗
Set Permissions	✓	✓	✗	✗

Flows

Note that Flows are part of the Data Management Add-on.

Capability	Creator	Explorer (can publish)	Explorer	Viewer
View	✓	✓	✓	✓
Download Flow	✓	✓	✓	✗
Run Flow	✓	✓	✗	✗
Overwrite	✓	✓	✗	✗
Move	✓	✓	*	✗
Delete	✓	✓	✗	✗
Set Permissions	✓	✓	✗	✗

Metrics

Capability	Creator	Explorer (can publish)	Explorer	Viewer
View	✓	✓	✓	✓
Overwrite	✓	✓	✗	✗
Move	✓	✓	*	✗
Delete	✓	✓	✗	✗
Set Permissions	✓	✓	✗	✗

*Although the Explorer role can be given the **Move** capability, they can't have the **Publish** capability on a project and therefore there is no place for them to move content to. The **Move** capability should therefore be considered not possible for Explorer site roles.

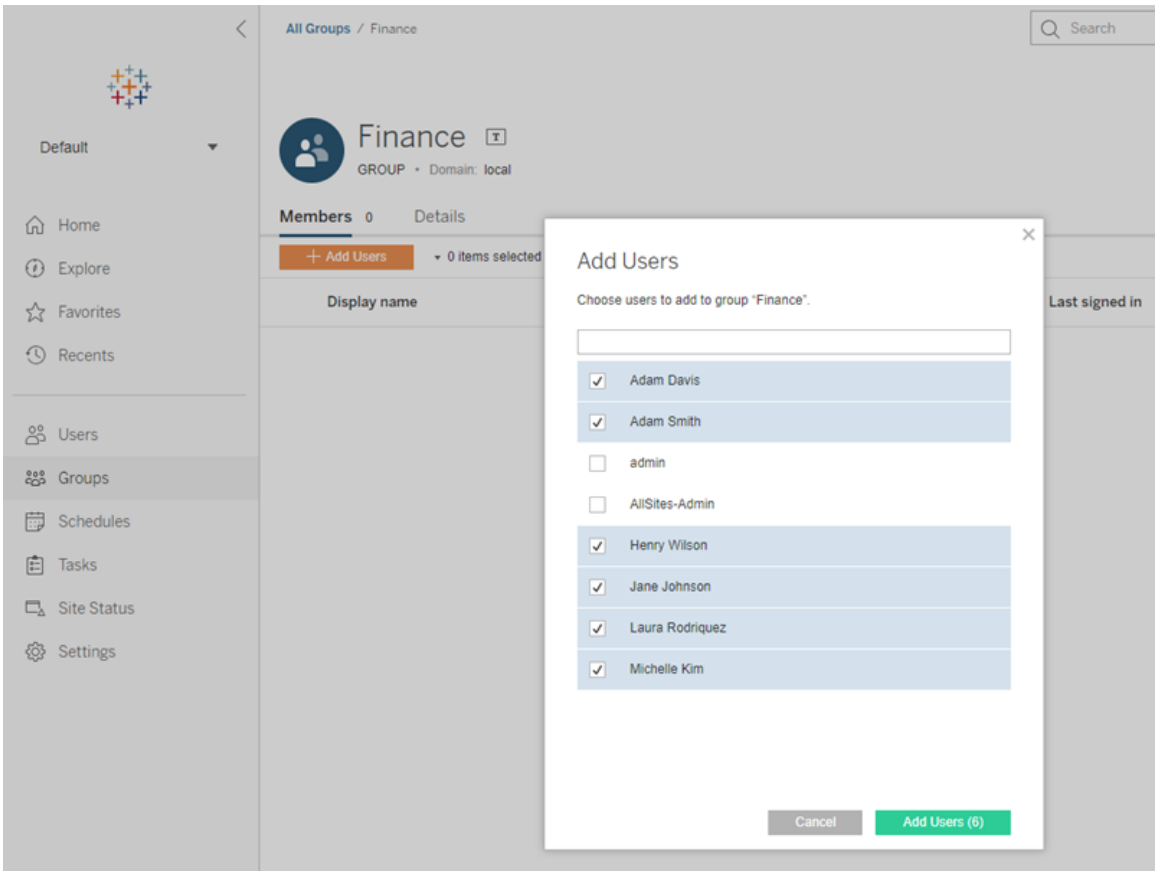
Quick Start: Permissions

You can use permission rules to control access to content on a site. A permission rule is a set capabilities that defines the level of access a group or user has on a content item. Content items are projects you create, and the workbooks and data sources published to them.

The most efficient way to manage permissions is to remove permissions from the **All Users** group before you create new groups for your environment. Then assign the permissions to groups at the project level.

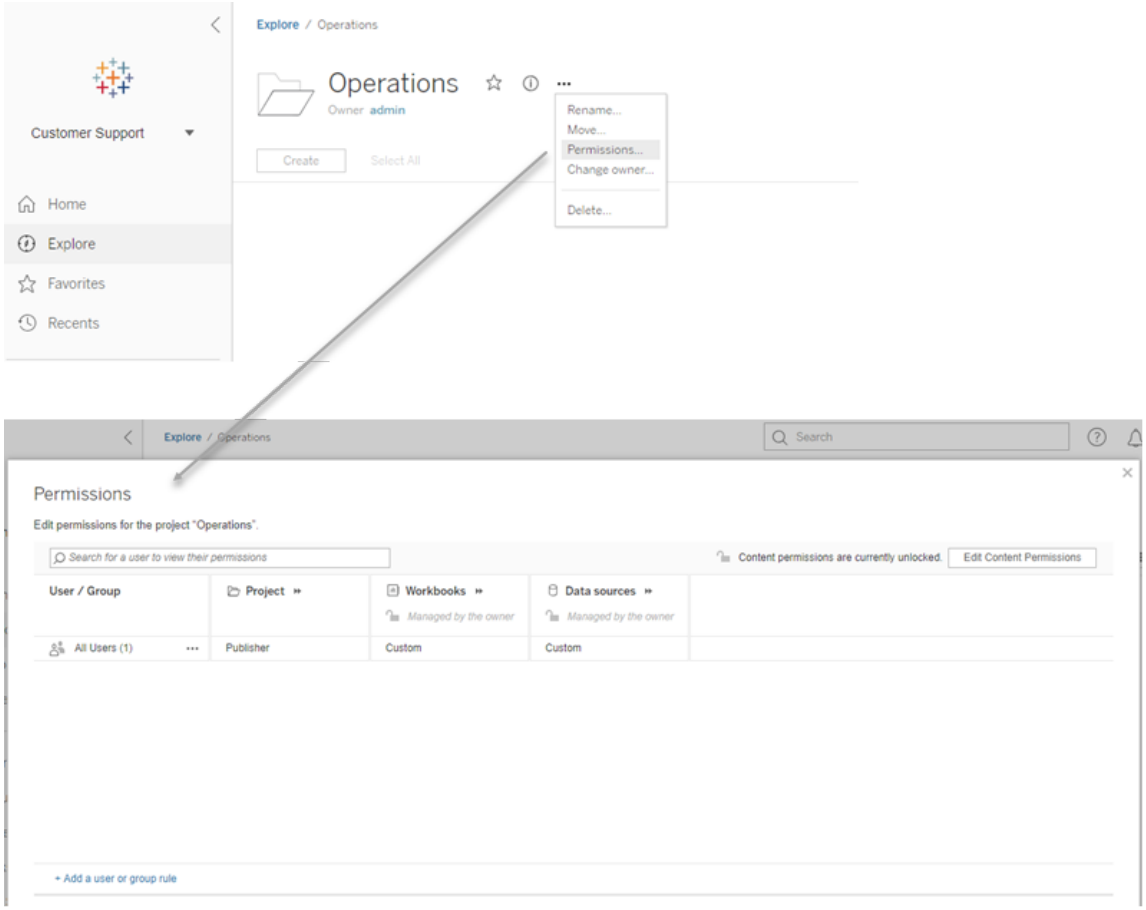
1 Add users to groups

Create groups for users based on who should have the same permissions, and then add users to those groups. Within a site, select **Groups**. Select a group name, and then select **Add Users**.



2 Open a project's permissions settings

The site's **Content** page shows the top-level projects. Navigate to the project you want to update, select its **Actions** (**...**) menu, and then select **Permissions**.

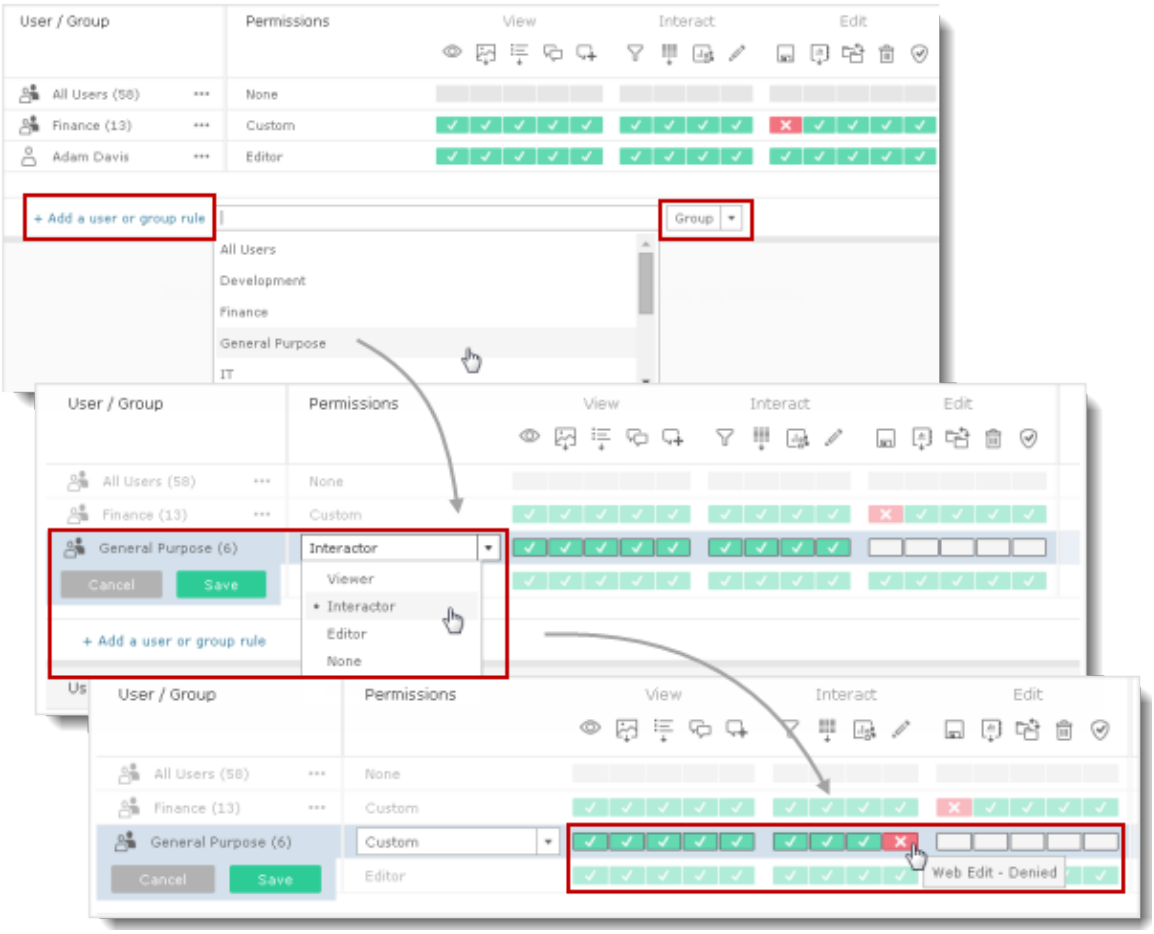


If you're not sure where to find a child project, display filters, and select **Show all projects**.

3 Create a permissions rule

Click **Add a user or group rule**, select **Group**, and then find and select the group.

Select a permissions role template to apply an initial set of capabilities for the group. Click a capability to set it to **Allowed** or **Denied**, or leave it **Unspecified**. Click **Save** when you are done.

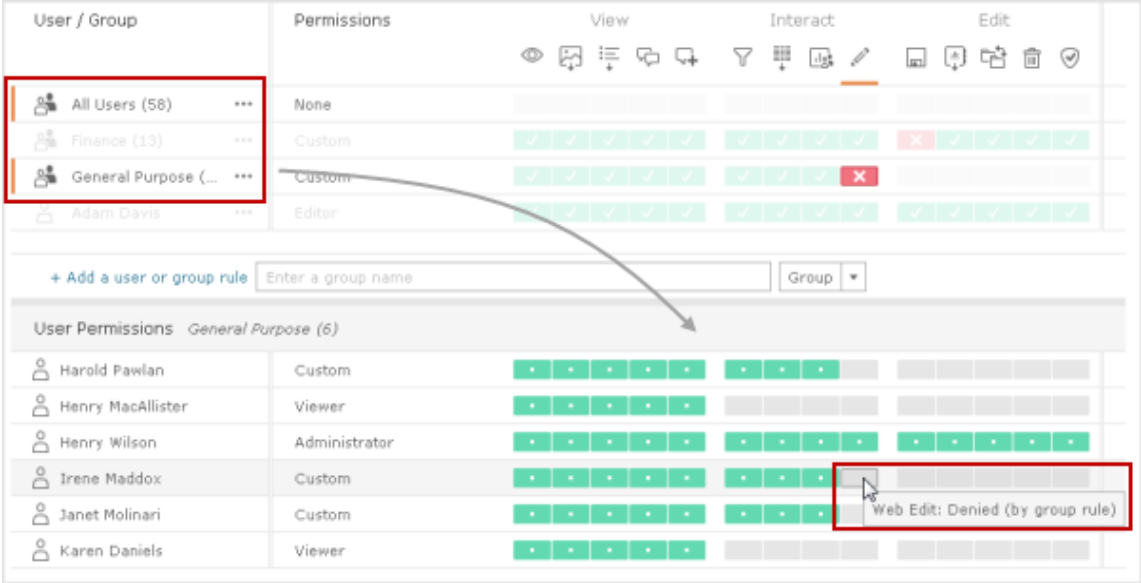


Whether a user can set permissions is based on their site role and how their **Set Permissions** capability is set.

4 View a user's effective permissions

After you save the permissions rule for the group, you can view the effective permissions for that content.

Click a group name to see the group's users and their permissions. Hover over a capability box to see a tooltip with details on whether a capability is allowed or denied.



Custom indicates a user's capabilities have been changed from the initial settings for their site role or content role.

For more information, see Permissions.

Site roles

A user's site role determines the maximum permissions allowed for that user.

- Server and site administrators can access all site content and take actions on it.
- Owners always get full access to the content they've published. When the parent project permissions are not locked, owners can change permissions for their published content.

For more information, see Set Users' Site Roles and Use Projects to Manage Content Access.

Permissions evaluation

- **Denied** takes precedence over **Allowed**.
- **Unspecified** results in **Denied** if no other permissions are specified.

- Specific user permissions on content take precedence over group permissions on content. In other words, user permissions trump group permissions.

For a couple of best-practice steps for how to implement permissions, see the following:

- Configure Projects, Groups, and Permissions for Managed Self-Service
- Structure Content Projects, Groups, and Permissions (links to *Everybody's Admin Guide*)

Manage Content Ownership

When you publish a data source or workbook on Tableau Online or when you create a project, you become its *owner*. A content owner, a project leader with an appropriate site role, or an administrator can change ownership of a content asset. After ownership is reassigned, the original owner has no special connection to the content item, and their ability to access it is determined by their permissions on the project or that specific item.

Who can change or be given ownership, by content type

Whether you can change or be given ownership depends on your permissions and your relationship to the content asset, as described in the following table.

> **Note:** Full project leader access is available only with some site roles. For information, see Project-level administration.

Content asset type	Who can change ownership	Who can be given ownership
Top-level projects	Server administrator[1] Site administrator	Server administrator Site administrator (Creator and Explorer) Creator Explorer (can publish)
Child (nested) projects	Server administrator Site administrator Project owner	Any administrator or owner, excluding Explorer and Viewer.
Workbooks and data	Server administrator	Any administrator or user of the

sources	Site administrator Workbook or data source owner Project leader or owner of the project that contains the item	site, excluding Explorer and Viewer.
Flows	Server administrator Site administrator	Any administrator or user of the site, excluding Explorer and Viewer.

[1] The Server Administrator site role applies to Tableau Server only; not Tableau Online.

Considerations for changing content ownership

- Before you remove a user from Tableau Online, make sure they do not own any content assets.

  If the user does own content, you must first reassign ownership of those assets before you can delete the user. Otherwise, their site role is set to **Unlicensed**, but they are not deleted, and only an administrator can take certain actions on that content.

- If you change the ownership of a flow, workbook or data source that includes embedded credentials, to connect to underlying data, the embedded credentials will be deleted.

  You can update the embedded credentials by editing the connection information on Tableau Online. For more information, see Edit Connections on Tableau Online. Alternatively, the new owner can download the flow, workbook or data source, and

open the item in Tableau Desktop to update the embedded credentials, and then re-publish the workbook or data source.

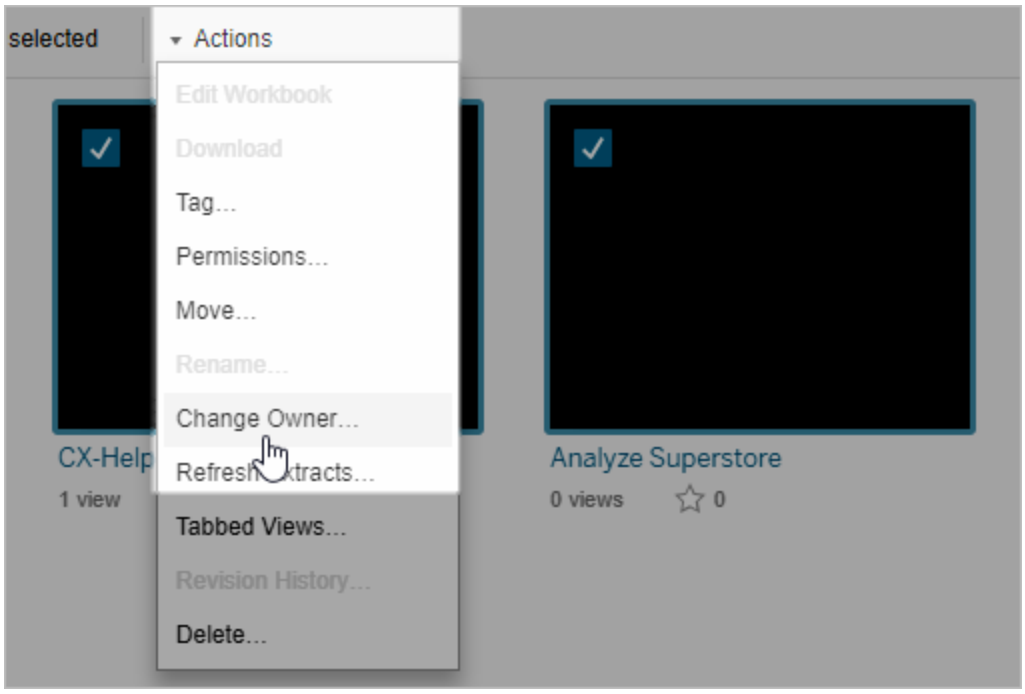
- If you do not lock permissions to projects, make sure users you give content ownership to know your permissions guidelines, or you account for permissions as you change ownership. In unlocked projects, by default, content owners can set permissions on their content. For more information, see Permissions.

Change the owner of a content resource

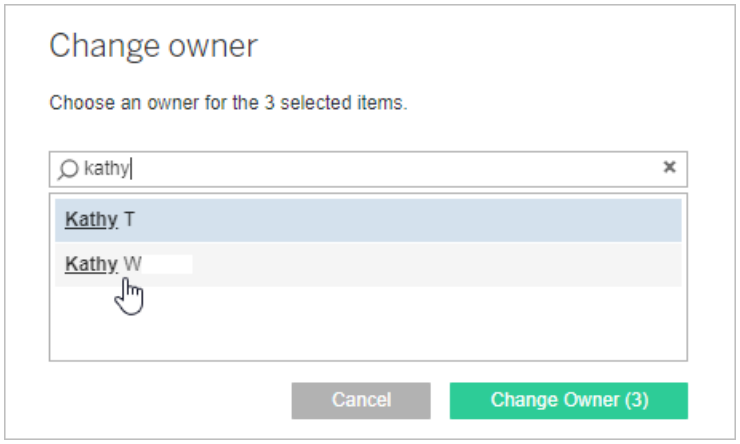
1. Sign in to the Tableau Online web environment and select the **Content** tab.
2. Navigate to the content you want to assign to someone else.
   - If you want to re-assign multiple of the same type of content, for example, multiple workbooks, open the **Explore** menu, and select the content type.
   - If you want to re-assign multiple items within the same project, navigate to the project.

     If you’re not sure where to find a child project, display filters, and select **Show all projects**.
   - If you want to re-assign multiple content items with the same owner, find the user in the Users page.
3. Select the items you want to reassign, and then select **Actions** > **Change Owner**.

   The other menu commands you see will depend on the content type.



4. Type the name of a user or select a user from the list.



5. Click **Change Owner**.

Manage Permissions for External Assets

Tableau Online and Tableau Server provide a space for accessing and managing published content. When Tableau Online or Tableau Server is licensed with the Data Management

Add-on, you have access to Tableau Catalog. Tableau Catalog adds a complementary space and a set of features across your site to track and manage metadata and lineage of external assets used by the content published to your site.

Tableau Catalog indexes content and assets

Catalog discovers, tracks, and stores metadata from the content that you publish to Tableau Online or Tableau Server.

Catalog indexes metadata for the following:

- **Tableau content:** workbooks, data sources, flows, projects, metrics, users, and sites
- **External assets:** databases and tables associated with Tableau content

  Catalog classifies the metadata of any data that comes from outside the Tableau environment as external assets. The data that comes from outside the Tableau environment is stored in many different formats, such as a database server or a local .json file.

  Catalog tracks only the metadata of the external data and does not track the underlying data in any form (raw or aggregated).

Catalog metadata includes the following:

- **Lineage information** or the relationship between items. For example, the Sales table has a relationship with both the Superstore data source and the Superstore Sample workbook.
- **Schema information**. Some examples include:
  - Table names, column names, and column types. For example, Table A contains Columns A, B, and C, which are types INT, VARCHAR, and VARCHAR.
  - Database name and server location. For example, Database_1 is a SQL Server database at http://example.net.
  - Data source name, and the names and types of the fields the data source contains. For example, Superstore data source has fields AA, BB, and CC. Field CC is a calculated field that refers back to both field AA and field BB.

- **User curated, added, or managed information**. For example, item descriptions, certifications, user contacts, data quality warnings, and more.

How does Tableau Catalog work?

Tableau Catalog indexes all content published to Tableau Online or Tableau Server to track lineage and schema metadata. For example, the metadata comes from workbooks, packaged workbooks, data sources, and the Tableau Server or Tableau Online repository.

As part of the indexing process, lineage and schema metadata about external assets (databases and tables) used by the published content are also indexed.

Note: In addition to accessing Catalog from Tableau Online or Tableau Server, indexed metadata can also be accessed from the Tableau Metadata API and Tableau Server REST API. For more information about the Tableau Metadata API or metadata methods in the REST API, see Tableau Metadata API and Metadata Methods in the Tableau Server REST API, respectively.

Permissions on metadata

Permissions control who is allowed to see and manage external assets and what metadata (for both Tableau content and external assets) is shown through lineage.

Note: If Tableau Online or Tableau Server is not licensed with the Data Management Add-on, then by default, only admins can see database and table metadata through the Tableau Metadata API. This default can be changed to use "derived permissions," as described below.

Access metadata

The permissions used to access metadata through Catalog (or Metadata API) work similarly to permissions for accessing content through Tableau Online or Tableau Server, with some additional considerations for sensitive data that can be exposed through lineage and the capabilities granted on external assets.

Permissions on Tableau content

Catalog uses view and manage capabilities that are already used by existing Tableau content to control the metadata that you can see and manage on Tableau content. For more general information on these capabilities, see Permissions.

Permissions on external assets using derived permissions

When Tableau Online or Tableau Server is licensed with the Data Management Add-on, by default Catalog uses *derived permissions* to automatically grant you capabilities to external assets in the following scenarios:

For **View** capability:

- If you are the owner of a workbook, data source, or flow, you can see the database and table metadata used *directly* by that workbook, data source, or flow. See Additional notes about lineage.
- If you are a project owner or project leader, you can see all the database and table metadata used by the content published to your project.

For both **Overwrite** and **Set Permissions** capabilities:

- If you are the owner of a flow, you can edit and manage permissions for the database and table metadata used by the flow output.

Note: For the flow cases above, the capabilities apply only after there has been at least one successful flow run under the current owner of the flow.

Check permissions

As an admin or someone who has been given the capability to set permissions for an asset, you can validate who has derived permissions by following the steps below.

1. Sign in to Tableau Online or Tableau Server.
2. From the left navigation pane, click **External Assets**.

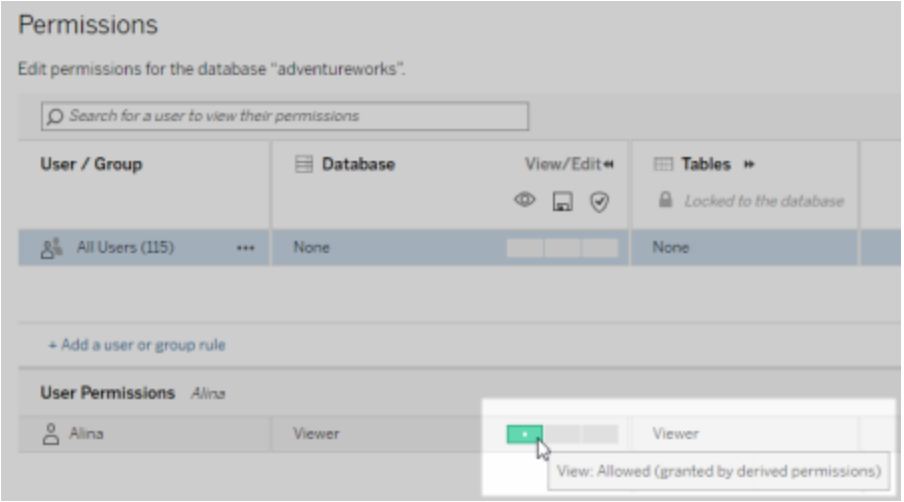
3. From the drop-down menu, select **Databases and Files** or **Tables.**

   Note: Local files, like .json or .csv files are grouped as external assets under **Databases**.

4. Select the check box next to the database or table whose permissions you want to modify, and then select **Actions** > **Permissions**.

5. In the Permissions dialog box, click **+ Add Group/User Rule** and start typing to search for a group or user.

6. Validate the permissions by clicking a group name or user name in the permission rules to see the effective permissions below.



Order of precedence in which Tableau evaluates derived permissions for external assets

When derived permissions are configured for your Tableau Online site or Tableau Server, each user's level of access to external assets depends on the associated Tableau content and the order of precedence of rules Tableau uses for its content.

Tableau follows the rules below, continuing on to the next rule, only if the current rule evaluates to "denied." If any rule evaluates to "allowed," the capability is allowed and Tableau stops evaluating. This rules list is based on the Permissions.

For **View** capability:

1. Admin role
2. License
3. Project leader (Tableau content)
4. Project owner (Tableau content)
5. Content owner (Tableau content)
6. *Derived permissions* (applies only to external assets and the View capability)
    a. Admin role
    b. License
    c. Project leader (external assets)
    d. Project owner (external assets)
    e. Content owner (external assets)
7. Explicit permissions

For **Overwrite** and **Set Permissions** capabilities:

1. Admin role
2. License
3. Project leader (Tableau content)
4. Project owner (Tableau content)
5. Content owner (Tableau content)
6. Explicit permissions (Tableau content)
7. *Derived permissions* (applies only to external assets and the Overwrite and Set Permissions capabilities for flow outputs)
    a. Admin role
    b. License
    c. Project leader (external assets)
    d. Project owner (external assets)
    e. Content owner (external assets)

Turn off derived permissions

As an admin, you can turn off the derived permissions default setting for a site in favor of manually granting explicit permissions to databases and tables.

1. Sign in to Tableau Online or Tableau Server as an admin.
2. From the left navigation pane, click **Settings**.
3. On the General tab, under Automatic Access to Metadata about Databases and Tables, clear the **Automatically grant authorized users access to metadata about databases and tables** check box.

   Note: Data quality warning messages on databases and tables that are visible to users though derived permissions remain visible to those users even when the check box is not selected.

Set permissions on individual external assets

In order to grant additional users permissions to view, edit (overwrite), and manage external assets, an admin can grant those capabilities explicitly on individual databases or tables for users or groups.

Database permissions act as a permissions template

Database permissions function like Permissions. In other words, when permissions are set at the database level, those permissions can serve as a template for any newly discovered and indexed child tables of that database. Furthermore, database permissions can also be locked so that the child tables will always use the permissions set at the database level.

Granting permission at the database level can help create a scalable process for enabling permissions to tables.

Summary of permissions capabilities

The following table shows the capabilities you can set for external assets (databases and tables):

Capability	Description	Template
View	See the database or table asset.	View
Overwrite	Add or edit data quality warnings and descriptions of the database or table asset. Prior to version 2020.1, the Overwrite capability was called Save.	Publish
Set Permissions	Grant or deny permissions for the database or table asset.	Administer

Set permissions on a database or table

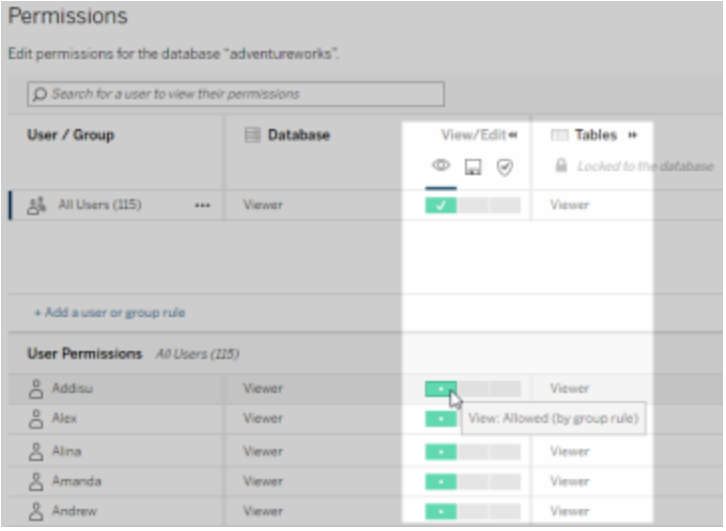
To set permissions on databases or tables, use the following procedure.

1. Sign in to Tableau Online or Tableau Server as an admin or someone who has been granted the "Set Permissions" capability.
2. From the left navigation pane, click **External Assets**.
3. From the drop-down menu, select **Databases and Files** or **Tables.**
   Note: Local files, like .json or .csv files are grouped as external assets under **Databases**.
4. Select the check box next to the database or table whose permissions you want to modify, and then select **Actions** > **Permissions**.
5. In the Permissions dialog box, click **+ Add Group/User Rule** and start typing to search for a group or user.
6. Select a permission role template to apply an initial set of capability for the group or user, and then click **Save**. Available templates are: View, Publish, Administer, None, and Denied.
7. To further customize the rule, click a capability in the rule to set it to Allowed or Denied,

or leave it unspecified. Click save when you are done.

8. Configure any additional rules you want for other groups or users.

9. Validate the permissions clicking a group name or user name in the permission rules to see the effective permissions below.



Lock permissions to the database

To lock (or unlock) permissions to the database, use the following procedure.

1. Sign in to Tableau Online or Tableau Server as an admin or someone who has been granted the "Set Permissions" capability.

2. From the left navigation pane, click **External Assets**. By default, the External Assets page shows a list of databases and files.

3. Select the check box next to the database whose permissions you want to lock, select **Actions** > **Permissions**, and then click the Table Permissions **Edit** link .

4. In the Table Permissions in Database dialog box, select **Locked** and click **Save**.

5. To unlock permissions, click **Edit** again, and select **Customized**.

Access lineage information

Catalog (and the Metadata API) can expose relationship and dependencies metadata, also referred to as *lineage*, among the content and assets on Tableau Online or Tableau Server. Lineage can show three primary things:

- How items relate to each other, either directly or indirectly
- How many of those items relate to each other
- With the appropriate permissions, shows sensitive data about items in the lineage

Sensitive lineage data

In some cases, lineage can contain sensitive data, such as data quality warning messages, content or asset names, or related items and metadata.

By default, complete lineage information displays for all users while its sensitive data is blocked from specific users who don’t have the appropriate View capabilities. The concept of blocking sensitive data is called obfuscation.

Obfuscation allows all metadata in the lineage to be visible while keeping its sensitive data blocked from specific users who don’t have the appropriate View capabilities. This default enables workflows that rely on a complete impact analysis.

If obfuscating sensitive data in the lineage is not enough for your organization, certain parts of the lineage, including its sensitive data, can be filtered.

Filtering omits certain parts of the lineage (and lineage-related areas like data details) for specific users who don't have the appropriate View capabilities to its sensitive data. Because filtering omits parts of lineage, it prevents workflows that rely on a complete impact analysis.

To change how sensitive data is handled, do the following:

1. Sign in to Tableau Online or Tableau Server as an admin.
2. From the left navigation pane, click **Settings**.
3. On the General tab, under **Sensitive Lineage Information**, select the radio button that bests handles lineage information for all users on your Tableau Online site or Tableau Server.

Additional notes about lineage

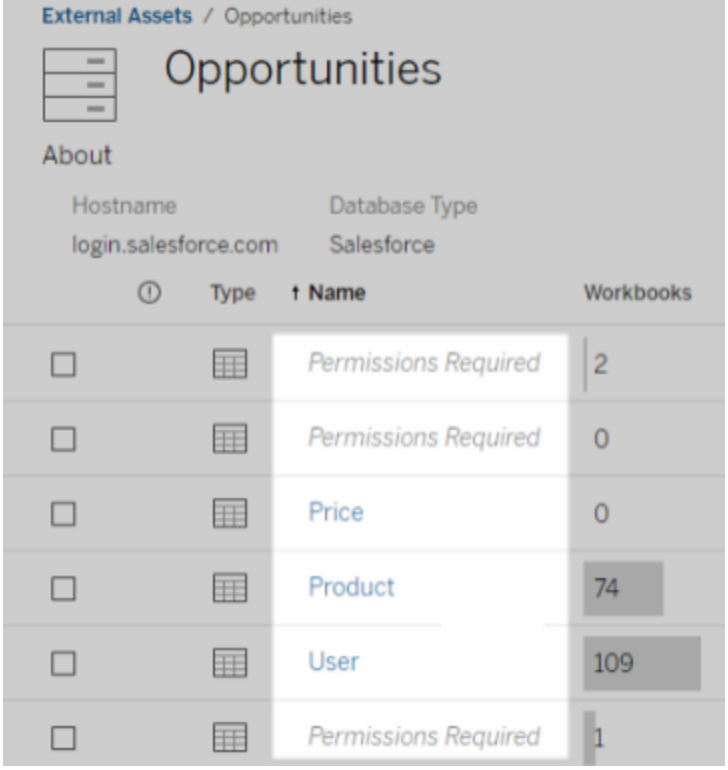
- **If you have the View capability on related assets**, you can see when and what assets and content are related to each other, and their sensitive metadata.

  For example, you can see 1) the names, data quality warnings, and total number of related upstream databases and tables and 2) the combined number of sheets (visible and hidden) in the lineage of the downstream workbook of the asset you are evaluating.

- **If you *don't* have the View capability on related assets**, you can always see when assets relate to each other.

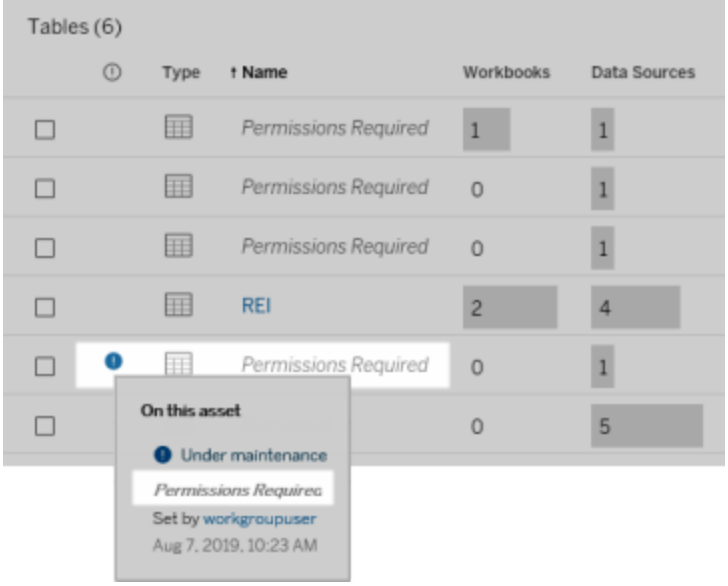
  For example, you can see 1) whether related upstream databases and tables exist in the lineage and 2) the total number of databases or total number of tables that are related to the asset you are evaluating.

  However, you can't see the metadata associated with those assets when you don't have the view capability for them. When metadata is blocked because of limited permissions, you see **Permissions Required**.



- **If you *don't* have the View capability on related assets**, you can always see whether the assets are certified.

  However, the level of detail that you can't see if you don't have View capability is the sensitive information related to the certification, like the names of the related databases and tables. When metadata is blocked because of limited permissions, you see **Permissions Required**.



For more information about lineage see Use Lineage for Impact Analysis.

Additional notes about tags discoverable through lineage data

In addition to Tableau content, external assets can also be tagged. Although tags are always visible, tagged items that you see through lineage data can either be obfuscated (default) or filtered as described earlier in this topic.

When tagged items are obfuscated:

- **If you have the View capability for tagged items**, you can see the tagged items and related tagged items, and all metadata.
- **If you don’t have the View capability for tagged items**:
  - You can see the type of tagged and related tagged items but you can't see sensitive metadata about the items. For example, suppose you use a tag filter to see items with the tag “Noteworthy.” Although you can see that there are database items tagged with "Noteworthy," you can’t see the names of the tagged databases.

- You can see how many related tagged items there are. For example, suppose you do a tag query on “Noteworthy.” Your query returns five tagged databases.

When tagged items are filtered, the tagged and related tagged items you see are limited to only the items that you have the View capability for.

For more information about tags, see Tagged Items in the Tableau User Help.

Potential mismatch between asset results and content results

When Catalog shows lineage information, it provides information between content and assets. Catalog lineage always shows the true count or result of associated items. However, elsewhere in Tableau Online or Tableau Server, you might see fewer number of items. One reason for this is because of your View capabilities. Outside of Catalog, or elsewhere in Tableau Online or Tableau Server, you see a filtered count or result of the content that you have access to according to your content permissions.

For example, suppose you're looking at the Superstore data source. The lineage for the Superstore data source can show how many upstream underlying tables the data source connects to and how many downstream workbooks rely on the data source. However, because you might not have the View capability on all of those downstream workbooks, the total number of related workbooks might be different when you're looking at Catalog lineage information versus the total number of workbooks represented in the **Connected Workbooks** tab.

There might be other reasons why, which are not related to permissions, you might see a mismatch between asset counts and content counts. For more information, see Use Lineage for Impact Analysis.

Who can do this

The following information summarizes the types of users who can do the tasks described in this topic.

Tableau Online site or Tableau Server admin

Data Management Add-on	Capability	Requirements
Licensed	See assets and their metadata	None

Data Management Add-on	Capability	Requirements
	Edit assets and their metadata	None
	Change permission on assets and their metadata	None
	Grant users ability to see assets and their metadata	**Default:** When “derived permissions” is on, your users can see metadata on external assets for the content that they own, or for the content that is published to a project that they are a project leader or project owner of. **Ad-hoc:** You can configure explicit **View** permissions on a specified external asset.
	Grant users ability to edit assets and their metadata	You can configure explicit "write" or **Overwrite** permissions on a specified external asset (if not automatically granted because the user is a flow owner) .
	Grant users ability to change permissions on assets and their metadata	You can configure explicit "edit" or **Set Permissions** on a specified external asset (if not automatically granted because the user is a flow owner) .

Data Management Add-on	Capability	Requirements
Not licensed	See all assets and their metadata	**Applies to Metadata API only**
	Edit assets and their metadata	Requires the Data Management Add-on
	Change permission on assets and their metadata	Requires the Data Management Add-on
	Grant users ability to see assets and their metadata	**Applies to Metadata API only:** You can turn on derived permissions as described above. If “derived permissions” is on, your users can see metadata on external assets for the content that they own, or for the content that is published to a project that they are a project leader or project owner of.
	Grant users ability to edit assets and their metadata	Requires the Data Management Add-on
	Grant users ability to change permissions on assets and their metadata	Requires the Data Management Add-on

User with Creator or Explorer license

Data Management Add-on	Capability	Requirements
Licensed	See assets and their metadata	**Default:** When "derived permissions" is enabled by your Tableau Online site admin or Tableau Server admin, you can see metadata on external assets for the content that you own, or for the content that is published to a project that you are a project leader or project owner of. **Ad-hoc:** You can see metadata on external assets that you have been granted explicit **View** permissions to.
	Edit assets and their metadata	You can edit metadata on an external asset that you have been granted explicit "write" or **Overwrite** permissions to(if not automatically granted because the user is a flow owner).
	Change permissions on assets and their metadata	You can change permissions on an external asset that you have been granted explicit "edit" or **Set Permissions** to ((if not

Data Management Add-on	Capability	Requirements
		automatically granted because the user is a flow owner).
	Grant other users permissions to see assets and their metadata	You can change permissions on an external asset that you have been granted explicit "edit" or **Set Permissions** to ((if not automatically granted because the user is a flow owner).
Not licensed	See assets and their metadata	**Applies to Metadata API only:** If “derived permissions” is enabled by your Tableau Online site admin or Tableau Server admin, you can see metadata on external assets for the content that you own, or for the content that is published to a project that you area project leader or project owner of.

Data Management Add-on	Capability	Requirements
	Edit assets and their metadata	Requires the Data Management Add-on
	Change permissions on assets and their metadata	
	Grant other users permissions to see assets and their metadata	

Enable Tableau Catalog

Tableau Catalog discovers and indexes all of the content on your Tableau Online site or Tableau Server, including workbooks, data sources, sheets, metrics, and flows. Indexing is used to gather information about the content, or metadata, about the schema and lineage of the content. Then from the metadata, Catalog identifies all of the databases, files, and tables used by the content on your Tableau Online site or Tableau Server.

Catalog is available with the Data Management Add-on. For more information, see About Data Management Add-on.

In addition to Catalog, metadata about your content can also be accessed from both the Tableau Metadata API and the Tableau REST API using Metadata Methods.

Catalog on Tableau Online

Catalog is automatically enabled when Tableau Online is licensed with the Data Management Add-on.

After your Tableau Online site has been licensed with the Data Management Add-on, the content that already exists on your Tableau Online site is immediately indexed. The time it takes to index the content depends on the amount of content you have. After the content is ini-

tially indexed, Catalog monitors newly published content and other changes to assets and continues to index in the background.

Troubleshoot Catalog

You or your users might encounter one of the following issues when using Catalog.

Timeout limit and node limit exceeded messages

To ensure that Catalog tasks that have to return a large number of results don't take up all system resources, Catalog implements both timeout and node limits.

- **Timeout limit**

  When tasks in Catalog reach the timeout limit, you and your users see the following message:

  "*Showing partial results, Request time limit exceeded. Try again later.*" or TIME_LIMIT_EXCEEDED

- **Node limit**

  When tasks in Catalog reach the node limit, you and your users see the following message:

  NODE_LIMIT_EXCEEDED

Disable Catalog

As a Tableau Online site admin, you can disable Catalog by turning off its capabilities.

Turn off Catalog capabilities

(Requires the Data Management Add-on)

You can turn off Catalog capabilities at any time. When Catalog capabilities are turned off, the features of Catalog, such as adding data quality warnings or the ability to explicitly manage permissions to database and table assets, are not accessible through Tableau Online.

However, Catalog continues to index published content and the metadata is accessible from the Tableau Metadata API and metadata methods in the Tableau REST API.

1. Sign in to Tableau Online using your site admin credentials.
2. From the left navigation pane, click **Settings**.
3. On the General tab, under Tableau Catalog, clear the **Turn on Tableau Catalog** check box.

Stop indexing metadata

Indexing cannot be stopped for a Tableau Online site.

Use Certification to Help Users Find Trusted Data

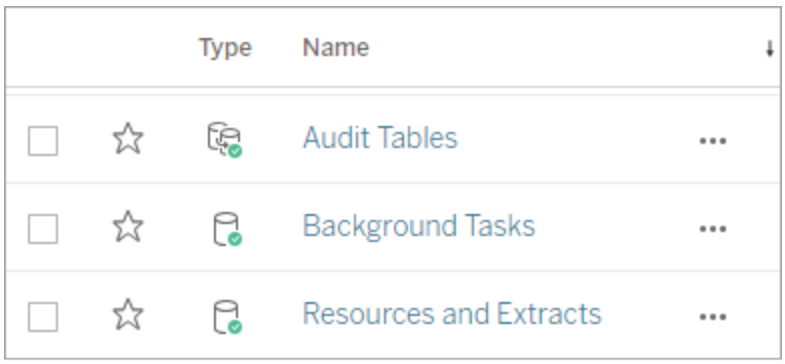
In a self-service environment with multiple publishers, it's common for a project on Tableau Online to contain a variety of content that is named similarly, or is based on the same or similar underlying data, or is published without any descriptive information about it. When this is the case, analysts might lack confidence about the data they should use.

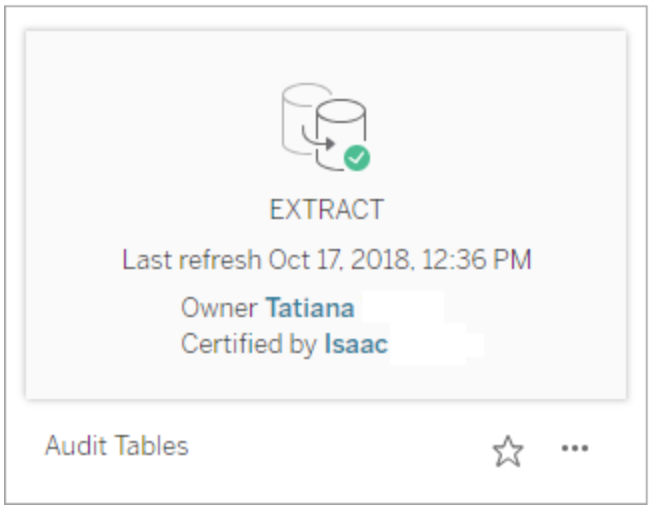
To help your users find the data that's trusted and recommended for their type of analysis, you can *certify* the data that complies with your organization's data standards.

Starting in 2019.3, Tableau Catalog is available in the Data Management Add-on to Tableau Server and Tableau Online. When Tableau Catalog is enabled in your environment, in addition to certifying published data sources, you can also certify the databases and tables that are associated with your workbook, flow, or data source content. For more information about Tableau Catalog, see "About Tableau Catalog" in the Tableau Server or Tableau Online Help.

How certification helps users find trusted data

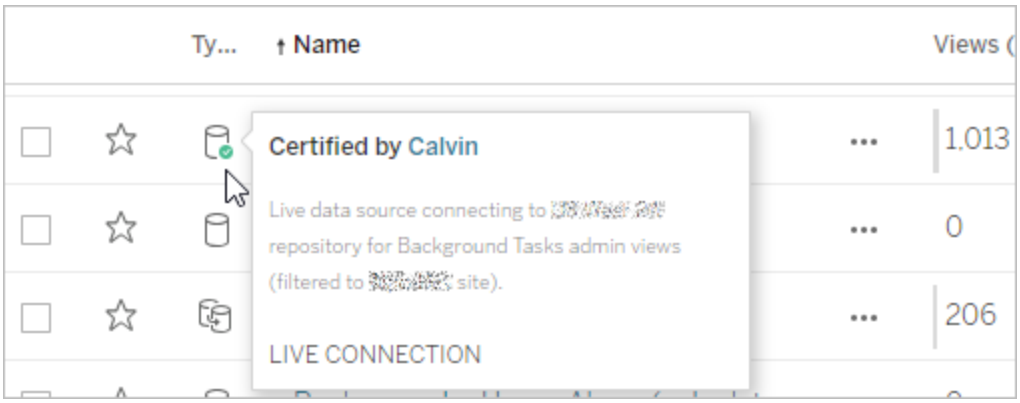
When you certify a data source (or database or table, if you have Tableau Catalog in your environment), it gets a green check mark on its icon in the list view or thumbnail in the grid view. This appears anywhere the data source (or database or table) is shown, including when connecting to data in web authoring or from Tableau Desktop.





Certified data sources rank higher in search results and are added to recommended data sources.

In addition, you can provide notes about the certification status, which appear in a tooltip when users hover over the data source icon or card. The tooltip in list view also shows who certified the data source and the data source's connection type.



For more information, see the How to certify data steps below.

Create guidelines for selecting data to certify

As with most Tableau functionality, certification is flexible. You can define for your organization the criteria you use to determine when to certify a data source (or database or table). As you do this, you might want to document and share your guidelines. As new data sources are published, the guidelines can help you and other administrators or project leaders to be consistent with your certification choices. They can also help users understand what certification means.

Whether you use the same certification criteria across all projects, or define unique criteria for each project, the important thing is to be clear about what certification means in your environment.

Who can certify data

To certify a data source, you must

- be an administrator, or
- have a site role of Explorer (Can Publish) or Creator and have the Project Leader capability on the project containing the data you want to certify.

To certify databases or tables, you must have Tableau Catalog enabled in your environment and either of the following permissions levels:

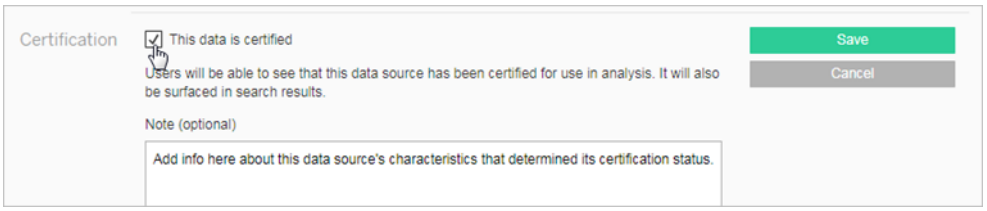
- Site Administrator site role.
- "Manage permissions" capability on a database to certify that database or any tables within that database.

How to certify data

The data you can certify depends on whether you have Tableau Catalog enabled in your environment. All users with the right permissions can certify data sources. Tableau Catalog users with the right permissions can also certify databases, tables, and files.

Certify data sources

1. Sign in to Tableau Online.
2. To certify a data source, on the **Explore** page, select **Data Sources**.
3. On the page, select the data source, and then select the **Details** icon ⓘ.
4. Next to **Certification**, select **Edit Certification Status**, and then do the following:
   a. Select the **This data is certified** check box.
   b. Add a note that gives users context for the certification status, intended use for the data, or other helpful information.



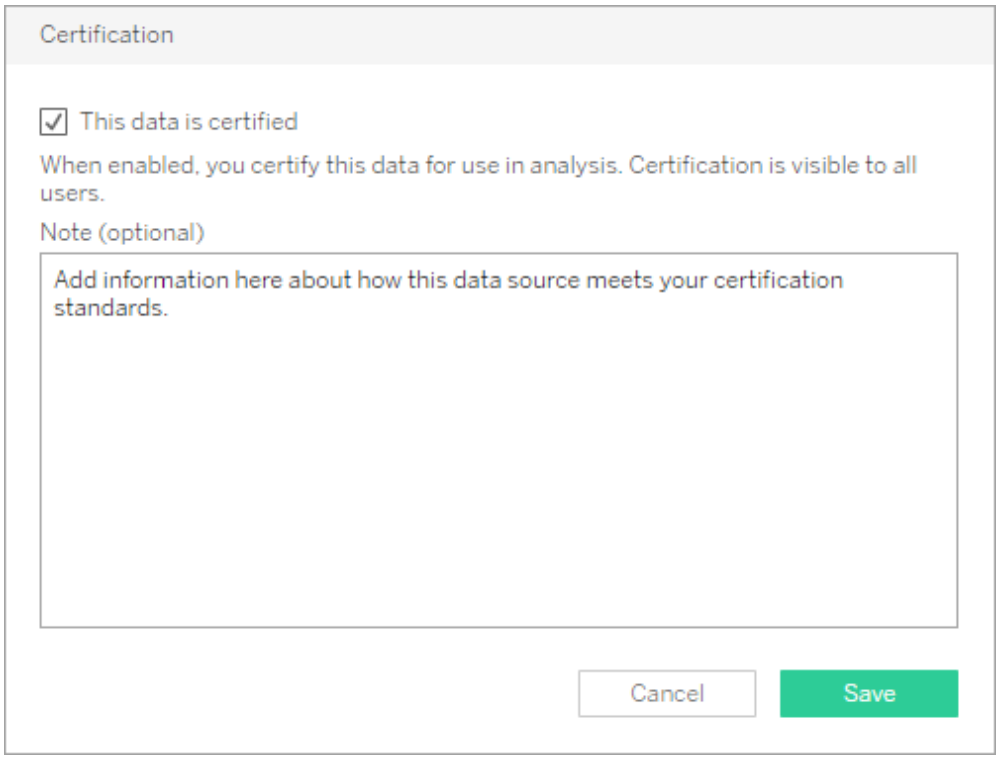
Information you add to the **Note** section appears in the certification badge tool-tip, mentioned earlier in How certification helps users find trusted data.

Certify databases and tables

When Tableau Catalog is enabled in your environment, you can certify databases and tables, if you have the right permissions.

1. Sign in to Tableau Online.
2. To certify a database or table, on the **External Assets** page, select **Databases and Files** or **Tables**.

3. On the page, select the More actions menu (...) next to the asset name you want to certify.
4. Select **Edit Certification** and then do the following:
   a. Select the **This data is certified** check box.
   b. Add a note that gives users context for the certification status, intended use for the data, or other helpful information, and then click **Save**.



Information you add to the **Note** section appears in the certification badge tooltip, mentioned earlier in How certification helps users find trusted data.

Use Lineage for Impact Analysis

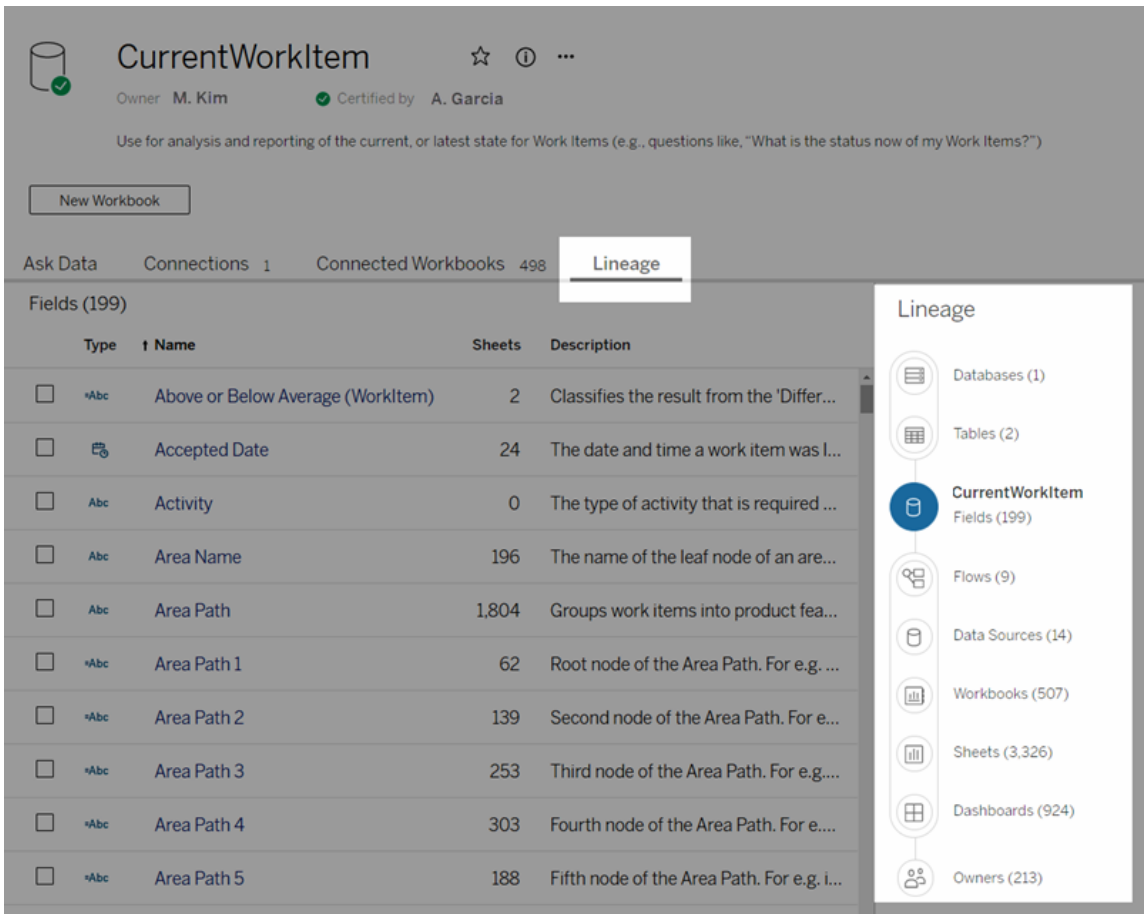
Knowing where your data comes from is key to trusting the data, and knowing who else uses it means you can analyze the impact of changes to data in your environment. The lineage feature in Tableau Catalog helps you do both these things.

Lineage requires the Data Management Add-on. Starting in 2019.3, Tableau Catalog is available in the Data Management Add-on to Tableau Online and Tableau Server. When Tableau Catalog is enabled in your environment, you have access to lineage for your data sources, metrics, flows, databases, and tables. For more information about Tableau Catalog, see "About Tableau Catalog" in the Tableau Server or Tableau Online Help.

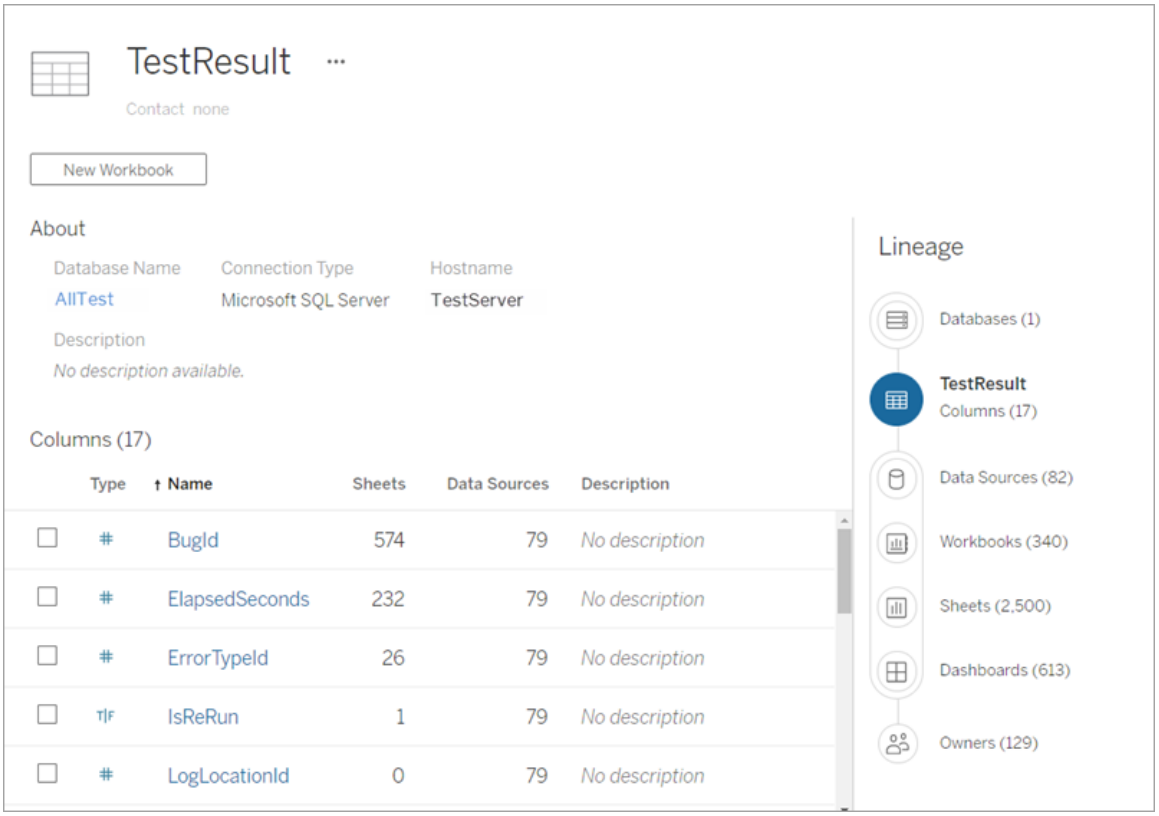
Navigate lineage

How you navigate to the **Lineage** pane depends on what kind of asset you're working with.

To see the lineage for Tableau content such as data sources or flows, from **Explore**, navigate to and open the content asset, and then select the **Lineage** tab.

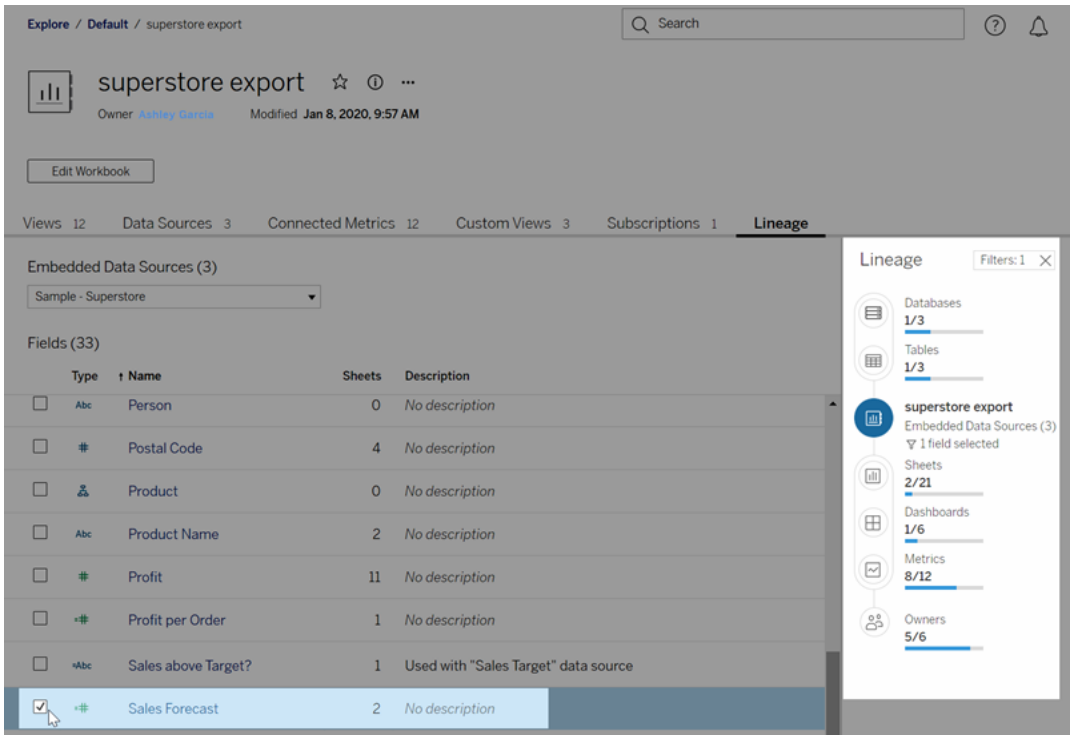


To see lineage for external assets, such as databases and tables, from **External Assets**, navigate to and select an asset from the list. When you select a table, for example, a page opens with information about that table, including the name, type, description, columns, and details about each column. To the right of the table information is the Lineage pane, which shows the lineage for that table.



Lineage shows dependencies in relationship to the lineage anchor, which is the asset selected. A lineage anchor can be a database, table, workbook, published data source, or a flow. (In the first example, the anchor is the CurrentWorkItem data source and in the second example, it's the TestResult table). All the assets below the anchor depend, either directly or indirectly, on the anchor—the outputs or the downstream assets. The assets above the anchor are the assets the anchor is either directly or indirectly dependent on—the inputs or the upstream assets.

When you select a field in a data source or a column in a table, the lineage is filtered to show only downstream assets that depend on the field (or column) or upstream inputs to the field (or column) as in this 'superstore export' workbook example:



You can select an upstream or downstream asset in the Lineage pane to see its details. For example, when you select Metrics, the list of metrics depending on this workbook appears to the left of the Lineage pane.

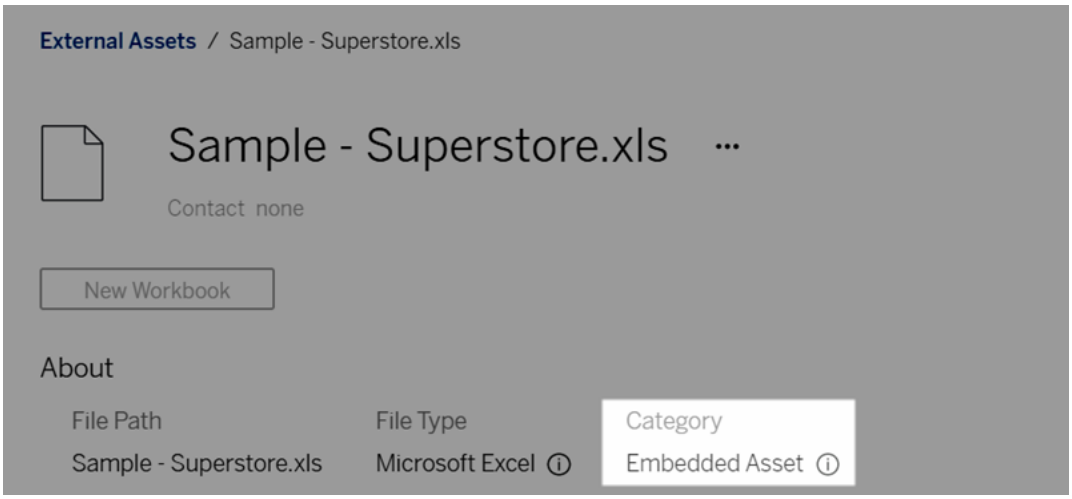
From the Lineage pane, you can navigate to any asset related to your initial choice, in this case the workbook, by following the links that interest you.

Embedded asset appears in External Assets

Tableau Catalog treats an external asset as ‘embedded’ if the **Include external files** check box is selected when a data source or workbook is published. When an external asset (database, table, or file) is embedded in published Tableau content (workbooks, data sources, and flows), the external asset is used by the content, but is not shareable with other users.

That embedded external asset appears in the lineage upstream from its Tableau content and is listed in External Assets.

To see if an external asset is embedded, go to the external asset's detail page and see if "Embedded Asset" is listed under **Category**.



For information about embedded data, see Publishing data separately or embedded in workbooks in Tableau Desktop and Web Authoring Help.

Lineage and custom SQL connections

When you view the lineage of a connection that uses custom SQL, Catalog doesn't support showing column information. For more information, see Tableau Catalog support for custom SQL in the Tableau Desktop and Web Authoring Help.

Mismatch between lineage count and tab count

You might notice a mismatch in the count of assets between the Tableau Catalog Lineage tool and the tabs in Tableau Server or Tableau Online.

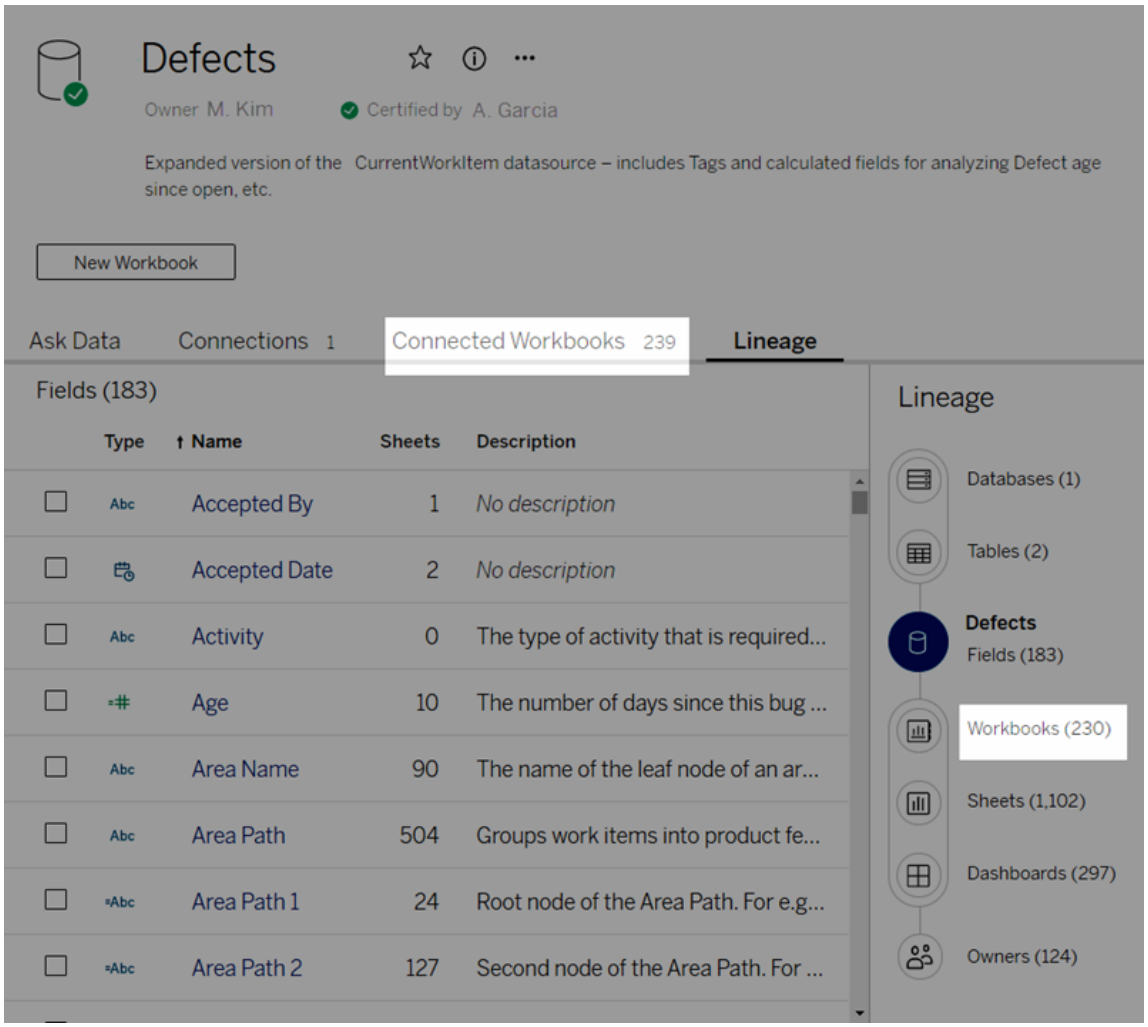
The count mismatch is explained by the fact that each—lineage count vs. tab count—counts assets a different way. For example, at any given point in time, Catalog can count only assets

that are indexed, whereas Tableau Server or Tableau Online counts any assets that are published. Other reasons for count differences include whether:

- You have "View" permissions for the asset.
- An asset is hidden.
- Any fields are used in a workbook.
- An asset is directly or indirectly connected to.

Workbook count mismatch example

As an example, here's how the tab count vs. the lineage count is determined for workbooks.



Connected Workbooks tab counts workbooks that meet both these criteria:

- Connects to the data source (whether or not any fields are actually used in the workbook).
- The user has permissions to view (whether it's a worksheet, dashboard, or story).

Tableau Catalog Lineage counts workbooks that meet all these criteria:

- Has been indexed by Tableau Catalog.
- Connects to the data source and uses at least one field in the data source.
- Contains worksheets, including dashboards or stories that contain a worksheet, that use at least one field in the data source.

When metadata is blocked because of limited permissions, Catalog still counts the workbook. But instead of seeing some of the sensitive metadata, you see **Permissions required**. For more information, see Access lineage information.

Use email to contact owners

At the end of the lineage is Owners. The list of owners includes anyone assigned as the owner or contact for any content downstream from the lineage anchor.

You can email owners to let them know about changes to the data. (To email owners, you must have the 'Overwrite' (Save) capability on the lineage anchor content.)

1. Select **Owners** to see the list of people who are impacted by the data in this lineage.
2. Select the owners you want to send a message to.
3. Click **Send Email** to open the email message box.
4. Enter the Subject and your message in the text box, and click **Send**.

Set a Data Quality Warning

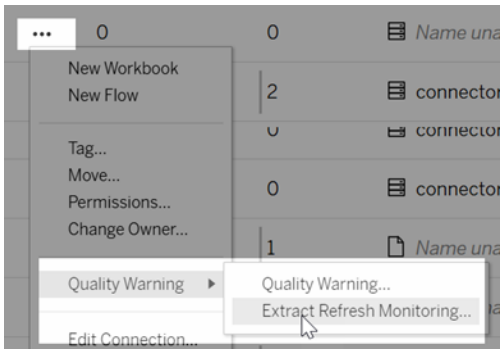
Data quality warnings are a feature of Tableau Catalog. Starting in 2019.3, Tableau Catalog is available in the Data Management Add-on to Tableau Online and Tableau Server. When Tableau Catalog is enabled in your environment, you can set data quality warnings. For more information, see "About Tableau Catalog" in the Tableau Server or Tableau Online Help.

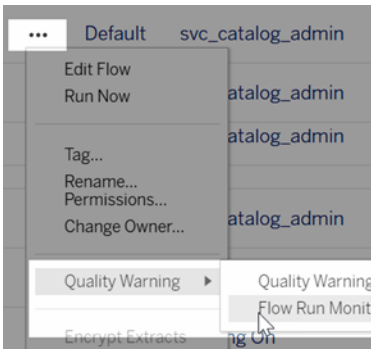
You can set a warning message on a data asset so that users of that data are aware of issues. For example, you might want to let users know that a data source has been deprecated, or that a refresh has failed for an extract data source, or that a table contains sensitive data.

About data quality warnings

There are two kinds of data quality warnings you can set. The first kind is visible to users until you remove it. The second kind is generated by Tableau when you set Tableau to monitor for refresh failures of extract data sources or flow run failures.

For extracts and flows, you can set one data quality warning of each kind per asset.





For live data sources and for databases and tables, you can set only one quality warning.

When you set the first kind, it's visible to users until you remove it using the data quality dialog box. You can also use the dialog box to make any updates to the quality warning you set.

When you set Tableau to monitor for extract data source refresh failures or flow run failures, if a warning is generated, it's visible to users until the extract refresh or flow run is successful. You can update or remove a warning by opening and editing the contents in the dialog box.

> **Note:** You can set both kinds of data quality warnings and enable high visibility using REST API. For more information, see Add Data Quality Warning in the Tableau REST API Help.

Who can see the data quality warning

When you set a warning, the warning is visible to users of the asset and any assets downstream from it. For example, a warning set on a table is visible to users looking at a dashboard with an upstream dependency on that table - users see a warning icon on the dashboard's Data Details tab and can open the pane to see the details. Warnings are visible elsewhere in Tableau as described in Set high visibility for a data quality warning. This applies to Tableau Server and Tableau Online users.

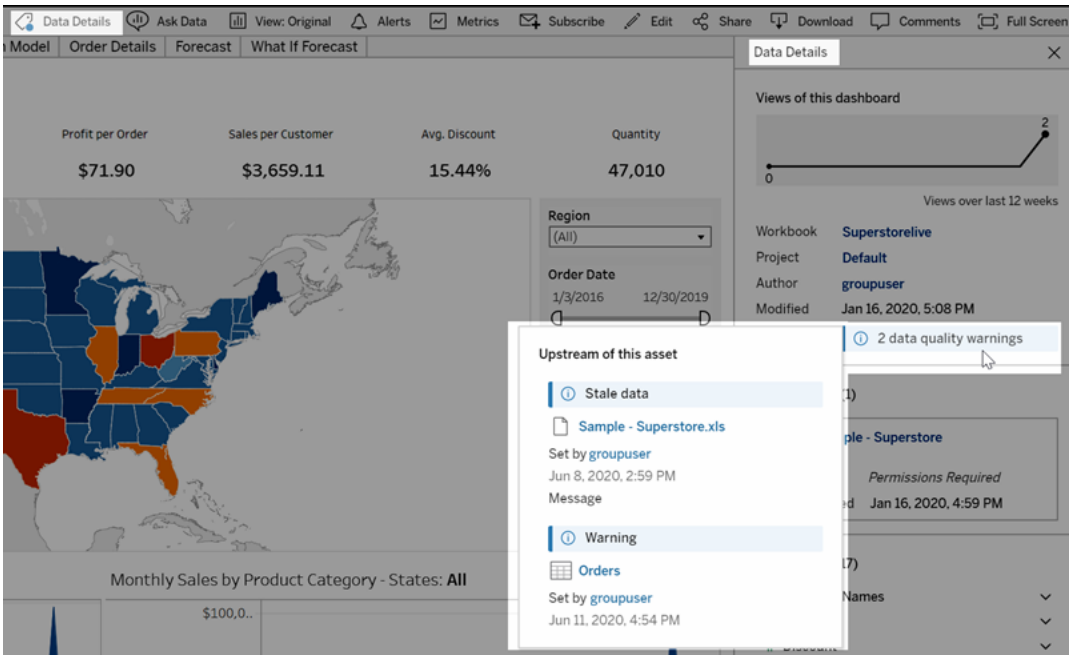
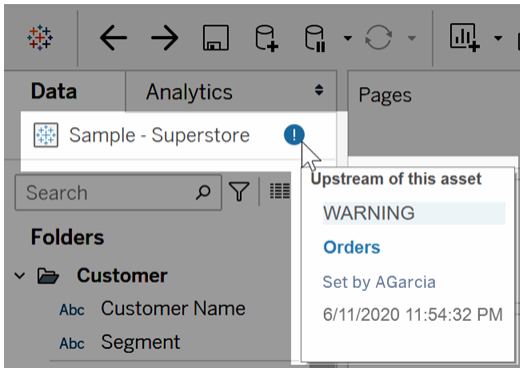


Tableau Desktop users see a warning icon (either a blue circle or a yellow triangle with an exclamation point) on the Data tab in a workbook sheet when a warning is set on a data source, table, or database used in the workbook. To see the details of the warning, hover over the warning icon with a mouse.



How to set a quality warning

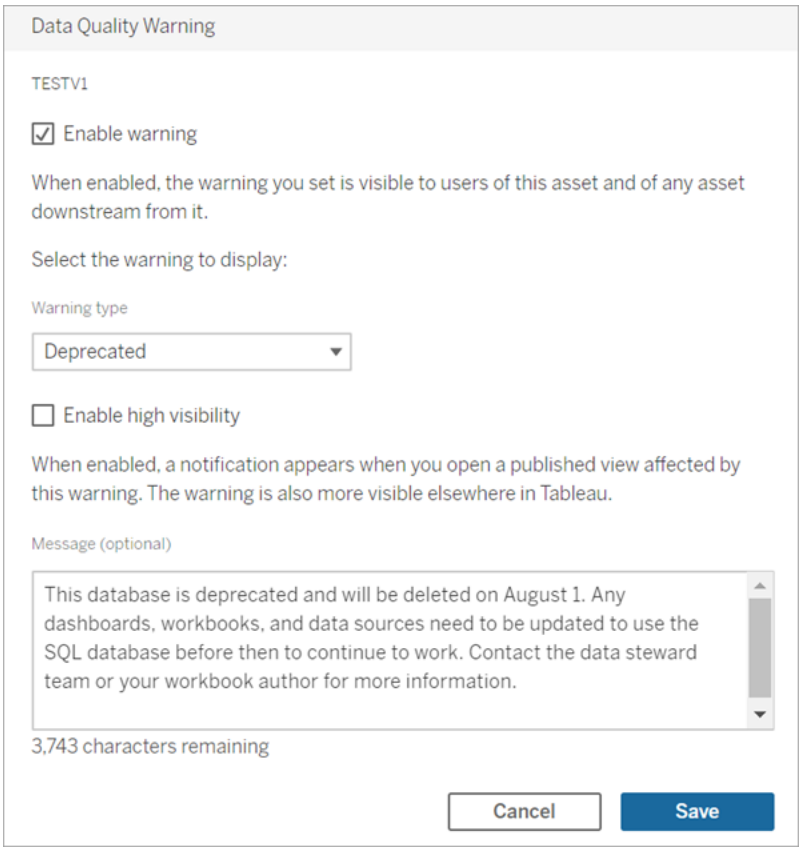
There are several types of data quality warnings you can set on an asset:

- Warning
- Deprecated
- Stale data
- Under maintenance
- Sensitive data

In addition to showing the type of data quality warning, you can include an optional message with more details about the warning.

To set a data quality warning:

1. Select the More actions menu (. . .) next to the asset you want to create a warning for, and then select **Quality Warning**.
2. Select the **Enable warning** check box.
3. Select the **Warning type** from the drop-down list.
4. (Optional) Select the **Enable high visibility** check box.
5. (Optional) Enter a message to display to users.
6. Click **Save**.

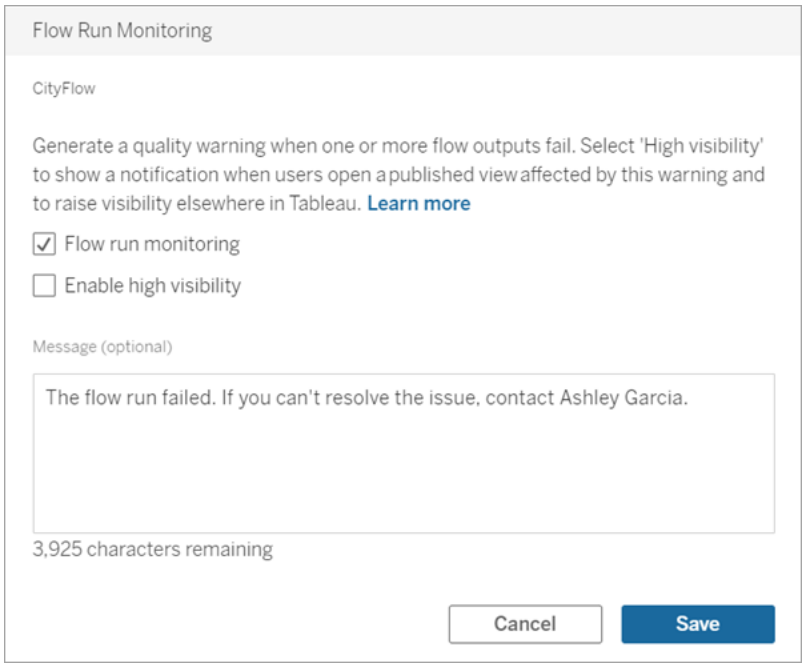


How to set a monitoring quality warning

You can set Tableau to monitor for two events: extract data source refresh failure and flow run failure. When the event occurs, Tableau generates a quality warning that appears in the same places that a manual quality warning appears.

To set Tableau to monitor for either event:

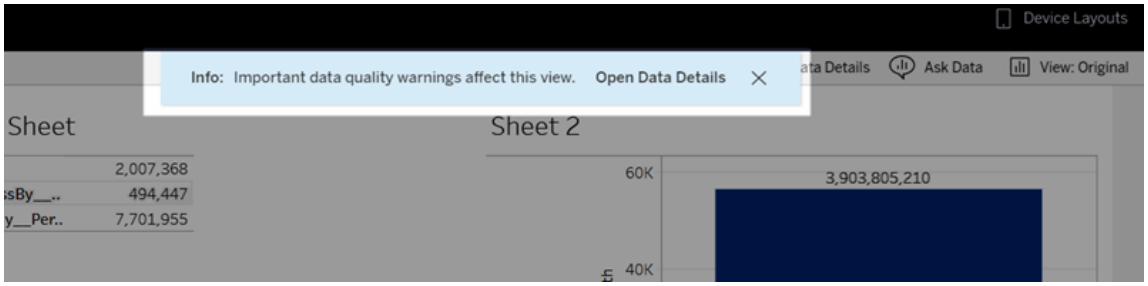
1. Select the More actions menu (. . .) next to the extract data source or flow you want to create a warning for, and then select the appropriate option:
    - Quality Warning > Extract Refresh Monitoring
    - Quality Warning > Flow Run Monitoring
2. In the dialog box, select the monitoring check box.
3. (Optional) Select the Enable high visibility check box.
4. (Optional) Enter a message to display to users.
5. Click Save.



Set high visibility for a data quality warning

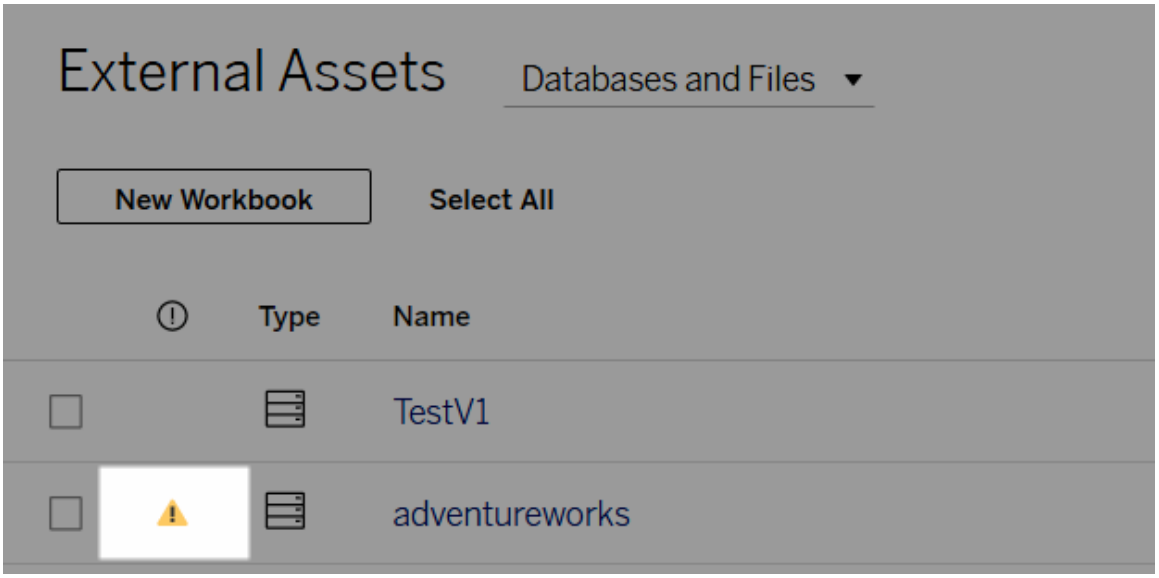
There are times when you want to make sure that users of a visualization know important information about the data they're viewing, whether it be that the data is stale or that the source has been deprecated or that the flow run has failed. You can do this by selecting the **Enable high visibility** check box in the Data Quality Warning dialog box, as described in step 4 of How to set a data quality warning.

When enabled, a notification appears when anyone opens a published view affected by this warning.

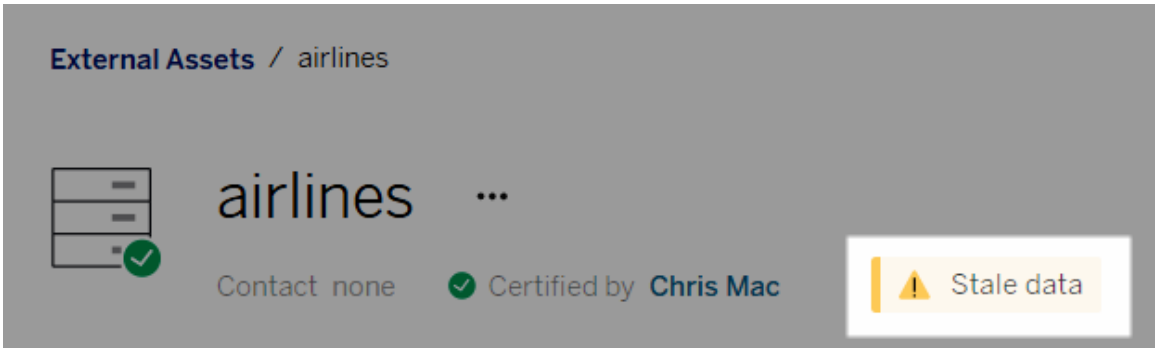


High visibility warnings are identified with a yellow warning symbol, which makes them more visible elsewhere in Tableau, as in these examples:

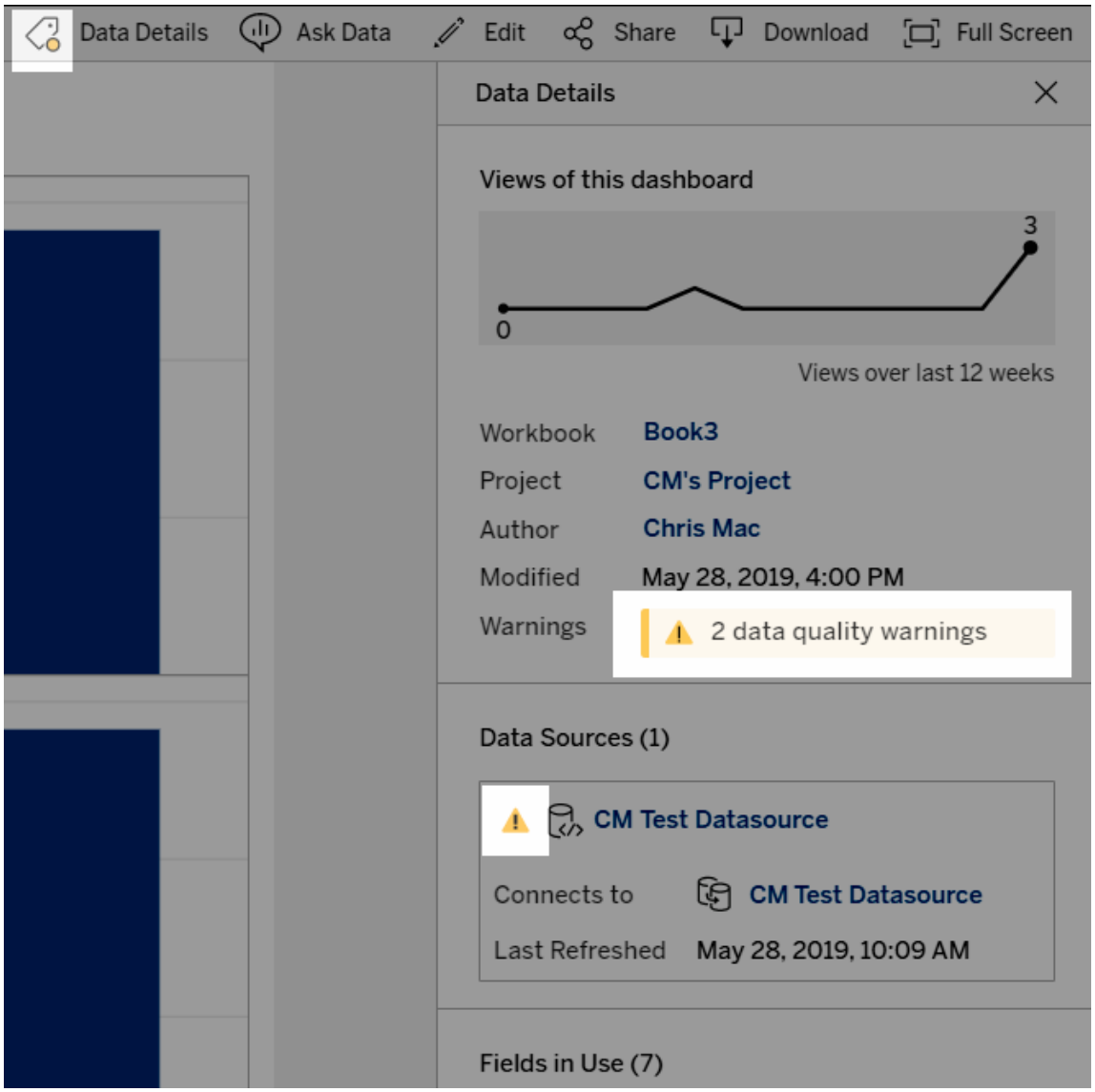
On the External Assets page:



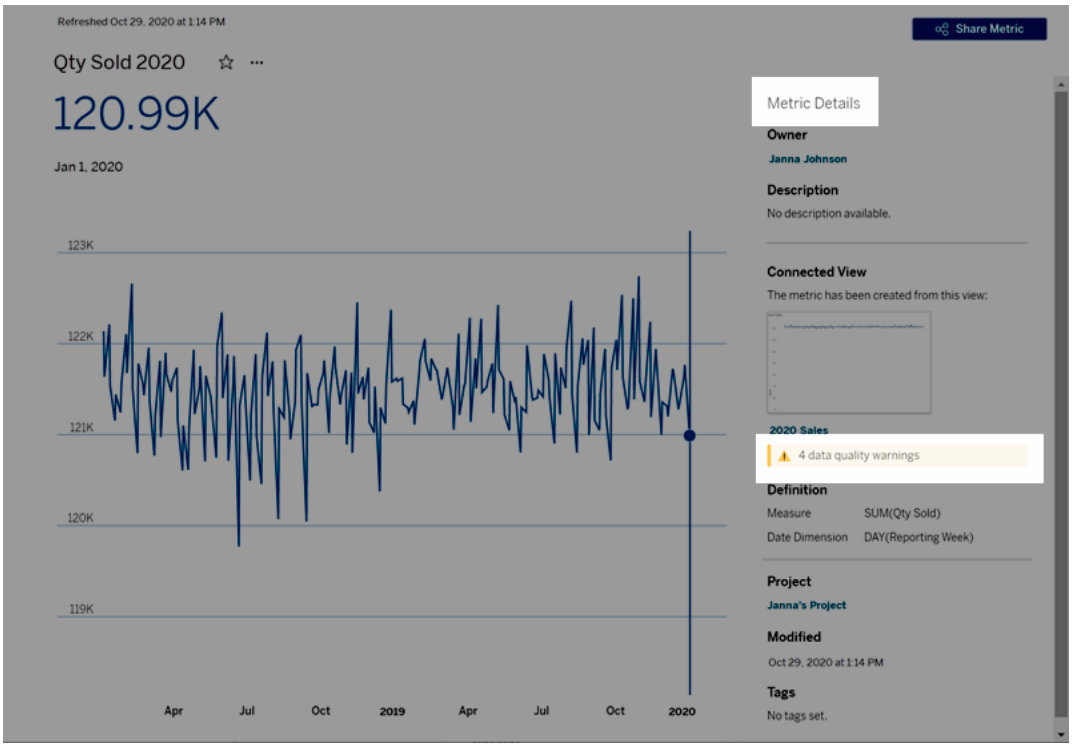
On a database page:



On the Data Details pane:



On metrics. Warnings appear when you open a metric in Tableau Mobile, and in Tableau Server and Tableau Online when you hover over a metric in grid view and on the metric details page, as shown below:



You can change a high visibility warning to normal visibility by clearing the **Enable high visibility** check box in the Data Quality Warning dialog box.

Remove a data quality warning

When a warning no longer applies, you can remove it by navigating to the data asset with the warning.

1. Select the More actions menu (. . .) next to the data asset and select **Quality Warning**.
2. Clear the **Enable warning** check box to remove the warning.
3. Click **Save**.

Who can do this

To set a data quality warning, you must either

- be a server or site administrator, or
- have the Save capability for the asset.

Manage Dashboard Extensions in Tableau Online

Dashboard extensions are web applications that run in custom dashboard zones and can interact with the rest of the dashboard using the Tableau Extensions API. Dashboard extensions give users the ability to interact with data from other applications directly in Tableau.

Note: You must be a site administrator to add extensions to the safe list and to control the type of data the extensions can access. The site administrator can also configure whether users on the site will see prompts when they add or view extensions in a dashboard. For information about extension security and recommended deployment options, see Extension Security - Best Practices for Deployment.

For information about using dashboard extensions in Tableau, see Use Dashboard Extensions.

Looking for Tableau Server? See Manage Dashboard Extensions in Tableau Server.

Before you run extensions on Tableau Online

Tableau supports two types of dashboard extensions: Network-enabled extensions, which can be hosted on web servers located inside or outside of your local network and have full access to the web, and Sandboxed extensions, which run in a protected environment without access to any other resource or service on the web.

Note: Beginning in March 2021.1 Tableau supports integration with Einstein Discovery through the Einstein Discovery Dashboard extension. This is a special extension that has access to data in Salesforce.com and is allowed by default. It is not considered a

> Network-enabled extension or a Sandboxed extension. For more information on Einstein Discovery integration, see Configure Einstein Discovery Integration.

Sandboxed extensions are hosted by Tableau and employ W3C standards, such as Content Security Policy (CSP), to ensure the extension can't make network calls outside of the hosting Tableau Server. A Sandboxed extension can query data in the dashboard, but it can't send that data anywhere outside of the sandbox. Sandboxed Extensions are supported in Tableau 2019.4 and later. By default, Sandboxed extensions are allowed to run if extensions are enabled for the site.

Network-enabled dashboard extensions are web applications and could be running on any computer set up as a web server. This includes local computers, computers in your domain, and third-party web sites. Because Network-enabled extensions could be hosted on third-party sites and could have access to the data in the dashboard, you want to only allow the extensions you trust. See Test Network-enabled extensions for security.

For security, you can use the settings for dashboard extensions on Tableau Online to control and limit the dashboard extensions that are allowed to run.

- By default, Sandboxed extensions are allowed to run if extensions are enabled for the site.
- By default, no Network-enabled extensions are allowed unless they have been explicitly added to the safe list.
- By default, only extensions that use the HTTPS protocol are allowed, which guarantees an encrypted channel for sending and receiving data (the only exception is for `http://localhost`).
- If the Network-enabled extension requires full data (access to the underlying data) the extension will not be able to run on Tableau Online unless you explicitly add the extension to the safe list and grant the extension access to full data.

Control dashboard extensions and access to data

Site administrators can control whether to enable extensions for the site and whether to allow Sandboxed extensions on the site. The default site settings allow Sandboxed extensions to run on the site, provided the extension is not specifically blocked on the server. The default site settings allow Network-enabled extensions to run that appear on the safe list for the site. Individual Sandboxed extensions can also be added to the safe list, if Sandboxed extensions are not allowed by default.

1. To change these settings for the site, go to **Settings > Extensions**.
2. Under Dashboard Extensions, configure these options:
   - **Let users run extensions on this site**
   - **Let Sandboxed extensions run unless they are specifically blocked by a server administrator**

Site administrators can add or remove Network-enabled and Sandboxed extensions from the safe list for a site. When you add an extension to the safe list, you can control whether to allow the extension to have access to full data. See Add extensions to the safe list and configure user prompts.

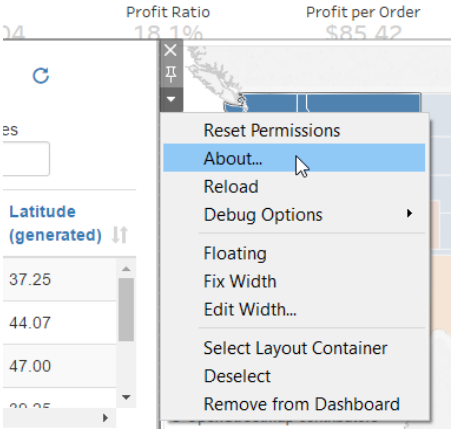
Identifying an extension

As a web application, an extension is associated with a URL. You use this URL to test and verify the extension. You also use the URL to add the extension to the safe list to allow full data access, or to the block list to prohibit any access.

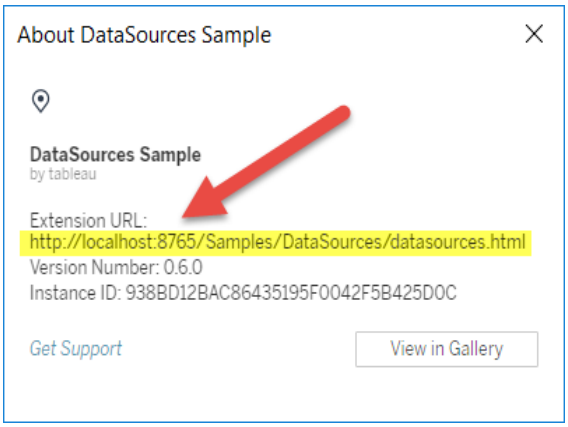
If you have the extension manifest file (`.trex`), an XML file that defines properties for the extension, you can find the URL from the `<source-location>` element.

```
<source-location>
    <url>https://www.example.com/myExtension.html</url>
</source-location>
```

If you have added the extension to the dashboard, you can find the URL from the extension properties. From the **More Options** menu, click **About**.



The About dialog box lists the name of the extension, the author of the extension, the web site of the author, along with the URL of the extension.



Add extensions to the safe list and configure user prompts

To ensure that users can use Network-enabled extensions that are trusted, you can add them to the safe list for the site. You can also add Sandboxed extensions to the safe list, if Sandboxed extensions aren't enabled by default on the site.

On the safe list, you can control whether to grant the extension full data access. By default, when you add an extension to the safe list, the extension only has access to the summary (or

aggregated) data. You can also control whether users will see a prompt asking them to allow the extension access to data. You might want to add an extension to the safe list (for example, a Sandboxed extension) so that you can configure whether or not users see the prompts. When you hide the prompt from users, the extension can run immediately.

1. Go to **Settings > Extensions**.
2. Under **Enable Specific Extensions**, add the URL of the extension. See Identifying an extension.
3. Choose to **Allow** or **Deny** the extension **Full Data Access**.

   Full data access is access to the underlying data in the view, not just the summary or aggregated data. Full data access also includes information about the data sources, such as the names of the connection, fields, and tables. In most cases, if you are adding an extension to the safe list so that it can run, you will also want to allow the extension to have access to full data, if the extension requires it. Before adding extensions to the safe list, be sure to Test Network-enabled extensions for security.
4. Choose to **Show** or **Hide** the **User Prompts**.

   Users see the prompts by default when they are adding an extension to a dashboard, or when they are interacting with a view that has an extension. The prompt tells users details about the extension and whether the extension has access to full data. The prompt gives users the ability to allow or deny the extension from running. You can hide this prompt from users, allowing the extension to run immediately.

Test Network-enabled extensions for security

Dashboard extensions are web applications that interact with data in Tableau using the Extensions API. Network-enabled dashboard extensions could be hosted on web servers inside or outside of your domain, and can make network calls and have access to resources on the Internet. Because of this and the potential vulnerabilities, such as cross-site scripting, you should test and vet Network-enabled dashboard extensions before users use them in dashboards on Tableau Desktop, and before you allow the extensions on Tableau Online.

Examine the source files

Dashboard extensions are web applications and include various HTML, CSS, and JavaScript files, and an XML manifest file (*.trex) that defines the properties in the extension. In many cases, the code for a dashboard extension is publicly available on GitHub and can be examined there or downloaded. In the manifest file (`*.trex`), you can find the source location, or URL indicated where the extension is hosted, the name of the author, and the web site of the author or company to contact for support. The `<source-location>` element specifies in the URL, the `<author>` element, specifies the name of the organization and the web site to contact for support (`website="SUPPORT_URL"`). The web site is the **Get Support** link user see in the **About** dialog box for the extension.

Many dashboard extensions reference external JavaScript libraries, such as the jQuery library or API libraries for third parties. Validate that the URL for external libraries points to a trusted location for the library. For example, if the connector references the jQuery library, make sure that the library is on a site that is considered standard and safe.

All extensions are required to use HTTPS protocol (`https://`) for hosting their extensions. You should examine the source files for the extension to ensure that any reference to external libraries is also using HTTPS or is hosted on the same web site as the extension. The one exception to the requirement of HTTPS is if the extension is hosted on the same computer as Tableau (`http://localhost`).

To the extent possible, make sure you understand what the code is doing. In particular, try to understand how the code is constructing requests to external sites, and what information is being sent in the request. In particular, check if any user-supplied data is validated to prevent cross-site scripting.

Understand data access

The Tableau Extensions API provides methods that can access the names of the active tables and fields in the data source, the summary descriptions of the data source connections, and the underlying data in a dashboard. If an extension uses any of these methods

in a view, the extension developer must declare that the extension requires full data permission in the manifest file (`.trex`). The declaration looks like the following.

```
<permissions>
   <permission>full data</permission>
</permissions>
```

Tableau uses this declaration to provide a prompt to users at run time that gives them the option of allowing this access or not. If the extension uses any one of these four methods, without declaring full-data permission in the manifest file, the extension will load but the method calls will fail.

For information about how an extension accesses data from the dashboard, and the JavaScript methods used, see Accessing Underlying Data in the Tableau Extensions API. To get a better understanding about what the extension can find out about the data, you can use the DataSources sample dashboard extension (available from the Tableau Extensions API GitHub repository) to see what data is exposed when the `getDataSourcesAsync()` method is called.

Test the extension in an isolated environment

If possible, test the dashboard extension in an environment that is isolated from your production environment and from user computers. For example, add a dashboard extensions to a safe list on a test computer or virtual machine that's running a version of Tableau Online that is not used for production.

Monitor traffic created by the dashboard extension

When you test a Network-enabled dashboard extension, use a tool like Fiddler, Charles HTTP proxy, or Wireshark to examine the requests and responses that the extension makes. Make sure that you understand what content the extension is requesting. Examine the traffic to be sure that the extension is not reading data or code that is not directly related to the purpose of the extension.

Configure Connection with Analytics Extensions

Analytics extensions allow you to extend Tableau dynamic calculations in a workbook with languages like R and python, and with other tools and platforms. These settings endpoints enable you to configure analytics extensions on your site in Tableau Online. For more information, see Analytics Extensions API.

For more information about user scenarios and configuring Tableau Desktop, see Pass Expressions with Analytics Extensions, in the *Tableau Desktop and Web Authoring Help*.

This topic describes how to configure sites on Tableau Online with analytics extensions.

Security requirements and configuration

For increased security, Tableau Online requires an encrypted channel and authenticated access to the external services used for analytics extensions.

Certificate

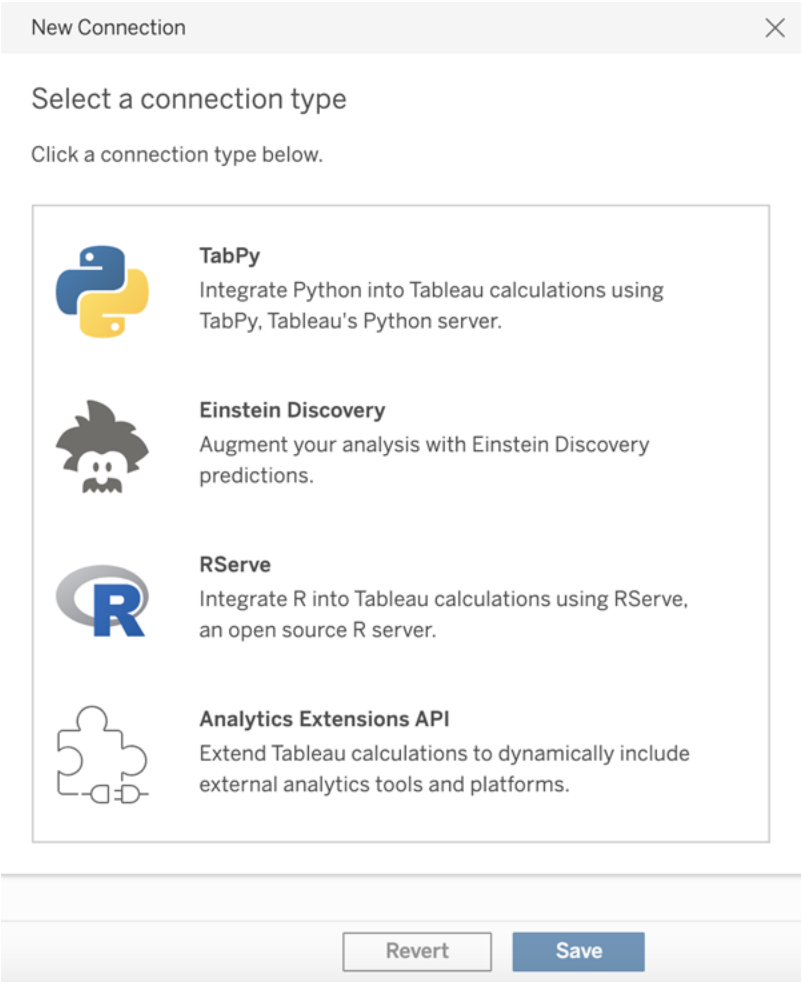
The server running the external service for analytics extensions must be configured with a valid TLS/SSL certificate from a trusted 3rd party certificate authority (CA). Tableau Online will not establish a connection with external servers that are configured with a self-signed certificate, a certificate from a private PKI, or a certificate that is not trusted by an established 3rd party CA.

Safelist firewall configuration

Many organizations deploy a firewall that requires safelist exceptions for known hosts outside the network. In this scenario, you will need to specify two Tableau Online IP addresses as exceptions. The Tableau Online IP addresses used for connections to analytics extensions servers are `44.224.205.196` and `44.230.200.109`.

Configure analytics extensions settings

1. Sign in to Tableau Online as a site administrator.
2. Click **Settings**.
3. On the Settings page, click the **Extensions** tab and then scroll to **Analytics Extensions**.
4. Select **Enable analytics extensions for site**.
5. Click **Create new connection**.
6. In Analytics Extension Connection, enter the configuration settings for your analytics service:



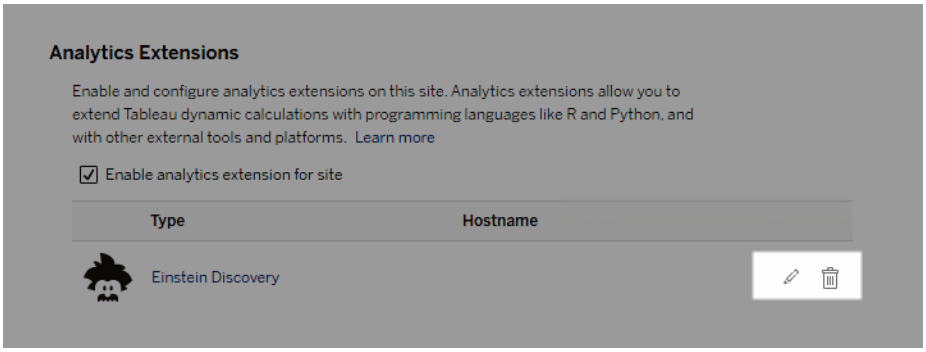
2. The options you need to configure depend on the connection type you choose:

- For Einstein Discovery connections, click **Enable**.
- For TabPy, RServer and Analytics Extensions API connections, enter the following information:
  - **Connection Name**: (Required) Specify the server type you are connecting to. RSERVE supports connections to R via the RServe package. TABPY supports connections to Python via TabPy or to other analytics extensions.
  - **Require SSL** (Recommended): Select this option to encrypt the connection to the analytics service. If you specify a `HTTPS` URL in the **Hostname** field, then you must select this option.
  - **Hostname**: (Required) Specify the computer name or URL where the analytics service is running. This field is case sensitive.
  - **Port**: (Required) Specify the port for the service.
  - **Sign in with a username and password**(Recommended): Select this option to specify user name and password that is used to authenticate to the analytics service.

7. Click **Save**.

Edit or delete an analytics extension connection

To edit or delete a configuration, navigate to **Analytics Extensions** on the **Extensions** tab of your site.



Click **Edit** or **Delete** and follow the prompts to change the configuration.

Script errors

Tableau cannot verify that workbooks that use an analytics extension will render properly on Tableau Online. There might be scenarios where a required statistical library is available on a user's computer but not on the analytics extension instance that Tableau Online is using.

A warning will be displayed when you publish a workbook if it contains views that use an analytics extension.

> This worksheet contains external service scripts, which cannot be viewed on the target platform until the administrator configures an external service connection.

Configure Einstein Discovery Integration

Beginning March, 2021, Tableau Online supports integration with Einstein Discovery, making Einstein Discovery predictions available to authors and viewers of dashboards. Einstein Discovery in Tableau is powered by salesforce.com. Consult your agreement with salesforce.com for applicable terms.

For details on how to use Einstein Discovery predictions in Tableau, including licensing and permission requirements, see Integrate Einstein Discovery Predictions in Tableau in the Tableau Desktop and Web Authoring Help.

Einstein Discovery dashboard extension

The Einstein Discovery dashboard extension allow workbook authors to surface real-time predictions in Tableau. The dashboard extension delivers predictions interactively, on-demand, using source data in a Tableau workbook and an Einstein Discovery-powered model deployed in Salesforce.

By default Tableau Online site configuration allows saved OAuth access tokens, so the only step necessary is to configure Cross-Origin Resource Sharing (CORS) in the Salesforce

org that hosts Einstein Discovery. This requires permissions in the Salesforce org. For details on necessary licenses and permissions, see Requirements for access - Einstein Discovery. For details on configuring CORS in Salesforce, see Configure CORS in Salesforce.com for Einstein Discover Integration in Tableau Online.

Einstein Discovery analytics extension

The Einstein Discovery analytics extension gives your users the ability to embed predictions directly in Tableau calculated fields. A table calc script requests predictions from a model deployed in Salesforce by passing its associated prediction ID and input data that the model requires. Use Model Manager in Salesforce to auto-generate a Tableau table calculation script, and then paste that script into a calculated field for use in a Tableau workbook.

By default Tableau Online site configuration allows saved OAuth access tokens, so the only step necessary is to configure Cross-Origin Resource Sharing (CORS) in the Salesforce org that hosts Einstein Discovery. This requires administrator permissions in the Salesforce org. For details, see Configure CORS in Salesforce.com for Einstein Discover Integration in Tableau Online.

Configure CORS in Salesforce.com for Einstein Discover Integration in Tableau Online

In version 2021.1.0 the ability to integrate Einstein Discovery predictions into Tableau Dashboards was added. You can do this using the Einstein Discovery dashboard extension. A prerequisite for this is configuring Cross-Origin Resource Sharing (CORS) in the Salesforce org that hosts Tableau CRM and includes the model and predictions that are going to be used.

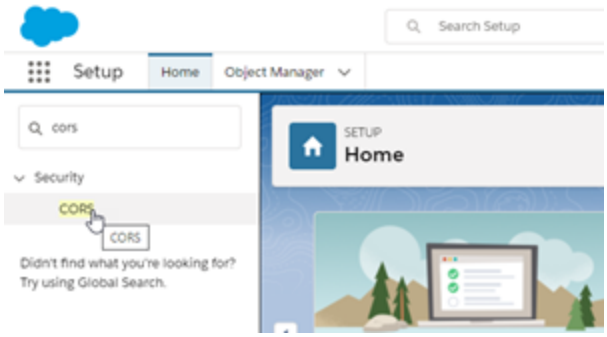
This procedure explains how an administrator in a Salesforce.com organization would do this configuration. You can find more information about CORS in the Salesforce documentation, Set Up Cross-Origin Resource Sharing (CORS).

Configure CORS for Einstein Discovery.

Note: This procedure documents the process in Salesforce Lightning. If you are using the traditional interface, the navigation may be different but the configuration is the same.

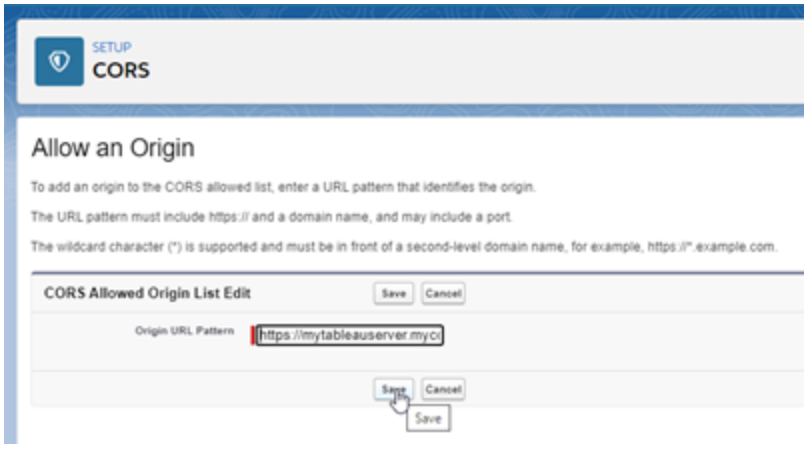
1. Sign in to your Salesforce.com developer account, click your user name in the upper-right, and then select **Setup**.

2. In the left navigation column, search for "cors" and select **CORS** .



3. In **CORS**, in the **Allowed Origins List** section, click **New**.

4. In **CORS Allowed Origin List Edit**, enter the URL of Tableau Online, beginning with "https://".



For more information about the URL pattern, see the Salesforce developer documentation: https://developer.salesforce.com/docs/atlas.en-us.chatterapi.meta/chatterapi/extend_code_cors.htm

5. Click **Save**.

Automate Tasks Using tabcmd

tabcmd

Tableau provides the tabcmd command-line utility which you can use to automate site administration tasks on your Tableau Online site. For example, creating or deleting users, projects, and groups.

Install tabcmd

When Tableau Server or Tableau Online is upgraded to a new version, if an updated version of tabcmd is required, you can download it from the Tableau *Server* Releases page on the Tableau website.

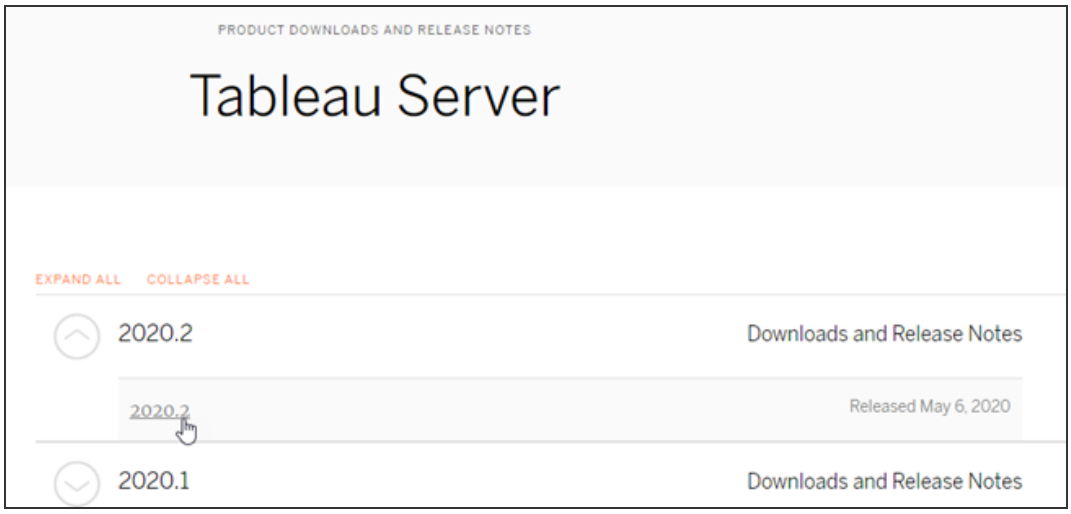
For Tableau Server, we recommend you download the version that matches your server version. For Tableau Online, we recommend you always download the latest version to avoid issues caused by version incompatibilities. In either case, using an out of date version of tabcmd can cause errors and unpredictable results.

1. Open a web browser and go to the Tableau Server Releases page. Go to this page even if you use Tableau Online.

2. If you're using:

   - **Tableau Online**, select the latest Tableau *Server* release.
   - **Tableau Server (Windows or Linux):** select the release that matches your server version.

   In either case, if the expanded information shows maintenance releases, select the latest maintenance release or the one that matches your server version.



   This takes you to the release notes page, called Resolved Issues, where you can read about security improvements and resolved issues.

3. Scroll to the **Download Files** section under the resolved issues, select the tabcmd download link that is compatible with the computer on which you'll run the tabcmd commands.

The remaining steps refer to this computer as “the tabcmd computer.”

4. Save the installer to the tabcmd computer, or a location accessible from that computer .

5. Complete the installation steps as appropriate for the operating system of the tabcmd computer:

- ## Windows

  By default tabcmd is installed to `C:\Program Files\Tableau\Tableau Server\<version>\extras\Command Line Utility`. You can change this during installation and recommend that you install tabcmd to a folder named `tabcmd` at the root of the C:\ drive (`C:\tabcmd`). This can make it easier to locate and run, and will accommodate some limitations with the Windows operating system if you add the tabcmd directory to the Windows PATH.

  > **Note** The tabcmd Setup program does not add the tabcmd directory to the Windows PATH variable. You can add it manually, or you can include the full path to tabcmd each time you call it.

  You can install tabcmd in two ways on Windows:

- Double-click the installer to follow the steps in the UI:

  a. Accept the license agreement.

  b. If you want to install to a non-default location, click **Customize** and type or browse to the location you want to install tabcmd to.

  c. Click **Install**.

     If you are prompted by Windows Defender Firewall or User Account Control, click **Allow access**.

- Run the installer from a command prompt:

  a. Open a command prompt as administrator on the tabcmd computer.

  b. Navigate to the directory where you copied the tabcmd installer.

  c. Install tabcmd:

     ```
     tableau-setup-tabcmd-tableau-<version_code>-x64.exe /quiet ACCEPTEULA=1
     ```

     To install to a non-default location:

     ```
     tableau-setup-tabcmd-tableau-<version_code>-x64.exe /quiet ACCEPTEULA=1 INSTALLDIR-R="<path\to\install\directory>"
     ```

     For example:

     ```
     tableau-setup-tabcmd-tableau-<version_code>-x64.exe /quiet ACCEPTEULA=1 INSTALLDIR-R="C:\tabcmd"
     ```

For a complete list of command line options you can use with the tabcmd installer, run the installer with a /?. For more information on tabcmd installer command line options, see Install Switches and Properties for tabcmd (Windows).

The tabcmd Setup program creates logs in `C:\Users\<user>\AppData\Local\Temp` you can use if you have problems installing tabcmd. The logs use the naming convention `Tableau_Server_Command_Line_Utility_(<version_code>)_##############.log`.

- ## Linux

Note: To run tabcmd on a Linux computer, you must have Java 8 (also called Java 1.8) installed. On RHEL-like systems this will be installed as a dependency when you install tabcmd. On Debian-like systems, you need to install Java 8 (1.8) separately if it is not already installed.

a. Log on as a user with sudo access to the tabcmd computer.

b. Navigate to the directory where you copied the `.rpm` or `.deb` package that you downloaded.

   - On RHEL-like distributions, including CentOS, run the following command:

     ```
     sudo yum install tableau-tabcmd-<version>.noarch.rpm
     ```

   - On Ubuntu and Debian, run the following command:

```
sudo apt-get install ./tableau-tabcmd-<ver-
sion>_all.deb
```

To uninstall tabcmd from a Linux computer, see the documentation for the Linux variety you are running.

6. (Optional) Add the fully qualified location where tabcmd is installed to your system path to allow you to run tabcmd commands without changing to that location, or specifying the location with each command. Steps to do this depend on the type and version of your operating system. For more information, see PATH_(variable).

How to use tabcmd

The basic steps for using tabcmd are as follows:

1. Open the Command Prompt as an administrator.
2. On a Windows computer, if you installed tabcmd on a computer other than the initial node, change to the directory where you installed tabcmd.

   On a Linux computer, you do not need to change to the install directory.
3. Run the tabcmd command.

When you use tabcmd, you must establish an authenticated server session. The session identifies the server or Tableau Online site and the user running the session. You can start a session first, and then specify your command next, or you can start a session and execute a command all at once.

Important: If you are using tabcmd to perform more than one task, you must run tasks one after another (serially), rather than at the same time (in parallel).

Commands (such as `login`) and the options (such as `-s`, `-u`, etc.) are not case sensitive, but the values you provide (such as `User@Example.com`) are case sensitive.

Examples

The following command demonstrates starting a session:

```
tabcmd login -s https://online.tableau.com -t mysite -u author-
ity@email.com -p password
```

Here's how to start a session and delete a workbook with one command—note that you do not need `login` here:

```
tabcmd delete "Sales_Workbook" -s https://online.tableau.com -t
campaign -u admin@email.com -p password
```

The options `-s`, `-t`, `-u`, and `-p` are among the tabcmd global variables, which can be used with any command.

For more information, see tabcmd Commands.

tabcmd Commands

You can use the following commands with the tabcmd command line tool in Tableau Online:

login

logout

get *url*

addusers (to group)

creategroup

deletegroup

export

createproject

deleteproject

publish

createextracts

refreshextracts

deleteextracts

runschedule

delete *workbook-name* or *datasource-name*

createsiteusers

deletesiteusers

removeusers

version

addusers *group-name*

Adds users to the specified group.

Example

```
tabcmd addusers "Development" --users "users.csv"
```

Options

`--users`

Add the users in the given `.csv` file to the specified group. The file should be a simple list with one user name per line. User names are not case sensitive. The users should already be created on Tableau Online.

If you use this command with large `.csv` files on Tableau Server, a server administrator can enable settings that help improve performance.

For more information, see CSV Import File Guidelines.

`--[no-]complete`

When set to `complete` this option requires that all rows be valid for any change to succeed. If not specified, `--complete` is used.

Global options

The following options are used by all `tabcmd` commands. The `--server`, `--user`, and `--password` options are required at least once to begin a session. An authentication token is stored so subsequent commands can be run without including these options. This token remains valid for five minutes after the last command that used it.

`-h, --help`

Displays the help for the command.

Note: Some commands listed may not apply when using tabcmd with Tableau Online.

`-s, --server`

The Tableau Online URL, which is required at least once to begin session.

`-u, --user`

The Tableau Online username, which is required at least once to begin session.

`-p, --password`

The Tableau Online password, which is required at least once to begin session.

`--password-file`

Allows the password to be stored in the given `.txt` file rather than the command line

for increased security.

`-t, --site`

Indicates that the command applies to the site specified by the Tableau Online site ID, surrounded by single quotes or double quotes. Use this option if the user specified is associated with more than one site. Site ID is case-sensitive when using a cached authentication token. If you do not match case you may be prompted for a password even if the token is still valid.

`--no-prompt`

When specified, the command will not prompt for a password. If no valid password is provided the command will fail.

`--[no-]cookie`

When specified, the session ID is saved on login so subsequent commands will not need to log in. Use the `no-` prefix to not save the session ID. By default the session is saved.

`--timeout`

Waits the specified number of seconds for the server to complete processing the command. By default the process will timeout in 30 seconds.

`--`

Specifies the end of options on the command line. You can use `--` to indicate to `tabcmd` that anything that follows `--` should not be interpreted as an option setting and can instead be interpreted as a value for the command. This is useful if you need to specify a value in the command that includes a hyphen. The following example shows how you might use `--` in a `tabcmd` command, where `-430105/Sheet1` is a required value for the `export` command.

```
tabcmd export --csv -f "D:\export10.csv" -- -430105/Sheet1
```

createextracts

Creates extracts for a published workbook or data source.

Options

`-d, --datasource`

The name of the target data source for extract creation.

`--embedded-datasources`

A space-separated list of embedded data source names within the target workbook. Enclose data source names with double quotes if they contain spaces. Only available when creating extracts for a workbook.

`--encrypt`

Create encrypted extract.

`--include-all`

Include all embedded data sources within target workbook. Only available when creating extracts for workbook.

`--parent-project-path`

Path of the project that is the parent of the project that contains the target resource. Must specify the project name with --project.

`--project`

The name of the project that contains the target resource. Only necessary if --workbook or --datasource is specified. If unspecified, the default project 'Default' is used.

`-u, -url`

The canonical name for the resource as it appears in the URL.

`-w, -workbook`

The name of the target workbook for extract creation.

Global options

The following options are used by all `tabcmd` commands. The `--server`, `--user`, and `--password` options are required at least once to begin a session. An authentication token is stored so subsequent commands can be run without including these options. This token remains valid for five minutes after the last command that used it.

`-h, --help`

Displays the help for the command.

Note: Some commands listed may not apply when using tabcmd with Tableau Online.

`-s, --server`

The Tableau Online URL, which is required at least once to begin session.

`-u, --user`

The Tableau Online username, which is required at least once to begin session.

`-p, --password`

The Tableau Online password, which is required at least once to begin session.

`--password-file`

Allows the password to be stored in the given `.txt` file rather than the command line

for increased security.

`-t, --site`

Indicates that the command applies to the site specified by the Tableau Online site ID, surrounded by single quotes or double quotes. Use this option if the user specified is associated with more than one site. Site ID is case-sensitive when using a cached authentication token. If you do not match case you may be prompted for a password even if the token is still valid.

`--no-prompt`

When specified, the command will not prompt for a password. If no valid password is provided the command will fail.

`--[no-]cookie`

When specified, the session ID is saved on login so subsequent commands will not need to log in. Use the `no-` prefix to not save the session ID. By default the session is saved.

`--timeout`

Waits the specified number of seconds for the server to complete processing the command. By default the process will timeout in 30 seconds.

`--`

Specifies the end of options on the command line. You can use `--` to indicate to `tabcmd` that anything that follows `--` should not be interpreted as an option setting and can instead be interpreted as a value for the command. This is useful if you need to specify a value in the command that includes a hyphen. The following example shows how you might use `--` in a `tabcmd` command, where `-430105/Sheet1` is a required value for the `export` command.

```
tabcmd export --csv -f "D:\export10.csv" -- -430105/Sheet1
```

creategroup *group-name*

Creates a group. Use `addusers` to add users after the group has been created.

Example

```
tabcmd creategroup "Development"
```

Global options

The following options are used by all `tabcmd` commands. The `--server`, `--user`, and `--password` options are required at least once to begin a session. An authentication token is stored so subsequent commands can be run without including these options. This token remains valid for five minutes after the last command that used it.

`-h, --help`

Displays the help for the command.

Note: Some commands listed may not apply when using tabcmd with Tableau Online.

`-s, --server`

The Tableau Online URL, which is required at least once to begin session.

`-u, --user`

The Tableau Online username, which is required at least once to begin session.

`-p, --password`

The Tableau Online password, which is required at least once to begin session.

`--password-file`

Allows the password to be stored in the given `.txt` file rather than the command line for increased security.

`-t, --site`

Indicates that the command applies to the site specified by the Tableau Online site ID, surrounded by single quotes or double quotes. Use this option if the user specified is associated with more than one site. Site ID is case-sensitive when using a cached authentication token. If you do not match case you may be prompted for a password even if the token is still valid.

`--no-prompt`

When specified, the command will not prompt for a password. If no valid password is provided the command will fail.

`--[no-]cookie`

When specified, the session ID is saved on login so subsequent commands will not need to log in. Use the `no-` prefix to not save the session ID. By default the session is saved.

`--timeout`

Waits the specified number of seconds for the server to complete processing the command. By default the process will timeout in 30 seconds.

`--`

Specifies the end of options on the command line. You can use `--` to indicate to `tabcmd` that anything that follows `--` should not be interpreted as an option setting and can instead be interpreted as a value for the command. This is useful if you need to specify a value in the command that includes a hyphen. The following example shows how you might use `--` in a `tabcmd` command, where `-430105/Sheet1` is a required value for the `export` command.

```
tabcmd export --csv -f "D:\export10.csv" -- -430105/Sheet1
```

createproject *project-name*

Creates a project.

Example

```
tabcmd createproject -n "Quarterly_Reports" -d "Workbooks show-
ing quarterly sales reports."
```

Options

`-n, --name`

Specifies the name of the project that you want to create.

`--parent-project-path`

Specifies the name of the parent project for the nested project as specified with the `-n` option. For example, to specify a project called "Nested" that exists in a "Main" project, use the following syntax: `--parent-project-path "Main" -n "Nested"`.

`-d, --description`

Specifies a description for the project.

Global options

The following options are used by all `tabcmd` commands. The `--server`, `--user`, and `--password` options are required at least once to begin a session. An authentication token is stored so subsequent commands can be run without including these options. This token remains valid for five minutes after the last command that used it.

`-h, --help`

Displays the help for the command.

Note: Some commands listed may not apply when using tabcmd with Tableau Online.

`-s, --server`

The Tableau Online URL, which is required at least once to begin session.

`-u, --user`

The Tableau Online username, which is required at least once to begin session.

`-p, --password`

The Tableau Online password, which is required at least once to begin session.

`--password-file`

Allows the password to be stored in the given `.txt` file rather than the command line for increased security.

`-t, --site`

Indicates that the command applies to the site specified by the Tableau Online site ID, surrounded by single quotes or double quotes. Use this option if the user specified is associated with more than one site. Site ID is case-sensitive when using a cached authentication token. If you do not match case you may be prompted for a password even if the token is still valid.

`--no-prompt`

When specified, the command will not prompt for a password. If no valid password is provided the command will fail.

`--[no-]cookie`

When specified, the session ID is saved on login so subsequent commands will not need to log in. Use the `no-` prefix to not save the session ID. By default the session is saved.

`--timeout`

Waits the specified number of seconds for the server to complete processing the command. By default the process will timeout in 30 seconds.

`--`

Specifies the end of options on the command line. You can use `--` to indicate to `tabcmd` that anything that follows `--` should not be interpreted as an option setting and can instead be interpreted as a value for the command. This is useful if you need to specify a value in the command that includes a hyphen. The following example shows how you might use `--` in a `tabcmd` command, where `-430105/Sheet1` is a required value for the `export` command.

```
tabcmd export --csv -f "D:\export10.csv" -- -430105/Sheet1
```

createsiteusers *filename.csv*

Adds users to a site, based on information supplied in a comma-separated values (CSV) file. If the user is not already created on the server, the command creates the user before adding that user to the site.

The CSV file must contain one or more user names and can also include (for each user) a password, full name, license type, administrator level, publisher (yes/no), and email address. For information about the format of the CSV file, see CSV Import File Guidelines.

As an alternative to including administrator level and publisher permissions in the CSV file, you can pass access level information by including the `--role` option and specifying the site role you want to assign users listed in the CSV file.

By default, users are added to the site that you are logged in to. To add users to a different site, include the global `--site` option and specify that site. (You must have permissions to create users on the site you specify.)

Example

```
tabcmd createsiteusers "users.csv" --role "Explorer"
```

Options

`--admin-type`

Deprecated. Use the `--role` option instead.

`--auth-type`

Sets the authentication type (`TableauID` or `SAML`) for all users in the `.csv` file. If unspecified, the default is `TableauID`.

Note: To use SAML authentication, the site itself must be SAML-enabled as well. For information, see Enable SAML Authentication on a Site.

`--[no-]complete`

Deprecated. Default error behavior: if there are more than 3 errors within a ten-row span, then the command will fail.

`--no-publisher`

Deprecated. Use the `--role` option instead.

`--nowait`

Do not wait for asynchronous jobs to complete.

`--publisher`

Deprecated. Use the `--role` option instead.

`--role`

Specifies a site role for all users in the `.csv` file. When you want to assign site roles using the --role option, create a separate CSV file for each site role.

Valid values are: `ServerAdministrator`, `SiteAdministratorCreator`, `SiteAdministratorExplorer`, `SiteAdministrator`, `Creator`, `ExplorerCanPublish`, `Publisher`, `Explorer`, `Interactor`, `Viewer`, and `Unlicensed`.

The default is `Unlicensed` for new users and unchanged for existing users. Users are added as unlicensed also if you have a user-based server installation, and if the `createsiteusers` command creates a new user, but you have already reached the limit on the number of licenses for your users.

Note: On a multi-site Tableau Server, if you want to assign the `ServerAdministrator` site role using the `--role` option, use the `createusers` command instead of `createsiteusers`.

`--silent-progress`

Do not display progress messages for the command.

Global options

The following options are used by all `tabcmd` commands. The `--server`, `--user`, and `--password` options are required at least once to begin a session. An authentication token is stored so subsequent commands can be run without including these options. This token remains valid for five minutes after the last command that used it.

`-h, --help`

Displays the help for the command.

Note: Some commands listed may not apply when using tabcmd with Tableau Online.

`-s, --server`

The Tableau Online URL, which is required at least once to begin session.

`-u, --user`

The Tableau Online username, which is required at least once to begin session.

`-p, --password`

The Tableau Online password, which is required at least once to begin session.

`--password-file`

Allows the password to be stored in the given `.txt` file rather than the command line for increased security.

`-t, --site`

Indicates that the command applies to the site specified by the Tableau Online site ID, surrounded by single quotes or double quotes. Use this option if the user specified is associated with more than one site. Site ID is case-sensitive when using a cached authentication token. If you do not match case you may be prompted for a password even if the token is still valid.

`--no-prompt`

When specified, the command will not prompt for a password. If no valid password is provided the command will fail.

`--[no-]cookie`

When specified, the session ID is saved on login so subsequent commands will not

need to log in. Use the `no-` prefix to not save the session ID. By default the session is saved.

`--timeout`

Waits the specified number of seconds for the server to complete processing the command. By default the process will timeout in 30 seconds.

`--`

Specifies the end of options on the command line. You can use `--` to indicate to `tabcmd` that anything that follows `--` should not be interpreted as an option setting and can instead be interpreted as a value for the command. This is useful if you need to specify a value in the command that includes a hyphen. The following example shows how you might use `--` in a `tabcmd` command, where `-430105/Sheet1` is a required value for the `export` command.

```
tabcmd export --csv -f "D:\export10.csv" -- -430105/Sheet1
```

delete *workbook-name* or *datasource-name*

Deletes the specified workbook or data source from the server.

This command takes the name of the workbook or data source as it is on the server, not the file name when it was published.

Example

```
tabcmd delete "Sales_Analysis"
```

Options

`-r, --project`

The name of the project containing the workbook or data source you want to delete. If not specified, the “Default” project is assumed.

`--parent-project-path`

Specifies the name of the parent project for the nested project as specified with the `-r` option. For example, to specify a project called "Nested" that exists in a "Main" project, use the following syntax: `--parent-project-path "Main" -r "Nested"`.

`--workbook`

The name of the workbook you want to delete.

`--datasource`

The name of the data source you want to delete.

Global options

The following options are used by all `tabcmd` commands. The `--server`, `--user`, and `--password` options are required at least once to begin a session. An authentication token is stored so subsequent commands can be run without including these options. This token remains valid for five minutes after the last command that used it.

`-h, --help`

Displays the help for the command.

Note: Some commands listed may not apply when using tabcmd with Tableau Online.

`-s, --server`

The Tableau Online URL, which is required at least once to begin session.

`-u, --user`

The Tableau Online username, which is required at least once to begin session.

`-p, --password`

The Tableau Online password, which is required at least once to begin session.

`--password-file`

Allows the password to be stored in the given `.txt` file rather than the command line for increased security.

`-t, --site`

Indicates that the command applies to the site specified by the Tableau Online site ID, surrounded by single quotes or double quotes. Use this option if the user specified is associated with more than one site. Site ID is case-sensitive when using a cached authentication token. If you do not match case you may be prompted for a password even if the token is still valid.

`--no-prompt`

When specified, the command will not prompt for a password. If no valid password is provided the command will fail.

`--[no-]cookie`

When specified, the session ID is saved on login so subsequent commands will not need to log in. Use the `no-` prefix to not save the session ID. By default the session is saved.

`--timeout`

Waits the specified number of seconds for the server to complete processing the command. By default the process will timeout in 30 seconds.

`--`

Specifies the end of options on the command line. You can use `--` to indicate to

`tabcmd` that anything that follows `--` should not be interpreted as an option setting and can instead be interpreted as a value for the command. This is useful if you need to specify a value in the command that includes a hyphen. The following example shows how you might use `--` in a `tabcmd` command, where `-430105/Sheet1` is a required value for the `export` command.

```
tabcmd export --csv -f "D:\export10.csv" -- -430105/Sheet1
```

deleteextracts

Deletes extracts for a published workbook or data source.

Options

`-d, --datasource`

The name of the target data source for extract deletion.

`--embedded-datasources`

A space-separated list of embedded data source names within the target workbook. Enclose data source names with double quotes if they contain spaces. Only available when deleting extracts for a workbook.

`--encrypt`

Create encrypted extract.

`--include-all`

Include all embedded data sources within target workbook.

`--parent-project-path`

Path of the project that is the parent of the project that contains the target resource. Must specify the project name with --project.

`--project`

The name of the project that contains the target resource. Only necessary if --workbook or --datasource is specified. If unspecified, the default project 'Default' is used.

`-u, -url`

The canonical name for the resource as it appears in the URL.

`-w, -workbook`

The name of the target workbook for extract deletion.

Global options

The following options are used by all `tabcmd` commands. The `--server`, `--user`, and `--password` options are required at least once to begin a session. An authentication token is stored so subsequent commands can be run without including these options. This token remains valid for five minutes after the last command that used it.

`-h, --help`

Displays the help for the command.

Note: Some commands listed may not apply when using tabcmd with Tableau Online.

`-s, --server`

The Tableau Online URL, which is required at least once to begin session.

`-u, --user`

The Tableau Online username, which is required at least once to begin session.

`-p, --password`

The Tableau Online password, which is required at least once to begin session.

`--password-file`

Allows the password to be stored in the given `.txt` file rather than the command line for increased security.

`-t, --site`

Indicates that the command applies to the site specified by the Tableau Online site ID, surrounded by single quotes or double quotes. Use this option if the user specified is associated with more than one site. Site ID is case-sensitive when using a cached authentication token. If you do not match case you may be prompted for a password even if the token is still valid.

`--no-prompt`

When specified, the command will not prompt for a password. If no valid password is provided the command will fail.

`--[no-]cookie`

When specified, the session ID is saved on login so subsequent commands will not need to log in. Use the `no-` prefix to not save the session ID. By default the session is saved.

`--timeout`

Waits the specified number of seconds for the server to complete processing the command. By default the process will timeout in 30 seconds.

`--`

Specifies the end of options on the command line. You can use `--` to indicate to

`tabcmd` that anything that follows `--` should not be interpreted as an option setting and can instead be interpreted as a value for the command. This is useful if you need to specify a value in the command that includes a hyphen. The following example shows how you might use `--` in a `tabcmd` command, where `-430105/Sheet1` is a required value for the `export` command.

```
tabcmd export --csv -f "D:\export10.csv" -- -430105/Sheet1
```

deletegroup *group-name*

Deletes the specified group from the server.

Example

```
tabcmd deletegroup "Development"
```

Global options

The following options are used by all `tabcmd` commands. The `--server`, `--user`, and `--password` options are required at least once to begin a session. An authentication token is stored so subsequent commands can be run without including these options. This token remains valid for five minutes after the last command that used it.

`-h, --help`

Displays the help for the command.

Note: Some commands listed may not apply when using tabcmd with Tableau Online.

`-s, --server`

The Tableau Online URL, which is required at least once to begin session.

`-u, --user`

The Tableau Online username, which is required at least once to begin session.

`-p, --password`

The Tableau Online password, which is required at least once to begin session.

`--password-file`

Allows the password to be stored in the given `.txt` file rather than the command line for increased security.

`-t, --site`

Indicates that the command applies to the site specified by the Tableau Online site ID, surrounded by single quotes or double quotes. Use this option if the user specified is associated with more than one site. Site ID is case-sensitive when using a cached authentication token. If you do not match case you may be prompted for a password even if the token is still valid.

`--no-prompt`

When specified, the command will not prompt for a password. If no valid password is provided the command will fail.

`--[no-]cookie`

When specified, the session ID is saved on login so subsequent commands will not need to log in. Use the `no-` prefix to not save the session ID. By default the session is saved.

`--timeout`

Waits the specified number of seconds for the server to complete processing the command. By default the process will timeout in 30 seconds.

`--`

Specifies the end of options on the command line. You can use `--` to indicate to

`tabcmd` that anything that follows `--` should not be interpreted as an option setting and can instead be interpreted as a value for the command. This is useful if you need to specify a value in the command that includes a hyphen. The following example shows how you might use `--` in a `tabcmd` command, where `-430105/Sheet1` is a required value for the `export` command.

```
tabcmd export --csv -f "D:\export10.csv" -- -430105/Sheet1
```

deleteproject *project-name*

Deletes the specified project from the server.

Using `tabcmd`, you can specify only a top-level project in a project hierarchy. To automate tasks you want to perform on a project within a parent project, use the equivalent Tableau REST API call.

Example

```
tabcmd deleteproject "Designs"
```

Option

`--parent-project-path`

Specifies the name of the parent project for the nested project as specified with the command. For example, to specify a project called "Designs" that exists in a "Main" project, use the following syntax: `--parent-project-path "Main" "Designs"`.

Global options

The following options are used by all `tabcmd` commands. The `--server`, `--user`, and `--password` options are required at least once to begin a session. An authentication token is stored so subsequent commands can be run without including these options. This token remains valid for five minutes after the last command that used it.

`-h, --help`

Displays the help for the command.

Note: Some commands listed may not apply when using tabcmd with Tableau Online.

`-s, --server`

The Tableau Online URL, which is required at least once to begin session.

`-u, --user`

The Tableau Online username, which is required at least once to begin session.

`-p, --password`

The Tableau Online password, which is required at least once to begin session.

`--password-file`

Allows the password to be stored in the given `.txt` file rather than the command line for increased security.

`-t, --site`

Indicates that the command applies to the site specified by the Tableau Online site ID, surrounded by single quotes or double quotes. Use this option if the user specified is associated with more than one site. Site ID is case-sensitive when using a cached authentication token. If you do not match case you may be prompted for a password even if the token is still valid.

`--no-prompt`

When specified, the command will not prompt for a password. If no valid password is provided the command will fail.

`--[no-]cookie`

When specified, the session ID is saved on login so subsequent commands will not need to log in. Use the `no-` prefix to not save the session ID. By default the session is saved.

`--timeout`

Waits the specified number of seconds for the server to complete processing the command. By default the process will timeout in 30 seconds.

`--`

Specifies the end of options on the command line. You can use `--` to indicate to `tabcmd` that anything that follows `--` should not be interpreted as an option setting and can instead be interpreted as a value for the command. This is useful if you need to specify a value in the command that includes a hyphen. The following example shows how you might use `--` in a `tabcmd` command, where `-430105/Sheet1` is a required value for the `export` command.

```
tabcmd export --csv -f "D:\export10.csv" -- -430105/Sheet1
```

deletesiteusers *filename.csv*

Removes users from from the site that you are logged in to. The users to be removed are specified in a file that contains a simple list of one user name per line. (No additional information is required beyond the user name.)

By default, if the server has only one site, or if the user belongs to only one site, the user is also removed from the server. On a Tableau Server Enterprise installation, if the server contains multiple sites, users who are assigned the site role of **Server Administrator** are removed from the site but are not removed from the server.

If the user owns content, the user's role is change to **Unlicensed**, but the user is not removed from the server or the site. The content is still owned by that user. To remove the

user completely, you must change the owner of the content and then try removing the user again.

Example

```
tabcmd deletesiteusers "users.csv"
```

Global options

The following options are used by all `tabcmd` commands. The `--server`, `--user`, and `--password` options are required at least once to begin a session. An authentication token is stored so subsequent commands can be run without including these options. This token remains valid for five minutes after the last command that used it.

`-h, --help`

Displays the help for the command.

Note: Some commands listed may not apply when using tabcmd with Tableau Online.

`-s, --server`

The Tableau Online URL, which is required at least once to begin session.

`-u, --user`

The Tableau Online username, which is required at least once to begin session.

`-p, --password`

The Tableau Online password, which is required at least once to begin session.

`--password-file`

Allows the password to be stored in the given `.txt` file rather than the command line

for increased security.

`-t, --site`

Indicates that the command applies to the site specified by the Tableau Online site ID, surrounded by single quotes or double quotes. Use this option if the user specified is associated with more than one site. Site ID is case-sensitive when using a cached authentication token. If you do not match case you may be prompted for a password even if the token is still valid.

`--no-prompt`

When specified, the command will not prompt for a password. If no valid password is provided the command will fail.

`--[no-]cookie`

When specified, the session ID is saved on login so subsequent commands will not need to log in. Use the `no-` prefix to not save the session ID. By default the session is saved.

`--timeout`

Waits the specified number of seconds for the server to complete processing the command. By default the process will timeout in 30 seconds.

`--`

Specifies the end of options on the command line. You can use `--` to indicate to `tabcmd` that anything that follows `--` should not be interpreted as an option setting and can instead be interpreted as a value for the command. This is useful if you need to specify a value in the command that includes a hyphen. The following example shows how you might use `--` in a `tabcmd` command, where `-430105/Sheet1` is a required value for the `export` command.

```
tabcmd export --csv -f "D:\export10.csv" -- -430105/Sheet1
```

export

Exports a view or workbook from Tableau Online and saves it to a file. This command can also export just the data used for a view. View data is exported at the summary level. To export detail-level data, you must use the Tableau Server UI. For details, see Download Views and Workbooks.

Note the following when you use this command:

- **Permissions**: To export, you must have the **Export Image** permission. By default, this permission is Allowed or Inherited for all roles, although permissions can be set per workbook or view.
- **Exporting data**: To export just the data for a view, use the `--csv` option. This exports the summary data used in a view to a .csv file.
- **Specifying the view, workbook, or data to export**:
  - Use part of the URL to identify what to export, specifically the `"workbook/view"` string as it appears in the URL for the workbook or view. Do not use the "friendly name," and exclude the `:iid=<n>` session ID at the end of the URL.

    For example, the Tableau sample view *Global Temperatures* in the *Regional*workbook has a URL similar to this: `<server_name>/#/views/Regional/GlobalTemperatures?:iid=3`

    To export the *Global Temperatures* view, use the string `Regional/GlobalTemperatures`.

    Do *not*use `Regional/Global Temperatures`, or `Regional/GlobalTemperatures?:iid=3`.
  - If the server is running multiple sites and the view or workbook is on a site other than Default, Use `-t <site_id>`.

- To export a workbook, get the URL string by opening a view in the workbook, and include the view in the string you use.

  In the above example, to export the *Regional* workbook, use the string `Regional/GlobalTemperatures`.

- To export a workbook, it must have been published with **Show Sheets as Tabs** selected in the Tableau Desktop Publish dialog box.

  Note: The Tableau workbook that contains the admin views cannot be exported.

- To filter the data you download, add a parameter filter using this format:

  ```
  ?<filter_name>=value
  ```

  or, if filtering on a parameter and that parameter has a display name that matches the name of a measure or dimension:

  ```
  ?Parameters.<filter_name>=value
  ```

- **The saved file's format**: Your format options depend on what's being exported. A workbook can only be exported as a PDF using the `--fullpdf` argument. A view can be exported as a PDF (`--pdf`) or a PNG (`--png`).

- **The saved file's name and location** (optional): If you don't provide a name, it will be derived from the view or workbook name. If you don't provide a location, the file will be saved to your current working directory. Otherwise, you can specify a full path or one that's relative to your current working directory.

  > **Note**: You must include a file name extension such as `.csv` or `.pdf`. The command does not automatically add an extension to the file name that you provide.

- **Dashboard web page objects not included in PDF exports**: A dashboard can

optionally include a web page object. If you are performing an export to PDF of a dashboard that includes a web page object, the web page object won't be included in the PDF.

- **Non-ASCII and non-standard ASCII characters and PDF exports**: If you are exporting a view or workbook with a name that includes a character outside the ASCII character set, or a non-standard ASCII character set, you need to URL encode (percent-encode) the character.

  For example if your command includes the city `Zürich`, you need to URL encode it as `Z%C3%BCrich`:

  ```
  tabcmd export "/Cities/Sheet1?locationCity=Z%C3%BCrich" -
  fullpdf
  ```

Clearing the Cache to Use Real-Time Data

You can optionally add the URL parameter `?:refresh=yes` to force a fresh data query instead of pulling the results from the cache. If you are using tabcmd with your own scripting and the `refresh` URL parameter is being used a great deal, this can have a negative impact on performance. It's recommended that you use `refresh` only when real-time data is required—for example, on a single dashboard instead of on an entire workbook.

Examples

Views

```
tabcmd export "Q1Sales/Sales_Report" --csv -f "Weekly-
Report.csv"
```

```
tabcmd export -t Sales "Sales/Sales_Analysis" --pdf -f "C:\T-
ableau_Workbooks\Weekly-Reports.pdf"
```

```
tabcmd export "Finance/InvestmentGrowth" --png
```

```
tabcmd export "Finance/InvestmentGrowth?:refresh=yes" --png
```

Workbooks

```
tabcmd export "Q1Sales/Sales_Report" --fullpdf
```

```
tabcmd export "Sales/Sales_Analysis" --fullpdf --pagesize
tabloid -f "C:\Tableau_Workbooks\Weekly-Reports.pdf"
```

Options

`-f, --filename`

Saves the file with the given filename and extension.

`--csv`

View only. Export the view's data (summary data) in `.csv` format.

`--pdf`

View only. Export as a PDF.

`--png`

View only. Export as an image in `.png` format.

`--fullpdf`

Workbook only. Export as a PDF. The workbook must have been published with **Show Sheets as Tabs** enabled.

`--pagelayout`

Sets the page orientation (`landscape` or `portrait`) of the exported PDF. If not specified, its Tableau Desktop setting will be used.

`--pagesize`

Sets the page size of the exported PDF as one of the following: `unspecified`, `letter`, `legal`, `note folio`, `tabloid`, `ledger`, `statement`, `executive`, `a3`, `a4`, `a5`, `b4`, `b5`, or `quarto`. Default is `letter`.

`--width`

Sets the width in pixels. Default is 800 px.

`--height`

Sets the height in pixels. Default is 600 px.

Global options

The following options are used by all `tabcmd` commands. The `--server`, `--user`, and `--password` options are required at least once to begin a session. An authentication token is stored so subsequent commands can be run without including these options. This token remains valid for five minutes after the last command that used it.

`-h, --help`

Displays the help for the command.

Note: Some commands listed may not apply when using tabcmd with Tableau Online.

`-s, --server`

The Tableau Online URL, which is required at least once to begin session.

`-u, --user`

The Tableau Online username, which is required at least once to begin session.

`-p, --password`

The Tableau Online password, which is required at least once to begin session.

`--password-file`

Allows the password to be stored in the given `.txt` file rather than the command line for increased security.

`-t, --site`

Indicates that the command applies to the site specified by the Tableau Online site ID, surrounded by single quotes or double quotes. Use this option if the user specified is associated with more than one site. Site ID is case-sensitive when using a cached authentication token. If you do not match case you may be prompted for a password even if the token is still valid.

`--no-prompt`

When specified, the command will not prompt for a password. If no valid password is provided the command will fail.

`--[no-]cookie`

When specified, the session ID is saved on login so subsequent commands will not need to log in. Use the `no-` prefix to not save the session ID. By default the session is saved.

`--timeout`

Waits the specified number of seconds for the server to complete processing the command. By default the process will timeout in 30 seconds.

`--`

Specifies the end of options on the command line. You can use `--` to indicate to `tabcmd` that anything that follows `--` should not be interpreted as an option setting and

can instead be interpreted as a value for the command. This is useful if you need to specify a value in the command that includes a hyphen. The following example shows how you might use `--` in a `tabcmd` command, where `-430105/Sheet1` is a required value for the `export` command.

```
tabcmd export --csv -f "D:\export10.csv" -- -430105/Sheet1
```

get *url*

Gets the resource from Tableau Online that's represented by the specified (partial) URL. The result is returned as a file.

Note the following when you use this command:

- **Permissions**: To get a file, you must have the **Download/Web Save As** permission. By default, this permission is allowed or inherited for all roles, although permissions can be set per workbook or view.
- **Specifying a view or workbook to get**: You specify a view to get using the `"/views/<workbookname>/<viewname>.<extension>"` string, and specify a workbook to get using the `"/workbooks/<workbookname>.<extension>"` string. Replace `<workbookname>` and `<viewname>` with the names of the workbook and view as they appear in the URL when you open the view in a browser and replace <extension> with the type of file you want to save. Do not use the session ID at the end of the URL (`?:iid=<n>`) or the "friendly" name of the workbook or view.

  For example, when you open a view *Regional Totals* in a workbook named *Metrics Summary*, the URL will look similar to this:

  ```
  /views/MetricsSummary_1/RegionalTotals?:iid=1
  ```

  Use the string `/views/MetricsSummary_1/RegionalTotals.<extension>` to get the view.

Use the string `/workbooks/MetricsSummary_1.<extension>` to get the workbook.

- **File extension**: The URL must include a file extension. The extension determines what's returned. A view can be returned in PDF, PNG, or CSV (summary data only) format. A Tableau workbook is returned as a TWB if it connects to a published data source or uses a live connection, or a TWBX if it connects to a data extract.

  > **Note**: If you are downloading a view to a PDF or PNG file, and if you include a `--filename` parameter that includes the .pdf or .png extension, you do not have to include a .pdf or .png extension in the URL.

- **The saved file's name and location** (optional): The name you use for `--file-name` should include the file extension. If you don't provide a name and file extension, both will be derived from the URL string. If you don't provide a location, the file is saved to your current working directory. Otherwise, you can specify a full path or one that's relative to your current working directory.

- **PNG size** (optional): If the saved file is a PNG, you can specify the size, in pixels, in the URL.

Clearing the cache to use real-time data

You can optionally add the URL parameter `?:refresh=yes` to force a fresh data query instead of pulling the results from the cache. If you are using tabcmd with your own scripting, using the `refresh` parameter a great deal can have a negative impact on performance. It's recommended that you use `refresh` only when real-time data is required—for example, on a single dashboard instead of on an entire workbook.

Examples

Views

```
tabcmd get "/views/Sales_Analysis/Sales_Report.png" --filename
"Weekly-Report.png"
```

```
tabcmd get "/views/Finance/InvestmentGrowth.pdf" -f
"Q1Growth.pdf"
```

```
tabcmd get "/views/Finance/InvestmentGrowth" -f "Q1Growth.pdf"
```

```
tabcmd get "/views/Finance/InvestmentGrowth.csv"
```

```
tabcmd get "/views/Finance/InvestmentGrowth.png?:size=640,480" -
f growth.png
```

```
tabcmd get "/views/Finance/InvestmentGrowth.png?:refresh=yes" -f
growth.png
```

Workbooks

```
tabcmd get "/workbooks/Sales_Analysis.twb" -f "C:\Tableau_Work-
books\Weekly-Reports.twb"
```

Global options

The following options are used by all `tabcmd` commands. The `--server`, `--user`, and `--password` options are required at least once to begin a session. An authentication token is stored so subsequent commands can be run without including these options. This token remains valid for five minutes after the last command that used it.

`-h, --help`

Displays the help for the command.

Note: Some commands listed may not apply when using tabcmd with Tableau Online.

`-s, --server`

The Tableau Online URL, which is required at least once to begin session.

`-u, --user`

The Tableau Online username, which is required at least once to begin session.

`-p, --password`

The Tableau Online password, which is required at least once to begin session.

`--password-file`

Allows the password to be stored in the given `.txt` file rather than the command line for increased security.

`-t, --site`

Indicates that the command applies to the site specified by the Tableau Online site ID, surrounded by single quotes or double quotes. Use this option if the user specified is associated with more than one site. Site ID is case-sensitive when using a cached authentication token. If you do not match case you may be prompted for a password even if the token is still valid.

`--no-prompt`

When specified, the command will not prompt for a password. If no valid password is provided the command will fail.

`--[no-]cookie`

When specified, the session ID is saved on login so subsequent commands will not need to log in. Use the `no-` prefix to not save the session ID. By default the session is saved.

`--timeout`

Waits the specified number of seconds for the server to complete processing the command. By default the process will timeout in 30 seconds.

`--`

Specifies the end of options on the command line. You can use `--` to indicate to `tabcmd` that anything that follows `--` should not be interpreted as an option setting and can instead be interpreted as a value for the command. This is useful if you need to specify a value in the command that includes a hyphen. The following example shows how you might use `--` in a `tabcmd` command, where `-430105/Sheet1` is a required value for the `export` command.

```
tabcmd export --csv -f "D:\export10.csv" -- -430105/Sheet1
```

login

Logs in a Tableau Online user.

Use the `--server`, `--site`, `--username`, `--password` global options to create a session.

> **Note**: When you use the **tabcmd login** command, you cannot use SAML single sign-on (SSO), even if your site is configured to use SAML. To log in, you must pass the user name and password of a user who has been created in your site. You will have the permissions of the Tableau Server user that you're signed in as.

If you want to log in using the same information you've already used to create a session, just specify the `--password` option. The server and user name stored in the cookie will be used.

If the server is using a port other than 80 (the default), you will need to specify the port.

You need the `--site` (`-t`) option only if the server is running multiple sites and you are logging in to a site other than the Default site. If you do not provide a password you will be

prompted for one. If the `--no-prompt` option is specified and no password is provided the command will fail.

Once you log in, the session will continue until it expires on the server or the `logout` command is run.

Example

Log in to the Tableau Online site with the specified site ID:

```
tabcmd login -s https://online.tableau.com -t siteID -u user-
@email.com -p password
```

Options

`-s, --server`

If you are running the command from a Tableau Server computer that's on your network, you can use `http://localhost`. Otherwise, specify the computer's URL, such as `http://bigbox.myco.com` or `http://bigbox`.

If the server is using SSL, you will need to specify `https://` in the computer's URL.

For Tableau Online, specify the URL `https://online.tableau.com`.

`-t, --site`

Include this option if the server has multiple sites, and you are logging in to a site other than the default site.

The site ID is used in the URL to uniquely identify the site. For example, a site named West Coast Sales might have a site ID of west-coast-sales.

`-u, --username`

The user name of the user logging in. For Tableau Online, the user name is the user's email address.

`-p, --password`

Password for the user specified for `--username`. If you do not provide a password you will be prompted for one.

`--password-file`

Allows the password to be stored in the given `filename.txt` file rather than the command line, for increased security.

`-x, --proxy`

Use to specify the HTTP proxy server and port (Host:Port) for the tabcmd request.

`--no-prompt`

Do not prompt for a password. If no password is specified, the `login` command will fail.

`--cookie`

Saves the session ID on login. Subsequent commands will not require a login. This value is the default for the command.

`--no-cookie`

Do not save the session ID information after a successful login. Subsequent commands will require a login.

`--timeout SECONDS`

The number of seconds the server should wait before processing the `login` command. Default: 30 seconds.

Global options

The following options are used by all `tabcmd` commands. The `--server`, `--user`, and `--password` options are required at least once to begin a session. An authentication token is stored so subsequent commands can be run without including these options. This token remains valid for five minutes after the last command that used it.

`-h, --help`

Displays the help for the command.

Note: Some commands listed may not apply when using tabcmd with Tableau Online.

`-s, --server`

The Tableau Online URL, which is required at least once to begin session.

`-u, --user`

The Tableau Online username, which is required at least once to begin session.

`-p, --password`

The Tableau Online password, which is required at least once to begin session.

`--password-file`

Allows the password to be stored in the given `.txt` file rather than the command line for increased security.

`-t, --site`

Indicates that the command applies to the site specified by the Tableau Online site ID, surrounded by single quotes or double quotes. Use this option if the user specified is associated with more than one site. Site ID is case-sensitive when using a cached authentication token. If you do not match case you may be prompted for a password even if the token is still valid.

`--no-prompt`

When specified, the command will not prompt for a password. If no valid password is provided the command will fail.

`--[no-]cookie`

When specified, the session ID is saved on login so subsequent commands will not need to log in. Use the `no-` prefix to not save the session ID. By default the session is saved.

`--timeout`

Waits the specified number of seconds for the server to complete processing the command. By default the process will timeout in 30 seconds.

`--`

Specifies the end of options on the command line. You can use `--` to indicate to `tabcmd` that anything that follows `--` should not be interpreted as an option setting and can instead be interpreted as a value for the command. This is useful if you need to specify a value in the command that includes a hyphen. The following example shows how you might use `--` in a `tabcmd` command, where `-430105/Sheet1` is a required value for the `export` command.

```
tabcmd export --csv -f "D:\export10.csv" -- -430105/Sheet1
```

logout

Logs out of the server.

Example

```
tabcmd logout
```

publish *filename.twb(x)*, *filename.tds(x)*, or *filename.hyper*

Publishes the specified workbook (.twb(x)), data source (.tds(x)), or extract (.hyper) to Tableau Online.

If you are publishing a workbook, by default, all sheets in the workbook are published without database user names or passwords.

The permissions initially assigned to the workbook or data source are copied from the project that the file is published to. Permissions for the published resource can be changed after the file has been published.

If the workbook contains user filters, one of the thumbnail options must be specified.

Example

```
tabcmd publish "analysis_sfdc.hyper" -n "Sales Analysis"
--oauth-username "user-name" --save-oauth
```

If the file is not in the same directory as tabcmd, include the full path to the file.

Example

```
tabcmd publish "\\computer\volume\Tableau Workbooks\analysis_
sfdc.hyper" -n "Sales Analysis" --oauth-username "username" --
save-oauth
```

Options

`-n, --name`

Name of the workbook or data source on the server. If omitted, the workbook, data source, or data extract will be named after filename.

`-o, --overwrite`

Overwrites the workbook, data source, or data extract if it already exists on the

server.

`-r, --project`

Publishes the workbook, data source, or data extract into the specified project. Publishes to the “Default” project if not specified.

`--parent-project-path`

Specifies the name of the parent project for the nested project as specified with the `-r` option. For example, to specify a project called "Nested" that exists in a "Main" project, use the following syntax: `--parent-project-path "Main" -r "Nested"`.

`--db-username`

Use this option to publish a database user name with the workbook, data source, or data extract.

If you connect to the data through a protected OAuth connection and access token, us the `--oauth-username` option instead.

`--db-password`

Use this option to publish a database password with the workbook, data source, or extract.

`--save-db-password`

Stores the provided database password on the server.

`--oauth-username`

The email address of the user account. Connects the user through a preconfigured OAuth connection, if the user already has a saved access token for the cloud data source specified in `--name`. Access tokens are managed in user preferences.

For existing OAuth connections to the data source, use this option instead of `--db-username` and `--db-password`.

`--save-oauth`

Saves the credential specified by `--oauth-username` as an embedded credential with the published workbook or data source.

Subsequently, when the publisher or server administrator signs in to the server and edits the connection for that workbook or data source, the connection settings will show this OAuth credential as embedded in the content.

If you want to schedule extract refreshes after publishing, you must include this option with `--oauth-username`. This is analogous to using `--save-db-password` with a traditional database connection.

`--thumbnail-username`

If the workbook contains user filters, the thumbnails will be generated based on what the specified user can see. Cannot be specified when `--thumbnail-group` option is set.

`--thumbnail-group`

If the workbook contains user filters, the thumbnails will be generated based on what the specified group can see. Cannot be specified when `--thumbnail-username`option is set.

`--tabbed`

When a workbook with tabbed views is published, each sheet becomes a tab that viewers can use to navigate through the workbook. Note that this setting will override any sheet-level security.

`--append`

Append the extract file to the existing data source.

`--replace`

Use the extract file to replace the existing data source.

`--disable-uploader`

Disable the incremental file uploader.

`--restart`

Restart the file upload.

Global options

The following options are used by all `tabcmd` commands. The `--server`, `--user`, and `--password` options are required at least once to begin a session. An authentication token is stored so subsequent commands can be run without including these options. This token remains valid for five minutes after the last command that used it.

`-h, --help`

Displays the help for the command.

Note: Some commands listed may not apply when using tabcmd with Tableau Online.

`-s, --server`

The Tableau Online URL, which is required at least once to begin session.

`-u, --user`

The Tableau Online username, which is required at least once to begin session.

`-p, --password`

The Tableau Online password, which is required at least once to begin session.

`--password-file`

Allows the password to be stored in the given `.txt` file rather than the command line for increased security.

`-t, --site`

Indicates that the command applies to the site specified by the Tableau Online site ID, surrounded by single quotes or double quotes. Use this option if the user specified is associated with more than one site. Site ID is case-sensitive when using a cached authentication token. If you do not match case you may be prompted for a password even if the token is still valid.

`--no-prompt`

When specified, the command will not prompt for a password. If no valid password is provided the command will fail.

`--[no-]cookie`

When specified, the session ID is saved on login so subsequent commands will not need to log in. Use the `no-` prefix to not save the session ID. By default the session is saved.

`--timeout`

Waits the specified number of seconds for the server to complete processing the command. By default the process will timeout in 30 seconds.

`--`

Specifies the end of options on the command line. You can use `--` to indicate to

`tabcmd` that anything that follows `--` should not be interpreted as an option setting and can instead be interpreted as a value for the command. This is useful if you need to specify a value in the command that includes a hyphen. The following example shows how you might use `--` in a `tabcmd` command, where `-430105/Sheet1` is a required value for the `export` command.

```
tabcmd export --csv -f "D:\export10.csv" -- -430105/Sheet1
```

refreshextracts *workbook-name* or *datasource-name*

Performs a full or incremental refresh of extracts belonging to the specified workbook or data source.

This command takes the name of the workbook or data source as it appears on the server, not the file name when it was published. Only an administrator or the owner of the workbook or data source is allowed to perform this operation.

Notes:

- This method will fail and result in an error if your Server Administrator has disabled the **RunNow** setting for the site. For more information, see Tableau Server Settings.
- You can use tabcmd to refresh supported data sources that are hosted in the cloud. For example, SQL Server, MySQL, PostgreSQL on a cloud platform; Google Analytics; and so on.
- To refresh on-premises data with tabcmd, the data source must be a type that can be configured for Tableau Bridge Recommended schedules. For all other data sources that connect to on-premises data, you can use Bridge or the command-line data extract utility. Learn more at Use Bridge to Keep Data Fresh and Automate Extract Refresh Tasks from the Command Line.

Examples

```
tabcmd refreshextracts --datasource sales_ds
```

```
tabcmd refreshextracts --project "Sales External" --datasource
sales_ds
```

```
tabcmd refreshextracts --project "Sales External" --parent-
```

```
project-path "Main" --project "Sales External" --datasource
sales_ds
```

```
tabcmd refreshextracts --workbook "My Workbook"
```

```
tabcmd refreshextracts --url SalesAnalysis
```

```
tabcmd refreshextracts --workbook "My Workbook" --addcal-
culations
```

```
tabcmd refreshextracts --datasource sales_ds --remove-
calculations
```

Options

`--incremental`

Runs the incremental refresh operation.

`--synchronous`

Adds the full refresh operation to the queue used by the Backgrounder process, to be run as soon as a Backgrounder process is available. If a Backgrounder process is available, the operation is run immediately. The refresh operation appears on the Background Tasks report.

During a synchronous refresh, `tabcmd` maintains a live connection to the server while the refresh operation is underway, polling every second until the background job is done.

`--workbook`

The name of the workbook containing extracts to refresh. If the workbook has spaces in its name, enclose it in quotes.

`--datasource`

The name of the data source containing extracts to refresh.

`--project`

Use with `--workbook` or `--datasource` to identify a workbook or data source in a project other than *Default*. If not specified, the Default project is assumed.

`--parent-project-path`

Specifies the name of the parent project for the nested project as specified with the `--project` option.

For example:

- To specify a project called "Nested" that exists in a "Main" project, use the following syntax:
- `--parent-project-path "Main" --project "Nested"`
- To specify a project called "Nested2" that is nested within the "Nested" project:
- `--parent-project-path "Main/Nested" --project "Nested2"`

`--url`

The name of the workbook as it appears in the URL. A workbook published as “Sales Analysis” has a URL name of “SalesAnalysis”.

`--addcalculations`

Use with `--workbook` to materialize calculations in the embedded extract of the workbook or `--datasource` to materialize calculations in the extract data source. Adds the operation to the queue used by the Backgrounder process. If a Backgrounder process is available, the operation runs immediately. This operation appears on the Background Tasks for Extracts administrative view.

`--removecalculations`

Use with `--workbook` or `--datasource` to remove calculations that were previously materialized. Adds the operation to the queue used by the Backgrounder process. If a Backgrounder process is available, the operation runs immediately. This operation appears on the Background Tasks for Extracts administrative view.

Global options

The following options are used by all `tabcmd` commands. The `--server`, `--user`, and `--password` options are required at least once to begin a session. An authentication token is stored so subsequent commands can be run without including these options. This token remains valid for five minutes after the last command that used it.

`-h, --help`

Displays the help for the command.

Note: Some commands listed may not apply when using tabcmd with Tableau Online.

`-s, --server`

The Tableau Online URL, which is required at least once to begin session.

`-u, --user`

The Tableau Online username, which is required at least once to begin session.

`-p, --password`

The Tableau Online password, which is required at least once to begin session.

`--password-file`

Allows the password to be stored in the given `.txt` file rather than the command line for increased security.

`-t, --site`

Indicates that the command applies to the site specified by the Tableau Online site ID, surrounded by single quotes or double quotes. Use this option if the user specified is associated with more than one site. Site ID is case-sensitive when using a cached authentication token. If you do not match case you may be prompted for a password even if the token is still valid.

`--no-prompt`

When specified, the command will not prompt for a password. If no valid password is provided the command will fail.

`--[no-]cookie`

When specified, the session ID is saved on login so subsequent commands will not need to log in. Use the `no-` prefix to not save the session ID. By default the session is saved.

`--timeout`

Waits the specified number of seconds for the server to complete processing the command. By default the process will timeout in 30 seconds.

`--`

Specifies the end of options on the command line. You can use `--` to indicate to `tabcmd` that anything that follows `--` should not be interpreted as an option setting and can instead be interpreted as a value for the command. This is useful if you need to specify a value in the command that includes a hyphen. The following example shows how you might use `--` in a `tabcmd` command, where `-430105/Sheet1` is a required value for the `export` command.

```
tabcmd export --csv -f "D:\export10.csv" -- -430105/Sheet1
```

removeusers *group-name*

Removes users from the specified group.

Example

```
tabcmd removeusers "Development" --users "users.csv"
```

Options

`--users`

Remove the users in the given `.csv` file from the specified group. The file should be a simple list with one user name per line.

If you use this command with large `.csv` files on Tableau Server, a server administrator can enable settings that help to improve performance. For information, see CSV Import File Guidelines

`--[no-]complete`

Requires that all rows be valid for any change to succeed. If not specified `--complete` is used.

Global options

The following options are used by all `tabcmd` commands. The `--server`, `--user`, and `--password` options are required at least once to begin a session. An authentication token is stored so subsequent commands can be run without including these options. This token remains valid for five minutes after the last command that used it.

`-h, --help`

Displays the help for the command.

Note: Some commands listed may not apply when using tabcmd with Tableau Online.

`-s, --server`

The Tableau Online URL, which is required at least once to begin session.

`-u, --user`

The Tableau Online username, which is required at least once to begin session.

`-p, --password`

The Tableau Online password, which is required at least once to begin session.

`--password-file`

Allows the password to be stored in the given `.txt` file rather than the command line for increased security.

`-t, --site`

Indicates that the command applies to the site specified by the Tableau Online site ID, surrounded by single quotes or double quotes. Use this option if the user specified is associated with more than one site. Site ID is case-sensitive when using a cached authentication token. If you do not match case you may be prompted for a password even if the token is still valid.

`--no-prompt`

When specified, the command will not prompt for a password. If no valid password is provided the command will fail.

`--[no-]cookie`

When specified, the session ID is saved on login so subsequent commands will not need to log in. Use the `no-` prefix to not save the session ID. By default the session is saved.

`--timeout`

Waits the specified number of seconds for the server to complete processing the command. By default the process will timeout in 30 seconds.

`--`

Specifies the end of options on the command line. You can use `--` to indicate to `tabcmd` that anything that follows `--` should not be interpreted as an option setting and can instead be interpreted as a value for the command. This is useful if you need to specify a value in the command that includes a hyphen. The following example shows how you might use `--` in a `tabcmd` command, where `-430105/Sheet1` is a required value for the `export` command.

```
tabcmd export --csv -f "D:\export10.csv" -- -430105/Sheet1
```

runschedule *schedule-name*

Runs the specified schedule.

This command takes the name of the schedule as it is on the server.

This command is not available for Tableau Online.

> **Note:** This method will fail and result in an error if your Server Administrator has disabled the **RunNow** setting for the site. For more information, see Tableau Server Settings.

Example

```
tabcmd runschedule "5AM Sales Refresh"
```

Global options

The following options are used by all `tabcmd` commands. The `--server`, `--user`, and `--password` options are required at least once to begin a session. An authentication token

is stored so subsequent commands can be run without including these options. This token remains valid for five minutes after the last command that used it.

`-h, --help`

Displays the help for the command.

Note: Some commands listed may not apply when using tabcmd with Tableau Online.

`-s, --server`

The Tableau Online URL, which is required at least once to begin session.

`-u, --user`

The Tableau Online username, which is required at least once to begin session.

`-p, --password`

The Tableau Online password, which is required at least once to begin session.

`--password-file`

Allows the password to be stored in the given `.txt` file rather than the command line for increased security.

`-t, --site`

Indicates that the command applies to the site specified by the Tableau Online site ID, surrounded by single quotes or double quotes. Use this option if the user specified is associated with more than one site. Site ID is case-sensitive when using a cached authentication token. If you do not match case you may be prompted for a password even if the token is still valid.

`--no-prompt`

When specified, the command will not prompt for a password. If no valid password is provided the command will fail.

`--[no-]cookie`

When specified, the session ID is saved on login so subsequent commands will not need to log in. Use the `no-` prefix to not save the session ID. By default the session is saved.

`--timeout`

Waits the specified number of seconds for the server to complete processing the command. By default the process will timeout in 30 seconds.

`--`

Specifies the end of options on the command line. You can use `--` to indicate to `tabcmd` that anything that follows `--` should not be interpreted as an option setting and can instead be interpreted as a value for the command. This is useful if you need to specify a value in the command that includes a hyphen. The following example shows how you might use `--` in a `tabcmd` command, where `-430105/Sheet1` is a required value for the `export` command.

```
tabcmd export --csv -f "D:\export10.csv" -- -430105/Sheet1
```

Install Switches and Properties for tabcmd (Windows)

You can use the following switches when installing the Tableau Server Command Line Utility (tabcmd) version 2019.4.0 or later from the command line on Windows.

Note: There are no equivalent switches for the Linux version of the tabcmd installer.

Switch	Description	Comments

`/install` | `/repair` | `/uninstall` | `/layout` " `<directory>` "	Run Setup to either install, repair, or uninstall tabcmd, or with `/layout`, create a complete local copy of the installation bundle in the directory specified.	Default is to install, displaying UI and all prompts. If no directory is specified on a fresh install, `C:\Program Files\Tableau\Tableau Server\2019.4\extras\Command Line Utility` is assumed.
`/passive`	Run Setup with minimal UI and no prompts.	
`/quiet` | `/silent`	Run Setup in unattended, fully silent mode. No UI or prompts are displayed.	**Note:** Use either `/silent` or `/quiet`, not both.
`/norestart`	Run Setup without restarting	**Note:** In certain rare cases, a restart cannot be

	Windows, even if a restart is necessary.	suppressed, even when this option is used. This is most likely when an earlier system restart was skipped, for example, during installation of other software.
`/log "<log-file>"`	Log information to the specified file and path. By default log files are created in the user's `%TEMP%` folder with a naming convention of `Tableau_Server_Command_Line_utility_<version_code>.log`.	If no file location is specified, the log file is written to the user's TEMP folder (`C:\Users\<username>\AppData\Local\Temp`). Check this log file for errors after installation. Example: `<Setup file> /silent /log="C:\Tableau\Logs\tabcmd-Install" ACCEPTEULA=1`

Properties	Description	Comments

`ACCEPTEULA=1|0`	Accept the End User License Agreement (EULA). Required for quiet, silent, and passive install. 1 = accept the EULA, 0 = do not accept the EULA.	If not included when using `/passive`, `/silent` or `/quiet`, Setup fails silently. If included but set to 0, Setup fails.
`INSTALLDIR="<path\to\installation\directory>"`	Install tabcmd to the specified non-default install location.	Specifies the location to install tabcmd. If not used, tabcmd is installed to `C:\Program Files\Tableau\Tableau Server\<version_code>\extras\Command Line Utility` Example: `<Setup`

		`file> /silent INSTALLDIR-R="C:\tabcmd"`

Managing Background Jobs in Tableau Online

In Tableau Online, users can schedule extract refreshes, subscriptions, or flows to run periodically. These scheduled items are referred to as **Tasks**. The Backgrounder process initiates unique instances of these tasks to run them at the scheduled time. The unique instances of the tasks that are initiated as a result are referred to as **Jobs**. Jobs are also created for runs that are initiated manually, by clicking the **Run Now** option in the web interface, programmatically through REST API, or tabcmd commands.

For example, an extract refresh task is created to run daily at 9 AM. This is an extract refresh task, and every day at 9 AM, a job will be created for the Backgrounder to run.

Running all these jobs can mean that Backgrounder uses a lot of resources at various times during the day. Using the Job Management feature, Site administrators can get more details on these jobs that happen in their Site, and take action on those jobs to better manage resource usage. .

The **Run Now** settings on the **General** settings page also allows you to manage your resources by either allowing or blocking users from running jobs manually. By default, this option is selected to allow users to run jobs manually. Clear the check box to prevent users from running jobs manually.

The Jobs page which contains the information about jobs can be accessed by navigating to the **Existing Tasks** menu of the left navigation menu.

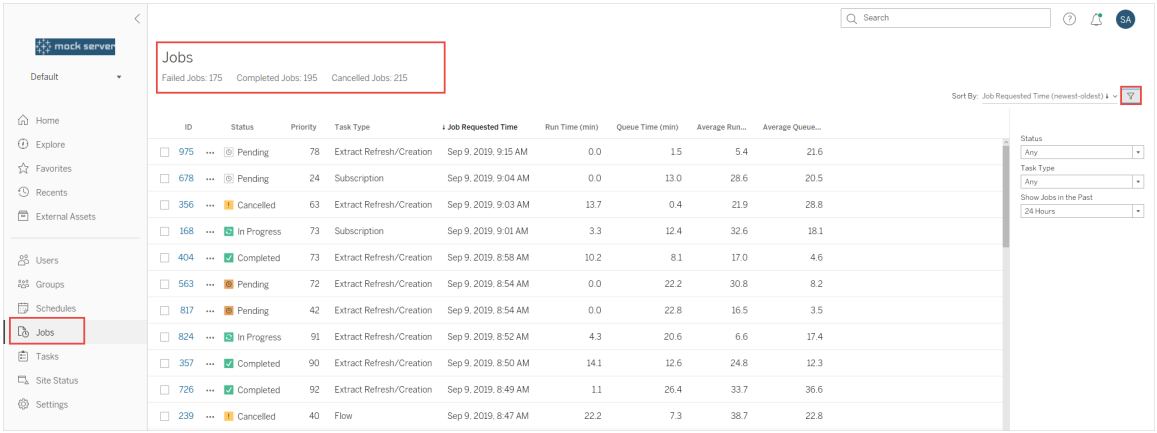
Information about jobs can only be viewed by Site administrators.

Overview

This topic describes how to view and understand the information displayed in the Jobs page.

Your Tableau Online site comes with capacity to support all your users' analytic needs. A site's capacity includes capacity for storage and tasks that need to be performed on the site for extracts, metrics, subscriptions, and flows. The jobs page allows you to monitor the tasks for your Tableau Online site. For more information on site capacity, see Tableau Online Site Capacity.

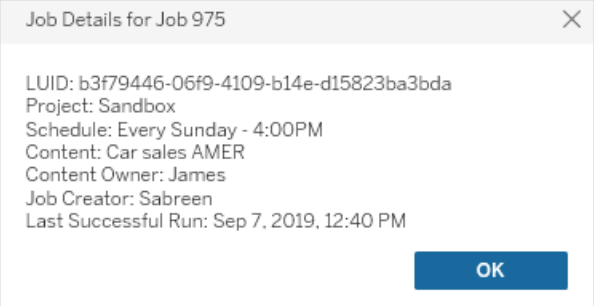
At the top of the page there are high level statistics for the number of **Failed**, **Completed**, and **Cancelled** jobs within the past 24 hours Applying filters do not change these values.



For each job generated, there is a Job ID, the status of that job, the priority, the type of task that the job was generated from, the current run time - if the job is in-progress, current queue time - if queued, as well as the average run time, and average queue time. Tableau records historical run and queue times to compute the average run time and average queue time.

The Job ID can be useful when viewing jobs on **Admin views** . When you click on the Job ID, you will see more detailed information about the job, such as the Job LUID, the project

name, the schedule , the content name, content owner, job creator, and the last time the job ran successfully.



Note: Doing a **Refresh Now** from the **Data Sources** page will only show the LUID information in the **Job Details** dialog box.

Task Types

There are several types of tasks:

- Bridge Refresh: Includes full and incremental extract refreshes that use Online refresh (formerly called Recommended) schedules. For more information, see About Bridge Refresh jobs.
- Extracts: This includes extract creation, incremental extract refreshes, and full extract refreshes. .
- Subscriptions: Includes subscriptions for workbooks and views. For more information, see Create a Subscription to a View or Workbook.
- Flow: This includes scheduled flows and manual flow runs.
- Encryption: Includes the following:

- Extract encryption and decryption
- Flow encryption and decryption
- Re-key extracts and flows

Filters

You can filter to see only certain jobs. The available filters are by Job Status type, Task Type, and Time Range. For the Time Range filter, you can choose from past one to 24 hours, in four hour increments.

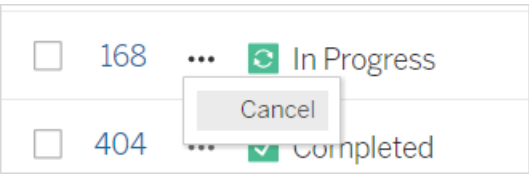
Canceling Jobs

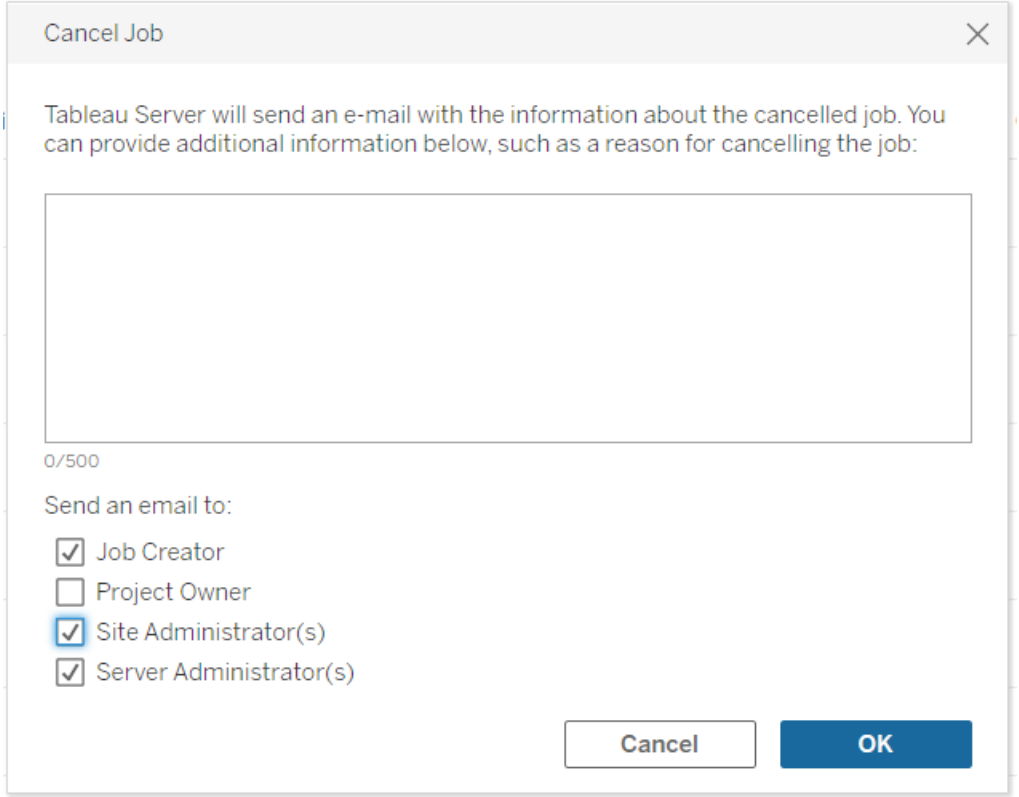
Extract refreshes, subscriptions and flow run jobs can be canceled. You can only cancel one job at a time, and selecting multiple jobs at one time for cancellation is not supported.

When you cancel a job, an email with the time the job was canceled, the affected content, and the time the job ran before being canceled is sent to the recipients that you select in the **Cancel Job** dialog box . In addition you can add your customized notes to be included in the email.

If you do not select any recipients, the job will be canceled, but no email will be sent.

To cancel a job, click on the ellipses next to the Job ID and use the dialog to cancel the job:

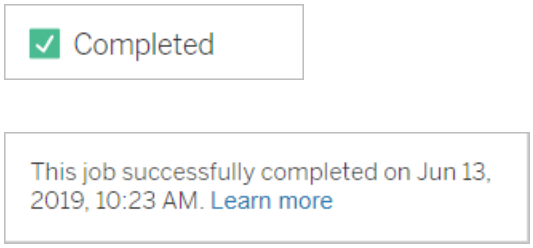




Status

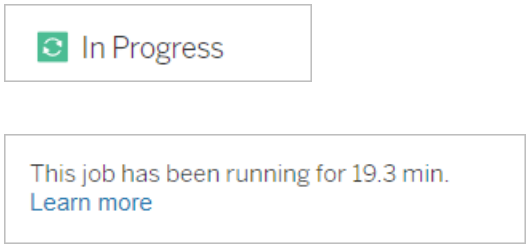
There are seven types of status that jobs can be in, and hovering over each status will display more relevant information.

- **Completed:** This job shows as **Completed successfully** and you can see the time when the job completed in the tooltip that is displayed when you hover over the status.

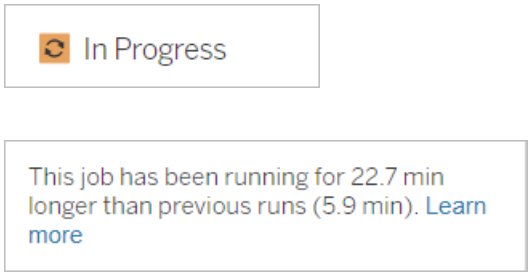


- **In Progress:** This job shows as **In Progress**. A time for how long the job has been

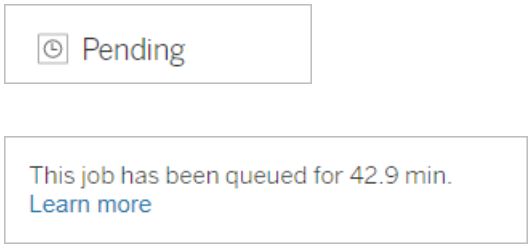
running for is displayed in the tooltip when you hover over the status.



- **In Progress:** This job is **In Progress**, but is **running late**. Tableau keeps track of the average run times for the same job, and if the current run time is longer than the average run time, then it is considered running late. Times for how much longer than average the job has been running and its average run time is provided in the tooltip that is displayed when you hover over the status.

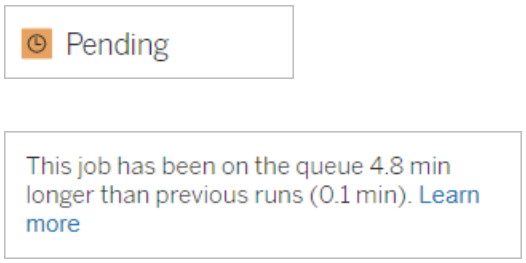


- **Pending:** This job is currently **Pending**, waiting to be run when there is available Backgrounder capacity. A time for how long the job has been in the queue for is provided in the tooltip that is displayed when you hover over the status.

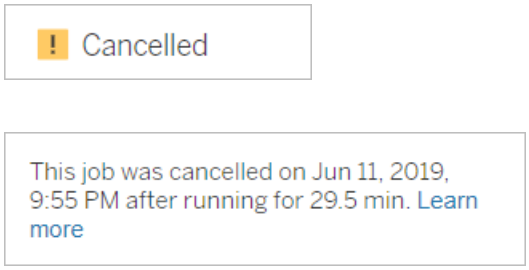


- **Pending:** This job is currently **Pending**, but is **running late**. Tableau keeps track of the average queue times for the same job, and if the current queue time is longer than

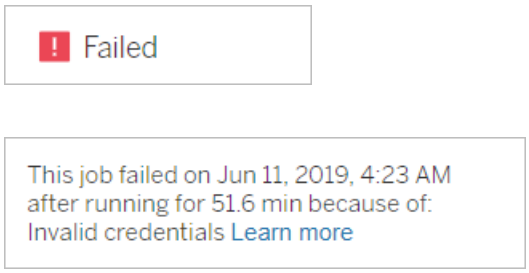
the average queue time then it is considered running late. Times for how much longer than average the job has been queued is provided in the tooltip that is displayed when you hover over the status.



- **Cancelled:** This job was **Cancelled** by a Site administrator. The time the job was cancelled and how long it ran for before cancellation is provided in the tooltip that is displayed when you hover over the status.

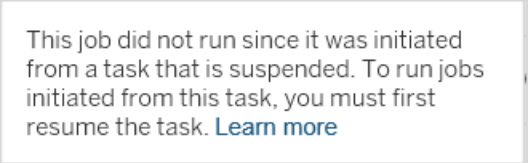


- **Failed:** This job is showing as **Failed**. The time when the job failed, how long it ran for before it failed, and why the job has failed is provided in the tooltip that is displayed when you hover over the status.



- **Suspended:** This job is showing as **Failed** with a pause icon. If the job fails 5 times

consecutively, then the job is suspended. Suspended tasks are still available but Backgrounder will not create jobs for these tasks until they are resumed by the user.



About Bridge Refresh jobs

Although Bridge Refresh jobs can generate the same statuses as other job types, Bridge Refresh jobs differ in the following ways:

- **Canceling jobs:** Bridge Refresh jobs can't be canceled from the Jobs page. Instead, ensure that Bridge clients are configured with the appropriate timeout limit to prevent any misuse of refreshes. For more information, see Configure a timeout limit for refreshes
- **"Sent to Bridge" job status:** A "Sent to Bridge" status indicates a completed Bridge Refresh job. A completed Bridge Refresh job means that the refresh job was successfully sent to a Bridge client in the pool. A completed Bridge Refresh job does not indicate whether the refresh itself completed successfully. If a refresh fails for whatever reason, the publisher (data source owner) is notified through both an account alert and a failure email alert. These alerts provide the publisher troubleshooting steps to help resolve the issue.
- **Subscription and Bridge Refresh jobs:** Subscription jobs can't be initiated by completed Bridge Refresh jobs. This is because a completed Bridge Refresh job only indicates whether the refresh job was successfully sent to a Bridge client in the pool and not whether the refresh job was completed successfully.

Notes:

- Refresh jobs that originate from Bridge (Legacy) schedules are not captured on the Jobs page. To monitor refresh jobs for Bridge (Legacy) schedules, you can refer to the Bridge Extracts admin view. For more information, see Bridge Extracts.
- For troubleshooting Bridge errors you see on the Jobs page, see Troubleshoot pooling.

Security in the Cloud

Tableau understands that data is among the most strategic and important assets an organization has. We put the highest priority on maintaining the security and privacy of our customers' data. Tableau enterprise-level security features manage operational security, user security, application security, network security, and data security.

To learn more, see the following resources on Tableau's website (https://www.tableau.com):

- Tableau Online Security in the Cloud white paper.
- Tableau Online tips: A security checklist for publishing data to the cloud

If you sign in to Tableau Online using TableauID credentials, you can use them also to sign in to the Tableau website.

Operational Security

The Tableau Online infrastructure is hosted in a SAS-70 compliant data center that provides numerous controls and safeguards over customer data.

Your data is your own, even when stored in Tableau Online. Only your authorized users have access to data or workbooks stored in Tableau Online—Tableau employees and other Tableau customers do not.

Tableau does have access to and may monitor metrics that have to do with system utilization, account status, and performance.

User Security

The only people who have access to your site and content are the users that your site's administrators have explicitly added to your site. If a user is no longer authorized in your system, simply remove that person's user account to revoke access to Tableau Online and your content stored there.

Tableau Online enforces an idle session timeout of 2 hours. This means that users will need to re-authenticate after not using Tableau Online for a period of 2 hours. The idle session timeout value is a system setting that cannot be modified.

Tableau Account

Your Tableau Account provides secure, unified authentication to Tableau's website and services.

Some of the security features of Tableau Accounts are:

- User sign-in is secured by HTTPS.
- Accounts are locked for a period of time after repeated unsuccessful sign-in attempts.
- Accounts are validated by user email to prove identity.
- Passwords are stored using cryptographic protection. Tableau employees and contractor do not have access to plain-text passwords.

Tableau Online site administrators have the option of using your organization's identity provider for added control and convenience of users. See Authentication.

Roles and Permissions

A role is a set of permissions that is applied to a project, workbook, view, or data source to manage user interaction. A wide range of specific permissions is available for each asset: view, create, edit, modify, delete, and more.

Network Security

All communication between users and Tableau Online is encrypted using SSL for secure transmission of data. Tableau Online supports TLS 1.2 and higher. For more information about TLS support, see the Tableau Knowledge Base. A variety of encryption techniques ensure security from browser to server tier to repository and back. In addition, Tableau has many built-in security mechanisms to help prevent spoofing, hijacking, and SQL injection attacks, and it actively tests and responds to new threats with monthly updates.

Application Security

The Tableau Online environment is hosted in a multi-tenant configuration providing separation of users, data, and metadata across customers.

Data Security

Tableau Online eliminates the need to implement VPNs or tunnels into your corporate environment. Many data sources can be captured as extracts and then refreshed on a regular basis. To use automatic refreshes, you need to embed credentials in the connection information for the data source. For Google and Salesforce.com data sources, you can embed credentials in the form of OAuth 2.0 access tokens.

You can define additional security in your workbooks and data sources by adding user and data source filters. Tableau also provides a User Filter capability that can enable row-level data security using the user name, group, or full name of the current user. User filters allow you to set a filter on your data based on the identity of the person viewing the data. For example, the Western Sales Director could see results for sales in the West but not for other regions. You set user filters when you publish workbooks and data sources from Tableau Desktop.

Data Location

Tableau Online is structured so that customers control where their data is stored. New customers can select their preferred region – currently either North America, Europe, or Asia

Pacific – when setting up their Tableau Online site. If needed, existing customers can migrate their data to a different region through the site migration process. Please direct site migration requests and questions about the migration process to Tableau Technical Support.

There are five site locations for Tableau Online: US West, US East, EU West, AP Northeast, and AP Southeast. Customer data is hosted and backed up in the selected region on a regular basis. You can verify your site location by logging in to Tableau Online and noting the host name at the beginning of the URL. For example, URLs beginning with **10ay** indicate US West and URLs beginning with **dub01** or **eu-west-1a** indicate EU West. For the list of Tableau Online host names and site locations, see Keep Data Fresh.

See also

Keep Data Fresh

OAuth Connections

Permissions

How SAML Authentication Works

User Filtering (Tableau Help)

Monitor Site Activity

Find Admin Views

The Site Status page contains an embedded Tableau workbook with various admin views. These views help you to monitor different types of site activity.

- Allows you to access the Admin Insights project, which you can use to build custom admin views about your site.

- Shows you general site activity for Tableau Online.
- Shows you general Tableau Bridge activity.

Navigate to admin views

To see the Admin Insights project or admin views, click **Site Status**. Site administrators can see administrative views for their site.

Use Admin Insights to Create Custom Views

You can get more visibility into your Tableau Online deployment by using Admin Insights.

Admin Insights is a Tableau Online-only project that is pre-populated with carefully curated data sources and a pre-built workbook of your site's data. Using the resources available to you through the Admin Insights project, you can create custom views to help answer a range of common questions you might have about your site.

For example:

- What's my Tableau Online adoption rate in my organization?
- What are common trends around the site’s deployment?
- What content is popular?
- What are my users doing?
- How should licenses be allocated?

Connect to Admin Insights data

If you're a site admin or someone who has been granted access to the Admin Insights project, you can access the Admin Insights data sources directly from Tableau Online using Web Authoring or through Tableau Desktop.

From Tableau Online

1. Sign in to Tableau Online and navigate to the **Admin Insights** project.
2. Select **Create** > **Workbook** and select one of the data sources to get started.

From Tableau Desktop

1. Open Tableau Desktop, under Connect, select **Tableau Server**.

   > **Note:** If you're not already signed in to Tableau Online, in the Tableau Server Sign In dialog box, click the **Tableau Online** hyperlink. Enter your Tableau Online credentials and then click **Sign In**.

2. In the search box, type "TS." A list of Admin Insights data sources displays.
3. Select a data source and click the sheet tab to get started with your analysis.

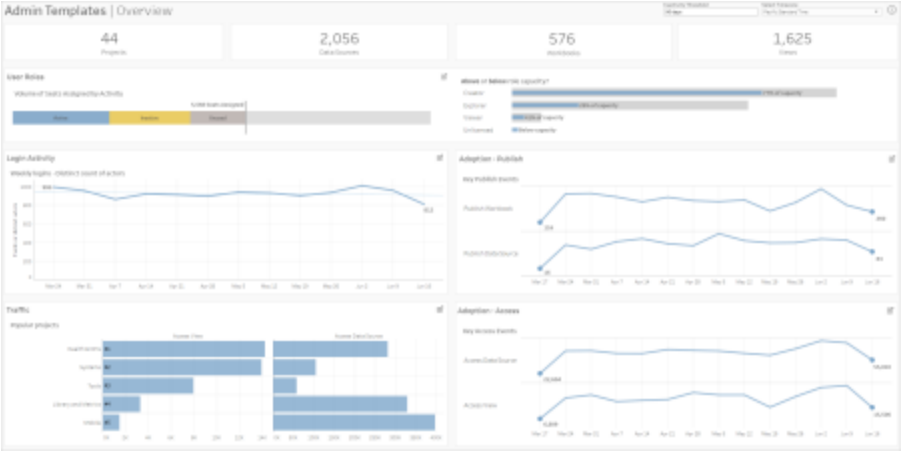
Start creating custom views

As you think about how you want to approach the analysis of your site and user metrics, consider some of the following questions that organizations commonly ask:

- What are the most popular views or data sources?
- Who are the most active users (i.e., who are the power users)?
- What are the most common tasks performed on the site?
- How many licenses are being used?
- Who hasn't signed in to the site in more than 90 days?

Explore the pre-built workbook

To help you answer the above questions (and more), go to the pre-built workbook, Admin Insights Starter, to see what kind of insights it can offer. The pre-built workbook is intended to serve as template on which to build more detailed dashboards and workbooks that go more in depth and address questions you have that are unique to your site deployment or organization.



User Role Drilldown

Focus: Site activity
Data source: TS Users

Use this dashboard to explore high-level site activity by user role.

This dashboard shows you just some of the ways you can analyze your site's log and activity metrics. Although Admin Insights captures 90 days worth of data, the "Last Publish" and "Last Access" dates can go back to as early as the date the site was created.

Do more with this dashboard:

- Change the "Inactivity threshold" (yellow by default) using the parameter control in the upper-right corner.
- Create URL actions that can email users based on their activity type. For example, email users when they haven't signed in to the site, accessed content, or published content in the last 90 days.
- Create additional views for this dashboard that compares the last 90 days (default) of activity (sign in, access, or publish) to the last 30 days, 60 days, and all days.

Login Activity Drilldown

Focus: Sign-in activity
Connects to: TS Events (primary), TS Users (secondary)

Use this dashboard to explore trends in sign-in activity.

Using the “Select Events or Distinct Actors” selector on the left, you can see your site’s weekly, daily, and hourly sign-in-related activity. Because there are two data sources behind this dashboard, you can see sign ins by all users, not just the users that have sign-in activity in the last 90 days.

Do more with this dashboard: Duplicate the dashboard and keep only the “Login user breakdown.” Then change the filter on the “Last Login Date” to null to see a list of users who have never signed in to the site. You can also email them depending on what kind of action you want users to take.

Traffic and Adoption Drilldown & Publish Event Drilldown

Focus: Content access and usage
Connects to: TS Events

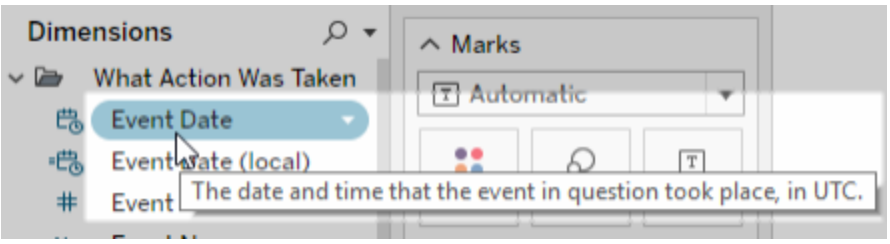
The information in the dashboards show you the following type of information:

- View access activity: When a view has been accessed and by whom.
- Data source access activity: When 1) a published data source has been connected to through Web Authoring or Tableau Desktop or 2) a user has viewed or published a workbook that uses the published data source.
- Workbook publish activity: When a workbook has been published and by whom.
- Data source publish activity: When a published data source has been published and by whom.

Do more with this dashboard: Using the “Project Name” selector in the upper-right corner, select a project on your site to filter on. **Note:** This filter affects all sheets in the Admin Insights Starter.

Explore the data sources

Alternatively, you can connect to the Admin Insights data directly. Explore the data on your own by hovering over each field (both dimensions and measures) to read a description of the data that's being captured.



TS Events

TS Events is an extract data source that functions as a master audit data source. It contains data about the various events happening on your site, including sign-ins, publishes, and accessed views

TS Users

TS Users is an extract data source that contains data about your users such as remaining licenses, site roles, and workbooks and views owned by a user.

Example custom views

You can follow the example procedures below to start creating your own custom views.

Example 1: What are the most popular views?

1. Connect to the TS Events data source using one of the procedures listed above in Connect to Admin Insights data.
2. From the Data pane, drag "Item Name" field to the Rows shelf and "Number of Events" field to the Columns shelf.
3. From the Data pane, drag "Field Type" to the Filters shelf, remove the selection next to the **All** check box, and select the **Data Source** check box.

Example 2: How many licenses are being used?

1. Connect to the TS Users data source using one of the procedures listed above in Connect to Admin Insights data.

2. From the Data pane, drag "Measure Names" to the Rows shelf and "Measure Values" to the Columns shelf.
3. Right-click the "Measure Names" field in the Rows shelf and select **Show Filter**.
4. Click the Measure Names filter drop-down menu, and select **Customize** > **Show Apply Button**.
5. In the filter, select "Total Allowed Licenses" and "Total Occupied Licenses" check boxes, and then click the **Apply** button.

Manage Admin Insights

Admin Insights is a Tableau Online-only project that is pre-populated with carefully curated data sources and a pre-built workbook of your site's data. Using the resources available to you through the Admin Insights project, you can create custom views to help answer a range of common questions you might have about your site.

Admin Insights versus Admin views

The Admin Insights project and the pre-built admin views (accessible from Tableau Online's Status page) are both valuable tools for monitoring the health and activity of your Tableau Online site. One tool does not replace the other.

To determine which tool to use, consider the following:

Admin Insights	**Admin Views**
• Site traffic, adoption, and reach • User roles and sign-in activity • Publishing-related activity	• General site activity, site performance, and disk space usage • Extract performance • Tableau Bridge traffic and extract-related activity • Troubleshooting

What's included with the Admin Insights project

The Admin Insights project is comprised of the following:

- **Admin Insights data sources**—TS Events and TS Users. You can use these data sources on which to create new data sources if you need to enrich the data with custom calculations or other data from your organization. For more information about the data sources, see Explore the data sources.
- **Admin Insights Starter**—a pre-built workbook that contains dashboards based on the Admin Insights data sources. These dashboards are intended to serve as templates on which to build more dashboards and views that can go more in depth and answer questions that are unique to your site's deployment or organization. For more information about the dashboards, see Explore the pre-built workbook.

About data freshness

The Admin Insights data sources contain up to 90 days' worth of data about your site on any given day. These data sources are updated once a day.

Because the Admin Insights Starter is based on these data sources, dashboards in the workbook are always showing up-to-date information. Periodically, Tableau updates the workbook itself. For more information, see Get updates to the Admin Insights Starter later in this topic.

Share access to Admin Insights

The Admin Insights content is initially visible to site admins only. Consider extending access to other site users in your organization to enable them to build, curate, and gain insight unique to their needs and workflows and ultimately help them manage their content more effectively. For more information about extending project permissions to non-site admins, see Permissions.

Move or rename the Admin Insights Starter

Tableau strongly recommends that you move the pre-built workbook, Admin Insights Starter, to a different project or simply rename it. Doing so helps ensure that your changes

are preserved and do not get overwritten by periodic updates Tableau makes to the pre-built workbook.

For more information, see the Get updates to the Admin Insights Starter below.

Get updates to the Admin Insights Starter

Periodically, Tableau makes updates to the Admin Insights Starter. The updates are automatically applied to the **Admin Insights Starter** workbook in the Admin Insights project. The updates are summarized in the Release Notes workbook that is also available in the Admin Insights project. Updates can include new fields or field descriptions, new views, updates to existing views, and more.

To make sure you get the latest updates to the Admin Insights Starter, and none of the changes you make to the workbook are overwritten, follow the steps described below.

Step 1: Prepare for updates

In order to preserve the changes you make to your workbook and avoid these changes from being overwritten by Tableau, Tableau recommends that you do one of the following tasks:

- Move the workbook to a different project
- Rename the workbook

To maintain both your changes and Tableau's latest workbook improvements, you'll need to repeat one of the above tasks after each update that Tableau makes.

Step 2: Check for updates

As part of its update process, Tableau recreates and then adds the Admin Insights Starter to your Admin Insights project.

If you've moved or renamed the workbook, a *new* "Admin Insights Starter" is added to your Admin Insights project. You can verify the new workbook by its modified date or by its publish date in revision history. The site administrator that owns your Admin Insights project is listed as the owner of the revision.

Step 3: Use Revision History to undo changes (optional)

If you were unable to move or rename the workbook before Tableau replaced the Admin Insights Starter, or you don't care for the update, you can use revision history to revert the changes. For more information about revision history, see Work with Content Revisions in the Tableau User Help.

Step 4: Manually make or move your changes to the latest Admin Insights Starter

To ensure that your changes are reflected in the same workbook as the changes made by Tableau, you'll need to follow the procedure below.

1. In the latest version of the Admin Insights Starter workbook, you do can do one or both of the following:
    - Manually make the changes that you made in your version of the workbook to the latest version of the workbook.
    - Export the sheet from your version of the workbook and save it to the latest version of workbook. For more information about exporting sheets, see Export and import sheets between workbooks in the Tableau User Help.
2. Move or rename the latest workbook again, so that any new updates Tableau makes to the Admin Insights Starter does not overwrite your changes.

Tips for managing Admin Insights

Although the Admin Insights project functions just like any other project on your site, Tableau recommends you consider the following while managing the project:

- **Move the Admin Insights Starter to a different location.** If you plan to make updates to Admin Insights Starter, Tableau recommends that you either 1) move the workbook to a different project or 2) rename the workbook. Doing one of these tasks ensures that your changes are preserved and do not get overwritten by periodic updates that Tableau automatically makes to the workbook. For more information, see Get updates to the Admin Insights Starter.
- **Use caution when moving data sources.** If you move any of the Admin Insights data sources outside of the Admin Insights project, Tableau will be unable to refresh

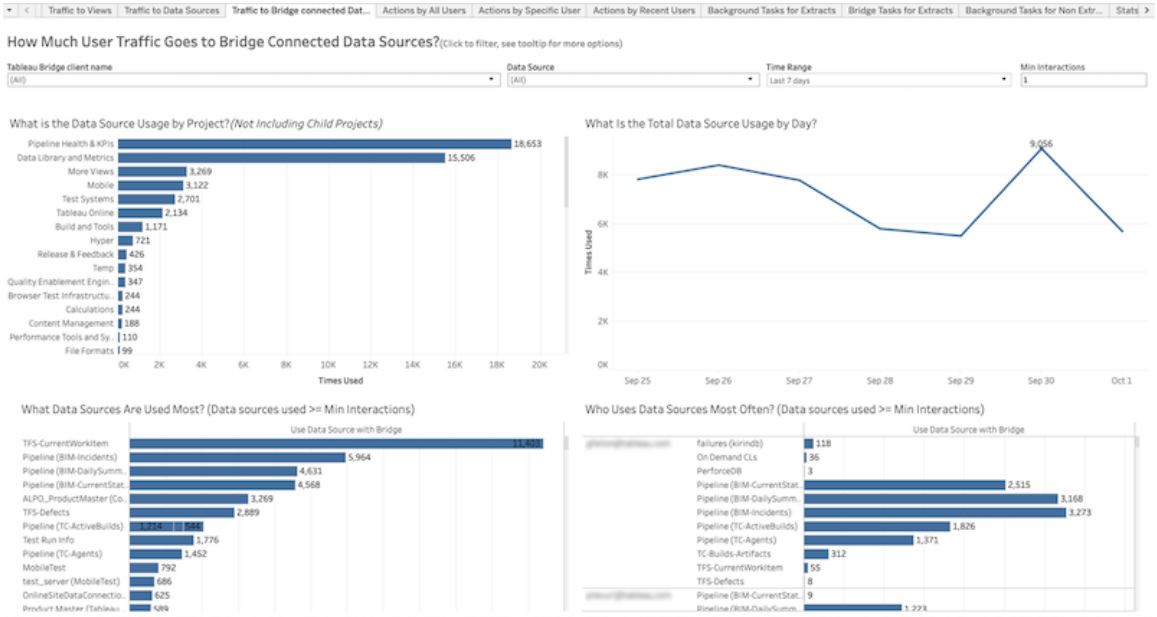
them. The data sources are also periodically updated by Tableau. To ensure the data sources are refreshed daily and your changes are preserved, keep the TS Events and TS Users data sources in the Admin Insights project.

- **Designate other users, including users who are not site admins, to access and create content for the project.** For example, allow a user to create new views based on the TS Events and TS Users data sources. For more information about changing project permissions, see Set permissions.

Traffic to Bridge Connected Data Sources

The **Traffic to Bridge Connected Data Sources** admin view gives the site admin the ability to see usage of data sources with live connections. This view can help you determine which data sources are most heavily used and those that are used less often. You can filter the information you see by selecting the Bridge client name, data source, and the time range.

This view gives you a snapshot of Tableau Online activity over the past 30 days.



The top of the view shows you how data sources are being used over the **Time Range** you specify (the default is the last 7 days):

- **What is the Data Source Usage by Project**—this shows total data source usage by project, based on the filters you set. Hover over a mark to see the number of times a data source was used. Select the mark to update the other sections of the view based on your selection.
- **What is the Total Data Source Usage by Day**—this shows total data source usage by day, based on the filters you set. Hover over a point on the line to see the count. Select the point to update the other sections of the view based on your selection.

Two bar graphs at the bottom of the view show results that are filtered by **Min Interactions**. These show you which data sources are most used, and who uses data sources most often. Only those data sources and users with interaction counts greater than or equal to the minimum interactions value are displayed:

- **What Data Sources are Used Most**—this is a list of the most used data sources. Like the other sections of the view, the information is limited by filters and any selection you make.
- **Who Uses Data Sources Most Often**—this shows the users who most often use the data sources. This is impacted by filters and any selection you make.

Background Tasks for Extracts

The Background Tasks for Extracts view displays extract-specific tasks that run on the server. This view gives you a snapshot of Tableau Online activity over the past 30 days.

Understand this view

To better understand this pre-built admin view, make note of the following:

- The table, "What Extracts Ran on this Server," lists the extracts that ran in the time period specified in **Timeline**.
- You can click **Success** or **Error** to filter the table based on status.
- You can also click a specific task to update the "How Much Time did Extracts Take" graph for the selected task.
- The table, "How Many Extracts Succeeded or Failed," updates for the status (success or failure) of the task, but the count of extracts that succeeded or failed does not change.

Status

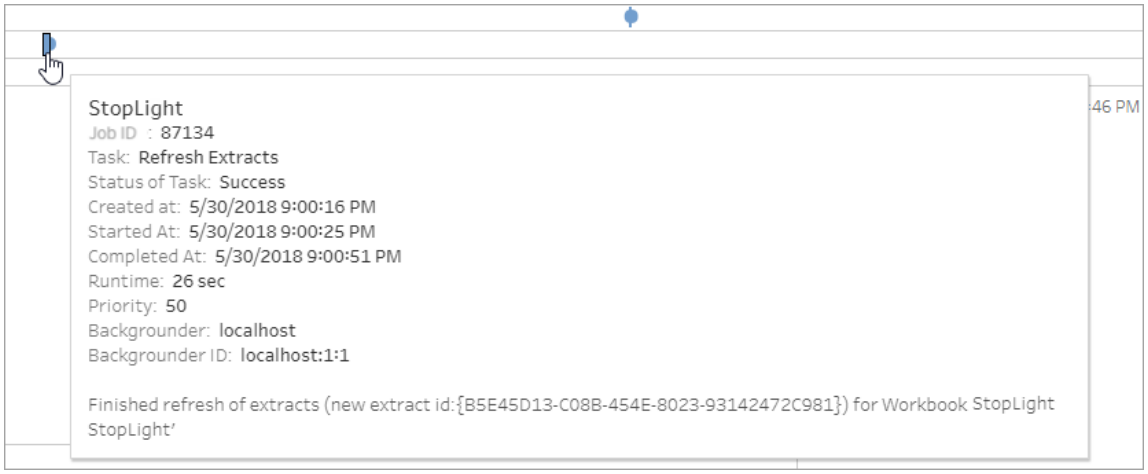
Tasks can have a status of success or error.

Icon	Description
*	**Error**—Server was unable to complete the task.

Icon	Description
	Success—Server completed the task.

See details about a task

For details on about the task, use your mouse to hover over the success or error icon.



Errors in task details

If a refresh task reaches the timeout limit, you might see one of the following errors in the task details:

- *The query time resource limit (7200 seconds) was exceeded.*
- *com.tableau.nativeapi.dll.TableauCancelException: Operation cancelled.*
- *The query time resource limit (8100 seconds) was exceeded.*

For more information about the timeout limit for refresh tasks and suggestions for resolving these errors, see Time limit for extract refreshes.

Bridge Extracts

The **Bridge Extracts** admin view captures the last 30-days' worth of refresh activity by Tableau Bridge, using Bridge (legacy) schedules.

This pre-built admin view can help answer the following questions the site admin might have about refreshes performed by one or all of the Bridge clients registered to the site:

- **Error rate:** How often are refreshes succeeding and failing? If refreshes are failing, why?
- **Requests made:** How many refreshes are scheduled?
- **Time-elapsed:** How long are refreshes taking?
- **Saturation:** How busy is each client?

You can filter the view by the client name, when the extract data source was created, the extract data source name, and the duration of the refresh.

Notes about this view

- If you don't see any data in the admin view, verify that you have a Bridge client associated with your site. Alternatively, change the value for the "Extract created" filter in the upper-right corner of the view.
- In the "Common extract refresh failures" table, hover over each bar to see the error and the error details. If there's more than one data source associated with the error, an asterisk (*) shows instead.

Background Tasks for Non Extracts

The Background Tasks for Non Extracts view displays tasks that the server runs that are not related to standard Online extract refreshes. For example, Bridge Refresh jobs, edited OAuth connections, subscription notifications, and so on. This view gives you a snapshot of Tableau Online activity over the past 30 days.

A table lists the tasks that ran in the time range specified. Click **Success** or **Error** to filter the table based on status. Select a specific task in the **How Many Tasks Succeeded or Failed on this Site** table to update the **What Background Tasks Ran on this Site** graph for the selected task.

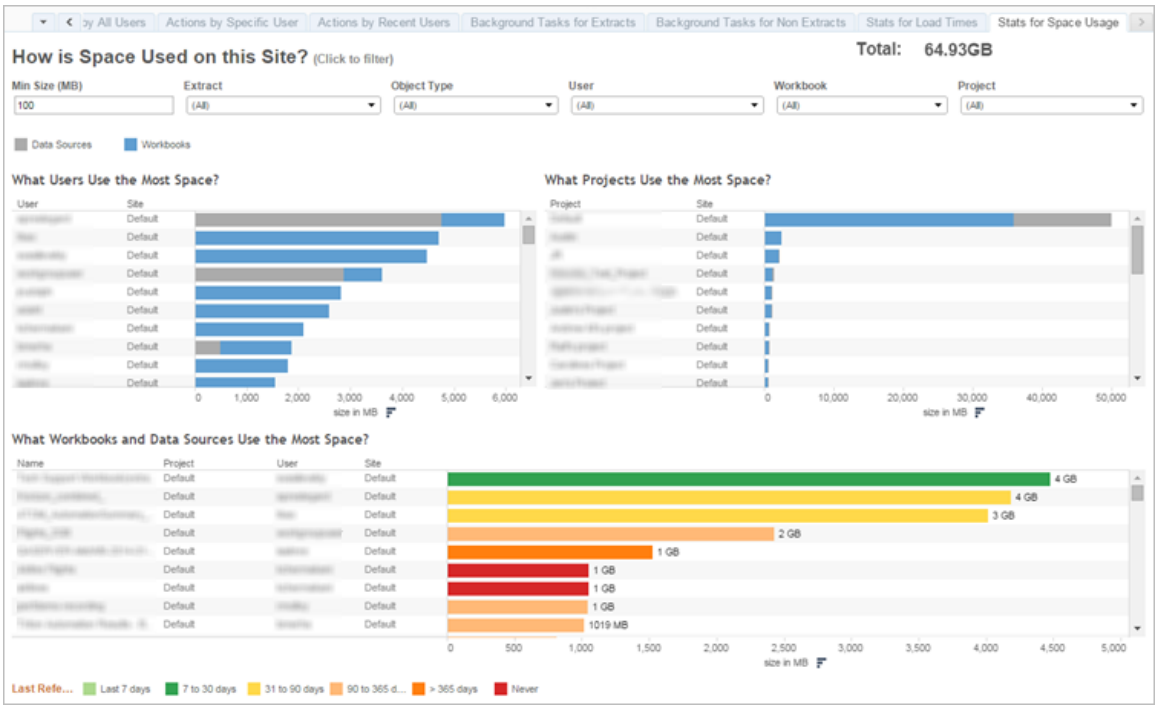
Tasks can have a status of success or error. For details about the task, use your mouse to hover over the success or error icon.

Icon	Description
	Error—Server was unable to complete the task.
	Success—Server completed the task.

Details that you can see about the task are its ID, status, priority, when it was created, started and completed. You can also see its runtime: the total run time of the background job, which includes the run time of the job plus background job overhead such as initialization and cleanup. You can also see which backgrounder the job is running on.

Stats for Space Usage

The Stats for Space Usage view can help you identify which workbooks and data sources are taking up the most disk space on the server. Disk space usage is displayed by user, project, and by the size of the flow output, workbook or data source and is rounded down to the nearest number:



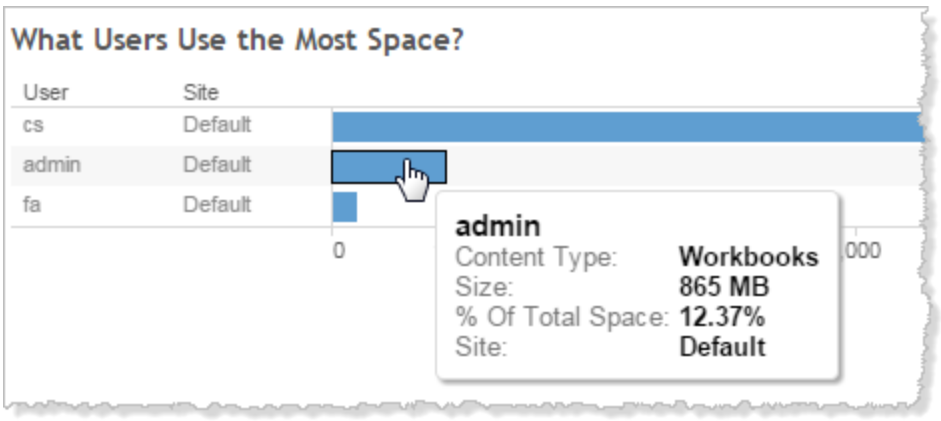
Use the **Min Size** filter to control which data sources and workbooks are displayed, based on the amount of space they take up.

Three bar graphs give you information about space usage on your Tableau Online:

- **What Users Use the Most Space**—This shows the users who own data sources and workbooks that are taking up the most space. Click a user name to filter the next two graphs for that user. Click the data source bar or the workbook bar for a user to filter the next two graphs for that type of object for that user. Click the selected user or bar to clear the selection.
- **What Projects Use the Most Space**—This shows the projects with the data sources and workbooks that are using the most space. If a user or object type is selected in the What Users Use the Most Space graph, this displays information specific to the selection.
- **What Workbooks, Flows, and Data Sources Use the Most Space**—This shows

the workbooks and data sources that are taking the most space. The bars are color-coded based on the length of time since the last refresh.

Move your cursor over any bar to display usage details:



Click on a bar to select it and update the other areas of the view based on that selection.

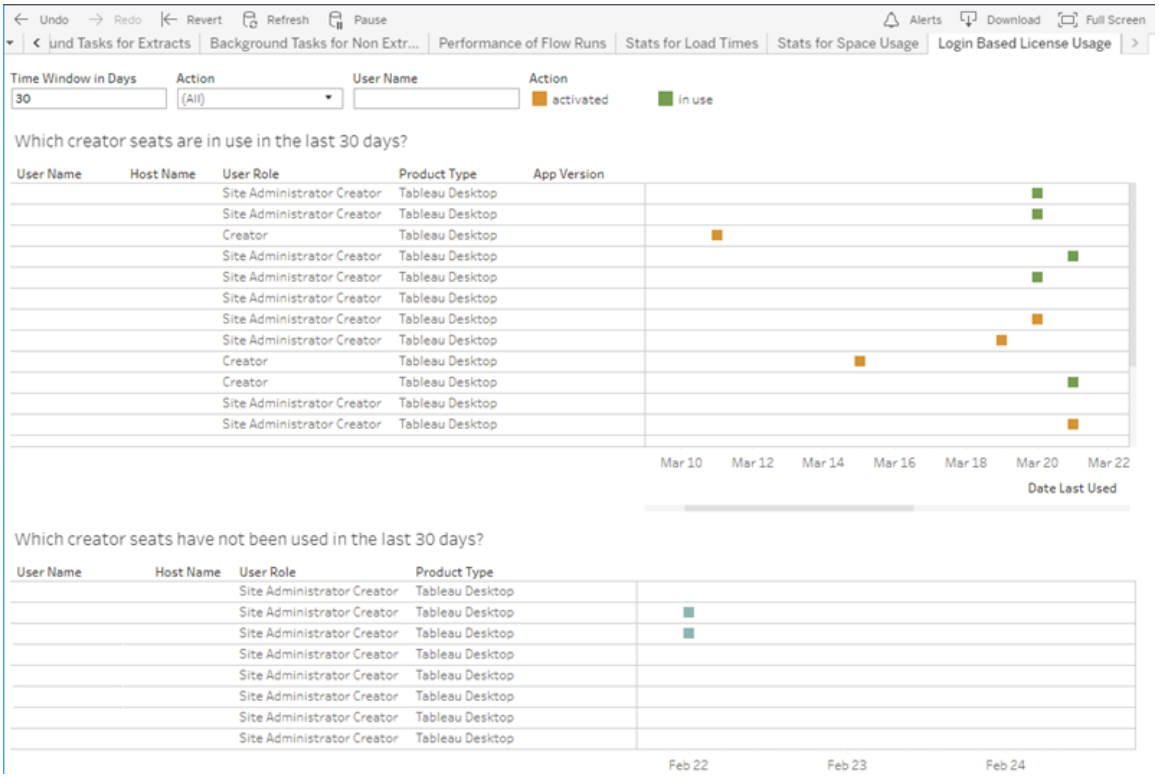
Login-based License Usage

Note: This view is only available to site administrators and server administrators.

The Login-based License Usage view lets server administrators view login-based license activation usage for Tableau Online or Tableau Server. The Login-based License Usage view can help you manage licenses efficiently and determine if you need more or fewer licenses. This view can help you answer the following questions:

- Who is using a Tableau Desktop or Tableau Prep Builder license in my enterprise?
- Has a Creator role been shared or transferred?
- Has any activation activity occurred on a computer where it should not be?
- On which host is the actiation being used?

- Which role is assigned to the user?
- On which Tableau product is the license in use?
- On which Tableau version is the license in use?
- Did the Creator role activate through Tableau Desktop or Tableau Prep Builder?
- Has the Creator seat been activated?
- How many Creator seats are in use?
- How many Creator seats are not in use?
- When was a Creator seat was last used?



In addition to using the login-based license usage administrative view, you can also access login-based license usage data (`identity_ based_activation_reporting`, `identity_based_activation_user_role_change`, and `identity_based_`

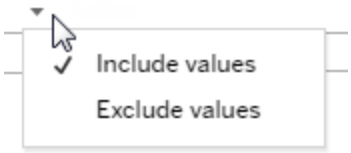
`activation_admin_view`) in the "workgroup" PostgresSQL database of the Tableau Server repository. Before you can access this data, you must enable access to the Tableau Server repository.

Filters

On the report screen, you can change the time window to show when seats were last used, filter on actions, filter on user name, and sort by columns.

- **Time Window in Days**. Enter the number of days for which to view login-based license management activated client usage data. You can view data for the past 30 days up to a maximum of 183 days.
- **(All)**. Apply all filters to the view.
- **Activated**. Show Creator users that have activated using login-based license management.
- **in use**. Show Creator users who activated using login-based license management whose seats are in use.
- **last used**. Show when the login-based license management client was last used.
- **unassigned**. Show which login-based license management activated Creator seats are currently unassigned.
- **user name**. Show login-based license management activations in use by the specified user.

When you hover over the filter card, a drop-down icon appears. Click the icon to specify whether the view should include data that matches the filter (the default) or exclude data that matches the filter:



Which creator seats are in use in the last <nn> days?

This area of the dashboard shows a list of three types licenses (activated, in use, and unassigned). Hovering over an activated, in use, or unassigned mark gives you information including the registered user of the copy of Tableau. Click a column head to sort the list.

Which creator seats have not been used in the last <nn> days

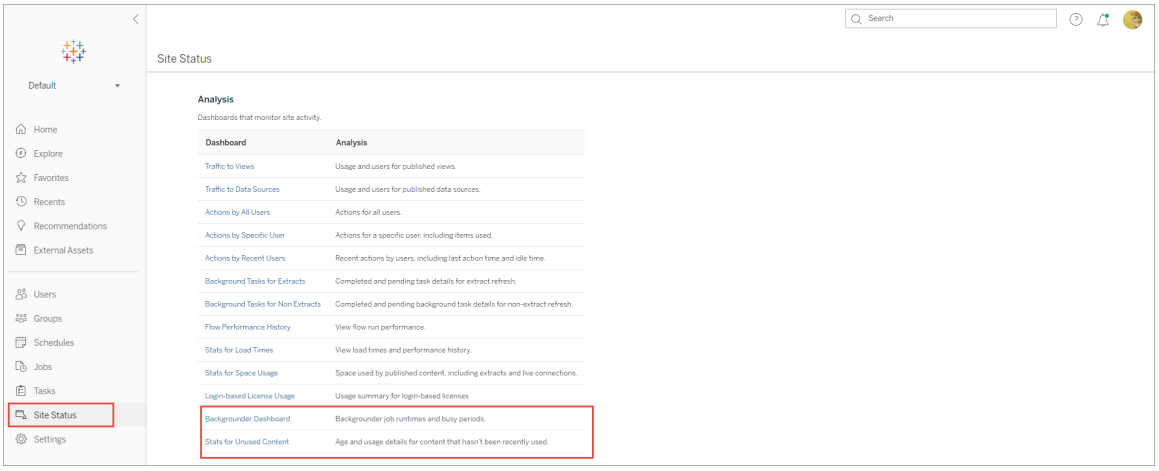
This area of the dashboard shows a list of licenses that have not been used during the specified time period. A timeline shows the last use date. Hovering over a last use mark gives you information including the registered user of the copy of Tableau.

Stale Content

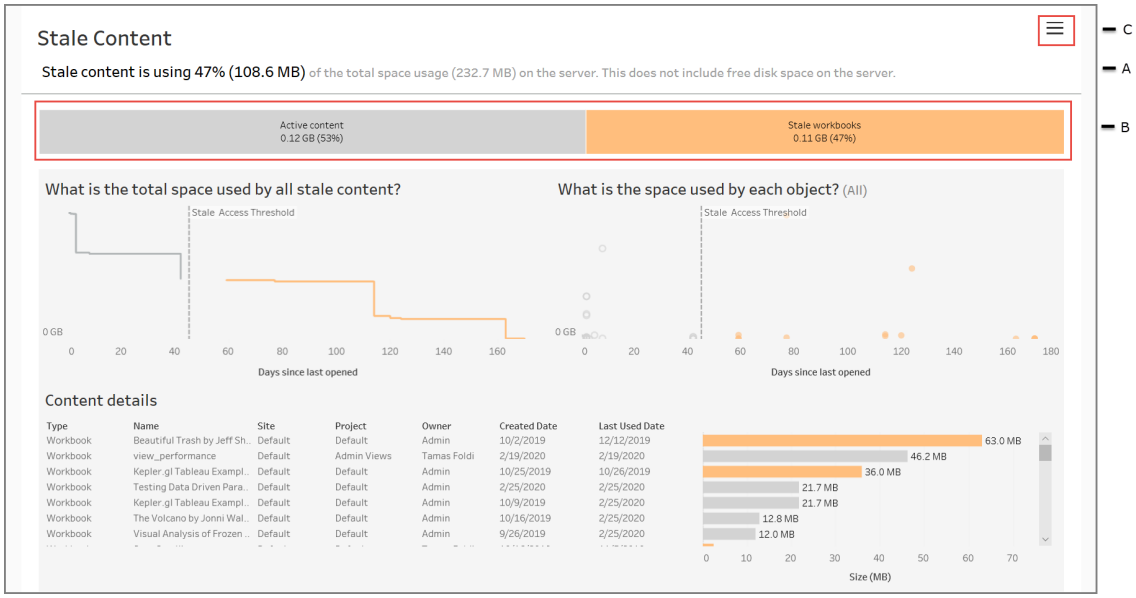
The Stale Content view can be used to identify content that hasn't been used or accessed in the specified time period (displayed as Stale Access Threshold). You can set that time period in days. The minimum value for the time period is 1 day and the maximum is 120 days.

This view also provides the information about the disk space used by stale and active content.

In previous versions of Tableau Server, admin views were all displayed in the same workbook, in separate tabs. However, the two new admin views are displayed as separate workbooks and not part of the existing admin view workbook. You can navigate to the new admin views from the Server or Site Status page:



Summary and Filters



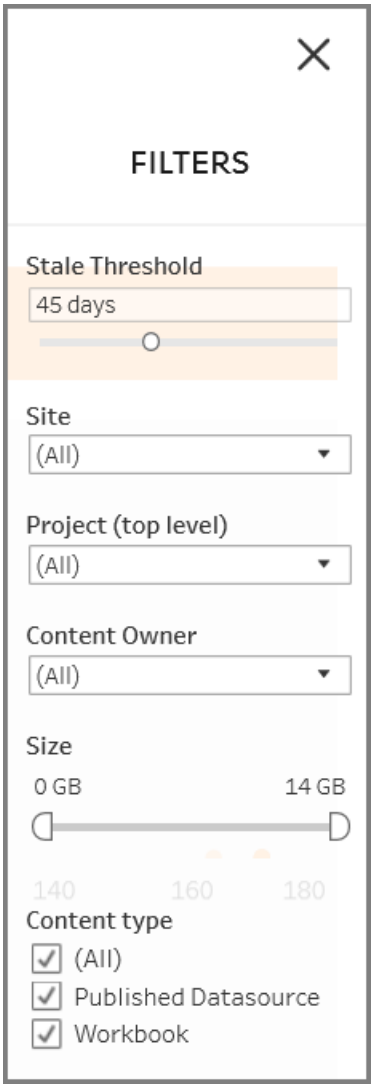
A - At the top of the view, you will see a statement that summarizes the amount of space that is used by stale content compared to the total space used. The total space used is defined as the sum total of disk space used by active and stale content.

B - This summary is followed by a chart that gives you a further breakdown of the types of stale content and content that is considered active - meaning content that has been accessed in the time period below the stale threshold. You can click on the bar chart and apply it to filter the data displayed in the view.

C - You can see and apply additional filter options by clicking the filter icon. This filter pane includes:

- Stale Threshold
- Site
- Project
- Content Owner
- Size

- Content type



These filters are applied to the entire view.

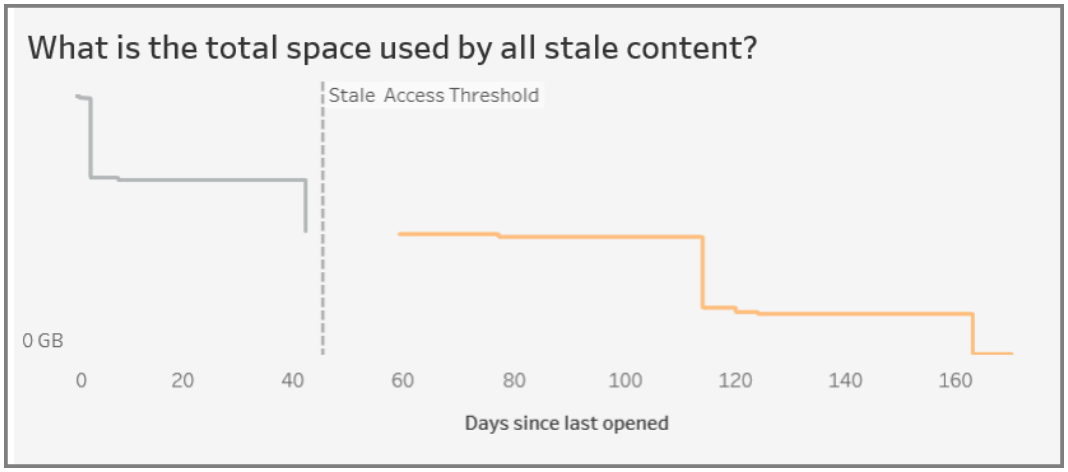
Details

The Stale Content view has three sections as described below that provides details:

1. **The top left section** shows you the total space used for the selected content. The x-axis shows the number of days that have passed since the content was last opened,

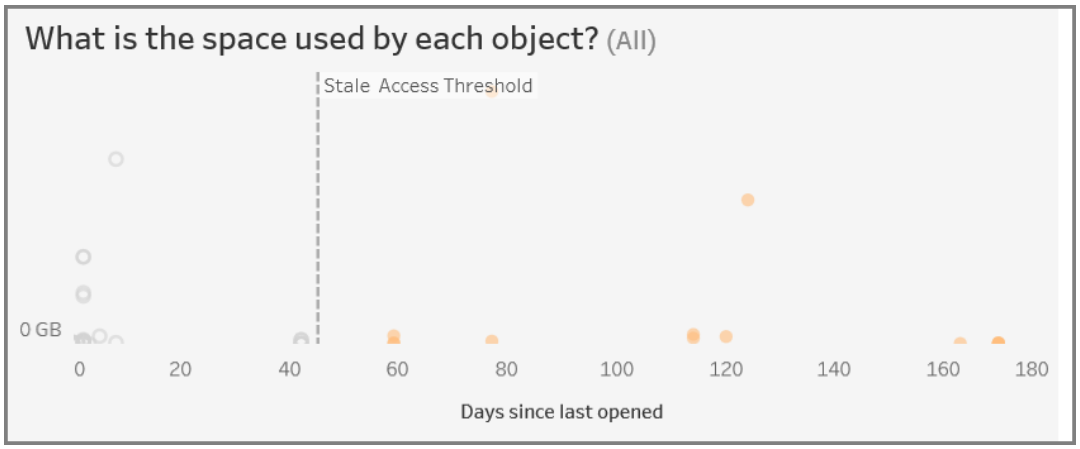
and the y-axis shows you the size. The graph also shows the stale threshold.

Set your desired staleness threshold, then use this view to identify content that is the most stale. Click the **Stale Workbooks** or **Stale Datasources** in the bar at the top to filter to the content of interest. Select the marks to the right of the **Stale Access Threshold** to see more details about content. The details are displayed in the bottom left section.



2. **The top right section** shows you the amount of space that is used by each selected content. For example, if you select Stale workbooks, the space used by each stale workbook is displayed. You can use this section to find out which content is the most stale, or is taking the most space.

   This section helps you identify content that hasn't been used in a long time. Click the **Stale Workbooks** or **Stale Data Sources** on the bar at the top. Select the oldest set of unused content (marks further to the right) to see more details. The details are displayed in the bottom left section. This can be your next set of content to consider for archiving or deleting as these are contents that nobody has been using, regardless of size.

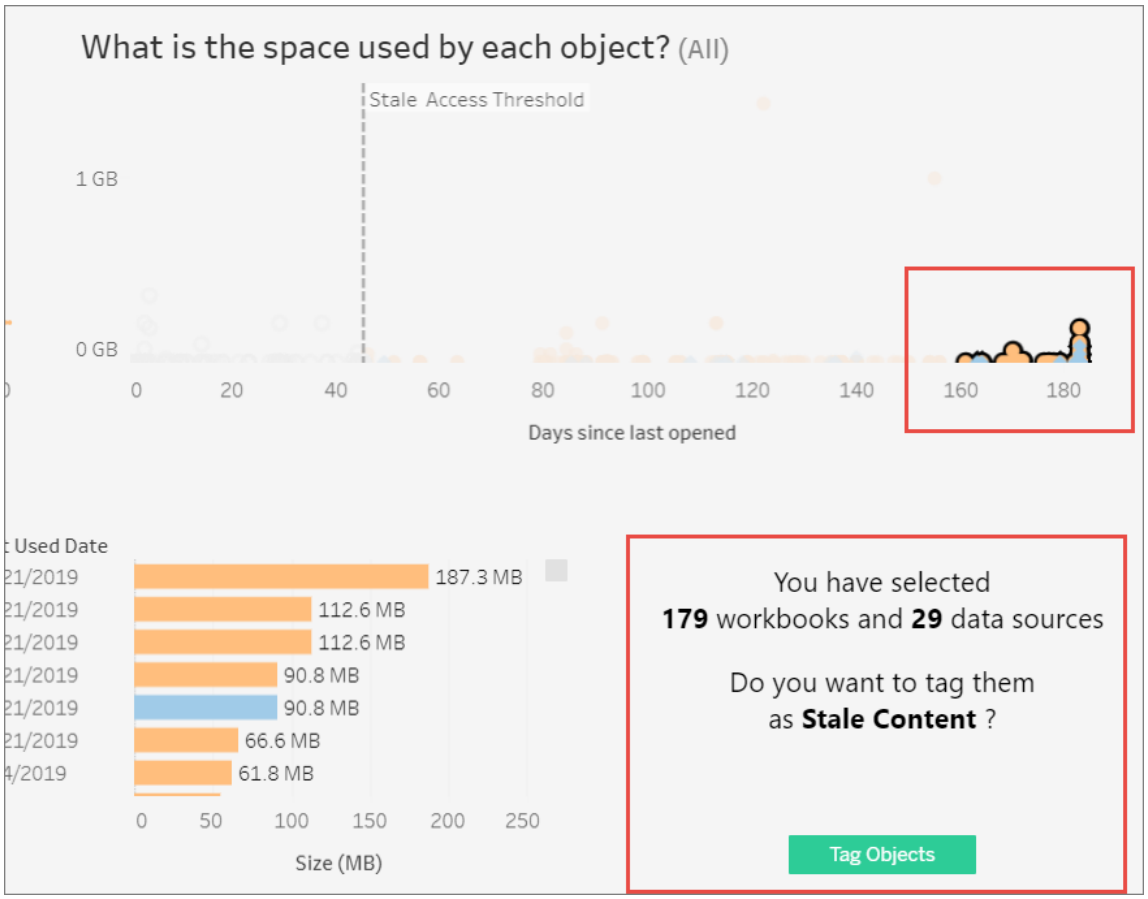


3. **The section at the bottom** shows detailed information about the selected content as shown below:

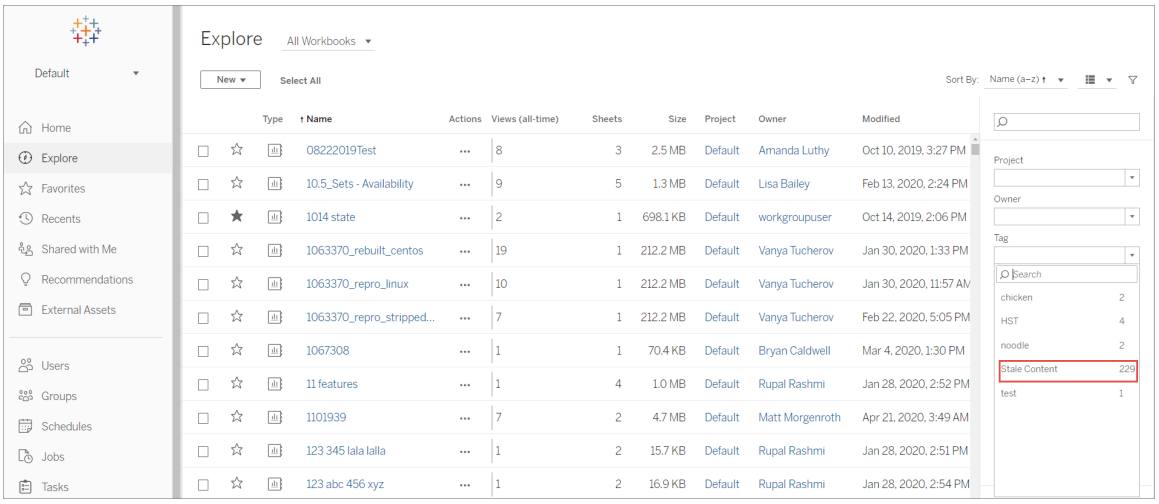
Archive or Delete Stale Content

Starting in 2020.3, the Stale Content admin view includes a feature that allows you to select and tag content as stale. You can select content from either the section at the bottom or the top right section. When you make a selection, you will see the number of objects and the type of content that are selected, as seen in the screen shot below. Click the **Tag Objects** button to tag the selected content.

In the screen shot shown below, content that has not been opened in the last 160 days or more are selected to be tagged as stale content.

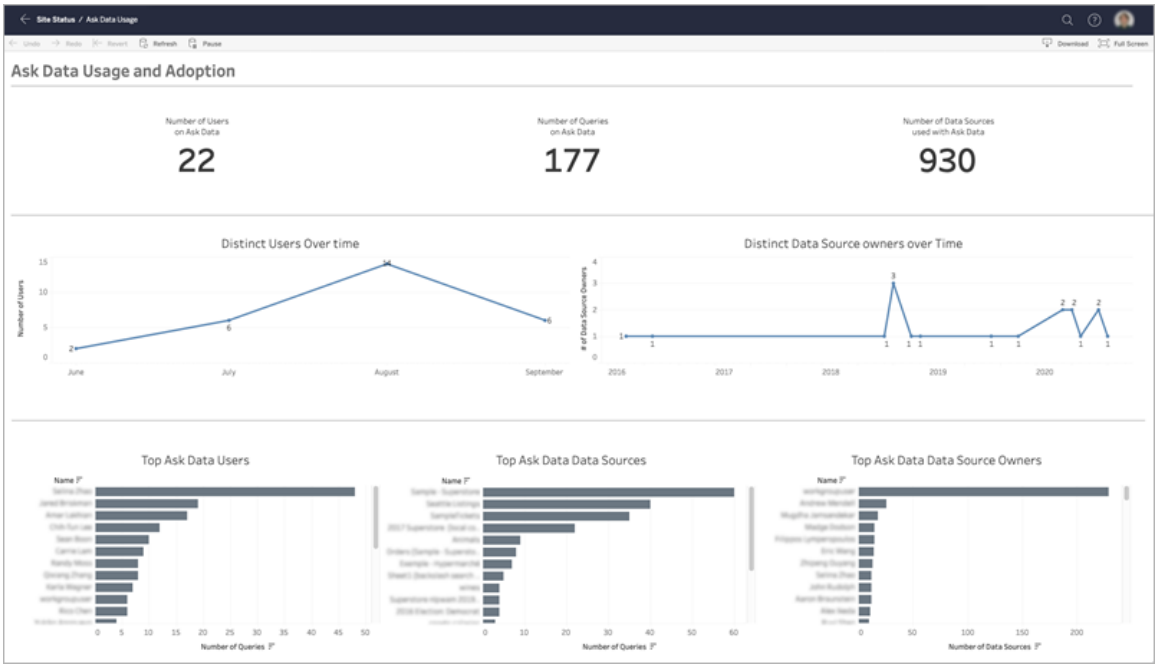


To find all the tagged content, on Tableau Server web interface, navigate to **Explore**. Select the **Stale Content** filter to see all the content that have the stale content tag. You can now select the content and either move it to a project that you use for archiving or delete the content.



Ask Data Usage

The Ask Data Usage view is a pre-built dashboard that allows site or server admins to see and understand the usage patterns and value of Ask Data for a site. Admins can see the growth of engagement with Ask Data and monitor the results of internal training or roll-outs. The dashboard highlights the top Ask Data users, data sources, and data source owners, along with some headline value metrics.



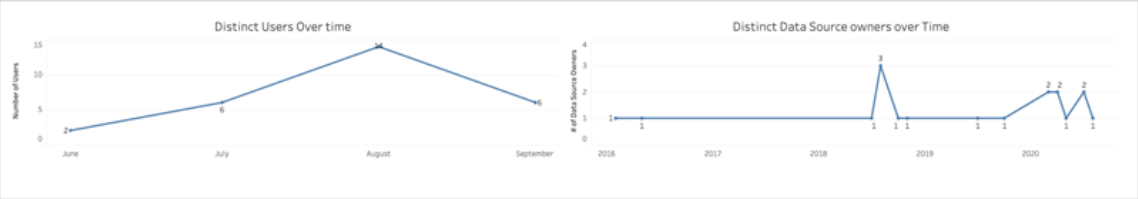
To enable Ask Data, see Enable Ask Data for Sites and Data Sources.

Explore the dashboard

The Ask Data Usage view provides information about Ask Data across the entire site. You can use the following metrics to understand user engagement and help drive self-service analytics adoption in your organization.

At the top of the dashboard, three headline metrics provide an overview of Ask Data usage on the site.

- **Number of Users on Ask Data** - This shows the total number of Ask Data users on the site.
- **Number of Queries on Ask Data** - This shows the total number of Ask Data queries issued on the site.
- **Number of Data Sources Used with Ask Data** - This shows the total number of data sources used with Ask Data.



In the middle of the dashboard, two line charts show you how Ask Data is used over time.

- **Distinct Users Over Time** - This shows the distinct number of Ask Data users over time.
- **Distinct Data Source Owners Over Time** - This shows the distinct number of data source owners over time.

At the bottom of the dashboard, three bar charts list the top Ask Data users, data sources, and data source owners.

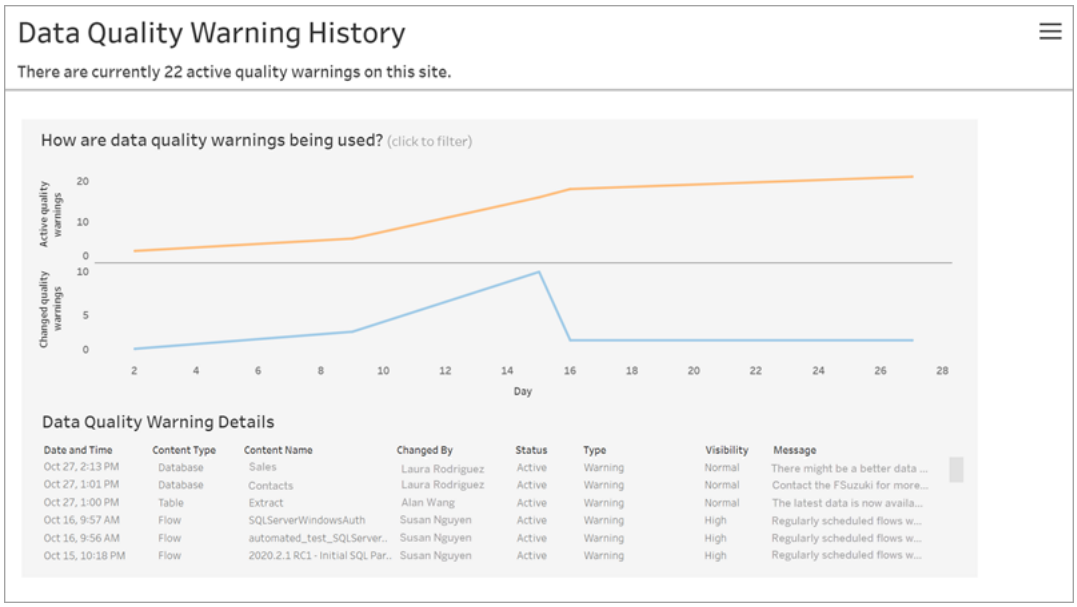
- **Top Ask Data Users** - This lists the top Ask Data users and the total number of queries issued by each user.
- **Top Ask Data Data Sources** - This lists the top Ask Data data sources and the total number of queries issued for each data source.
- **Top Ask Data Data Source Owners** - This lists the top Ask Data data source owners and the total number of data sources owned by each user.

Data Quality Warning History

When Tableau Catalog is enabled in your environment, site administrators can see how data quality warnings are being used on the site using the pre-built admin view, Data Quality Warning History.

For more information about Tableau Catalog, part of the Data Management Add-on, see "About Tableau Catalog" in the Tableau Server or Tableau Online Help.

From the Site Status page, select the Data Quality Warning History dashboard:



The dashboard shows how many data quality warnings are active over a period of time. It also shows how many warnings have been changed (created, updated, and deleted) over that same time period.

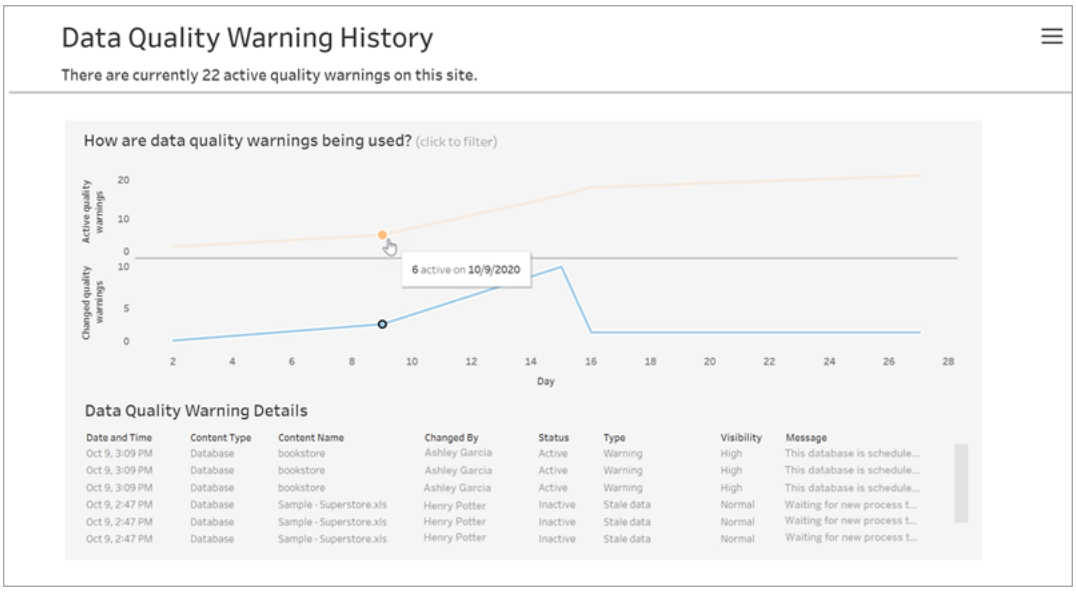
See warning details

Under the line charts are the details about the data quality warnings, including:

- **Date and Time** - When the warning was created or last changed.
- **Content Type** - The type of asset on which the warning is set. For example, database, table, data source, or flow.
- **Content Name** - Name of the asset on which the warning is set.
- **Changed By** - Name of the person who created or last changed the warning.
- **Status** - If the warning is active or inactive.
- **Type** - Warning type can be Stale data, Warning, Deprecated, Sensitive data, or Under maintenance.
- **Visibility** - The warning can be configured to have normal (the default) or high visibility.
- **Message** - The message the warning creator wrote to display to users when they see the details of the warning.

Filter warning history

When you review data quality warning history, you can click a mark on the view to filter the details shown below the view.



The numbers on the Day axis represent the date within the time range. For example, if today is November 18, and you filter for the last 7 days, the Day axis shows 12-18.

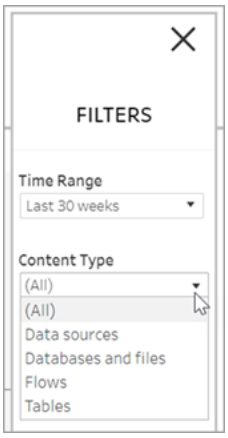
More filters are available when you click the filter icon in the upper right corner: filter by time range and by content type.

Filter by time range

The maximum time range you can configure is the past 30 days.

Filter by content type

You can see all the data quality warnings on your site, or you can filter to see warnings for specific types of assets, like data source or table:



Who can do this

To set a data quality warning, you must be a server or site administrator.

Manage Data

After you configure your Tableau Online site with your logo and authentication options, you can start organizing the *content* framework for the way you and your users want to share Tableau data. To populate your Tableau Online site with content (data, reports, and so on), you or the data professionals in your organization *publish* that content. Depending on the type of license, users can connect to and publish content from Tableau Desktop, or from the Tableau Online web editing environment.

Types of content you can publish include standalone data sources that users can share among multiple workbooks, and workbooks that contain *embedded* data connections with visualizations based on that data. Each of these types has pros and cons, which are explained in the Publishing resources below.

Determine your organization's publishing needs

As the site administrator, before you open the site for publishing, evaluate how much preparation you think is appropriate for your level of Tableau Online use:

- If you don't have strict requirements around data access—for example, you have just a few users who all share the same data—you might dive in to the Publishing resources, starting with publishing steps, and adjust your publishing and content management practices as you go.
- If people use Tableau across distinct areas of your organization, or if you have a large Tableau user population, we recommend using the Publishing resources to create a test environment, and working out access and discoverability wrinkles. You can still adjust practices as you go, but it's not as easy to do this after you open up the site to a large group of active users.

Examples of additional factors you might need to consider are authorization (permissions for who gets access to what), data security and compliance requirements, minimizing users' need to contact you for help if they can't figure out where to publish or find their data, and so on. For more information, see Configure Projects, Groups, and Permissions for Managed Self-Service.

Summary of the publishing process

In Tableau Desktop, you open the workbook or data connection you want to upload to Tableau Online, and go to the Server menu to publish it.

During the publishing steps, you sign in to Tableau Online, entering the Tableau Online address (**https://online.tableau.com**) and your credentials.

The publishing steps require you to make decisions related to how you and others in your organization will access your data source or workbook. In some cases, this can involve a few layers of complexity, and it helps for you to understand how these layers fit together. Use the topics in the following lists to determine the level of complexity you need and to help establish appropriate publishing guidelines.

Publishing resources

These resources are part of the Tableau User Help and open in a new browser window.

- **Publishing concepts**

  Prepare for Publishing a Workbook

  Publish Data Sources and Workbooks

  Best Practices for Published Data Sources

- **Basic publishing steps for informal collaboration**

  Simple Steps to Share a Workbook

- **Comprehensive data source planning and publishing steps for meeting**

compliance and security standards, creating a data "source of truth," and using best practices

Plan the Data Source

Publish a Data Source

Publish a Workbook

Tableau Online storage limit

A site has a 100 GB storage limit for workbooks and extracts. The storage limit is not configurable. For additional technical specifications for Tableau Online, see Technical Specifications on the Tableau website.

Tableau Online data connection support

You can publish data sources and workbooks using direct (live) or extract connections to your underlying database. You can also publish multi-connection data sources that use either or both types of connection. The database connections defined in the workbook or data source determines how you can publish and keep the data fresh on Tableau Online.

If you're familiar with connection types and want a more specific list of data types and their supported connections, see Keep Data Fresh. Otherwise, read on.

Connector types that support direct (live) connections to Tableau Online

When you use live connections, published workbooks and data sources always reflect what is current in the underlying database.

Tableau Online supports live connections to:

- Google BigQuery, Amazon Redshift data, or SQL-based data hosted on a cloud platform; for example, Amazon RDS, Microsoft SQL Azure, or similar service.

  For direct connections to cloud data, you usually need to add Tableau Online to your data provider's authorized list.

- On-premises relational data, such as SQL Server or Oracle, when you use Tableau Bridge to maintain the connection.

  To learn more about Tableau Bridge, see Use Tableau Bridge to Keep Data Fresh.

You can embed database credentials in live connections so all users who have access to the published content can see the underlying data. Or you can require users to provide their own database credentials. In that case, even if they can open the published content on the server, they need to sign in to the underlying database to see it.

Connector types that support extract connections

For any type of data that Tableau can connect to, users can publish extracts with embedded database credentials, and set up recurring refresh schedules.

You can create an extract in Tableau Desktop, before you initiate the publishing process, to have finer control over the connection definition. You might do this if you want to publish a sampling of the data, or to set up the ability to refresh incrementally. Otherwise, Tableau creates the extract during publishing, and you can do full refreshes only.

After Tableau completes the publishing step, it guides you through the steps for setting up a schedule for refreshing your data. If your Tableau data source or workbook connects to underlying data in the cloud, refreshes are run from Tableau Online directly. If the underlying data is on your local network, you use Tableau Bridge.

To learn more about Tableau Bridge, see Use Tableau Bridge to Keep Data Fresh.

Creators: Connect to data on the web

Before you can create a new workbook and build a view on the web to analyze your data on the web, you need to connect to your data. Tableau supports connecting to data sources on the web published through Tableau Desktop, or, connecting to data directly through Tableau Online, Tableau Server, or Tableau Public.

Starting in 2019.3, Tableau Catalog is available in the Data Management Add-on to Tableau Server and Tableau Online. When Tableau Catalog is enabled in your environment, in addition to navigating and connecting to data from Explore, you can navigate and connect to more kinds of data, like databases and tables, from Tableau Catalog. For more information about Tableau Catalog, see "About Tableau Catalog" in the Tableau Server or Tableau Online Help.

Note: Data connections created in Tableau Server or Tableau Online are **live connections** only. If you need to use an extract for web authoring, you can publish your data source through Tableau Desktop. To publish through Tableau Desktop, see Publish Data Sources and Workbooks. However, data connections in Tableau Public are extracts only, and there is no way to publish a data source.

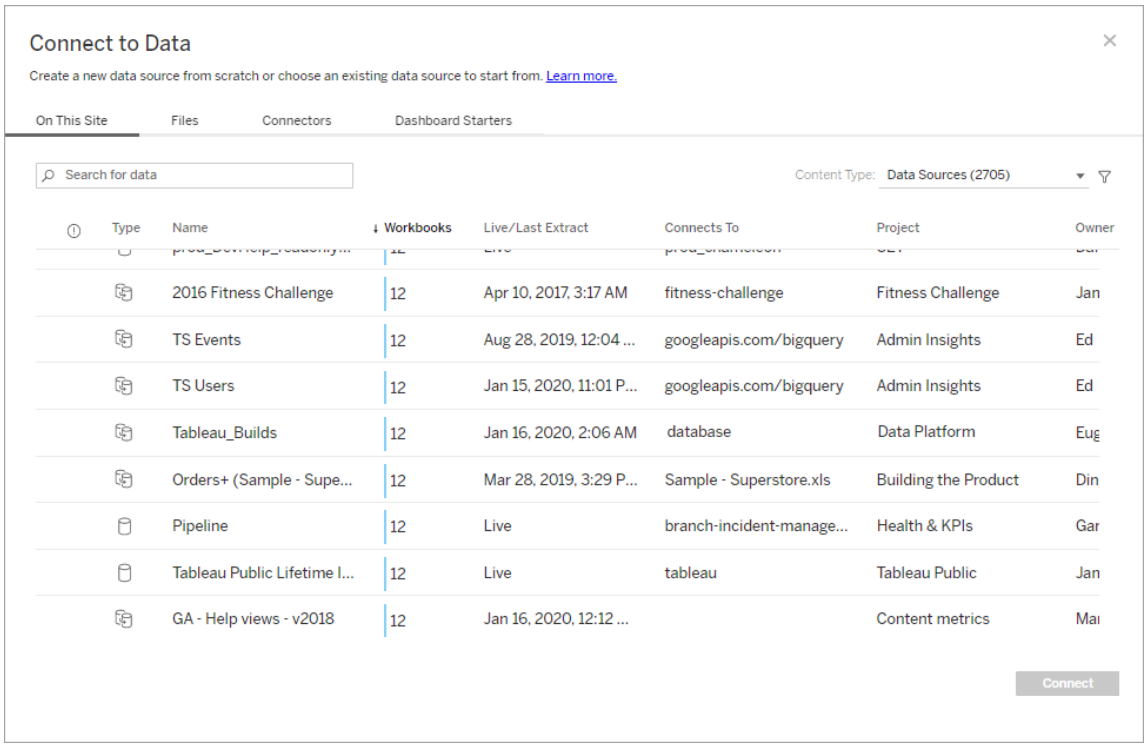
Open the Connect to Data page

On the web, you use the Connect to Data page to access data to connect to. After you sign in to Tableau Server or Tableau Online, you can open this page two ways:

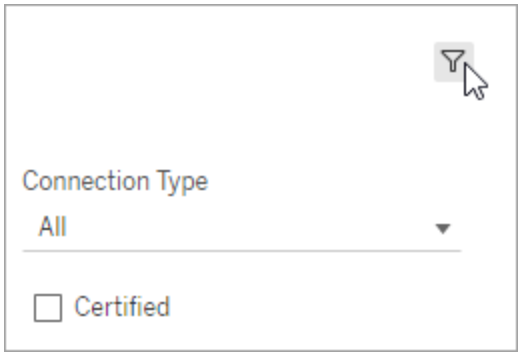
- **Home** > **New** > **Workbook**
- **Explore** > **New** > **Workbook**

If you're on Tableau Public, you can open this page from your author profile:

- **My Profile** > **Create a Viz**

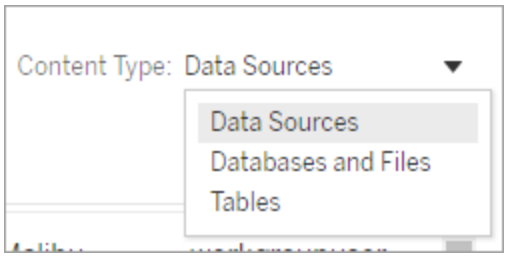


Select the filter icon to filter by Connection Type and by Certified.

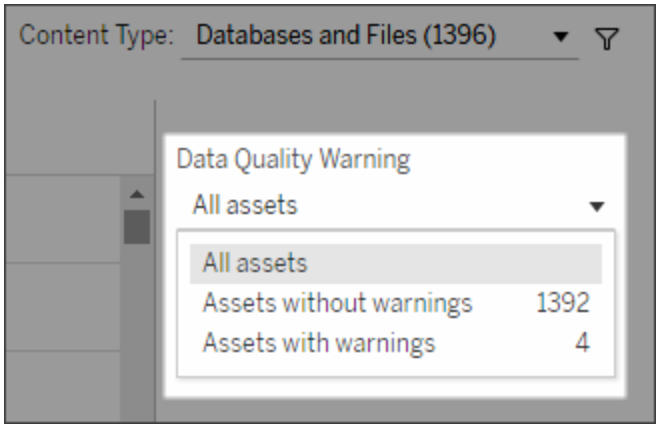


When you have Catalog enabled in your environment:

- You can select from **Data Sources**, **Databases and Files**, or **Tables** to search for data.



- When you select **Databases and Files** or **Tables**, you can filter assets by Data Quality Warning: All assets, Assets without warnings, and Assets with warnings.



On the Connect to Data page, the tabs you see depend on the product you have.

Tableau Server

On Tableau Server, select from the following tabs to connect to data: On this site, Files, and Connectors.

Connect to data On this site

1. Select **On this site** to browse to or search for published data sources.
2. Select the data source under **Name** and click the **Connect** button.

> **Note:** When you have the Data Management Add-on with Tableau Catalog enabled, you can use **On this site** to connect to databases and tables, as well as data sources.

Connect to files

Tableau supports uploading Excel, text-based data sources (.xlsx, .csv, .tsv), and spatial file formats that only require one file (.kml, .geojson, .topojson, .json, and Esri shapefiles and Esri File Geodatabases packaged in a .zip) directly in your browser. In the **Files** tab of the **Connect to Data** window, connect to a file by dragging and dropping it into the field or clicking **Upload from Computer**.

Use connectors

From the **Connectors** tab, you can connect to data housed in a cloud database or on a server in your enterprise. You need to supply connection information for each data connection that you make. For example, for most data connections, you need to supply a server name and your sign-in information.

Supported Connectors has information on how to connect Tableau to each of these connector types to set up your data source. If the connector you need doesn't appear in the Connectors tab, you can connect to data through Tableau Desktop and publish your data source to Tableau Online or Tableau Server for web authoring. Learn more about how to Publish a Data Source in Tableau Desktop.

When Tableau successfully connects to your data, the Data Source page opens so that you can prepare the data for analysis and begin building your view. To learn more, see Creators: Prepare Data on the Web.

Tableau Server connectors

Actian Matrix*	Google Cloud SQL	OData
Alibaba AnalyticDB for MySQL	Google Drive	OneDrive
Alibaba Data Lake Analytics	Kognito*	Oracle
Alibaba MaxCompute	Kyvos	Pivotal Greenplum Database
	Hortonworks Hadoop Hive	

Amazon Athena	IBM BigInsights	PostgreSQL
Amazon Aurora for MySQL	IBM DB2	Progress OpenEdge*
Amazon Redshift	IBM PDA (Netezza)*	Qubole Presto
Apache Drill	MapR Hadoop Hive	SAP Sybase ASE*
Aster Database*	MariaDB	SAP Sybase IQ*
Box	MarkLogic*	Salesforce
Cloudera Hadoop	Microsoft Azure Synapse Analytics	SharePoint Lists
Databricks	Microsoft SQL Server	SingleStore (formerly MemSQL)
Denodo	MonetDB*	Snowflake
Dropbox	MongoDB BI Connector	Spark SQL
Exasol	MySQL	Teradata***
Google BigQuery**		Vertica

*Not available on Linux servers.

**Google BigQuery requires OAuth when creating data sources from the web. Learn more about how server administrators can Set up OAuth for Google.

***Teradata web authoring currently does not support query banding functionality. See Teradata for more details.

Tableau Catalog Supported Connectors

Tableau Catalog supports making a connection with a subset of the data connectors that Tableau Server supports. If a data source, database, file, or table is grayed out, you can't con-

nect from Tableau Server. You can, however, connect from the Tableau Desktop **Connect** pane, if you have the correct permissions.

Tableau Online

On Tableau Online, select from the following tabs to connect to data: On this site, Files, Connectors, and Dashboard Starters.

Connect to data On this site

1. Select **On this site** to browse to or search for published data sources.
2. Select the data source under **Name** and click the **Connect** button

> **Note:** When you have the Data Management Add-on with Tableau Catalog enabled, you can use **On this site** to connect to databases and tables, as well as data sources.

Connect to files

Tableau supports uploading Excel or text-based data sources (.xlsx, .csv, .tsv) directly in your browser. In the **Files** tab of the Connect to Data window, connect to an Excel or text file by dragging and dropping it into the field or clicking **Upload from Computer**.

Use connectors

From the **Connectors** tab, you can connect to data housed in a cloud database or on a server in your enterprise. You need to supply connection information for each data connection that you make. For example, for most data connections, you need to supply a server name and your sign-in information.

Supported Connectors has information on how to connect Tableau to your data using connectors. If the connector you need doesn't appear in the Connectors tab, you can connect to data through Tableau Desktop and publish your data source to Tableau Online or Tableau

Server for web authoring. Learn more about how to Publish a Data Source in Tableau Desktop.

> **Note**: If you're unable to connect to your data from Tableau Online, check to see if the database is publicly accessible. Tableau Online can only connect to data that's accessible from the public internet. If your data is behind a private network, you can connect using Tableau Bridge. To learn more, see Publishers: Use Tableau Bridge to Keep Tableau Online Data Fresh.

Tableau Online Connectors

Amazon Athena	Google BigQuery*	*OneDrive
Amazon Aurora for MySQL	Google Cloud SQL	Oracle
Amazon EMR Hadoop Hive	Google Drive	PostgreSQL
Amazon Redshift	Hortonworks Hadoop Hive	SharePoint Lists
Box	MapR Hadoop Hive	SingleStore (formerly MemSQL)
Cloudera Hadoop	Microsoft Azure Synapse Analytics	Snowflake
Databricks	Microsoft SQL Server	Spark SQL
Denodo	MongoDB BI Connector	**Teradata
*Dropbox	MySQL	Vertica
Exasol	OData	

*For more information about using OAuth 2.0 standard for Google BigQuery, OneDrive, and DropBox connections in Tableau Online, see OAuth Connections.

**Teradata web authoring currently does not support query banding functionality. See Teradata for more details.

Tableau Catalog Supported Connectors

Tableau Catalog supports making a connection with a subset of data connectors that Tableau Online supports. If a data source, database, file, or table is grayed out, you can't connect from Tableau Online. You can, however, connect from the Tableau Desktop **Connect** pane, if you have the correct permissions.

Use Dashboard Starters

On Tableau Online, you can author and analyze data from LinkedIn Sales Navigator, Oracle Eloqua, Salesforce, ServiceNow ITSM, and QuickBooks Online using Dashboard Starters. On the **Dashboard Starter** tab, from the list of pre-built designs, select an option and click **Use Dashboard**. For more information, see Dashboard Starters for Cloud-based Data Sources.

Tableau Public

On Tableau Public, you can connect to data by uploading a supported file.

Connect to files

Tableau supports uploading Excel or text-based data sources (.xlsx, .csv, .tsv) directly in your browser. In the **Files** tab of the Connect to Data window, connect to an Excel or text file by dragging and dropping it into the field or clicking **Upload from Computer**. If you don’t have a data set, check out the free sample data sets on the Tableau Public website.

After you connect

When Tableau connects to your data, the Data Source page opens so that you can prepare the data for analysis and begin building your view. To learn more, see Creators: Prepare Data on the Web.

Keep data fresh in web authoring

Update uploaded files in Tableau Online or Tableau Server: If you manually upload a file (Excel or text) for web authoring, Tableau can't refresh the file automatically. To update your data, select "Edit Connection" to upload a new version of the file.

In Tableau Public, go to your viz and click **Request Update**. You can also keep your data fresh automatically by selecting "Keep this data in sync" in Tableau Desktop Public Edition.

Update file-based published data sources in Tableau Online: If you have a published data source in Tableau Online (published through Tableau Desktop) that uses file-based data, you can keep it fresh using Tableau Bridge. For more information, see Expand Data Freshness Options by Using Tableau Bridge.

Run Initial SQL

Note: Tableau Prep Builder version 2019.2.2 and later supports using Initial SQL, but doesn't yet support all of the same options supported by Tableau Desktop . For information about using Initial SQL with Tableau Prep Builder, see Use Initial SQL to query your connections in the Tableau Prep Builder online help.

When connecting to some databases, you can specify an initial SQL command that will run when a connection is made to the database, for example, when you open the workbook, refresh an extract, sign in to Tableau Server, or publish to Tableau Server. Initial SQL is not run when your refresh your view. Note that this initial SQL is different than a custom SQL connection. A custom SQL connection defines a relation (or table) to issue queries against. For more information, see Connect to a Custom SQL Query.

You can use this command to:

- Set up temporary tables to use during the session.
- Set up a custom data environment.

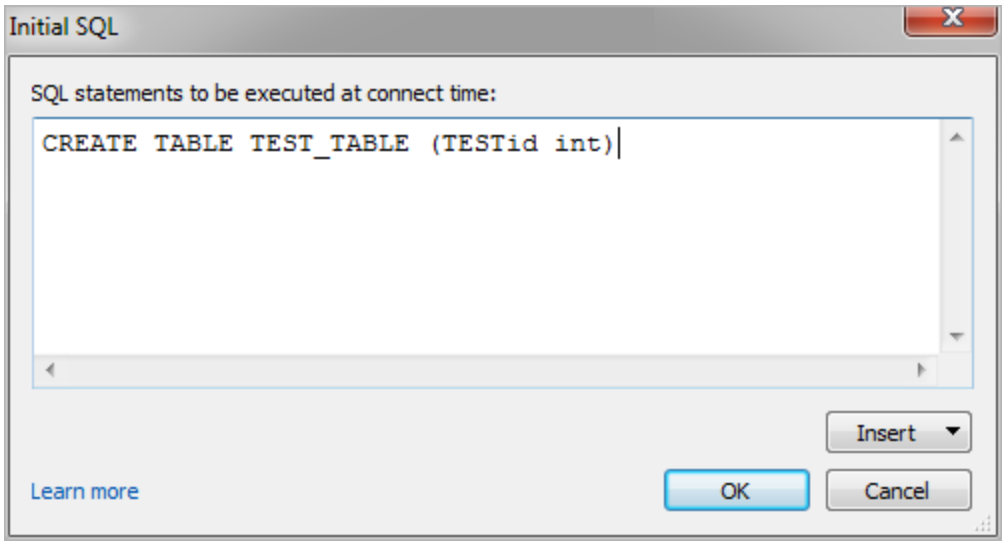
You have the option to add an initial SQL command in the Server Connection dialog box or on the Data Source page.

Note: If your data source supports running an initial SQL statement, an **Initial SQL** link appears in the lower-left corner of the Server Connection dialog box. For information about your data source, see Supported Connectors.

To use initial SQL

1. In the Server Connection dialog box, click **Initial SQL**. Or, on the Data Source page, select **Data** > **Initial SQL** or **Data** > **Query Banding and Initial SQL** depending on the database you connect to.

2. Enter the SQL command into the Initial SQL dialog box. You can use the **Insert** drop-down menu to pass parameters to your data source.



Note: Tableau does not examine the statement for errors. This SQL statement is simply sent to the database when you connect.

Your software license may restrict you from using initial SQL with your connection. If you publish to Tableau Server, the server must be configured to allow Initial SQL statements. By default, the server software is configured to allow these statements to run when the workbook is loaded in a web browser.

Administrators can configure server to ignore initial SQL statements by using the `tsm configuration set` command:

```
tsm configuration set -k vizqlserver.initialsql.disabled -v true
```

If the server doesn't allow initial SQL statements, the workbook opens, but the initial SQL commands are not sent.

For more information about the `tsm configuration set` command, see the Tableau Server Help.

Parameters in an initial SQL statement

You can pass parameters to your data source in an initial SQL statement. There are several reasons why this is useful:

- You can configure impersonation using the **TableauServerUser** or **TableauServerUserFull** parameters.
- If your data source supports it, you can set up row-level security (for example, for Oracle VPD or SAP Sybase ASE) to make sure that users see only the data that they are authorized to see.
- You can provide more details in logging, for example, the Tableau version or the workbook name.

The following parameters are supported in an initial SQL statement:

Parameter	Description	Example of returned value
TableauServerUser	The user name of the current server user.	jsmith

	Use when setting up impersonation on the server. Returns an empty string if the user is not signed in to Tableau Server.	
TableauServerUserFull	The user name and domain of the current server user. Use when setting up impersonation on the server. Returns an empty string if the user is not signed in to Tableau Server.	domain.lan\jsmith
TableauApp	The name of the Tableau application.	Tableau Desktop Professional Tableau Server
TableauVersion	The version of the Tableau application.	9.3
WorkbookName	The name of the Tableau workbook. Use only in workbooks with an embedded data source.	Financial-Analysis

Examples

The following examples show different ways you can use parameters in an initial SQL statement.

- This example sets the security context on Microsoft SQL Server:

  ```
  EXECUTE AS USER = [TableauServerUser] WITH NO REVERT;
  ```

- This example shows how, on a DataStax data source, you can use parameters to add detail to logging or to set up a session variable to keep track of the data:

  ```
  SET TABLEAUVERSION [TableauVersion];
  ```

- This example can be used to help set up row-level security for Oracle VPD:

  ```
  begin
  ```

```
 DBMS_SESSION.SET_IDENTIFIER([TableauServerUser]);

end;
```

Note: Oracle PL/SQL blocks require a trailing semicolon to terminate the block. Consult Oracle documentation for the proper syntax.

Defer execution to the server

You can defer an initial SQL statement so that it is executed only on the server. One reason to defer execution to the server is if you don't have permission to execute the commands that set up impersonation. Use <ServerOnly></ServerOnly> tags to enclose the commands to be executed only on the server.

Example:

```
CREATE TEMP TABLE TempTable(x varchar(25));
INSERT INTO TempTable VALUES (1);
<ServerOnly>INSERT INTO TempTable Values(2);</ServerOnly>
```

Security and impersonation

If you use the **TableauServerUser** or **TableauServerUserFull** parameter in an initial SQL statement, you will create a dedicated connection that can't be shared with other users. This will also restrict cache sharing, which can enhance security, but may also slow performance.

Troubleshoot 'create table' for MySQL and Oracle connections

For MySQL connections, tables are not listed after using initial SQL to create table

When you connect to MySQL, if you run an initial SQL statement like the following, tables might not show because of the way Tableau constructs the query:

```
CREATE TABLE TestV1.testtable77(testID int);
```

To resolve this issue, add `IF NOT EXISTS` to the SQL statement:

```
CREATE TABLE IF NOT EXISTS TestV1.TestTable(testID int);
```

For Oracle connections, using initial SQL to create table causes Tableau to stall

When you connect to Oracle and run an initial SQL statement like the following, Tableau is stalled with a spinning wheel because of the way Tableau constructs the query:

```
CREATE TABLE TEST_TABLE (TESTid int)
```

To resolve this issue, use the following SQL statement:

```
BEGIN
EXECUTE IMMEDIATE 'create table test_table(testID int)';
EXCEPTION
WHEN OTHERS THEN NULL;
END;
```

Extract Upgrade to .hyper Format

Beginning in version 10.5, new extracts use the .hyper format instead of the .tde format. Extracts in the .hyper format take advantage of an improved data engine, which supports the same fast analytical and query performance as the data engine before it, but for even larger extracts.

Although there are many benefits of using .hyper extracts, the primary benefits include the following:

- **Create larger extracts:** Extracts in the .hyper format can contain billions of rows of data. Because .hyper extracts can support more data, you can use version Tableau Desktop Current to consolidate .tde extracts that you previously had to create separately.
- **Faster extract creation and refreshes:** While Tableau has always optimized

performance for creating and refreshing extracts, this release supports faster extract creation and refreshes for even larger data sets.

- **Better performance when interacting with views that use larger extract data sources:** Views that use extract data sources perform better than they did previously. Although smaller extracts continue to perform efficiently, larger extracts perform more efficiently.

What causes an extract upgrade?

Although you can continue to open and interact with .tde extracts in version Current, when you perform an extract task on a .tde extract, the .tde extract is upgraded to a .hyper extract. After the extract is upgraded, you should be aware of the following backward limitations:

- You can't convert the upgraded extract back to a .tde extract.
- You can't open the upgraded extract in an earlier version of Tableau Desktop.
- You can't use the **Export as Version** in Tableau Desktop to downgrade a workbook that contains a .hyper extract.
- You can't open a workbook in Tableau Desktop 10.4 and earlier that is downloaded from Tableau Online using the **Download Tableau Workbook** option if the workbook contains a .hyper extract.

Tasks that cause an extract upgrade

There are three distinct ways a .tde extract can get upgraded to a .hyper extract: 1.) during an extract refresh (full or incremental), 2.) when appending data to an extract, and 3.) when an extract is upgraded manually using Tableau Desktop Current. After an extract has been upgraded, the original .tde extract is automatically removed from Tableau Online if it's not being reference by other workbooks.

The followings tasks will upgrade a .tde extract to a .hyper extract on Tableau Online:

- Manual extract refresh

- Incremental extract refresh using Tableau Bridge

  Note: A full refresh of a .tde extract using Tableau Bridge 10.4 and earlier does not upgrade the extract.

- A scheduled full or incremental extract refresh
- A scheduled incremental extract refresh using Tableau Bridge

  Note: A full refresh of a .tde extract using Tableau Bridge 10.4 and earlier does not upgrade the extract.

- Automated refresh tasks that are performed through the Extract Command-Line Utility
- Automated append data to an extract using tabcmd
- Automated append data to an extract using the Extract Command-Line Utility

Impact of extract upgrade

In general, Tableau recommends that you upgrade to Tableau Desktop Current to match the latest version of Tableau Online. By using the latest version Tableau Desktop, you can avoid certain extract compatibility issues when working with extracts that were created using earlier versions of Tableau Desktop.

If you cannot upgrade to the latest version of Tableau Desktop, review a detailed explanation of the extract compatibility scenarios on the Tableau Support page or a summary explanation below to better understand when extract upgrades can occur and potential compatibility issues you or others might experience.

Note: In the tables below, "10.4" represents Tableau 10.4 and earlier and "10.5" represents Tableau 10.5 and later.

Performing tasks on Tableau Online

When working with extracts created in an earlier version of Tableau Desktop, you should be aware of the following extract-related compatibility scenarios around tasks performed on Tableau Online.

Task	10.4 workbook	10.5 workbook	
	.tde extract	.tde extract	.hyper extract
Publish from Tableau Desktop 10.4	√	Not possible	Not possible
Publish from Tableau Desktop 10.5	√	√	√
Refresh or scheduled refresh	Workbook version remains unchanged, but extract upgrades to .hyper format	Workbook version remains unchanged, but extract upgrades to .hyper format	√
Edit/save in web authoring	Workbook version changes to 10.5, but extract remains in .tde format	√	√
Edit/save in web authoring then refresh or append	Workbook version changes to 10.5, and extract upgrades to .hyper format	Workbook version remains unchanged, but extract upgrades to .hyper format	√

Refreshing extracts using Tableau Bridge

When working with extracts created in earlier versions of Tableau, you should be aware of the following extract-related compatibility scenarios around refreshing extracts using Tableau Bridge.

Task		10.4 workbook	10.5 workbook	
		.tde extract	.tde extract	.hyper extract
Full refresh	from Tableau Bridge 10.4	√	√	√
Incremental refresh or append		Workbook version remains unchanged, but extract upgrades to .hyper format	Workbook version remains unchanged, but extract upgrades to .hyper format	√
Full refresh	from Tableau Bridge 10.5	Workbook version remains unchanged, but extract upgrades to .hyper format	Workbook version remains unchanged, but extract upgrades to .hyper format	√
Incremental refresh and append		Workbook version remains unchanged, but extract upgrades to .hyper format	Workbook version remains unchanged, but extract upgrades to .hyper format	√

Downloading from Tableau Online

When working with extracts created in earlier versions of Tableau, you should be aware of the following extract-related compatibility scenarios when downloading from Tableau Online.

Task		10.4 workbook	10.5 workbook	
		.tde extract	.tde extract	.hyper extract
Download and open	in Tableau Desktop 10.4	√	Can't open workbook; you see a "this workbook uses a .hyper extract and is not compatible with this version; open the workbook in version 10.5 or later" error message, and then asked to locate the extract	Can't open workbook; you see a "this file was created by a newer version; upgrade Tableau" error message
	in Tableau Desktop 10.5	√	√	√
Export As Version	from Tableau Desktop 10.5	√	√	Option is greyed out

Automating extract refresh and append tasks

When working with extracts created in earlier versions of Tableau, you should be aware of the following extract-related compatibility scenarios around automating refresh and append tasks from tabcmd and the Tableau Command-Line Utility.

Task		10.4 workbook	10.5 workbook	
		.tde extract	.tde extract	.hyper extract
Refresh or append	using 10.4 tabcmd	Workbook version remains unchanged, but extract upgrades to .hyper format	Workbook version remains unchanged, but extract upgrades to .hyper format	√
	using 10.5 tabcmd	Workbook version remains unchanged, but extract upgrades to .hyper format	Workbook version remains unchanged, but extract upgrades to .hyper format	√
Publish extract	using 10.4 tabcmd	√	√	Not possible
	using 10.5 tabcmd	Not possible	Not possible	√
Refresh or append	using 10.4 Tableau Command-Line Utility	√	Not possible	Not possible
	using 10.5 Tableau Command-Line Utility	Workbook version remains unchanged, but extract upgrades to .hyper format	Workbook version remains unchanged, but extract upgrades to .hyper format	√

Why keep an extract in .tde format?

If you cannot upgrade to the latest version of Tableau Desktop or Tableau Bridge, you'll need to keep your extract in .tde format.

How to keep an extract in .tde format

To keep an extract in the .tde format, you'll need to avoid upgrading the extract. To avoid upgrading the extract, do not perform any of the tasks listed above in the Tasks that cause an extract upgrade section to a .tde extract.

Then, consider the following suggestions if you need to maintain a .tde version of an extract:

- Perform extracts tasks using Tableau Online, but maintain an earlier version of Tableau Desktop and the ability to connect to the original data to recreate .tde extracts.
- Use an earlier version of Tableau Desktop to perform extract tasks, such as extract refresh or append data.
- Disable existing extract refresh schedules on Tableau Online or Tableau Bridge until you can identify which extracts should and shouldn't be upgraded.

  Note: To access an extract's refresh schedule, you must be a data source owner, site administrator, or Project Leader. For more information about which site roles allow full Project Leader capabilities, see Project-level administration.

What to expect after an extract upgrade

After your extract has been upgraded, there are some additional changes you can expect when working with extracts in version Current. For more information, see After an extract upgrade section in Tableau Help.

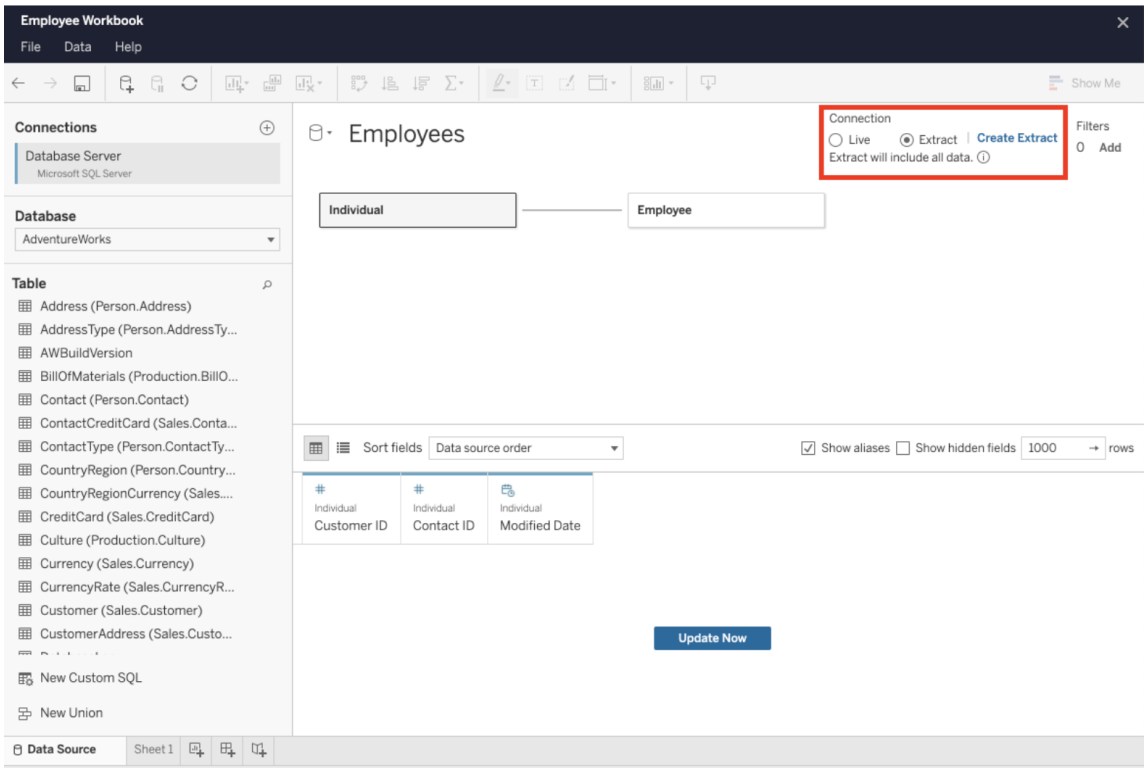
Create Extracts on the Web

You can extract your data sources in the web (without using Tableau Desktop) to improve data source performance and support additional analytical functions. When you extract your data source, Tableau will copy the data from your remote data store to Tableau Server or Online. To learn more about the benefits of extracting your data, see Extract Your Data. In the web, you can extract while in Web Authoring or while in Content Server.

Create extracts in Web Authoring

You can create extracts directly in web authoring with default extract settings.

Extract an Embedded Data Source in Web Authoring



To create an extract in web authoring:

Tip: It is recommended to finalize your data model before you create the extract. Extract creation may take a long time and any changes to your data model, such as adding new logical tables, will invalidate the extract.

1. Click the **Data Source** tab in the bottom left corner of the web authoring pane. For new workbooks, you will start in the **Data Source** tab.
2. In the top-right corner, change the connection type from **Live** to **Extract**.
3. Click **Create Extract**. You will see the **Creating Extract** dialog box.

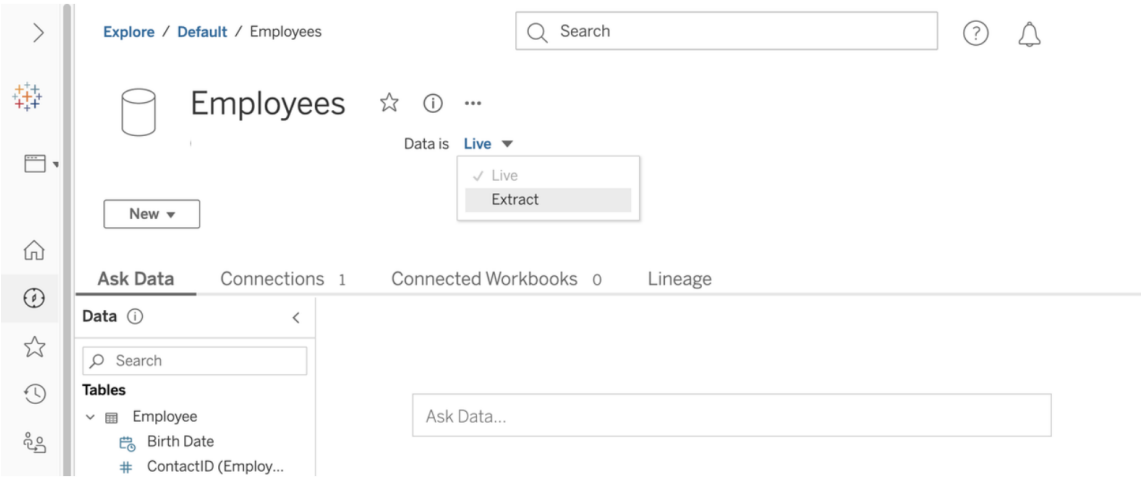
Extract creation might take a long time and you can close your authoring session while the extract is being created. To ensure your extract creation is not lost, in the dialog box, click **Notify Me When Complete** to specify a location for the extracted workbook to be saved. If your extract succeeds, your workbook will be saved to the specified location and you will be notified that you can continue your web authoring session. If your extract creation fails, you will be notified that the extract could not be created and you can restore your unsaved changes by reopening the original workbook in web authoring.

Limitations

- In the web, you can't specify extract settings like incremental refresh and extract filters.
- You can't create extracts for embedded data sources that reference published data sources. As a workaround, create the extract directly on the published data source. For more information, see Extract a Published Data Source on Content Server.
- You can't create extracts for file-based data sources. File-based data sources already have special performance features and adding extraction will have no performance benefit.
- This feature does not apply to bridge-based data sources in Tableau Online.

Create extracts in Content Server

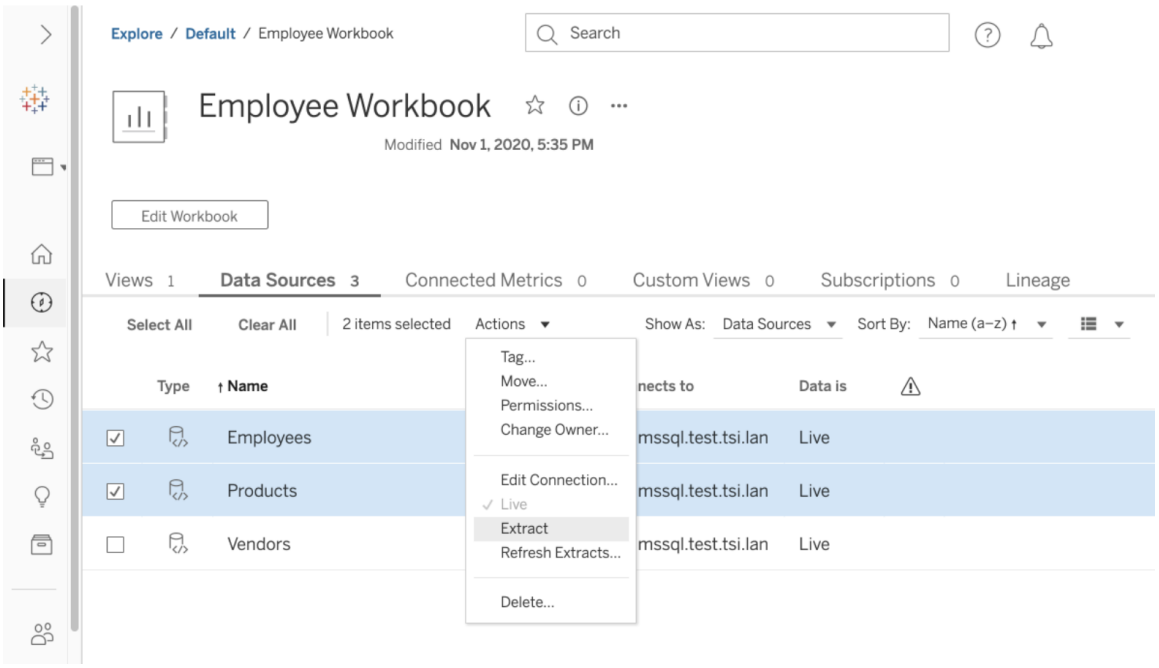
Extract a Published Data Source on Content Server



To extract a published data source:

1. Sign in as an administrator or as the owner of the data source.
2. On the Content tab, select **Explore** > **Data sources**.
3. Select a data source by clicking on the Data Source name.
4. At the top of the screen, under the Data Source name, select the drop-down menu that says **Live**.
5. Change the connection type from **Live** to **Extract**. If the extract encryption at rest feature is enabled on the site, select either **Encrypted** or **Unencrypted**.
6. If you see an error message about embedded credentials, embed your credentials in the data source. To do this, click **Edit Connection**. Select "Embedded password in connection" and then click **Save**.

Extract an Embedded Data Source on Content Server



To extract one or more data sources that are embedded in a published workbook:

1. Sign in as an administrator or as the owner of the data source.
2. Navigate to the published workbook.
3. Navigate to the Data Sources tab
4. Select one or more of the data sources.
5. Click the **Action** button.
6. Click **Extract**. If the extract encryption at rest feature is enabled on the site, select either **Encrypted** or **Unencrypted**.

Limitations

- Your connection credentials must be embedded in the data source.
- In the web, you can't specify extract settings like incremental refresh and extract filters.
- You can't create extracts for embedded data sources that reference published data sources. As a workaround, create the extract directly on the published data source.

- You can't create extracts for file-based data sources. File-based data sources already have special performance features and adding extraction will have no performance benefit.
- This feature does not apply to bridge-based data sources in Tableau Online.

Keep Extracted Data Fresh

After data is extracted, you can optionally set up an extract refresh schedule to keep the data fresh. For more information, see Schedule Refreshes on Tableau Online.

Monitor and Manage Extracts

Server administrators can monitor extract creation on the **Background Tasks for Extracts** admin view. For more information, see Background Tasks for Extracts.

Server administrators can manage extracts on the Jobs page. For more information, see Managing Background Jobs in Tableau Online.

Keep Data Fresh

After you publish workbooks and data sources to Tableau Online, you can decide how you want to keep the data current. Options for keeping published data fresh depend on the characteristics of your data sources.

Data freshness options by data source

The following table lists data freshness options (and exceptions) that are available depending on the data source.

Exceptions

- Tableau Online does not support connections to any cube-based data source.
- Tableau Online does not support published connections that use Kerberos

authentication.

- Although you can publish extracts of SAP BW data to Tableau Online, refreshes are not supported. The best way to update SAP BW data sources is to republish them.
- Tableau Bridge does not support extract refreshes for data sources with OAuth authentication.

Options

Source	Publish options	Freshness options	Authentication
On-premises data (accessible only from a private network)			
File-based data (Excel, .csv, .txt)	Extract only	Use Tableau Bridge (recommended) Manual refresh from Tableau Desktop Automated command-line scripts	n/a
Statistical file (SAS (*.sas7bdat))	Extract only	Use Tableau Bridge (recommended) Manual refresh from Tableau Desktop Automated command-line scripts	n/a
Data hosted on a cloud platform (For example, Oracle on Amazon RDS)	Live connection or extract, depending on database	Use Tableau Bridge (recommended) Manual refresh from Tableau Desktop Automated command-line scripts	Embedded credentials in Tableau Bridge settings
Relational database	Live connection or	Use Tableau Bridge (recommended)	Embedded credentials in

Source	Publish options	Freshness options	Authentication
(Relational databases that Tableau Desktop connects to. For example, SQL Server, Oracle, IBM DB2)	extract, depending on database	Manual refresh from Tableau Desktop Automated command-line scripts	Tableau Bridge settings
Cloud data (accessible from the public internet)			
Data hosted on cloud platforms	Live connection or extract	Extracts: Schedule directly on Tableau Online	Embedded credentials + IP safe list
(See the list of supported platforms in Allow Direct Connections to Data Hosted on a Cloud Platform			Edit Connections on Tableau Online
Salesforce, Google Analytics	Extract only	Schedule directly on Tableau Online Refresh Data Using Saved Credentials	OAuth Connections
Google	Live con-	Extracts:	OAuth Con-

Source	Publish options	Freshness options	Authentication
BigQuery, Google Sheets	nection or extract	Schedule directly on Tableau Online Refresh Data Using Saved Credentials	nections
Cloud (Box, Dropbox, OneDrive, Google Drive) file-based data (Excel, .csv, .txt, .tab, .tsv, .json)	Live connection or extract	Extracts: Schedule directly on Tableau Online Refresh Data Using Saved Credentials	OAuth Connections
Anaplan Oracle Eloqua ServiceNow ITSM	Extract only	Schedule directly on Tableau Online Refresh Data Using Saved Credentials	Embedded credentials Edit Connections on Tableau Online
Marketo	Extract only	Schedule directly on Tableau Online	Embedded credentials
Web Data Connectors	Extract only	For basic user name and password credentials, use Tableau Bridge. For custom (non-basic) user name and password credentials or OAuth con-	Tableau Bridge: Embedded credentials Other: n/a

Source	Publish options	Freshness options	Authentication
		nections, use the Tableau Desktop **Refresh From Source** command, or run a manual refresh from Tableau Desktop. For more information, see the WDC Authentication topic in the Tableau Web Data Connector API Help.	

Tableau Online IP addresses for data provider authorization

As a security measure, cloud data providers might require you to supply a list of authorized IP addresses from which external applications request access to your data. A request from an IP address that is not explicitly approved could be rejected. To make sure live connections you publish to Tableau Online remain uninterrupted, add Tableau Online to your data provider's allowlist (safe list).

The table lists IP address ranges Tableau Online uses, depending on your site location. You can see its location in the URL that appears after you sign in to Tableau Online.

Host Name (Instance)	Site Location	IP Address or Range
10ax.online.tableau.com	US West - Oregon	34.208.207.197 52.39.159.250
10ay.online.tableau.com	US West - Oregon	34.218.129.202 52.40.235.24
10az.online.tableau.com	US West - Oregon	34.218.83.207 52.37.252.60

Host Name (Instance)	Site Location	IP Address or Range
us-west-2b.online.tableau.com	US West - Oregon	34.214.85.34 34.214.85.244
us-east-1.online.tableau.com	US East - Virginia	50.17.26.34 52.206.162.101
prod-useast-a.online.tableau.com	US East - Virginia	3.219.176.16/28
prod-useast-b.online.tableau.com	US East - Virginia	3.219.176.16/28
dub01.online.tableau.com	EU West - Ireland	34.246.74.86 52.215.158.213
eu-west-1a.online.tableau.com	EU West - Ireland	34.246.62.141 34.246.62.203
prod-apnortheast-a.online.tableau.com	Asia Pacific - Japan	18.176.203.96/28
prod-apsoutheast-a.online.tableau.com	Asia Pacific - Australia	3.25.37.32/28
prod-uk-a.online.tableau.com	EU West - UK	18.134.84.240/28

These addresses are dedicated to and controlled by Tableau.

Note: In addition to enabling communication over the Tableau Online IP range, you might need to enable access over the appropriate database port (for example, 80 or 443) depending on the communication type (HTTP or HTTPS).

Find authorization steps for your data provider

The following links take you to the steps on common data providers' websites for authorizing external applications on their platforms.

Amazon:

- Redshift
- RDS
- EC2

Microsoft Azure

Google Cloud Platform

Disclaimer: The links in the list above take you outside of Tableau.com. Although we make every effort to ensure links to external websites are accurate, up to date, and relevant, Tableau cannot take responsibility for the accuracy or freshness of pages maintained by external providers. Contact the external site for answers to questions regarding its content.

Tableau Bridge connections to Tableau Online

To facilitate connections between on-premises data and Tableau Online, Tableau Bridge uses common ports (80 and 443) to make outbound requests to Tableau Online. For more information, see Network access section in the Install Tableau Bridge topic.

See also

- Manage Data
- Best Practices for Published Data Sources (Tableau Help)

- Notify Owners When Extract Refreshes Fail
- Edit Connections on Tableau Online

Allow Direct Connections to Data Hosted on a Cloud Platform

If you maintain SQL-based data on a cloud platform, you can use direct connections to that data when you publish workbooks and data sources to Tableau Online. When you use a direct connection, you do not need to publish a static extract of the data. Instead, depending on the underlying data type, you can determine how to keep the data current: through a live connection or refreshing an extract on a schedule. You can also require users to provide credentials for accessing the data when they open views that connect to content.

In this context, the term *cloud platform* means that the service is available on the public internet. Cloud platforms can include Amazon Web Services, Microsoft Azure, Google Cloud Platform, and so on.

Support for direct connections to data hosted on cloud platforms

The list below includes both live connection and extract refresh support specifically for SQL-based data hosted on a cloud platform.

Note: Make sure that Tableau Online is on your data provider's authorized list (safe list). For more information, see Tableau Online IP addresses for data provider authorization.

Encrypting connections using SSL is an option for these underlying data types. For more information, see Enable encrypted connections later in this topic.

Supported connectors

Note: Not all connectors in this list are supported by Tableau Prep Conductor. To see the supported list of connectors, open Tableau Prep Builder and expand the **Connect** pane.

- Amazon Athena
- Amazon Aurora for MySQL
- Amazon EMR Hadoop Hive
- Amazon Redshift
- Azure Synapse Analytics* (SQL Server-compatible)
  (*formerly known as: Azure SQL Data Warehouse, Azure SQL Database)
- Cloudera (Hive, Impala)
- Databricks
- Denodo
- EXASOL (EXASolution)
- Google BigQuery, Google Sheets
- Google Cloud SQL (MySQL-compatible)
- Hortonworks Hadoop Hive
- MapR Hadoop Hive
- Microsoft SQL Server
- MongoDB BI Connector

- MySQL
- Oracle
- PostgreSQL
- SAP HANA
- SingleStore (formerly MemSQL)
- Snowflake
- Spark SQL
- Presto
- Teradata
- Vertica

Notes:

- MongoDB BI Connector requires SSL. Tableau doesn't support MongoDB Connector for BI authentication plugins.
- For more information about supported features by connector, refer to the specific connector topic in the Supported Connectors section of the Tableau User Help.

Enable encrypted connections

You can enable SSL encryption for connections to your hosted SQL data. You do this when you create the connection in Tableau Desktop.

Notes:

- This information does not apply to Google BigQuery, which connects over HTTPS by default and uses OAuth for authentication.
- Tableau Online does not currently support SSL using Google Cloud SQL.

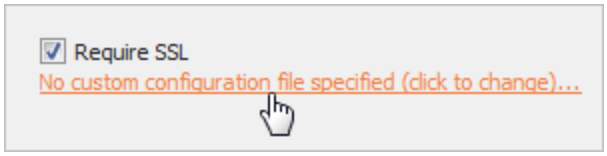
1. In Tableau Desktop, connect to the data.
2. In the **Server Connection** dialog box, select the **Require SSL** check box.
3. For PostgreSQL and SQL Server-compatible connections click **OK** to complete the steps.

   For some MySQL-compatible connections, linked text appears under the **Require SSL** check box. This indicates that you can specify an alternative certificate file to use, such as a self-signed certificate.

4. (Optional) Use a self-signed or other custom certificate to connect to this data over SSL.

   Note: This step does not apply to Google BigQuery, because it uses OAuth for authentication to the server.

   a. Select the link text that appears.

   b. In the **Configure and Use SSL Certificate** dialog, specify the certificate's **.pem** file.

   For example, for MySQL connections to data hosted on Amazon RDS, you can point to Amazon's self-signed certificate file at this address.

   Note: If you plan to publish with an SSL connection that uses a self-signed or other custom certificate, test your configuration to make sure it works as expected. For some configurations, Tableau Online supports only certificates that

are signed by a publicly trusted certificate authority, such as Verisign, Thawte, GlobalSign, and so on.

See also

- Connector Examples in the Tableau Help

Configure Connection with Analytics Extensions

Analytics extensions allow you to extend Tableau dynamic calculations in a workbook with languages like R and python, and with other tools and platforms. These settings endpoints enable you to configure analytics extensions on your site in Tableau Online. For more information, see Analytics Extensions API.

For more information about user scenarios and configuring Tableau Desktop, see Pass Expressions with Analytics Extensions, in the *Tableau Desktop and Web Authoring Help*.

This topic describes how to configure sites on Tableau Online with analytics extensions.

Security requirements and configuration

For increased security, Tableau Online requires an encrypted channel and authenticated access to the external services used for analytics extensions.

Certificate

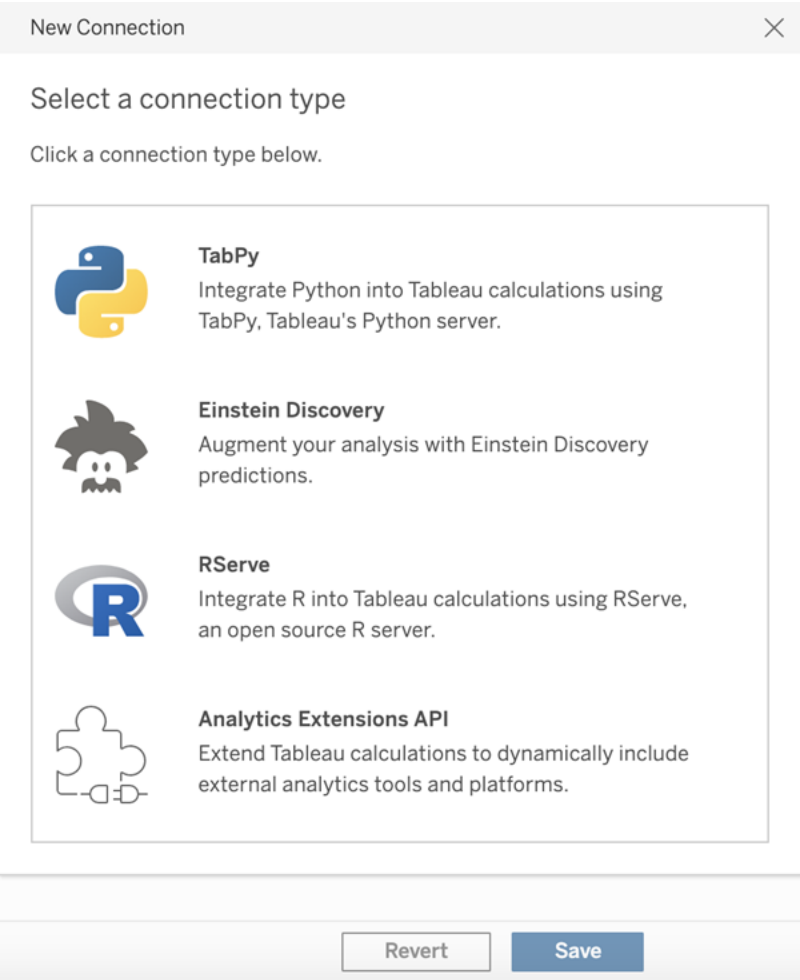
The server running the external service for analytics extensions must be configured with a valid TLS/SSL certificate from a trusted 3rd party certificate authority (CA). Tableau Online will not establish a connection with external servers that are configured with a self-signed certificate, a certificate from a private PKI, or a certificate that is not trusted by an established 3rd party CA.

Safelist firewall configuration

Many organizations deploy a firewall that requires safelist exceptions for known hosts outside the network. In this scenario, you will need to specify two Tableau Online IP addresses as exceptions. The Tableau Online IP addresses used for connections to analytics extensions servers are `44.224.205.196` and `44.230.200.109`.

Configure analytics extensions settings

1. Sign in to Tableau Online as a site administrator.
2. Click **Settings**.
3. On the Settings page, click the **Extensions** tab and then scroll to **Analytics Extensions**.
4. Select **Enable analytics extensions for site**.
5. Click **Create new connection**.
6. In Analytics Extension Connection, enter the configuration settings for your analytics service:



2. The options you need to configure depend on the connection type you choose:

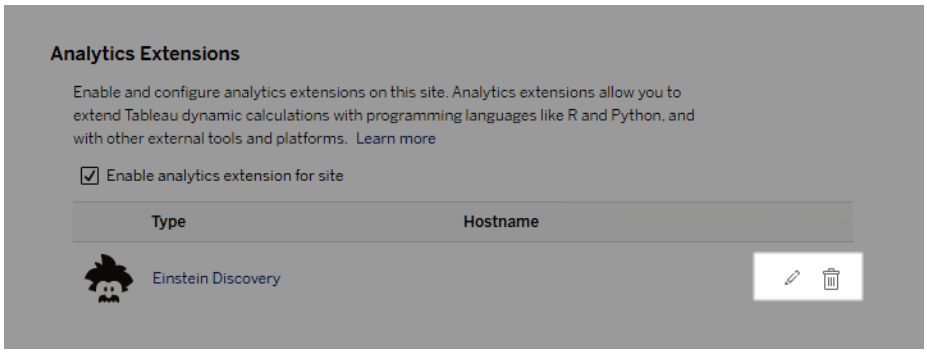
   - For Einstein Discovery connections, click **Enable**.
   - For TabPy, RServer and Analytics Extensions API connections, enter the following information:
     - **Connection Name**: (Required) Specify the server type you are connecting to. RSERVE supports connections to R via the RServe package. TABPY supports connections to Python via TabPy or to other analytics extensions.
     - **Require SSL** (Recommended): Select this option to encrypt the connection to the analytics service. If you specify a `HTTPS` URL in the **Hostname** field, then you must select this option.

- **Hostname**: (Required) Specify the computer name or URL where the analytics service is running. This field is case sensitive.
- **Port**: (Required) Specify the port for the service.
- **Sign in with a username and password**(Recommended): Select this option to specify user name and password that is used to authenticate to the analytics service.

7. Click **Save**.

Edit or delete an analytics extension connection

To edit or delete a configuration, navigate to **Analytics Extensions** on the **Extensions** tab of your site.



Click **Edit** or **Delete** and follow the prompts to change the configuration.

Script errors

Tableau cannot verify that workbooks that use an analytics extension will render properly on Tableau Online. There might be scenarios where a required statistical library is available on a user's computer but not on the analytics extension instance that Tableau Online is using.

A warning will be displayed when you publish a workbook if it contains views that use an analytics extension.

> This worksheet contains external service scripts, which cannot be viewed on the target platform until the administrator configures an external service connection.

Use Certification to Help Users Find Trusted Data

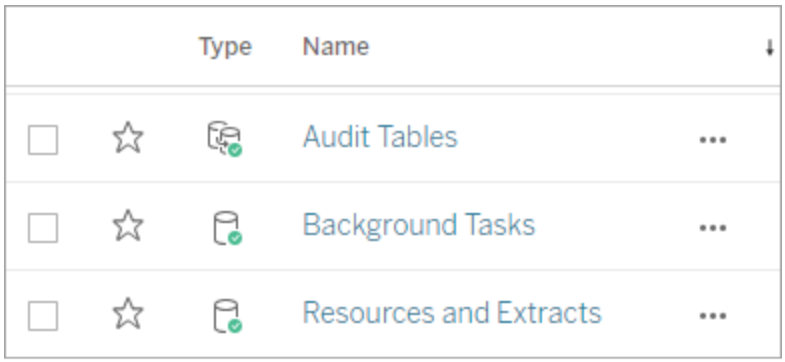
In a self-service environment with multiple publishers, it's common for a project on Tableau Online to contain a variety of content that is named similarly, or is based on the same or similar underlying data, or is published without any descriptive information about it. When this is the case, analysts might lack confidence about the data they should use.

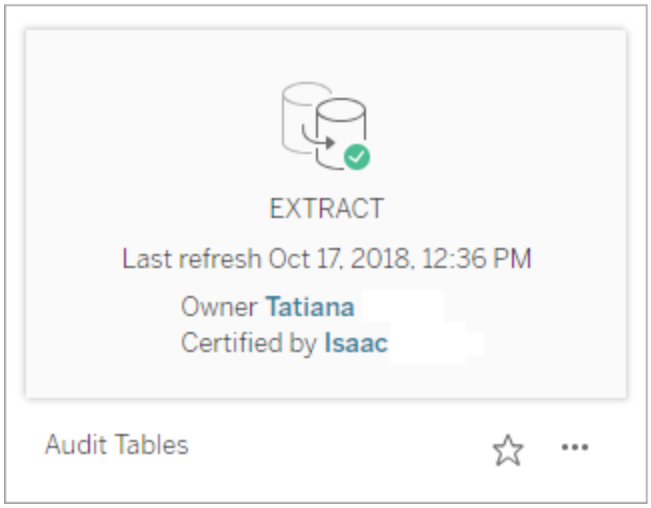
To help your users find the data that's trusted and recommended for their type of analysis, you can *certify* the data that complies with your organization's data standards.

Starting in 2019.3, Tableau Catalog is available in the Data Management Add-on to Tableau Server and Tableau Online. When Tableau Catalog is enabled in your environment, in addition to certifying published data sources, you can also certify the databases and tables that are associated with your workbook, flow, or data source content. For more information about Tableau Catalog, see "About Tableau Catalog" in the Tableau Server or Tableau Online Help.

How certification helps users find trusted data

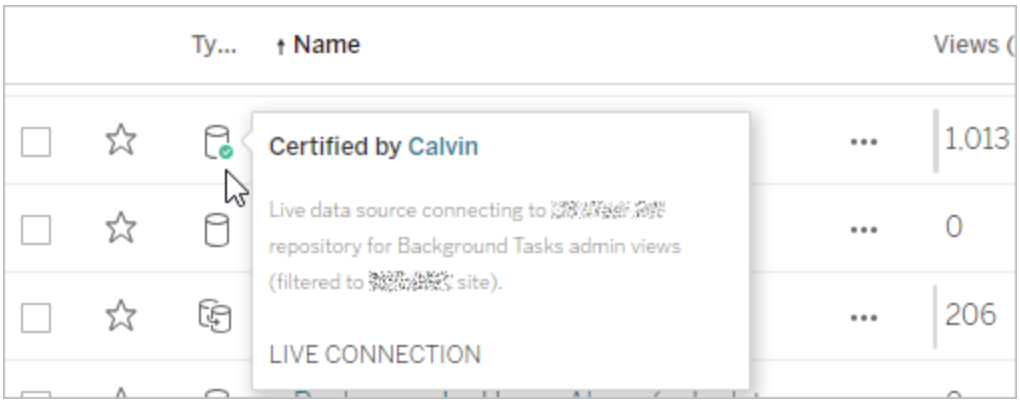
When you certify a data source (or database or table, if you have Tableau Catalog in your environment), it gets a green check mark on its icon in the list view or thumbnail in the grid view. This appears anywhere the data source (or database or table) is shown, including when connecting to data in web authoring or from Tableau Desktop.





Certified data sources rank higher in search results and are added to recommended data sources.

In addition, you can provide notes about the certification status, which appear in a tooltip when users hover over the data source icon or card. The tooltip in list view also shows who certified the data source and the data source's connection type.



For more information, see the How to certify data steps below.

Create guidelines for selecting data to certify

As with most Tableau functionality, certification is flexible. You can define for your organization the criteria you use to determine when to certify a data source (or database or table). As you do this, you might want to document and share your guidelines. As new data sources are published, the guidelines can help you and other administrators or project leaders to be consistent with your certification choices. They can also help users understand what certification means.

Whether you use the same certification criteria across all projects, or define unique criteria for each project, the important thing is to be clear about what certification means in your environment.

Who can certify data

To certify a data source, you must

- be an administrator, or
- have a site role of Explorer (Can Publish) or Creator and have the Project Leader capability on the project containing the data you want to certify.

To certify databases or tables, you must have Tableau Catalog enabled in your environment and either of the following permissions levels:

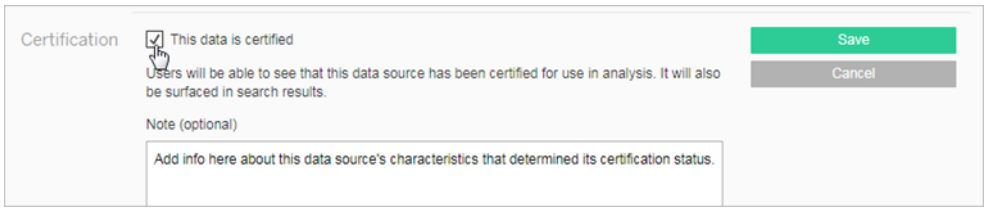
- Site Administrator site role.
- "Manage permissions" capability on a database to certify that database or any tables within that database.

How to certify data

The data you can certify depends on whether you have Tableau Catalog enabled in your environment. All users with the right permissions can certify data sources. Tableau Catalog users with the right permissions can also certify databases, tables, and files.

Certify data sources

1. Sign in to Tableau Online.
2. To certify a data source, on the **Explore** page, select **Data Sources**.
3. On the page, select the data source, and then select the **Details** icon ⓘ.
4. Next to **Certification**, select **Edit Certification Status**, and then do the following:
   a. Select the **This data is certified** check box.
   b. Add a note that gives users context for the certification status, intended use for the data, or other helpful information.



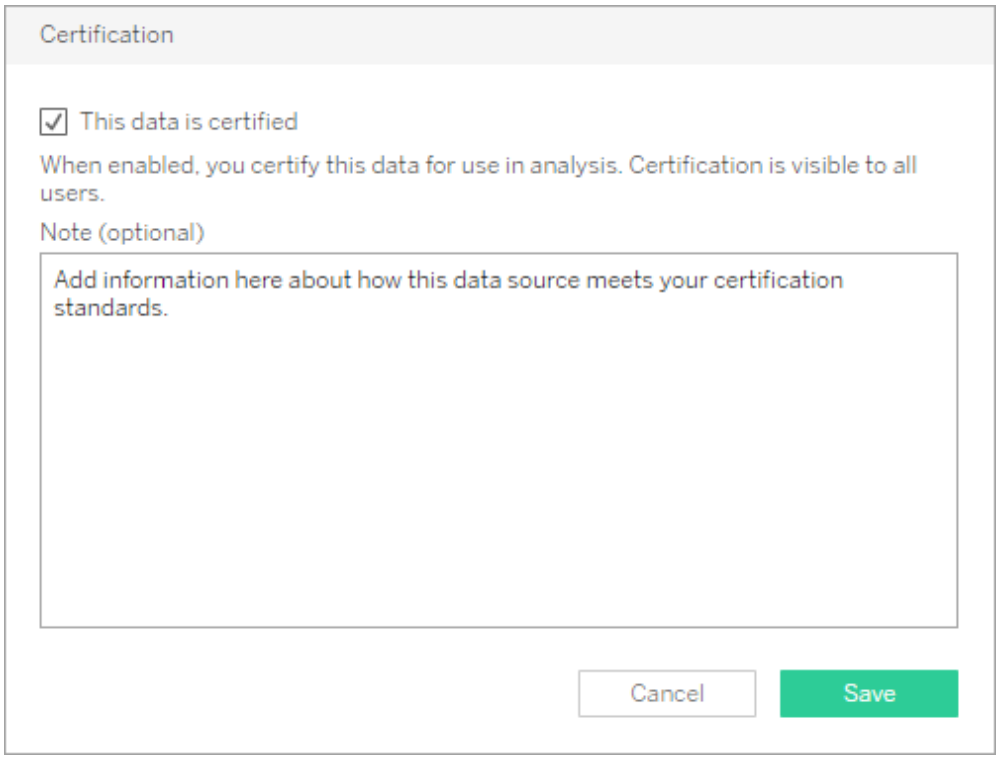
Information you add to the **Note** section appears in the certification badge tool-tip, mentioned earlier in How certification helps users find trusted data.

Certify databases and tables

When Tableau Catalog is enabled in your environment, you can certify databases and tables, if you have the right permissions.

1. Sign in to Tableau Online.
2. To certify a database or table, on the **External Assets** page, select **Databases and Files** or **Tables**.

3. On the page, select the More actions menu (...) next to the asset name you want to certify.
4. Select **Edit Certification** and then do the following:
   a. Select the **This data is certified** check box.
   b. Add a note that gives users context for the certification status, intended use for the data, or other helpful information, and then click **Save**.



Information you add to the **Note** section appears in the certification badge tooltip, mentioned earlier in How certification helps users find trusted data.

Notify Owners When Extract Refreshes Fail

A scheduled extract refresh can fail to complete for a variety of reasons, such as outdated embedded credentials or file path. For scheduled refreshes that run directly from Tableau Online, after a refresh has failed five consecutive times, Tableau Online suspends the schedule until a site admin or the data source owner takes an action to address the cause.

A site admin can enable Tableau Online to send email to the owner of a data source when its scheduled extract refresh does not complete successfully. The data source owner can then opt out individually in their account settings.

The email contains the following information:

- Extract or workbook name.
- The date and time of the last successful refresh. Or, if the last refresh was longer than 14 days ago, the email shows “not in the last *N* days.”
- The number of consecutive times the refresh has failed.
- A suggested action to take to address the cause of the failure, such as updating embedded credentials or a file path, and a link to Tableau Online to take the action.

When receiving email about data sources refreshed by Tableau Bridge, there will be some differences. For more information, see Differences for Tableau Bridge refreshes later in this topic.

Enable refresh failure emails

As a site admin, you have the ability to enable (or disable) refresh failure emails for your site using the procedure below. If you opt in, each user can potentially opt out from receiving refresh failure emails from his or her individual account.

1. Sign in to Tableau Online as a site admin and click **Settings**.
2. Under **Notifications for Extract Jobs and Flow Runs**, select or clear the **Send notifications to data source, flow, and workbook owners** check box.

Differences for Tableau Bridge refreshes

For data sources that are refreshed through Tableau Bridge, notifications will vary. For more information, see Manage Email Alerts for Bridge.

Refresh Data on Tableau Online

You can manually refresh data, as well as schedule data refreshes.

Schedule Refreshes on Tableau Online

You can schedule refresh tasks directly on Tableau Online for extracts of cloud-hosted data. This can include extracts of the following types of data:

- Salesforce.com or Google Analytics.
- Google BigQuery or Amazon Redshift, if you do not want to use a live connection. For on-premises Redshift, you must use Tableau Bridge.
- SQL-based or other data hosted on cloud platforms, such as Amazon RDS, Microsoft Azure, or Google Cloud Platform, if you do not want to use a live connection, or if live connection isn't supported for that data source.

  For a list of supported data sources, see Allow Direct Connections to Data Hosted on a Cloud Platform.

Schedules are also available when creating extract refresh with Tableau Bridge. For more information see, Set Up a Bridge Refresh Schedule.

Notes:

- When a refresh is performed on extracts created in Tableau 10.4 and earlier (that is, a .tde extract), the extract is upgraded to a .hyper extract automatically. While there are many benefits of upgrading to a .hyper extract, you won't be able to open the extract with earlier versions of Tableau Desktop. For more information, see Extract Upgrade to .hyper Format.
- For information about refreshing extracts of Microsoft Excel, SQL Server or other data Tableau Online cannot reach directly, see Connectivity with Bridge.
- Your Tableau Online site comes with capacity to support all your users' analytic needs. A site's capacity includes capacity for storage and tasks that need to be performed on the site includes extracts. For more information, see Tableau Online Site Capacity.

Create a refresh schedule

Important!

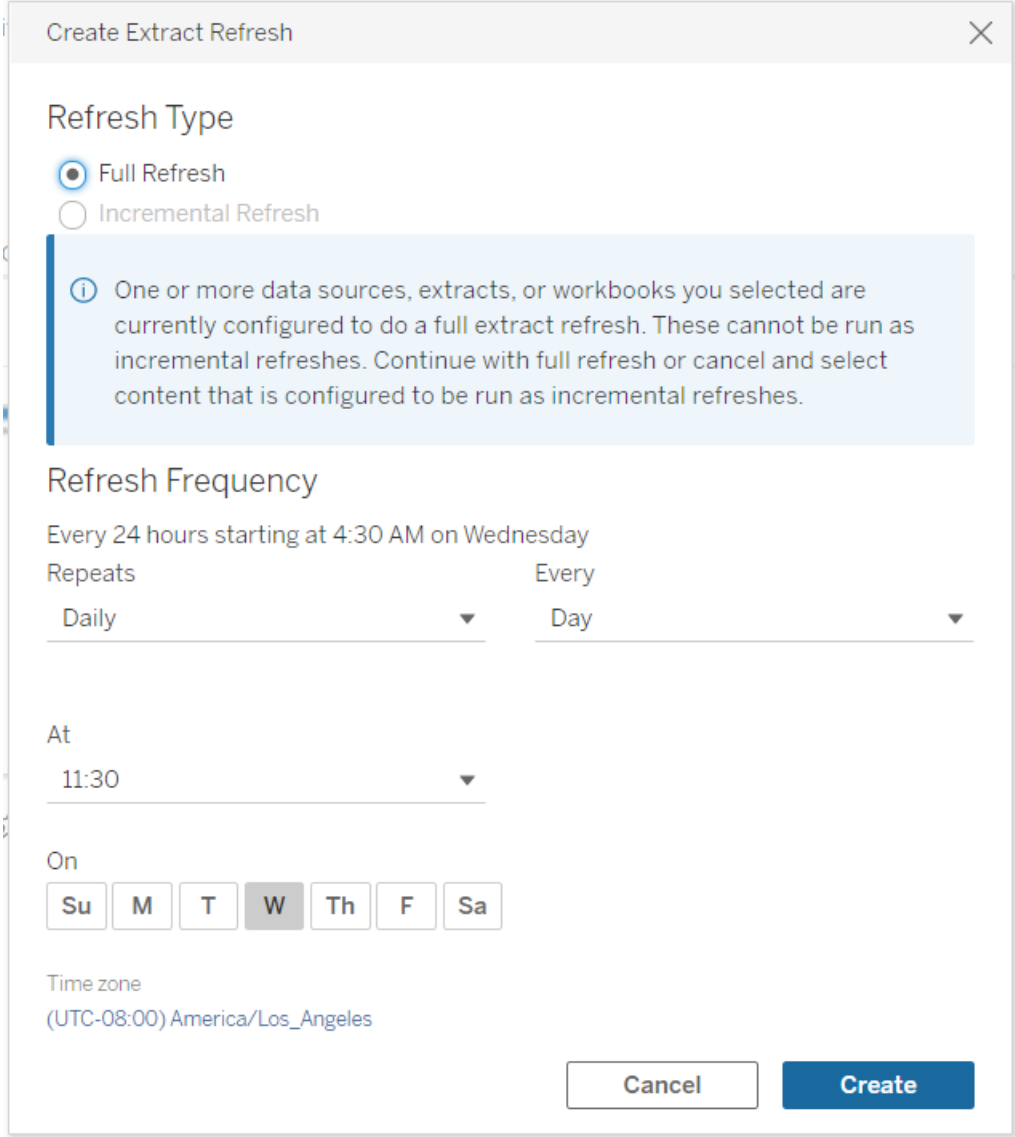
- **Run Now** option is no longer available in **Create an Extract Refresh** dialog box. **Run Now** option is now listed in the **Actions** drop down menu.
- You cannot configure tasks to run sequentially (aka serially). Instead, you might want to stagger your start time for the extract refreshes, so the tasks run one after the other.

- If you migrate your existing tasks to custom schedules, please note that unless you change your start times for these tasks, they will run in parallel, which may not be desired.

1. When you're signed in to Tableau Online, select Explore from the left navigation pane, and then, depending on the type of content you want to refresh, select All Workbooks or All Data Sources from the drop-down menu.

2. Select the check box for the workbook or data source you want to refresh, and then select **Actions > Refresh Extracts**.

3. In the Refresh Extracts dialog, select Schedule a Refresh, and complete the following steps:



- **Refresh Type:** Select the type of refresh you want. A full refresh is performed by default. Incremental refresh is available only if you configured for it in Tableau Desktop before publishing the extract. If you select one of more workbook or data source that has been set to do full refreshes, then the option to select incremental refresh is disabled. For more information, see Refreshing Extracts in the Tableau Help.

- **Refresh Frequency:** Setup the frequency for the extract refreshes to run. You can set the frequency to run hourly, daily, weekly or monthly. The time and day

intervals depend on the repeat frequency that you select as described below:

- **Hourly:** The available frequency is every hour from a specific time to a specific time. This means that the task will run every hour during the specified time.
- **Daily:** The available frequencies are every two, four, six, eight, or twelve hours, or just once a day. You can also choose one or more days of the week, in addition to start and end times. This means you can run a task on all or certain days of the week at specific hourly intervals or once a day.
- **Weekly:** The available frequency is one or more days of the week at a specific time. This means you can run the task on certain days of the week, once a week at a certain time.
- **Monthly:** You can set this up in two different ways:
  1. You can select **Day** as the frequency interval which then allows you to select specific dates of the month. For example you can select the task to run on the 2nd, 15th and 28th of every month at 2:45 pm.
  2. You can also choose the first, second, third, fourth, fifth, and the last day of the week at a specific time. For example you can choose to run the task every second Wednesday of the month at 2:45 pm.

Update an Existing Schedule

When making changes to an existing schedule, you will no longer choose from a list of existing schedules, but directly change the recurrence in the schedule.

Time limit for extract refreshes

To ensure that long running refresh tasks don't take up all system resources and don't prevent refreshes of other extracts on your site, Tableau Online enforces a time limit, also known as a timeout limit, of 7200 seconds (120 minutes or two hours) for refresh tasks. The timeout limit is the longest allowable time for a single extract to complete a refresh before it's canceled. The timeout limit is not configurable.

Staying within the timeout limit

Although reaching the timeout limit is not common, if you're working in an extract-heavy environment, there are few modifications you can make to your extracts to help avoid reaching the timeout limit.

- Upgrade extracts to the .hyper format
- Set up incremental refreshes
- Decrease the size of extracts
- Use an alternative method for refreshing extracts
- Schedule refreshes at a different time

Upgrade extracts to the .hyper format

Beginning with Tableau 10.5, the format of new extracts changed from .tde to .hyper. Along with a number of optimizations, refreshing large extracts in the .hyper format can be faster. If you're working with .tde extracts, consider upgrading your .tde extracts to the .hyper format. For more information, see Extract Upgrade to .hyper Format.

Set up incremental refreshes

Consider configuring your extracts to be incrementally refreshed instead of fully refreshed each time a refresh task is performed.

By default, extracts are set up to fully refresh. Although a full refresh gives you an exact copy of the data, a full refresh can take a long time to complete. To reduce the time it takes to refresh an extract, consider setting up incremental refreshes of your extracts instead. For more information, see Configure an incremental extract refresh in the Tableau Help.

> **Note:** You must set up the incremental refresh before publishing the extract to Tableau Online. After publishing, you will then be able to select Incremental Refresh option in the Create Extract Refresh dialog.

Decrease the size of extracts

You can help refresh tasks complete faster by decreasing the size of your extracts.

There are two common methods for decreasing the size of extracts: hide all unused fields and use data source filters.

- **Hide all unused fields:** Fields that you hide in your data source are excluded when the extract is created. To hide fields while creating the extract, see Create an extract in the Tableau Help.
- **Add data source filters:** You can reduce the number of rows in your extract by adding a data source filter. For more information, see Filter Data from Data Sources in the Tableau Help.

> **Note:** You must hide all unused fields or add data source filters before publishing the extract to Tableau Online.

Use an alternative method for refreshing extracts

If possible, consider refreshing your extracts outside of Tableau Online.

- **Tableau Desktop:** You can manually refresh published extracts from Tableau Desktop. For more information, see Refresh Published Extracts from Tableau Desktop.
- **Tableau Bridge:** Depending on the data source, you can use Tableau Bridge to set up and refresh published extracts on a schedule. For more information, see Use Bridge to Keep Data Fresh.
- **Tableau Data Extract Command-Line utility:** Depending on the data source, you can use the command-line utility that comes with Tableau Desktop to programmatically refresh published extracts. For more information, see Automate Extract Refresh Tasks from the Command Line.

Schedule refreshes at a different time

Consider changing when the refresh tasks occur. For more information, see Manage Refresh Tasks.

Errors when refresh tasks reach timeout limit

If a refresh task reaches the timeout limit, you or others might see one of the errors listed below. If you published the extract or are the extract owner, you might see one of these errors in an email notification. If you're a site administrator, you might see one of these errors in the administrative view about Background Tasks for Extracts.

- *The query time resource limit (7200 seconds) was exceeded.*
- *com.tableau.nativeapi.dll.TableauCancelException: Operation cancelled.*
- *The query time resource limit (8100 seconds) was exceeded.*

To help resolve and avoid these errors in the future, see the section above, Staying within the timeout limit.

Refresh Data Using Saved Credentials

To keep published data fresh for Salesforce, Google Analytics, Google BigQuery, OneDrive, Dropbox, Quickbooks Online, Anaplan, Oracle Eloqua, and ServiceNow ITSM, you must do

the following:

1. Embed credentials into the data connection. The steps are described in this topic
2. If your data source or workbook contains an extract, you can add the extract to a refresh schedule. For the steps to schedule a refresh, see Schedule Refreshes on Tableau Online.

   If your data source or workbook contains a direct (live) connection to the data, then the data is always fresh, and you don't need to create a scheduled task to refresh it.

Embed credentials into the data connection

You can embed credentials for your connection by following these steps.

1. Sign in to the site that has the published data source you want to keep fresh, and display the **Data Sources** page.
2. Select the data source with the connection you want to refresh, and on the **Actions** menu, select **Edit Connection**.
3. The options in the Edit Connection dialog box will vary depending on the data source your selected. Review the options available to you and select the one that meets your needs.

   If you select **Prompt user for <connector name> credentials**, you will need to refresh data manually. You can do this by asking users to republish the data source from Tableau Desktop or by initiating a refresh task on Tableau Online.

Connector-specific credential information

Use OAuth credentials

Secure data connections are made using OAuth access tokens for data connections to Google Analytics, Google BigQuery, Google Sheets, OneDrive, Dropbox, Salesforce, and QuickBooks Online. You create access tokens by signing in to the data from Tableau Online and approving Tableau Online access to the data as long as the credentials exist (or you

manually revoke access). When you add a new account, the sign-in page appears. When you sign in, you create a new access token for the credentials you submit.

> **Note:** Dropbox uses OAuth credentials, however Tableau doesn't currently support authenticating to Dropbox using a Google account.

You can embed shared credentials, as you might do if you use a dedicated database account for a group of users. Or you can embed an individual user's credentials. The account you use to create the access token must allow a level of access for running the refresh task.

Use other credentials

Anaplan, Oracle Eloqua, and ServiceNow ITSM each support using saved credentials (for example, user name and password) to connect to the data.

Use Salesforce security tokens

If you embed standard Salesforce credentials, Salesforce might require a security token for you to access a data source. For example, if you want to access the Salesforce connection from an IP address that is not included in your organization's trusted IP list. This security token must be appended to the password used in the data connection.

The security token can expire. When Tableau is unable to refresh a Salesforce connection because the security token has expired, Tableau displays an alert to the following users:

- Authors of the relevant workbooks and data sources.
- Authors of workbooks that connect to the relevant data sources.
- Site administrators.

You can renew an expired security token by editing the data connection on the server.

For more information about Salesforce authentication and security tokens see Security and the API in the Salesforce.com *SOAP API Developer's Guide*.

Start a Refresh Task Manually

You can refresh extracts of data hosted with most cloud data providers directly on Tableau Online. You can run a refresh from Tableau Bridge for data sources you've set up there.

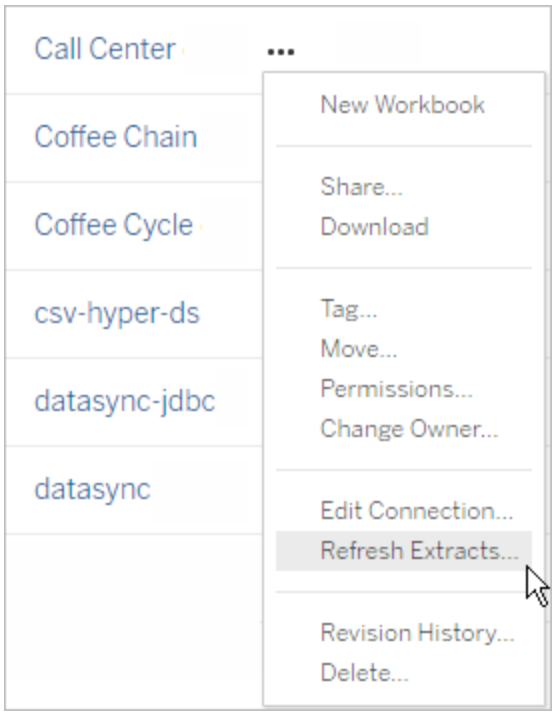
If a data source has scheduled refreshes, running a manual refresh does not affect the schedule.

Before you start a refresh task

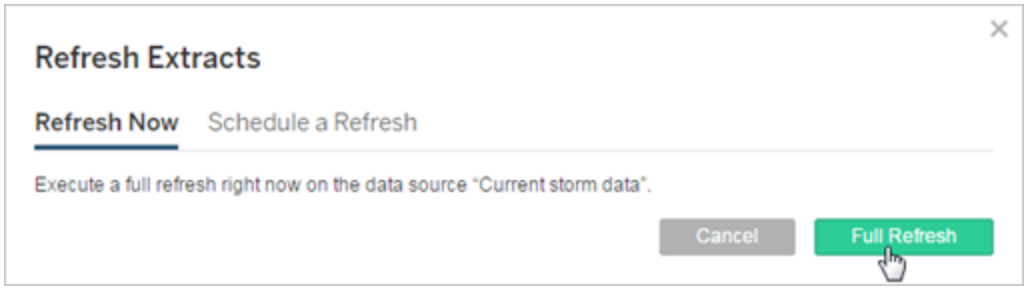
When an extract refresh is performed on extracts created in Tableau 10.4 and earlier (that is, a .tde extract), the extract is upgraded to .hyper extract automatically. While there are many benefits of upgrading to a .hyper extract, you will be unable to open the extract with previous versions of Tableau Desktop. For more information, see What's new to extracts.

Run a refresh on Tableau Online

1. Sign in to the Tableau Online site to which the data source is published.
2. On the Data Sources page, select the **More actions** icon (…) next to the data source you want to refresh, and then select **Refresh Extracts** from the menu.



3. Under **Refresh Now**, select **Full Refresh**.



Note: For data sources that have scheduled refreshes, site administrators can initiate a refresh also from the **Actions** menu on the **Tasks** > **Extract Refreshes** page.

Run a refresh in the Tableau Bridge client

- Open Tableau Bridge from the Windows system tray, and select the **Run now** icon ( ) for the data source.

Note: When an extract refresh is performed on extracts created in Tableau 10.4 and earlier (that is, a .tde extract), the extract is upgraded to .hyper extract automatically. While there are many benefits of upgrading to a .hyper extract, you won't be able open the extract with earlier versions of Tableau Desktop. For more information, see Extract Upgrade to .hyper Format.

Manage Refresh Tasks

Administrators can manually refresh extracts or delete their schedules.

1. Sign in to the site that has the schedules you want to manage, and then click **Tasks**.
2. Select one or more scheduled extract refreshes.
3. From the **Actions** menu, do any of the following:
   - Select **Change Schedule**, and choose a new schedule from the list.
   - Select **Run Now** to refresh manually.

     Note: If an extract does not have a scheduled refresh, you can refresh it on demand from the Data Connections page.
   - Select **Delete** to completely remove the schedule for the selected data sources.

See also

Notify Owners When Extract Refreshes Fail

Automatically Suspend Extract Refreshes for Inactive Workbooks

To save resources, Tableau can automatically suspend extract refresh tasks for inactive workbooks. This feature applies to full extract refreshes only, not to incremental extract refreshes. This feature only applies to refresh tasks that run more frequently than weekly,

not to weekly or less frequent refresh tasks. This feature only applies to extracts that are embedded in workbooks and not to published data sources.

If any of these events occur, the workbook inactivity countdown timer is reset.

- Viewing the workbook sheets
- Setting up a data-driven alert or subscription on the workbook
- Downloading the workbook
- Moving the workbook's location or changing the owner

This feature is only configurable on Tableau Server. On Tableau Online, this feature is not configurable and the number of days that a workbook can be inactive before extract refresh tasks are suspended is 32 days.

Notifications

An email notification is sent three days before the extract refresh schedule is suspended.

Another email notification is sent when the extract refresh schedule is suspended.

Resume suspended extract refreshes

Suspended extract refreshes won't resume automatically if someone uses the workbook. It must be done manually.

To view and resume extract refreshes that were suspended:

1. Sign into the site and click **Tasks**.
2. Click the **Extract Refreshes** tab.
3. Select one or more items.
4. From the **Actions** menu, select **Resume**.

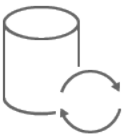
Use Tableau Bridge

Get Started

- Use Bridge to Keep Data Fresh
- Install Bridge
- Set Up a Bridge Refresh Schedule
- Use Bridge for Private Cloud Data

Quick Reference for Site Admins

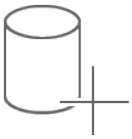
- About the Bridge Client
- Configure and Manage the Bridge Client Pool
- Change the Bridge Client Settings

Quick Reference for Publishers 

- Publish a Bridge Data Source with a Live Connection
- Stop Keeping Data Fresh Through Bridge
- Manage Email Alerts for Bridge
- Troubleshoot Issues with Bridge

Enterprise

- Plan Your Bridge Deployment
- Monitor Bridge Extracts Activity
- Monitor Traffic to Bridge Connected Data Sources
- Monitor Bridge Refresh Jobs



Connectivity

- Connectivity with Bridge
- Update Bridge Connection Information

Security

- Bridge Security

Use Bridge to Keep Data Fresh

For data sources that Tableau Online can't reach directly, you can use Tableau Bridge to keep data fresh. For example, use Bridge when your data source connects to data hosted behind a firewall.

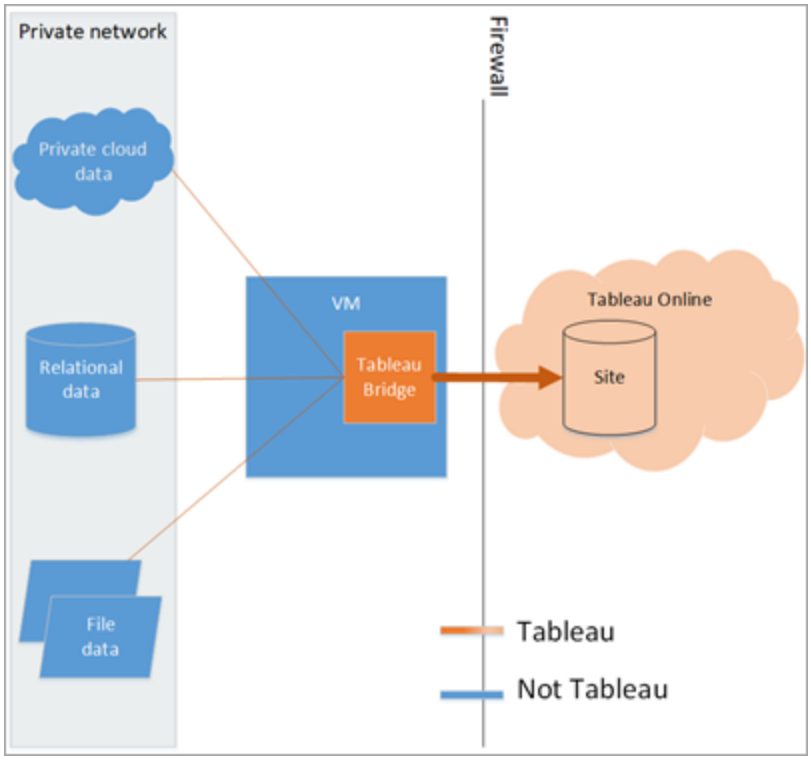
Note: If a data source connects to underlying data hosted in the cloud accessible from the public internet, live and extract connections run from Tableau Online directly.

What is Bridge

Tableau Bridge is client software that runs on a machine in your network. The client works in conjunction with Tableau Online to keep data sources that connect to private network data, which Tableau Online can't reach directly, up to date. Private network data includes on-premises data and virtual cloud data.

How does it work

Tableau Bridge functions like a conduit between private network data, such as Excel files and SQL Server data, and Tableau Online. The client communicates with Tableau Online through an outbound encrypted connection to enable connectivity between data behind a firewall and your Tableau Online site.



For more information about how Bridge communicates with Tableau Online, see Tableau Bridge Security.

Who can use it

Although any authorized user of Tableau Online can use Bridge, Bridge is optimized for users that perform the following functions in an organization: site admins and data source owners.

Site admins, or users who have the Site Administrator or Site Administrator Creator role on Tableau Online, install and manage Bridge clients. For more information, see Plan Your Bridge Deployment.

Data source owners, or users who have the Creator or Explorer (can publish) role on Tableau Online, typically publish and manage their own data sources. Data source owners use Bridge to facilitate the live and extract connections between Tableau Online and private network data.

- For **live connections**, Bridge is detected automatically as part of the data source publishing process.

  After the site admin enables support for maintaining live connections (through pooling), users see the option to publish the data source with a live connection during the publishing process. This option is available when live connections are supported for relational or cloud databases accessible only from inside the network.

  After the user publishes the data source, an available client in the pool facilitates the live queries. That's all there is to it.

  To get started, users publish a data source to Tableau Online, and select the option to maintain a live connection. Or, publish a workbook, and select the option to publish the data source separately, and then specify a live connection. For more information about publishing data sources, see Publish a Bridge Data Source with a Live Connection.

  Note: If publishing a data source that connects to a private cloud database, follow the steps described at Publish private cloud-based data sources to ensure Bridge is used to facilitate the data freshness tasks.

- For **extract connections**, users can set up refresh schedules. Users need to publish the data source separately, whether he or she goes through the publishing data source or workbook process. For more information, see Set Up a Bridge Refresh Schedule.

  Note: If publishing a data source that connects to a private cloud database, follow the steps described at Set up schedules for private cloud-based data sources to use Bridge facilitated refresh schedules.

Install Bridge

Tableau Bridge is software that you can install and use in conjunction with Tableau Online. Always install the latest version of Bridge to take advantage of the latest security and feature updates.

Before installing Bridge

Before you install the Bridge client, review the minimum requirements and general information that you need to know to help ensure a successful start to using Bridge.

System recommendations

Bridge is available for the Windows operating system. You can also install the client on a virtual machine. For more information about which versions of Windows are supported and other recommendations, review the Recommended software and hardware.

License requirements

You do not need a product key to use Bridge. Use of Bridge is subject to your End User License Agreement (EULA). Users of Bridge must be authorized users of Tableau Online.

Network access

Because Bridge facilitates connections between your on-premises data and Tableau Online, it requires the ability to make outbound connections through the internet. Bridge

does not require the ability to make inbound connections, which means that it typically does not require a network administrator to make firewall or network changes to work.

Addresses and ports

Just like Tableau Desktop, Bridge uses common ports (80 and 443) to make outbound requests to Tableau Online. In most cases, the machine where the client is installed and the network it is running on are already configured to allow the necessary access.

Database drivers

Bridge uses Tableau connectors to connect to different databases to maintain data freshness. Some of those connectors require drivers to communicate with the databases.

By default, the following drivers are installed with the client:

- Oracle (OCI)
- Microsoft SQL Server
- PostgreSQL

To get drivers for other connectors that the client supports, go to the Driver Download page on the Tableau website. Make sure to filter the list on the Windows operating system and use the instructions listed for the latest version of Tableau Desktop.

Install Bridge

Follow the procedure below to install a Bridge client. You do not need a Tableau product key to install or use the client.

1. Download the installer from the Product Downloads and Release Notes page on the Tableau website. We recommend downloading the latest version listed on the page to take advantage of the latest security and feature updates.

2. Run the installer.

3. When prompted, accept the license agreement to continue.

4. (Optional) Customize the installation by clicking **Customize**. You can change any of

the following options:

- **Install location:** You can specify a different location to install the client.
- **Create a desktop shortcut:** Clear the check box if you don't want to automatically create a desktop shortcut for Bridge.
- **Create a Start menu shortcut:** Clear the check box if you don't want to automatically add a shortcut for Bridge to the Start menu
- **Enable error reporting:** If Bridge has a problem and closes unexpectedly, crash dump files and logs are generated and sent to Tableau. To turn off this option, clear this check box during installation. You can also turn this option off (or back on) in the client after installation. For more information, see Error reports.
- **Install database drivers:** Clear the check box if you don't want to automatically install the default database drivers.

5. Click **Install** to begin the client installation.

After the client is installed, you can start the client by double-clicking the Bridge shortcut on your desktop or from Tableau Desktop (if it's installed on the same machine as Bridge).

About My Tableau Bridge Repository

As part of the Bridge installation, a folder called **My Tableau Bridge Repository** is created on the machine where the client is installed. This repository folder contains critical subfolders, such as **Logs** and **Configuration**, that Bridge needs in order to operate properly.

The repository folder is created under the Documents folder: *\Users\<user>\Documents\My Tableau Bridge Repository*.

Important: We strongly recommend that you do not change the folder that Bridge uses as its repository.

Upgrade Bridge

Staying in sync with the latest version of Bridge ensures that you can take advantage of the latest features and fixes included with each new version of the Bridge client.

To upgrade the client, follow the procedure below.

Important: If you're running client version 2018.2-2018.3, we strongly recommends upgrading to the latest version of Bridge to take advantage of the latest security and feature updates. For more information, see Error "There was problem and the data engine could not start properly" article in the Tableau Knowledge Base.

1. Log on to the machine where the client is installed.
2. If you're running the client in Service mode, in the lower-left corner of the client, next to Mode, select **Application**. Changing to Application mode ensures that the Tableau Bridge service stops completely before the upgrade.
3. Select **Settings** > **Exit**.
4. Follow the steps listed in the Install Bridge section to install the client and complete the upgrade.

After installation is complete, the client will start as normal. If the client was running in Service mode prior to the upgrade process, switch back to Service mode.

Error reports

You can help improve Bridge by automatically sending error reports to Tableau. Error reports are comprised of crash dump files that are sent to Tableau when the Bridge client has to close unexpectedly (crash). These files are used by Tableau to identify and address issues that can cause the client to close unexpectedly.

Important: Turn off this option if your data is subject to any privacy regulations.

What's in an error report

The encrypted package is made up of the following files: crash/core dump files and manifest files related to the crash.

The files can contain data that include:

- Machine-specific information. For example: hardware, operating system, domain, etc.
- Snapshot of the memory contents at the time of the crash. For example: which data

sources had extracts refreshed, which data sources had live queries, etc.

- Information that Bridge was processing at the time of crash, including customer-identifiable information that might be used to correct the error. For example: who is using Bridge with which site, the name of the client that the user is signed in to, etc.

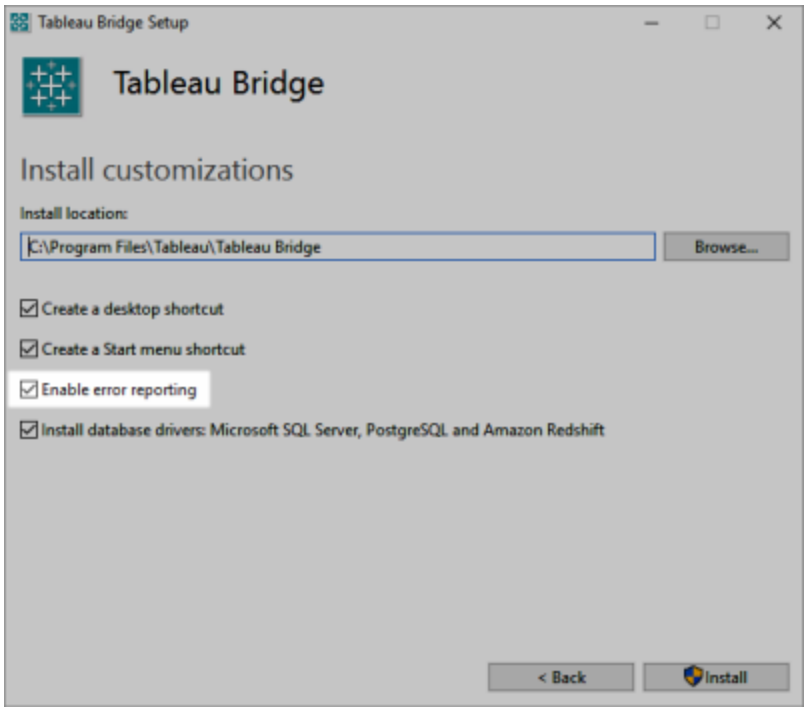
For more information about how Tableau treats sensitive information, see the Tableau privacy policy on the Tableau website.

Configure automatic error reporting

You can configure Bridge to send error reports automatically in one of two places: during the client installation process or after installation directly in the client.

Enable the automatic error reporting option during client installation

During installation, the option to automatically send error reports from the client is selected by default. However, you can remove the selection.



Disable the automatic error reporting option in the client

If you decided to use the default setting during the installation process and decide later on that you don't want to allow error reports to be sent automatically, you can modify the option from the client menu.

Install Bridge from the command line

You can install the Bridge client from command line if you're a local administrator on the machine.

General command line syntax

The syntax for running the Bridge installer from the command line is the following:

```
tableauBridge<installer_name>.exe /option1 /option2
PROPERTY1 PROPERTY2
```

A few notes about the syntax:

- The `tableau<installer_name>.exe` file is the client installer for the product and version you're installing.
- The options specify how the installation process should run. For example, whether it should display output while installing and whether it should create log files.
- The properties settings specify configuration settings that the installer should make during the installation process.

Example installer command

The following example shows an installer command with some options and property settings.

```
     tableauBridge-64bit-2018-2-0.exe /quiet /passive
ACCEPTEULA=1 DATABASEDRIVERS=1
```

You must run the command from the directory where the .exe file is located or specify a full path to the location of the .exe file on the machine. Do not run the installer from a shared directory on your network. Instead, download the .exe file to a directory on the machine where you want to install the client.

Installer options and properties

You can specify one or more options in the command line for the installer.

Installer options

A couple of notes about the options:

- Each option is prefixed with a slash (/).
- Options must come before properties.

Option	Description
`quiet`	Run the installer without messages (status or installation progress) and without requiring user interaction. The client doesn't launch after installation is complete.
`passive`	Run the installer and display dialog boxes and installation status. Does not prompt the user for input. The client launches after installation is complete.
`norestart`	Suppress any attempts to restart. By default, the installer will prompt you before restart unless you run the installer in quiet mode.
`log "`*`log-`*	Log installation information to the specified path and file. Specify

file.txt"	the path and file name, such as `/log "c:\-logs\logfile.txt"`. The default log file is the system `%TEMP%` directory.
`repair`	Run the installer to repair an existing installation of Bridge.
`h`	Help—lists options and properties for the installer.

Installer properties

You can also include one or more properties in the command line for the installer.

Some notes about the properties:

- All of these properties can be used for the initial installation of client. They can't be used to update any settings after initial installation.
- Property names are case sensitive.
- There are no spaces on either side of the equal sign.
- Each property set is delimited with a space.
- Properties must go after options.

Property	Description	Value
`ACCEPTEULA`	Accept the End User License Agreement (EULA). If you don't set this option to `1`, Bridge can-not be installed using quiet mode.	1=Accept 0=Don't accept (default)
`CRASHDUMP`	You can set this option to "1" to help improve Bridge by sending error reports to Tableau automatically when the client crashes. For more information, see Error reports.	1=Yes (default) 0=No

`DATABASEDRIVERS`	Install the default set of database drivers that you might connect to from Tableau Bridge. For more information, see Database drivers. To download other database drivers, see the Driver Download page on the Tableau website. You must distribute other drivers using whatever asset management tools you use for software deployment in your organization.	1=Yes (default) 0=No
`DESKTOPSHORTCUT`	Create a desktop shortcut.	1=Yes (default) 0=No
`DRIVERDIR`	Specify an installation directory (other than the default) for the database drivers. This option creates the directory and creates an entry in the HKEY_LOCAL_MACHINE\ registry. The default location for drivers is C:\Program Files\Tableau\Drivers.	A path such as `D:\Drivers`
`DRIVER_MSSQL`	Disable the Microsoft SQL Server driver from	1=Install (default) 0=Don't install

	installing automatically during Tableau Bridge installation.	
`DRIVER_POSTGRES`	Disable the PostgreSQL driver from installing automatically during Tableau Bridge installation.	1=Install (default) 0=Don't install
`DRIVER_REDSHIFT`	Disable the Amazon Redshift driver from installing automatically during Tableau Bridge installation.	1=Install (default) 0=Don't install
`INSTALLDIR`	Specify an installation directory other than the default. If you specify a custom directory for the installation location and plan to install future releases to this same location, you need to specify a version specific sub-folder to install to. Otherwise you will need to uninstall the previous version first. Side-by-side installations of multiple versions in the same sub-directory is not	A path such as `D:\Software\Tableau Bridge`.

	supported.	
SKIPAPPLICATIONLAUNCH	You can set this option to "1" to prevent the new application from opening automatically when the installation process is complete. This option applies to manual. This option doesn't apply to quiet installations because Tableau Bridge doesn't open automatically when using that option.	1=Yes 0=No (default)
STARTMENUSHORTCUT	Create a Tableau Bridge entry on the Windows Start menu.	1=Yes (default) 0=No

Uninstall Bridge

Although it's not necessary to uninstall previous versions of the Bridge client when installing a newer version, you can uninstall Bridge 2018.2 and later if you no longer need it on your machine.

The primary method for uninstalling the client is through the Windows Control Panel.

Alternatively, you can use the following procedure to uninstall Bridge from the command line.

1. Open the Command Prompt as an administrator.
2. In the location where the .exe was installed, run the following command:

```
tableau<installer_name>.exe /uninstall /quiet
```

Set Up a Bridge Refresh Schedule

This topic describes how a data source owner can set up and update refresh schedules for a data source that connects to on-premises data. Refresh schedules for data sources that connect to on-premises data rely on Tableau Bridge. The tasks described in this topic assume Bridge has been set up and is being maintained by your site admin. Exceptions are noted.

Notes:

- Bridge keeps data fresh for published data sources only, i.e., data sources published separately from workbooks. Bridge can't keep data fresh in data sources embedded in workbooks.
- To set up and configure a refresh schedule for a private cloud-based data source, see Use Bridge for Private Cloud Data.

Online refresh schedules versus Bridge (legacy) schedules

For data sources that are set up to use extract connections, Bridge uses refresh schedules to keep data fresh.

There are two types of refresh schedules that you can configure for Bridge to use:

- Refresh schedules in Online (formerly called Recommended)
- Bridge (legacy)

The schedule you use can depend on a couple of factors, including which version the original schedule was created and the type of underlying data that the data source connects to. In summary, Online refresh schedules are designed to leave client management tasks to the site admin and enables you to perform all your data source management tasks directly on Tableau Online. Bridge (legacy) schedules is designed to continue supporting file-based data sources.

Version

Beginning with Bridge 2020.2, all newly created schedules use Online refresh (formerly called Recommended) schedules by default unless the data source connects to file data. An

Online refresh schedule requires at least one Bridge 2020.2 (or later) client to be set up and added to the client pool by your site admin.

By default, schedules that were created prior to Bridge 2020.2 use Bridge (legacy) schedules. Bridge (legacy) schedules can be migrated to Online refresh schedules unless the schedules are used to refresh data sources that connect to file data.

File-based data sources must use Bridge (legacy) schedules regardless of which version of Tableau was used to set up the original schedules. For more information, see the next section.

Underlying data

As mentioned above, file-based data sources must use Bridge (legacy) schedules because they are not currently supported with the Online refresh schedules workflow.

Relational-based data sources can use either Online refresh (formerly called Recommended) schedules or Bridge (legacy) schedules. However, a benefit of Online refresh schedules is that it leaves client management tasks to the site admin and enables you to perform all your data source management tasks directly on Tableau Online.

Compare schedules

The following table delineates the primary differences between Online refresh (formerly called Recommended) and Bridge (legacy) schedules for keeping on-premises data fresh.

	Online Refresh Schedule	**Bridge (Legacy) Schedule**
Supported data types	Relational data Private cloud data	File data (requires Bridge (legacy) schedule to keep data fresh) Relational data Connector plugins (requires Bridge (legacy) schedule to keep data fresh)
Data source management	Data source page on Tableau Online	Data source page on Tableau Online + designated client

Scheduling	Integrated with Tableau Online refresh schedules	Can be configured to refresh as frequently as 15 and 30 minute increments
REST API	Run Extract Refresh Now option Update Data Source Now option	Not supported

Manage schedules

Though the scheduling tasks are exactly the same, there are two primary entry points for setting up a Online refresh (formerly called Recommended) schedule for a data source that connects to on-premises data. The first entry point is during the data source publishing process, from Tableau Desktop. The second entry point is at any time after the data source publishing process.

Note: Online refresh schedules that use Bridge support the same scheduling frequency options as Online refresh schedules that do not use Bridge.

Set up a schedule

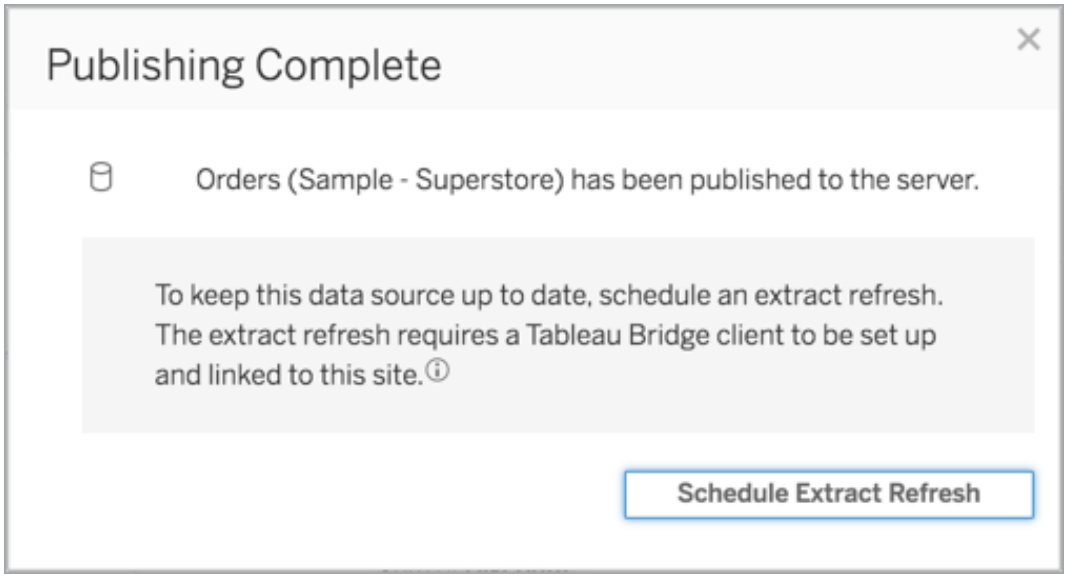
In most cases, you will set up a schedule as you publish your data source from Tableau Desktop.

1. In Tableau Desktop, create your data source.
2. Select **Server** > **Publish Data Source** to begin the publishing process. If you haven't already signed in to Tableau Online, you will be prompted to.
3. In the Publish Data Source to Tableau Online dialog box, configure the various options for your data source, and then click the **Publish** button. This opens a browser window to Tableau Online.

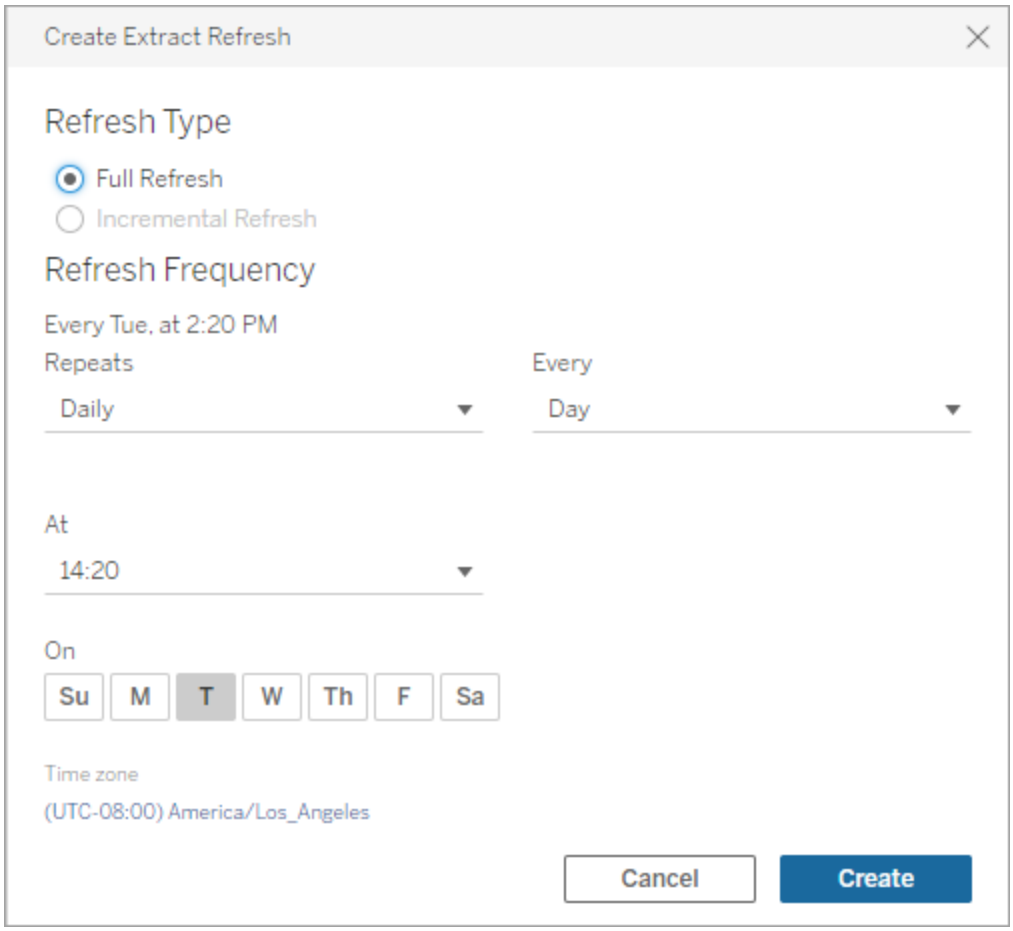
   Note: Depending on the data that the data source is connected to or how you've configured the data source, the dialog will default to publishing an extract or will give you

the option to publish an extract. If you are provided options, select the option to publish an extract.

4. In the Publishing Complete dialog box, click the **Schedule Extract Refresh** button.



5. In the Create Extract Refresh dialog box, configure a schedule for the refresh. For more information about how to configure the schedule, see Schedule Refreshes on Tableau Online



6. Click the **Create** button.

Add or update an existing schedule

For whatever reason you are unable to schedule a refresh during the data source publishing process, you can add a new or update a schedule anytime after.

1. Sign in to Tableau Online and navigate to your data source.
2. From the data source page, click the **Extract Refreshes** tab.
3. Do one of the following:

a. To set up a new schedule, click the **New Extract Refresh** button and configure a schedule for your refresh.

b. To update an existing schedule, select the check box next to the schedule, click the Actions menu, and then select **Change Frequency** to reconfigure the schedule for the refresh.

4. Click the **Create** button.

Manage Bridge (legacy) schedules

If your data source connects to file data, you can use the Bridge (legacy) schedule to keep your data fresh.

Notes:

- Bridge (legacy) schedules can only complete successfully if you embed your database credentials in the connection through the Bridge client. For more information, see Embed or update database credentials for Bridge (legacy).
- When you use a Bridge (legacy) schedule, the time that shows on the client and the time that shows on Tableau Online correspond to the time zone of the machine from which the client is running.

Set up a Bridge (legacy) schedule

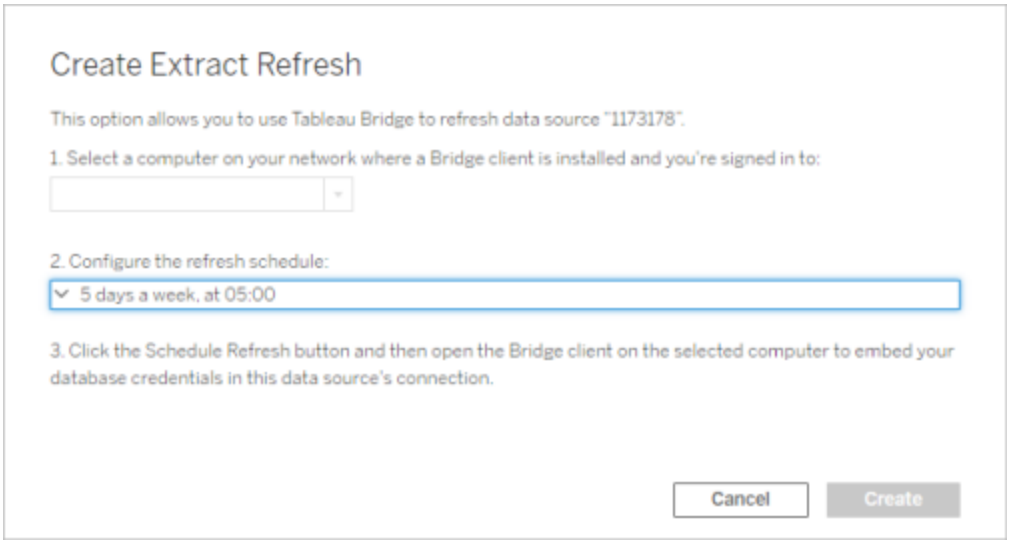
Just like with Online refresh schedules, in most cases, you will set up a Bridge (legacy) schedule as you publish your data source from Tableau Desktop.

Make sure to use Bridge (legacy) schedules to keep all your file-based data sources fresh.

1. In Tableau Desktop, create your data source.
2. Select **Server** > **Publish Data Source** to begin the publishing process. If you haven't already signed in to Tableau Online, you will be prompted.
3. In the Publish Data Source to Tableau Online dialog box, configure the various options for your data source, and then click the **Publish** button. This opens a browser window to Tableau Online.

4. In the Publishing Complete dialog box, click the **Schedule Extract Refresh** button. The **Create Extract Refresh** dialog box, where you configure the Bridge (legacy) schedule, displays.

5. In the Create Extract Refresh dialog box, follow each step to configure the schedule.



Notes:

- **To refresh during a specific time period on selected days:** Select **Hourly**, specify the time range during the day using the **From** and **To** drop-down lists, and then select the days of the week.

  To optimize performance on the server, refresh tasks are distributed within a range of up to five minutes of the time of day you specify. For example, if you set an hourly schedule, the occurrence set to run at 1:00 AM could run any time between 1:00 and 1:05 AM.

- **Full or incremental refresh:** If available, you specify whether you want a full or incremental refresh. By default, Tableau Online runs a full refresh. Incremental refresh is available only if you configured the data source for an

incremental refresh in Tableau Desktop before publishing. For information, see Refreshing Extracts in the Tableau Help.

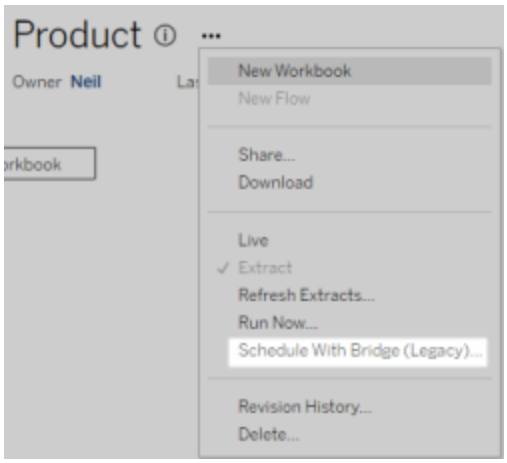
6. Click the **Create** button.

Add a new or update an existing Bridge (legacy) schedule

If you're unable to schedule a refresh during the data source publishing process, you can add a new or update a Bridge (legacy) schedule anytime after.

Make sure to use Bridge (legacy) schedules to keep all your file-based data sources fresh.

1. Sign in to Tableau Online and navigate to your data source.
2. From the data source page, click the **Extract Refreshes** tab.
3. Do one of the following:
   a. To set up a new Bridge (legacy) schedule, in the data source's actions menu, select **Schedule with Bridge (Legacy)**, configure the schedule, and then click the **Schedule Refresh** button.



   b. To update an existing Bridge (legacy) schedule, select the check box next to the existing schedule, click the data source's actions menu, and then select **Change Schedule**. In this workflow, you can't change the client that performs

the refresh. If you need to change the client that performs the refresh, see Change the client that performs the Bridge (legacy) schedule. When finished, click the **Change Schedule** button.

Other Bridge (legacy) schedule management tasks

Add a new or update an existing schedule from the client

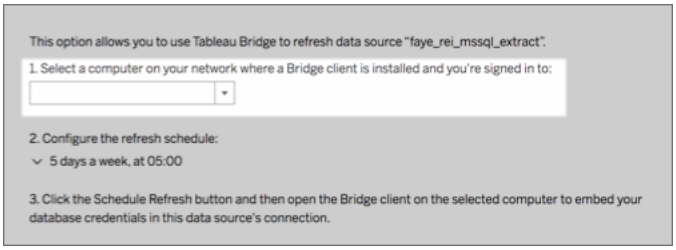
If you, not your site admin, are managing the "named" clients or the clients that are associated with your file-based data sources, you can add a new or update an existing Bridge (legacy) schedule directly from the Bridge client.

1. Open the Windows system tray and click the Bridge icon to open the client.
2. Point to the data source and click the **Schedule** icon. This opens a browser window to the data source page in Tableau Online.
3. Repeat steps 2-3 from the above Add a new or update an existing Bridge (legacy) schedule section to set up the schedule.

Add a new computer (client) to perform a scheduled refresh

When you publish a data source that connects to file-based data, you must set up a Bridge (legacy) schedule to keep the data fresh. As part of the scheduling process, in the scheduling dialog, you must specify a machine. The machine you specify is the Bridge client that performs the refresh.

The Bridge (legacy) schedule displays the clients that you signed into.



If the client you want to select is not available from the drop-down list, it can be one of a few reasons:

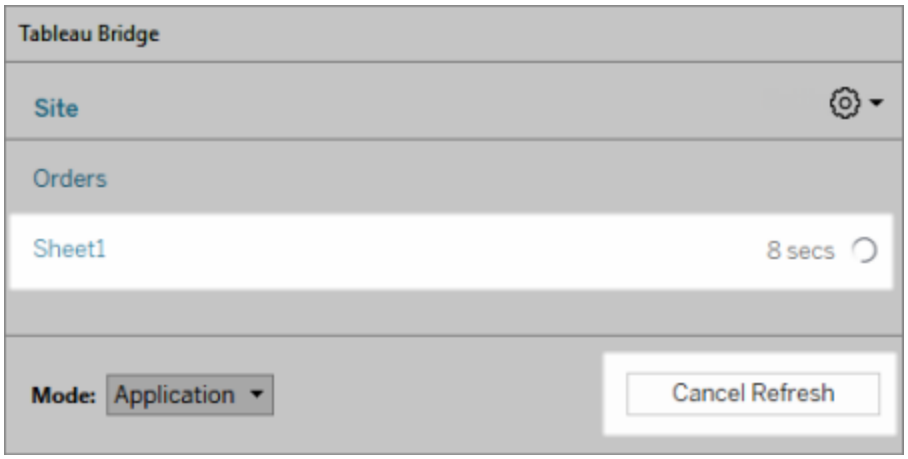
- You're not signed in to the client.
- The client is not properly registered or connected to the site. Go to and open the client and make sure that it has a green or "Connected" status.
- Your site admin manages all clients in your organization. When using Bridge (legacy) schedules, the data source owner and the user signed into the client must be the same. If your site admin is signed into the client, he or she must reassign ownership of the data source to him or herself in order to schedule a refresh.

Cancel an in-progress refresh

In some cases, you might need to cancel an in-progress refresh of a file-based data source. You can cancel a refresh for a data source that uses the Bridge (legacy) schedule only.

1. Open the Windows system tray and click the Bridge icon to open the client.

2. Click the **Cancel Refresh** button. This action will cancel the in-progress refresh.



Note: A client can perform one Bridge (legacy) refresh at a time. If you need to run more than one Bridge (legacy) refresh at the same time, discuss with your site admin about setting up additional clients on different machines to perform the extract refreshes.

Change the client that performs the Bridge (legacy) schedule

If you're working with a Bridge (legacy) schedule and want to change the location or machine that performs the refresh, you must set up a new refresh schedule. You can only schedule a refresh using a client that you are signed in to.

To set up a new Bridge (legacy) schedule, see Set up a Bridge (legacy) schedule. When you're done setting up a new refresh schedule, make sure that you delete the previous schedule identical to the new schedule.

Important: If the data source requires database credentials to access the underlying data, you must go back to the client and edit the connection information to re-embed the database credentials. You can use the **Test Connection** option in the client to check whether the data source can access the underlying data.

Remove a client from a site

After you change the client that performs the Bridge (legacy) schedule, consider permanently removing the client from the site if it's no longer being used for any other data freshness tasks.

1. Sign in to Tableau Online.
2. In the upper-right corner of the browser, click your profile image or initials, and select **My Account Settings**.
3. Under Connected clients, click **Delete** next to the client you want to remove from the site.

Verify a previous or upcoming refresh

You can check when a previous refresh took place or find out when the next refresh will occur.

1. Sign in to Tableau Online and navigate to your data source.
2. From the data source page, click the **Extract Refreshes** tab.
3. Next to the schedule, review **Last update** and **Next** update columns.

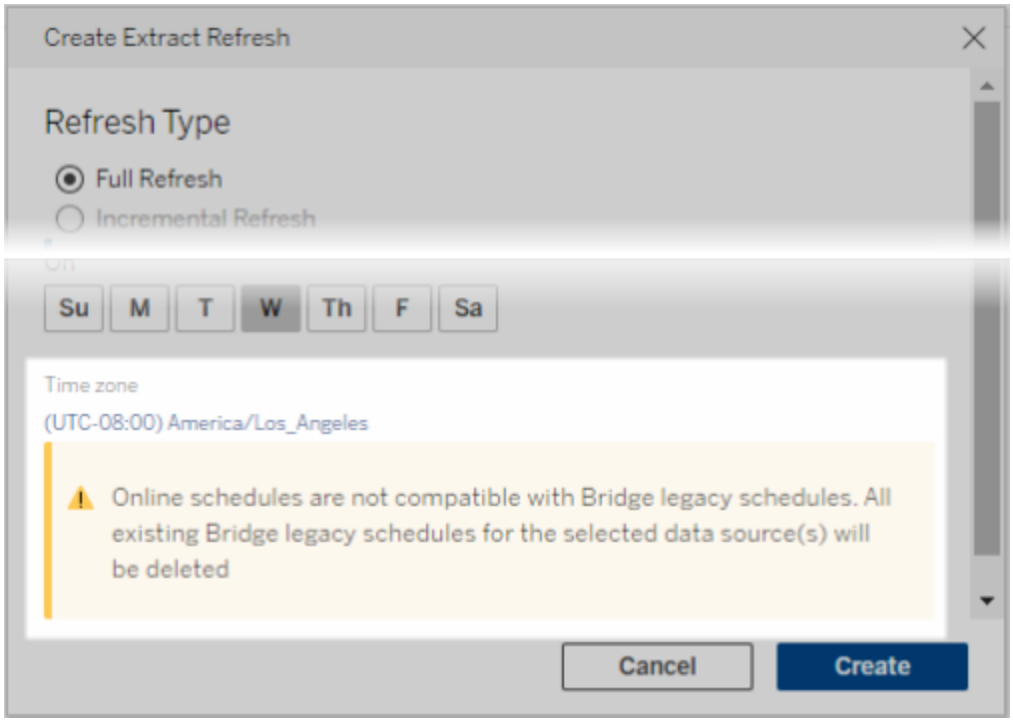
Migrate from Bridge (legacy) to Online refresh schedules

Refresh schedules that were created before 2020.2 use the Bridge (legacy) schedule by default. For data sources that connect to relational data, you can migrate Bridge (legacy)

schedules to use Online refresh schedules to keep your data fresh. Online refresh schedules run on Bridge 2020.2 clients managed by your site admin and take advantage of a pool of available Bridge clients to perform the refreshes.

When you migrate a pre-2020.2 schedule to use an Online refresh schedule, the previous schedule is deleted and can't be recovered. If you change your mind after migrating the schedule, you must create the previous schedule using the Bridge (legacy) schedules workflow described in the Set up a Bridge (legacy) schedule section above.

1. Sign in to Tableau Online and navigate to your data source.
2. From the data source page, click the **Extract Refreshes** tab.
3. Click the **New Extract Refresh** button.
4. Configure the schedule and click the **Create** button. The original Bridge (legacy) schedule will be deleted.



Note: Online refresh schedules require at least one Bridge 2020.2 (or later) client to be set up and added to the pool by your site admin. If no clients have been set up or are available at the time of the scheduled refresh, the refresh will fail.

Delete a refresh schedule

1. Sign in to Tableau Online and navigate to the data source whose refresh schedule you want to delete.
2. On the data source page, click the Extract Refreshes tab.
3. Select the check box next to the schedule you want to delete and select **Actions** > **Delete**.

Use Bridge for Private Cloud Data

This topic describes how a data source owner can publish a data source that connects to cloud data, such as Amazon Redshift and Snowflake, that can only be accessed from a private network.

Data sources that connect to private cloud data rely on Tableau Bridge to keep data fresh. In most cases, Tableau Online will automatically detect that Bridge is required as part of the publishing process. However, in some cases, you might need to manually configure your connection to ensure that Bridge is used.

The tasks described in this topic assume Bridge has already been set up and is being maintained by your site admin.

Note: Bridge keeps data fresh for published data sources only, i.e., data sources published separately from workbooks. Bridge can't keep data fresh in data sources embedded in workbooks.

Set up schedules for private cloud-based data sources

Use the following procedure to ensure that Bridge schedules are used to keep your private cloud-based data sources up to date.

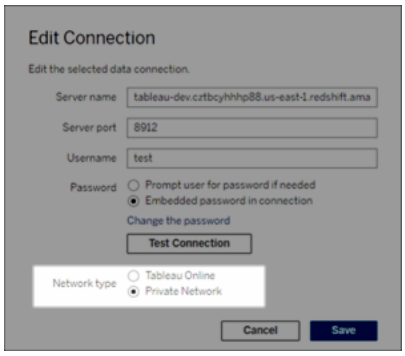
1. Follow steps 1-7 in the Publish a Data Source topic in the Tableau User Help.

2. If not already signed in to Tableau Online, sign in and navigate to your data source.

3. From the data source page, click the **Connections** tab and select the check box next to the connection.

4. From the Actions drop-down menu next to the connection, select **Edit Connection**.

5. In the dialog box next to Network type, select the **Private Network** radio button and click **Save**.



Note: Changing the network type does not change the network type used by existing schedules for the data source.

For example, if you created a refresh schedule prior to changing the network type, you must delete it before using the **Run Now** option. Alternatively, proceed to the next step so that a previous Online refresh schedule is automatically deleted when you create a new Bridge-dependent refresh schedule. For more information about deleting a refresh schedule, see Delete a refresh schedule.

6. Follow one of the steps below depending on the schedule you need to configure:

   - For an Online refresh (formerly called Recommended) schedule, follow the steps described here: Add or update an existing schedule.

- For a Bridge (legacy) schedule, follow the steps described here: Add a new or update an existing Bridge (legacy) schedule.

Note: If you had previously set up a Tableau Online refresh schedule, it will be deleted automatically when you save the Bridge-dependent schedule.

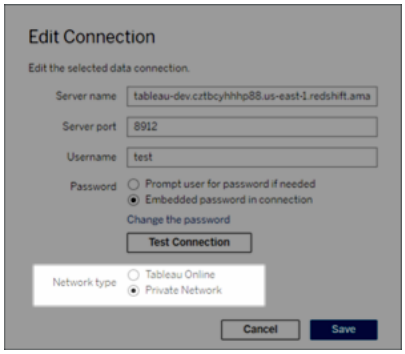
7. Click the **Schedule Refresh** button.

Publish private cloud-based data sources that use live connections

Use the following procedure to ensure that Bridge is used to keep private cloud-based data sources up to data.

1. In Tableau Desktop, create your data source.
2. Select **Server** > **Publish Data Source** to begin the publishing process. If you haven't already signed in to Tableau Online, you will be prompted to.
3. In the Publish Data Source to Tableau Online dialog box, configure the various options for your data source and ensure you do the following:
   - Under Authentication, click **Edit** and select **Embedded password**.
   - Depending on the data that the data source is connected to or how you've configured the data source, the dialog can default to publishing a live connection or give you the option to publish a live connection or extract. If you are provided with options, select **Maintain a live connection**.
4. Click the **Publish** button. This opens a dialog box.
5. In the dialog box, click the **Publish with Bridge** button. This opens a browser window to Tableau Online.

6. In the Publishing Complete dialog box, click the **Done** button.
7. From the data source page, click the **Connections** tab and select the check box next to the connection.
8. In the dialog box next to Network type, if not selected automatically, select the **Private Network** radio button and click **Save**.



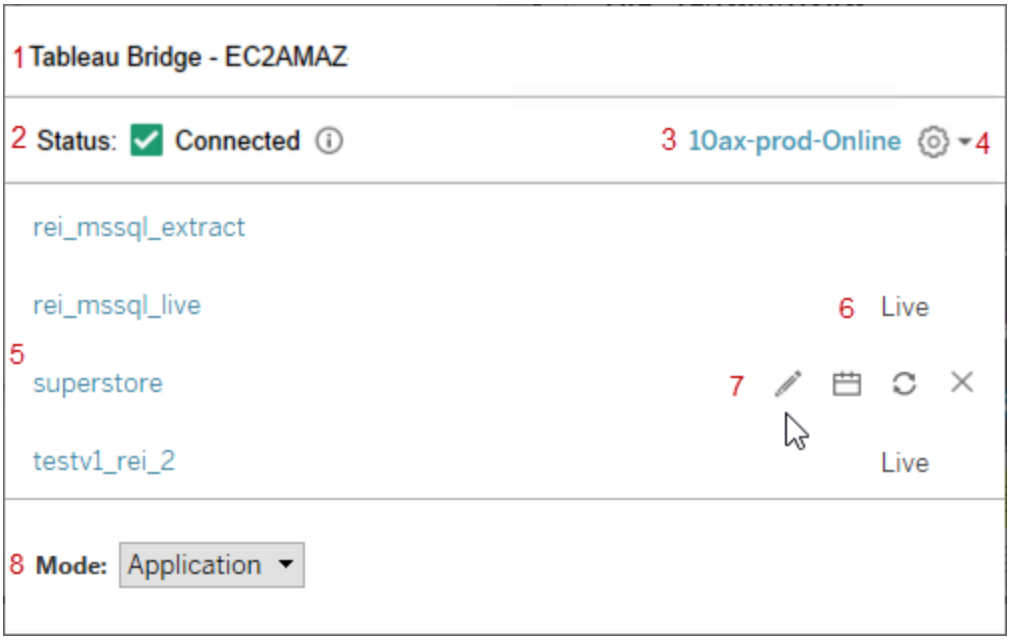
About the Bridge Client

This topic describes the Bridge client and requirements for running and using it. In most cases, the site admin is responsible for installing and managing the client.

Client overview

The client is required to enable connectivity between Tableau Online and on-premises data. When the client is running, it's accessible from the Windows system tray on the machine

where it is installed.



The client is comprised of the following parts:

1. **Client name**, which is also the name of the machine where the client is installed.
2. **Connection status** indicates whether the client is connected to Tableau Online.
3. **Site**: The Tableau Online site that the client is registered to.
4. **Settings menu**, which contains options to disable error reports and unlink the client from a site.
5. **Data sources**: By default, this area displays a list of data sources that are being load balanced (or pooled) by clients across the site. This list can also contain data sources that have been assigned to this specific client using Bridge (legacy) schedules.

   Note: This list does not show data sources that are refreshed with the Online refresh (formerly called Recommended) schedules. To see data sources refreshed with Online refresh schedules, go to the Jobs page and filter on **Bridge Refreshes**.

6. **Pooling status**: This shows whether the data source is part of the client pool.
   - Live: A Live status indicates the data source has a live connection and is part of the pool of clients.
   - Blank: A blank status indicates the client is not part of the pool. This is because the data source is using Bridge (legacy) schedules.

7. **Legacy options**: These options display on hover to edit or view connection information, go to the schedule, and run a manual refresh on hover for data sources that use Bridge (legacy) schedules.

8. **Client mode** indicates if the client is running as a Windows application or service. For more information, see the section below.

Application versus Service mode

A client can operate in one of two modes: Application or Service.

The mode the client can run depends on the Windows user account it's running under, the Tableau Online site settings that the client is registered to, and general data freshness needs.

- **Application:** When the client is set to run in Application mode, it runs as a Windows *application*.

  In this mode, the client can facilitate live queries and scheduled refreshes for data sources that connect to on-premises data while the dedicated user is logged on to Windows. If the dedicated user logs off Windows, the client cannot maintain live queries and refresh extracts on a schedule. Client versions 2020.1 and earlier run in this mode by default.

- **Service:** When the client is set to run in Service mode, it runs as a Windows *service*.

  In this mode, the client runs continuously even if the user is logged out of Windows. The Windows user account must be a member of the local Administrators group to run the client in service mode. This mode is recommended for pooled clients that load

balance live queries and scheduled refreshes. Service mode is the default mode beginning with Bridge 2020.2 clients.

Mode guidelines

	Extract connection with scheduled refresh	**Live connection**
Application mode	• Quickly set up and validate that the client is keeping data sources up to date. • Have more control over when the client is performing data freshness tasks. • Doesn't require the user to be a local admin on the machine. • Requires the user to be logged on to Windows.	
Service mode	• Set up the client once — if the machine has to restart, the client reconnects to Tableau Online automatically. • Requires the Windows user account to be a member of the local Administrators group on the machine. In addition, to refresh file-based data sources, the account must have domain access to the network shared drive where the file data is hosted. • Doesn't require the user to be logged on to Windows.	
	Recommended for load balancing refreshes. For more information, see Configure and Manage the Bridge Client Pool.	Recommended for load balancing live queries. For more information, see Configure and Manage the Bridge Client Pool.

Client requirements

In order to run and use the client, a certain set of requirements must be met as well as some additional requirements that are unique to the data freshness task.

Core requirements

- Client can only run on 64-bit version of Windows.
- Only one client can be installed on a machine.
- The machine on which the client is running must be on the same Windows domain and have access to the underlying database specified in the data source.
- Both the machine and the Windows user must have access to the underlying data specified in the data source.
- The appropriate database drivers must be installed on the machine where the client is running.

For more information, see Plan Your Bridge Deployment.

Additional requirements for Service mode

- To run the client in **Service** mode, the Windows user account running Bridge must be a member of the local Administrators group on the machine. The user doesn't need to be logged on to Windows, but the machine must be powered on with Windows running.
- When using the client in **Service** mode and connecting to file data hosted on a network shared drive, it's required that the account have domain access to the network shared drive.

Additional requirements for extract connections

To refresh data sources, the client can run as a Windows service or as an application. In addition to the core requirements above, the following requirements must be met:

- The user signed in to Tableau Online from the client must have a **Creator**, **Explorer (Can Publish)**, or one of the two types of site admin role: **Site Administrator Creator** or **Site Administrator Explorer**.

  If the user is not a site admin, he or she must be the owner of the data source.

- If the client is set to run as an application, it completes refreshes only when the machine is powered on, and the Windows user is logged on and running Bridge.

  If the machine is turned off, if the user logs off of Windows, or if the user exits the client, updates for the data sources running on that client (either through the pool or manually) will not be able to reach Tableau Online, and the data sources won't get refreshed until the user signs in again. During this time, the data source owner will receive refresh failure notification emails from Tableau Online. For more information, see Stop Keeping Data Fresh Through Bridge.

- To ensure refreshes of file-based data sources complete without any issues, a client that has been set up to run as a service must reference the full UNC path of the source file and not the mapped drive path. For a client that has been set up to run as an application, we strongly recommend that the client also references the full UNC path. For more information, see Change the file path for a data source.

Additional requirements for live connections

To run live queries (for data sources with live connections), the client can run as a Windows service or as a Windows application. In addition to the core requirements above, the following requirements must be met:

- The user signed in to Tableau Online from the client must have one of the two types of site admin roles: **Site Administrator Creator** or **Site Administrator Explorer**.

- Each Tableau Online site can have multiple clients that maintain live connections. Those clients can also be used to refresh extracts.

- If the client is set up to run as an application, live queries can only occur when the

computer is on and the Windows user is logged on and running Bridge.

If the computer is turned off, if the user logs off of Windows, or if the user exits the client, updates to the data sources will not be able to reach Tableau Online, and the data sources can't be kept up to date.

- To maintain live connections, the databases that the data sources connect to *can't* be accessible from the public internet.

Repair a client running in Service mode

Occasionally something causes one of the data source connections to stop functioning normally. When this happens, an alert appears, and it usually provides information that direct you toward the cause of the problem. However, if Tableau Online cannot provide troubleshooting information in the alert, and if you run Tableau Bridge as a service, you can use the **Repair** command to try to reset connections.

To help repair a client in Service mode, in the Windows system tray, right-click the Bridge icon and select **Repair**. This stops and restarts the service, which can be enough to resolve the issue.

Configure and Manage the Bridge Client Pool

This topic describes how site admins can configure and manage pooling for Bridge clients. Pooling allows clients across the site to load balance data freshness tasks for data sources that connect to on-premises data.

Configure pooling

The purpose of a pool is to distribute (or load balance) data freshness tasks among the available clients in a pool. Although the client in the pool that performs the data freshness task is chosen at random, if for whatever reason a client can no longer perform the task, the task is automatically rerouted to another available client in the pool to handle the task. There is no additional intervention required from you or your users to support or manage the pool of clients.

Pooling is optimized for keeping data sources that connect to relational data fresh. Pooling support does not extend to data sources that use Bridge (legacy) schedules or connect to file data because for those cases, the scheduled refresh must be associated with a specific client.

In general, we recommend pooling in the following situations:

- **Bridge is used as a critical service.** If your organization requires that live query and scheduled refresh support must be available even if a client becomes unavailable.
- **Client is at capacity.** If your existing site traffic is exceeding current capacity of the client.

Before configuring the pool

Before you can configure the client pool for the site, review the following:

- (Required) Clients must be installed and running.
- Clients are configured to run as a service. For more information, see Application versus Service mode.
- The user authenticated into the client is a Tableau Online site admin. For more information about deploying Bridge, see Plan Your Bridge Deployment.

Note: Prior to Bridge 2020.2, only live queries could be pooled. Scheduled refreshes for extracts could not be pooled.

Note about user roles

Only site admins, or users with either the Site Administrator or Site Administrator Creator role, can configure and maintain pooled clients. Regardless of the type of user authenticated in to the client, only site admins can add clients to the pool, remove clients from the pool, and monitor clients in the pool.

Step 1: Ensure clients can connect to the site

In order for Bridge to work with your site, you must allow clients to authenticate to the site.

1. Sign in to Tableau Online using your site admin credentials and go to the **Settings** page.

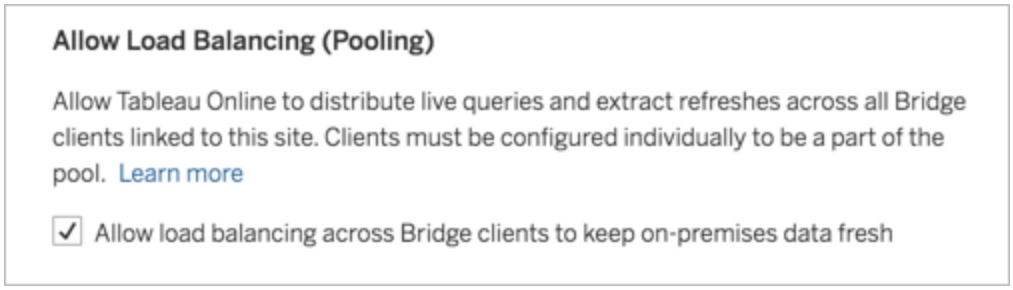
2. Click the Authentication tab and validate that the **Let clients automatically connect to this Tableau Online site** check box under the Connected Clients heading is selected. For more information about this check box, see Access Sites from Connected Clients.

Step 2: Enable pooling

In addition to the site setting above, you must configure a Bridge-specific setting to enable pooling for the site.

1. While signed in to Tableau Online as a site admin, click the **Bridge** tab on the Settings page.

2. Under Allow Load Balancing heading, select the **Allow load balancing across Bridge clients to keep on-premises data fresh** check box.



After you enable pooling for the site, as part of the publishing process, Tableau Online associates users and certain data source with Bridge and the client pool automatically.

Step 3: Add clients to the pool

By default, all Bridge 2020.2 (and later) clients are included in the pool when if the user authenticated into the client is a site admin. Follow the procedure below to add clients that were not automatically added to the pool or removed from the pool at some point.

1. While on the Bridge tab, under Client Status, navigate to the client you want to include in the pool.
2. In the Pool column, click the drop-down arrow and select **Default**.
3. Repeat step 2 for each client you want included in the pool.

Manage pooled clients

There are a few ways you can manage your pooled Bridge clients.

Monitor data freshness tasks

You can monitor client activity using a combination of the Jobs page and built-in admin views.

Refresh jobs

To monitor refresh jobs, you can use the following resources:

- **Jobs** page: The Jobs page can show you the completed, in progress, pending, canceled, and suspended refresh jobs that use Online refresh (formerly called Recommended) schedules. For more information, see About Bridge Refresh jobs.
- **Background Tasks for Non Extracts** admin view: After filtering on **Refresh Extracts Via Bridge**, this admin view shows refresh jobs for data sources that use Online refresh (formerly called Recommended) schedules. For more information, see Background Tasks for Non Extracts.
- **Bridge Extracts** admin view: This admin view shows refresh jobs for data sources that use Bridge (legacy) schedules. For more information about this view, see Bridge Extracts.

Live queries

To monitor live query activity, you can use the Traffic to Bridge Connected Data Sources admin view.

Manage registered clients

In the Client Status table, you can see a list of all the clients that are registered to the site, not just the clients that you're authenticated to. Clients can only be registered to one site at a time.

Client Status

Computer Name	Owner	Pool	Version	Connection Status	Last Connected	
SNguyen1-mid	Susan Nguyen	Default	20193.19.1017.1259	Disconnected	Jun 3, 2020, 4:16 PM	Delete
SNguyen2-mid	Susan Nguyen	Default	20202.20.0401.0300	Disconnected	May 7, 2020, 5:05 AM	Delete
SNguyen3-mid	Susan Nguyen	Default	20202.20.0401.0300	Connected	Jun 5, 2020, 7:48 PM	Delete
EC2BCS-47X4XV8	Jane Smith	Not pooled	20201.20.0219.0753	Disconnected	Apr 22, 2020, 7:56 PM	Delete
EC2BCS-34M4LX9	Jane Smith	Default	20202.20.0525.1210	Connected	Jun 5, 2020, 8:17 PM	Delete
FSuzuki-laptop2	Fred Suzuki	Not pooled	20201.20.0409.1743	Connected	Jun 5, 2020, 8:06 PM	Delete

The clients you see in this list can tell you the following information:

- Client name, which is also the name of the machine the client is installed on and running from.
- Owner name, which in most cases is a site admin. This is the user who is authenticated (signed in) to Tableau Online from the client.
- Pooled or not pooled:
  - Clients listed as "Default" are included in the pool. This means clients are load balancing live queries and scheduled refreshes for data sources (live connections or extract connections) that connect to on-premises relational data.
  - Clients listed as "Not pooled" are not included the pool. In most cases, clients might not be included in a pool because those specific clients have been set aside to exclusively run Bridge (legacy) schedules, which includes scheduled refreshes for data sources that connect to file data. Though clients that run Bridge (legacy) schedules can be part of client pool, the refreshes themselves cannot be load balanced.

Note: Pools cannot be partitioned to handle live queries separately from scheduled refreshes.

- Client version:

  - A warning icon ( ) displays in this column when the client is not running the latest version of Bridge. Although not required, we strongly recommend upgrading to take advantage of the latest security and feature updates. To download the latest version of Bridge, go to the Tableau Bridge Releases page on the Tableau website.

    Note: The warning icon shows only when there is a newer client available for download. The warning icon is not an indication that there are issues with the client or related Bridge data sources.

  - Clients that are integrated with Tableau Desktop (versions 2018.1 and earlier) will not have version numbers listed.

- Connection status—for more information see the section below.

- Last connected—shows the day and time Tableau Online was last able to reach the client.

Client connection status

In the table of registered clients, the colored circles and status labels indicate the *availability* of the client to support data freshness tasks.

- Green or "Connected": A green or **Connected** state indicates that the client is connected and *available* to support live queries (live connections) and schedule refreshes (extract connections).

- Red or "Disconnected": A red or **Disconnected** state can indicate one of a few conditions that have temporarily put the client in a disconnected state. The most common scenario is if the client is not running or was unable to establish communication with

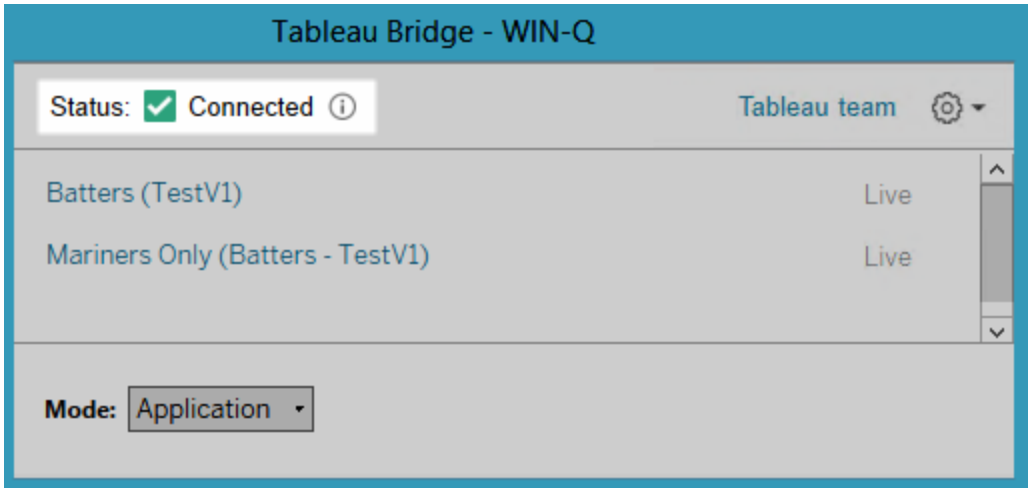
Tableau Online after being launched. You can hover the mouse over the status to see a tooltip that describes the condition.

Notes:

- When the client is in a disconnected state, live queries might be disrupted. In cases like this, views that depend on data sources with live connections may properly display until the issue is resolved.
- When a client is in a disconnected state, However, extract refreshes continue to run on schedule and manual refreshes from the client can be initiated.

- No color or blank: Clients that are integrated with Tableau Desktop (versions 2018.1 and earlier) can't show different states of availability.

The states described above reflect and correspond to the status you see in the client.



Troubleshoot pooling

Bridge Refresh jobs fail with one of the errors listed below.

The following errors can be seen on the Jobs page and the Background Tasks for Non Extracts admin view.

- **"errorID=NO_POOLED_AGENTS_ASSIGNED"**

  This issue can occur if there are no clients in the pool. To resolve this issue, add at least one Bridge 2020.2 (or later) client to the pool. For more information, see Step 3: Add clients to the pool.

- **"errorID=NO_AGENT_IN_POOL_SUPPORTS_REMOTE_EXTRACT_REFRESH"**

  This issue can occur when a refresh schedule job tries to run without at least one Bridge 2020.2 (or later) client in the pool. To resolve this issue, add at least one Bridge 2020.2 (or later) client to the pool. For more information, see Step 3: Add clients to the pool.

- **"errorID=NO_POOLED_AGENTS_CONNECTED"**

  This issue can occur when none of the clients in the pool are available to run data freshness tasks. For more information, see the Client connection status section above.

- **"errorID=REMOTE_EXTRACT_REFRESH_ALL_AGENTS_BUSY"** or **"errorMessage: Maximum concurrency reached"** in the client

  These issues can occur if the number of refresh schedule jobs running at a given time exceeds the capacity of your client pool. To help resolve this issue, you can do the following:

  - Add additional clients to the pool. For more information, see Step 3: Add clients to the pool.
  - Increase the size of the **connectionPool** setting on each client. For more information, see Modify the size of the Bridge pool.

- **"errorID=SITE_NO_LONGER_HANDLING_LIVE_QUERIES"**

  This issue can occur when Bridge pooling has not been enabled or turned off for the site. To help resolve this issue, enable pooling. For more information, see Step 2: Enable pooling.

Bridge clients are being signed out

This issue can happen if you deploy a large number of clients under the same Windows services account. When there are more than 10 clients running under one Windows services account, account security measures can cause clients to be logged out. For more information, see Windows services account.

Change the Bridge Client Settings

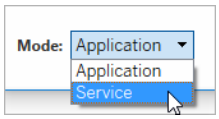
There are several Bridge client settings that the site admin can configure to change how a client runs. In some cases, a data source owner might be responsible for some of the tasks described in this topic if he or she maintains his or her own client to run Bridge (legacy) schedules.

Run Bridge as a Windows service

In order for a client to be included in a pool, the client should run as a Windows service (**Service** mode). By default, a client is set to run as a Windows service so that it can load balance live queries and refreshes in the background without requiring a dedicated user to be logged in to the machine. For a client to run as a Windows service, the Windows user account that runs the client must be a member of the local Administrator group on the machine.

Note: If you're a data source owner and managing the client yourself, your client will not be included in the pool. However, if you want the Bridge (legacy) schedule to run in the background even when you're not logged on to your machine, your client must be running as a Windows service (**Service** mode).

1. Open the Windows system tray and click the Bridge icon to open the client.
2. From the Mode drop-down menu, select **Service**. A sign-in windows displays.



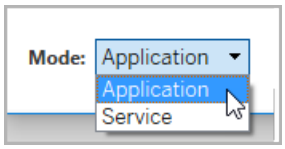
3. Enter your local admin credentials.

In your list of Windows services, Bridge appears as **Tableau Bridge service**. You can see this in the Windows Services console or on the **Services** tab in the Task Manager.

Stop running Bridge as a Windows service

To stop the client from running as a service, change its mode.

1. Open the Windows system tray and click the Bridge icon to open the client.
2. From the Mode drop-down menu, select **Application**.

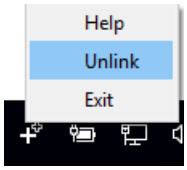


When the client is running in Application mode, live queries and scheduled refreshes can only run when the user is logged in to the Windows user account on the machine where the client is running from.

Switch the site a client is associated with

When you want to use a client to keep data sources published to a different Tableau Online site fresh, you can unlink the existing client and authenticate to the new site from the client.

1. Open the Windows system tray and click the Bridge icon to open the client.
2. From the drop-down menu, select **Unlink**.



Unlink removes the list of data sources, schedules, and connection information from the client.

3. Open the Windows system tray and click the Bridge icon to open the client.

4. When prompted, sign in to the new site with your site admin credentials.

5. Do one or both of the following to configure the client:

    - If this client refreshes file-based data sources, ask data source owners to reconfigure their data sources and refresh schedules.

    - If you want this client to facilitate live connections or extract connections that use Recommended schedules, ensure that the new client is part of the pool. For more information, see Configure and Manage the Bridge Client Pool

When you unlink a client, you might also need to remove the Bridge (legacy) schedules for the data sources that the client was refreshing. The other data sources will continue to have data freshness tasks performed by other registered clients in the pool.

For more information, see Effects of exit and unlink.

Configure a timeout limit for refreshes

To govern the misuse of extracts or refreshes, you can enforce a time limit, also known as a timeout limit, for refreshes performed by a client. The timeout limit is the longest allowable time for a single extract to complete a refresh before it's canceled by the client. If an extract refresh is canceled as a result of reaching the timeout limit, you will see a message in the client and an email alert will be sent to the data source owner.

By default, the timeout limit for a client is set to 24 hours. You can change the timeout limit for a client through the Bridge configuration file.

Note: The client must be restarted for any changes made to the configuration file to take effect.

1. On the machine where the client is installed, go to the **Configuration** folder in the My Tableau Bridge Repository.

    The default location of the Configuration folder is C:\Users\jsmith\Documents\My Tableau Bridge Repository\Configuration.

2. Open the **TabBridgeClientConfiguration.txt** file.

3. Next to `extractRefreshTimeout`, change the time allowed for a refresh task to complete.

   Note: If you don't see the parameter in the configuration file, you can add `"extractRefreshTimeout" : 08:00:00",` to the `dataSourceRefreshSettings` setting like in the example below.

4. Save and close the file.

5. Exit and restart the client for the changes to take effect. The way you restart the client depends on whether the client is running in Application or Service mode.

   - For Application mode: from the client menu, select **Exit**.
   - For Service mode: from the Mode drop-down menu, select **Application**; from the client menu, select **Exit**.

Manage the size of Bridge log files

The client creates logs of activities as part of its normal operation. You might need to use these logs when you are troubleshooting issues with Bridge or if Tableau Support requests logs from you to help resolve an issue.

By default, the maximum size allowed for a Bridge log files is 25 MB. When a log file exceeds that size limit, a new log file is created. When the number of log files reaches 40, which is the default value for the maximum number of allowed Bridge log files, the oldest log file is deleted.

You can change the default values for these parameters through the Bridge configuration file.

Note: Log files named tabprotosrv* vary from other Bridge log files. The maximum size is 1 MB and the maximum number of allowed log files is 8,192. These values are also not configurable.

1. On the machine where the client is installed, go to the **Configuration** folder in the My Tableau Bridge Repository.

   The default location of the Configuration folder is C:\Users\jsmith\Documents\My Tableau Bridge Repository\Configuration.

2. Open the **TabBridgeClientConfiguration.txt** file.

3. Next to `loggerSettings`, change the values for the following parameters:

   ```
   "maxLogFileSizeInMB" : 25
   ```

   ```
   "maxBackupLogFileCount" : 40
   ```

4. Save and close the file.

5. Exit and then restart the client for the changes to take effect. The way you restart the client depends on whether the client is running in Application or Service mode.

- For Application mode: from the client menu, select **Exit**.
- For Service mode: from the Mode drop-down menu, select **Application**; from the client menu, select **Exit**.

Modify the size of the Bridge pool

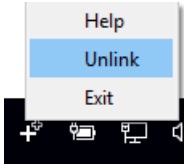
By default, each client in a pool can load balance up to 10 refresh jobs at one time. The maximum number of refresh jobs allowed per client is 100. If the number of refresh jobs running at a given time exceeds the capacity of your client pool or you have the hardware resources to support it, consider increasing each client's capacity.

Important: The procedure described below requires unlinking the client. Unlinking removes the association between the site and the client. This means for data sources that are refreshed using Bridge (legacy) schedules, unlinking the client removes associations to those data sources, its schedules, and any connection information from the client. As part of modifying the size of the Bridge pool, we recommend you click the Bridge icon in the Windows System tray and note the data sources listed (step 5) to aid the rescheduling process (step 10).

1. On the machine where the client is installed, go to the Configuration folder in the My Tableau Bridge Repository.

   The default location of the Configuration folder is C:\Users\jsmith\Documents\My Tableau Bridge Repository\Configuration.

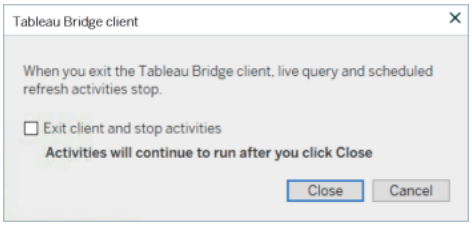
2. Open the **TabBridgeClientConfiguration.txt** file.
3. Edit the value next to `ConnectionPool`.
4. Save and close the file.
5. (Optional) Click the Bridge icon in the Windows System tray and note the data sources listed and the refresh schedules that have been configured for those data sources.
6. Right-click the Bridge icon in the Windows System tray and select **Unlink**.



For more information about the Unlink option, see Effects of exit and unlink.

7. Exit the client for the changes to take effect. The way you exit the client depends on whether the client is running in Application or Service mode.

   - For Application mode: from the client menu, select **Exit**.
   - For Service mode: from the client menu, select **Exit**. In the dialog box, select the **Exit client and stop activities** check box and click **Close**.



8. Start Bridge again.
9. When prompted, sign in Tableau Online using your site admin credentials.
10. (Optional) If you followed step 5 for data sources that use Bridge (legacy) schedules, follow the procedure described in Add a new or update an existing Bridge (legacy) schedule to reschedule the refreshes and effectively re-associate the data sources with the client.

Publish a Bridge Data Source with a Live Connection

This topic describes how a data source owner can publish a data source that uses a live connection to on-premises data. Data sources that connect to on-premises (including private cloud) data rely on Tableau Bridge. The tasks described in this topic assume Bridge has already been set up and is being maintained by your site admin.

Notes:

- Bridge keeps data fresh for published data sources only, i.e., data sources published separately from workbooks. Bridge can't keep data fresh in data sources embedded in workbooks.
- To publish a private cloud-based data source that uses a live connection, see Use Bridge for Private Cloud Data.

Publish a data source

The procedure below describes how you can publish a data source that uses a live connection. To support live connections to data sources that connect to on-premises data, Bridge uses functionality called live queries. To keep the data source up to date, Bridge queries the database directly and returns the results of the query for use in the data source.

1. In Tableau Desktop, create your data source.
2. Select **Server** > **Publish Data Source** to begin the publishing process. If you haven't already signed in to Tableau Online, you will be prompted to.
3. In the Publish Data Source to Tableau Online dialog box, configure the various options for your data source and ensure you do the following:
   - Under Authentication, click **Edit** and select **Embedded password** or **Server Run As account** depending on the option you see.
   - Depending on the data that the data source is connected to or how you've configured the data source, the dialog can default to publishing a live connection or give you the option to publish a live connection or extract. If you are provided with options, select **Maintain a live connection**.
4. Click the **Publish** button. This opens a browser window to Tableau Online.
5. In the Publishing Complete dialog box, click the **Done** button.

Stop Keeping Data Fresh Through Bridge

This topic describes the ways a data source owner can stop refreshing data through Tableau Bridge when running Bridge (legacy) schedules.

Note: If you stop using Bridge, views that depend on data sources that rely on Bridge will no longer display data and produce blank pages instead.

Remove a data source from a client

One way you can stop a client from refreshing a data source that uses the Bridge (Legacy) schedule by removing the data source from the client.

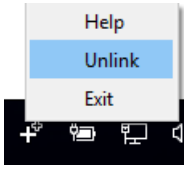
1. Open the Windows system tray and click the Bridge icon to open the client.
2. Point to the data source and click the Remove icon next to the data source name.

Stop using Bridge temporarily or permanently

- To stop using a client and temporarily suspend updates to data sources performed by the client, open the client from the system tray, and on the settings menu in the upper-right, select **Exit**.

  When you exit, the data sources and connection settings remain intact.

- To stop a client and permanently remove the data sources the client links to Tableau Online, right-click the Bridge icon in the system tray, and select **Unlink**.

  Unlinking a client also removes all connection information from the client, including stored database credentials and Tableau Online account credentials.

Effects of exit and unlink

If you exit the client and the next refresh occurs while the client is temporarily stopped, the data source owner will see an alert in Tableau Online and be sent an email notification.

If you unlink a client, we recommend you delete the Bridge (legacy) schedules the client runs. For more information, see Delete the Bridge (legacy) schedule after unlinking a client, below.

Delete the Bridge (legacy) schedule after unlinking a client

When you unlink the client, you should also delete the Bridge (legacy) refresh schedules that the client runs. If a schedule is not deleted, the refresh will attempt to run as scheduled. In cases like this, you might receive refresh failure notifications.

1. Sign in to Tableau Online and navigate to the data source.
2. On the data source page, click the **Extract Refreshes** tab.
3. Select the check box next to the schedule and select **Actions** > **Delete**.

Permanently remove a client from a site

You can permanently remove a client from a site, which will make the client no longer visible when setting up a Bridge (legacy) schedule.

1. Sign in to Tableau Online and navigate to your Account Settings page.
2. Under Connected Clients, click **Delete** next to the client you want to permanently remove from the site.

Manage Email Alerts for Bridge

A scheduled refresh can fail for a variety of reasons. As a data source owner, it's important to be aware of these refresh failures so that you can troubleshoot any issues and minimize gaps in data freshness.

If enabled by your site admin, you will receive email alerts about refresh failures for all of the data sources that you own. When refreshes for your data sources are facilitated by Bridge (through Online refresh (formerly called Recommended) or Bridge (legacy) schedules), the type of alerts you receive, when you receive the alerts, and the alerts that you can configure will differ from Tableau Online alerts.

Differences with Bridge email alerts

- Unlike refreshes that run directly on Tableau Online, Bridge refreshes timeout after 24 hours (default). However, a timeout limit for refreshes can be increased (or decreased) through each Bridge client by a site admin. For more information, see Configure a timeout limit for refreshes.
- In addition to refresh failure emails, data source owners will receive email warnings for the following two scenarios:
  - **Bridge client is not running:** When an upcoming scheduled refresh can't start because the client linked to the data source is not running.
  - **Incomplete refresh:** When a scheduled refresh hasn't completed after a specified amount of time.
- For a particular data source, Tableau Online sends email about the first five consecutive refresh-related issues (i.e., refresh failures, alerts because the client is not running, or alerts because the refresh hasn't completed yet) on the first day. If the data source continues to have refresh issues after the first day, Tableau Online sends one email per day.
- A data source owner can received up to 10 emails, one email per data source with active and consecutive refresh issues, in one day. The time period of *one day* is 24 hours starting at the time of the first refresh issue.
- Data refresh-initiated Subscription emails are not supported for views or workbooks that rely on Bridge extract data sources to keep data fresh. For more information, see Missing subscription emails.

Configure email alert for an incomplete refresh

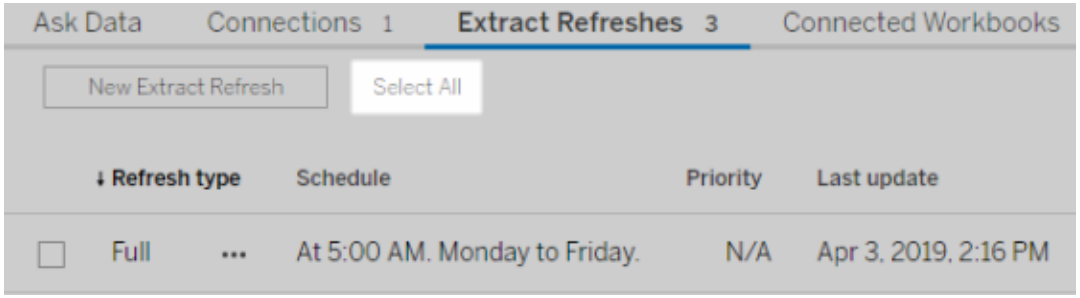
For data sources that use Bridge (legacy) schedules, by default, a refresh email alert is sent 24 hours after the scheduled start time for a data source with an incomplete refresh. If a scheduled refresh completes within 24 hours of its scheduled start time, you will not see an email alert.

In some cases, you might want to be notified sooner than 24 hours. You can configure the email alert to send after an amount of time that better aligns with the duration of a particular refresh.

1. Sign in to Tableau Online and navigate to your data source.

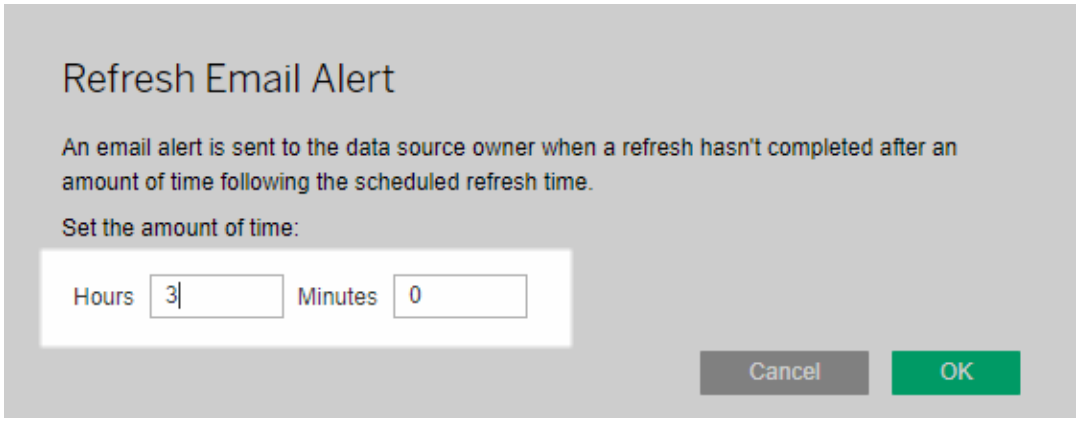
2. From the data source page, click the **Extract Refreshes** tab, and then click the **Select All** button.

   The email alert factors all the schedules for a data source when determining when to send the email alert even if you select only one schedule.



3. From the Actions menu, select **Edit Refresh Email Alert**.

4. In the Refresh Email Alert dialog box, specify the hours and minutes following a scheduled refresh time that the alert should be sent, and click **OK**.



- **One email alert per data source:** You can configure one refresh email alert for a data source. If a data source has multiple refresh schedules, the email alert is sent based on the next scheduled time across all schedules. Review the following two scenarios that demonstrate how the email alert timing works.

  Scenario 1

  Suppose you have an extract data source with one scheduled refresh set to run daily at 5 AM. For the purposes of this example, the refresh usually takes 30 minutes for Bridge to complete at that time of day.

  If you specify 3 hours for the email alert, you will be sent an email at around 8 AM if the refresh hasn't completed by that time.

  Scenario 2:

  Suppose you have the same data source from Scenario 1, with same time specified for the email alert against the following three schedules:

  - Schedule 1 - runs daily at 5 AM
  - Schedule 2 - runs twice a week, Tuesday and Thursday, at 1 PM
  - Schedule 3 - runs once a week, on Saturday, at 12 AM

  For the purposes of this example, though it can take as few as 30 minutes for Bridge to complete the refresh at 5 AM, during business hours, the refresh can take up to 3 hours to complete.

  Like the first scenario, if the refresh for schedule 1 hasn't completed by 8 AM, you will be sent an email. Regardless of the refresh for "schedule 1" being completed or not, you will be sent an email at around 4 PM on Tuesday if the refresh for "schedule 2" hasn't completed. Similarly, regardless of what happened on Tuesday, if the refresh for "schedule 2" hasn't completed by 4 PM on Thursday, you will be sent an email. Finally, if the refresh for "schedule 3" hasn't completed by 3 AM, you will be sent an email.

- **Email alert time is based on the expected start time of the scheduled refresh:** The time you specify for the refresh email alert is the amount of time *after* the scheduled start time of the refresh. If you see email alerts too frequently or never at all, consider increasing the time to decrease email alert frequency or decrease the time to increase email alert frequency.

  The default is 24 hours.

- **Email alert can't be turned off:** Though email alerts can't be turned off, you can increase the time for an email alert so that the scheduled refresh completes before the email alert can be sent.

- **Refresh failure emails must be enabled:** In addition to refresh failure emails being enabled for the site (by the site admin), as the data source owner, you must also have refresh failure emails enabled for your account.

Stop receiving email alerts when a client is not running

By default, Tableau Online is configured to notify data source owners when scheduled refreshes can't start because the Bridge client linked to the data source is not running.

There are two primary reasons why you might be receiving this email:

- The computer where the client is running from is not on.

- An extract data sources continues to be associated with a client that is no longer in use.

If any of these reasons apply to your situation, consider taking a few moments to: 1) make sure the machine where the client is installed on is on and the client itself is running and 2) if you're a site admin, delete unused clients from the site. If you're not a site admin, you can delete the data source from the client. For more information, see Scheduled refreshes appear to be running outside of schedule:.

Troubleshoot Issues with Bridge

Different parts of the Tableau Bridge workflow require coordination with Tableau Desktop and Tableau Online. Depending on the task you're trying to complete, the underlying data that you're working with, and the data source's connection (live or extract), and on the symptoms you're seeing, some troubleshooting steps might require you to work in one or both of these respective products in addition to the client itself.

The issues and the steps to help resolve these issue might apply to data source owners or site admins.

Understand common issues after upgrade

After upgrading to Bridge 2020.2 (or later), you might notice some changes to your Bridge-specific workflows.

Can't configure 15 minute or 30 minute refreshes

Online refresh (formerly called Recommended) schedules can only refresh as frequently as Tableau Online allows. If you need to refresh your data source more frequently, consider continue using Bridge (legacy) schedules instead.

Note: When using Bridge (legacy) schedules, the data source owner must be the same user that is signed into the client that is designated to refresh the data source. Depending on how client management is administered in your organization, your site admin might need to take ownership of your data source.

Can't find the "Refresh this extract on" or "Select where to run refreshes" button

Beginning with Bridge 2020.2, Bridge schedules are better integrated with Tableau Online schedules and can be accessed and set up directly in the same location as Tableau Online refresh schedules. For more information about Bridge schedules, see Set Up a Bridge Refresh Schedule.

Can't find the Run Now option

The **Run Now** option in Tableau Online is not available on individual data source pages for data sources that use Bridge (legacy) schedules. In most cases, a manual refresh of a data source that uses a Bridge (legacy) schedule can only be performed from the client that the data source is linked to.

Can't refresh data sources that use Relationships

Bridge 2019.4 (or earlier) does not support data sources created with Relationships in Tableau 2020.2 (or later). To keep your on-premises data fresh, make sure you're running the latest version of the client. To get the latest client, see Tableau Bridge Releases.

Can't find "Schedule with Bridge Legacy" option

Because Bridge cannot refresh data sources embedded in workbooks, the **Schedule with Bridge Legacy** option is not available from the workbook page on Tableau Online. To refresh data sources using Bridge (legacy) (or Online refresh) schedules, republish the workbook with data sources published separately.

Some data sources are not listed or missing from the client

Data sources that use Online refresh (formerly called Recommended) schedules or whose schedules have been migrated to use Online refresh schedules are not visible from the client. As a site admin, you can monitor data sources with Online refresh schedules using the Jobs page. For more information, see About Bridge Refresh jobs.

Data sources that use live queries and Bridge (legacy) schedules (which includes schedules created with Bridge 2020.1 and earlier) continue to display in the client.

Locate Bridge

If you can't find the Bridge client or the option to use Bridge, try one or more of the suggestions below.

Can't find the Bridge installer

To download the client, go to Tableau Bridge Releases page on the Tableau website and click the download button. For more information about the Bridge installer and the installation process, see Install Bridge topic in the Tableau Online Help.

Can't find Bridge on my machine

After installing the client on your machine, you can do one of the following tasks to open the client:

- Double-click the Bridge shortcut ( ) on your desktop.
- From your desktop, in the Windows system tray, click the Bridge icon ( ).
- Using Windows file explorer, search **Tableau Bridge** to locate the client.
- If Tableau Desktop is installed on the same machine as the client, open Tableau Desktop and select **Server** > **Start Tableau Bridge Client**.

  Note: This task opens the correct client if you're using Tableau Desktop 2018.2 and later. If you're using Tableau Desktop 2018.1 and earlier, using the **Start Tableau Bridge Client** option will cause an older version of the client to open.

Can't find the Bridge option in the publishing dialog

The reason you might not see Bridge option in the publishing dialog depends on what you are publishing to Tableau Online: a data source or a workbook.

If you're publishing a data source:

- The data source is file-based. Therefore, the option to use Bridge displays *after* you have successful published the data source to Tableau Online.

  After you successfully publish the data source, you see the Publishing Complete dialog, which allows you to schedule refreshes for your file-based data source using Bridge while on Tableau Online. For more information about scheduling refreshes using Bridge while on Tableau Online, see Set Up a Bridge Refresh Schedule.

- The data source connects to data that Tableau Online can reach directly.

  If Tableau Online can reach the data directly, you don't need to use Bridge to keep the data fresh. For a list of connectors that Tableau can use to reach the data directly, see Supported connectors.

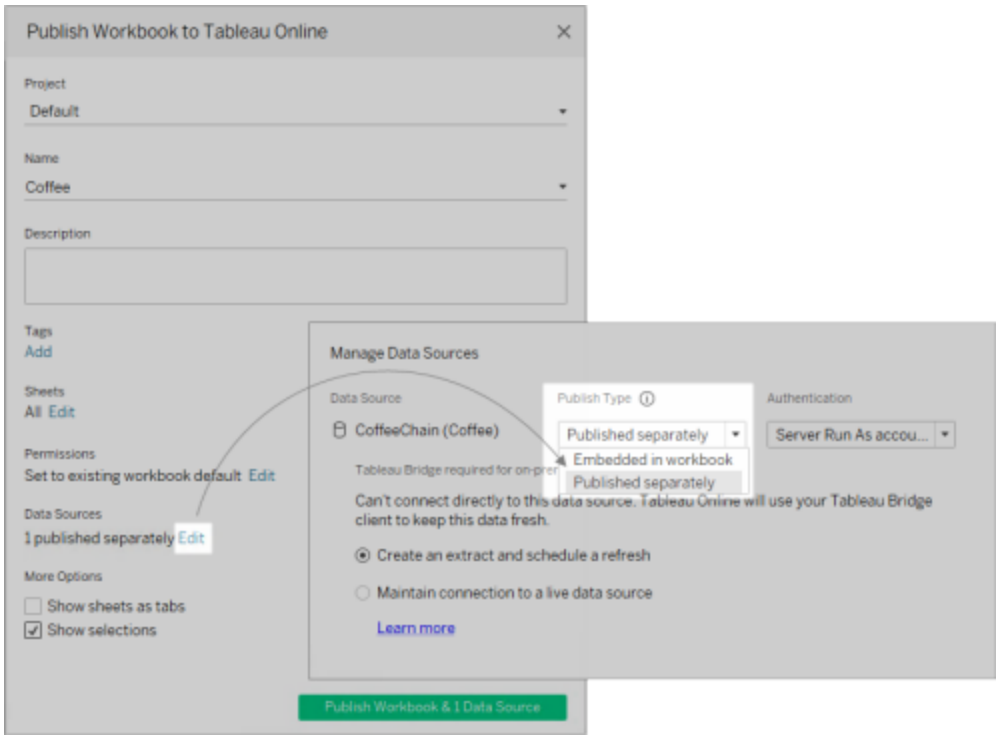
- The data source connects to data that is not supported by Bridge.

  For a list of connectors that Bridge can support, see Supported connectors.

If you're publishing a workbook:

- The workbook contains an embedded data source that must be published separately.

  To publish the data source separately, in the Publish Workbook to Tableau Online dialog box, click **Edit** under Data Sources. Under the Publish Type drop-down, select **Published separately**.



Resolve installation issues

Using macOS or Linux

Bridge is not supported on macOS or the Linux operating system. To use Bridge, you must use a Windows machine. For more information about other system requirements, see Connectivity with Bridge.

Local admin on the machine

The Windows user account you're logged in to must be a member of the local Administrators group. For more information about minimum installation requirements, see Before installing Bridge. For more information on system requirements, see About the Bridge Client.

Resolve sign-in issues

Working with multiple Tableau Online sites or Bridge is signed in to the incorrect site

Make sure you're entering the correct user name and password for the Tableau Online site that the client is associated with. If you suspect that an incorrect user name and password is saved for a site or that the client is singed in to the incorrect site, use the **Unlink** option in the client to remove its association with the site and to clear the password.

Identify causes for scheduled refresh issues

There are several symptoms that can indicate that scheduled refreshes are not performing as expected. Symptoms might include, but not limited to, the following:

- As the site admin or data source owner, you see an alert on Tableau Online that a scheduled refresh could not complete.
- As the site admin or data source owner, you receive an email notification from Tableau indicating that a Bridge refresh could not complete.
- As a data source owner, you receive an email notification from Tableau indicating that a Bridge refresh could not start on schedule because the Bridge client is not running.

- You see an alert in the client next to the data source whose refresh could not complete.
- Outdated data in the view.

If any of the above symptoms apply to your situation, follow the procedure below. If the procedure doesn't resolve your issue, then try one or more of the tasks below the procedure to help identify the cause of the refresh issue.

1. Open the client, click the data source, and then click the **Details** button to review the error message.

2. If the error message doesn't provide enough information to resolve the refresh issue, go to the Tableau Knowledge Base and search for the refresh issue.

Important: If you see the "There was a problem and the data engine could not start properly" error message and you're running client version 2018.2-2018.3, Tableau strongly recommends upgrading to version 2019.1 or later. For more information, see Error "There was problem and the data engine could not start properly" article in the Tableau Knowledge Base.

If the Tableau Knowledge Base doesn't address your specific issue, then try one or more of the following tasks:

- **Validate authentication information in the client:** If a data source requires authentication, ensure that the correct database credentials are being reference by the client, even if the database credentials are already referenced in Tableau Online. For information about embedding database credentials in the client, see Embed or update database credentials for Bridge (legacy).
- **Upgrade the client:** Upgrade to the latest version of the client. You can get the latest version of the client from the Tableau Bridge Releases page on the Tableau website. For more information about installation, see Install Bridge.
  Note: Because of an issue that’s preventing Bridge 2018.2-2018.3 from performing extract refreshes, Tableau strongly recommends that you upgrade to Bridge 2019.1 or later.
- **Make sure that the client is running:** Log onto the machine where client is installed and make sure the client is running. After you verify the client is running, you can run a manual refresh of the data source or wait until the next scheduled refresh.

- **Confirm file-based data source uses UNC path:** If you're working with a file-based data source, ensure that the client references the UNC path. For more information, see Change the file path for a data source.

- **Confirm whether Application mode or Service mode requirements are met:** If the client is set up to run in **Application** mode, you must be logged onto the machine where the client is running in order for scheduled refreshes to complete. If your client is set up to run in **Service** mode, you don't have to be logged on to the machine where the client is running. However, the machine must be on.

- **Confirm that all connections in the data source are supported by Bridge:**

  If refreshing a multi-connection data source (that is, a data source that uses a cross-database join), make sure all connections in the data source are supported by Bridge. If one or more connections are not supported, Bridge is unable to refresh the data source until the unsupported connection is removed. For a list of supported connectors, see Supported connectors. To remove a connection from a data source, you must edit the data source in Tableau Desktop. For more information, see Editing a Published Data Source in the Tableau knowledge base.

- **Manually refresh the data source:** Manually refreshing the data source can help determine whether the issue is caused by the client or by a different part of the Bridge workflow, such as publishing from Desktop or the data source itself.

  - **From the client** - To determine if the issue is isolated to the specific scheduled refresh or all scheduled refreshes managed by the client, do a manual refresh of the published data source from the client.

    1. Open the client.
    2. Hover over the data source whose schedule refresh is not working, and click the Run Now icon ( ) to manually start a refresh.

If the manual refresh is successful, you have a temporary workaround for the refresh issue. If the refresh is unsuccessful, review the error in the client to help resolve the issue.

- **From Tableau Desktop** - To determine whether or not the issue is a client issue or an issue with the published data source, you can do a manual refresh of the data source from Tableau Desktop.

  1. Open Tableau Desktop.
  2. In the Connect pane, click **Tableau Server** and connect to the published data source that is not refreshing.
  3. From the Data menu, select the data source and then select **Tableau Data Server** > **Refresh from Source**.

  If the refresh from source is successful, you have temporary workaround for the refresh issue. If the refresh is unsuccessful with the same error that shows in the client, contact Tableau Technical Support on the Tableau website.

- **From Tableau Desktop, create a local copy of the data source** - To determine that the issue is not with the publishing process or with Tableau Online in general, first create a local copy and then manually refresh the published data source.

  1. Open Tableau Desktop.
  2. In the Connect pane, click **Tableau Server** and connect to the published data source that is not refreshing.
  3. From the Data menu, select the data source and then select **Create Local Copy**.
  4. From the Data menu, select the local copy of the data source and then select **Refresh**.

  If refreshing from a local copy of the data source is successful, you have a temporary workaround for the refresh issue. The issue is likely with the publishing process.

- **Refresh the data source using the Tableau Extract Command-Line Utility:**

Refreshing the data source using the Tableau Extract Command-Line Utility is another method for isolating whether the issue is specific to the client or with the data source or other part of the Bridge workflow. This method can also provide an automated or temporary way of refreshing the extract. For more information about setting up and using the Tableau Extract Command-Line utility, see Automate Extract Refresh Tasks from the Command Line.

If the refresh is successful through the command line utility, you have a temporary workaround for the refresh issue. If the refresh is unsuccessful, contact Tableau Technical Support on the Tableau website.

- **Scheduled refreshes appear to be running outside of schedule:**

  After Tableau Online's upgrade to 2019.2, a data source owner might receive multiple email notifications when an upcoming scheduled refresh can't start because the client is not running. Because a data source owner can receive up to five consecutive email notifications per day for up to ten data sources that they own, it might appear the scheduled refreshes are running outside of their scheduled times. As a data source owner, you might be receiving the notifications for the following reasons:

  - **The machine where the client is running from is not on.** To stop notifications in this scenario, make sure the machine where the client is installed on is on and the client itself is running before the upcoming scheduled refresh is to occur. Alternatively, if the extract data source doesn't need to be refreshed regularly, consider removing the schedule and manually refreshing it from the client when needed. For more information about removing a schedule, see Stop Keeping Data Fresh Through Bridge.
  - **Extract data sources continue to be associated with a client that is no longer in use.** To stop notifications in this scenario, as a site admin, you can delete the client from the site. For more information, see Permanently remove a client from a site.
    If you're not a site admin, consider the following:
    - If the extract data source doesn't need to be refreshed, you can remove the data source from the client. For more information, see Remove a

data source from a client.

- If the extract data source needs to be refreshed, albeit infrequently, you can change the client associated with that extract data source (and its schedule). For more information, see Change the Bridge Client Settings.

Identify causes for live query issues

Issues around live queries are typically due to the option not being enabled or that Bridge doesn't support the data source type.

No "Live" data sources listed in the client

A few things need to happen in order for "Live" data sources to display in the client. First, the site admin has to enable pooling for the site. Second, the site admin must also add at least one client to the pool. Finally, the data source must be published with a live connection. All three factors need to happen in order for "Live" data sources to display in the client.

The option to publish with a live connection or the "Maintain connection to a live data source" option during publishing is missing

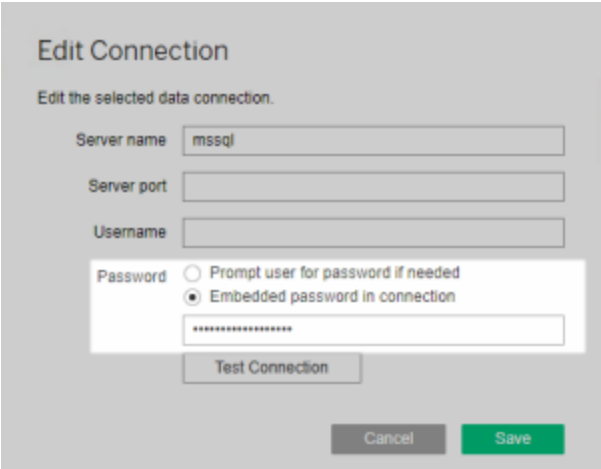
The option to use Bridge to support live queries for an on-premises data source must be enabled by your Tableau Online site admin through pooling. If the option is not available to you during publishing, consider contacting your site admin to enable the option. If you're a site admin, see Configure and Manage the Bridge Client Pool.

You're prompted for database credentials

If the data source requires authentication by the database, the credentials must be embedded in the data source at the time of publishing. If the credentials are not embedded in the data source at the time of publishing, the credentials can be added to the published data source on Tableau Online.

1. Sign in to Tableau Online and navigate to the data source.
2. From the data source page, on the Connections tab, select the check box next to the connection.
3. From the Actions menu, click **Edit Connections**.

4. Select the **Embedded password in connection** and enter the necessary database credentials.



You're working with a file-based or statistical file-based data source

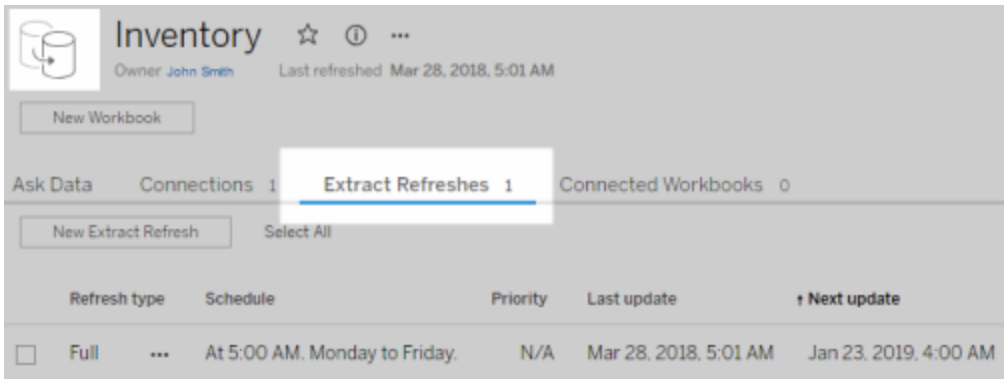
Bridge doesn't support data sources with live connections to file-based and statistical file-based data sources. To keep data fresh for these types of data sources, you can publish extracts and set up a refresh schedule for each data source instead. For a list of connectors that Bridge supports, see Supported connectors. For more information about setting up refresh schedule, see Set Up a Bridge Refresh Schedule.

Data source doesn't display as "Live" in the client:

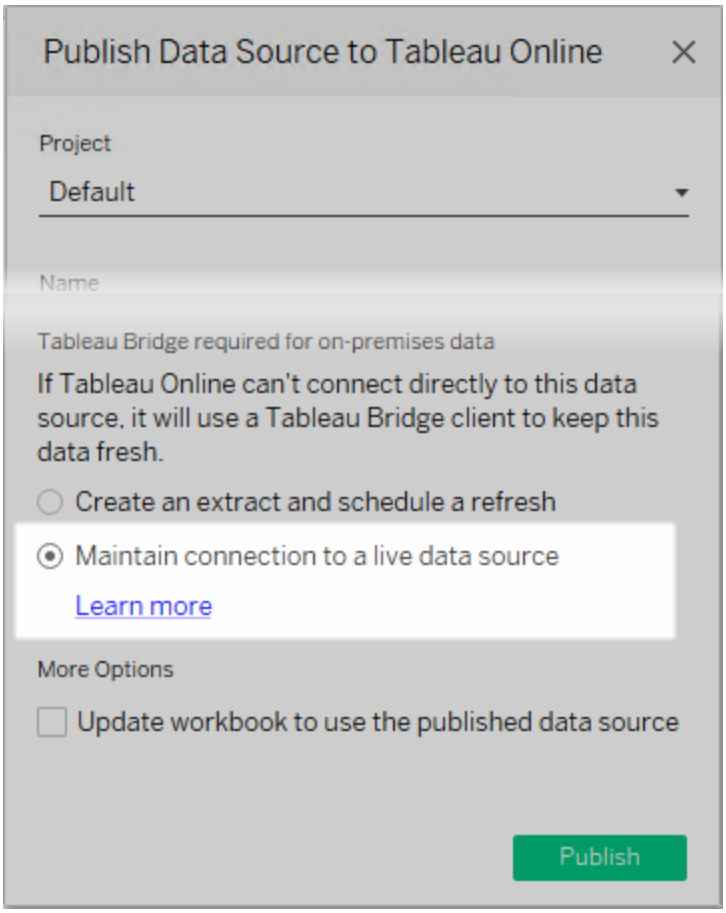
If the data source doesn't show as "Live" in the client, the data source was likely published as an extract. To validate that the data source was published as an extract, follow the steps below.

1. Sign in to Tableau Online and navigate to the data source.
2. On the data source page, check whether the data source has an "Extract Refreshes" tab or an extract icon ( ). If the data source shows the tab then it was published as

an extract.



To resolve the issue, republish the data source from Tableau Desktop, ensuring that you select the **Maintain connection to a live data source** option. This option tells Bridge to maintain a live connection to your data.



Client is running Application mode

If you're using Bridge 2018.2 and later, after the site admin has enabled pooling, live queries are supported in both Application and Service modes. However, if the client is running Application mode, you must be logged on to keep data fresh.

If you're using Bridge 2018.1 and earlier, even if live queries are enabled by the site admin, Bridge can't support live queries in Application mode. The client must be running in Service mode to support live queries.

For more information about running the client in Application mode or Service mode, see Application versus Service mode.

Understand other common issues

Delay before list of data sources populate in client

There is a short delay, usually several seconds, populating the list of data sources in the client. This is expected behavior. The client is contacting Tableau Online to get the list of data sources before it can display that information.

"No linked data found" in the client

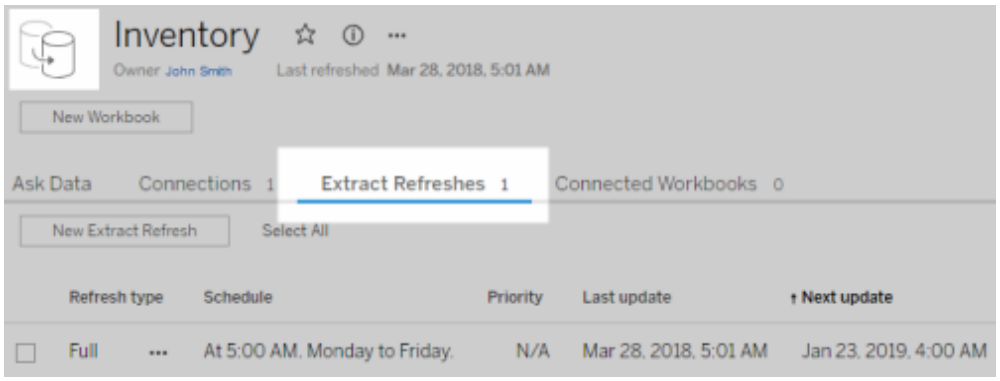
If the client shows a green indicator and "Connected" status, but also shows a "No linked data found," review the suggestions below based on the type of data source you're expecting to see.

If you're expecting to see an extract data source that uses a Bridge (legacy) schedule listed in the client, try the following:

- Validate that the extract refresh schedule is assigned to the correct client. For more information, see Change the Bridge Client Settings.

If you're expecting to see a data source with a live connection or an extract data source that uses a Online refresh (formerly called Recommended) schedule, try one or more of the following:

- Validate that the data source was published with a live connection.
    1. Sign in to Tableau Online and navigate to the data source.
    2. From the data source page, check whether the data source has an "Extract Refreshes" tab or a extract icon ( ). If the data source shows the tab then it was published as an extract.



- Make sure at least one client is part of the pool to facilitate data sources with live connections. To do this, contact your site admin. If you're the site admin, verify that you've enabled pooling for the site and client. For more information, see Configure and Manage the Bridge Client Pool.

Red indicator and "Disconnected" status in the client

If the client shows a red indicator and "Disconnected" status, try the following tasks, in the order listed:

1. In the client menu, click **Repair**.
2. If step 1 doesn't resolve the issue, from the Mode drop-down menu, select **Application** and wait a few seconds. Switch back to **Service** and wait a few more seconds.
3. If step 2 doesn't resolve the issue, restart the machine. Make sure that there are no scheduled refreshes that are in progress.

In some cases, the client shows a red indicator and "Disconnected" status if the client is running on a machine that is "locked down." This means that the client is restricted to connecting to a minimum set of domains. For a list of the minimum set of domains that the client needs to connect to in order to work, see Additional security considerations.

Missing subscription emails

Data refresh-initiated Subscriptions are not supported for views and workbooks that rely on Bridge to keep data fresh. This means you do not receive subscription emails when the following are true: 1) subscriptions are configured for **When Data Refreshes** and 2) the views or workbooks you're subscribing to rely on extract data sources that refresh using Bridge. To use subscriptions in this scenario, consider configuring your subscriptions to use **On Selected Schedule** instead. For more information, see Troubleshoot Subscriptions.

Understand common errors

While using Bridge, you might see one of the following errors.

"An error occurred while communicating with Tableau Server: Tableau Bridge does not have a client configured for your site to handle live connections." or ***"Cannot connect to database"***

This is an error that you might see when connecting to a published data source whose data freshness is being facilitated through Bridge. To resolve these errors, try the following tasks in the order listed.

- Make sure the client is added to the pool. To do this, contact your site admin. If you're a site admin, verify that you've enabled pooling for the site and at least one client. For more information, see Configure and Manage the Bridge Client Pool.
- Make sure the client shows a green indicator and "Connected status. If it shows a red or "Disconnected" status, see Red indicator and "Disconnected" status in the client.

"This data source requires a correct file path" or ***"Unable to refresh data source because of an unsupported operation"***

If you're working with a file-based or statistical file-based data source you might see this error because the path referenced by the client is the mapped drive path instead of the UNC path. To resolve this issue, you must update the file location path in the client. For more information, see Change the file path for a data source.

While refreshing on Tableau Online, you might see the following error:

"Error: Failed to queue *n* tasks"

This error can occur if you've selected to use the **Run Now** option on multiple data sources and one or more data sources connect to file data. The Run Now option can only be used for data sources that use Online refresh schedules.

Prepare and send log files to Tableau Technical Support

If the troubleshooting steps in this article don't help isolate or solve the issue you're having with Bridge, you can contact Tableau for help. Before you contact Tableau for help, consider following the steps below to gather and send the necessary Bridge client log files that Tableau will needs to diagnose and help resolve the issue.

Prepare clean log files

1. On the machine, close the client:
   - If your client is running Application mode, from the client menu, select **Exit**.
   - If your client is running Service mode, change the client to Application mode, and then from the client menu, select **Exit**.
2. Go to and open the **My Tableau Bridge Repository** folder.

   The default location of the My Tableau Bridge Repository folder is C:\Users\jsmith\Documents\My Tableau Bridge Repository.
3. In the My Tableau Repository folder, rename the **Log** folder. For example, Logs_archive. By changing the name of this folder, the client will create a new "Logs" folder.
4. Open the Command Prompt as an admin.
5. Change to the Tableau Bridge bin folder. For example: C:\Program Files\Tableau\Tableau Bridge\bin.
6. Run the following command: `TabBridgeClient.exe -DLogLevel=Debug`

Note: The above command is case-sensitive. If the command is not typed exactly as written, the log files will not capture the issue at the level of detail that is necessary to help diagnose the issue.

After this step, the client opens automatically.

Reproduce the issue

After you prepare the client to create new log files, try to reproduce the issue you're having with Bridge. By reproducing the issue, the new log files can capture specific details about the issue. These details are essential for Tableau to have in order to isolate, diagnose, and resolve the problem.

Send log files

1. After the issue has been reproduced, right-click the Bridge icon in the Windows system tray and select **Exit** to stop Bridge. This step ensures that all errors are recorded in the log file.
2. Using Windows file explorer, go to and open the **My Tableau Bridge Repository** folder.
3. Right-click the **Logs** folder and select **Send to** > **Compressed (zipped) folder**.
4. Contact Tableau Technical Support on the Tableau website.

   Note: If the .zip file you created in step 2 is larger than 5 MB, see Sending Large Files in the Tableau Knowledge Base.
5. Locate and start Bridge. If the client was previously running in Service mode, ensure that **Service** is selected in the client.

Plan Your Bridge Deployment

As a site admin, if you're setting up Tableau Bridge for the first time or upgrading, there are a set of recommendations, best practices, and planning tasks to follow to optimize Bridge for your organization.

For an general overview of Bridge, see Use Bridge to Keep Data Fresh.

Before deploying Bridge

Before you deploy Bridge, review the following information to help you, as the site admin, understand the different components of Bridge, how these components work together, and how they impact your Bridge deployment.

Bridge software

Bridge is stand-alone software, provided at no additional cost, to use in conjunction with Tableau Online. Bridge is a thin client that you install behind a firewall to enable connectivity between on-premises data and Tableau Online.

In most cases, you will own the set up and management of several clients, or a pool of clients, in your organization. However, there is one notable exception to client pool. For more information, see Management models.

Recommended version

To take advantage of the latest security and feature updates, always install the latest version of the Bridge client from the Tableau Bridge Releases page. For more information, see the Install Bridge topic.

Note:

- Clients can only be registered to one site at a time.
- There is no limit on how many clients that can be registered to a site.

Database drivers

To facilitate connectivity between on-premises data and Tableau Online, Bridge requires drivers to communicate with some databases. Some driver software is installed with the client. Other driver software must be downloaded and installed separately. For more information, see the Install Bridge section in the Install Bridge topic.

Recommended software and hardware

Bridge is designed to scale up and scale out. When configuring your Bridge deployment, consider the following:

- For a smaller pool of clients running on higher specification machines, each client can be scaled up to run more scheduled refresh jobs in parallel.
- For a larger pool of clients running on lower specification machines, though each client can run fewer refresh jobs in parallel, each client still provides high throughput and capacity for the pool as a whole.

For more information about pooling, see Pooling capacity.

Operating systems and more

Bridge can be installed on any supported version of the Microsoft Windows operating system.

Only one Bridge client should be installed per operating system.

- Microsoft Windows 10 or later, 64-bit
- Microsoft Server 2012 or later
- Java 11
- Intel Pentium 4 or AMD Opteron processor or later
- 2 GB memory
- 1.5 GB minimum free disk space

Additional hardware guidelines

The following table shows additional hardware guidelines for virtual environments running Bridge. These guidelines are based on the number of concurrent refreshes you need each client to be able to run in parallel.

	Refreshes running in parallel per client	
	<=5	**<=10**
vCPU	4	8

	Refreshes running in parallel per client	
	<=5	**<=10**
RAM	16 GB	32 GB
NVMe SSD	150 GB	300 GB

Virtual environments

All of Tableau's products operate in virtualized environments when they are configured with the proper underlying Windows operating system and minimum hardware requirements.

- Citrix environments (non-streaming)
- Microsoft Hyper-V
- Parallels
- VMware
- Microsoft Azure
- Amazon EC2

Required accounts

There are two types of accounts that your Bridge deployment requires: a Windows service account and a Tableau Online account.

Windows services account

Bridge clients can run in one of two modes: Application or Service. To run the client in Service mode, a Windows services account is required. Service mode allows the client to run continuously without a dedicated logged on user. Service mode is recommended to support 1) data sources with live connections to on-premises data, and 2) load balancing (pooling) of clients. For more information about each mode, see About the Bridge Client.

Important: We recommend that no more than 10 clients run under a single Windows services account.

Tableau Online account

Tableau Online authenticates the client by the user that is signed in to and managing the client. Therefore, a Tableau Online site admin account is necessary to perform certain management tasks, like adding or removing a client from a pool, both on the client and Tableau Online site.

One of the following site roles is required to manage Bridge:

- Site Administrator Creator
- Site Administrator Explorer

Note: A Creator or Explorer (can publish) role is required to publish data sources and keep data fresh with Bridge.

Supported connectivity

When planning your deployment, as the site admin, it's important to know what data your users are connecting to, the type of connections they're using, and how those connection types affect how data sources can be managed.

Data types

Tableau Online supports connectivity to data hosted on a cloud platform—data typically accessible from the public internet or outside the firewall. For data accessible only from a private network (inside the firewall), that is on-premises data, Bridge must be used.

On-premises data that Bridge supports falls into three general categories:

- **Relational data**—examples include Microsoft SQL Server, MySQL, PostgreSQL, Oracle, Teradata, or even PostgreSQL hosted in Amazon RDS
- **File data**—examples include Microsoft Excel, text, and statistical files
- **Some cloud data** (accessible only from a private network)—examples include Redshift, Teradata, and Snowflake

After a connection to the on-premises data is made, the connection information is saved with the Tableau data source. Bridge uses that connection information to facilitate connectivity between the on-premises data and Tableau Online.

Data connections

Bridge supports data sources that use connections between on-premises data and Tableau Online. A data source can use one of two connection types:

- **Live:** Data sources set up to use live connections enable real-time updates of the data. This means any changes to the underlying data is reflected, via Bridge's live queries, in the data source (or workbook) published to Tableau Online.
- **Extract:** Data sources set up to use extract connections enable snapshots of the data. These snapshots can be refreshed on a schedule, via Bridge's Online refresh (formerly called Recommend) or Bridge (legacy) schedules, to capture any changes to the underlying data. These snapshots are then pushed to the data source (or workbook) published to Tableau Online. For more information about the schedules, see Data freshness.

Support for these connection types depend on the data that the data source is connected to. Bridge supports live connections (also known as live queries) for most relational data. For other data, including file data, only extract connections are supported. For more information, see Bridge exceptions.

Data freshness

Bridge keeps data sources up to date using live queries and refresh schedules.

For data sources set up to use extract connections, Bridge uses refresh schedules. There are two types of schedules that can be created by data source owners to keep data fresh: Online refresh and Bridge (legacy).

- **Online refresh** (formerly called Recommended) schedules allow data source owners to manage Bridge data sources directly on Tableau Online.

Beginning with Bridge 2020.2, all new schedules use Online refresh schedules by default unless the data source connects to file data. To refresh file-based data sources, Bridge (legacy) schedules must be used.

- **Bridge (legacy)** schedules require a designated client to perform the refresh. A client can be designated to perform the refresh by the data source owner. The data source owner can only assign a Bridge (legacy) schedule to a client that he or she is already authenticated or signed into using his or her own Tableau Online credentials.

  Schedules created prior to Bridge 2020.2 will use Bridge (legacy) schedules. The data source owner can migrate Bridge (legacy) schedules to use Online refresh schedules unless the data source connects to file data. File-based data sources must use Bridge (legacy) schedules.

Depending on the schedule type, different refresh concurrency is supported. For more information, see Pooling capacity.

Compare schedules

The following table delineates the primary differences between Online refresh and Bridge (legacy) schedules for keeping on-premises data fresh.

	Online Refresh Schedule	**Bridge (Legacy) Schedule**
Supported data types	Relational data Private cloud data	File data (requires Bridge (legacy) schedule to keep data fresh) Relational data Connector plugins (requires Bridge (legacy) schedule to keep data fresh)
Data source management	Data source owner	Site admin or data source owner (depending on who is designated to own the client management tasks)

Client management	Site admin	Site admin or data source owner (depending on who is designated to own the data source management tasks)
Scheduling	Integrated with Tableau Online refresh schedules	Bridge-specific schedule that can be configured to refresh as frequently as 15 and 30 minutes
Pooling support	Live queries Scheduled refreshes (for data sources with extract connections)	Not supported
Refresh concurrency per client	10	1
REST API	Run Extract Refresh Now option Update Data Source Now option	Not supported

Data access and authentication

The underlying data that a data source connects to often requires authentication. If authentication is required, the publisher or owner can configure how the database credentials are obtained. The configuration options are: **Prompt user** or **Embedded password**.

If the data source is set to prompt users, database credentials are not stored with the connection. This means, a user who opens the data source (or workbook that uses the data source) must enter his or her own database credentials to access the data. If a data source is set up with the password embedded, database credentials ares saved with the connection and used by anyone who accesses the data source (or workbook that uses the data source). For more information, see Set Credentials for Accessing Your Published Data.

Data source management

In most cases, the site admin owns and manages the Bridge clients. Data source owners manage the data sources themselves for tasks that range from publishing to updating database credentials and refresh schedules.

Note: Bridge can only keep data fresh for published data sources, i.e., data sources published separately from workbooks. Bridge can't keep data fresh in embedded data sources, i.e., in data sources that are embedded in a published workbook.

Exception for file-based data sources

One exception to the primary data source management workflow described above is data sources that connect to file data.

To manage a file-based data source, the owner of the data source must also be the user signed into the client. The owner can therefore either be the publisher or the site admin. How the owner is determined depends on how you want to distribute data source and client management tasks in your organization. For more information, see Mixed management.

Management models

Although there are no constraints on how to set up and manage Bridge in your organization, your Bridge deployment will likely fall into one of two common management models. The management model you use, as the site admin, depends on the type of on-premises data that your Bridge deployment needs to support.

Centralized management

A centralized management model supports pooling of clients and is optimized for keeping relational data fresh. When clients that are configured for pooling (default), live queries and refresh jobs happen in parallel across available clients.

Note: Prior to Bridge 2020.2, only live queries could be pooled. Beginning with Bridge 2020.2, both live queries and scheduled refresh jobs can be pooled.

For example, if you have 20 refreshes and have five clients that are running and available, you can expect each client to be allocated to run four refresh jobs each.

Using this model means:

- As the site admin, you can set up and take down Bridge clients as needed.
- For data source owners, this means they can 1) have uninterrupted publishing workflows that detect whether Bridge is needed, 2) edit or update database credentials from Tableau Online directly, and 3) schedule refreshes from Tableau Online directly.

Mixed management

A mixed management model is required if Bridge facilitates connectivity for data sources that connect to both relational and file data, like Excel or text. With this model, in addition to the benefits of the centralized management model, “named” or designated clients must be managed separately to support file data.

For data sources that connect to file data, the owner of the data source and the user authenticated into and managing the client must be the same. Therefore, the owner of the client can be one of two types of users: data source owner or site admin.

- **Data source owner:** The data source owner should be the client owner if you want him or her to perform data source management tasks on his or her own. Data source management tasks include updating refresh schedules and updating database credentials that are saved with the client.
- **Site admin owner:** You must be the client owner if you want to retain all client management responsibilities. This means, you must assign ownership of the data source to yourself, effectively making you the new data source owner. You are then responsible for all data source management tasks associated with owning data sources that connect to file data.

Using this model means:

- File-based data sources must be refreshed using Bridge (legacy) schedules.
- When scheduling refreshes, data sources that connect to file data need to be assigned to a specific client. When scheduling a refresh, the client is only visible to the data source owner if he or she is signed into the client itself under the same Tableau Online account.
- If the data source owner maintains ownership of his or her data sources, he or she must own the management of the client that refreshes those data sources.
- If you, as the site admin, want to maintain ownership of the client, you must also own the data sources that are assigned to the specified client.
- Only one refresh can happen at a time for data sources that connect to file data. If you need refreshes to happen at the same time, consider designating additional “named” clients to support higher throughput.

Pooling capacity

By default, data freshness tasks, live queries and data sources that use extract connections refreshed with Online refresh (formerly called Recommended) schedules, are distributed and load balanced across available clients in the pool.

Data Freshness Task	**Pooling Support**	**Concurrency Capacity**
Live query	Yes	16 live queries per client
Extract connection - Online refresh (formerly called Recommended) schedule	Yes	10 refreshes per client (can be configured)
Extract connection - Bridge (legacy) schedule	No	1 refresh per client

Scheduling capacity

Because Bridge clients can easily be connected and disconnected, you can leverage scripts to schedule Bridge capacity (i.e., the number of running client machines) in advance of

anticipated data freshness workloads.

For example, if your Bridge clients run on virtual machines on AWS, the following AWS resources can help you get started with scheduling:

- AWS Instance Scheduler
- How do I stop and start my instances using the AWS Instance Scheduler?
- How do I stop and start Amazon EC2 instances at regular intervals using Lambda?

Bridge exceptions

There are some exceptions that you and your users should be aware of when using Bridge. The following list summarizes some of those exceptions.

- For specific connectivity exceptions, see Unsupported connectivity.
- For data source management exception, see Exception for file-based data sources.
- For client management model exception, see Mixed management.

Deploy Bridge

The steps to install and set up Bridge are simple. However, there are a few additional things you must do before you proceed with your deployment.

New Bridge deployment

Centralized management

To deploy Bridge using the centralized management model, do the following:

1. For each machine, log on using your Windows services account, and install the latest client.
2. After installation, sign in to the client using your Tableau Online site admin credentials to ensure that the client is running under Service mode (on by default).
3. Open a browser, sign in to Tableau Online using your site admin credentials and go to

the Bridge settings page to ensure:

a. Installed clients are properly linked to the site.

b. Clients are part of the client pool (on by default for clients running Bridge 2020.2 and later).

4. Monitor the Bridge live queries using **Bridge Connected Data Sources** admin view, and refresh jobs from the **Jobs** page on Tableau Online.

Mixed management

To deploy Bridge using the mixed management model, do the following:

1. For each machine, log on using your Windows services account, and install the latest client.

2. After installation, sign in to the client using your Tableau Online site admin credentials to ensure that the client is running under Service mode (on by default).

3. Open a browser, sign in to Tableau Online using your site admin credentials and go to the Bridge settings page to ensure:

   a. Installed clients are properly registered to the site.

   b. Clients are part of the client pool (on by default for clients running Bridge 2020.2 and later).

4. To enable support for file data, do one of the following:

   - If the publisher will own and manage their own data sources, ensure that the data source owner installs the latest client on their machine before any data source publishing takes place.

   - If you will own and manage both the data sources and clients associated with those data sources:

i. Set up another machine and client to designate for refreshing data sources.

ii. Sign in to that client using your Tableau Online site admin credentials.

iii. Open a browser, sign into Tableau Online using your site admin credentials and go to the Bridge settings page to ensure:

   i. Installed clients are properly recognized and registered to the site.

   ii. Clients are not part of the pool.

iv. Change ownership of the published data sources that need to be refreshed with your Bridge client to yourself.

v. After you change ownership of the data sources, change the client associated with the refresh.

vi. Log on to the machine running the client and open the client.

vii. For each new data source assigned to your client, enter the database credentials that the client needs to connect and refresh the data source.

5. Monitor the Bridge live queries using **Traffic to Bridge Connected Data Sources** admin view, and refresh jobs from the **Jobs** page on Tableau Online.

Next steps

After you have Bridge set up and running in your organization, your users can start connecting to on-premises data, publishing data sources to Tableau Online, and keep data fresh.

Existing Bridge deployment

Deploying Bridge 2020.2 (or later)

The latest updates to Bridge include enterprise-specific improvements to provide better redundancy in refresh scenarios and help reduce the need for site admins to manage data sources. For more information about the changes, see What's New in Tableau Online.

Step 1: Add new 2020.2 (or later) clients first

The latest enterprise improvements have been designed to complement your existing Bridge deployment. Therefore, Tableau recommends that before you upgrade your existing clients, first add new 2020.2 (or later) clients to your environment. For more information, see What's New in Tableau Online.

Notes:

- New extract data sources that use the Online refresh schedules will default to using 2020.2 (or later) clients and new capabilities.
- Existing data sources that are already configured on a schedule (Bridge (legacy)) and associated with specific clients will continue to run as expected.
- New clients can refresh 10 data sources in parallel by default but can be configured to refresh up to 100 in the TabBridgeClientConfiguration.txt file. For more information, see Change the Bridge Client Settings.
- We recommend that no more than 10 clients run under the same Windows services account.

Step 2: Request data source owners to convert refresh schedules

After 2020.2 (or later) clients have been added to and running successfully in your network, ask data source owners to convert their current refresh schedules (Bridge (legacy)) to use Online refresh schedules. This applies to data sources that connect to relational data only. For more information, see Migrate from Bridge (legacy) to Online refresh schedules.

Important:

- We recommend that data source owners begin the process by converting refresh schedules for extract data sources that are least critical to daily business. This is because converting existing refresh schedules (Bridge (legacy)) to Online refresh schedules will immediately delete the existing refresh schedules.
- Schedules for extract data sources that connect to file data cannot be converted to

use integrated refresh schedules. Instead those data sources will continue to use the (Bridge (legacy)) refresh schedule and the client that it's linked to.

Step 3: Upgrade existing clients to Bridge 2020.2 (or later)

Upgrade all existing clients to Bridge 2020.2 (or later). For more information, see Install Bridge.

Step 4: Add existing clients to a pool

After upgrade, ensure upgraded clients are running as a Window service and then add those clients to the pool. For more information, see Configure and Manage the Bridge Client Pool.

Connectivity with Bridge

When data sources connect to on-premises data that Tableau Online can't reach directly, Tableau Bridge is used to facilitate connectivity.

Supported connection types

Bridge keeps data sources that connect to on-premises data up to date using the following connection types: extract and live.

Extract connections

When data sources use extract connections to connect to on-premises data, Bridge can be used to perform scheduled refreshes of the extracts. Refreshes can be scheduled for all data sources that connect to data listed in the Supported connectors section below. The type of data that Bridge can support falls into one of the following categories:

- **Relational data**
- **File data**, including statistical files.
- **Private cloud data and some ODBC data**, including Amazon Redshift, Teradata, and Snowflake.
- **Some web data connector (WDC) data** if you access the data by entering a

standard user name and password. Bridge can't be used to access a data provider's website using OAuth.

For additional requirements to support extract connections, see Additional requirements for extract connections.

Live connections

Bridge can be used to support data sources that use live connections to on-premises data as well. Bridge supports data sources with live connections, using live queries, to most data sources listed in the Supported connectors section below. For example, Bridge supports maintaining live connections between your on-premises SQL Server or Oracle data.

For additional requirements to support live connections, see Additional requirements for live connections.

Supported connectors

Unless otherwise specified, Bridge supports refreshes schedules (extract connection) and live queries (live connections) to on-premises data (accessible only from within a private network) whose data sources use the connectors in the table below.

Excel (extract refresh only)	HortonWorks Hadoop Hive	Presto
Text File (extract refresh only)	IBM BigInsights	Progress OpenEdge (extract refresh only)
Statistical File - .sas7bdat (extract refresh only)	IBM DB2	SAP HANA (extract refresh only)
Actian Vector	Kognitio	SAP Sybase ASE
Amazon Athena	MAPR Hadoop Hive	SharePoint Lists
Amazon Aurora for MySQL	MariaDB	Snowflake
Amazon EMR Hadoop Hive		

- Amazon RedShift
- Apache Drill
- Aster Database
- Azure SQL Data Warehouse
- Cloudera Hadoop
- Exasol
- Firebird
- Google Cloud SQL (extract refresh only)
- MarkLogic
- MemSQL
- Microsoft SQL Server
- MonetDB
- MySQL
- Oracle
- OData (extract refresh only)
- Pivotal Greenplum Database
- PostgreSQL
- Spark SQL
- Splunk
- Tableau extracts (extract refresh only)
- Teradata
- Vertica
- Web Data Connector (not using OAuth)
- Other Databases (JDBC)
- Other Databases (ODBC)

Limited connector support

Similar to Tableau, Bridge provides limited support for data sources that use the connector plugins, Web Data Connector, or a JDBC or ODBC driver to connect to an unsupported database. For more information about the support provided, see the following topics in the Tableau Help:

- Connector Plugin
- Web Data Connector
- Other Databases (JDBC)
- Other Databases (ODBC)

Unsupported connectivity

There are a few connectivity scenarios that Bridge does not support.

Connection types

- Live connections to file-based data
- Extract connections or live connections to cube data
- Multi-connection data source (data sources that contain cross-database joins) *when* it uses one or more connectors not supported by Bridge. For more information, see Refreshing Cross-Database Joined Data Sources on Tableau Bridge in the Tableau Knowledge Base.

When to use an alternative to Bridge

Connecting to cloud data that Tableau Online *can* reach directly

For cloud data, setting up refresh schedules directly with Tableau Online is almost always a better (or in some cases the only) choice. For a list of connectors supported by Tableau Online, see Allow Direct Connections to Data Hosted on a Cloud Platform.

Note: For some WDC data sources, scheduling refreshes is not an option because of OAuth. For more information, see Working with data accessed through OAuth below.

Refreshing extracts of other cloud data

For some cloud data, you can sign in to by providing a standard user name and password. For example, you might be able to connect to a MySQL database hosted on a cloud platform. In a scenario like this, you can set up a refresh schedule for extracts that connect to this type of data directly with Tableau Online. For more information, see Schedule Refreshes on Tableau Online.

Working with data accessed through OAuth

Data accessed through the provider's web authorization page (OAuth) is not supported by Bridge. Popular providers that use OAuth include Salesforce.com, Google, and WDC data sources created from QuickBooks Online, Facebook, Twitter, and other websites.

To determine whether your data requires OAuth, when you sign in to your cloud data through Tableau Desktop, if you are redirected to the data provider's sign-in page, that provider most likely uses OAuth or similar standard and therefore Bridge can't be used.

As an alternative to Bridge, to refresh data that connects through OAuth:

- For extracts of **Salesforce** and **Google** data, you can set up a schedule directly on Tableau Online.
- For extracts of **WDC** data sources you created from Facebook, Twitter, or other website, you can refresh the extracts from Tableau Desktop, either by using the **Refresh from Source** option, or by republishing the data source. For more information, see Refresh Extracts from Tableau Desktop.

Update Bridge Connection Information

This topic describes how a data source owner can update the connection information for a data source that connects to on-premises data.

Embed or update database credentials

For live queries and scheduled refreshes to run as expected, data sources that require user authentication must have the database credentials embedded with the data source.

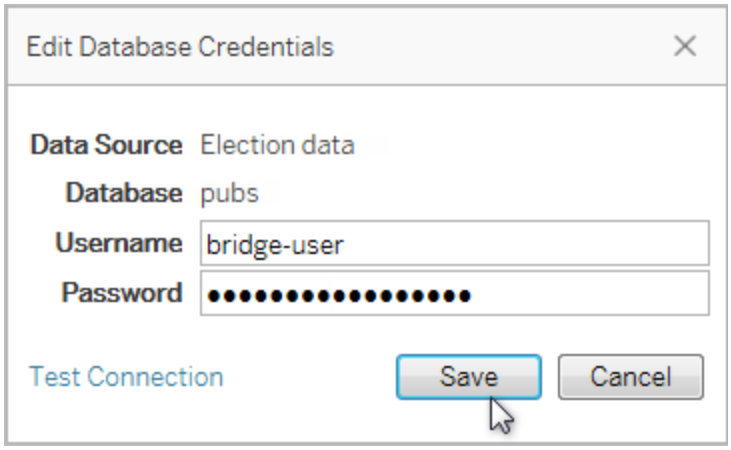
You can embed database credentials for your data source in one of two ways: 1) during publish time from Tableau Desktop or 2) after publishing from the data source's Connection tab in Tableau Online. The procedure below describes how to embed database credentials on Tableau Online. For more information about embedding database credentials in Tableau Desktop, see Set Credentials for Accessing Your Published Data.

1. Sign in to Tableau Online and navigate to your data source.
2. From the data source page, click the **Connections** tab.
3. Select the check box next to the connection, click the Actions menu, and select **Edit Connection**.
4. In the Edit Connection dialog box, enter the database credentials required for accessing the data, and click **Save**.

Embed or update database credentials for Bridge (legacy)

If you use the **Bridge (legacy)** schedule to refresh your data sources, you must embed the database credentials in the connection information in the Bridge client. This task must be done even if you embedded the database credentials at publishing time on Tableau Desktop.

1. Open the Windows system tray and click the Bridge icon to open the client.
2. Point to the data source, and then click the **Edit** icon ( ) that appears.
3. In the dialog box, enter the database credentials required for accessing the data, and then click **Save**.



Change the file path for a data source

If you the **Bridge (legacy)** schedule is used to refresh, saved with the data source is the location of the file. In some cases, you might need to update the file location that the client references under the following circumstances:

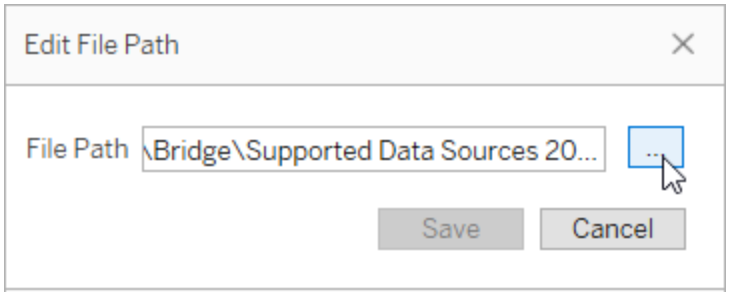
- **Source file location has changed**
- **Data source was published from a mapped drive:** If a client used to perform refresh is running in Service mode and the data source was published from a mapped drive, the file path referenced by the client must be updated to use the full

UNC path. The Windows services account that the client is running under must also have access to the UNC path location of the file. We strongly recommend clients running in Application mode also reference the UNC path for its file-based data sources.

When one of the above conditions is met, you can use the procedure below to change the file path for the data source.

1. Open the Windows system tray and click the Bridge icon to open the client.
2. Point to the data source, and then click the **Edit** icon ( ) that appears.

3. In the dialog box, enter the path location information and then click **Save**.



Change the connection type

A data source can use one of two connection types: live or extract. The connection type determines the frequency at which the data source can be updated to reflect the changes in the underlying data. Depending on the data that is being connected to, some data sources can have live or extract connections but other data sources can only have extract connections. For more information, see Connectivity with Bridge.

If you want to change the connection type of a data source, you must re-publish it from Tableau Desktop, and select the connection preference there. The publishing process will offer you the option to use live or extract depending on the on-premises data that the data source is connected to. If you switched from a live connection to extract, the workflow leads you through setting up a refresh schedule for your data source.

Repair connections

Occasionally something causes one or more of the connections to stop functioning normally. When this happens, an alert appears in the client, and it usually provides information that can direct you toward the cause of the problem. However, if the alert can't provide any troubleshooting information and your client is running in **Service** mode, you can use the **Repair** option to try to reset the connections.

1. Open the Windows system tray and right-click the Bridge icon.
2. From the drop-down menu, select **Repair**. This option stops and restarts the service, which can be enough to resolve the issue.

Bridge Security

Tableau Bridge applies the following security designs:

- All communication is initiated from behind the on-premises firewall and therefore does not require you to manage additional exceptions.
- Data in transit, to and from Bridge, is encrypted.
- Database credentials are stored on the computer using Windows credentials manager if the data source is set up to use Online refresh (formerly called Recommended) or Bridge (legacy) schedules. For Online refresh schedules, the credentials are passed on to the client that is selected to perform the refresh.

You can find more details about Bridge security in the sections below.

Transmission security

Data, to and from the Bridge client, is transmitted by a TLS 1.2 connection.

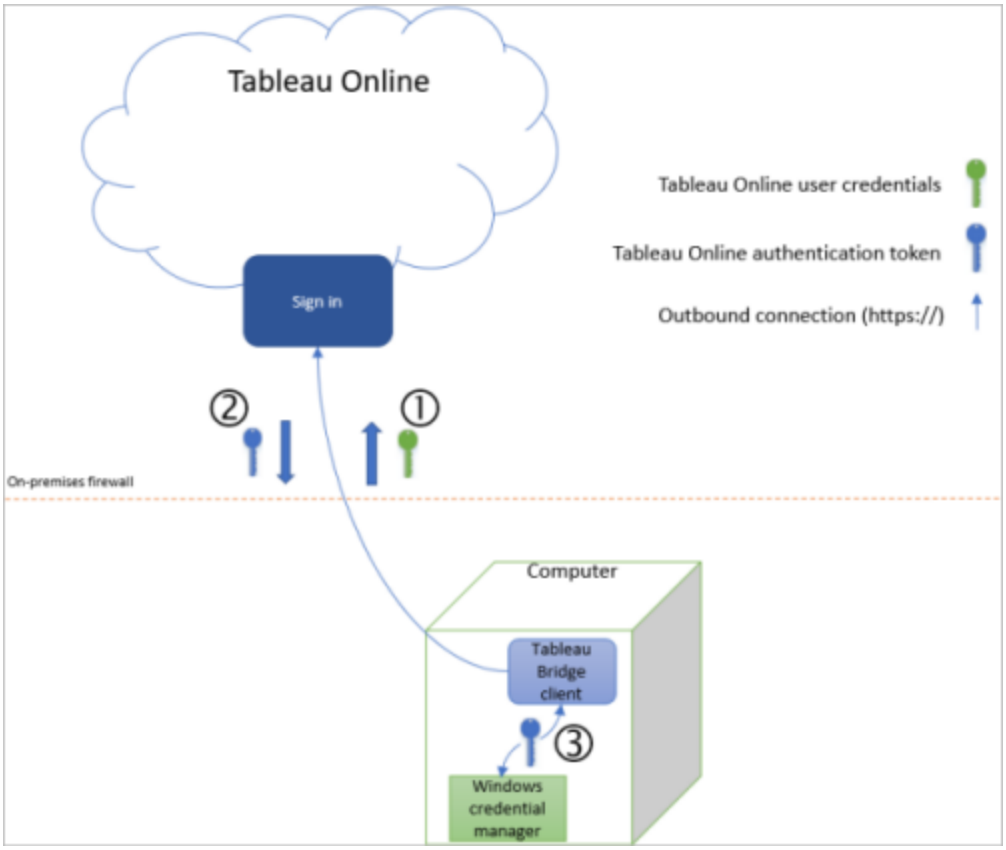
Authentication

There are two primary authentication points for Bridge.

Tableau Online

To connect to Tableau Online, a users Tableau Online credentials are entered through the Bridge client.

After 1) the credentials are entered, 2) an authorization token is returned by Tableau Online. The 3) token is stored on the computer where the client is running using the credentials manager of the Windows operating system. Bridge uses the token to perform various tasks such as downloading the refresh schedule information for an extract.



On-premises data

To access on-premises data, some data sources require authentication using database credentials. Depending on the connection type of the data source, the client handles database credentials in one of the following ways:

- For **live connections and extract connections that use Online refresh (formerly called Recommended) schedules**, database credentials are sent at the time of the request and use a TLS 1.2 connection.
- For **extract connections that use Bridge (legacy) schedules**, if the data source requires database credentials, these credentials must be entered in the client directly. The database credentials are stored on the computer using the credentials manager of the Windows operating system. The client sends the database credentials to the database, which is also behind the on-premises firewall, at the scheduled refresh time.

The client supports domain-based security (Active Directory) and user name/password credentials to access on-premises data.

Changes to on-premises firewall

The Bridge client requires *no* changes to the on-premises firewall. The client achieves this by making only outbound connections to Tableau Online. To allow outbound connections, the client uses the following protocols depending on the connection type used by the data source:

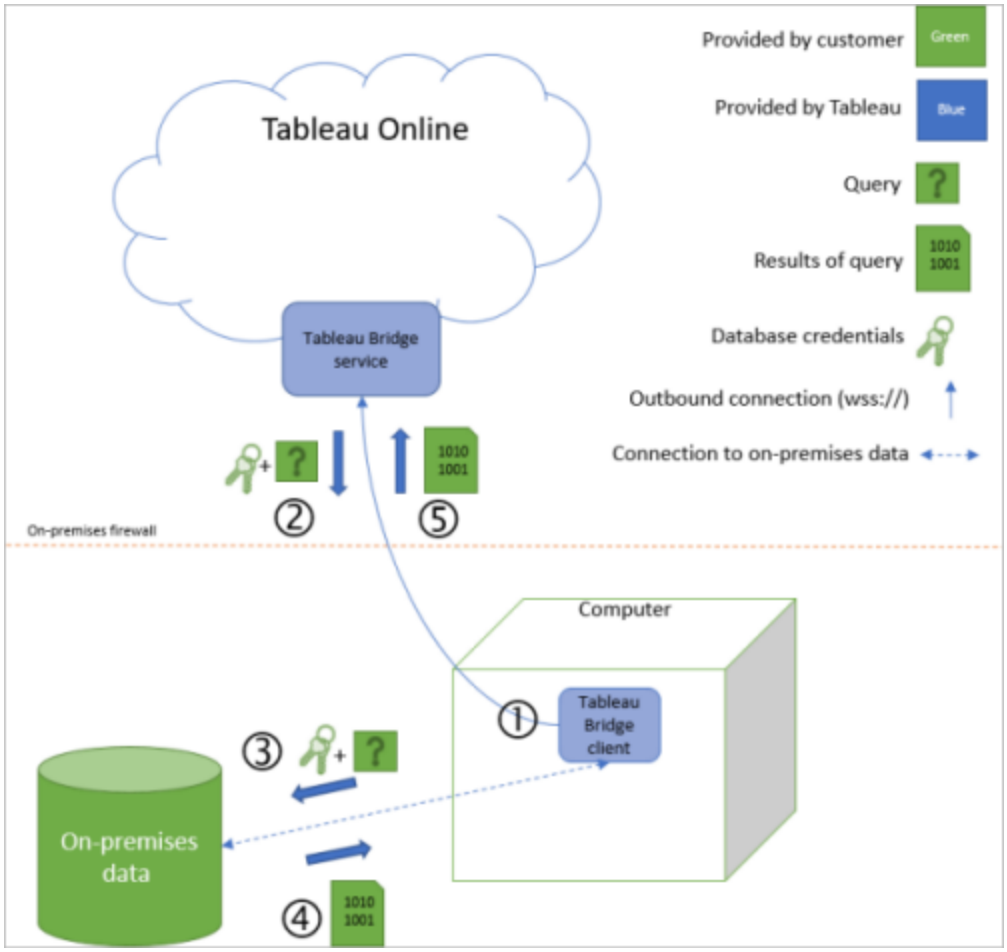
- For **live connections and extract connections that use Online refresh (formerly called Recommended) schedules**, secure WebSockets (wss://).
- For **extract connections that use Bridge (legacy) schedules**, HTTP Secure (https://).

Access to on-premises data

Connections to on-premises data are initiated by the Bridge client on behalf of Tableau Online. The process by which the connection is initiated depends on the connection type of the data source.

- For **live connections**, the client 1) establishes a persistent connection to a Tableau Bridge service, which is the part of the client that resides on Tableau Online, using

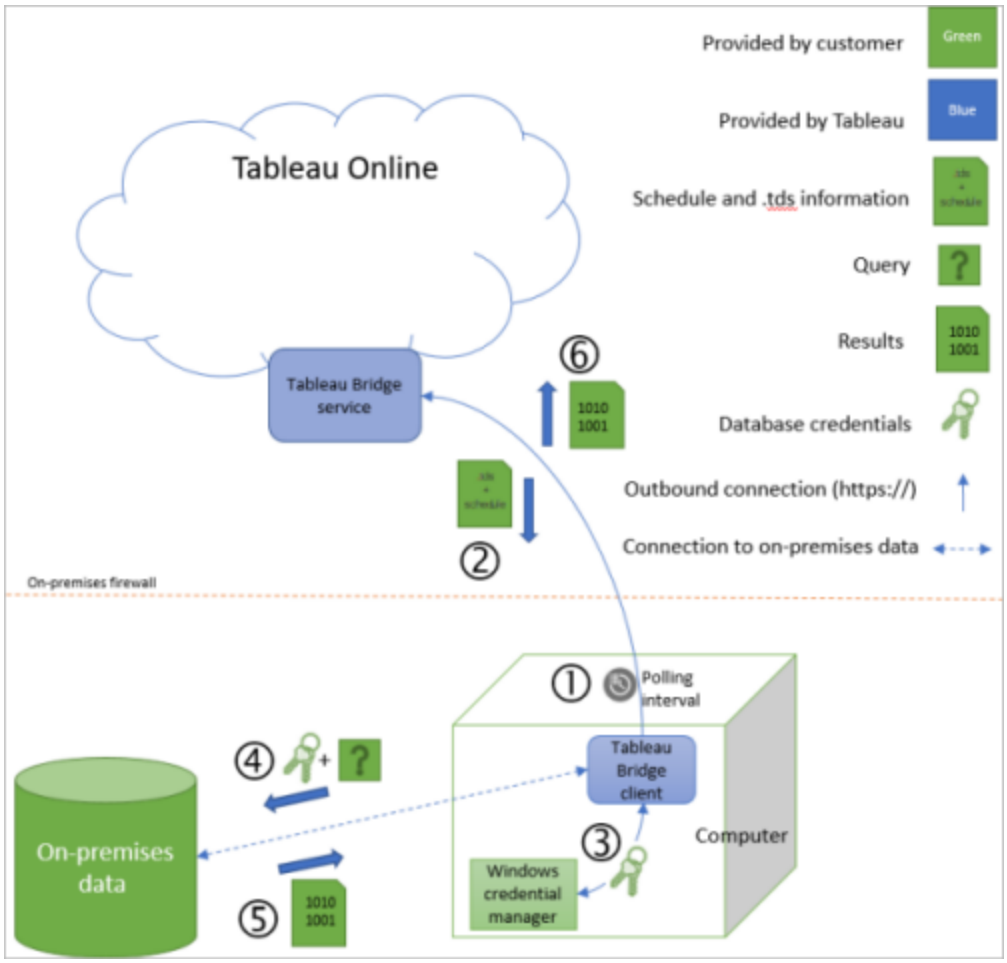
secure WebSockets (wss://). The client then waits for a response from Tableau Online before 2) initiating a live query to the on-premises data. The client 3) passes the query to the on-premises data, then 4) returns the on-premises data using 5) the same persistent connection.



- For **extract connections that use Online refresh (formerly called Recommended) schedules**, the client 1) establishes a persistent connection to a Tableau Bridge service, which is the part of the client that resides on Tableau Online, using secure WebSockets (wss://). The client then waits for a request from Tableau Online for new refresh schedules. When the client receives the requests, 2) the client contacts Tableau Online using a secure connection (https://) for the data source (.tds)

files. 3/4) Then the client connects to the on-premises data using the embedded credentials in the request. The client 5) creates an extract of the data and then 6) republishes the extract to Tableau Online using the Tableau Bridge service. Steps 2-6 can be occurring in parallel to allow multiple refresh requests to happen.

- For **extract connections that use Bridge (legacy) schedules**, the client 1) contacts Tableau Online using a secure connection (https://) for new refresh schedules and data source (.tds) files. If 2) this information is available, at the scheduled time, 3/4) the client connects to the on-premises data using the stored credentials. The client 5) creates an extract of the data and then 6) republishes the extract to Tableau Online using a Tableau Bridge service. The Tableau Bridge service is a part of the client that resides on Tableau Online.



Additional security considerations

Optional forward proxy filtering

To ensure that your data is transmitted to Tableau Online only, you can implement domain-based filtering on outbound connections (forward proxy filtering) from the Bridge client.

The following list contains the partially qualified domain names that Bridge requires for outbound connections:

- ***.online.tableau.com**
- ***.newrelic.com**, used for client application performance monitoring
- ***.nr-data.net**, used for client application performance monitoring
- ***.cloudfront.net**, a CDN used for static content

- ***.akamai**, a CDN for some Tableau Online pods
- ***.compute-1.amazonaws.com**, Amazon VPC's public DNS hostname, which takes the form ec2-<public-ipv4-address>.compute-1.amazonaws.com, for the us-east-1 region
- ***.compute.amazonaws.com**, Amaon VPC's public DNS hostname, which takes the form ec2-<public-ipv4-address>.compute.amazonaws.com, for all other regions (outside of us-east-1)
- **crash-artifacts-747369.s3.amazonaws.com**, used for receiving crash dump reports
- **s3-us-west-2-w.amazonaws.com**, used for receiving crash dump reports
- **s3-w-a.us-west-2.amazonaws.com**, used for receiving crash dump reports

Refresh Published Extracts from Tableau Desktop

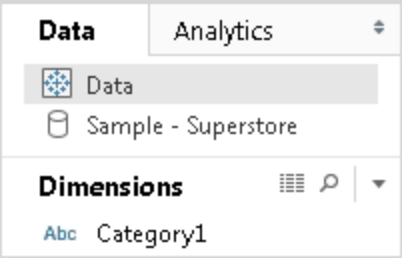
You can send updates to published extracts from Tableau Desktop. This option is best for refreshing extracts of data you maintain on your local network.

Note: If you want to refresh an extract, make note of the file format of the extract before you perform an extract refresh. If you perform a refresh on an .tde extract using version Current, the extract is upgraded to .hyper extract automatically. While there are many benefits of upgrading to a .hyper extract, you will be unable to open the extract with previous versions of Tableau Online. For more information, see Extract Upgrade to .hyper Format.

1. In Tableau Desktop, connect to the data source that is published to Tableau Online or open a workbook that connects to it.

   To connect to the server, use the address **https://online.tableau.com**.

   In the Data pane, a data source published to a Tableau server shows a Tableau icon next to its name.



2. Select **Data** > **Tableau Data Server**, and then choose one of the following options:

   - **Refresh from Source**

     Refreshes the extract (full or incremental) using the data in the original data source.

     This command is available only for extracts that include a connection to the original data source. If you connected directly to a extract file and then published it, the connection to the original data source is not included.

   - **Append Data from Data Source**

     Updates the extract from another data source in the workbook.

   - **Append Data from File**

     Updates the extract from the contents of a file if the original data source type of the extract is the same file-based data source or extract file.

Note: If you do not see the Tableau Data Server option, your data source may not be published to Tableau Online (in which case it will not show the icon above). If you see the Tableau Data Server option, but refresh commands are unavailable, the data source exists on the server, but it is not an extract. For example, it is a live connection to data hosted on the internet.

See also

Topics in the Extracting Data section in the Tableau Help.

Automate Extract Refresh Tasks from the Command Line

You can automate extract refresh tasks using the Tableau Data Extract Command-Line Utility. This is a command-line utility that comes with Tableau Desktop, through which you can refresh published extract data sources or append data to them from a file.

Requirements for using the Tableau Data Extract Command-Line Utility include the following:

- It is available with Tableau Desktop on Windows and can run only on a Windows system.
- It is not available with the trial version of Tableau Desktop.
- You can use it for extract data sources that don't use OAuth.
- You can use it to refresh single-connection data sources only. It does not work for multi-connection data sources.

Before you run the utility

When an extract refresh or append data is performed on extracts created in Tableau 10.4 and earlier (that is, a .tde extract), the extract is upgraded to .hyper extract automatically. While there are many benefits of upgrading to a .hyper extract, you will be unable to open the extract with previous versions of Tableau Desktop.

For more information, see Extract Upgrade to .hyper Format.

Run the utility

1. Open the Command Prompt as an administrator and change to the Tableau Desktop bin directory. For example:

   ```
   cd C:\Program Files\Tableau\Tableau Current\bin
   ```

2. Use either of the following commands, adding parameters described in the tables below.

   - `tableau refreshextract`
   - `tableau addfiletoextract`

Note: When using the utility, always specify `tableau` on the command line or in scripts, never `tableau.exe`.

Note: To troubleshoot, check the logs in the tableaucom.txt file in the \My Tableau Repository\Logs folder.

Syntax and parameters for the tableau refreshextract command

Use `tableau refreshextract` to refresh an extract on Tableau Server or Tableau Online. Refreshing an extract updates an existing extract with any modifications that have been made to the data source since the last refresh.

To see help for this command, at the Windows command prompt, type the following command:

```
tableau help refreshextract
```

Using parameters

- All options have a full form that you use with a double hyphen (for example, `--server`).
- Some options also have a short form that you use with a single hyphen (for example, `-s`).
- If the value for an option contains spaces, enclose it in quotation marks.
- The source being refreshed must be the original data source, not a .tde.

tableau refreshextract command options

Short Form	Full Form	Description
	`--source-username <user name>`	A valid user name for the data source connection. Use this option with `--source-password`, or use `--original-file` instead of the user name and password options. **Note**: You must provide the user name and password when refreshing a published extract, even if the data source was originally published with embedded credentials.
	`--source-password "<password>"`	The password for the data source user.
	`--original-file <path`	Path and file name for the data source to be refreshed on the server. For example: `--ori-`

	and file name> or --original-file <path and folder name>	ginal-file c:\folder\file.csv To refresh a multi-file data source, pass the path to a folder that contains the data files. For example: --original-file c:\folder. If the file is on a network share, use the UNC format for the path: \\server\path\filename.csv
	--force-full-refresh	If the data source is set up for incremental refreshes, use this option to force a full extract refresh. If this option is not included, an incremental refresh is performed. Not all data sources support incremental refresh.
-s <server http address>	--server <URL>	The URL for the Tableau server on which the data is published. For Tableau Online, specify https://online.tableau.com.
-t <site id>	--site <siteid>	In a multiple-site environment, specifies the site to which the command applies. For Tableau Online, use this argument if your user name is associated with more than one site. For Tableau Server, if you do not specify a site, the default site is assumed. The site id is independent of the site name, and it is indicated in the URL when you view the site in a browser. For example, if the URL for the page you see after signing in to Tableau Online is https://online.tableau.com/t/vernazza/views

		the site id is *vernazza*.
	`--datasource <datasource>`	The name of the data source, as published to Tableau Server or Tableau Online.
	`--project <projectname>`	The project to which the data source belongs. If this option is not included, the default project is assumed. If the project you want to specify is a child project nested within a project hierarchy, you must use this parameter along with the `--parent-project-path` parameter.
	`--parent-project-path path/to/-project`	If a project to which the data source is published is not at the top level of a project hierarchy, use this parameter along with the `--project` parameter to specify the path to a nested project. Use the forward slash character (`/`) to delimit project levels in the hierarchy. Use the backward slash (`\`), to escape instances of forward or backward slash characters in project names. For example, for a project named Sandbox, in project Social, under top-level Marketing: `--project Sandbox --parent-project-path Marketing/Social`
`-u <username>`	`--username <username>`	Valid Tableau Server or Tableau Online user.
`-p "<password>"`	`--password "<password>"`	The password for the specified Tableau Server or Tableau Online user.

	`--proxy-user-name <user-name>`	The user name for a proxy server.
	`--proxy-pass-word "<pass-word>"`	The password for a proxy server.
`-c "<path and file name>"`	`--config-file "<path and file name>"`	Path and file name information for a file containing configuration options for the command. Always enclose the path in double quotation marks. For more information, see Using a config file below.

Sample tableau refreshextract command

The following command refreshes an extract named CurrentYrOverYrStats that has been published to Tableau Online. This command specifies the following:

- Tableau Online user and password.
- Tableau Online site and project names.
- The data source, which in this case is hosted by a cloud-based data source provider (for example, Salesforce.com), and the username and password to sign in to the hosted data source.

```
C:\Program Files\Tableau\Tableau Current\bin>tableau
refreshextract --server https://online.tableau.com --user-
name email@domain.com --password "OurServerPwd" --site ver-
nazza --project "New Animations" --datasource
"CurrentYrOverYrStats" --source-username database_user-
@hosted_datasource_provider.com --source-password "db_pass-
word"
```

To refresh an extract of file-based data source, provide the path to the original file from which you created the extract. If the file is on a network share, use the UNC format instead of a mapped drive.

```
C:\Program Files\Tableau\Tableau Current\bin>tableau
refreshextract --server https://online.tableau.com --user-
name email@domain.com --password "OurServerPwd" --site ver-
nazza --project "New Animations" --datasource
"CurrentYrOverYrStats" --original-file "\\server-
\path\filename.csv"
```

Syntax for tableau addfiletoextract

Use `tableau addfiletoextract` to append file content to an extract that has been published to Tableau Server or Tableau Online. This command combines the two files.

If you want simply to update an existing extract with the latest changes, use the `refreshextract` command instead. Using `addfiletoextract` to update an existing extract will duplicate data instead.

To see help for this command, at the Windows command prompt, type the following command:

```
tableau help addfiletoextract
```

All options have a full form that you use with a double hyphen (for example, `--server`). Some options also have a short form that you use with a single hyphen (for example, `-s`). If the value for an option contains spaces, enclose it in quotation marks.

tableau addfiletoextract command options

Short Form	Full Form	Description

	`--file <path and file name>`	Path and file name information for the data file containing data to append. The file can be from Excel, Access, a Tableau data extract, or a delimited text file. It cannot be password protected. Use UNC format if the file is on a network share. For example, `\\server-\path\filename.csv`
`-s <server http address>`	`--server <URL>`	The URL for the Tableau server on which the data is published. For Tableau Online, specify `https://online.tableau.com`.
`-t <site id>`	`--site <site id>`	In a multiple-site environment, specifies the site to which the command applies. For Tableau Online, you must include this argument if your user name is associated with more than one site. For Tableau Server, if you do not specify a site, the default site is assumed.
	`--datasource <datasource>`	The name of the data source, as published to Tableau Server or Tableau Online.
	`--project <projectname>`	The project to which the data source belongs. If this option is not included, the default project is assumed. If the project you want to specify is a child project nested within a project hierarchy, you must use this parameter along with the `--parent-project-path` parameter.

	`--parent-project-path path/to/project`	If a project to which the data source is published is not at the top level of a project hierarchy, use this parameter along with the `--project` parameter to specify the path to a nested project. Use the forward slash character (`/`) to delimit project levels in the hierarchy. Use the backward slash (`\`), to escape instances of forward or backward slash characters in project names. For example, for a project named Sandbox, in project Social, under top-level Marketing: `--project Sandbox --parent-project-path Marketing/Social`
`-u <username>`	`--username <username>`	Valid Tableau Server or Tableau Online user.
`-p "<password>"`	`--password "<password>"`	The password for the specified Tableau Server or Tableau Online user.
	`--proxy-username <username>`	The user name for a proxy server.
	`--proxy-password "<password>"`	The password for a proxy server.
`-c "<path and filename>"`	`--config-file "<path and filename>"`	Path and file name information for a file containing configuration options for the command. Always enclose the path in double quotation marks. For more information, see

		Using a config file below.

Sample tableau addfiletoextract command

```
C:\Program Files\Tableau\Tableau Current\bin>tableau add-
filetoextract --server https://online.tableau.com --user-
name email@domain.com --password "OurServerPwd" --site
vernazza --project "New Animations" --datasource "Cur-
rentYrOverYrStats" --file "C:\User-
s\user2\Documents\DataUploadFiles\AprMay.csv"
```

Using a config file

You can use a plain text editor, such as Notepad or Text Edit, to create a config (configuration) file that you can use with `tableau refreshextract` or `tableau add-filetoextract`. A config file can be useful if you expect to update the same data source regularly over time. Instead of having to type the same options each time you run a command, you specify the config file. A config file also has the advantage of not exposing user names and passwords on the command line.

Create the config file

For example, say you created a file called config.txt and saved it to your Documents folder. And in the file, you included the parameter information shown below.

For an extract from a hosted data source, published to Tableau Online, where **server** is **https://online.tableau.com**:

```
server=https://online.tableau.com
site=vernazza
username=email@domain.com
password=OurPassword
project=New Animations
```

```
datasource=CurrentYrOverYrStats
source-username=database_user@hosted_datasource_pro-
vider.com
source-password=db_password
```

Reference the Config File from the Command Line

After you create the config file, you run the `tableau refreshextract` or `tableau addfiletoextract` command, pointing to the config file as the only option you use on the command line, and enclosing the config file's path in double quotation marks. The syntax is as follows:

```
tableau refreshextract --config-file "<path>"
```

For example, to refresh the extract specified in the sample in the Create the config file section, you would run the following command (making sure that you are working in the bin directory for your version of Tableau Desktop):

```
C:\Program Files\Tableau\Tableau Current\bin>tableau
refreshextract --config-file "C:\User-
s\user1\Documents\config.txt"
```

Syntax Differences for Config Files

The syntax for specifying options inside a config file differs from the syntax you use on the command line in the following ways:

- Option names do not begin with dashes or hyphens.
- You use an equals sign (with no spaces) to separate option names from option values.
- Quotation marks are not necessary (or allowed) around values, even when they include spaces (as for the `project` option in the example shown earlier).

Use Windows Task Scheduler to Refresh Extracts

You can use Windows Task Scheduler, in combination with the Tableau Data Extract Command-Line Utility, to automate regular updates to Tableau Online data sources from within your corporate firewall. You can configure a task to occur once per day, week, or month, or after a specific system event. For example, run the task when the computer starts.

To learn more, see the Task Scheduler How To... page in the Microsoft TechNet library.

Set Up for Data-Driven Alerts

When data reaches important thresholds for your business, data-driven alerts automatically send email notifications to key people users specify. As a Tableau Online administrator, you set up data-driven alerts much like you do subscriptions. For information about how users create and manage these alerts, see Send Data-Driven Alerts in Tableau User Help.

Manage all data-driven alerts in a site

1. At the top the browser window, click **Tasks**, and then click **Alerts**.
2. Select any alerts you want to update.
3. From the **Actions** menu, do any of the following:
    - Add or remove yourself as a recipient.
    - Edit alerts to change data thresholds, delivery schedules, and the full list of recipients.
    - Change alert ownership to different users, or delete alerts.

Disable data-driven alerts for a site

Data-driven alerts are supported for all sites by default, but administrators can disable them for specific ones.

1. While viewing a site, click **Settings** on the left side navigation pane.
2. Under Data-Driven Alerts, uncheck **Let users create alerts and receive alert emails**.
3. Click **Save**.

Suspend data-driven alerts

Resume suspended alerts

If an alert fails enough times, you'll receive a notification email that your alert has been suspended. There are a few ways that administrators or alert owners can resume a suspended alert:

- From the Tasks > Alerts area of Tableau web pages, an icon appears in the Last checked column to indicate that the alert is suspended. Select **...** > **Resume Alert** to resume the alert.
- Click **Resume Alert** in the notification email to resume the alert. A notification will either allow you to resume the alert, or indicate that the view has changed and the alert should be deleted.
- From the Alerts panel of the affected view or workbook. To resume the alert from a view or workbook, select **Alert** to open the Alerts panel. An icon appears next to the suspended alert. Select **Actions** > **Resume Alert** on the affected alert to resume.

Alert owners will receive an email notification when the alert is working again.

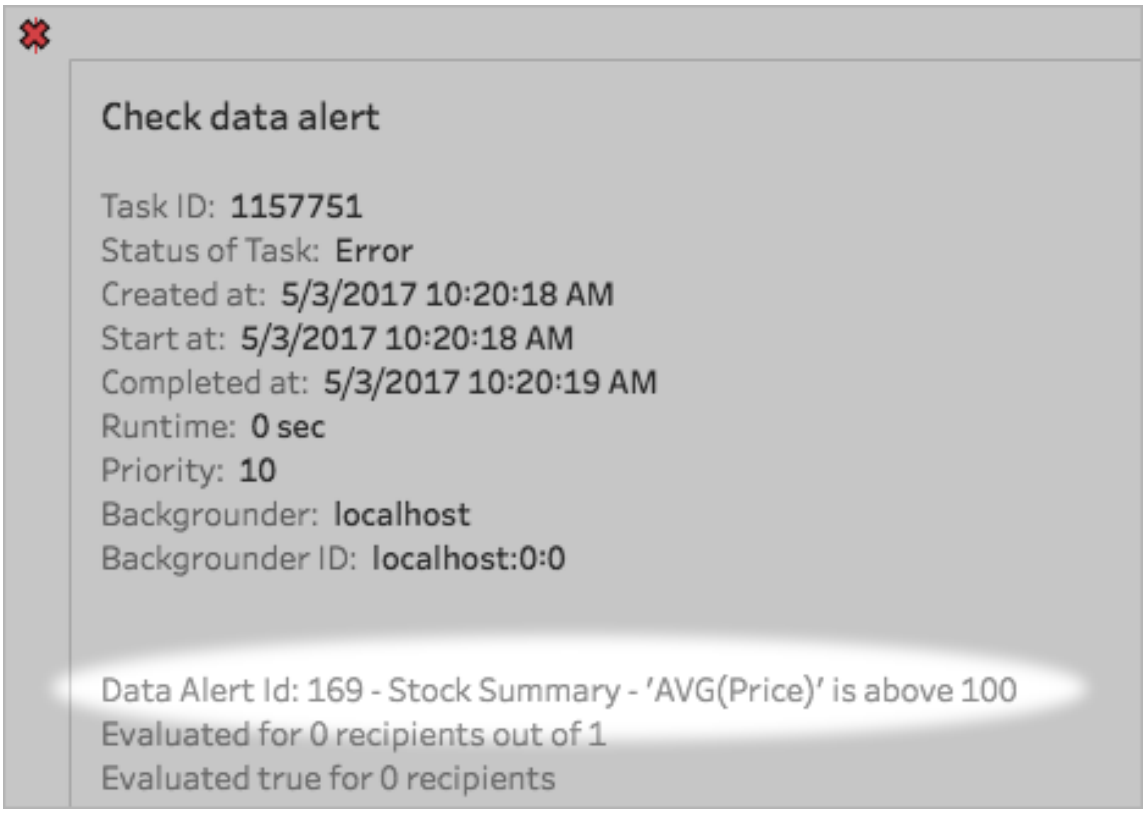
Identify and fix failing alerts

As an administrator, you can proactively identify failing alerts that users may be unaware of. To check:

1. Select Status in your site menu
2. Select Background tasks for non-extracts
3. From the Task drop-down menu, select Check if Data Alert is True
4. In the far right, click on Error to see a list of failing alerts
5. Hover over the red failure icon to display a tooltip with alert details

To determine the alert owner, look for the alert ID number in the data_alerts table of the Tableau Online Repository. (In the alert management area of a site, you can also look for the alert name following the number, but be aware that multiple different alerts may use the same name.)

Note: Alert owners will be automatically notified when an alert fails ten times. Administrators can customize when alert owners receive notifications.



Failing alerts are often caused by content changes on Tableau Online. Encourage users to recreate alerts if changes like the following occur:

- A workbook, view, or data field is removed or renamed.
- Database credentials embedded in workbooks expire. (Alerts require workbooks to use either embedded credentials, or none at all.)
- A data source becomes inaccessible.

Set Up for Metrics

Metrics are a type of Tableau content that tracks the value of an aggregate measure, such as sum of sales. Because metrics refresh frequently and display their current value in an easy-to-glance format, they are useful for monitoring data. To learn more about how users work with metrics, see Create and Troubleshoot Metrics.

Ensure that users can create metrics

When metrics are enabled for a site, all users with a Creator or Explorer (can publish) site role can create metrics, if they have the correct permissions.

Metrics are created from existing views on a Tableau site. To ensure that users can create metrics on a view, verify that:

- Users have Download Full Data permission for the view. For more information, see Permissions.
- The password for the data source is embedded, if it is required. For more information, see Edit Connections on Tableau Online.

Disable metrics for a site

Metrics are enabled on all sites by default. You can disable metrics on a per-site basis.

1. On the site where you want to disable metrics, from the navigation panel, click **Settings**.
2. Under **Metrics Content Type**, uncheck **Enable metrics**.
3. Click **Save**.

When you disable the metrics content type, metrics no longer appear on the site. The data for any existing metrics is retained, but these metrics will no longer refresh. If you re-enable metrics, these metrics will reappear and resume refreshing.

Manage metrics

Though metrics are created from a view, they are not tied to the view like alerts or subscriptions. This means you can manage metrics similar to how you manage workbooks, by renaming, moving, tagging, deleting, or setting permissions on a metric.

Find metrics to manage either by navigating the project hierarchy or via the following paths.

- To see all metrics on a site: navigate to the Explore section, then select **All Metrics**.
- To see metrics created from the views in a workbook: open the workbook, then select the **Connected Metrics** tab.

- To see metrics related to a search term: perform a search, then select the **Metrics** tab.

Address failing and suspended metric refreshes

Metric refreshes may fail for one of the following reasons.

- The connected view was deleted or modified.
- Permissions changed for the connected view.
- The password for the data source is no longer embedded or is no longer valid.
- There was a temporary connectivity issue, which will resolve itself.

For more information on why metric refreshes fail and what users can do to fix them, see Fix failing refreshes.

Encourage users to overwrite a metric if the connected view was modified in a way that caused the refresh to fail, but the view is still available. Users can overwrite a metric by creating a metric with the same name in the same project as the existing metric.

Resume suspended refreshes

If the cause of the failure is fixed, for example by embedding the correct password for the data source, you can resume the metric refresh.

1. Locate the affected metric. Metrics with suspended refreshes display the text **Refresh Suspended**, instead of the time of last refresh, in grid and list view.
2. On the warning message, click **Resume refresh.**

Tableau attempts to perform the refresh. If this attempt succeeds, you'll receive a confirmation, and the refresh will resume on schedule. If the attempt doesn't succeed, the refresh remains suspended. You or the metric owner can delete or overwrite the metric, or keep it to reference historical data.

Monitor metric activity with administrative views

Use the administrative views for Tableau Online to monitor metric activity.

To monitor metric refresh activity:

1. From the navigation panel, click **Site Status**.
2. Select the **Background Tasks for Non Extracts** dashboard.
3. Filter for the tasks **Find Metrics to Update** or **Update All Metrics on a View**. For more information, see Background Tasks for Non Extracts.

To monitor more metric events, create a custom view using Admin Insights. Connect to the Admin Insights **TS Events** data source and use the **Event Name** dimension to see the following events: Create Metric, Delete Metric, Move Metric From, Move Metric To, and Update Metric. For more information, see Use Admin Insights to Create Custom Views.

Troubleshoot Refresh Issues

When Tableau Online is unable to complete a scheduled refresh, an alert appears to indicate that the refresh has failed. If a scheduled refresh fails five consecutive times, Tableau Online suspends the refresh. When a refresh is suspended, Tableau Online does not try to run it again until you take an action that attempts to correct the cause of the failure.

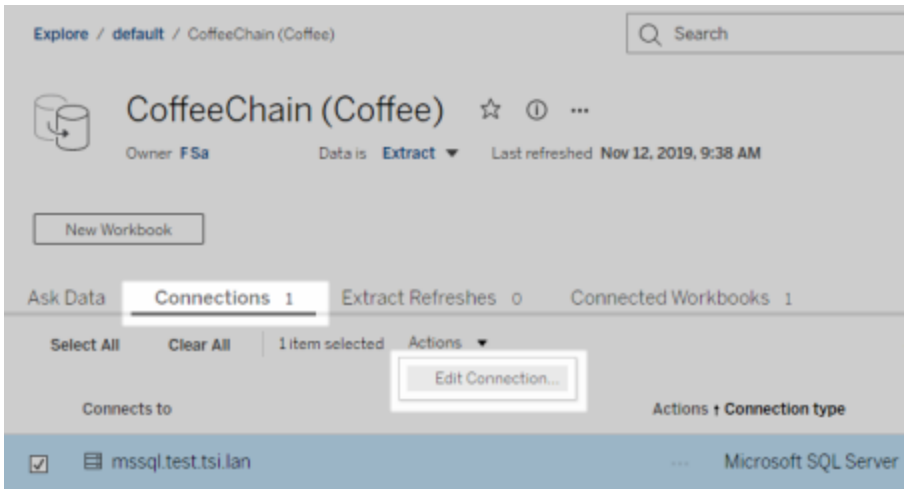
To display an alert that describes the reason the refresh failed, select the notification icon ( ) in the upper-right corner of the browser window.

Resolve errors and resume suspended refreshes

To help resolve refresh issues, you can take any of these actions, based on the cause indicated in the alert:

- **Errors related to access token validation or user credentials**

  To correct these issues, click the **Connection Details** link in the alert to go to the **Connection** tab on the data source page for the data source whose scheduled failed. On the Connections tab, select the check box next to the data connection, and click **Edit Connection** so you can update a user name or password, or select a different access token. After you update the connection information, Tableau Online restarts the refresh schedule.



If you originally embedded the credentials or other data connection information when you published the workbook or data source from Tableau Desktop, you can also republish the workbook or data source. As part of the publishing process, you can choose to set a new refresh schedule. Otherwise, Tableau Online restarts the existing schedule.

- **Errors that indicate the database was unreachable**

  Confirm that the underlying database is online and that you can sign in to access its data. You can use the **Try again** link in the alert to restart the refresh schedule.

- **Errors related to Tableau Bridge**

  To troubleshoot errors related to Bridge, see Troubleshoot Issues with Bridge.

Troubleshoot Subscriptions

"The view snapshot in this email could not be properly rendered."

If you receive a subscription with this error message, there could be several reasons:

- **Missing credentials**: Some views are published with embedded credentials. You may receive the above error if the embedded credentials are now out-of-date, or if the view was republished without the embedded credentials.
- **Database temporarily down**: If the view has a live database connection and the database was temporarily down when the subscription was being generated, you might receive the above error.

Can't see images in email

For images of content to display in a subscription email, users subscribed to views, in addition to **View** permissions, must also have **Download Image/PDF** permissions. For more information, see Permissions.

Can't subscribe

If you can see a view on Tableau Server and it has a subscription icon ( ) in the upper right corner, you can subscribe to it.

To subscribe to a view, the view you're subscribing to must either have embedded credentials for its data source or not rely on credentials at all. Examples of the latter include a workbook that connects to an extract that isn't being refreshed, or a workbook whose data is in a file that was included with the workbook at publish time. Embedding credentials is a step that happens in Tableau Desktop (see the Tableau Help for details).

No subscription icon

It's possible to see a view but be unable to subscribe to it. This can happen :

- **The view uses a live database connection**: Views with live database connections, where you’re prompted for your database credentials when you first click the view, aren't available for subscription. A subscription includes a view (or workbook), data, and a schedule. To deliver the data required for the view, Tableau Server either needs embedded database credentials or data that doesn't require credentials. Where live database connections are concerned, Tableau Server doesn't have the credentials, only the individual users do. This is why you can only subscribe to views that either don’t require credentials or have them embedded.

Missing PDF attachment

You can add a PDF attachment to your subscription if your administrator has it enabled. If the PDF attachment is missing from your subscription, it might be because the size of the PDF exceeds the email size limit. In Tableau Online, each site has a maximum email size of 2MB. For details, see Tableau Online Site Capacity.

Suspended Subscriptions

By default, a subscription is suspended after 5 consecutive subscription failures.

Resume suspended subscriptions

Subscription owners can resume subscriptions:

- from My Subscription tab in Content Settings
- from the Subscriptions tab per workbook

When a subscription is resumed, the alert failing count goes back to zero. The next evaluation of the subscription will occur at the next scheduled evaluation time.

Can't set subscription frequency to "When Data Refreshes"

You can set subscriptions to run when an extract refreshes if the workbook uses one published connection to an extract. When creating or modifying a subscription, you may not see a **Frequency** option if the workbook uses:

- An extract refresh through Tableau Bridge
- More than one extract refresh
- A live data connection

> **Note**: If a workbook uses both a published connection to an extract and a Tableau Bridge connection, you may be able to set the subscription frequency to **When Data Refreshes**. If selected, the subscription will run on the extract refresh, not the Tableau Bridge refresh.

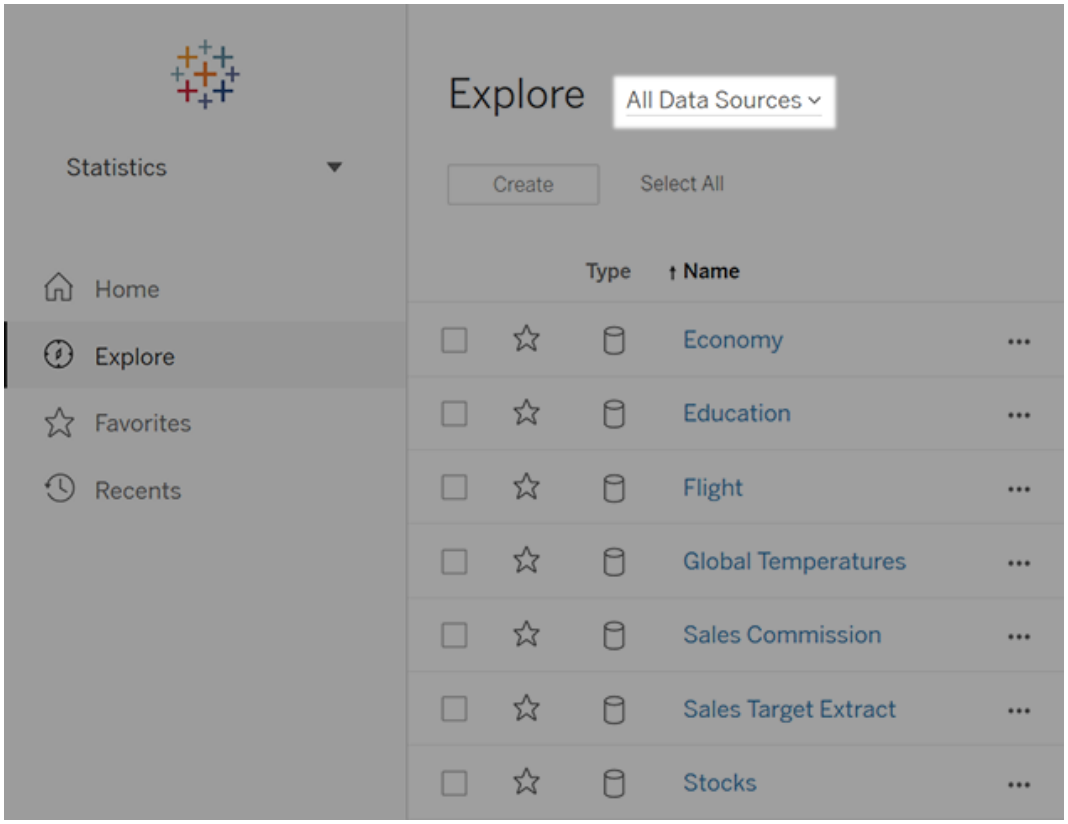
Manage Connection Information

Edit Connections on Tableau Online

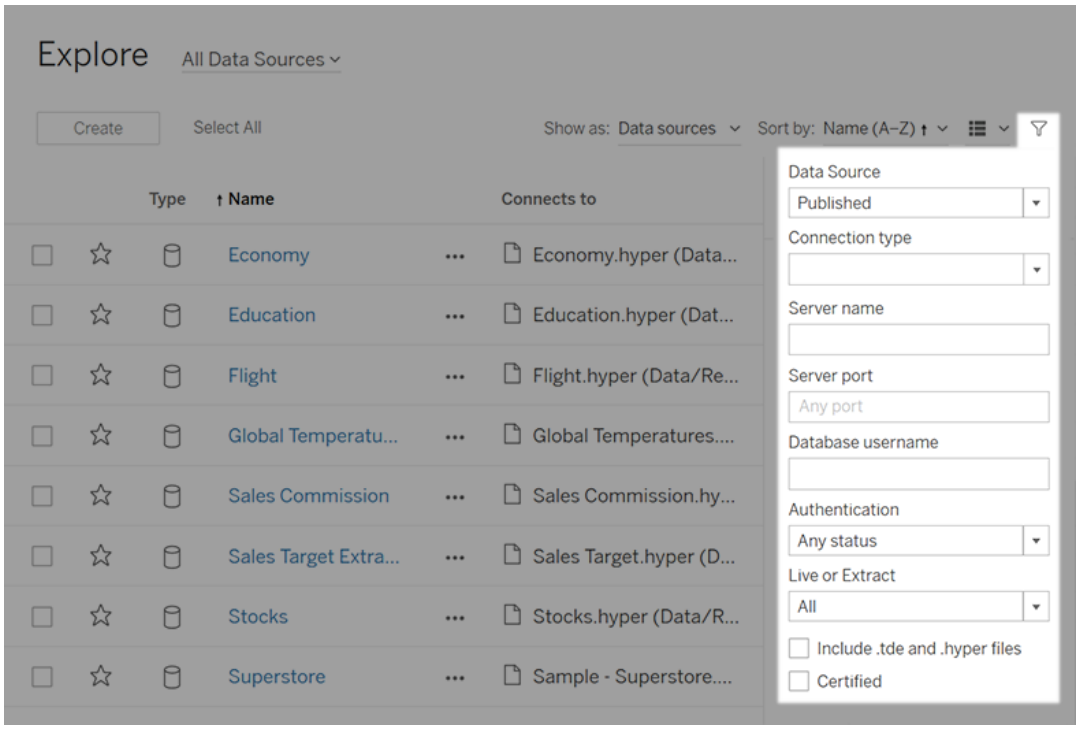
Administrators and data source owners can manage a published data source's connection information. The connection information describes the data source, its owner, and how to access the data. You can embed database credentials in the connection to allow users to access the data directly or to enable scheduled refreshes for extracts. Alternatively, you can set the connection so that users are prompted to sign in. You can also change the server name for cloud-based data.

The data source owner or a site administrator can manage this information directly on the site. For example, you can update tags or change the data source owner, without having to republish the data source.

1. On the site that has the data source you want to modify, open the Explore page, then filter to show **All Data Sources**.



If there are a large number of data sources, use filters to narrow the list.



2. Select the check box next to the data source you want to update, and on the **Actions** menu, select **Edit Connection**.

   Note: The **Edit Connection** option is not available for connections to extracts and file-based data.

3. Update the connection information and click **Save**.

   For connections that support using saved credentials to refresh the data, see Refresh Data Using Saved Credentials.

4. Refresh the Data Connections page (press F5 or Ctrl+R) for your changes to take effect.

OAuth Connections

For Google BigQuery, Google Analytics, Salesforce, OneDrive, Dropbox, and QuickBooks Online, an alternative to storing your sensitive database credentials with Tableau Online is to

create connections using the **OAuth 2.0** standard.

From Tableau, when you sign in to data with a provider that uses OAuth, you are redirected to the provider's sign-in page. After you provide your credentials and authorize Tableau to access your data, the data provider sends Tableau an **access token** that uniquely identifies requests from Tableau. For more information, see Overview of the OAuth process below.

Using OAuth connections provides the following benefits:

- **Security:** Your database credentials are never known to or stored in Tableau Online, and the access token can be used only by Tableau.
- **Convenience:** Instead of having to embed your data source ID and password in multiple places, you can use the token provided for a particular data provider for all published workbooks and data sources that access that data provider.

  In addition, for live connections to Google BigQuery data, each workbook viewer can have a unique access token that identifies the user, rather than sharing a single user name and password credential.

Overview of the OAuth process

The following steps describe a workflow in the Tableau environment that calls the OAuth process.

1. You take an action that requires access to a cloud data source.

   For example, you open a workbook that's published to Tableau Online.

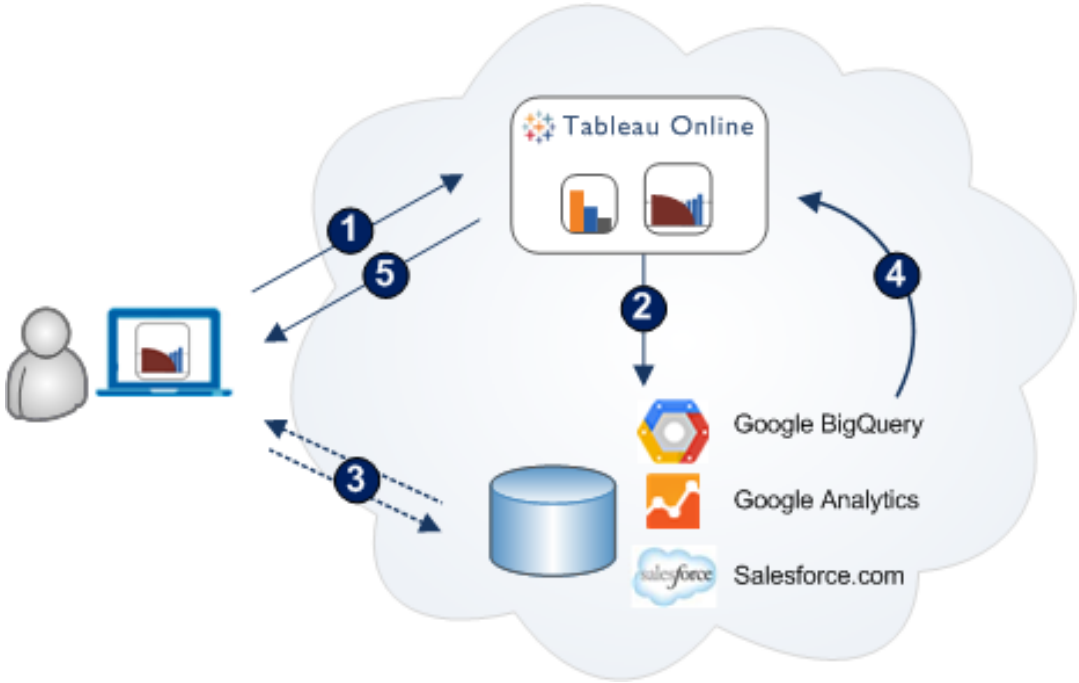
2. Tableau directs you to the cloud data provider's sign-in page. The information that is sent to the data provider identifies Tableau as the requesting site.

3. When you sign in to the data, the provider prompts you to confirm your authorization for Tableau Online to access the data.

4. Upon your confirmation, the data provider sends an access token back to Tableau

Online.

5. Tableau Online presents your workbook and data to you.



The following workflows can use the OAuth process:

- Creating a workbook and connecting to the data source from Tableau Desktop or from Tableau Online.
- Publishing a data source from Tableau Desktop.
- Signing in to a Tableau Online site from an approved *client*, such as Tableau Mobile, Tableau Bridge, or Tableau Desktop.

Access tokens for data connections

You can embed credentials based on access tokens with data connections, to enable direct access after the initial authentication process. An access token is valid until a Tableau Online user deletes it, or the data provider revokes it.

It is possible to exceed the number of access tokens your data source provider allows. If that's the case, when a user creates a new token, the data provider uses length of time since last access to decide which token to invalidate to make room for the new one.

Access tokens for authentication from approved clients

By default, Tableau Online sites allow users to access their sites directly from approved Tableau clients, after users provide their credentials the first time they sign in. This type of authentication also uses OAuth access tokens to store the users' credentials securely.

For more information, see Access Sites from Connected Clients.

Manage Saved Credentials for Data Connections

On Tableau Online, you can manage saved credentials on your Account Settings page. Saved credentials enable you to connect to a data source without being prompted for your credentials. The credentials saved for your connection can be OAuth access tokens, or other credentials, such as user name and password.

On Tableau Server, if your server administrator has allowed you to save credentials, you can find and manage them in the **Saved Credentials** section on your Account Settings page.

> **Note:** If you do not see the Saved Credentials section, consult with your Tableau Server administrator about allowing saving credentials.

Remove saved credentials

To remove Tableau access to data, delete the associated saved credentials for that data from your account.

After you delete the credentials, you will need to sign in to the data the next time you access it. This will create new saved credentials.

Your administrator might choose for all users to use the same shared credentials for connecting to a data source. If this is the case, the saved credential is associated with the data connection for all users, and it does not appear under Saved Credentials on your Account Settings page.

> **Note:** If you're a Tableau Server user and can't delete saved credentials, ask your administrator if they've cleared the **Allow users to save data source access tokens** option in the server settings.

Test connections using saved credentials

If the connector supports test functionality, you can test the connection using saved credentials.

1. While you’re signed in to Tableau Server or Tableau Online, display your Account Settings page.
2. In the Saved Credentials section, click the **Test** link next to the stored connection that you want to test.

This test confirms that Tableau Online or Tableau Server can access your account using this corresponding saved credential. If the test succeeds, but you cannot access your data through this managed connection, confirm that the credentials you provided for this connection can access your data.

For example, if you accidentally created the connection using your personal Gmail account, but you use a different account to access a Google Analytics database, you will need to delete the saved credentials and sign in to the data using the appropriate Gmail account.

Clear all saved credentials

When you select **Clear All Saved Credentials**, the following items are removed from your user account:

- All saved credentials for connections that are stored in your account.

  Caution: If any of these saved credentials are stored with published workbooks or data sources, deleting them also removes access to the data source from those locations. Effectively, this is like "changing the locks" anywhere the affected saved credentials are used.

- Passwords you have used to access published data extracts or workbooks that connect to them.

Create and Interact with Flows on the Web

You can create and interact with flows on Tableau Online to clean and prepare your data. Connect to your data, build a new flow, or edit an existing flow and your work is automatically saved every few seconds as you go. Create draft flows that are only available to you or publish your flow to make it available for others. Run your individual flows right from the web or run your flows automatically on a schedule using Tableau Prep Conductor if you have the Data Management Add-on. For more information, see Tableau Prep on the Web.

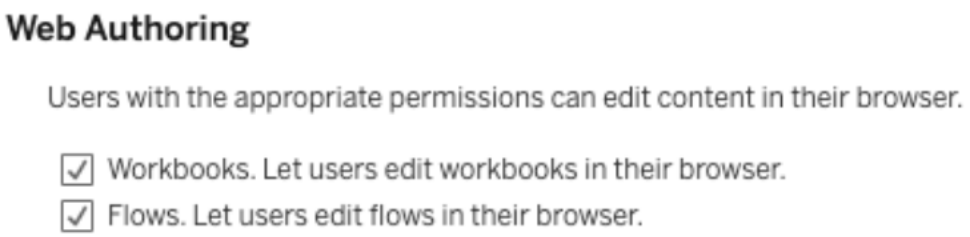
Turn flow web authoring on or off for a site

Note: This setting is only available for Tableau Server. Web authoring is enabled for Tableau Online and cannot be turned off.

1. In a web browser, sign in to the server as an administrator and go to the site in which you want web authoring to be enabled. In that site, click **Settings**.

2. In the **Web Authoring** section, select **Flows. Let users edit flows in their browser.** to enable the functionality.

   Clear the check box to turn off web authoring for that site.



3. If you want the change to take effect immediately, restart the server. Otherwise, the change takes effect after server session caching expires or the next time users sign in after signing out.

Use Flows

You can publish flows from Tableau Prep Builder to Tableau Server or Tableau Online, run flows and manage flows.

With the Data Management Add-on you can also schedule and monitor flows. For more information, see License the Data Management Add-on.

Feature	Description
Publish a flow to Tableau Server or Tableau Online	Publish flows to Tableau Server or Tableau Online.
Schedule flow runs	You can create scheduled flow tasks to run a flow at a specific time or on a recurring basis. This feature requires the Data Management Add-on. For more information, see License the Data Management Add-on.
Manage flows	Manage a variety of actions, depending on your permissions, including run flows, tag flows, change owners, set permissions, download flows, move flows between projects, rename or delete flows.

Feature	Description
Monitor flow health and performance	Set up email notifications at the site or server level when flows fail, view and resume suspended flow tasks, and view errors and alerts. You can also use Administrative Views to monitor the activities related to flows, performance history, and the disk space used at the server or site level. This feature requires the Data Management Add-on. For more information, see License the Data Management Add-on.
Tableau REST API - flow methods	Programmatically use the flow methods of the Tableau Server REST API.

Create, Interact with, and Embed Views on the Web

You can create and interact with views on Tableau Online. For more information, see the following topics in the Tableau Help for users.

Using Tableau on the Web

Tour your Tableau Site

Edit Views on the Web

Join your Data

Create a Dashboard

Create a Story

Embed Views and Dashboards in Web Pages

Make Workbooks Compatible Between Versions

Alerts and subscriptions

Troubleshoot Subscriptions

Send Data-Driven Alerts from Tableau Online or Tableau Server

Web Authoring and Tableau Desktop Feature Comparison

For anyone familiar with Tableau Desktop and new to the web authoring environment in Tableau Server and Tableau Online, this topic provides a summary of the web features that you use similarly to the way you do in Tableau Desktop. It also lists some fundamental differences between the two environments.

Note: This topic summarizes core authoring functionality and does not cover every difference between the desktop and web environments.

Features listed by version

For a list of the latest web editing features to be added to each release, see the web authoring sections in What's New in Tableau and What's New in Tableau Online.

For a list of features compared by version, see the Tableau Desktop vs Tableau Web Editor viz on Tableau Public. This information is curated and maintained by Andrew Pick of the Information Lab, a Tableau Gold partner in the UK.

Disclaimer: Clicking this link will take you away from the Tableau website. Tableau cannot take responsibility for the accuracy or freshness of pages maintained by external providers. Contact The Information Lab if you have questions regarding its content.

General differences in web authoring

- Your authoring capabilities are determined by your license level. For an overview of what you can do with each license level, see What can I do with a Tableau site?

- You can access right-click menu actions on fields in the view, but not on every item in the workspace.
- Keyboard shortcuts for web authoring and Tableau Desktop are not the same. For a list of web authoring keyboard shortcuts, see Shortcuts for web authoring.

Web authoring capabilities

In the web environment, you can connect to data and create workbooks from those data sources, or data published through Tableau Desktop. You can edit views created on the web or published from Tableau Desktop.

Administrators can set at the site level what web authoring abilities users can have. Explorers can edit workbooks, create new workbooks from published data sources, connect to published data sources, and create and edit views, dashboards, and stories. Creators have those same capabilities, but can also create new workbooks, connect to data on the web, and use Ask Data and (in Tableau Online) Dashboard Starters to quickly dive into analysis.

Data management

- **Creators**: Connect to data sources, upload files (text, excel, and Tableau workbooks), or use pre-built Dashboard Starter templates for certain data sources. For more information, see Creators: Connect to Data on the Web.
- **Creators**: Prepare data on the web in the Data Source page. For more information, see Creators: Prepare Data on the Web.

> **Note**: There is a limitation on the number of rows that can be viewed in the Data Source page when authoring data on the web, determined by browser:
> - Internet Explorer: 10,000 rows
> - Other browsers: 100,000 rows

> Independent of browser, the total number of records (rows by columns) that can be viewed in the Data Source page on the web is **3 million**.

- Run Initial SQL when connecting with some data sources
- Relate your data to combine data from multiple tables
- Join data from different tables in the same data source or from different databases using a multi-connection data source
- Add a join calculation
- Union data
- Pivot data
- Copy values in a grid (Ctrl+C, or Command-C on a Mac)
- Edit Data Sources
- Clean data using the Data Interpreter
- Create a Custom SQL query

- **Explorers**: Connect to published data sources.
  - Blend published data sources.
  - Save a data source (embedded in a published workbook) as a separate, published data source.
  - Change aggregation of measures in the view. Change the default aggregation of measures in the Data pane.
  - Search for fields in the schema.

- Duplicate, hide, or rename fields.
- Change the data type of fields.
- Convert measures to dimensions or vice versa.
- Convert a discrete field to continuous and vice versa. This option is available for measures and date dimensions.
- Assign a geographic role for a field.
- Create aliases for members of dimensions.
- Create and edit groups.
- Create and edit sets (conditioned sets are not available)
- Create, edit, and remove parameters. Formatting numbers and dates, and adding comments for the parameter are not supported on the web.

Analytics

- Create, edit, rename, duplicate, and clear sheets (views, dashboards, and stories) in a workbook.
- Use Ask Data to automatically create views.
- Use Explain Data to automatically create views.
- Search for fields in the Data pane with schema search
- Drag fields to the view, Rows, Columns, and different mark types in the **Marks** card.
- Use **Show Me** to create views. Also, from the Data pane, select and drag a field of interest to the view area to automatically create a "Show Me" view.
- View underlying data (via tooltips).
- Viz in Tooltip works in web views, but must be configured in Tableau Desktop. Viz in

Tooltip worksheets can be hidden, the same way you would hide worksheets used in stories or dashboards.

- Actions work in web views, but must be configured in Tableau Desktop.
- Create and edit calculated fields.
- Create bins from continuous measures, and edit bins.
- Create and edit table calculations, and use quick table calculations.
- Create sets and show set controls
- Use the **Analytics** pane to drag reference lines, trend lines, and other objects into the view. Edit reference lines, trend lines, and bands. Create and configure reference distributions on a continuous axis. Adding a cluster, and adding and modifying a forecast, are not supported for the web.
- Create groups by selecting marks in the view and then clicking Group Members (paperclip) in the tooltip for that selection. You can also edit existing groups in the Data pane.
- Create hierarchies by dragging one dimension onto another in the Data pane. **Note**: You can't create hierarchies when fields are already grouped within a folder.
- Change options for interacting with maps, including enabling or disabling pan and zoom, or showing map search, the view toolbar, or map scale. Users can also map units.
- Drill up and down a continuous hierarchy in the view. In a view with a continuous hierarchy, hover near the headers on a continuous axis to display the + and - controls. Click to drill down or up.
- Show labels, totals, and subtotals.
- Show, hide, and format mark labels

- Show and hide titles and captions.
- Show and hide cards for filters and highlighters.
- Show, hide, and resize headers in the view.
- Swap X and Y axes. Resize axes in the view.
- Change the view size.
- Show and hide the View Toolbar for any view or dashboard.
- Duplicate a sheet as a crosstab view.

Filtering and sorting

- Use data highlighting.
- Add, edit, and remove filters, and edit filter control layouts. **Wildcard**, **Condition**, and **Top** tab filters are not available.
- Filter across published data sources.
- Apply filters to multiple sheets
- Create context filters (**Add to Context** option in the Filters shelf) and dependent filters (**Only Relevant Values** option in a filter control shown in a view).
- Apply table calculation filters to totals in the view.
- Show hidden fields, and exclude or remove fields from the view.
- Sort fields in the view in ascending or descending order. Access the **Sort** dialog box by right-clicking a dimension on the Rows or Columns shelf. Nested sorting on dimension values within the context of each pane.
- Drag and drop headers to create a custom sort order within a view.

Formatting

- Resize the width of row headers and the height of column headers.
- Edit workbook formatting, including formatting lines.
- Edit worksheet and dashboard titles.
- Edit axes (double-click an axis in the view). Other options available: **Synchronize dual axes**, clearing the axis range (**Reset**), and tick mark settings. Enable or disable **Dual axis** in a field context menu (right-click a measure field on Rows or Columns shelf). Logarithmic scales can be positive or symmetric (includes 0 and negative values).
- Edit number formatting (decimal places, percentage, thousands separator, units, and currency).
- Create, edit, move, and resize point, mark, and area annotations.
- Add and edit dashboards objects, including: horizontal and vertical layout containers, text, images, navigation buttons, web page links, and dashboard extensions.
- Create transparent worksheet backgrounds (set background color to **None**). Combine transparent worksheets with transparent filters, highlighters, and parameters.
- Change the color palette. For categorical fields you can assign specific colors and custom colors (using a hex code) to data items. For continuous fields, you can set custom colors for start and end colors (using a hex code).
- Create, rearrange, and preview device-specific dashboard layouts
- Set a dashboard item's exact size, position, and spacing.
- Add padding, borders, and background colors around items in dashboards.
- Select a background map in map views.

- Legends per measure. If you create separate color legends for the measures in your view, Tableau assigns the default color palette to each new color legend. To change the color legend for each measure, click the drop-down arrow on the color legend to open the **Edit Colors**dialog box and select the palette that you want to use. For more details, see Legends per measure.

Related topics

What can I do with a Tableau site?

Set a Site's Web Authoring Access

Getting Started with Web Authoring

Creators: Connect to Data on the Web

Creators: Prepare your Data on the Web

Build Views on the Web

Grant Web Edit, Save, and Download Permissions

Set a Site's Web Authoring Access and Functions

Tableau Server administrators can specify at the site level whether to allow users to edit published views in the web environment and configure other web authoring functionality.

By default web authoring functionality is enabled for all sites. Users with the **Web Edit** capability can create and edit workbooks directly on the server. Turn off web authoring if you want users to be able to view and interact with published workbooks but not make any changes to the core information.

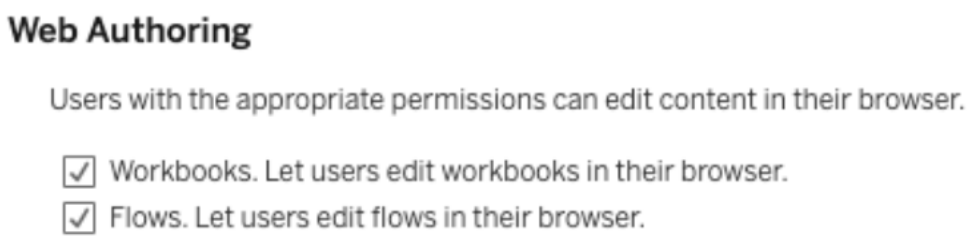
The steps below describe how to set web authoring and other associated functionality for an entire site. For more granular control over which users can use web editing, you can use projects, groups, and permissions. See Set Web Edit, Save, and Download Access on Content.

Turn web authoring on or off for a site

Note: This setting is only available for Tableau Server. Web authoring is enabled for Tableau Online and cannot be turned off.

1. In a web browser, sign in to the server as an administrator and go to the site in which you want web authoring to be enabled. In that site, click **Settings**.
2. In the **Web Authoring** section, select **Workbooks. Let users edit workbooks in their browser.** to enable the functionality.

   Clear the check box to turn off web authoring for that site.

3. If your site is already in production, and you want the change to take effect immediately, restart the server.

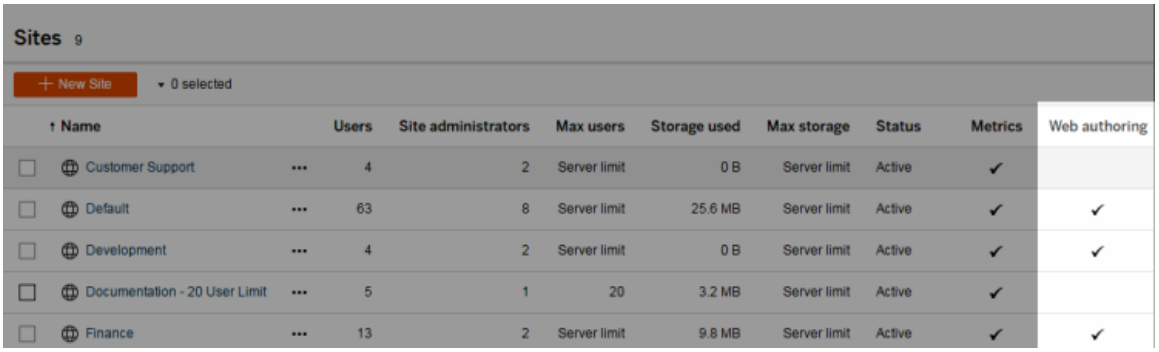
   Otherwise, the change takes effect after server session caching expires or the next time users sign in after signing out.

Notes

- When you enable web authoring, make sure that, on the appropriate workbooks or views, the permission rule for a user or group allows the **Web Edit** capability.
- If you turn off web authoring on a production site and do not complete the last step to restart the server, users might continue to have authoring access until their session caches expire or they sign out.

See which sites allow web authoring

To confirm which sites allow web authoring, on the site-selection menu at the top, select **Manage All Sites**, and then go to the **Sites** page.



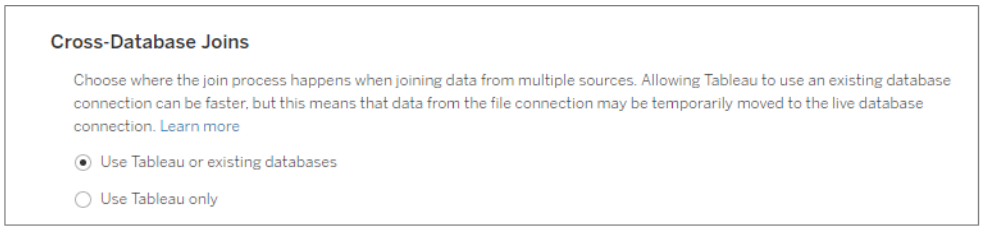
Name	Users	Site administrators	Max users	Storage used	Max storage	Status	Metrics	Web authoring
Customer Support	4	2	Server limit	0 B	Server limit	Active	✓	
Default	63	8	Server limit	25.6 MB	Server limit	Active	✓	✓
Development	4	2	Server limit	0 B	Server limit	Active	✓	✓
Documentation - 20 User Limit	5	1	20	3.2 MB	Server limit	Active	✓	
Finance	13	2	Server limit	9.8 MB	Server limit	Active	✓	✓

Configure cross-database join options

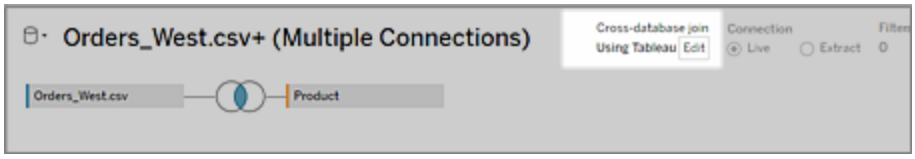
To improve performance for cross-database joins, users can allow Tableau to perform the join using the live database they are connected to instead of using Hyper. While this option is faster, if Tableau uses the connected database to perform the join, data from the file data source that the user is connected to is temporarily moved into temp tables in the database. Because this moves data outside of Tableau, as an administrator you may want to restrict access to this feature for users with web authoring permissions.

1. In a web browser, sign in to the server as an administrator and go to the site in which you want web authoring to be enabled. In that site, click **Settings**.

2. In the **Cross-Database Joins** setting, select one of the following options:
   - **Use Tableau or existing databases** - Select this option if you want to allow users to choose whether they want to allow Tableau to use the live database to perform cross database joins.
   - **Use Tableau only** - Select this option to restrict users to use only Hyper to perform cross data-base joins.



If you select **Use Tableau only**, the option to choose how Tableau performs the cross-database join won't display in the canvas when the user connects to a supported data source and supported database. For more information about this feature, see Improve performance for cross-database joins.



Connect to Published Data Sources in Web Editing

The steps below describe how to connect to published data sources when you're signed in to Tableau Server or Tableau Online. For details on how to edit workbooks and view on the web, see Build Views on the Web and Using Tableau on the Web.

For information about how to connect to a published data source from Tableau Desktop, see Tableau Server or Tableau Online in the Connector Example reference in this help system.

Connect to a published data source in the web editing environment

You can connect to data if you have permissions to create and edit views.

1. While you’re signed in to your Tableau Server or Tableau Online site, select a view to edit.
2. In editing mode, click the **New Data Source** icon .
3. In the **Connect to Data Source** dialog box, select a published data source from the list, and then click **Add**.

You can also connect to a published data source when you're creating a new workbook directly on Tableau Server or Tableau Online.

1. When you’re signed in to your site, navigate to the **Content** page and select **Data Sources**.
2. In the list of data sources, select the check box next to the one you want to use, and then click **Actions** and select **New Workbook**.

Use Relationships for Multi-table Data Analysis

Tables that you drag into this canvas use relationships. Relationships are a flexible way to combine data for multi-table analysis in Tableau.

Think of a relationship as a contract between two tables. When you are building a viz with fields from these tables, Tableau brings in data from these tables using that contract to build a query with the appropriate joins.

We recommend using relationships as your first approach to combining your data because it makes data preparation and analysis easier and more intuitive. Use joins only when you

absolutely need to. Learn more about the basics of creating relationships in this 5-minute video.

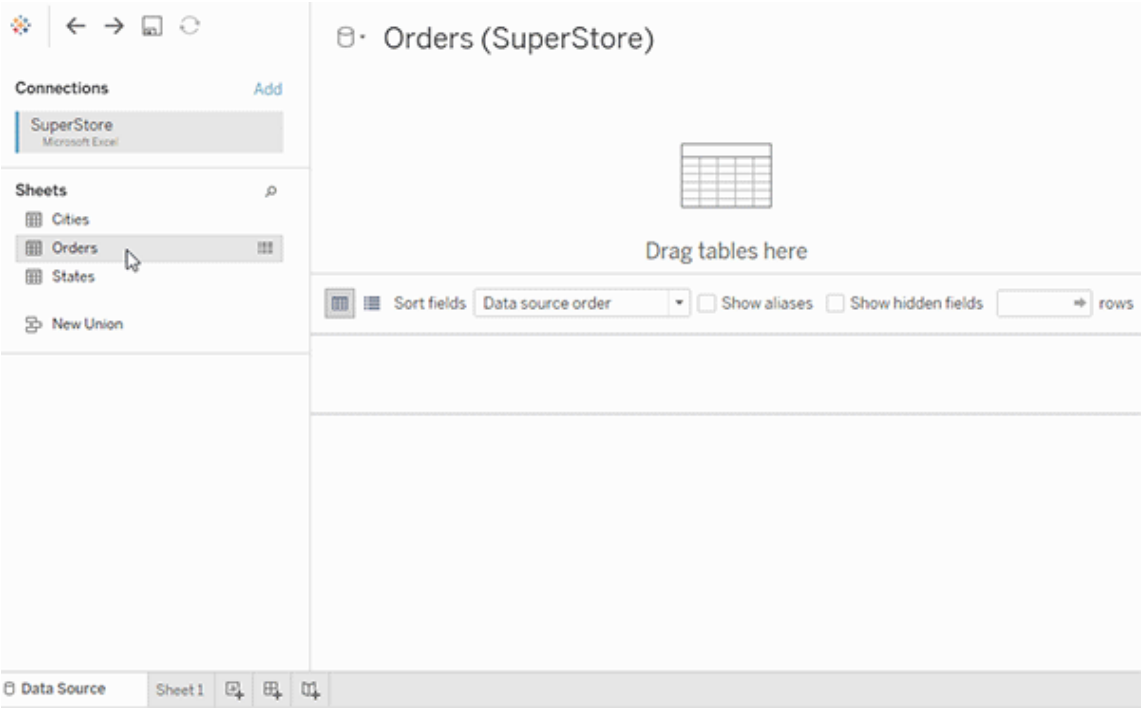
Learn more about how relationships work in these Tableau blog posts:

- Relationships, part 1: Introducing new data modeling in Tableau
- Relationships, part 2: Tips and tricks
- Relationships, part 3: Asking questions across multiple related tables

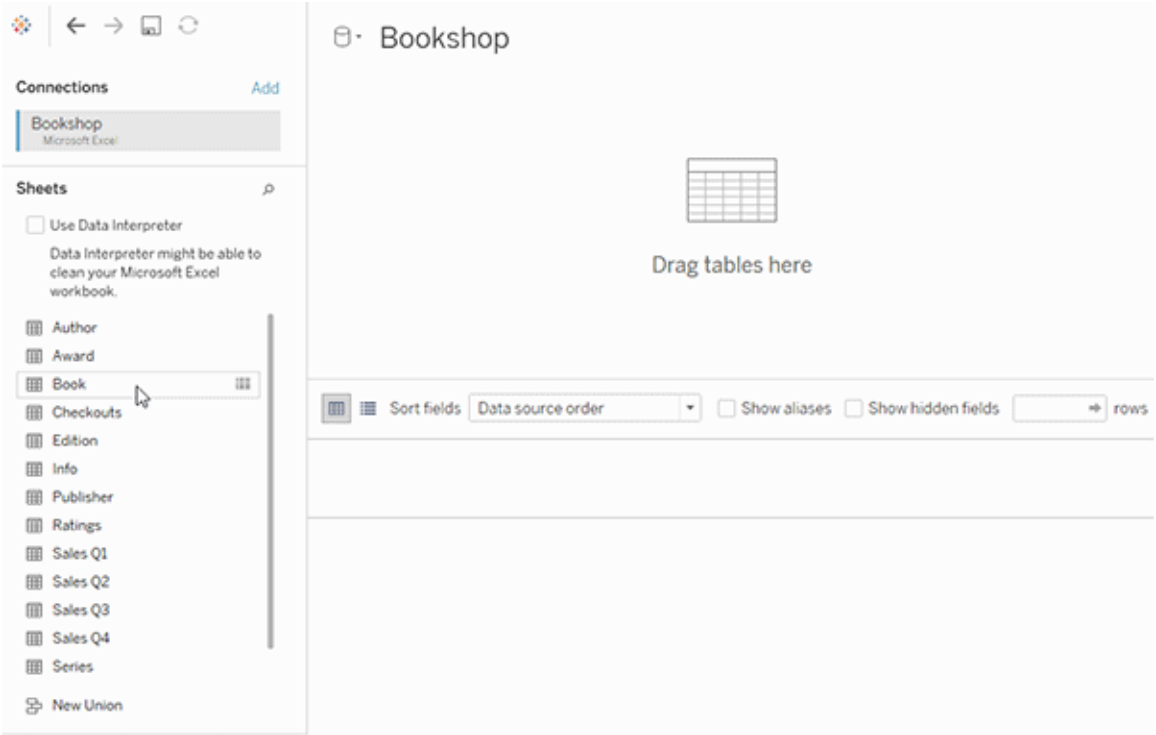
Are you building a new data source and workbook?

Drag a table to the Data Source page canvas to start building your data source.

A data source can be made of a single table that contains all of the dimension and measure fields you need for analysis...



Or, you can create a multi-table data source by dragging out more tables and defining their relationships...



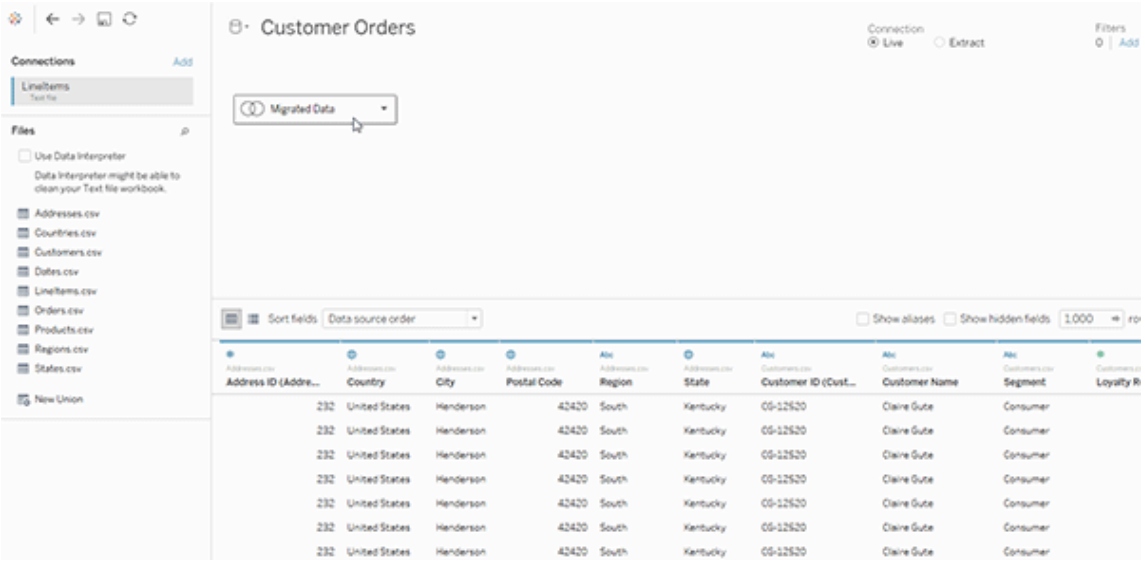
Watch this 1-minute video about getting started with using relationships.

For more information about using relationships, see Relate Your Data, How Relationships Differ from Joins, The Tableau Data Model, and Create and define relationships.

For more information on changes to data sources and analysis in Tableau 2020.2, see What's Changed with Data Sources and Analysis in 2020.2 and Questions about Relationships, the Data Model, and Data Sources in 2020.2.

Are you opening an older workbook or data source?

When you open a pre-2020.2 workbook or data source in 2020.2, your data source will appear as a single logical table in the canvas, with the name "Migrated Data" or the original table name. Your data is preserved and you can continue to use the workbook as you did before.



To see the physical tables that make up the single logical table, double-click that logical table to open it in the physical layer. You will see its underlying physical tables, including joins and unions.

For more information on changes to data sources and analysis in Tableau 2020.2, see What's Changed with Data Sources and Analysis in 2020.2 and Questions about Relationships, the Data Model, and Data Sources in 2020.2.

The Tableau Data Model

Every data source that you create in Tableau has a data model. You can think of a data model as a diagram that tells Tableau how it should query data in the connected database tables.

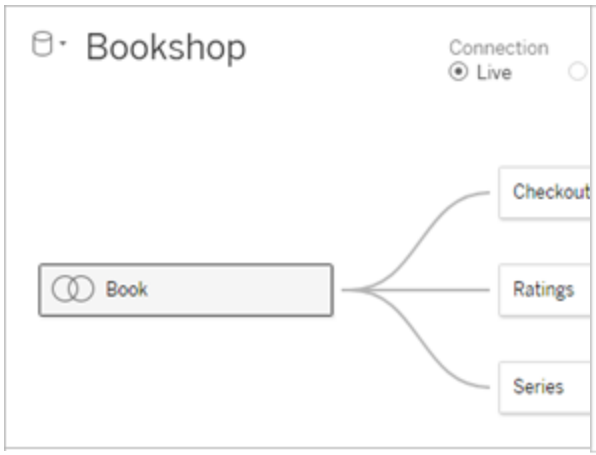
The tables that you add to the canvas in the **Data Source** page create the structure of the data model. A data model can be simple, such as a single table. Or it can be more complex, with multiple tables that use different combinations of relationships, joins, and unions.

The data model has two layers:

- The default view that you first see in the Data Source page canvas is the *logical layer* of the data source. You combine data in the logical layer using relationships (or noodles). Think of this layer as the Relationships canvas in the Data Source page. For more information, see Use Relationships for Multi-table Data Analysis.
- The next layer is the *physical layer*. You combine data between tables at the physical layer using joins and unions. Each logical table contains at least one physical table in this layer. Think of the physical layer as the Join/Union canvas in the Data Source page. Double-click a logical table to view or add joins and unions.

Logical Layer

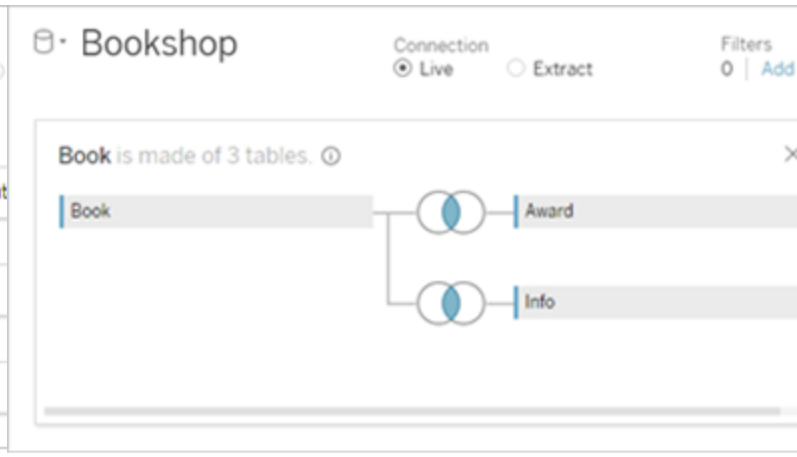
Noodles = Relationships



The top-level view of a data source with multiple, related tables. This is the logical layer. Logical tables can be combined using relationships (noodles). They don't use join types. They act like containers for physical tables.

Physical Layer

Venn diagram = Joins



Double-click a logical table to open it and see its physical tables. Physical tables can be combined using joins or unions. In this example, the Book logical table is made of three, joined physical tables (Book, Award, Info).

Logical Layer

Relationships canvas in the Data Source page

Physical Layer

Join/Union canvas in the Data Source page

Logical Layer	Physical Layer
Tables that you drag here are called logical tables	Tables that you drag here are called physical tables
Logical tables can be related to other logical tables	Physical tables can be joined or unioned to other physical tables
Logical tables are like containers for physical tables	Double-click a logical table to see its physical tables
Level of detail is at the row level of the logical table	Level of detail is at the row level of merged physical tables
Logical tables remain distinct (normalized), not merged in the data source	Physical tables are merged into a single, flat table that defines the logical table

Layers of the data model

The top-level view that you see of a data source is the logical layer of the data model. You can also think of it as the Relationships canvas, because you combine tables here using relationships instead of joins.

When you combine data from multiple tables, each table that you drag to the canvas in the logical layer must have a relationship to another table. You do not need to specify join types for relationships; during analysis Tableau automatically selects the appropriate join types based on the fields and context of analysis in the worksheet.

The physical layer of the data model is where you can combine data using joins and unions. You can only use pivots in this canvas. You can think of it as the Join/Union canvas. In previous versions of Tableau, the physical layer was the only layer in the data model. Each logical table can contain one or more physical tables.

Important: You can still create single-table data sources in Tableau that use joins and unions. The behavior of single-table analysis in Tableau has not changed. Your upgraded workbooks will work the same as they did before 2020.2.

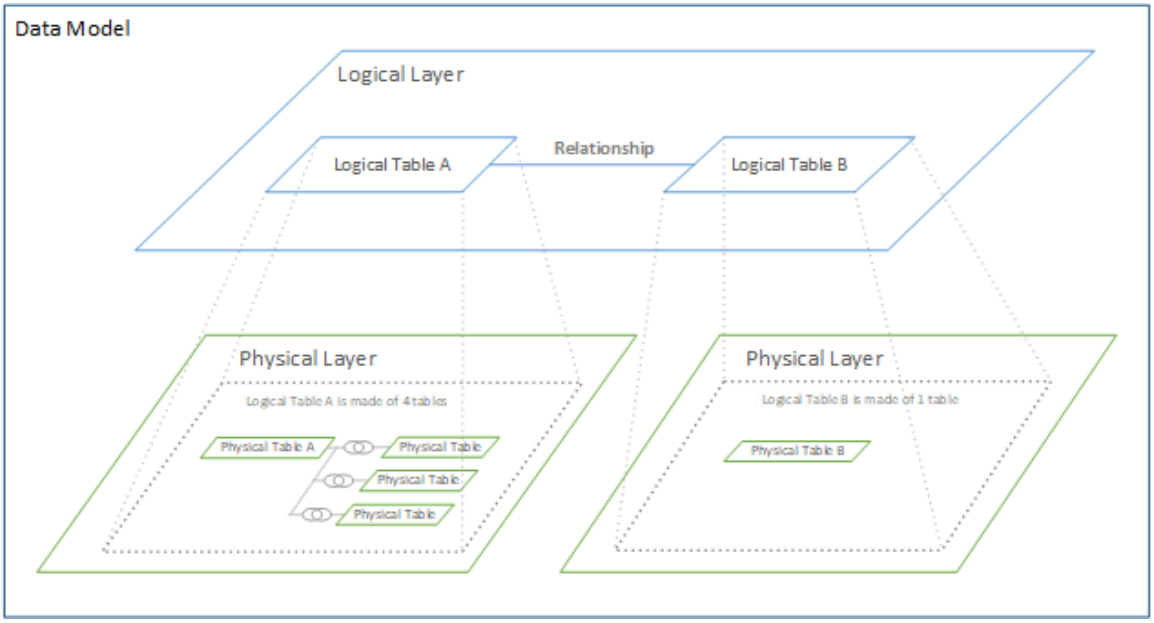
Learn more: For related information on combining data using relationships, also see these

topics and blog posts:

- How Relationships Differ from Joins
- Use Relationships for Multi-table Data Analysis
- Relate Your Data
- Relationships, part 1: Introducing new data modeling in Tableau
- Relationships, part 2: Tips and tricks
- Relationships, part 3: Asking questions across multiple related tables

Understanding the data model

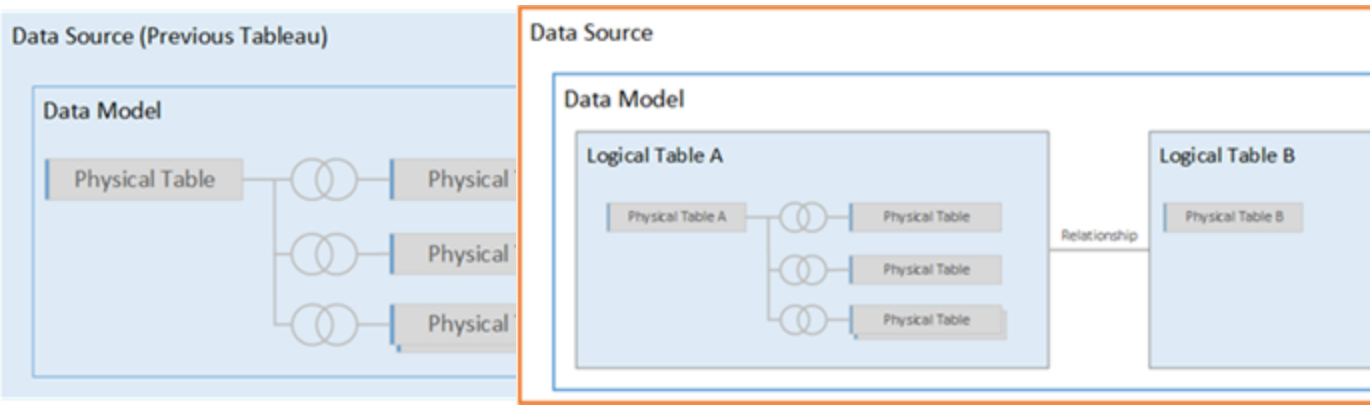
In previous versions of Tableau, the data model had only the physical layer. In Tableau 2020.2 and later, the data model has the logical (semantic) layer and a physical layer. This gives you more options for combining data using schemas to fit your analysis.



In Tableau 2020.2 and later, a logical layer has been added in the data source. Each logical table contains physical tables in a physical layer.

In previous versions of Tableau, the data model in your data source consisted of a single, physical layer where you could specify joins and unions. Tables added to the physical layer (joined or unioned) create a single, flattened table (denormalized) for analysis.

Previous versions **2020.2 and later**



In versions of Tableau before 2020.2, the data model has only the physical layer

In 2020.2 and later, the data model has two layers: the logical layer and the physical layer

In Tableau 2020.2, the data model in your data source includes a new semantic layer above the physical layer—called the logical layer—where you can add multiple tables and relate them to each other. Tables at the logical layer are not merged in the data source, they remain distinct (normalized), and maintain their native level of detail.

Logical tables act like containers for merged physical tables. A logical table can contain a single, physical table. Or it can contain multiple physical tables merged together through joins or unions.

Build a new model

When you add one or more tables to the logical layer, you are essentially building the data model for your data source. A data source can be made of a single, logical table, or you can drag multiple tables to the canvas to create a more complex model.

- The first table that you drag to the canvas becomes the root table for the data model in your data source.
- After you drag out the root table, you can drag out additional tables in any order. You will need to consider which tables should be related to each other, and the matching field pairs that you define for each relationship.

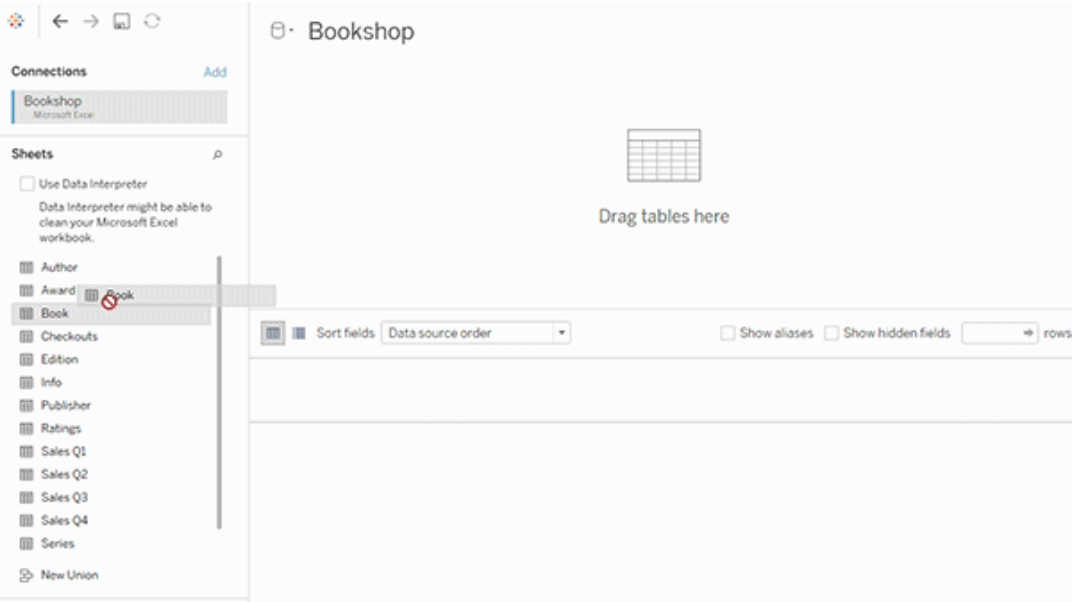
- If you are creating a star schema, it can be helpful to drag the fact table out first, and then relate dimension tables to that table.
- Deleting a table in the canvas automatically deletes its related descendants as well. If you delete the root table, all other tables in the model are also removed.
- Each relationship must be made of at least one matched pair of fields. Add multiple field pairs to create a compound relationship. Matched pairs must have the same data type. Changing the data type in the Data Source page does not change this requirement. Tableau will still use the data type in the underlying database for queries.
- Relationships can be based on calculated fields.
- You can specify how fields used in the relationships should be compared by using operators when you define the relationship.

Note: You can't edit the data model of a published data source.

For more information about relationships, see Create and define relationships in Relate Your Data.

Multi-table model

- To create a multi-table model, drag tables to the logical layer of the Data Source page canvas.



Tables that you drag to the logical layer of the Data Source page canvas must be related to each other. When you drag additional tables to the logical layer canvas, Tableau automatically attempts to create the relationship based on existing key constraints and matching fields to define the relationship. If it can't determine the matching fields, you will need to select them.

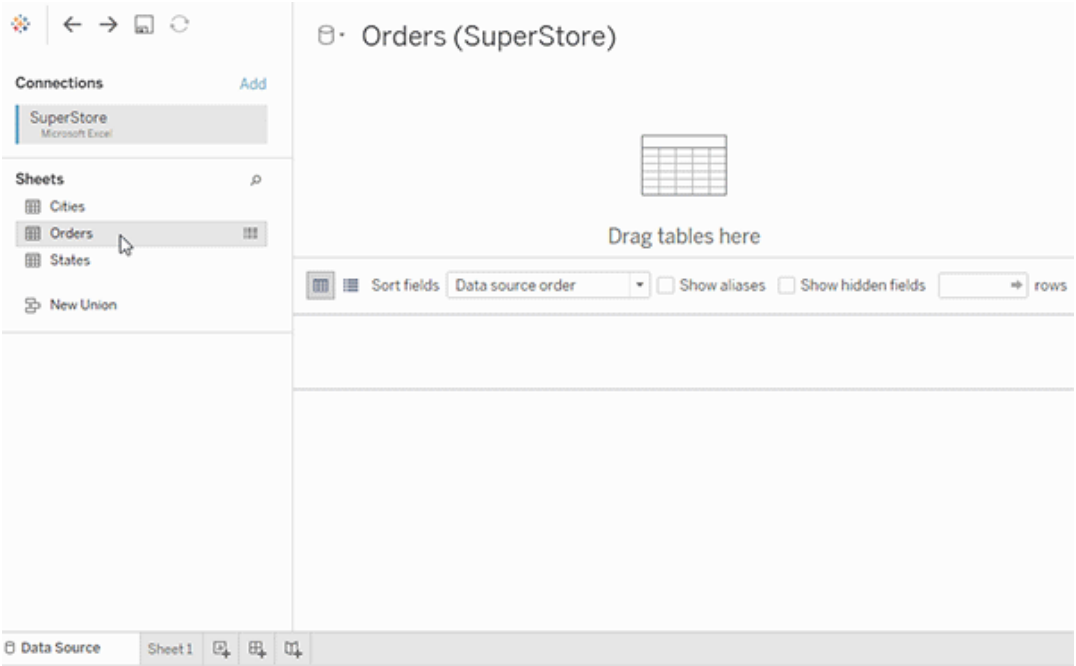
If no constraints are detected, a **Many-to-many** relationship is created and referential integrity is set to **Some records match**. These default settings are a safe choice and provide the most a lot of flexibility for your data source. The default settings support full outer joins and optimize queries by aggregating table data before forming joins during analysis. All column and row data from each table becomes available for analysis.

You can add more data inside any logical table by double-clicking the table. This opens the physical layer of the Data Source page canvas. If you need to use joins or unions, you can drag the tables you want to join or union into the physical layer canvas. The physical tables are merged in their logical table.

Follow the steps in Create and define relationships to combine multiple tables.

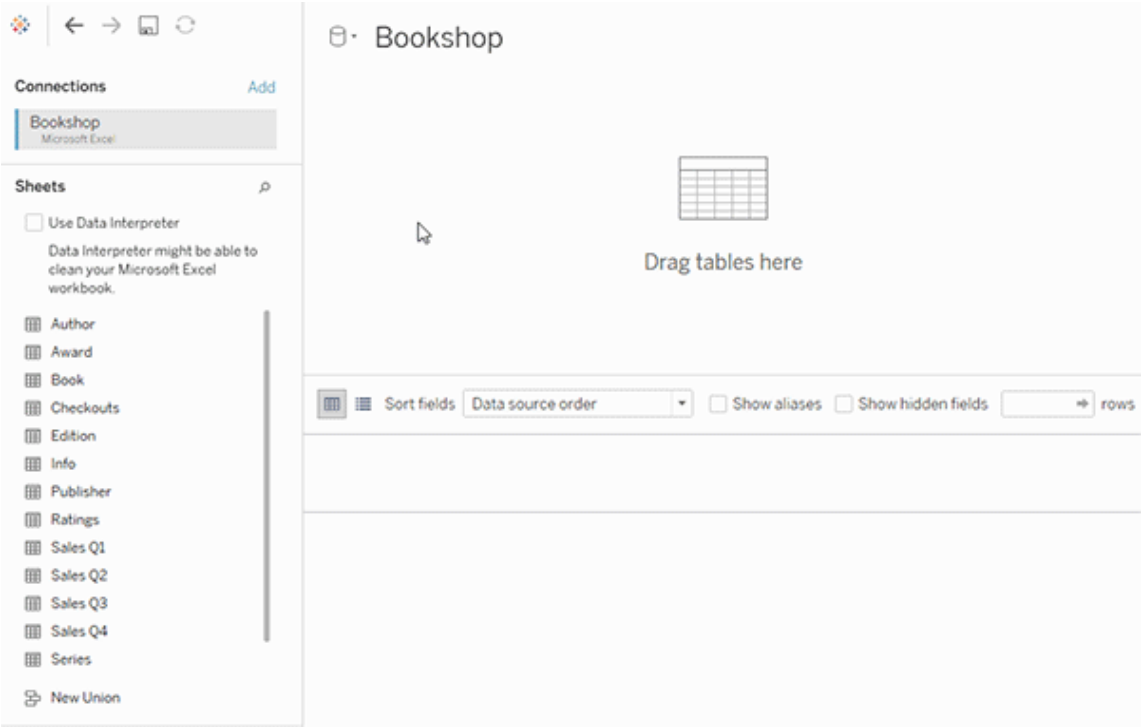
Single-table model

- To create a single-table model, drag a table into the logical layer canvas of the Data Source page. You can then use the fields from that table in the Data pane for analysis.



Single-table model that contains other tables

You can add more data inside the single, logical table by double-clicking the table. This opens the physical layer of the Data Source page canvas. If you need to use joins or unions, you can drag the tables you want to join or union into the physical layer canvas. The physical tables are merged in their logical table.



This example shows the Book table in the Relationships canvas (logical layer) of the data source. Double-clicking the Book logical table opens the Join/Union canvas (physical layer).

In this example, the joins merge the Award and Info tables with the Book table. In this case, the join between Book and Award will be one-to-many, at the level of detail of awards. This would duplicate measure values for Book and Info. To avoid duplication, you could relate Award and Info to Book instead of joining them inside of the Book logical table.

Supported data model schemas

The data modeling capabilities introduced to Tableau in 2020.2 are designed to make analysis over common multi-table data scenarios—including star and snowflake data models—easy. The following types of models are supported in Tableau data sources.

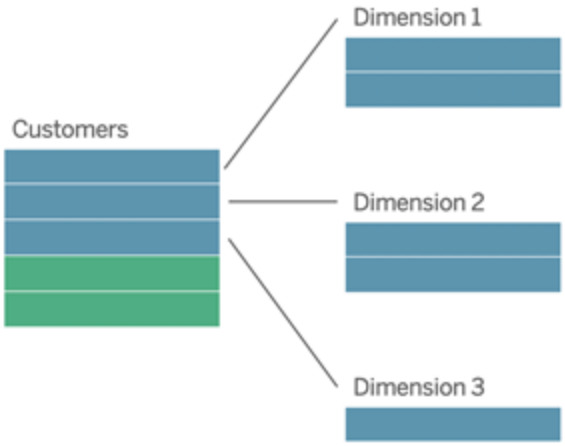
Single-table

Analysis over a single logical table that contains a mixture of dimensions and measures works just as in Tableau pre-2020.2. You can build a logical table using a combination of

joins, unions, custom SQL, and so on.

Star and snowflake

In enterprise data warehouses, it is common to have data structured in star or snowflake schemas where measures are contained in a central fact table and dimensions are stored separately in independent dimension tables. This organization of data supports many common analysis flows including rollup and drill down.



These models can be directly represented with relationships in the data modeling capabilities available starting with Tableau 2020.2.

Drag the fact table into the model first and then relate the dimension tables to the fact table (in a star schema) or to other dimension tables (in a snowflake).

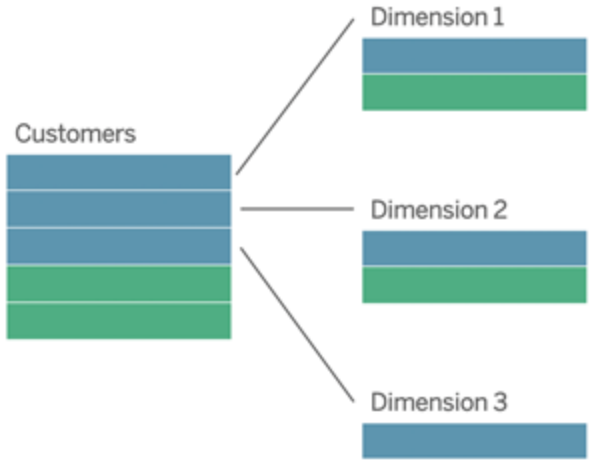
Typically, in a well-modeled star or snowflake schema, the relationships between the fact table and the dimension tables will be many-to-one. If this information is encoded in your

data warehouse, Tableau will automatically use this to set the relationship's Performance Options. If not, you can set this information yourself. For more information, see Optimize Relationship Queries Using Performance Options.

In a well-modeled star or snowflake schema, every row in the fact table will have a matching entry in each of the dimension tables. If this is true and captured in your data warehouse integrity constraints, Tableau will automatically use this information to set the referential integrity setting in Performance Options. If some fact table rows do not have a matching row in a dimension table (sometimes called "late-arriving dimensions" or "early-arriving facts"), Tableau will default to retaining all rows when computing measures, but may drop values when showing dimension headers. For more information, see Optimize Relationship Queries Using Performance Options.

Star and snowflake with measures in more than one table

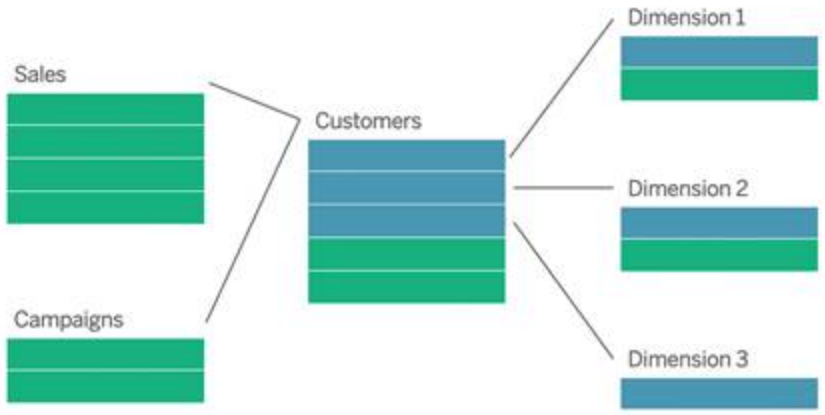
In some star or snowflake schemas, all the measures for your analysis are contained in the fact table. However, it is often true that additional measures of interest may be related to the dimension tables in your analysis. Even if the dimension tables do not contain measures, it is common in analysis to want to count or otherwise aggregate dimension values. In these cases, the distinction between fact tables and dimension tables is less clear. To create clarity when viewing your data model, we recommended adding the finest grain table to the data source canvas first, and then relating all other tables to that first table.



If you were to join these tables together into a single logical table, the measures in the dimension tables would be replicated, resulting in distorted aggregates unless you took precautions to deduplicate the values using LOD calculations or COUNT DISTINCT. However, if you instead create relationships between these tables, Tableau will aggregate measures before performing joins, avoiding the problem of unnecessary duplication. This relieves you of the need to carefully track the level of detail of your measures.

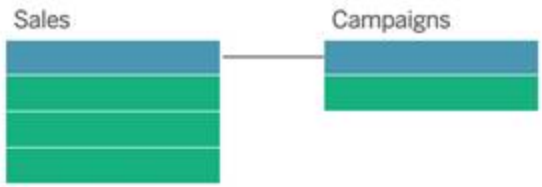
Multi-fact analysis

Tableau's data modeling capabilities support some forms of multi-fact analysis. Additional fact tables (containing measures) can be added to any of the previously mentioned models as long as they only relate to a single dimension table. For example, you can bring two or more fact tables together to analyze a shared dimension, such as in Customer 360-like analyses. These fact tables can be at a different level of detail than the dimension table, or from each other. They can also have a many-to-many relationship with the dimension table. In these scenarios, Tableau will ensure that values are not replicated before aggregation.



If you don't have a shared dimension table that relates your fact tables, you can sometimes dynamically build one using custom SQL or by using joins or unions of other dimension tables.

Two fact tables can be related directly to each other on a common dimension. This type of analysis works best when one of the fact tables contains a superset of the common dimension.



Unsupported models

- **Multiple fact tables related to multiple shared dimension tables**. In some use cases it is common to have multiple fact tables related to multiple shared dimension tables. For example, you might have two fact tables, Store Sales and Internet Sales, related to two common dimension tables, Date and Customer. Typically, such scenarios would require creating a circular relationship in your data model. Circular relationships are not supported in 2020.2.

  You can approximate this type of model by merging some of the tables in the physical layer. For example, you might be able to union Store Sales and Internet Sales into a single table, which can then be related to Date and Customer. Alternatively, you might be able to cross-join Date and Customer to create a single dimension table which can then be related to Store Sales and Internet Sales.

- **Directly relating 3 or more fact tables on shared dimensions**. While it is possible to build this model in the logical layer, you might see unwanted results, unless you only use dimensions from a single table.

Requirements for relationships in a data model

- When relating tables, the fields that define the relationships must have the same data type. Changing the data type in the Data Source page does not change this requirement. Tableau will still use the data type in the underlying database for queries.
- You can't define relationships based on geographic fields.
- Circular relationships aren't supported in the data model.
- You can't edit relationships in a published data source.

- You can't define relationships between published data sources.
- Your workbook must use an embedded data source for you to be able to edit relationships and performance options in the Data Source page in Tableau Online or Tableau Server.

Factors that limit the benefits of using related tables

- Dirty data in tables (i.e. tables that weren't created with a well-structured model in mind and contain a mix of measures and dimensions in multiple tables) can make multi-table analysis more complex.
- Using data source filters will limit Tableau's ability to do join culling in the data. Join culling is a term for how Tableau simplifies queries by removing unnecessary joins.
- Tables with a lot of unmatched values across relationships.
- Interrelating multiple fact tables with multiple dimension tables (attempting to model shared or conformed dimensions).

How Relationships Differ from Joins

Relationships are a dynamic, flexible way to combine data from multiple tables for analysis. You don’t define join types for relationships, so you won’t see a Venn diagram when you create them.

Think of a relationship as a contract between two tables. When you are building a viz with fields from these tables, Tableau brings in data from these tables using that contract to build a query with the appropriate joins.

- **No up-front join type**. You only need to select matching fields to define a relationship (no join types). Tableau first attempts to create the relationship based on existing key constraints and matching field names. You can then check to ensure they are the fields you want to use, or add more field pairs to better define how the tables should be related.
- **Automatic and context-aware**. Relationships defer joins to the time and context of analysis. Tableau automatically selects join types based on the fields being used in the visualization. During analysis, Tableau adjusts join types intelligently and preserves the native level of detail in your data. You can see aggregations at the level of detail of the fields in your viz rather than having to think about the underlying joins. You don't need to use LOD expressions such as FIXED to deduplicate data in related tables.

- **Flexible**. Relationships can be many-to-many and support full outer joins. When you combine tables using relationships, it's like creating a custom, flexible data source for every viz, all in a single data source for the workbook. Because Tableau queries only tables that are needed based on fields and filters in a viz, you can build a data source that can be used for a variety of analytic flows.

For more information, see Relate Your Data and Don't Be Scared of Relationships.

Joins are still available as an option for combining your data. Double-click a logical table to go to the join canvas. For more information, see Where did joins go?

Watch a video: For an overview of data source enhancements and an introduction to using relationships in Tableau, see this 5-minute video.

For related information about how relationship queries work, see these Tableau blog posts:

- Relationships, part 1: Introducing new data modeling in Tableau
- Relationships, part 2: Tips and tricks
- Relationships, part 3: Asking questions across multiple related tables

Characteristics of relationships and joins

Relationships are a dynamic, flexible way to combine data from multiple tables for analysis. We recommend using relationships as your first approach to combining your data because it makes data preparation and analysis easier and more intuitive. Use joins only when you absolutely need to.

Here are some advantages to using relationships to combine tables:

- Make your data source easier to define, change, and reuse.
- Make it easier to analyze data across multiple tables at the correct level of detail (LOD).
- Do not require the use of LOD expressions or LOD calculations for analysis at different levels of detail.
- Only query data from tables with fields used in the current viz.

Relationships

- Are displayed as flexible noodles between logical tables
- Require you to select matching fields between two logical tables
- Do not require you to select join types
- Make all row and column data from related tables potentially available in the data source
- Maintain each table's level of detail in the data source and during analysis
- Create independent domains at multiple levels of detail. Tables aren't merged together in the data source.
- During analysis, create the appropriate joins automatically, based on the fields in use.
- Do not duplicate aggregate values (when Performance Options are set to Many-to-Many)
- Keep unmatched measure values (when Performance Options are set to Some Records Match)

Joins

Joins are a more static way to combine data. Joins must be defined between physical tables up front, before analysis, and can’t be changed without impacting all sheets using that data source. Joined tables are always merged into a single table. As a result, sometimes joined data is missing unmatched values, or duplicates aggregated values.

- Are displayed with Venn diagram icons between physical tables
- Require you to select join types and join clauses
- Joined physical tables are merged into a single logical table with a fixed combination of data
- May drop unmatched measure values
- May duplicate aggregate values when fields are at different levels of detail
- Support scenarios that require a single table of data, such as extract filters and aggregation

Requirements for using relationships

- When relating tables, the fields that define the relationships must have the same data type. Changing the data type in the Data Source page does not change this requirement. Tableau will still use the data type in the underlying database for queries.
- You can't define relationships based on geographic fields.

- Circular relationships aren't supported in the data model.
- You can't edit relationships in a published data source.
- You can't define relationships between published data sources.
- Your workbook must use an embedded data source for you to be able to edit relationships and performance options in the Data Source page in Tableau Online or Tableau Server.

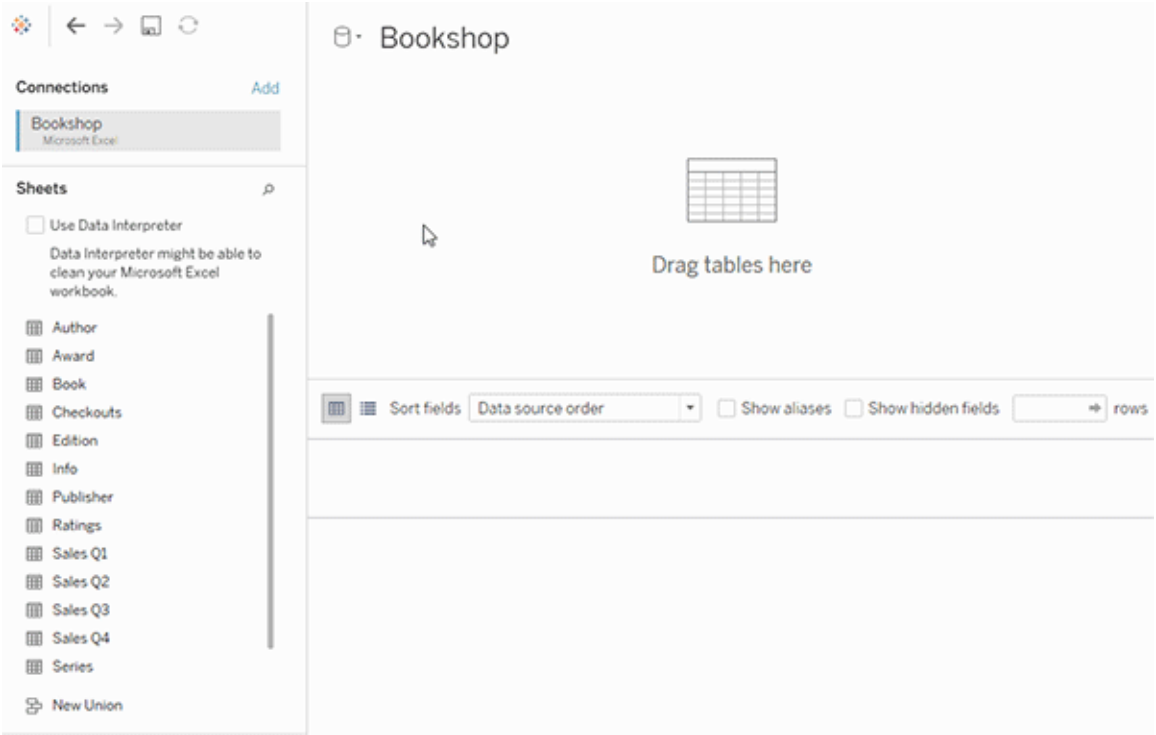
Factors that limit the benefits of using related tables

- Dirty data in tables (i.e. tables that weren't created with a well-structured model in mind and contain a mix of measures and dimensions in multiple tables) can make multi-table analysis more complex.
- Using data source filters will limit Tableau's ability to do join culling in the data. Join culling is a term for how Tableau simplifies queries by removing unnecessary joins.
- Tables with a lot of unmatched values across relationships.
- Interrelating multiple fact tables with multiple dimension tables (attempting to model shared or conformed dimensions).

Where did joins go?

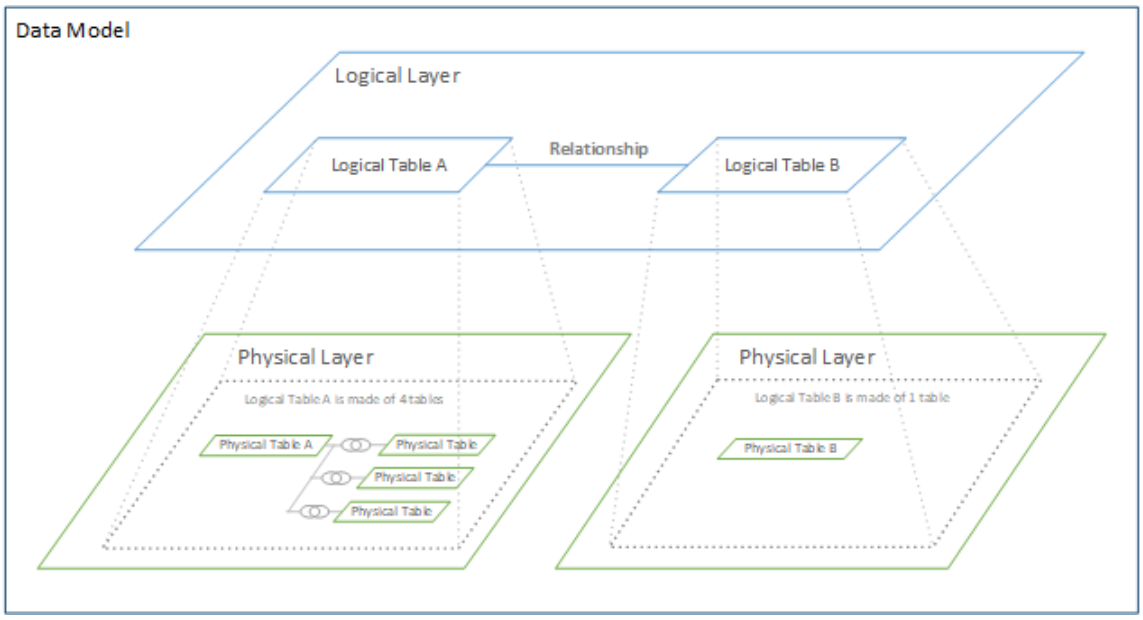
You can still specify joins between tables in the physical layer of a data source. Double-click a logical table to go to the Join/Union canvas in the physical layer and add joins or unions.

Every top-level, logical table contains at least one physical table. Open a logical table to view, edit, or create joins between its physical tables. Right-click a logical table, and then click **Open**. Or, just double-click the table to open it.



When you create a data source, it has two layers. The top-level layer is the logical layer of the data source. You combine data between tables in the logical layer using relationships.

The next layer is the physical layer of the data source. You combine data between tables at the physical layer using joins. For more information, see Logical and physical tables in the data model.



Optimize Relationship Queries Using Performance Options

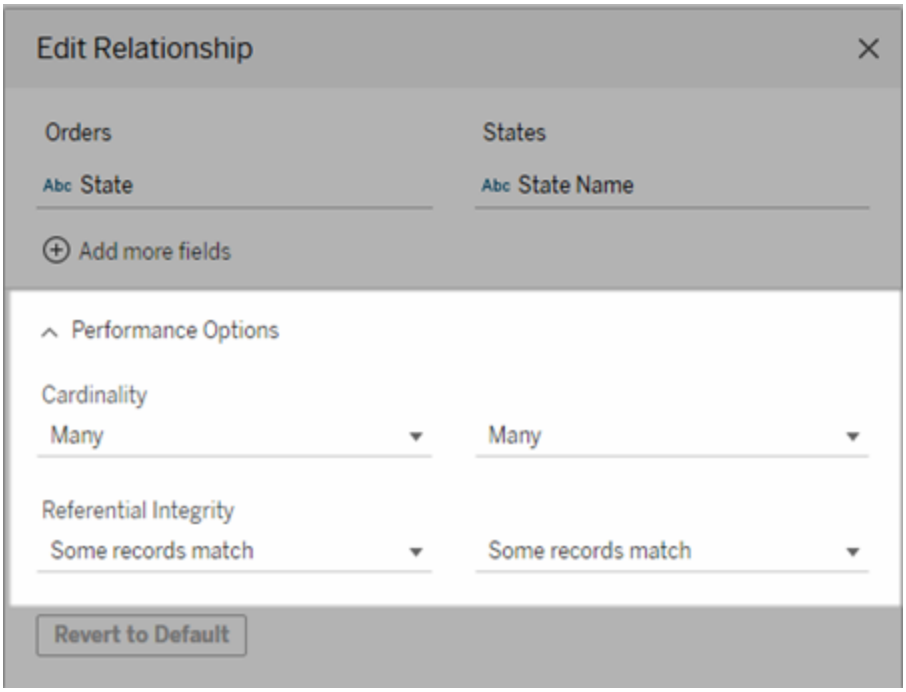
Performance Options are optional settings that define the cardinality (uniqueness) and referential integrity (matching records) between the two tables in a relationship. These settings help Tableau optimize queries during analysis.

- **If you aren't sure what to choose**, use the recommended default settings indicated by Tableau. Using the defaults is safe and will automatically generate correct aggregations and joins during analysis. If you don't know the cardinality or referential integrity, you don't need to change these settings.
- **If you know the shape of your data**, you can optionally change these settings to represent uniqueness and matching between the records in the two tables.

In many analytical scenarios, using the default settings for a relationship will give you all of the data you need for analysis. In some scenarios, you might want to adjust the Performance Options settings to describe your data more accurately. For more details about using relationships to combine and analyze data, see Relate Your Data and this Tableau blog post: Relationships, part 1: Introducing new data modeling in Tableau.

> **Note**: In web authoring in Tableau Server or Tableau Online: Your workbook must be connected to a live data source for you to be able to edit relationships and performance options in the Data Source page. You cannot edit the data model of a published data source.

What the Cardinality and Referential Integrity settings mean



Cardinality options

Cardinality settings determine if Tableau aggregates table data before or after automatically joining the data during analysis.

- Select **Many** if the field values aren't unique, or you don't know. Tableau will aggregate the relevant data before forming joins during analysis.
- Select **One** if field values are unique. During analysis, the relevant data will be joined before aggregation. Setting this option correctly optimizes queries in the workbook when the field values in the relationship are unique. However, selecting **One** when field values aren’t unique can result in duplicate aggregate values being shown in the view.

Note: Selecting **One** treats records as if each key value is unique and there is at most only one row with a null value.

Referential Integrity options

Referential Integrity settings determine the type of join used to get the dimension values for a measure during analysis.

- Select **Some Records Match** if some values in the field don't have a match in the other table, or you don't know. During analysis, Tableau uses outer joins to get dimensions values for a measure. All measure values will be shown in the view, even unmatched measures.
- Select **All Records Match** if values in the field are guaranteed to have a match in the other table. This setting generates fewer and simpler joins during analysis, and optimizes queries. You might see inconsistent results during analysis (unmatched values removed or missing in view) if there are unmatched values in this table.

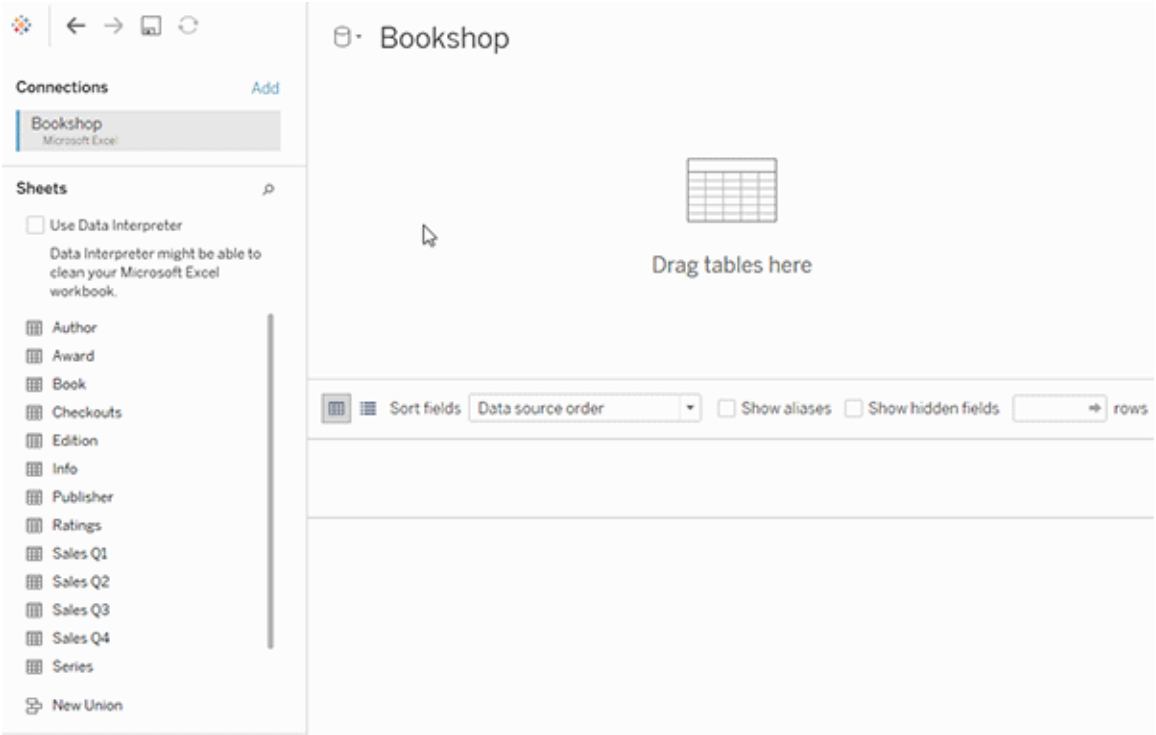
Notes: Selecting **All Records Match** treats records as if no null values exist in the fields used for the relationship. During analysis, Tableau will use inner joins to get dimension values for a measure. By default, Tableau will never join null keys.

For more information about Cardinality and Referential integrity as concepts, see Cardinality and Referential Integrity.

Where did joins go?

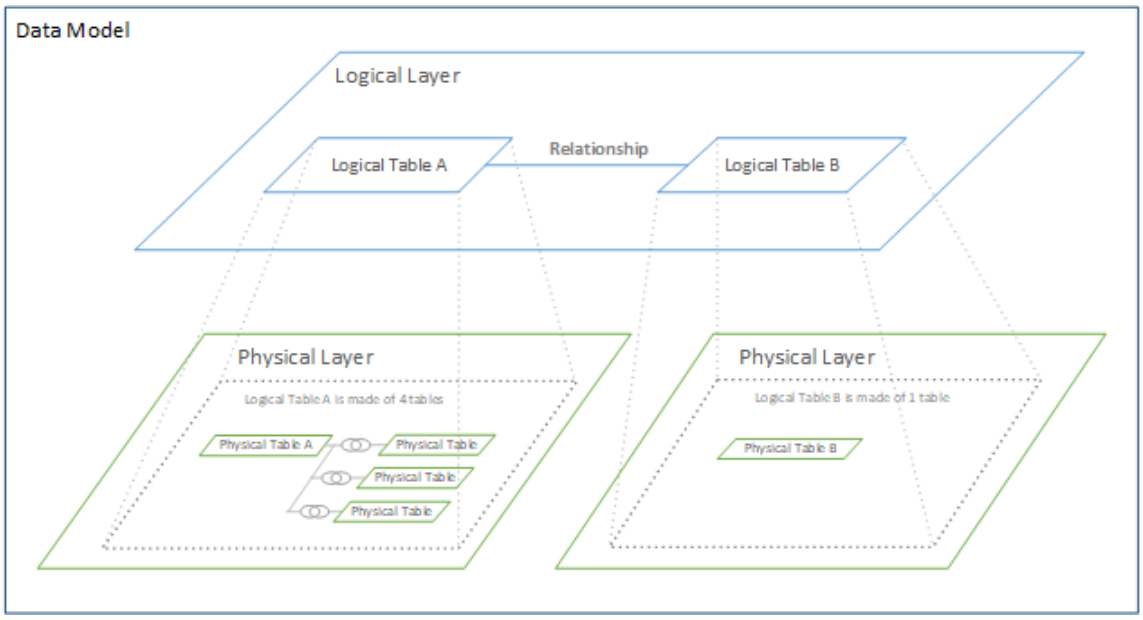
You can still specify joins between tables in the physical layer of a data source. Double-click a logical table to go to the join canvas.

Every top-level, logical table contains at least one physical table. Open a logical table to view, edit, or create joins between its physical tables. Right-click a logical table, and then click **Open**. Or, just double-click the table to open it.



When you create a data source, it has two layers. The top-level layer is the logical layer of the data source. You combine data between tables in the logical layer using relationships.

The next layer is the physical layer of the data source. You combine data between tables at the physical layer using joins. For more information, see Logical and physical tables in the data model.



Tips on using Performance Options

If you know the shape of your data, you can use the optional settings in Performance Options to establish the cardinality of the tables to each other (one-to-one, one-to-many, many-to-many) and indicate referential integrity (values from one table will always have match in the other table).

Instead of thinking of the settings in Performance Options as “yes” and “no”, think of them as “yes” and “I don’t know”. If you are sure that a table's values are unique, select **One**. If you are sure that each record in one table matches one or more records in the other table, select **All Records Match**. Otherwise, leave the default settings as they are.

If you aren't sure about the shape of your data, use the default settings. When Tableau can't detect these settings in your data, the default settings are:

- Cardinality: Many-to-Many
- Referential integrity: Some Records Match

If Tableau detects key relationships or referential integrity in your data, those settings will be used and indicated as "detected".

To reapply the default settings, click **Revert to Default**.

Cardinality refers to the uniqueness of data contained in a field (column) or combination of fields. When the tables you want to analyze contain many rows of data, queries can be slow (and performance of the overall data source is affected) so we recommend choosing a method for combining data based on the cardinality of the related columns between tables.

- Low cardinality: When related columns have a lot of repeated data. For example, a table called Products might contain a Category column that contains three values: Furniture, Office Supplies, and Technology.
- High cardinality: When related columns have highly unique data. For example, a table called Orders might contain an Order ID column that contains a unique value for every order of product.

Referential integrity means that one table will always have a matching row in the other table. For example, a Sales table will always have a matching row in the Product Catalog table.

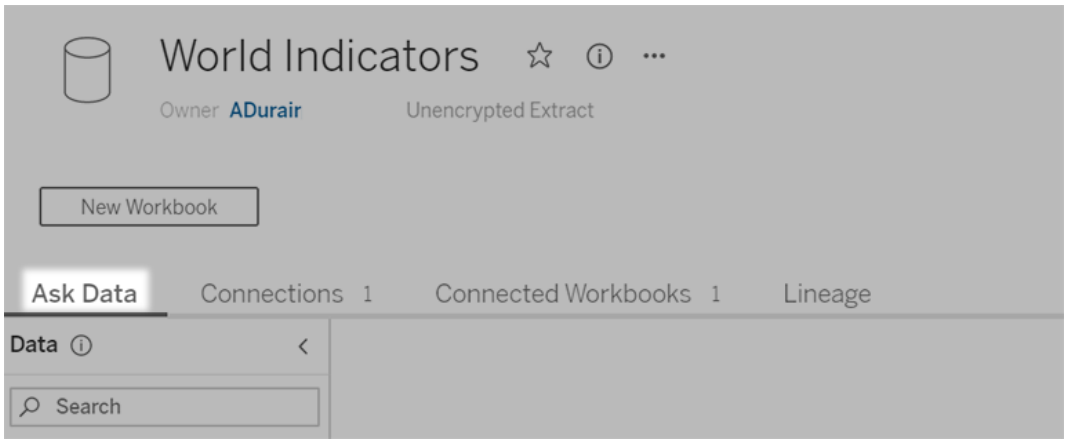
Automatically Build Views with Ask Data

Ask Data introduces an entirely new way to interact with your data, letting you type a question and instantly get a response right in Tableau. Answers come in the form of automatic data visualizations, with no need to manually drag-and-drop fields or understand the nuances of your data's structure.

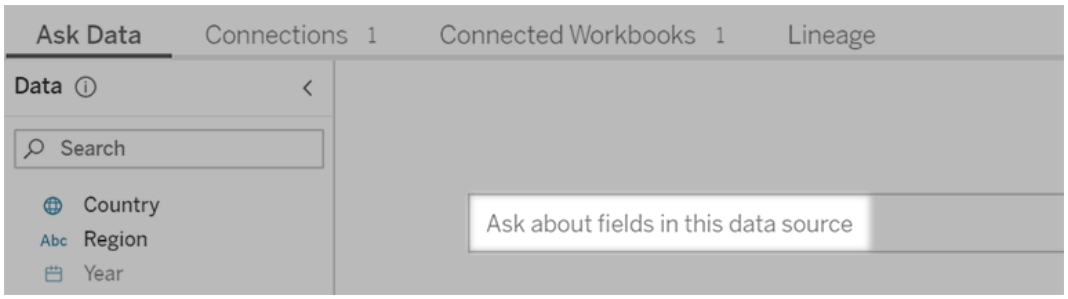
Ask Data lets you ask sophisticated questions naturally, with support for key analytical concepts like time series and spatial analysis, and an understanding of conversational phrases like "last year", "earliest", and "most popular".

Ask Data to quickly build a viz

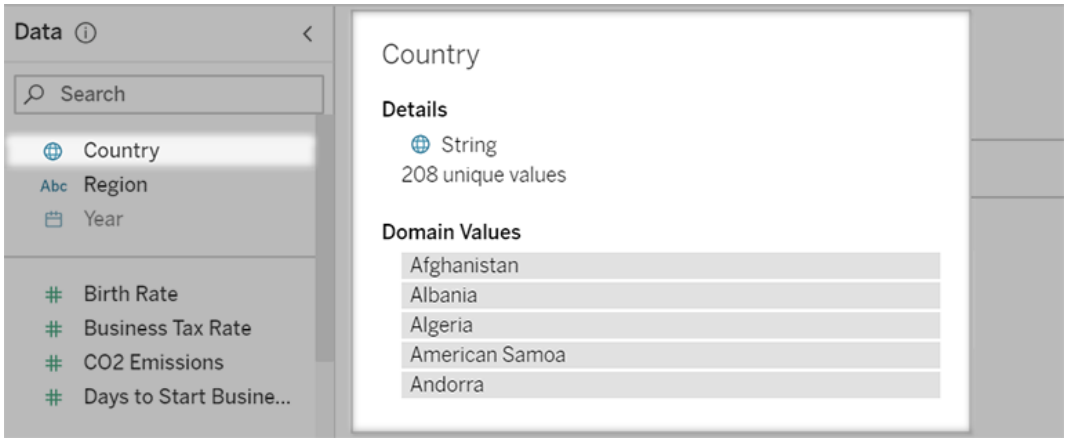
1. In Tableau Server or Tableau Online, navigate to a published data source, and then click **Ask Data** at left. (Ask Data isn't available for data sources embedded in workbooks.)



2. In the text box reading "**Ask about fields in this data source**", enter terms from the data source fields at left.



Hover over each field to learn more about the data it contains. Unlike the data fields seen in standard Tableau views, these fields can't be dragged to the canvas.

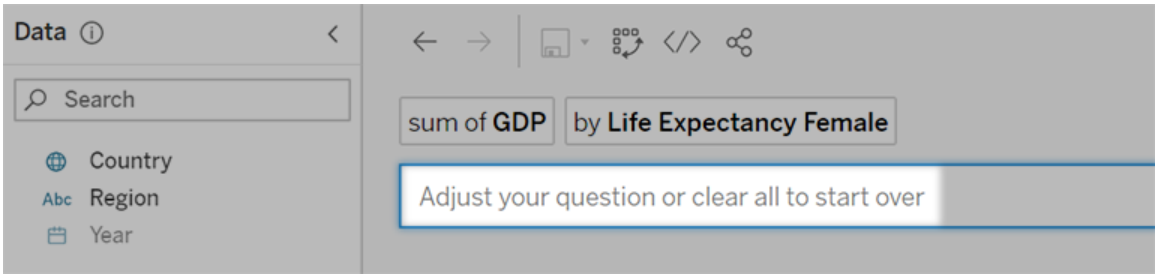


3. As you type, Ask Data automatically completes your entry using likely combinations of data fields and analytical functions. To automatically create a viz, either press **Enter**, or choose from suggested entries below the text box.

   Just like that, you've created a compelling visualization of your data!

Rephrase your question using a conversational style

After Ask Data initially builds a viz, you can quickly revise it by typing conversational phrases in the text box reading "**Adjust your question or clear all to start over**".



In the text box, do any of the following:

- Change the viz type with phrasing like "as a bar chart".
- Add functions with phrasing like "by country" or "in December".
- Replace fields by typing "replace [*existing field name*] with [*new field name*]"
- Remove fields by typing "remove [*field name*]"
- Clear the viz by typing "reset" or "clear".

Rephrase your question using the interface

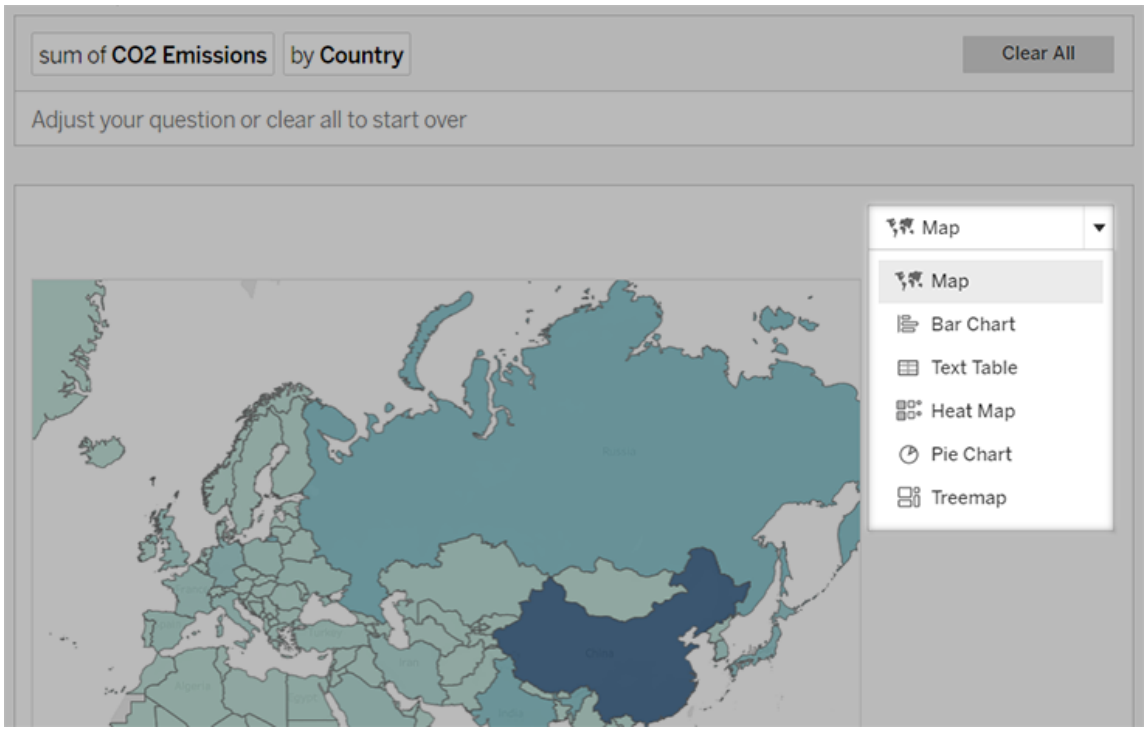
You can also rephrase questions by clicking options and data fields in the user interface.

Change the viz type

If the default viz doesn't fully reveal your data, click the menu at upper right, and choose from these supported viz types:

- Bar Chart
- Gantt Bar

- Heat Map
- Histogram
- Line Chart
- Map
- Pie Chart
- Scatter
- Stacked Bar Chart
- Text Table
- Treemap

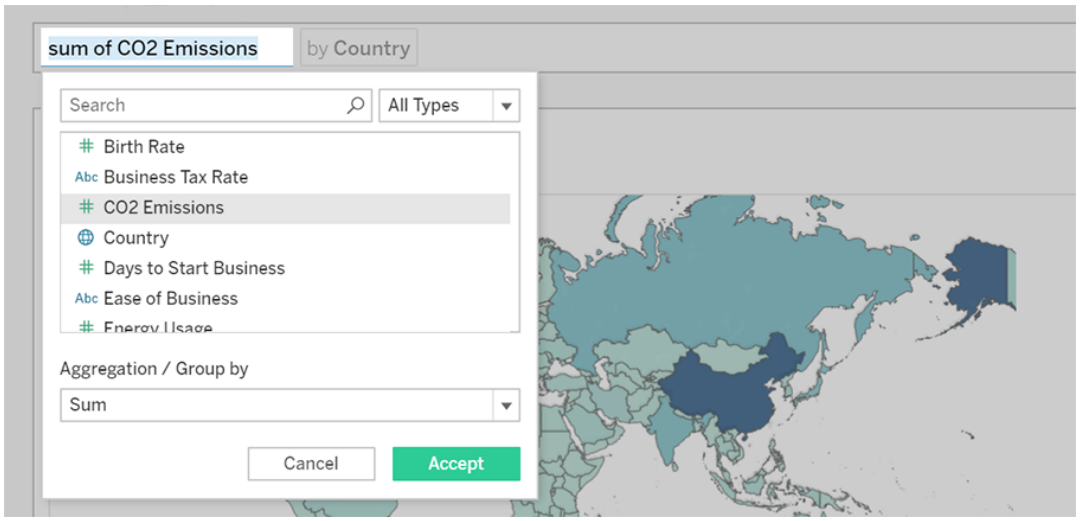


Note: To automatically create certain viz types, Ask Data sometimes adds fields like "Number of Records" to your entries.

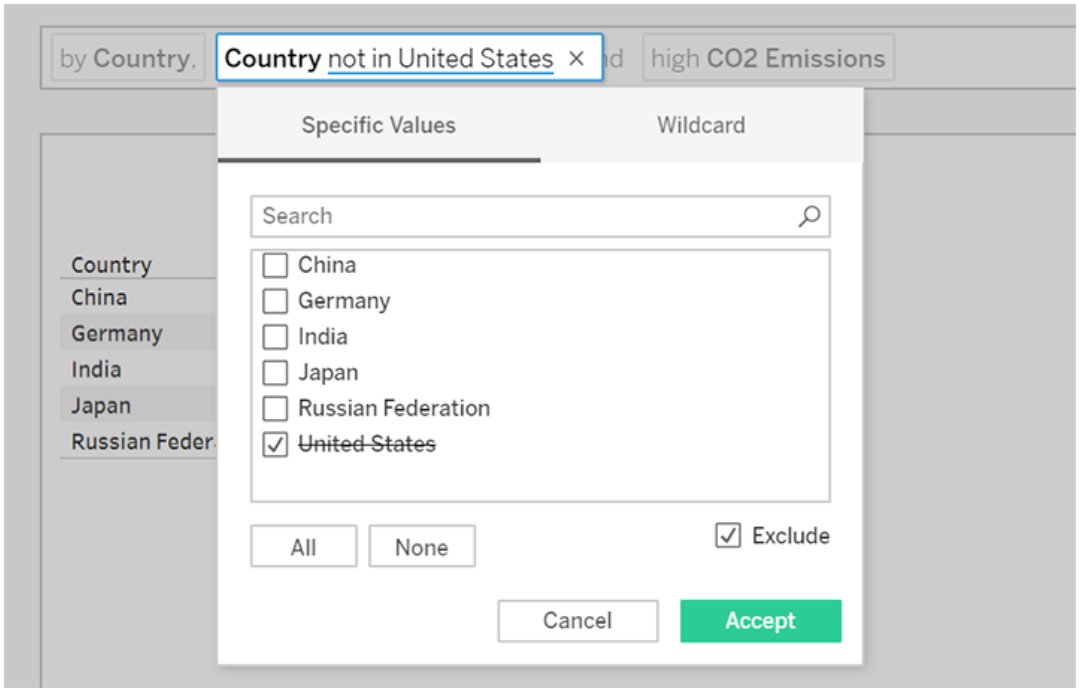
Customize fields and their data

Ask Data gives you several ways to fine-tune how field values are displayed.

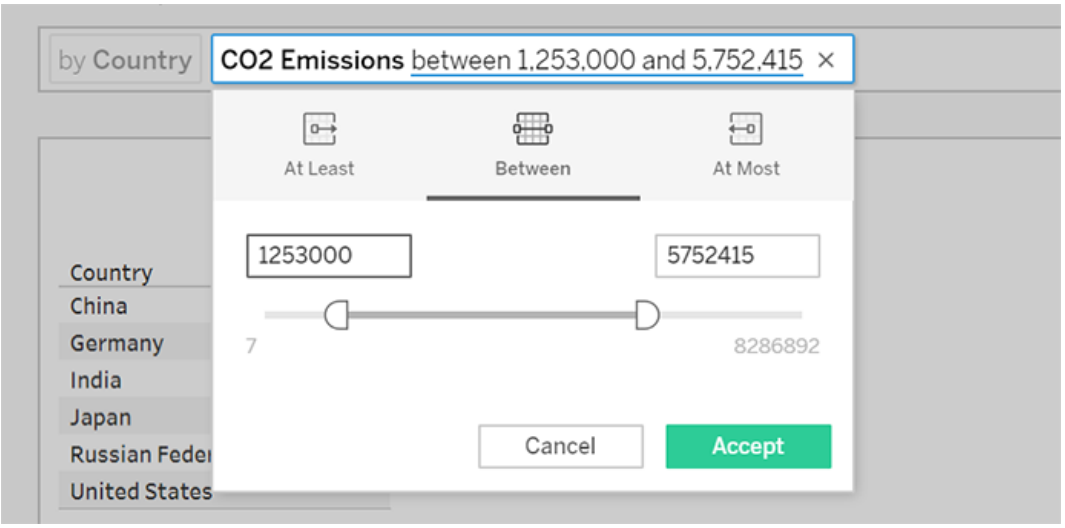
- To switch the fields used for the vertical and horizontal axes, click the Swap Axes button above the text box.
- To change a field or its aggregation type (for example, from sum to average), click the field name in the text box.



- If a field is used as a filter, click the name to specify values or wildcard parameters.



- To adjust a numeric range, click words like “high”, “between”, or “cheap” in the text box.



- To delete a field, hover over it and click the **X**.

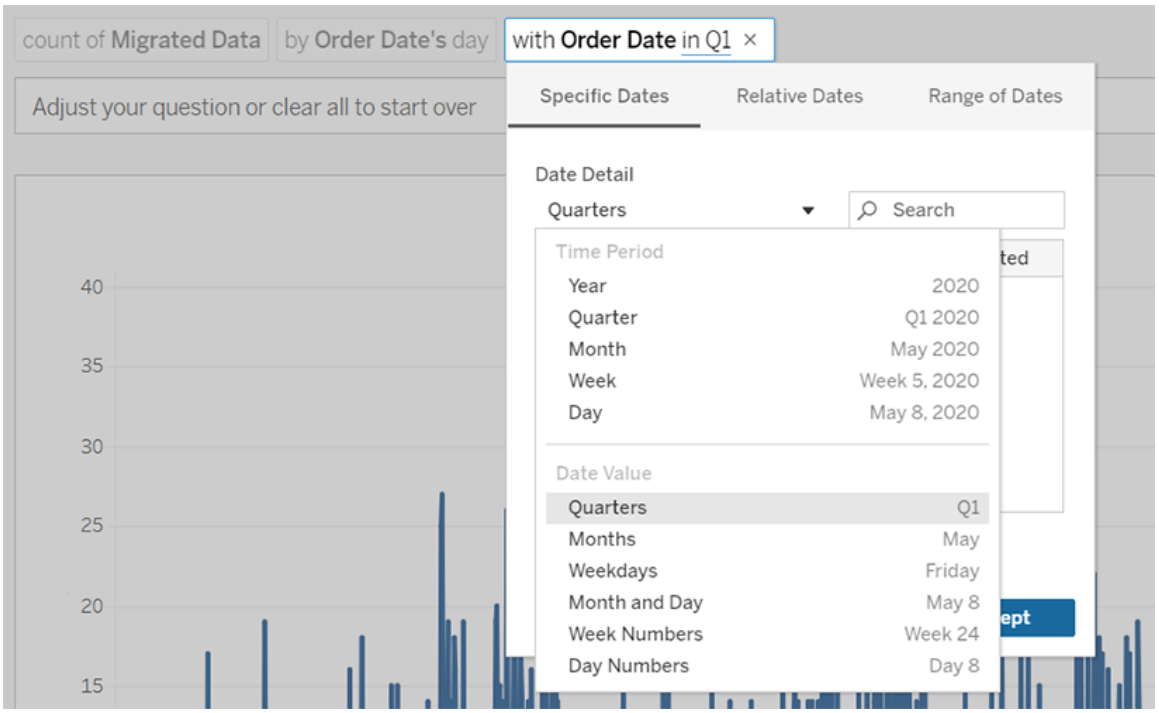
Adjust date filters

To adjust a date filter, click words like “in”, “last”, “previous”, or “between”. Then click one of the following:

- **Specific Dates** to enter a specific time period or date value
- **Relative Dates** to show a date range relative to the present day
- **Range of Dates** to enter specific start and end points

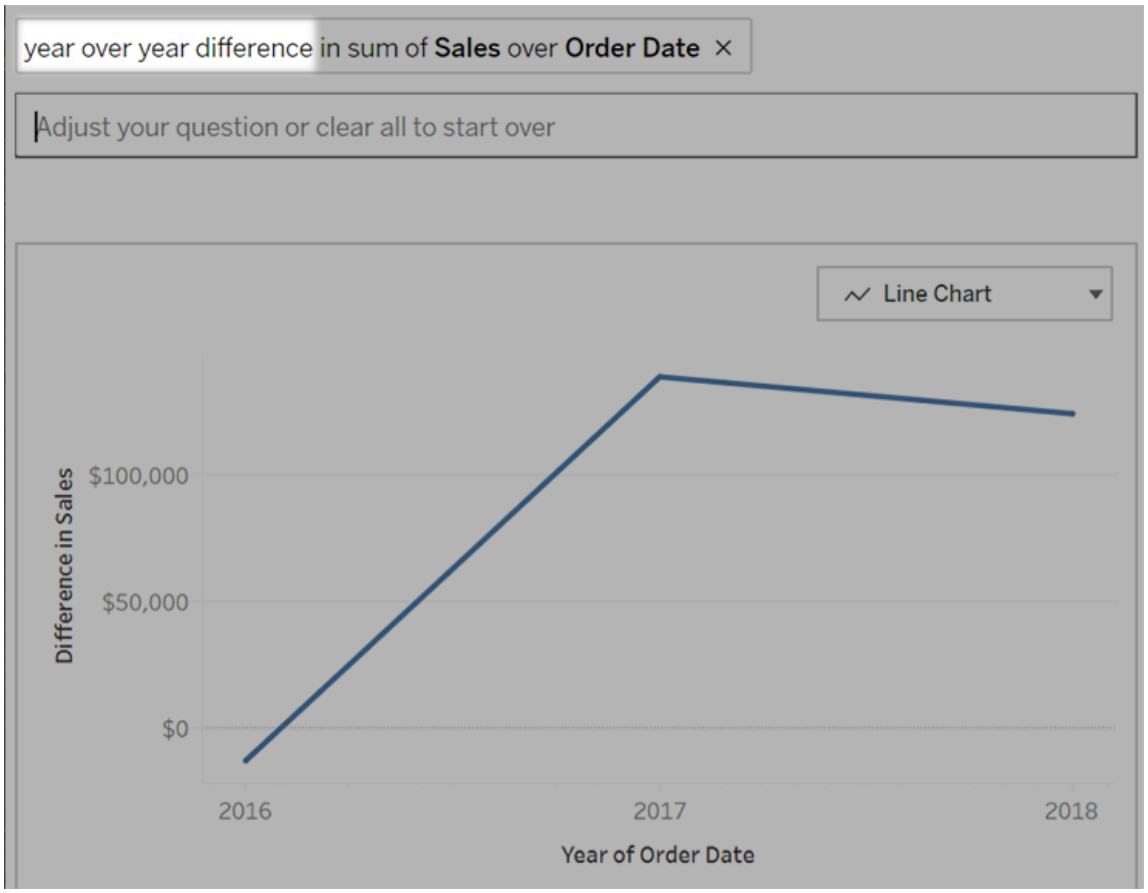
Specific Dates offers some unique options in the **Date Detail** menu:

- **Time Period** options show a single continuous date range
- **Date Value** options show ranges that can repeat in multiple time periods. For example, to see combined sales performance for Q1 across multiple years, under Date Value, you would choose Quarters.

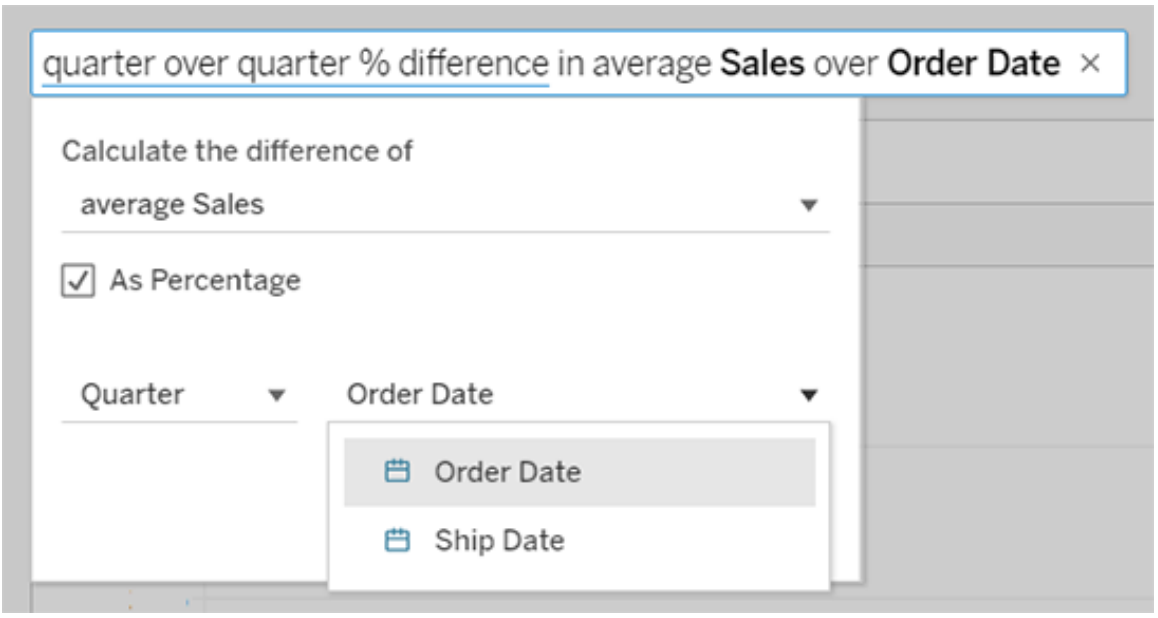


Compare differences over time

Ask Data lets you compare time periods with phrases like “year over year”, “quarter over quarter”, or similar comparisons by month, week, or day. The results appear as difference or percent difference table calculations in workbooks you save from Ask Data.



In the text box, click a difference calculation to choose other fields, aggregation methods, and time periods.



Apply simple calculations

Ask Data supports simple calculations between two measures, which you can apply using these symbols:

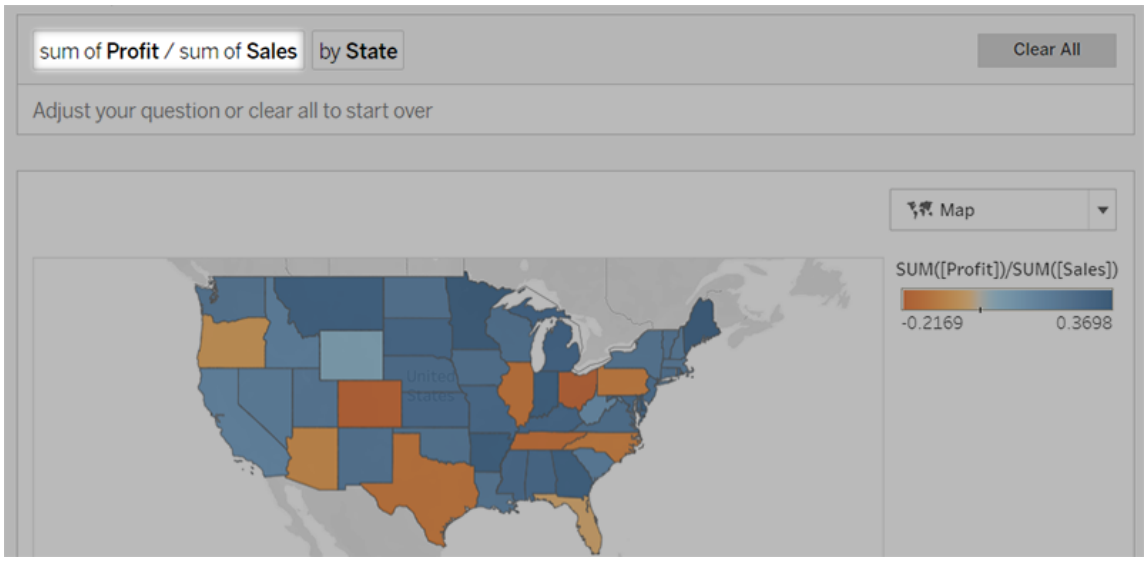
+ sums the measures

- produces the difference between them

* multiplies

/ divides

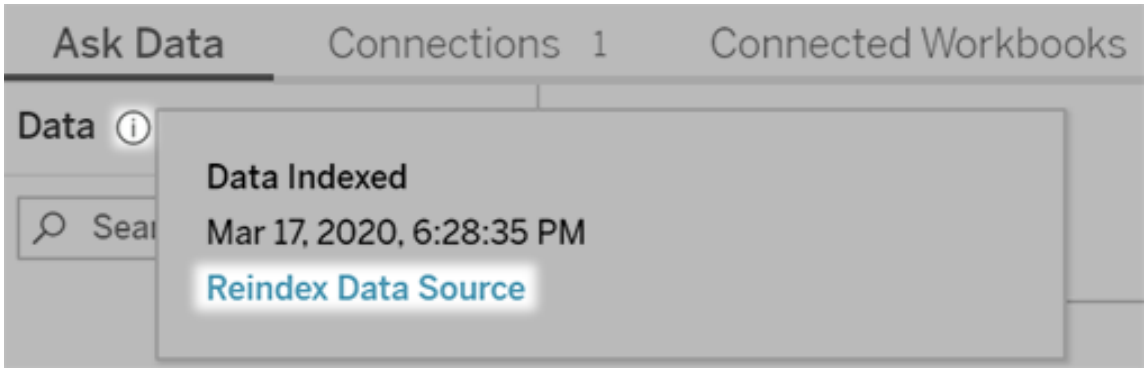
In workbooks you save from Ask Data, these calculations don't become calculated fields but instead ad hoc calculations on the Columns, Rows, or Marks shelves.



Reanalyze a data source

Owners of data sources can configure them to be reanalyzed by Ask Data on an automatic, daily schedule, or only upon user request.

If analysis requires user request, and you know a data source has changed recently, click the circled “i” in the Data pane at left, and then click **Reindex Data Source**.



Tips for success

As you structure questions for Ask Data, apply these tips to get better results.

- **Use keywords** — For example, instead of “I want to see all the countries that these airports are in”, try “by airport and country”.
- **Use exact wording for field names and values** — For example, if your data source includes Airport Code, Airport Name, and Airport Region fields, specify those by name.
- **See a ranked list** — Ask Data maps terms like “best” and “worst” to Top 1 and Bottom 1, respectively. If you want to see broader rankings, use “high” and “low” instead. For example, enter “houses with low sale prices”.
- **Surround unusually long values with quotation marks** — To analyze long field values that contain line returns, tabs, more than two words, or more than 50 characters, surround them with quotation marks. To improve performance, Ask Data doesn't index fields of that length.

Enable Ask Data for Sites and Data Sources

Ask Data is supported for all user roles with direct access to data sources: Creators, Explorers, and Interactors. To make Ask Data available in Tableau Online and Tableau Server, data source owners and Tableau administrators need to follow these simple steps.

> **Note:** Ask Data doesn't support multidimensional cube data sources, or non-relational data sources like Google Analytics.

Enable or disable Ask Data for a site

As a site administrator, go to the **General** site settings, and do the following:

1. (Tableau Server only) In the **Web Authoring** section, select **Let users edit workbooks in their browser**.
2. In the **Availability of Ask Data** section, choose from these options:

- **Enabled by default** enables Ask Data for all data sources by default, but lets specific ones be disabled by data source owners and administrators.
- **Disabled by default** disables Ask Data for all data sources by default, but lets specific ones be enabled by data source owners and administrators. (If you select this option, **Always disable Ask Data** becomes available, which fully disables Ask Data throughout your site.)

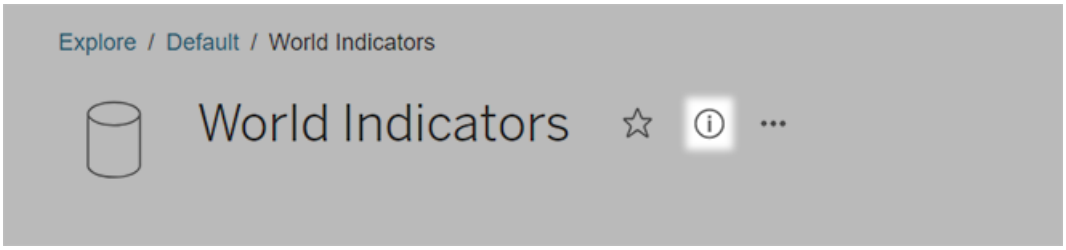
Ensure that users can access a data source

To use Ask Data, users must have permission to connect to the individual data source. If a data source has row-level permissions, those permissions also apply to Ask Data, which won't recognize secure values or make related statistical recommendations.

Enable or disable Ask Data for a data source

Ask Data is enabled for most data sources by default, but you can disable it for data sources it won't be used with. For enabled data sources, you can change how often field values are indexed, optimizing system performance.

1. At the top of the data source page, click the Details icon:



2. In the Ask Data section, click **Edit**.
3. Click the **Enable for this data source** check box.
4. If you're enabling Ask Data, choose an indexing option for field values:

- **Automatic** checks for changes every 24 hours and analyzes the data source if it is live, has had an extract refreshed, or has been republished. Choose this option for a data source frequently used with Ask Data, so it will be ready before users query it.
- **Triggered by user request** analyzes the data source only when users click **Reindex Data Source**. Choose this option if the data source changes frequently but users query it with Ask Data only occasionally.
- **Disabled** analyzes only field names, not values.

5. Click **Save**.

Optimize Data for Ask Data

If you manage and publish data sources, here are some tips to help make users of Ask Data more successful. By spending a little extra time on this process, you'll open up data analysis to a wider range of people at your organization, helping them independently answer questions and gain deeper insights.

Optimize in Ask Data

The Ask Data interface provides a number of ways to optimize how users interact with data.

Customize suggested questions

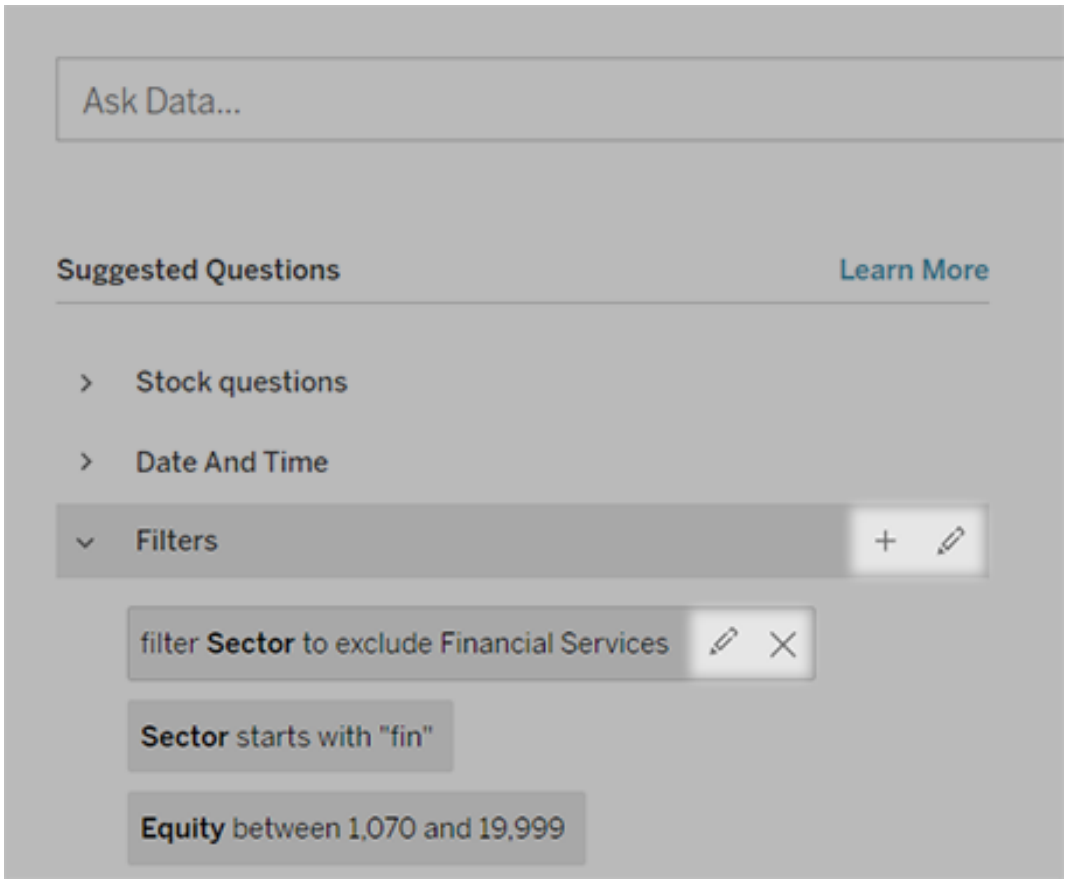
Data source owners and Tableau administrators can customize suggested questions in Ask Data, tailoring them to the needs of users in your organization.

On the Ask Data tab for a data source, do any of the following:

- To edit a section title, click the pencil icon to the right of the title.
- To add a question to a section, click the plus sign (+) to the right of the title. Then enter Text to Display and the related query in the Matching Result field.

> **Tip:** Ask Data creates a viz for the matching result when users either click the displayed text or enter it as a query.

- To change an existing question, hover over it and click the pencil icon . To remove a question, click the X.



Add synonyms for field names and values

People may not use the same terminology found in your data source, so data source owners and Tableau administrators can add synonyms for specific data field names and values. Synonyms you enter are available throughout your organization, making data analysis quicker and easier for everyone.

Exclude values of specific fields from query interpretations

To improve the usability of query interpretations in Ask Data, you can exclude the values of specific fields from indexing. Though Ask Data doesn't add non-indexed values to query interpretations, the values still appear in visualization results when relevant. For example, if you don't index values from a "Product" field because they add unnecessary detail to query interpretations, Ask Data can still display values such as "iPhone 12" in resulting data visualizations. And users can manually add non-indexed values to queries by surrounding them with quotation marks (for example, "Sales for Product containing "iPhone 12"").

Note: This field-level setting is ignored if the value indexing setting for the data source is set to Disabled. Field names and related synonyms are always indexed.

1. In Ask Data, hover over a data source field at left, and click the **Edit Field Details** icon (the pencil).

2. Deselect **Index field values.**

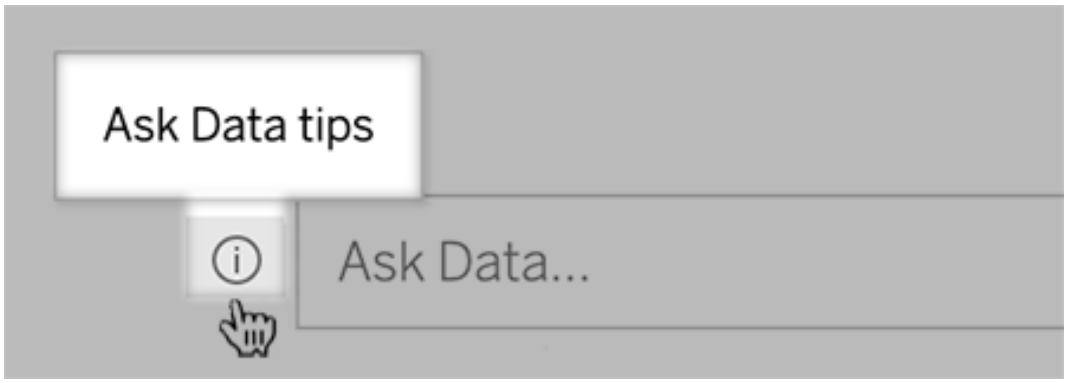
   Either click the text box that appears to reindex the data source now, or let it reindex based on its regular indexing schedule.

See how people use Ask Data with a data source

For data source owners and Tableau administrators, Ask Data provides a dashboard that reveals the most popular queries and fields, the number of visualization results that users clicked, and other helpful information. Filters let you narrow data down to specific users and time ranges. These stats help you further optimize the data source to increase the success of your users.

Note: If you use Tableau Server, you can access this data in the Tableau Server Repository to create custom dashboards.

1. In Tableau Server or Tableau Online, navigate to a data source, and then click **Ask Data** at left.
2. To the left of the Ask Data text box, click the "i".



3. In the lower-left corner of the tips dialog, click **Usage Analytics**.

Optimize data sources

To create the best experience for Ask Data users, optimize the original data source.

Note: For improved performance and support for large data sets, use Ask Data with published extracts rather than live data sources. For more information, see Create an extract.

Be aware of unsupported data source features

Ask Data supports all Tableau data source features except the following. If your data source contains these, Ask Data users won't be able to query related fields.

- Sets
- Combined fields

- Parameters
- Table calculations in calculated fields

Anticipate user questions

Anticipate the kinds of questions your users will ask, and then optimize your data source for those questions using these techniques:

- Clean and shape data in Tableau Prep or a similar tool.
- Join data to include all fields users may have questions about in one table, improving performance.
- Add calculated fields that answer common user questions.
- Create bins with appropriate sizes for quantitative variables that users are likely to want to see as a histogram or another binned form.

Simplify the data

To make data easier to understand by both users and Ask Data, simplify the data source as much as possible during the data prep process.

1. Remove any unnecessary fields to improve performance.
2. Give each field a unique and meaningful name.
    - For example, if there are five field names that start with “Sales …”, better distinguish them so Ask Data can properly interpret the term “sales”.
    - Rename “Number of records” to something more meaningful. For example, use “Number of earthquakes” in a data source where each record is an earthquake.
    - Avoid field names that are numbers, dates, or boolean (“true” or “false”) values.
    - Avoid names which resemble analytical expressions such as “Sales in 2015” or “Average Products Sold”.
3. Create meaningful aliases for field values, reflecting terms people would use in conversation.

Set appropriate field defaults

To help Ask Data analyze data correctly, ensure that default field settings reflect the content of each field.

- Set data types for text, time, date, geographic, and other values.
- Assign the proper data role: dimension or measure, continuous or discrete.

- For each measure, assign appropriate default settings in Tableau Desktop, such as color, sort order, number format (percentage, currency, etc.), and aggregation function. For example, SUM may be appropriate for “Sales”, but AVERAGE might be a better default for “Test Score”.

> **Tip:** It's particularly helpful to set a default comment for each field, because these comments appear as informative descriptions when users hover over fields in Ask Data.

Create hierarchies for geographic and categorical fields

For time data, Tableau automatically creates hierarchies, which let users quickly drill up and down in vizzes (for example, from day to week to month). For geographic and categorical data, however, we recommend that you create custom hierarchies to help Ask Data produce visualizations that reflect the relationships between fields. Be aware that Ask Data won't show the hierarchies in the data pane.

Ask Data doesn't index hierarchy names, only names of fields within hierarchies. For example, if a geographic hierarchy named “Location” contains “Country” and “City” fields, users should enter “Country” and “City” in their questions for Ask Data.

Avoid field names that Ask Data uses for analytical functions

To let users ask questions about data in a conversational style, Ask Data reserves the following words for analytical functions. If any of these words appear as field names in your data, we recommend that you revise them.

> **Note:** In addition to the terms listed below, Ask Data reserves all conjunctions, prepositions, and visualization types such as “Bar chart”.

Aggregation terms

- aggregate
- average

- avg
- maximum
- max
- mean
- median
- minimum
- min
- most
- sum
- count
- distinct count

Grouping terms

- group
- by
- per

Filtering and limiting terms

- filter
- limit
- at least
- at most
- between
- top
- bottom
- contains
- starts with
- ends with
- include

Sorting terms

- sort
- alphabetical
- ascending
- descending

Time terms

- date
- second
- minute
- hour
- day
- week
- month
- quarter
- year
- second over second (sos)
- minute over minute
- hour over hour (hoh)
- day over day (dod)
- week over week (wow)
- month over month (mom)
- quarter over quarter (qoq)
- year over year (yoy)
- today
- tomorrow
- yesterday
- next
- last

Qualifying terms

- best
- expensive
- most expensive
- cheap
- cheapest
- big
- small

Explain Data: Status Information

When you run Explain Data on a mark, a statistical analysis is run on the aggregated mark, and then on possibly related fields from the data source that aren't represented in the current view.

Explain Data does not include every column from the data source in the analysis. The status bar indicates the number of fields considered in the analysis, and the information tooltip indicates which fields weren't included. In many cases, certain types of fields will be automatically excluded from the analysis.

When a data source contains more than 1000 unvisualized dimensions or measures, you might see an alert asking if you want Explain Data to consider more fields. Click **Explain All** to run an analysis that includes more fields.

When a data source contains dimensions with a large number of unique values (up to 500), those fields will not be considered for analysis initially. You can select which fields are included for consideration by clicking the **Choose fields for** *YourDataSourceName* link in the status bar, or by clicking the **Data** menu, and then selecting *YourDataSourceName* > **Choose Fields for Explain Data**.

> **Note**: Dimensions with more than 500 unique values will not be considered for analysis.

Fields excluded by default

Fields excluded by default	why
All unvisualized measures when there are more than 1,000 measures in the data source. All unvisualized dimensions when there are more than 1,000 dimensions in the data source.	Computing explanations for more than 1000 unvisualized meas-

Fields excluded by default	why
	ures or dimensions can take longer to compute, sometimes several minutes. These fields are excluded by default for initial analysis, but you can choose to include them for further analysis. In this situation, you might see an alert asking if you want Explain Data to consider more fields. Click the alert link to get more information.

Fields excluded by default	why
	Click **Explain All** in the resulting tooltip to run an analysis that includes more fields.
Fields that use geometry, latitude, or longitude	It is highly likely that an explanation that calls out the latitude or the longitude as an explanation is due to a spurious correlation and not a probable explanation. Geometry, latitude, or longitude by themselves can never be explanations.
Dimensions with high cardinality (dimensions with > 500 members)	High cardinality dimensions

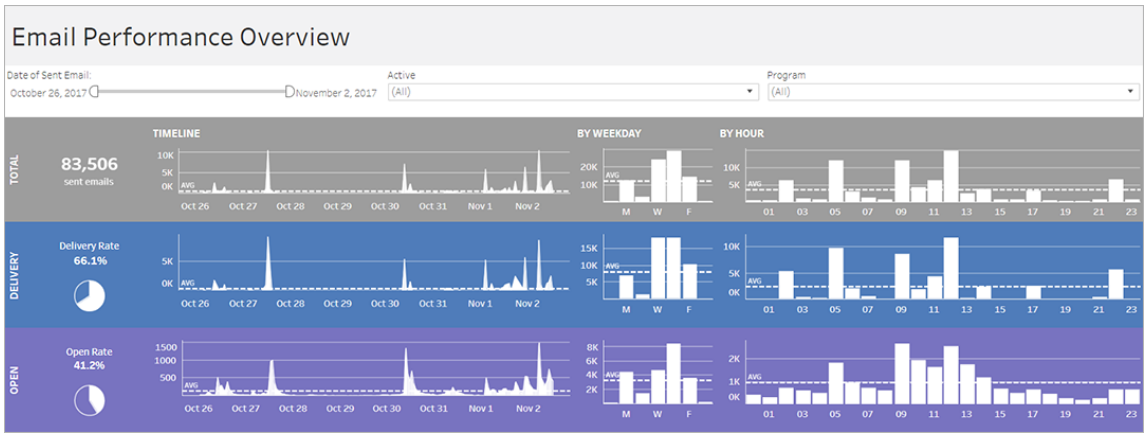
Fields excluded by default	why
	take longer to compute. Dimensions with more than 500 unique values will not be considered for analysis.
Groups, bins, or sets	Not currently supported.
Table calculations	Cannot be analyzed when table calculations are at a different level of detail than the view.
Unvisualized measures that can't be averaged	Unvisualized measures that can't be averaged include measures that are calculated fields where the calculation

Fields excluded by default	why
	expression includes aggregations (display as AGG() fields when added to the sheet).
Discrete measures and continuous dimensions	Not currently supported.
Hidden fields	Not available.
Calculated fields with errors	No values present to analyze.

Dashboard Starters for Cloud-based Data

Dashboard Starters help you quickly author and analyze data from cloud-based systems like Salesforce, ServiceNow ITSM, LinkedIn Sales Navigator, Marketo, and Oracle Eloqua.

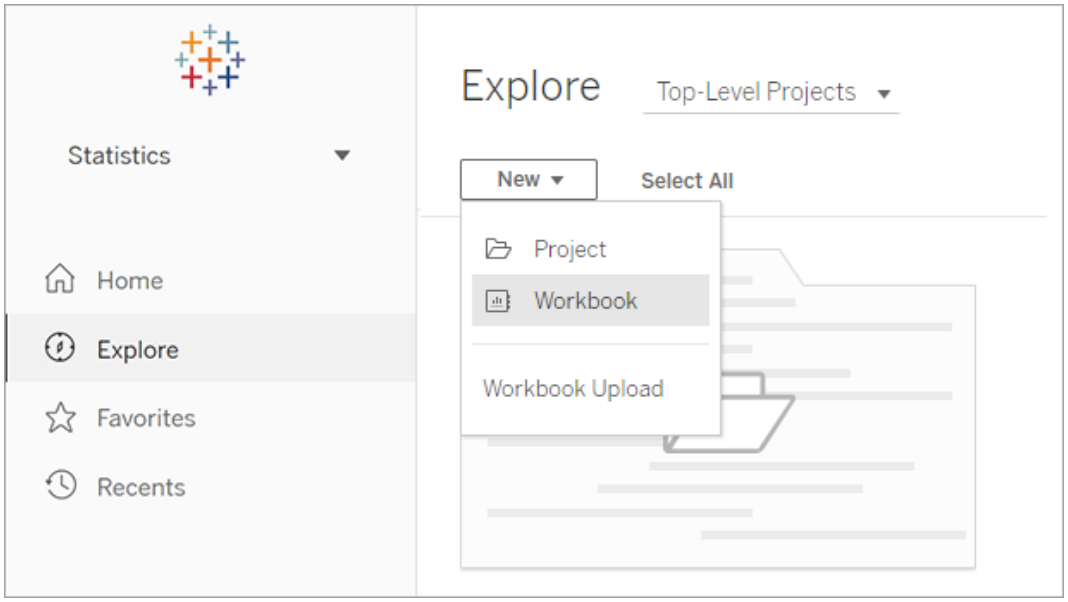
Simply create a new workbook and choose from several beautiful, informative designs that are tailor-made for key business metrics.



Create a Dashboard Starter

It's easy to create a Dashboard Starter. When the process is complete, you can edit the resulting workbook just like any other, quickly customizing it for your needs.

1. In Tableau Online, open the Explore page, then click the **New** button and select **Workbook**.



> **Note**: Site administrators can also access Dashboard Starters from the Home page, under **Dashboard Starters**.

2. At the top of the Connect to Data window, click **Dashboard Starter**.
3. From the list of pre-built designs, find an option that reflects the data source and business metrics you need, and click **Use Dashboard**.
4. To quickly see how a workbook looks with sample data, click **Continue without signing in**. Or click **Continue** to create a workbook with your data.
5. Specify a name and containing project for the workbook.
6. If you chose to create a workbook with your data, connect to your data source. While Tableau prepares an extract of your data, sample data appears so you can explore the layout.

   That's it—you've created a rich, interactive dashboard in seconds!

Change permissions to share Dashboard Starters with colleagues

To avoid exposure of confidential data, workbooks for Dashboard Starters are visible only to authors and administrators by default. To share a Dashboard Starter with your colleagues, follow these simple steps:

1. In Tableau Online, navigate to the workbook for the Dashboard Starter.
2. Select the workbook, click **Actions**, and choose **Permissions**.
3. Give **View** permissions to any user or group you want to see the dashboard. For more information, see Edit Permissions in Tableau Online Help.

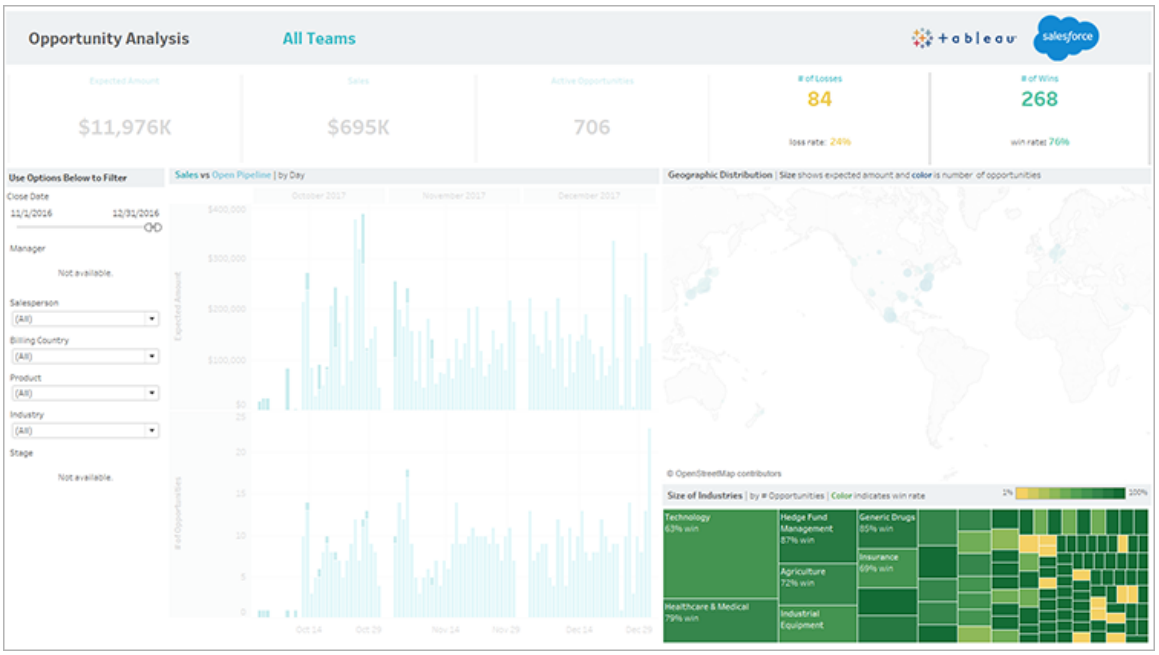
Replace sample data with your data

If you chose to quickly load sample data in a dashboard, you can replace it with your data at any time.

1. In Tableau Online, navigate to the workbook for the Dashboard Starter.
2. On the **Data Sources** tab, select the data source. From the Actions menu, choose **Edit Connection**.
3. For authentication, select **Embedded credentials in the connection**, and either choose an existing user account or add a new one. Then click **Save**.
4. On the **Refresh Schedules** tab, select the schedule. From the Actions menu, choose **Run Now**.

Fix grayed-out views by replacing field names

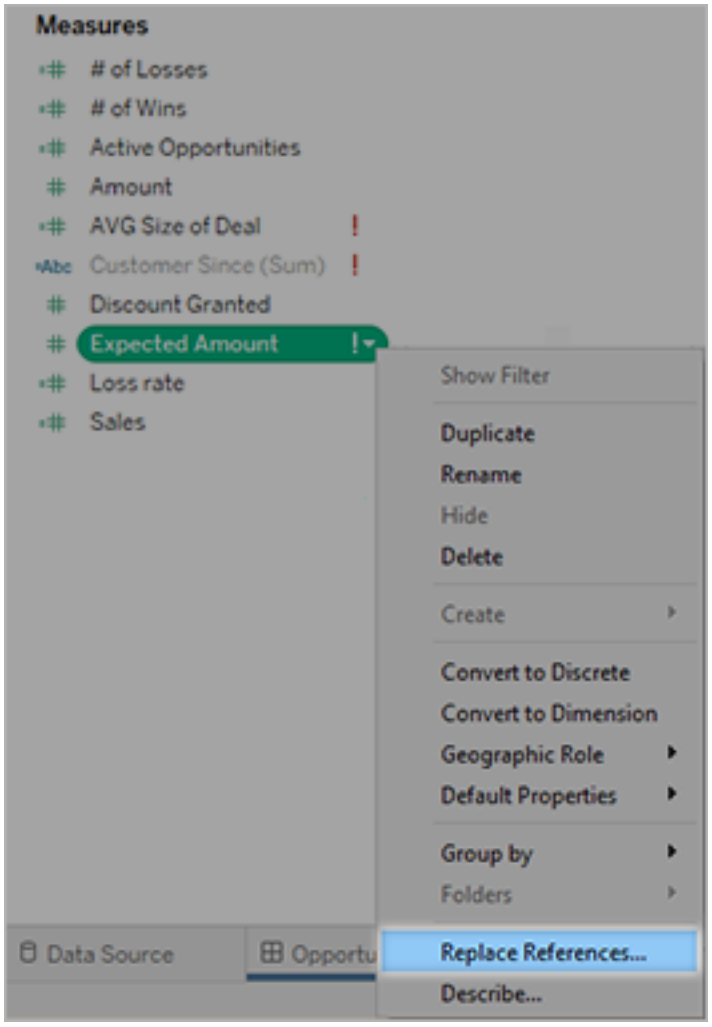
If your organization has customized the data structure for a cloud-based system, you may need to match those changes in Dashboard Starters after your data loads in them. For example, if your organization has renamed the Salesforce “Account” field to “Customer”, you'll need to make a corresponding change in Dashboard Starters to avoid grayed-out views like this:



Fortunately, the fix is pretty straightforward:

1. Above the dashboard, click **Edit**.
2. Navigate directly to the grayed-out sheet.
3. In the Data pane at left, look for red exclamation points (!) next to field names, which indicate that your organization uses different names.
4. Right-click each of those fields, and choose **Replace References**. Then select the

correct field name from the list.

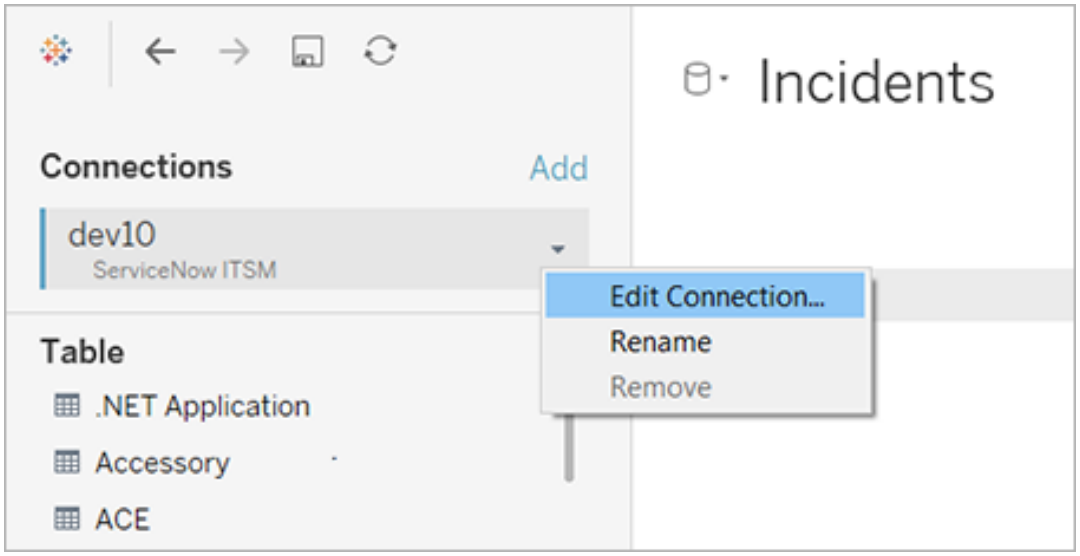


Fix empty dashboards by changing default date ranges

If a dashboard looks completely empty, the likely cause is a default date range that doesn't correspond to the dates in your source data.

1. Download the workbook, and open it in Tableau Desktop.
2. Click the **Data Source** tab.
3. In the upper-left corner, click the arrow next to the data source name, and choose

Edit Connection. Then sign in.



4. Specify a date range that reflects the dates in your data, and click **Connect**.
5. Choose **Server** > **Publish Data Source** to update extracts of the data on Tableau Online.

Use Dashboard Extensions

Extensions let you add unique features to dashboards or directly integrate them with applications outside Tableau. Adding extensions is easy; you incorporate them into dashboard layouts just like other dashboard objects.

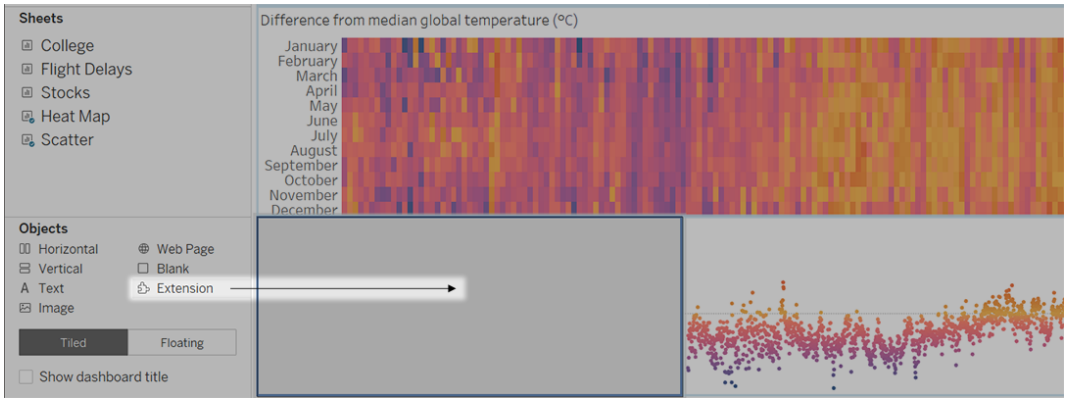
Extensions expand dashboard functionality with the help of web applications created by third-party developers. If you're a developer and want to create your own extensions, see the Tableau Extensions API documentation on GitHub.

Note: Tableau administrators can turn off dashboard extensions for Tableau Desktop, Tableau Server, and Tableau Online.

Add an extension to a dashboard

1. In a Tableau workbook, open a dashboard sheet.

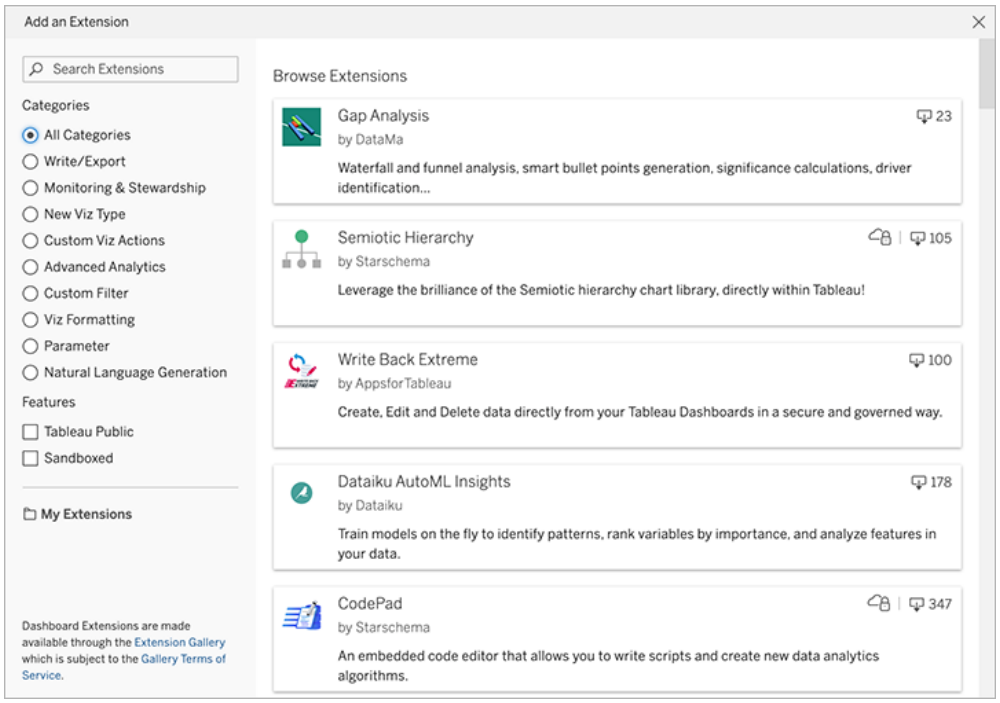
2. From the **Objects** section, drag **Extension** to the dashboard.



3. In the “Add an Extension” dialog box, do either of the following:

   - Search for and select an extension.

   - Click **My Extensions**, and navigate to a .trex file you previously downloaded.



4. If prompted, allow or deny the dashboard extension access to data in the workbook. For more information, see Data security, Network-enabled, and Sandboxed extensions.

   If you allow access, follow any on screen instructions for configuring the extension.

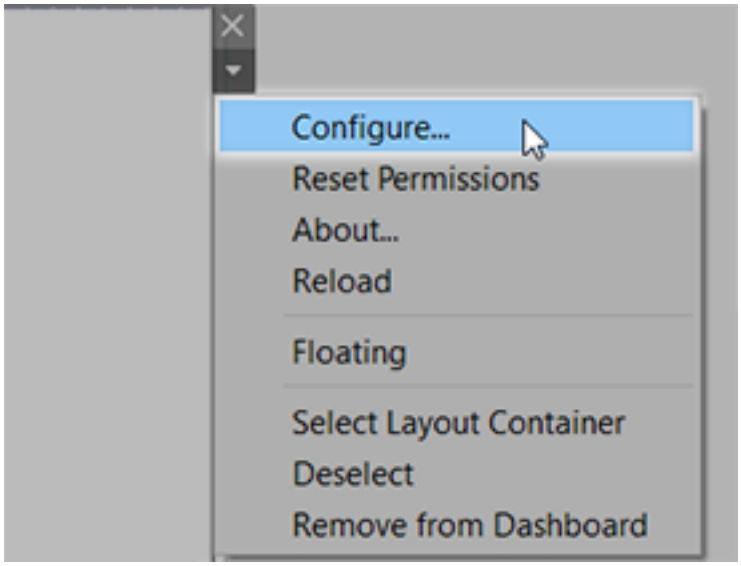
   > **Note:** If you're using Tableau Server or Tableau Online, Extension objects will appear blank in prints, PDFs, and images of dashboards (including images in subscription emails).

Configure a dashboard extension

Some dashboard extensions provide configuration options that let you customize features.

1. Select the extension in the dashboard, and from the drop-down menu in the upper-right corner, choose **Configure**.

2. Follow the on-screen instructions to configure the extension.



Reload a dashboard extension

If a dashboard extension becomes unresponsive, you might need to reload it, which is similar to refreshing a web page in a browser.

1. Select the extension in the dashboard, and from the drop-down menu in the upper-right corner, choose **Reload**.

   The dashboard extension is refreshed and set to its original state.

2. If reloading the extension fails to return it to a useable state, try removing it from the dashboard and adding it again.

Data security, Network-enabled, and Sandboxed extensions

Dashboard extensions are web applications that come in two forms:

- *Network-enabled extensions* run on web servers located outside of your local network.
- *Sandboxed extensions* run in a protected environment without access to any other resource or service on the web.

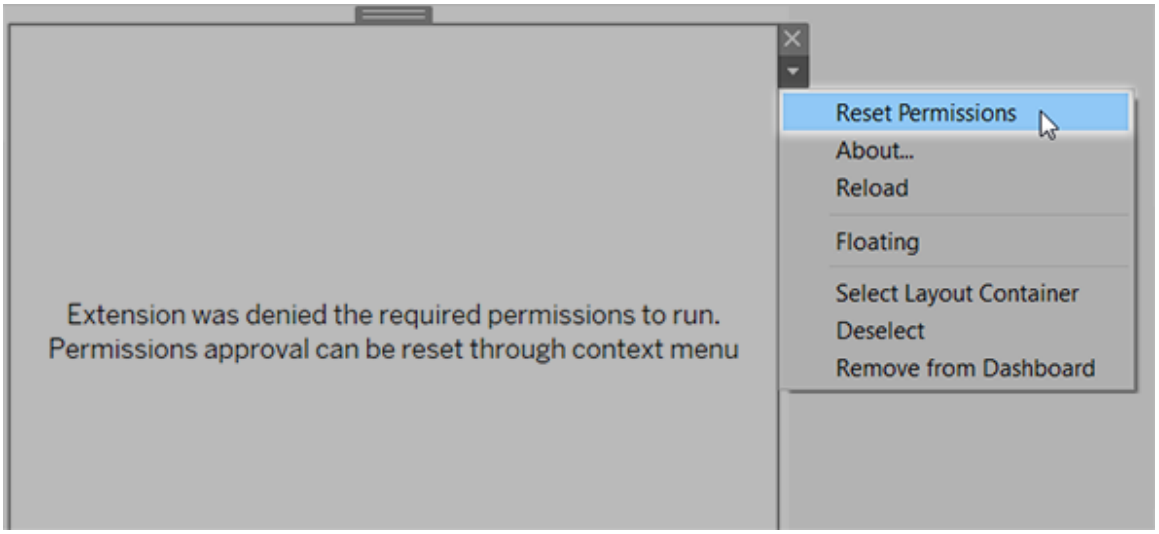
Before adding a Network-enabled extension or viewing a dashboard with one, be certain that you trust the website that hosts it. By default, dashboard extensions use the HTTPS protocol, which guarantees an encrypted channel for sending and receiving data, and ensures some privacy and security.

For more information about data security when using dashboard extensions, see Extension Security - Best Practices for Deployment.

Allow or deny data access to a Network-enabled extension

Depending on how an extension is designed, it can access either visible data in a view, or full underlying data, table and field names from data sources, and information about data source connections. When you add an extension, or view a dashboard with one, you're given an opportunity to allow or deny the extension to run and access this data.

If you're viewing a dashboard with an extension that requires full data access, and that access has been denied, a message appears in place of the extension. If you trust the extension and want to use it, you can reset permissions and allow the extension to run.



1. Select the extension in the dashboard, and from the drop-down menu in the upper-right corner, choose **Reset Permissions**.

2. Click either **Allow** to let the extension run and access data, or **Deny** to prevent the extension from running.

Ensure that JavaScript is enabled in Tableau Desktop

Dashboard extensions interact with data using the Tableau Extensions API library, a JavaScript library. If you want to use extensions, be sure that JavaScript is enabled in the dashboard security settings:

Choose **Help** > **Settings and Performance** > **Set Dashboard Web View Security** > **Enable JavaScript**.

Ensure that extensions run on Tableau Online or Tableau Server

You can add extensions to workbooks you publish from Tableau Desktop or directly in the web-authoring mode of Tableau Online and Tableau Server. A Tableau administrator must allow extensions to run on a site and add Network-enabled extensions to a safe list. Administrators should only allow extensions that you have tested and trust.

If you want to use a dashboard extension on Tableau Online or Tableau Server, direct your administrator to Manage Dashboard Extensions in Tableau Online or Manage Dashboard Extensions in Tableau Server.

Supported web browsers for Sandboxed extensions

Sandboxed extensions run in all browsers supported Tableau Server and Tableau Online except Internet Explorer 11.

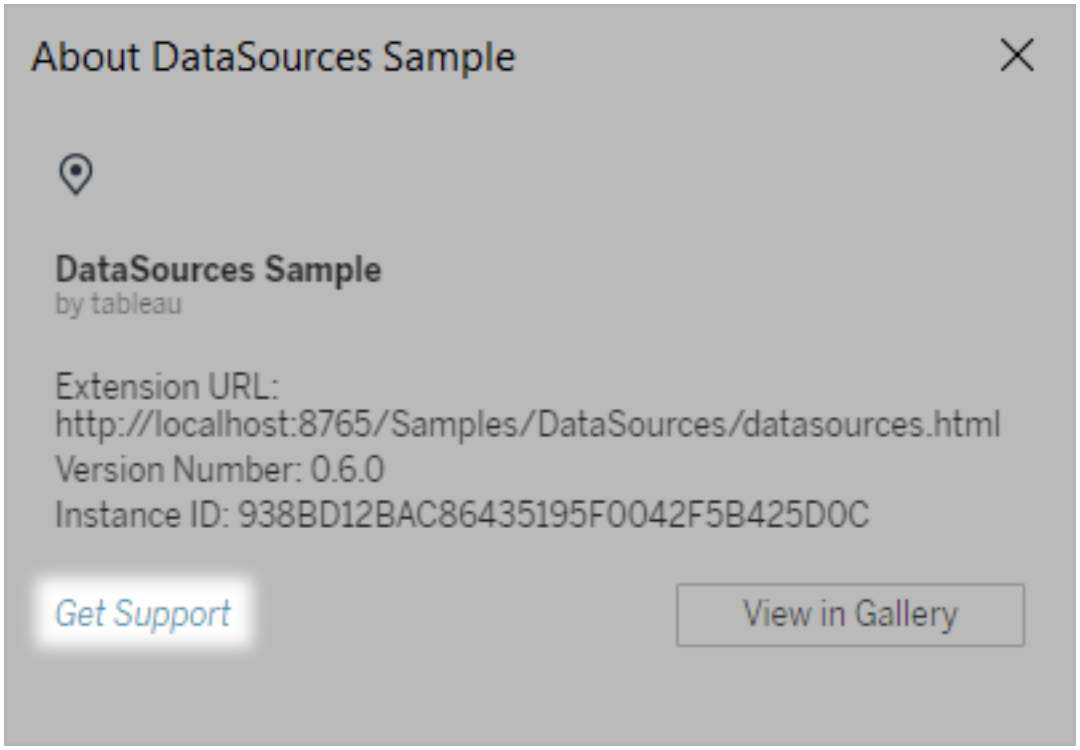
Supported versions of Tableau Server for Sandboxed extensions

You can use Sandboxed extensions in Tableau Server 2019.4 and later.

Get support for dashboard extensions

To get help for an extension, you'll need to contact the developer or company who created it.

1. Select the extension in the dashboard, and from the drop-down menu in the upper-right corner, choose **About.**
2. Click **Get Support** to go to the support page of the extension developer.



Note: Tableau doesn't provide support for extensions or for other programs that interface with the Extensions API. However, you can submit questions and ask for help in the Tableau developer community.

Create a Subscription to a View or Workbook

Subscriptions email you an image or PDF snapshot of a view or workbook at regular intervals—without requiring you to sign in to Tableau Server or Tableau Online.

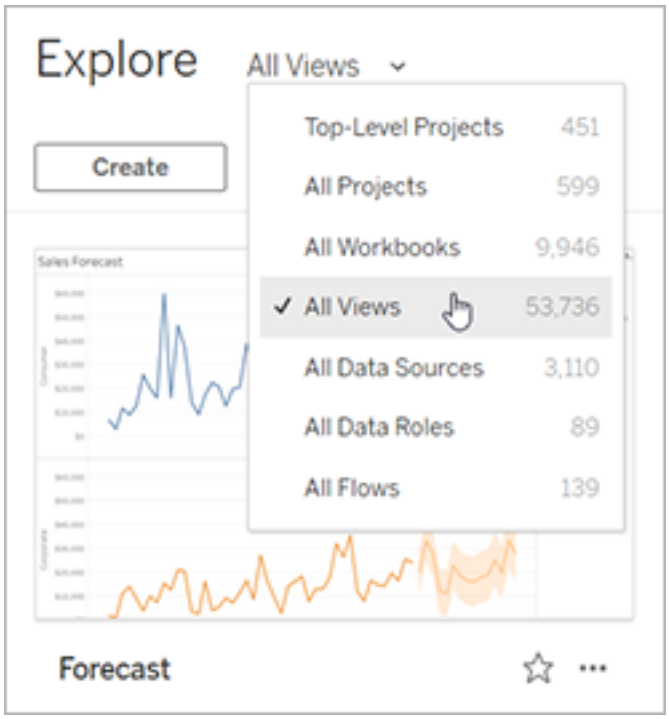
Note: In Tableau Server, administrators determine whether subscriptions are enabled for a site.

Set up a subscription for yourself or others

When you open a view in Tableau Server or Tableau Online, if you see a subscription icon ( ) in the toolbar, you can subscribe to that view or to the entire workbook. You can subscribe other users who have permission to view the content if you own a workbook, if you are a project leader with an appropriate site role, or if you are an administrator.

Note: Data refresh-initiated subscription emails are not supported for views or workbooks that rely on data sources that use Bridge to keep data fresh.

1. From the Explore section of your site, select **All Workbooks** or **All Views**, or open the project that contains the view you want to subscribe to.



2. Open a view either directly, or after opening the containing workbook.

3. In the toolbar above the view, click **Subscribe**.

4. Add the Tableau users or groups you want to receive the subscription. To receive a subscription, users must have the **View** and **Download Image/PDF** permissions. If they use Tableau Server, their accounts must also have email addresses.

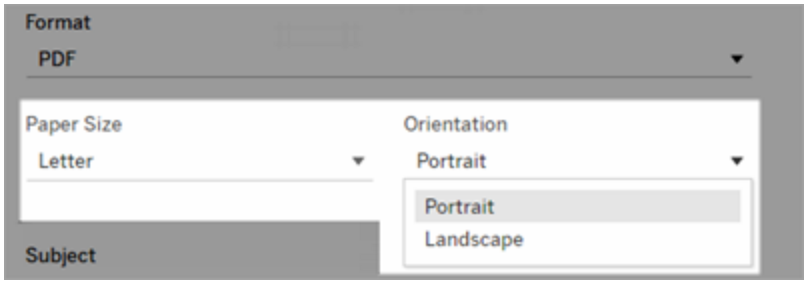
> **Note**: When you subscribe a group, each user is added individually at the time the subscription is created. If more users are added to the group later, you must re-subscribe the group for those new users to receive the subscription. Likewise,

users later removed from the group will not have their subscriptions removed automatically unless their permissions to the subscribed view are removed.

5. Choose whether subscription emails include the current view or the entire workbook.

6. Choose the format for your snapshot: as a PNG image, a PDF attachment, or both.

   - If PDFs, choose the paper size and orientation you'd like to receive.



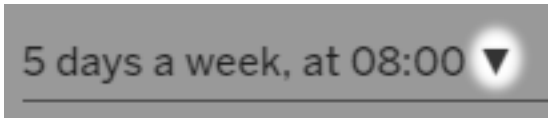
7. When the workbook uses one data extract on a published connection, you can pick a frequency:

   - **When Data Refreshes**: sends only when data in the view or workbook is refreshed.
   - **On Selected Schedule**: Pick a schedule for the subscription.

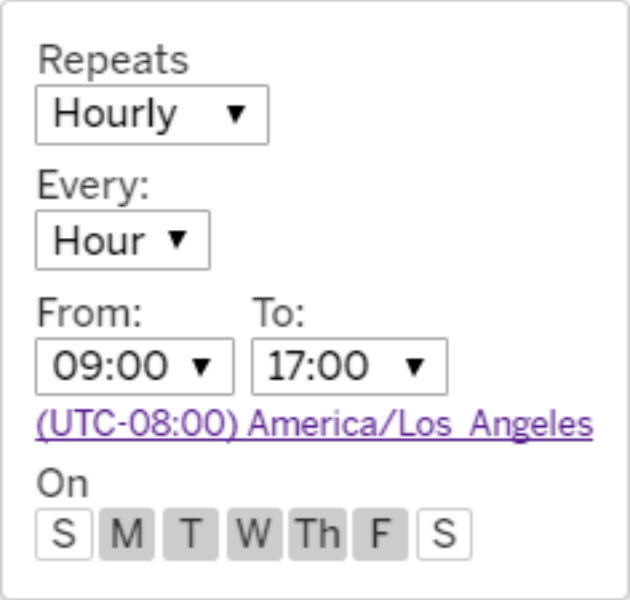
8. If frequency is not set to When Data Refreshes, pick a schedule:

   - For Tableau Server, choose from subscription schedules established by your administrator.

   - For Tableau Online and Tableau Server with custom schedules enabled, click the drop-down arrow to the right of the current settings.



Then specify a custom schedule that sends subscription emails whenever you wish. (The precise delivery time may vary if server load is high.)



To change the time zone, click the Time Zone link it to go to your account settings page.

9. To clarify subscription emails, customize the subject line, and add a message.
10. If the view contains data only when high-priority information exists, select **Don't send if view is empty**.
11. If you own the workbook, select **Subscribe me**.
12. Click **Subscribe**.

When you receive a subscription email, you can select the image (or the link in the message body for PDF subscriptions) to be taken to the view or workbook in Tableau Online or Tableau Server.

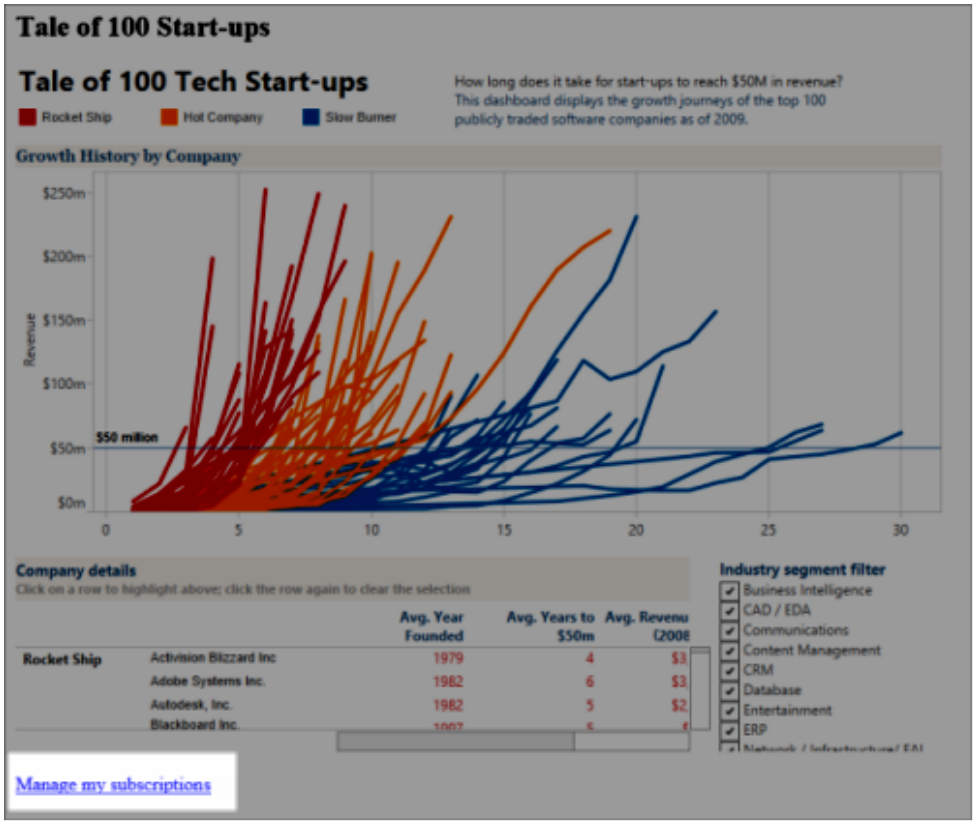
Update subscription settings

Update or unsubscribe from a subscription

You can unsubscribe from an existing subscription, or make changes to a subscription's format, schedule, subject, or empty view mode.

1. Access your Tableau Server or Tableau Online account settings by doing one of the following:

   - Click **Manage my subscriptions** at the bottom of a subscription email.



   - Sign in to Tableau Server or Tableau Online. At the top of the page, select your

user icon, and then select **My Content**.

2. Click **Subscriptions**.

3. Select the check box next to the view you want to unsubscribe from, click **Actions**, and then click **Unsubscribe**, or select the subscription option you'd like to change.

Resume or delete suspended subscriptions

Sometimes, subscriptions fail because of an issue with the workbook or a problem loading the view. If a subscription fails more than five times, you'll receive a notification email that your subscription has been suspended. There are a few ways to resume a suspended subscription if you're a subscription owner or administrator:

- From the My Content area of Tableau web pages, an icon appears in the Last update column to indicate that the subscription is suspended. Select **...** > **Resume Subscription** to resume.

- From the Subscriptions tab of the affected workbook, an icon appears in the last update column to indicate that the subscription is suspended. Select **...** > **Resume Subscription** to resume.

You'll receive an email notification when the subscription is working again.

See also

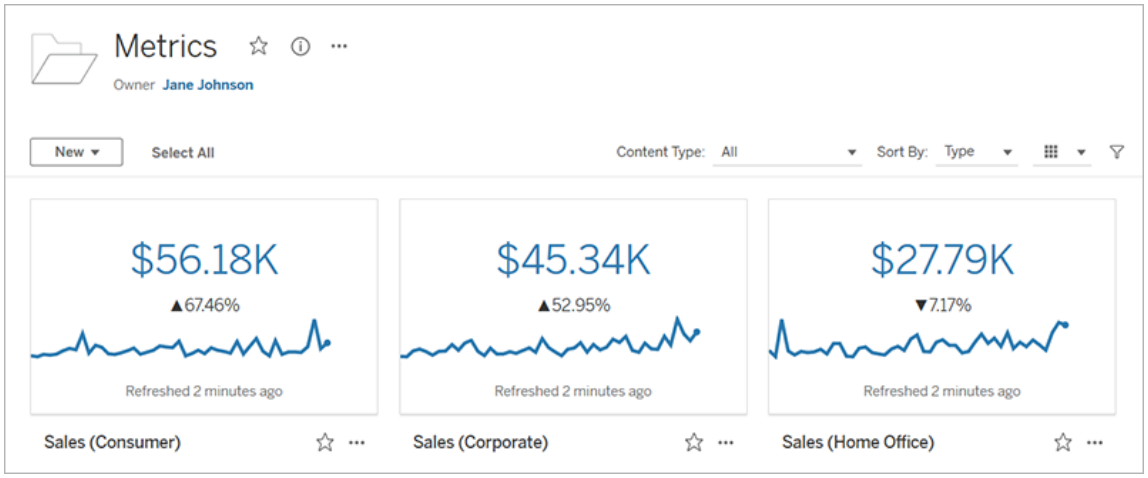
Change Subscription Settings in the Tableau Desktop and Web Authoring Help.

Project-level administration in the Tableau Online Help, to learn which site roles allow full Project Leader capabilities.

Create and Troubleshoot Metrics

Metrics help you track changes to your data. You can quickly monitor key numbers, because metrics update automatically and display their current value on the grid and list view for your content. This means that you don't need to open a metric to see your data.

If you have multiple dashboards you frequently check, create metrics for the numbers you want to monitor, then track them in one place by adding them to your favorites or creating them in the same project.



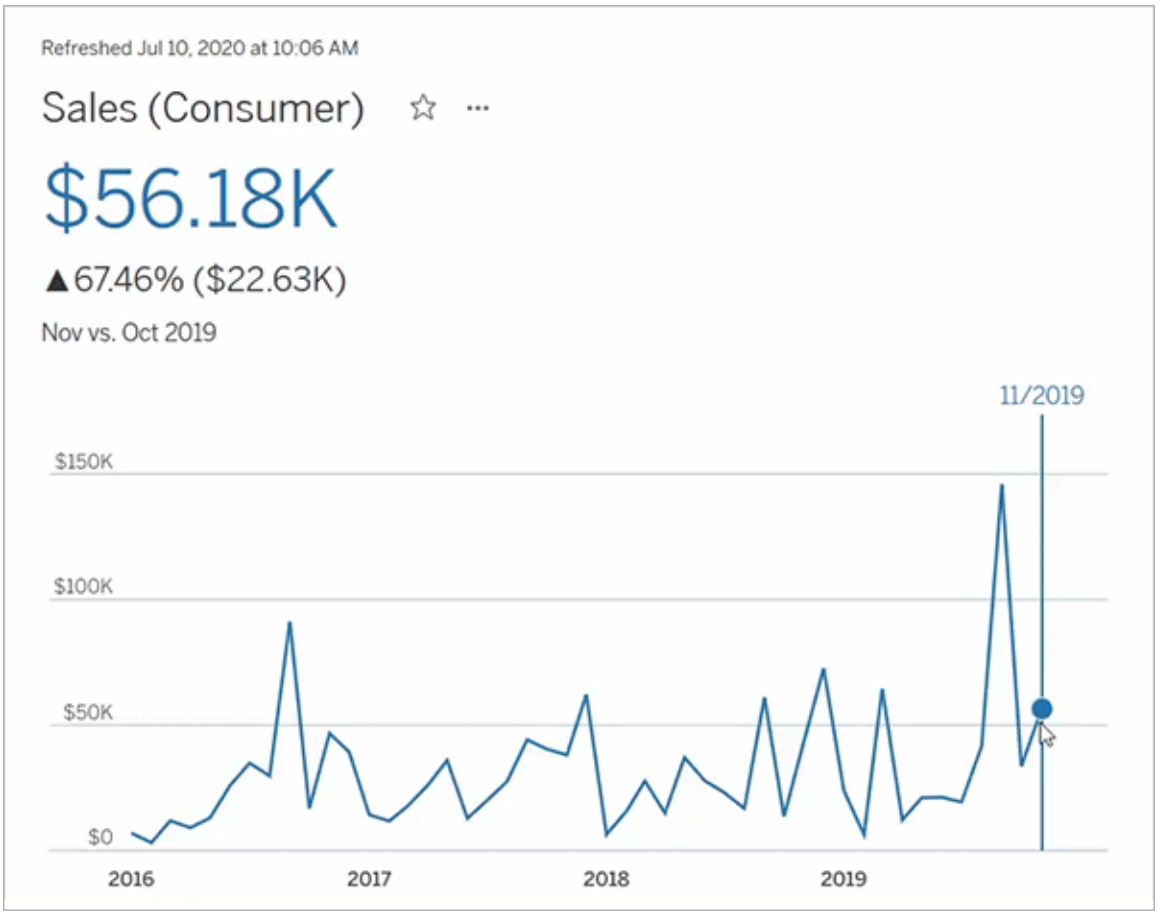
How metrics are defined

A metric's value is defined by an aggregate measure, such as sum of sales, and an optional date dimension, such as order date. For information about dimensions and measures, see Dimensions and Measures, Blue and Green. Any filters applied to the measure before the metric was created will apply to the metric value, for example, filters for segment or region.

Timeline metrics and single-number metrics

A metric that has a date dimension as part of its definition will have a timeline. Because metrics are defined based on the mark you select when you create a metric, you include a timeline by selecting a mark on a chart with a date axis or header.

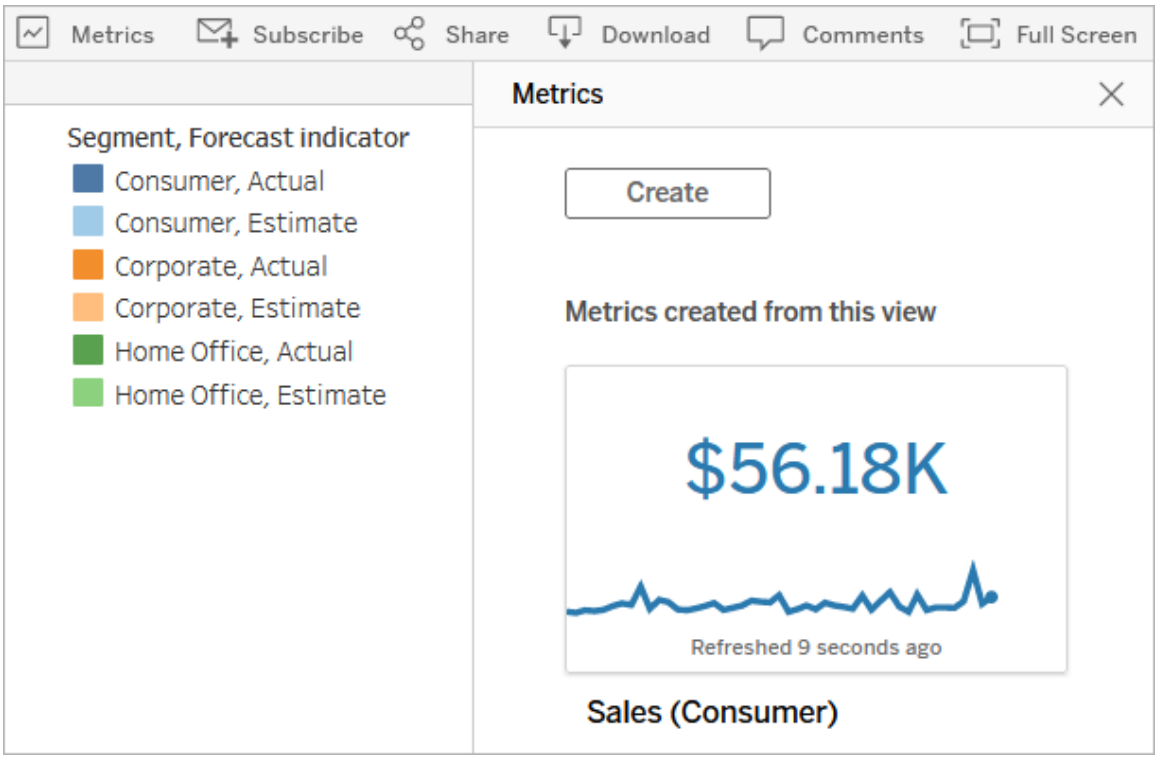
When you open a metric, the timeline shows the value of the measure based on the granularity of the date dimension, for example, daily sales or monthly users. Move your mouse along the timeline to see historical values.



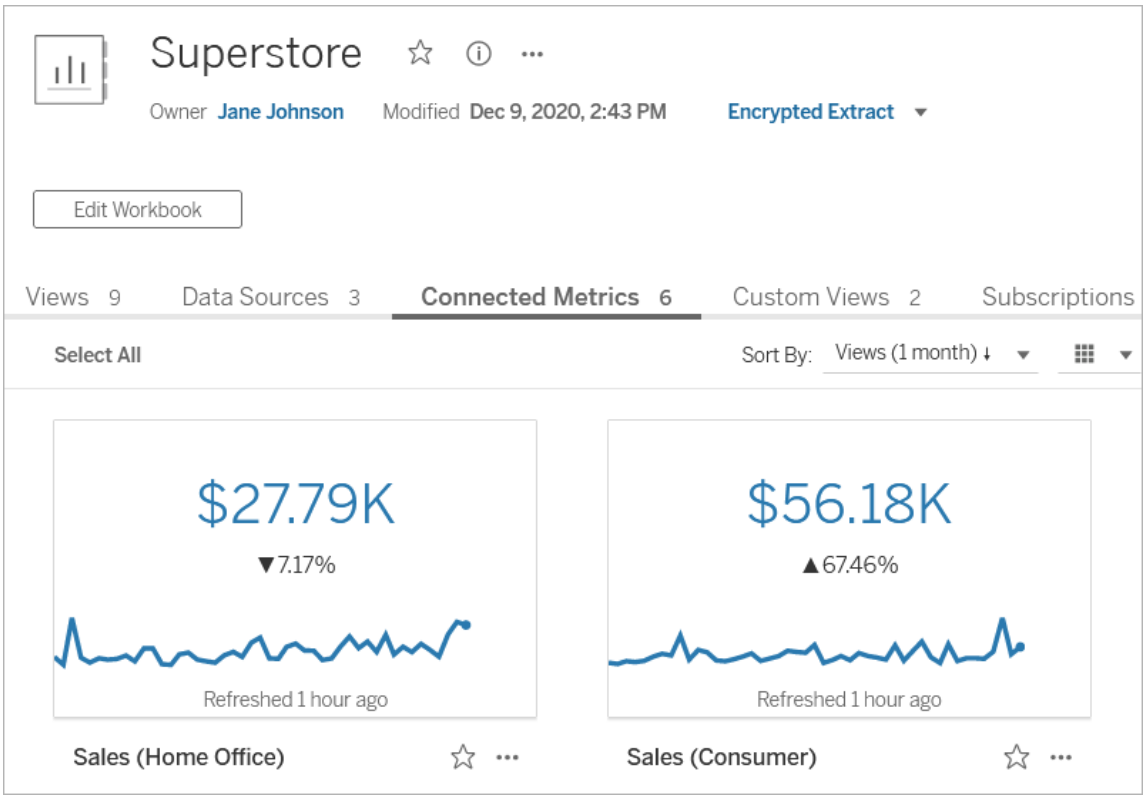
If the mark you select doesn't have a date dimension associated with it, your metric will be a single-number metric. Single-number metrics still refresh, and their values update when the data changes, but they don't show previous values on a timeline.

See connected metrics

Connected metrics are the metrics that were created from a particular view or workbook. To see connected metrics for a view, click the **Metrics** button in the view toolbar. The metrics displayed are ordered from the newest creation date to the oldest. Users with all site roles can see connected metrics for a view. However, the Create button will appear only if you have a site role of Creator or Explorer (can publish). For more information, see Create a metric.



To see connected metrics for a workbook, click the **Connected Metrics** tab. You can sort these metrics using the Sort By menu.

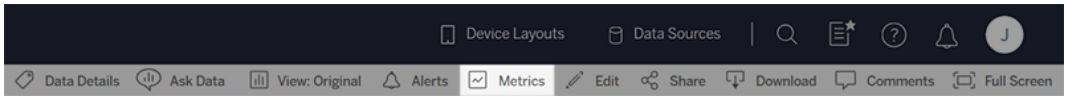


Before creating your own metric from a view, it's a good idea to check the connected metrics. Another user might have already created the metric you want. Instead of creating a duplicate metric, open the existing metric and add it as a favorite.

Create a metric

If you have a site role of Creator or Explorer (can publish), you can create metrics on Tableau Online or Tableau Server. Metrics are formatted automatically and optimized for viewing on both mobile and desktop devices.

1. Navigate to the view that you want to create a metric from.
2. On the view toolbar, click the **Metrics** button.

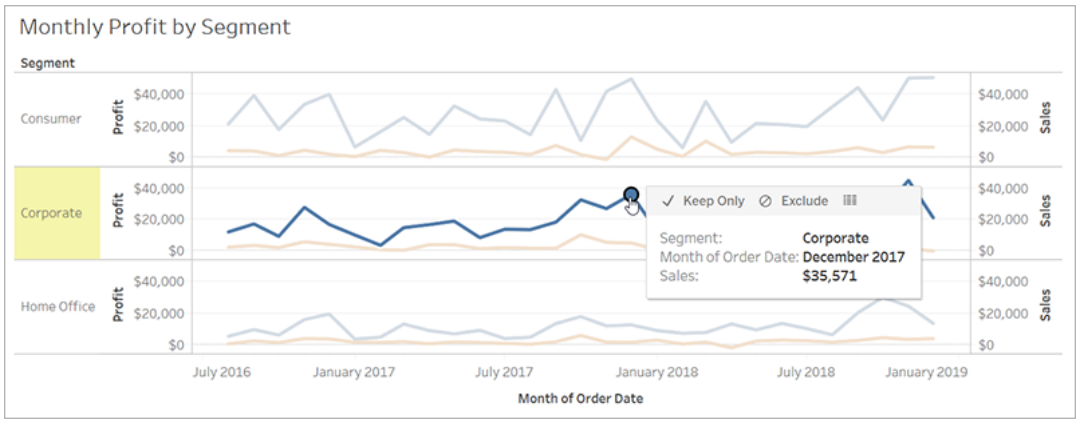


The metrics pane opens.

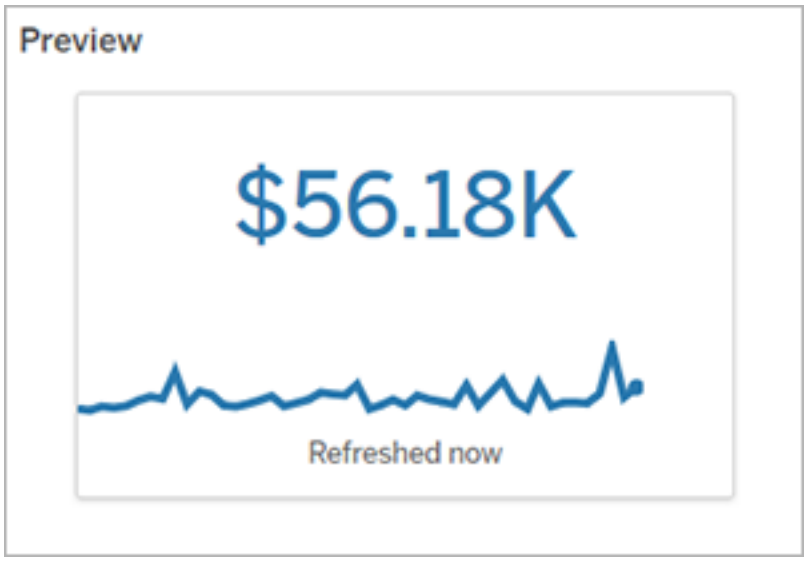
3. If the pane shows connected metrics, select the **Create** button to enter authoring mode.

4. Select a mark. If you encounter an error, see When you can't create a metric.

   The measure, and optional date dimension, associated with this mark will define your metric. Any filters you apply to this mark will be applied to your metric.



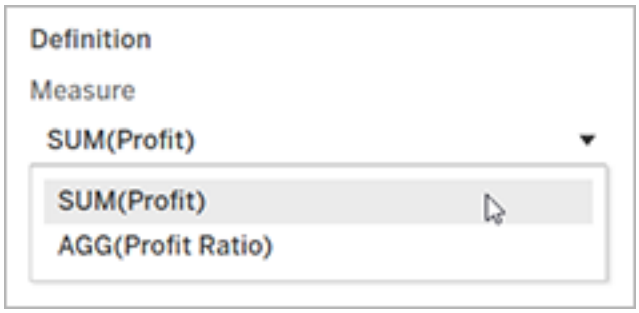
The metrics pane shows a preview of your metric. The value in the preview is the most recent value for the metric, which may differ from the value of the mark you selected in the case of metrics with a date dimension.



5. The **Name** field is pre-populated based on your selection. You can give the metric a different name. A metric must have a unique name within the project it belongs to.

6. Under **Description**, enter an optional message to help others understand your metric. For example, describe filters applied to the metric or indicate the data source used by the metric.

7. Under **Definition** > **Measure**, select the measure to use for your definition from the drop-down. This option appears only if the mark you selected has more than one measure associated with it.

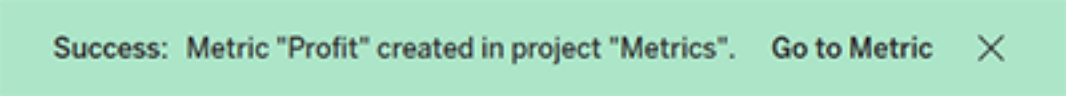


8. Under **Project**, click **Change Location** to choose a different project for the metric.

By default, your metric will be added to the same project that the view belongs to.

9. Click the **Create** button.

   A message appears with a link to the metric in the project you added it to.



Though metrics are created from a view, they exist independent of that view. This means you manage metrics similar to how you manage workbooks. For example, you can set permissions for a metric or move it to another project. For information about managing content on your Tableau site, see Manage Web Items.

Overwrite a metric

1. Create a metric with the same name in the same project as the metric you want to overwrite.

   The Overwrite Metric dialog appears.

2. Click the **Overwrite** button.

When you overwrite a metric, the metric continues to appear for those who have added it to their favorites, and any changes made to permissions for the previous metric will apply to the new metric.

When you can't create a metric

If you select a mark on a chart that doesn't support metrics, you will get an error message explaining why you can't create a metric. The table below summarizes these scenarios.

Reason	Scenarios
You don't have access to the full data for the chart.	• Row level security or user filters limit the data you can see. For more information, see Restrict Access at the Data Row Level.

Reason	Scenarios
	• You don't have permission to see the full data. For more information, see View Underlying Data.
The password for the workbook's data source is not embedded or is no longer valid. For more information, see Set Credentials for Accessing Your Published Data.	• The workbook prompts for a password. • Credentials are passed using single sign-on (SSO).
The data isn't at the correct level of granularity.	• The data in the chart isn't aggregated. Metrics use aggregations, such as sum or average. For more information, see Data Aggregation in Tableau. • There are multiple values per cell of data—a result of data blending. For more information, see Troubleshoot Data Blending.
The date dimension is not supported.	• The chart includes both date parts and date values. For more information, see Change Date Levels. • The date dimension uses the ISO 8601 calendar rather than the standard Gregorian calendar. For more information, see ISO-8601 Week-Based Calendar. • The date dimension is aggregated at the custom level of Month / Year or Month / Day / Year. For more information, see Custom Dates.

How metrics refresh

When a metric refreshes, it checks the connected view (the view the metric was created from) for new data. A refresh doesn't necessarily update the value of a metric, because there may be no changes to the data.

Metrics refresh at a frequency either based on an extract's refresh schedule or, for live data, every 60 minutes. The time of the last refresh is displayed on the metric.

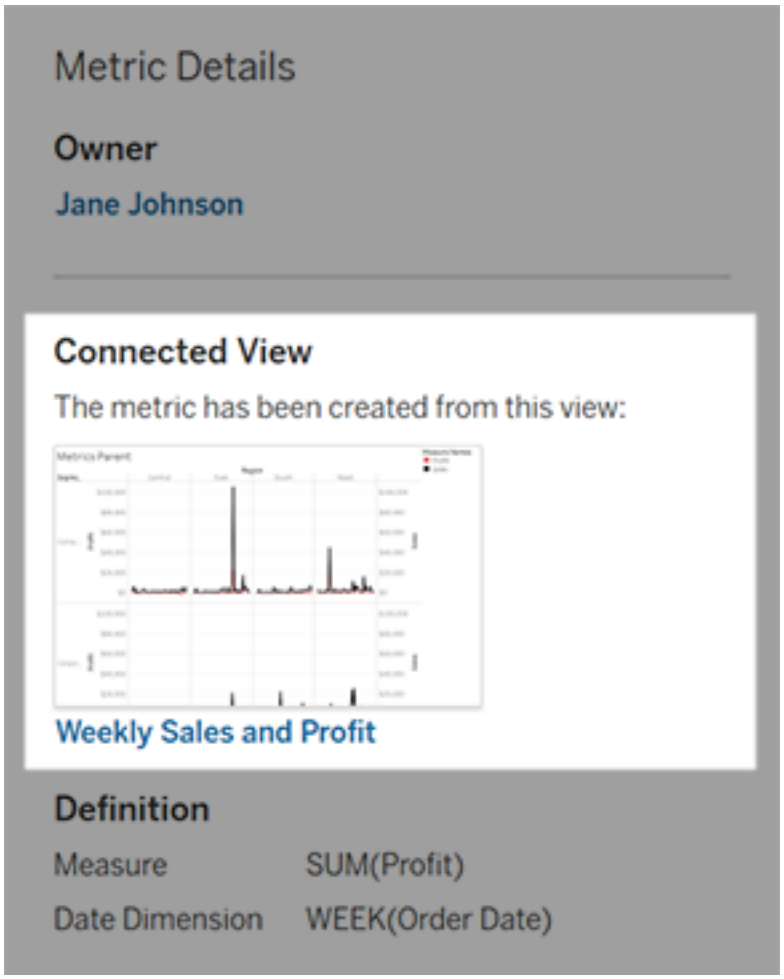
Fix failing refreshes

If a metric isn't able to access the connected view or its underlying data, the refresh will fail. If the refresh for your metric fails, you'll receive an email notification, which notes the time of the failure and the affected metric.

Metric refreshes may fail for one of the following reasons.

- The connected view was deleted or modified.
- Permissions changed for the connected view.
- The password for the data source is no longer embedded or is no longer valid.
- There was a temporary connectivity issue, which will resolve itself.

To identify the cause of the failure, inspect the **Connected View** under Metric Details.



If the connected view is still listed

Open the view to investigate the cause of the failure.

Evidence	Cause	Solution
The workbook prompts for a password or displays an error when connecting to the data source.	The password for the data source is not embedded or is no longer valid.	The content owner or a Tableau administrator can edit the data source connection to embed the password. For more information, see Edit Connections.
You can't view the full data, following the	You no longer have permission to	The content owner or a Tableau administrator can change the permissions for

Evidence	Cause	Solution
instructions on View Underlying Data.	access to the full data.	the view. For more information, see Permissions.
The measure or date dimension that defines the metric is no longer present.	The view has been modified so the metric can't connect to the data needed to refresh.	The content owner or a Tableau administrator can check the revision history and restore previous versions. For more information, see View Revision History

If there is no connected view listed

The view was deleted or you no longer have permission to access the view. Contact your Tableau administrator for assistance.

Resume suspended refreshes

If a refresh fails enough times, the refresh is suspended. You'll receive an email notification if the refresh for your metric is suspended.

When a metric refresh is suspended, Tableau no longer attempts to get new data for the metric. Metrics with suspended refreshes continue to present historical data.

If the cause of the failure is fixed, you can resume the refresh.

1. Open the affected metric.
2. On the warning message, click **Resume refresh**.

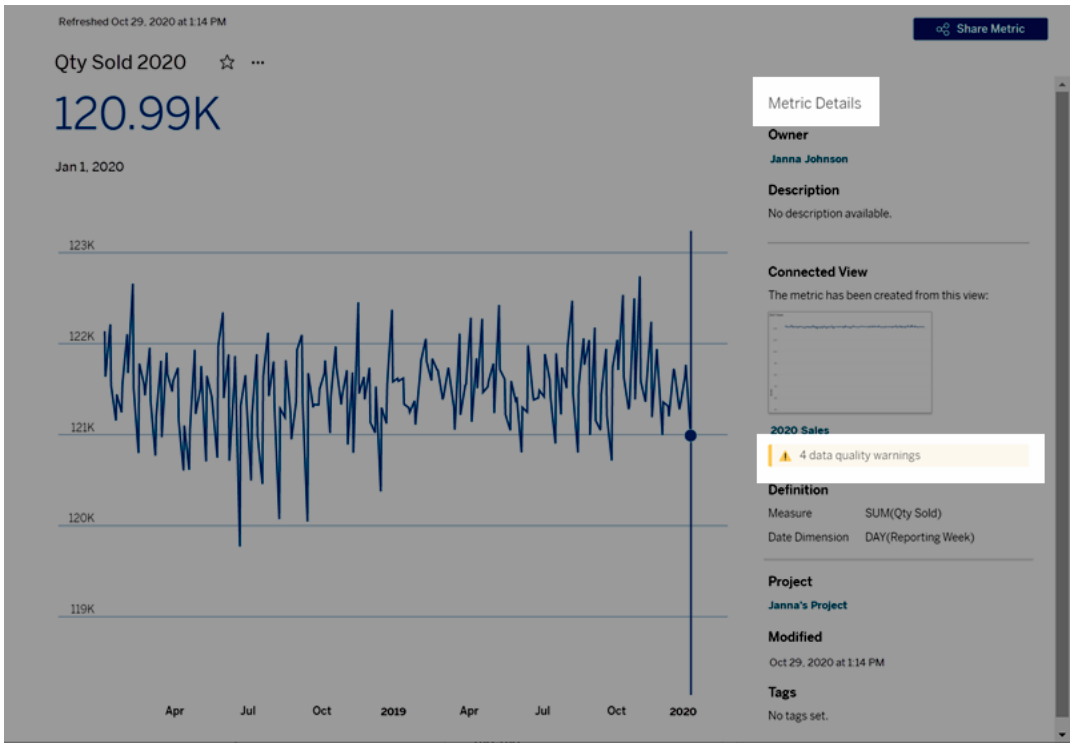
Tableau attempts to perform the refresh. If this attempt succeeds, you'll receive a notification, and the refresh will resume on schedule. If the attempt doesn't succeed, your refresh remains suspended.

Try overwriting the metric if the connected view is still available. For more information, see Overwrite a metric. Otherwise, you can keep the metric to reference past data or delete the metric.

Metrics Appear in Tableau Catalog

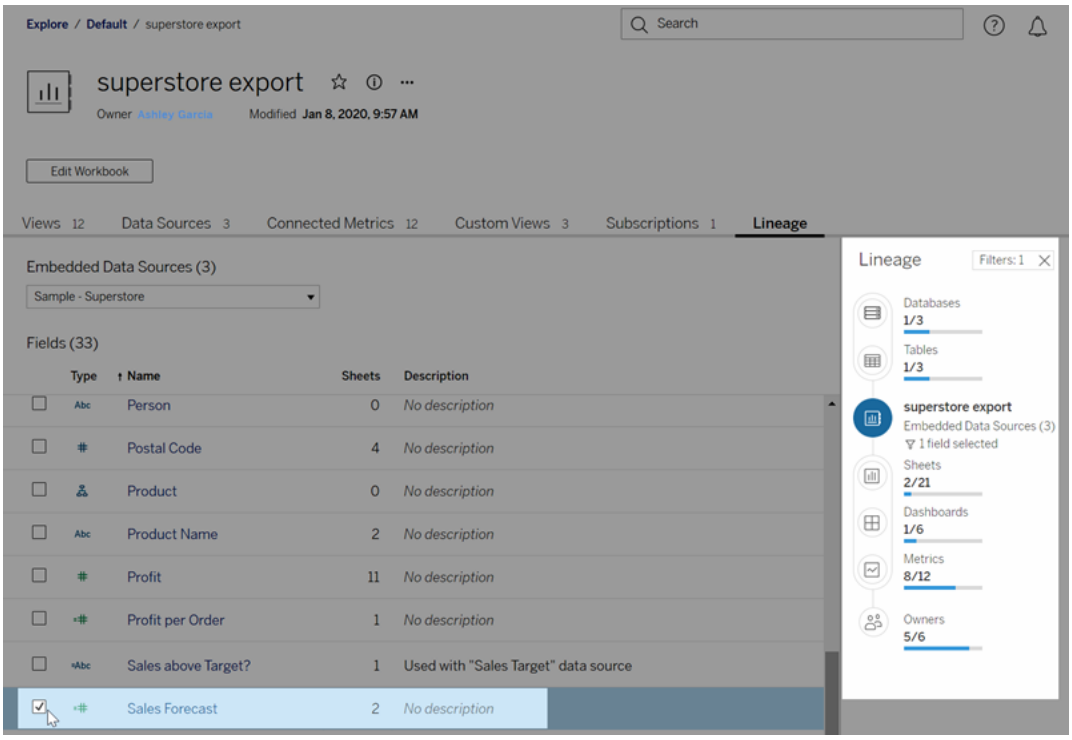
Starting in 2019.3, Tableau Catalog is available in the Data Management Add-on to Tableau Online and Tableau Server. When the Tableau Catalog is enabled in your environment, you can see metrics in the Catalog lineage tool, and metrics affected by data quality warnings display those warnings. For more information about Tableau Catalog, see "About Tableau Catalog" in the Tableau Server or Tableau Online Help.

When you have metrics defined for the numbers you want to monitor, it's important to know if the data that the metrics rely on are impacted in any way. You can use Catalog in a couple of ways to know this. First, data quality warnings set on the data your metric is based on show on the metric. These warnings appear when you open a metric in Tableau Mobile, and in Tableau Server and Tableau Online when you hover over a metric in grid view and on the metric details page, as shown below:



For more information, see "Set a Data Quality Warning" in the Tableau Server or Tableau Online Help.

You can also use the lineage tool in Tableau Catalog to see the upstream sources that your metric relies on. When doing an impact analysis, you can see which metrics are affected if a certain column or a table is changed or deprecated, or if certain workbooks are removed. Including metrics in the lineage means that Catalog gives a full picture of the impact changes can have on the assets in your environment.



For more information, see "Use Lineage for Impact Analysis" in the Tableau Server or Tableau Online Help.

Developer Resources

The Developer Portal on the Tableau Community is the place to go for everything related to extending and automating Tableau. There you can get access to the following:

- **JavaScript API**—Integrate Tableau views into your own web applications.
- **REST API**—Manage provisioning, permissions, and publishing on Tableau Server or Tableau Online via HTTP. The REST API gives you access to the functionality behind the data sources, projects, workbooks, site users, and sites. You can use this access to create custom applications or to script interactions with server resources.
- **Tableau SDK**—Use C, C++, Java, or Python to create extracts from any data and then to publish your extracts.
- **Tableau Metadata API**—Using GraphQL, you can discover and query Tableau content and related external assets and metadata. For more information, see Tableau Metadata API.
- **Web Data Connector**—Create a Tableau connection in JavaScript to almost any data that's accessible over HTTP. This can include internal web services, JSON data, XML data, REST APIs, and many other sources.
- **ODBC connector**—Create a connection using ODBC (Open Database Connectivity), which is a data-access protocol that's supported by a wide array of data sources. In Tableau Desktop, you can connect to any ODBC-compliant source using the built-in ODBC connector.

In addition to these resources, you can get complete documentation and examples, and collaborate with the Tableau developer community.

Notes for Tableau Online users

- When you make REST API calls to Tableau Online, you need to use the URL for the instance on which your site exists. For example, **https://10ay.online.tableau.com/**

  For information, see **Specifying Resources for Tableau Online** under Using URIs to Specify Resources.

- Not all of the methods provided in the Tableau REST API are applicable to Tableau Online. For information, see the API listing by category in the API Reference.

Go to the Developer Portal

About Data Management Add-on

The Data Management Add-on is a collection of features and functionality that helps customers manage Tableau content and data assets in their Tableau Server or Tableau Online environment.

Starting in Tableau Server version 2019.1, Tableau Prep Conductor is available for on-premise Tableau Server deployments, and in version 2019.3, Tableau Prep Conductor is available for Tableau Online deployments. You can use Tableau Prep Conductor to schedule and monitor flows.

Starting in version 2019.3, Tableau Catalog is included in the Data Management Add-on, making a variety of additional features available to you in the data management space. You can use Tableau Catalog to discover data, curate data assets, communicate data quality, perform impact analysis, and trace the lineage of data used in Tableau content.

Both Tableau Catalog and Tableau Prep Conductor are licensed through the Data Management Add-on. For more information about licensing, see License the Data Management Add-on.

To purchase the Data Management Add-on, contact your account manager.

Data Management Add-on Features

The following table lists the features for the Data Management Add-on, which includes:

- Tableau Catalog
- Tableau Prep Conductor

Tableau Catalog

These features require the Data Management Add-on with Tableau Catalog enabled.

Feature	Description
Permissions on metadata	Tableau Catalog enables you to control who can see and manage external assets and what metadata is shown through lineage by setting permissions.
Expanded connect experience - data discovery	Whether you author in the web or in Tableau Desktop, you can now search for and connect to the specific databases and tables used by published data sources and workbooks on your Tableau Server or Tableau Online site.
Expanded search	Tableau Catalog expands search results to include fields, columns, databases, and tables.
Tag external assets	You can categorize items on Tableau Server and Tableau Online with tags, helping users to filter external assets (databases, files, tables, and columns).
Certify databases and tables	Help users find trusted data that meets the standards you set by certifying databases and tables.
Set data quality warnings	You can set warnings to alert users to data quality issues, such as stale or deprecated data.
Lineage and impact analysis	The Lineage tool traces the source of your data. You can use it to analyze the impact of changes to your data, identify which users might be impacted, and email owners of a workbook, data source, or flow, or contacts for a database or table, about data-related updates.
Data Details	Enable users to better understand a published visualization by seeing information about the data used.
Add descriptions to assets	Help users find the data they're looking for by adding descriptions to databases, tables, and columns.

Feature	Description	
Developer resources	Tableau REST API - metadata methods	Programmatically add, update, and remove external assets; and add additional metadata to Tableau content and external assets like descriptions.
	Tableau Metadata API	Programmatically query metadata from the content published to Tableau Server or Tableau Online. Programmatically update certain metadata using the metadata methods in the Tableau Server REST API. **Note:** The Metadata API does not require the Data Management Add-on.
	GraphiQL	Explore and test queries against the Metadata API schema using an interactive in-browser tool called GraphiQL. **Note:** GraphiQL does not require the Data Management Add-on.

Tableau Prep Conductor

These features require the Data Management Add-on with Tableau Prep Conductor enabled on Tableau Server or Tableau Online.

Feature	Description
Schedule flow runs	You can create scheduled flow tasks to run a flow at a specific time or on a recurring basis.
Monitor flow health and performance	Set up email notifications at the site or server level when flows fail, view and resume suspended flow tasks, and view errors and alerts. You can also use Administrative Views to monitor the activities related to flows, performance history, and the disk space used at the server or site level.
Tableau	Programmatically schedule flows.

Feature	Description
REST API - flow methods	

License the Data Management Add-on

The Data Management Add-on includes Tableau Catalog and Tableau Prep Conductor. Contact your account manager (or go to the Tableau pricing page) to purchase the Data Management Add-on.

Tableau Prep Conductor

After you purchase and license the Data Management Add-on, you must enable Prep Conductor on Tableau Online. For more information, see Enable Tableau Prep Conductor on Your Tableau Online Site.

- At least one resource block is required to use Tableau Prep Conductor in Tableau Online. To learn more about resource blocks, see Resource Blocks.
- When the Data Management Add-on is active and enabled, you can schedule flows in Tableau Server or Tableau Online and monitor flows.
- When the Data Management Add-on is removed or deactivated, or if the Data Management Add-on expires, then the ability to schedule flows is disabled.
- If your Tableau Server or Tableau Online license is still active and valid, you can download the flows using the Tableau Server REST API. For more information, see Flow Methods.

Tableau Catalog

After you purchase and license the Data Management Add-on for Tableau Online, Catalog is automatically enabled.

- When the Data Management Add-on is active and enabled, you can use Tableau Catalog to discover data, curate data assets, perform impact analysis, and trace the lineage of data used in Tableau content.
- When the Data Management Add-on is removed, deactivated, or expired, the information remains on the server. The Tableau Catalog-specific information is then only accessible using the Tableau Metadata API; it no longer appears in the product. For more information, see the Metadata API.
- When the Data Management Add-on is removed, deactivated, or expired, the write APIs for all new Tableau Catalog information (for example, table descriptions, data quality warnings, column descriptions) are disabled. You can still read information using the Metadata API, however permissions on tables and databases can't be explicitly managed in the product.

Resource Blocks

Resource Blocks are units of compute capacity in Tableau Online. Resource Blocks run Tableau Prep Conductor flows. Each Resource Block can run one flow at a time so the number of flows you can run concurrently is equal to the number of Resource Blocks that you have.

When you license the Data Management Add-on for Tableau Online, you must purchase at least one Resource Block. To purchase more Resource Blocks, contact your account manager (or go to the Tableau pricing page for more information).

Tableau Prep Conductor

If you build flows in Tableau Prep, you can automate running your flows to refresh flow input and output data on a schedule using Tableau Online, instead of opening Tableau Prep Builder to run individual flows manually. Tableau Prep Conductor runs flows, checks connection credentials, and sends alerts if a flow fails. For more information, see About Tableau Prep Conductor.

Tableau Prep Conductor is licensed through the Data Management Add-on. For information about how Data Management Add-on licensing works, see License the Data Management Add-on.

About Tableau Catalog

Data is increasing in volume, formats, and importance leading to more complex environments. With the rapid pace that data changes, it can be hard to keep track of that data and how it's being used in such complex environments. At the same time, more users need to access more of that data in more places, and it’s difficult for users to find the right data. Ultimately, this causes a lack of trust in the data because people question whether they’re using the right source or if it’s up to date.

Tableau Catalog integrates features like lineage, impact analysis, data dictionary, data quality warnings, and search into your Tableau applications, helping solve these problems differently from a stand-alone catalog. It focuses on both IT and the end user so that everyone using Tableau Server or Tableau Online has more trust and visibility into the data, while also enabling more discoverability. Tableau Catalog builds a catalog out of the Tableau content being used by your organization, enabling comprehensive functionality like the following:

- **Impact analysis and lineage**.
  - You can see the workbooks and other Tableau content that depend on particular columns or fields from tables or data sources you manage. When you need to make changes to your data, you can notify the impacted Tableau authors using email.
  - As a workbook author, you can use lineage to trace the fields that your workbook depends on.
  - As a user, when you use a Tableau visualization, you can see where the data came from that was used to create the view.
- **Curation and trust**. As a data steward, you can add helpful metadata, like descriptions and certification, so that users find the right data. You can set data quality warnings, view data details on the Data Details pane, certify assets, and remove assets from the catalog.
- **Data discovery**. You can use Tableau Catalog to search for databases, tables, and data sources to analyze in Tableau and connect to them from the search results.

Starting in 2019.3, Tableau Catalog is available in the Data Management Add-on to Tableau Server and Tableau Online. When the product key is active and enabled, the catalog features described above are integrated into the product you're using, so you can work with the data where you find it.

How Tableau Catalog works

Tableau Catalog discovers and indexes all the content on your site—workbooks, metrics, data sources, sheets, and flows—to gather metadata about the content. From the metadata, databases and tables (also referred to as external assets) are identified. Knowing the relationships between the content and the external assets enables Tableau to display the lineage of the content and external assets. Tableau Catalog also enables users to connect to external assets using Tableau Server or Tableau Online.

For information about how you can use Tableau Catalog to support data governance in your organization, see Governance in Tableau in the Tableau Blueprint Help.

Key Tableau Catalog terms

- Metadata. Information about the data.
- Tableau content. Content created in Tableau such as workbooks, data sources, and flows.
- External assets. The metadata about the databases and tables used by the Tableau content published to Tableau Server or Tableau Online.

License Tableau Catalog

Tableau Catalog is licensed through the Data Management Add-on. For information about how Data Management Add-on licensing works, see License the Data Management Add-on.

Enable Tableau Catalog

After Tableau Server or Tableau Online is licensed with the Data Management Add-on, you can enable Tableau Catalog by doing one of the following tasks:

- **For Tableau Online**, no action necessary. Tableau Catalog is on by default, configured to use derived permissions, and ready to use. For more information about derived permissions, see the Permissions on metadata topic.

- **For Tableau Server**, the Server admin must first enable the Tableau Metadata API using the `tsm maintenance metadata-services` command. For more information, see Enable Tableau Catalog.

  After the Metadata API is enabled, Tableau Catalog is on by default, configured to use derived permissions, and ready to use. For more information about derived permissions, see the Permissions on metadata topic.

Features and functionality

To learn more about the features you can use with Tableau Catalog, see the following Help articles:

Data discovery

- In the **Connect** pane on Tableau Desktop, under **Search for Data** select **Tableau Server** to connect to data using Tableau Server or Tableau Online. When Tableau Catalog is enabled, in addition to searching for published data sources to connect to, you can now search for and connect to the specific databases and tables used by published data sources and workbooks on your Tableau Server or your Tableau Online site.
- Search is expanded to include results based on fields, columns, databases, and tables when Tableau Catalog is enabled.
- If you author in the web, you can also connect to databases and tables, as well as published data sources, from Tableau Server and Tableau Online.

Curation and trust

- Certify your data assets to help users find trusted and recommended data.
- Set data quality warnings to alert users to data quality issues, such as stale or deprecated data.
- Categorize items on Tableau Server and Tableau Online using tags to help users filter external assets.

- Better understand published visualizations by using the Data Details tab to see information about the data used.
- Add descriptions to databases, tables, and columns to help users find the data they're looking for.

Lineage and impact analysis

- Use lineage to trace the source of your data and to analyze the impact of changes to your data and identify which users might be impacted.
- Email owners of a workbook, data source, or flow or contacts for a database or table about data-related updates.

Developer resources

You can use metadata methods in the Tableau REST API to programmatically update certain metadata. For more information about the metadata methods, see Metadata Methods in the Tableau Server REST API.

In addition to the REST API, you can use the Tableau Metadata API to programmatically query metadata from the content published to Tableau Server or Tableau Online. The Metadata API is fast and flexible and is best when you are looking to find out specific information about the relationship between metadata and its structures. Explore and test queries against the Metadata API using an interactive in-browser tool called GraphiQL.

Note: The Data Management Add-on is not required to use the Metadata API or GraphiQL.