



Governed self-service analytics at scale

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Purpose

This paper will provide an overview of important considerations to ensure governance at scale as you deploy modern, self-service analytics with Tableau across your business. We aim to help IT understand the important roles, responsibilities, and repeatable processes needed to collaborate with the business, including delegating administrative tasks, in order to scale your analytics solution and make data-driven decision-making the norm throughout your organization.

Introduction

For the staff at Seattle Children's Hospital, speed is a matter of life and death. The faster a doctor or nurse can help a child, the better the outcome. Mere minutes can make a critical difference.

That's where real-time decisions come in. With self-service analytics, the hospital staff can ask urgent questions on the spot, respond quickly, and streamline efforts by prioritizing resources. They can get to their patients faster and save as many lives as possible.

"We're seeing analysts and managers as well as clinicians, doctors, and researchers using Tableau to solve problems in ways we couldn't do before, largely because we didn't have enough time or enough people," says Ted Corbett, Director of Knowledge Management at Seattle Children's.

That is the power of self-service analytics, where the right data is put in the hands of the right people in a secure, governed manner. It empowers organizations to fully leverage their data, be it for saving lives, driving supply-chain efficiency, or spotting new opportunities. The IT team at Seattle Children's recognized the need to convert data into information and enabled its users to self-serve.

Self-service analytics at scale can drive enterprise transformations by:

1. Empowering people to ask and answer their own questions with data
2. Enabling people to easily share their insights with their team and the rest of the organization
3. Ensuring that the data driving the decisions is accurate, trusted and secure

Today's organizations seek a modern approach to self-service analytics that balances the needs of both IT and the business, ensuring both governance and business agility. This also redistributes the workload of content generation to business users rather than IT. We believe that the people who know the data best should ask and answer their questions.

People in your organization are already self-serving their analytical needs by exporting data from enterprise sources (like Salesforce or Google Analytics) into spreadsheets and PDFs. They need to answer their own questions rapidly, but moving data into ungoverned environments for downstream analysis and collaboration via files and email can compromise data security, governance, and trust. So how do you meet this need for self-service analytics while mitigating risks?

Moving from top-down, IT-led business intelligence toward a modern self-service model is may seem like a night-and-day change. However, it's important to acknowledge that deploying modern analytics is never all or nothing, nor should governed self-service analytics at scale be considered a destination so much as an ongoing, iterative journey.

Tableau is designed for ease of use, allowing users to have access where IT can provide a starting point with curating data sources. Over time, IT will delegate roles and responsibilities to properly trained business users. In this way, modern analytics grants as little or as much change as the organization is ready for.

With a defined vision, IT and business teams should collaborate to move the organization forward with the security and governance IT requires and the agility that empowers the business. Start with these key steps to deploy and scale governed self-service analytics across your organization:

1. Set up your environment rapidly to create immediate value
2. Centralize and standardize your data models
3. Empower your people to be self-reliant and build trust
4. Monitor and audit usage

Deploying Tableau Server

It's easy for one person to pick up Tableau Desktop and start exploring data in just minutes; the challenge is to quickly enable everyone in your organization with self-service analytics. Tableau is flexible and powerful, able to handle your entire organization, and its server administration requirements are straightforward so that as your organization matures, you can add capacity and controls as needed.

“ As an IT team, we balanced freedom and order, says Steven, The business now uses their time more efficiently, and they're taking Tableau and doing the things that only they can do, which is making more money and bringing us closer to our customers.

—STEVEN JOHN, CIO, AMERIPRIDE

[Read the full story](#)

Install and Configure

Tableau offers the greatest choice and flexibility of modern analytics platforms and can be custom-configured based on your existing and future data infrastructure, user load and usage profile, device strategy, and goals. Our belief is not to dictate your technology stack or analytics strategy. This means you can leverage your current investments and rely on Tableau as a constant as your data environment continues to evolve and expand.

You can deploy Tableau Server on Windows or Linux, install on-premises with physical hardware or virtual machines, or in the public cloud on Amazon Web Services, Microsoft Azure, or Google Cloud Platform.

If you don't want to manage your own infrastructure, you can use Tableau Online, a fully-hosted version of Tableau Server run by Tableau. With Tableau Online, you don't have to worry about installation, hardware management, or server scaling—it's all done for you.

It's easy to integrate Tableau with enterprise security and authentication protocols that you already have in place. Tableau supports Kerberos, SAML, SSL, Active Directory, client certificates, and SSO for SAP HANA to help secure user access to your content.

Scale your Deployment

There's nothing wrong with starting with a small deployment, perhaps a single department or a specific use case present within a few departments. Key data sources can help you estimate of the relevant audience size for your deployment because user engagement will drive server scalability and sizing decisions.

Like other enterprise platforms, Tableau Server scales up by adding processor, memory, and/or disk, or scales out by adding more nodes to a cluster. Each approach adds more capacity but can be customized to tune your environment to your unique workload mix.

As users recognize the value and ease of answering their own questions, utilization of analytics will increase as will your users' expectation of data freshness. Along with the data size and location, and your organization's risk tolerance, these are critical areas to consider when architecting your deployment strategy and your scalability plan.

Given that analytics are often mission-critical and modern BI solutions often see fast growth, you should consider reassessing server utilization and user needs and licensing more frequently than with other technology solutions. You may need to change your topology to scale more frequently than other enterprise platforms you've managed. The key is to be proactive in monitoring utilization and assessing the changing needs of the business.

Organize Content

Tableau's user interface streamlines content viewing and management. You can see, in one place, key information about content including related items and available actions.

Tableau Server and Tableau Online give you the flexibility to structure your environment and manage your content based on your users' needs and your governance requirements.

If you need multi-tenancy for extra security, you can organize content on separate sites. Each site can have unique users, data, and content. Users of one site may not have access to another site or even be aware of its existence.

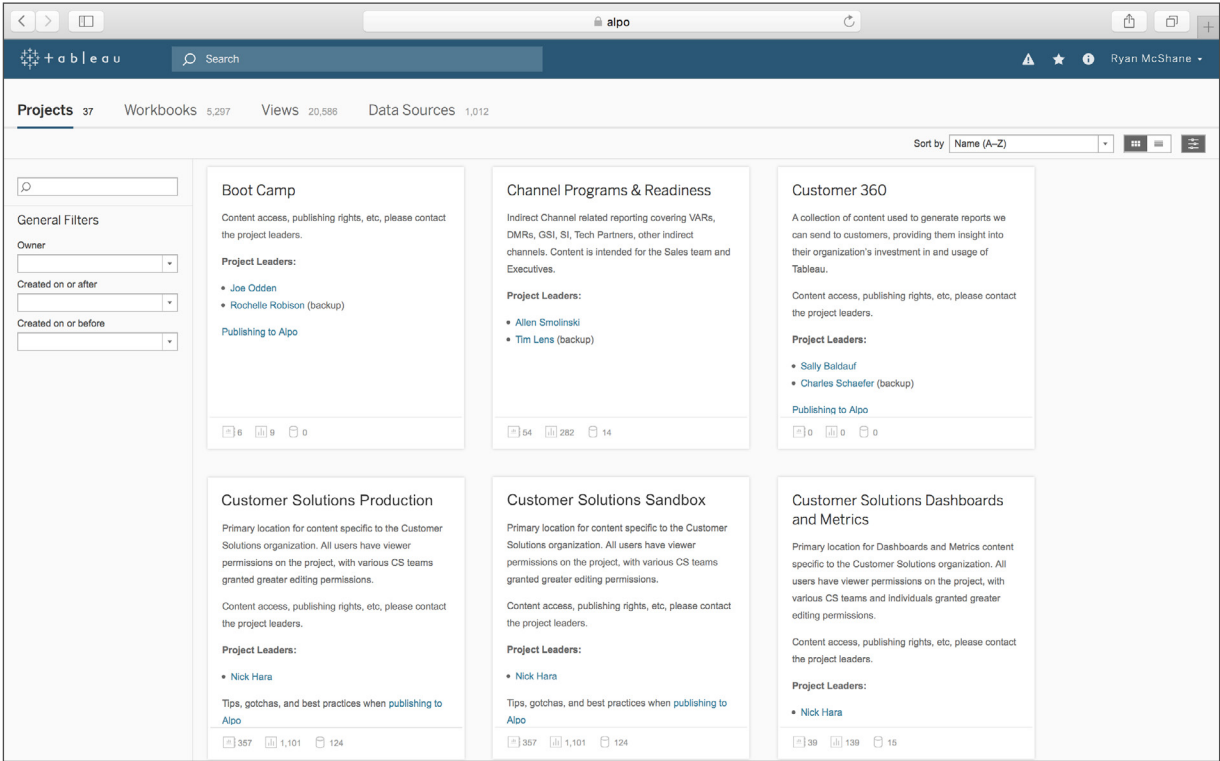
Projects are a basic container for your workbooks and data sources. They group together items and behave much like folders to provide hierarchical organization. Permissions can be handled at the project, workbook, and data source levels, with groups and users having access to them.

Projects and nested projects are used to split content into functional areas with varying levels of permission. You may have Tableau users in various teams (like finance, marketing, sales, and IT) and wish to serve different content to each team even though all the content is based on the same data source.

IT should create a content organization framework of different projects for different departments, including sandbox and production projects for ad hoc or uncertified content and validated, certified content respectively —as a way to manage content and data governance. With a self-service sandbox, teams of users can freely explore and perform ad hoc analysis. IT should manage and publish production data sources and dashboards in a separate production project, retaining more control over publishing in this space, where the entire business will be able to use trusted data with confidence.

A subset of properly trained users should handle the vetting process to approve content and promote it to the production folders within their business units. As the business iterates on trusted data and creates new content, these items can be certified by IT or data stewards and mainstreamed into the production projects. This ensures that the organization’s primary data sources and dashboards are constantly improving and evolving as the business changes and grows.

For example, at Tableau, we organize our content into separate projects for various teams. You can see that the customer solutions team has access to three different projects, one of which is the team’s sandbox for works in progress. This is where users can ask and answer their own questions. The production project houses vetted and published dashboards which the team manages internally. The last folder holds leadership-vetted content that has been made available to other teams. It provides visibility for the rest of the company into the performance of the customer solutions team.



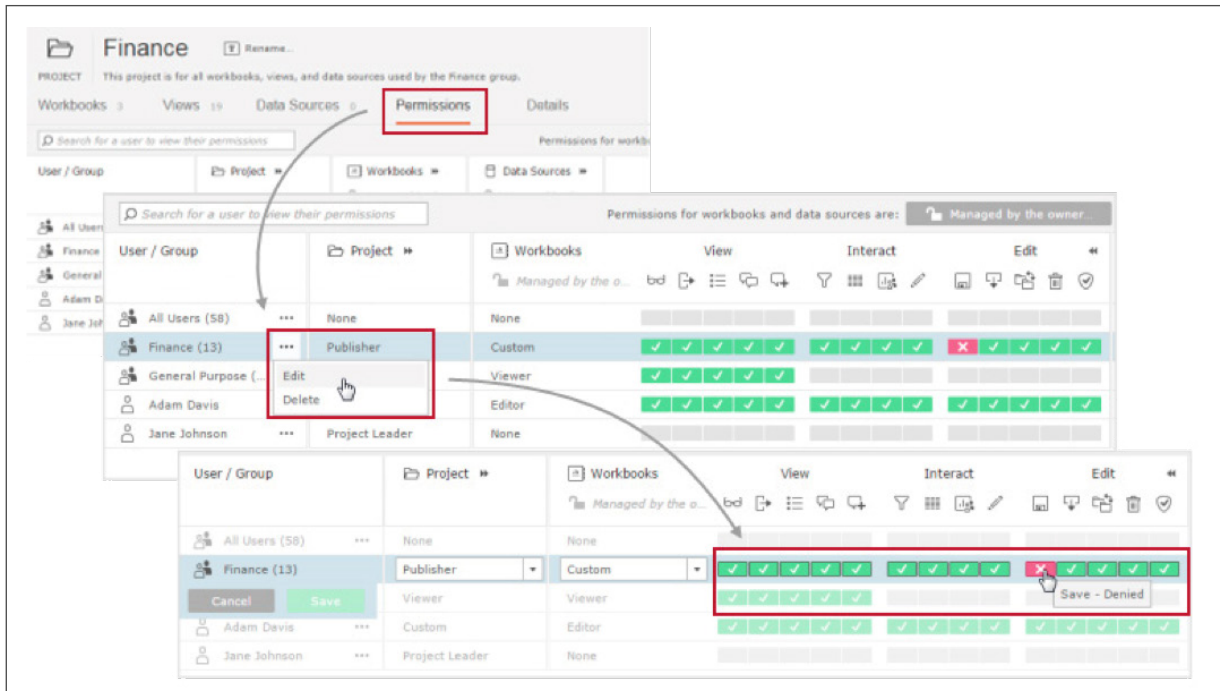
Manage Site Roles and Permissions

Business users and administrators will have varying degrees of skill and interactivity with the platform and fall into different roles. Understanding these roles will help you apply the appropriate security, permissions, and support structure within your organization as users grow and learn new skills, and as IT delegates more responsibilities.

- Server Administrator — Install software and database drivers, configure, upgrade, monitor, maintain, and oversee security, in alignment with the organization’s governance policy and processes.
- Site Administrator/Project Leader — Manage a Tableau Server site or project respectively, including users, permissions, and data source certification.
- Creator (Data Steward/Analyst) — Connect to data to author new data sources and dashboards, which are published and shared on Tableau Server or Tableau Online. Data Stewards (DBA or data analyst) publish data sources. Creators incorporate process definitions, policies, guidelines, and business knowledge for enterprise metadata management in compliance with organizational and/or regulatory obligations.
- Explorer (Analyst) — Connect to existing data sources and author new dashboards, which are saved and shared on Tableau Server or Tableau Online.
- Viewer (Business User) — Interact with filters and parameters to customize published content. Viewers can also receive alerts triggered by business events.

Tableau’s intuitive interface makes it easy to associate users to functional groups, manage permissions in groups, and see who has access to which content. You can create groups locally on the server (or in Tableau Online) or import from Active Directory and sync on a set schedule. The permissions view also helps business users manage their own users and groups.

Tableau has default permission rules for projects, workbooks, and data sources, or you can define custom permission rules for these content types. Custom permissions allow more granularity in permissions— from accessing or downloading a data source to how a user interacts with published content. As an administrator, you can assign permission rules and lock them to the project. Locked projects enforce permission rules on all content within the container, including nested projects.



A user's effective permissions for a content resource are determined by the capabilities allowed through their license type, site role, and content permissions, including whether or not the user owns the content item, any permission rules applied to groups the user belongs to, and the permission rules applied to that user for a specific project.

Delegate Administration

In large enterprise deployments, it becomes necessary to delegate administration of both users and content. This not only helps remove IT as a potential bottleneck to scaling self-service analytics but allows IT to focus on the important duties of platform administration, data architecture, data engineering—ultimately, business enablement.

Initially, IT may retain more traditional roles in regards to data access and governance, content management, and site administration. As Tableau Server scales, IT should delegate site administration roles to select business users with the appropriate skills and grasp of governance. Site administrators sit at the crossroads of IT and the business with control of content and users within a specific site. This is especially common when it comes to departmental content management and permissions.

Site administrators should understand and actively contribute to the management, monitoring, and maintenance of sites. This includes governance policies, procedures, and risk management; site organization and content publishing; monitoring utilization, performance, and compliance of site content; as well as ongoing education and support to support adoption, collaboration, and the sustainable growth of self-service analytics.

Tableau can help simplify certain functional tasks of site admins. For example, both system and site admins with the correct permissions can add new users via the UI, API, or command-line tool (tabcmd). Site admins can also delegate permissions and content management to project leaders with the right expertise and permissions within their own groups. For example, the analyst aligned to the marketing department can be the project leader who assigns permissions for marketing projects.

Automate with APIs

With a full suite of APIs built on industry-standard programming languages and data-interchange formats, both system admins and developers can automate, embed, and extend Tableau to fit specific business requirements or address specific workflows.

The Tableau Server REST API and tabcmd utility, along with the JavaScript API and data extract APIs, offer simple and flexible ways to build on Tableau Server's capabilities.

For example, you can build a script to log in, create new user accounts, generate a subscription, and so on. You can automate new site creation, adding individual projects, assigning permissions, alerts, and more.

- **Javascript API:** Develop custom embedded analytics and integrate with other applications.
- **Extensions API:** Develop dashboard extension to integrate external applications.
- **REST API:** Automate Tableau Server management with REST endpoints.
- **Document API:** Modify workbook and data source files programmatically.
- **Extract API:** Programatically build Tableau Data Extracts in TDE format.
- **Web Data Connector SDK:** Connect to any web data source.
- **ODBC Connections:** Customize and tune data connections using ODBC standards.

Centralize Data Models

With the proper planning, resources, and skills, decentralized control can help your business users move faster. The challenge is maintaining data integrity and security without hindering self-service analytics or slowing the business workflow. Tableau has the flexibility to establish the right levels of control based on the content, the users, and the data in question. Some content can take a connect-and-go approach while others are based on a shared or governed data source managed by IT.

Tableau also integrates seamlessly with enterprise ETL tools such as Informatica, Alteryx, Trifacta, and many others to help you make the most of your existing analytics investment. Our partners' tools extend Tableau's capabilities so organizations can more easily collect, store, transform, and connect to their data.

Maintain Control with Data Security

With Tableau Server and Tableau Online, you can set secure access to your data at multiple levels.

- **Permissions on the database:** Tableau respects the security that you have on your database and only provides the data that a user has access to. You can choose to require user authentication with each access to the database, or you can embed the author's credentials directly in the data source for everyone to reuse.
- **Permissions on data sources in Tableau:** Similar to content permissions in Tableau, you can also set permissions on your data source. You can allow an entire team to connect to the data source but limit permissions for editing metadata to a few named users responsible for data integrity and administration.
- **User filters on workbooks:** You can set user filters on workbooks you publish in order to show users only the data they need to see based on their Tableau Server credentials.

These measures allow the business user to focus on deriving insights from the data instead of having to worry about the underlying database structure, proper field definitions, or data integrity. The maintenance of the data source can either fall to IT, database administrators, or the proper business users, like data stewards.

Tableau Data Server

Data governance ensures the accuracy of the data driving your users' decisions. IT can empower the business to be self-reliant by providing a trusted and centralized environment. And that's where the Tableau Data Server comes in. Data Server hides the complexity of your modern data architecture and centrally manages data connections, both live and extracts.

With Tableau Data Server, you can share data models, secure how your users access data, and manage and consolidate extracts. This way, you can avoid unnecessary processing and storage of large, separate, overlapping files. The Data Server also allows you to schedule automatic refreshes for each published extract, which can run multiple times per day on a schedule that works best for you.

Issues with extract refreshes are visible to all users so they'll be aware of any impacts to their dashboards. Tableau Server's administrative views also let you know if automatic refreshes fail so you'll know when your organization isn't using the most recent data available and require notification. Admins and workbook authors can schedule extract refreshes when they publish their workbooks or data sources.

You can help jumpstart your users' analyses by allowing them to view and interact with curated content and connect to Published Data Sources. When you've identified use cases and provided a starting point, users can jump right into analysis—no need to wait for extracts or metadata setup.

As you see which data sets are being accessed most frequently, you can begin curating central, governed, and accurate versions of those data sources and related dashboards. Over time, to maintain responsiveness to growing business needs and help spread value across the organization, you can delegate this responsibility to skilled data stewards.

Publish, Certify, and Share Data Models

Tableau connects to any data, with dozens of optimized native connectors. With the Web Data Connector SDK, you can unlock the entire world of web data from virtually any site that publishes data in JSON, XML, or HTML. You can set up connections once and enable all users to access and analyze the data consistently.

Published Data Sources (data models of live connections or extracted data sets) can be shared and centrally managed on Tableau Server or Tableau Online, which can then be reused by others. Changes to a Published Data Source are automatically propagated to workbooks built using that data source. Once you have published a data source that contains all the connection information such as tables and joins, business users can connect to it and add their own calculations or even blend in additional data.

A very powerful feature of Tableau is the cross-database join, which allows you to join tables from different vendors and databases then save them as a new single data source for others to find and reuse. You can keep your customer data in SQL Server and inventory management data in Amazon RedShift. Your business users don't have to know the specifics; for them, it just works as a part of a seamless experience.

Business users who are closest to their data—for example, data stewards or project leaders—can also be granted permission to publish new data sources with custom field definitions, calculations, parameters, and groups. This means any metadata changes you make to the source (calculated fields, parameters, aliases, or definitions) can be saved and shared with others, allowing for a secure, centrally-managed, and standardized data set. As Creators, all of this is done right in Tableau—no separate tools needed.

Establishing a data standard for Published Data Sources will help to enable the business with governed data access for self-service. Be sure to address the following before publishing a new data source:

- ✓ Filtered and sized to the analysis
- ✓ Business-friendly naming convention
- ✓ Set data types
- ✓ Create hierarchies
- ✓ Apply formatting (dates, numbers)
- ✓ Set fiscal year start date, if applicable
- ✓ Add new calculations
- ✓ Remove duplicate/test calculations
- ✓ Enter comments
- ✓ Aggregate to the highest level
- ✓ Hide unused fields
- ✓ Publish to Tableau Server

This approach also allows users to prototype the data before publishing it to production sites. Once tested and trusted, data sources can be certified by a server administrator, site administrator, or project leader. Certified Data Sources also get preferential treatment in Tableau Server search results and in the smart data source recommendations algorithm so that they are discoverable and easily reusable.

Certifications and recommendations will help you make data sources discoverable and improve data stewards' abilities to govern enterprise analytics effectively in Tableau. Both features help reduce the proliferation of redundant data models and save analysts time when trying to find good data that they can trust.

Empower Your People

Tableau's mission is simple. We help people see and understand data. To do this at scale, we've built a powerful, mission-critical analytics platform with the greatest breadth and depth of analytical capabilities to drive your business—from data access and prep to governance and collaboration. Its ease of use means faster adoption at scale, regardless of users' skill levels.

There are many BI tools that give people access to already-built dashboards. Tableau is unique in that the dashboard is often just the beginning of that discovery process, not the end. A modern analytics platform should enable deeper explorative analysis, complementing people's natural ability to ask questions, instead of requiring they learn complex, technical or analytical skills. People can focus on the cycle of analytics in an undisturbed workflow, rather than features, capabilities, and reporting requirements.

When users sign in, they see all the dashboards and data they have access to. Digging in is as easy as browsing, searching, opening, and exploring. And we encourage people to push the boundaries when exploring—a wrong path will never require starting over. Tableau empowers the people who know the data best and can maximize the impact of the insights.

Tableau not only empowers business users but also allows IT to take on a more strategic role in empowering the business, aligning the functional duties of scaling and supporting the platform to the strategic goals of the business. With a governed self-service analytics platform in place, IT can leave behind the traditional report factory role to enable business agility at scale and become a partner to the business.

Discover Content

In order to enable data-driven decision-making across the organization, users need easy access to data and dashboards at all times, even on the go.

Users can access and explore dashboards directly from Tableau Server and Tableau Online using any mobile browser or via Tableau Mobile, our native app available for iOS and Android devices. Offline snapshots of the dashboards let users have a quick glance at their favorite views without having to rely on network connectivity.

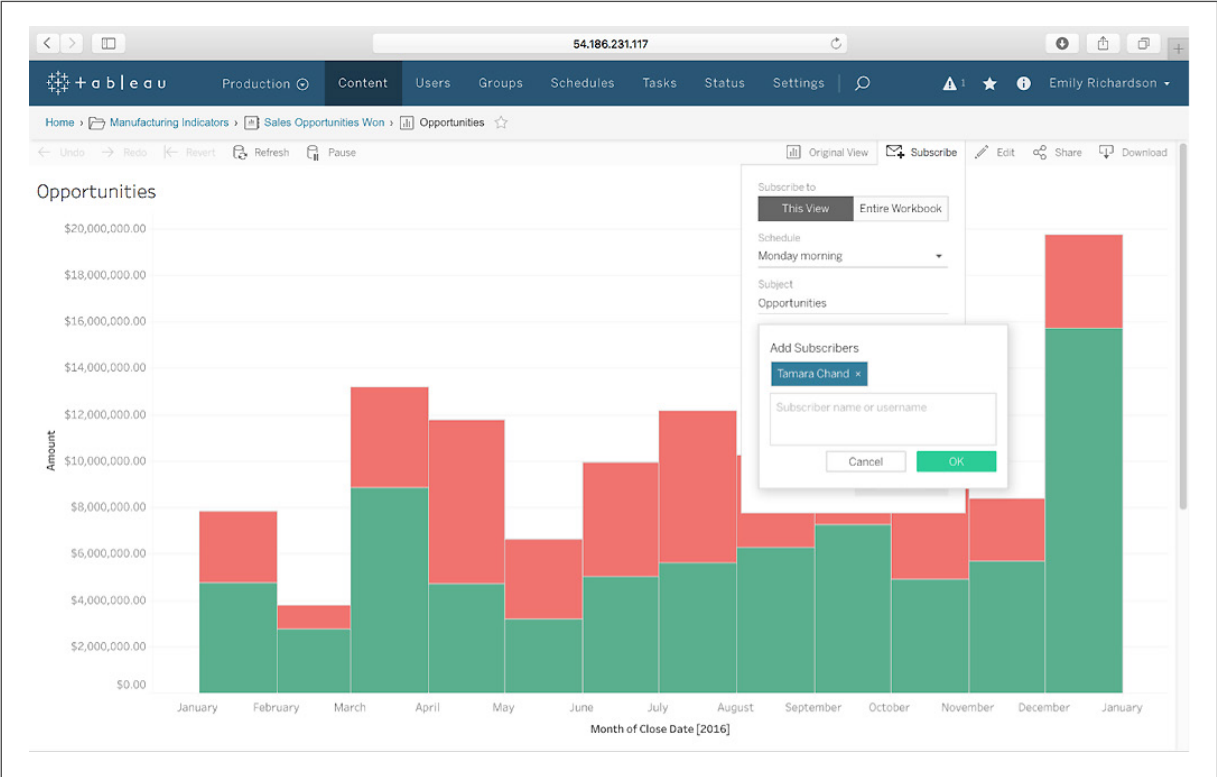
Tableau has several features to help users stay on top of relevant content. These include global search, tags, favorite views, alerts, subscriptions, and full web authoring.

With visual search, users can search across content types, sort by relevance, get an image preview of the view before they load the full dashboard, and see the popularity of different content. With the subscription feature, executives can easily track weekly reports across the organization. Admins have the ability to enable subscriptions, create new subscriptions, and delete existing ones.

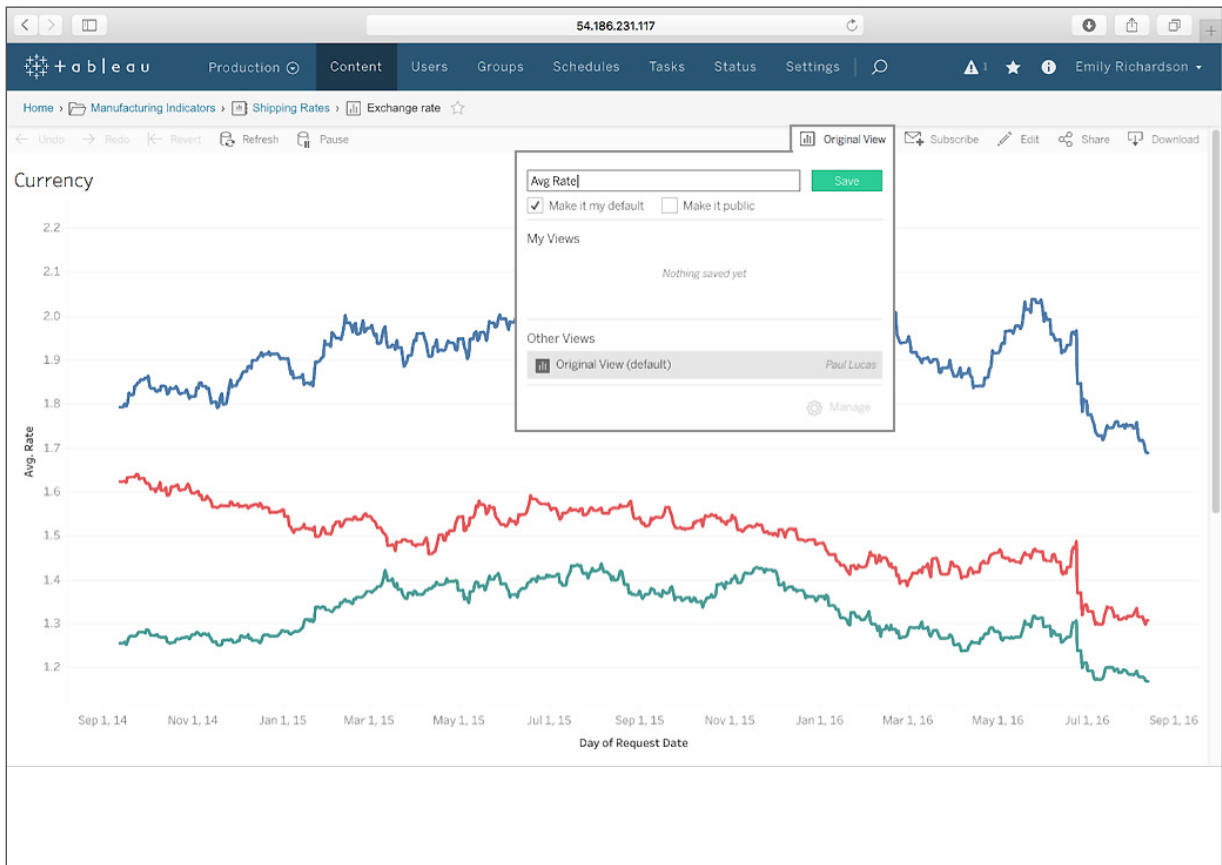
All of the ways people interact with content—tracked through the number of views, favorites, and subscriptions—provide valuable insights into the popularity and quality of content. These metrics can help identify trending topics or areas of focus as they surface across the business, which could inform growth areas or other opportunities. Tableau leverages this data with machine learning to improve search relevance, help users discover new and rising content, and even suggest relevant joins and tables.

Collaborate and Share Insights

Once users have explored their data, they can easily share their insights with others. Users can subscribe themselves and others to content to stay up to date on the key business metrics they care about most.



Users can share the original view or their custom-filtered and selected view of the visualization.



You can rest easy knowing that the security in Tableau Server and Tableau Online will protect against unauthorized access. Users without permission to certain content won't see it in their search results.

The screenshot shows a "Revision History" dialog box in Tableau Desktop. The dialog title is "Revision History" and it contains the text "Select a previous revision of workbook 'Area Code Analysis'". Below this is a table with three columns: "Revision Number", "Owner", and "Publish Date". The table lists five revisions. Revision 4 is the current revision, published by Ryan McShane on Feb 8, 2016, at 5:25 PM. Revisions 3, 2, and 1 are also listed with their respective owners and dates. At the bottom of the dialog are "Cancel" and "Download Selected Revision" buttons.

Revision Number	Owner	Publish Date
Revision 4 (current)	Ryan McShane	Feb 8, 2016, 5:25 PM
Revision 3	Ryan McShane	Feb 6, 2016, 4:24 PM ...
Revision 2	Ryan McShane	Feb 4, 2016, 4:21 PM ...
Revision 1	Tyler Doyle	Jan 22, 2016, 9:48 AM ...

Tableau's versioning feature helps ensure content is backed up and can be easily recovered should someone overwrite a preferred version of a workbook.

Monitoring

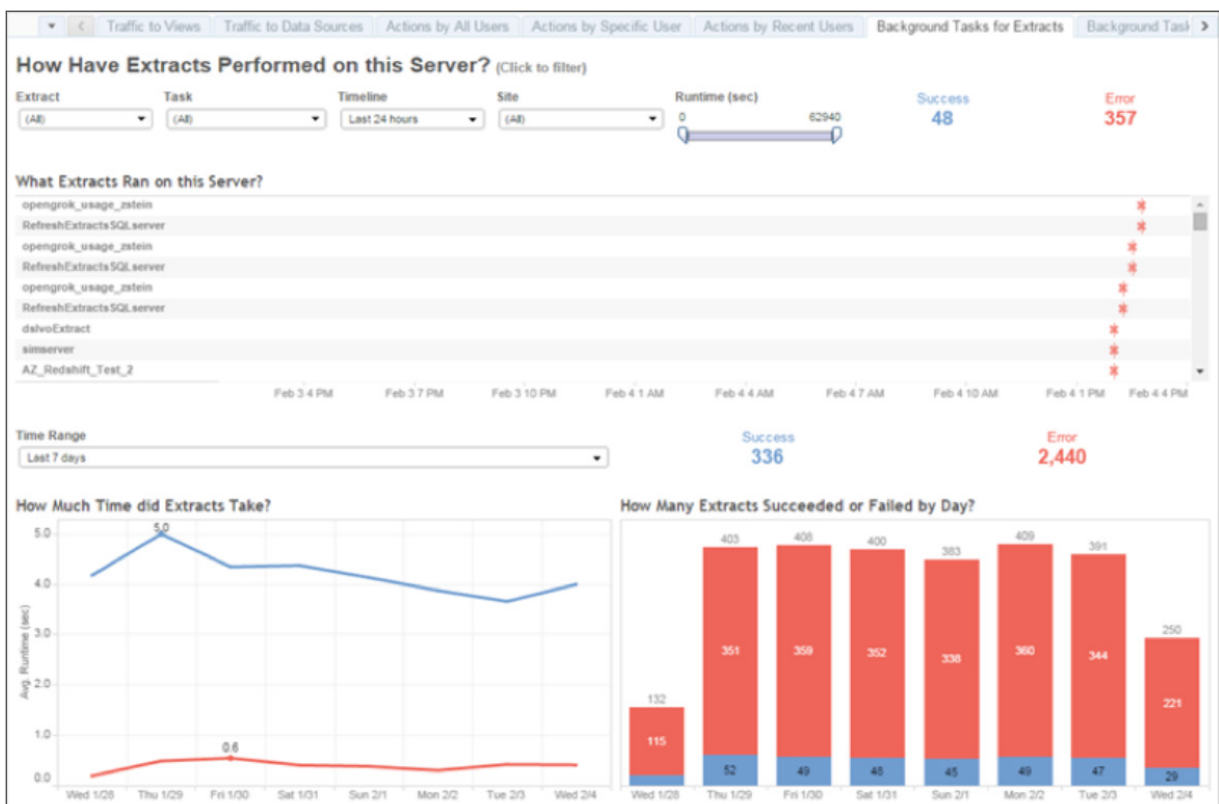
Monitoring usage is a critical piece of the self-service model as it allows IT and site administrators to be proactive and responsive about usage, performance, and failures. Just as business users leverage data to make smarter decisions, you, too, are empowered to make data-driven decisions on your Tableau deployment.

Tableau allows direct access to the Tableau Server Repository which includes information about user activities, data connections, queries, extracts, errors, views, and interactions on Tableau Server. You can drill down, aggregate, and answer your questions to find your own insights. Interactive default administrative views let you clearly see the usage of your Tableau Server deployment. If you are trying to resolve an issue for a particular user, you can also filter and see the activity for just that user.

You can also create custom administrative views from Tableau Server's repository data. To get a better view into performance and to identify your resource and performance bottlenecks, you can bring in data from your preferred resource monitoring tools collate that information with performance data from Tableau. To see a consolidated list of open source tools for deployment, platform management and monitoring, load testing and scalability, platform automation, content management, and data management, visit Tableau Admin Tools.

Track Failures

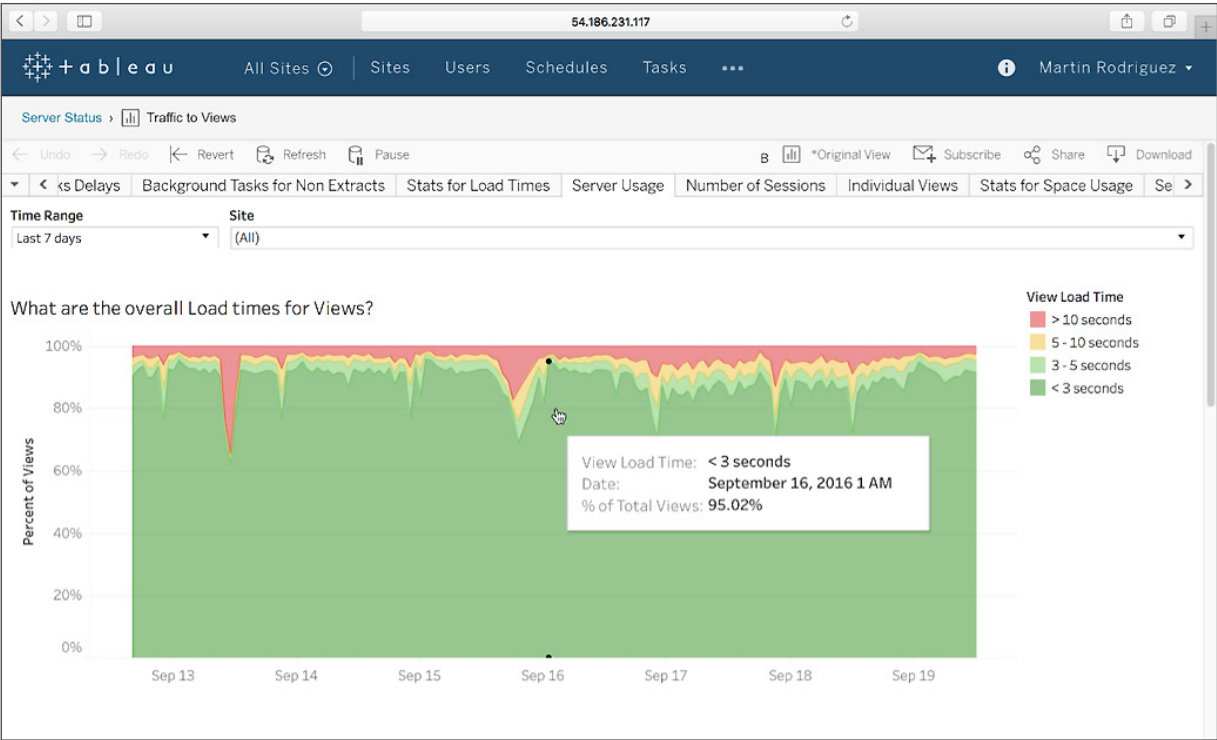
Tableau Server provides visibility into server health issues and background tasks through email alerts and admin views. You can see the status of all currently-running server processes and choose to be notified if any of the server processes go down. When scheduled tasks fail, you can see why they failed, take action, and prevent future failures.



Monitor Performance and Capacity

Keep track of load times and space utilization to ensure the performance of your system meets the requirements of your users. Visibility and historical trends will help you better understand the usage patterns and provision new capacity before users are impacted. You can set up alerts to warn you when space falls below a certain threshold you've set.

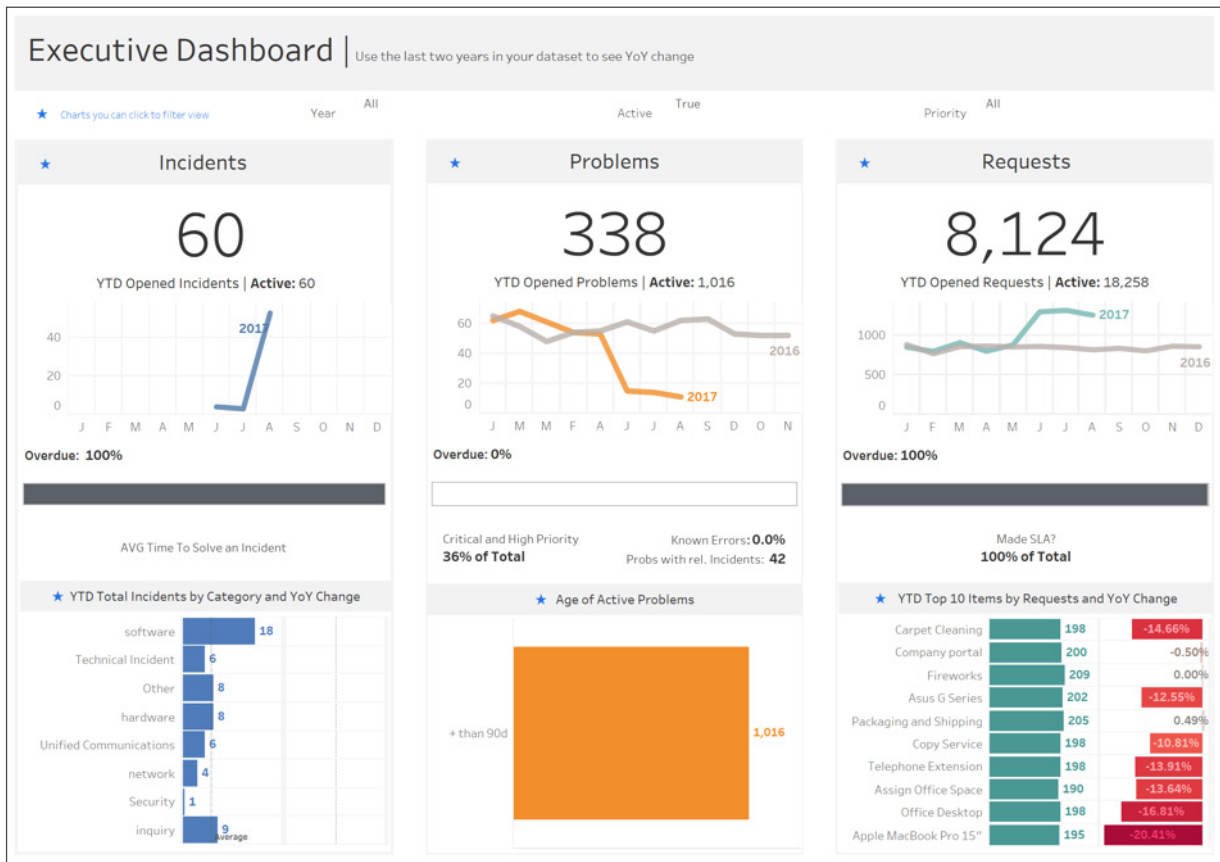
Analytics are often mission-critical to making business decisions and Tableau can see extremely fast adoption and engagement growth. Without careful planning and intervals of assessment, a "set it and forget it" deployment can be met with inadequate resources that fail to support the workload of highly-engaged users.



Uncover New Insights

Why limit yourself to just monitoring Tableau usage data? Just like any other business unit, you can use Tableau to visually monitor IT systems and applications, hardware and software inventory, patch compliance, and more.

New with Tableau Online 2018.1, out-of-the-box **Dashboard Starters** provide starting points for popular cloud applications, including ServiceNow and Workfront (previously AtTask):



Additional views can provide direct paths to action to navigate directly to a ticket. A couple clicks allows the viewer to drill down into the details of projects in the queue, including surfacing project descriptions, the most recent status update, and other helpful information.

About Tableau

Tableau is a complete, easy-to-use, enterprise-ready visual business intelligence platform that helps people see and understand data through rapid-fire, self-service analytics at scale. Whether on-premises or in the cloud, on Windows or Linux, Tableau leverages your existing technology investments and scales with you as your data environment shifts and grows. Unleash the power of your most valuable assets: your data and your people.

Additional resources

[Tableau Free Trial](#)

[Tableau for the Enterprise: An IT Overview](#)

[Evaluation Guide: How to Choose the Right Modern BI & Analytics Platform](#)

[Tableau Server Scalability Overview](#)

[Redefining the Role of IT in a Modern BI World](#)

[Best Practices for Designing Efficient Tableau Workbooks](#)