



MOSS ADAMS

PROPRIETARY AND CONFIDENTIAL



SYSTEM DESCRIPTION OF THE TABLEAU ONLINE SYSTEM
RELEVANT TO SECURITY AND AVAILABILITY (SOC 3)



April 1, 2017 through March 31, 2018

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I. INDEPENDENT SERVICE AUDITOR'S REPORT



Tableau Software
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Seattle, WA 98103

To the Management of Tableau Software:

Scope

We have examined Tableau Software's accompanying assertion in Section II titled "Assertion of Tableau Software Management" (assertion) that the controls within Tableau Software's Tableau Online System (system) were effective throughout the period April 1, 2017 to March 31, 2018, to provide reasonable assurance that Tableau Software's service commitments and system requirements were achieved based on the trust services criteria relevant to security and availability (applicable trust services criteria) set forth in TSP section 100A, *Trust Services Principles and Criteria for Security, Availability, Processing Integrity, Confidentiality, and Privacy* (AICPA, *Trust Services Principles and Criteria*).

Service Organization's Responsibilities

Tableau Software is responsible for its service commitments and system requirements and for designing, implementing, and operating effective controls within the system to provide reasonable assurance that Tableau Software's service commitments and system requirements were achieved. Tableau Software has also provided the accompanying assertion about the effectiveness of controls within the system. When preparing its assertion, Tableau Software is responsible for selecting, and identifying in its assertion, the applicable trust service criteria and for having a reasonable basis for its assertion by performing an assessment of the effectiveness of the controls within the system.



Service Auditor's Responsibilities

Our responsibility is to express an opinion, based on our examination, on whether management's assertion that controls within the system were effective throughout the period to provide reasonable assurance that the service organization's service commitments and system requirements were achieved based on the applicable trust services criteria. Our examination was conducted in accordance with attestation standards established by the American Institute of Certified Public Accountants (AICPA) and in accordance with International Standard on Assurance Engagements 3000 (Revised), Assurance Engagements Other Than Audits or Reviews of Historical Financial Information, issued by the International Auditing and Assurance Standards Board. Those standards require that we plan and perform our examination to obtain reasonable assurance about whether management's assertion is fairly stated, in all material respects. We believe that the evidence we obtained is sufficient and appropriate to provide a reasonable basis for our opinion.

Our examination included:

- Obtaining an understanding of the system and the service organization's service commitments and system requirements
- Assessing the risks that controls were not effective to achieve Tableau Software's service commitments and system requirements based on the applicable trust services criteria
- Performing procedures to obtain evidence about whether controls within the system were effective to achieve Tableau Software's service commitments and system requirements based the applicable trust services criteria

Our examination also included performing such other procedures as we considered necessary in the circumstances.

Inherent Limitations

There are inherent limitations in the effectiveness of any system of internal control, including the possibility of human error and the circumvention of controls.

Because of their nature, controls may not always operate effectively to provide reasonable assurance that the service organization's service commitments and system requirements were achieved based on the applicable trust services criteria. Also, the projection to the future of any conclusions about the effectiveness of controls is subject to the risk that controls may become inadequate because of changes in conditions or that the degree of compliance with the policies or procedures may deteriorate.



Opinion

In our opinion, management's assertion that the controls within Tableau Software's Tableau Online System were effective throughout the period April 1, 2017 to March 31, 2018, to provide reasonable assurance that Tableau Software's service commitments and system requirements were achieved based on the applicable trust services criteria is fairly stated, in all material respects.

MOSS ADAMS LLP

Seattle, Washington
June 19, 2018



II. ASSERTION OF TABLEAU SOFTWARE MANAGEMENT



We are responsible for designing, implementing, operating, and maintaining effective controls within Tableau Software's Tableau Online System (system) throughout the period April 1, 2017 to March 31, 2018 to provide reasonable assurance that Tableau Software's service commitments and system requirements relevant to security and availability were achieved. Our description of the boundaries of the system is presented in Section III titled "Tableau Software's Description of the Boundaries of Its Tableau Online System" and identifies the aspects of the system covered by our assertion.

We have performed an evaluation of the effectiveness of the controls within the system throughout the period April 1, 2017 to March 31, 2018, to provide reasonable assurance that Tableau Software's service commitments and system requirements were achieved based on the trust services criteria relevant to security and availability (applicable trust services criteria) set forth in TSP section 100A, *Trust Services Principles and Criteria for Security, Availability, Processing Integrity, Confidentiality, and Privacy* (AICPA, *Trust Services Principles and Criteria*). Tableau Software's objectives for the system in applying the applicable trust services criteria are embodied in its service commitments and system requirements related to the applicable trust services criteria are presented in Section III titled "Tableau Software's Description of the Boundaries of Its Tableau Online System".

There are inherent limitations in any system of internal control, including the possibility of human error and the circumvention of controls. Because of these inherent limitations, a service organization may achieve reasonable, but not absolute, assurance that its service commitments and system requirements are achieved.

We assert that the controls within the system were effective throughout the period April 1, 2017 to March 31, 2018, to provide reasonable assurance that Tableau Software's service commitments and system requirements were achieved based on the applicable trust services criteria.

Damon Fletcher
Interim Chief Financial Officer
Tableau Software

Andrew Beers
Chief Development Officer
Tableau Software

Brian Smith
Vice President, Technical Operations
Tableau Software

June 19, 2018



III. TABLEAU SOFTWARE'S DESCRIPTION OF THE BOUNDARIES OF ITS TABLEAU ONLINE SYSTEM

A. SYSTEM OVERVIEW

1. SERVICES PROVIDED

Tableau Software (NYSE: DATA), headquartered in Seattle, Washington, helps people see and understand data. The company was formed in 2003 as Tableau Software LLC, a Delaware limited liability company, and incorporated in 2004 as Tableau Software, Inc., a Delaware corporation. Tableau Software's (Tableau) products put the power of data into the hands of everyday people, allowing a broad population of business users to engage with their data, ask questions, solve problems, and create value. Based on innovative core technologies originally developed at Stanford University, Tableau's products reduce the complexity, inflexibility, and expense associated with traditional business intelligence applications. Tableau currently offers six products:

- Tableau Online system, a hosted version of Tableau Server
- Tableau Server, a business intelligence platform for organizations
- Tableau Desktop, a self-service analytics product for anyone with data
- Tableau Prep, a data preparation product used to combine, shape, and clean data
- Tableau Public, a free hosted platform for analyzing and sharing public data
- Tableau Bridge, to live query on-premise data from Tableau Online

SERVICES IN SCOPE

This report covers the Tableau Online system service offering described below. Tableau Online is offered following a Software-as-a-Service (SaaS) model. In this service delivery model, Tableau is responsible for all service delivery layers including infrastructure (*i.e.*, hardware and software that comprise the Tableau Online service), system and physical security, data storage (for data extracts uploaded to the service), and service management processes (*i.e.*, the operation and management of the infrastructure and the system and software engineering lifecycles).

Customers are responsible for configuring their site within Tableau Online and establishing appropriate authentication mechanisms. Customers manage all access and permissions within their site.



OVERVIEW OF TABLEAU ONLINE

Tableau Online was launched in July 2013 and is a multi-tenant, cloud-based SaaS offering built on Tableau Server. The offering provides customers a powerful business intelligence platform that is easy to use, scalable, responsive, and secure without requiring them to manage physical infrastructure. The service is hosted in secure data centers and can be accessed by customers remotely using Tableau Desktop, a browser, or a mobile device. Customers connect to Tableau Online over the internet, and data transported to and from the service is encrypted using Transport Layer Security (TLS).

The features of Tableau Online are designed to enable users to collaborate, connect to data, create new analyses, and subscribe to dashboards directly from the browser. Tableau Online's key capabilities include:

- **Shared content**— Tableau Online provides an easy-to-navigate repository of shared visualizations and dashboards. Users can either use Tableau Desktop to create and publish their work to Tableau Online or connect to Excel and CSV files, databases, and popular web applications to start their data exploration right from the browser. Any user with appropriate security credentials can view and interact with the published content using Tableau Desktop, a web browser, or mobile application. The ability to publish dashboards and easily share impactful visual analysis increases awareness of business data and promotes improved decision-making. In addition, allowing others to interact with an analysis gives them deeper understanding of the information which leads to an improved grasp on the problem and hence greater confidence in the solution.
- **Shared data**—Just as Tableau Online is a platform for shared analysis, it is also a platform for shared data. Organizations can use Tableau Online to centrally manage data extracts and metadata, enabling knowledge sharing, efficiency, data consistency, and security. Tableau Online can create snapshots of data, or securely connect directly to databases in the cloud or stored on-premises. Business users or IT professionals can create rich data models, containing calculations, hierarchies, field aliases, sets and groups of interest, and publish them to Tableau Online to be shared across an organization. Others can use these models as a starting point while extending them to meet their own specific analytical needs. While centralized data models are not a pre-requisite for analysis in Tableau Online, they provide flexibility and increased productivity while maintaining control and security of data.
- **Universal access**—Tableau Online is designed to enable seamless sharing of content across desktop, mobile and Web clients. Once users author and publish analytical content to the server, people across an organization can consume it on different browsers and devices. Further, Tableau Online automatically detects the access device being used and adapts the content to take advantage of the device's capabilities including native touch experience, form factor, and security. Tableau Online allows users to actively subscribe to content for automatic delivery on their devices or pull content on demand.
- **Self-service collaboration**—Users can use Tableau Online to stay on top of their data anywhere. They can subscribe to dashboards to be delivered via email on a schedule, they can use data driven alerts to be notified when data meets a particular business condition, and they can collaborate on analyses directly in the browser.
- **Scalability**—Tableau Online's distributed multi-tier architecture allows it to scale to tens of thousands of users, across desktop, web, and mobile clients in order to meet the needs of some of the largest organizations globally.



- **Security**—Tableau Online is hosted in secure data centers and also leverages industry-leading cloud infrastructure. A robust security model is in place that provides authentication and authorization, along with data and network security.
- **Administration**—Tableau believes the ease of administering a system is tremendously important to its adoption. While Tableau Online's management interface is designed to be simple enough for a line-of-business user, an Application Program Interface (API) is also provided to allow administrators to automate routine management tasks.

2. INFRASTRUCTURE

Tableau Online is hosted in SOC 2 audited enterprise-class data centers that have the following features:

- N+1 power and cooling infrastructure
- Multi-level physical security that includes building access control, alarm systems, and video surveillance
- 24x7 security monitoring and support
- Environmental monitoring including fire detection and suppression systems
- Internet connectivity available from diverse providers

By leveraging colocation and top-tier cloud providers, Tableau can expand data center and network capacity as demands increase.

In addition to the headquarters in Seattle, Washington (U.S.) the company has key technology operations in the following locations:

- Santa Clara, California (U.S.) – primary data center
- Tukwila, Washington (U.S.) – backup data center
- Dublin, Ireland (EMEA) – primary data center
- Munich, Germany (EMEA) – backup data center
- Amazon Web Services (U.S. East and U.S. West)

The physical production infrastructure consists of servers, storage, and network devices that collectively form the foundation for the service. Infrastructure is deployed in a redundant configuration where possible and practical. Infrastructure is deployed using gold images that have unnecessary services disabled and are hardened following industry best practices. All logical access to infrastructure components is managed by Tableau personnel.



The production network is logically and physically separate from the corporate production network and is segmented to create boundaries between networks with different security requirements. Firewalls or load balancers are deployed at all ingress and egress points and are leveraged to restrict traffic to only the ports and protocols required for service operation. Load balancers inspect and restrict inbound traffic and distribute load across multiple front-end web servers. Wireless networks are not permitted in the production network.

Administrative access is restricted to a small number of trusted individuals that are authorized by Tableau senior management. Access is reviewed and approved on a quarterly basis. Remote access to the production environment is only permitted through hardened VPN gateways that require two-factor authentication.

All access is logged, and server, storage, and network infrastructure is configured to log to a central log collection service. The log collection service is leveraged for reviewing, reporting, alerting, troubleshooting, and retention.

3. SOFTWARE

Tableau Online is a multi-tenant, cloud-based SaaS offering built on Tableau Server. Tableau Online has many enterprise-class features including:

LIVE QUERY ENGINE

Tableau has developed a Live Query Engine that interprets abstract queries generated by VizQL into syntax understandable by popular database systems. For instance, the Live Query Engine can compile VizQL statements into optimized SQL and MDX syntax understandable by database systems made by Microsoft, Oracle, IBM, EMC, SAP, Teradata and many other database vendors. As a result, Tableau's technology provides customers with a way to increase the accessibility, usability, and performance of their databases. It also gives them a uniform user interface for interacting with databases of diverse vendors, formats and sizes.

It is common for traditional business intelligence products to import data from the organization's database systems. In contrast, Tableau's Live Query Engine enables customers to query databases without having to first import the data into Tableau's products. Queries generated by the Live Query Engine are interpreted and run by the database, with only the results of each query rendered. This approach offers many advantages for customers:

- **Data consistency**—Copying data can cause people to work with out-of-date information. Further, each copy of the data may represent information at different times leading to inconsistency. With the Live Query Engine, customers do not need to create additional copies of their data.
- **Avoids data movement**—Moving and loading data is often time consuming and expensive. With Live Query Engine, customers do not need to move data in order to use Tableau products.



- **Scalability**—Many database vendors provide massively parallel implementations of databases that provide scalable data access to large data sets. These systems can scale in various ways including scaling the number of tables in the database, the number of records in each table, the number of columns in each record, the number of users, and the number of active queries. These systems also provide powerful computation capabilities for very large data volumes. Tableau's Live Query Engine allows businesses to leverage their investment in scalable data infrastructure.
- **Security**—Transferring data out of a database causes customers to lose the security and permissions models associated with that data. Using Tableau's Live Query Engine, customers can leverage the security and permissions models specified in their database systems.
- **Flexibility**—The database industry consists of multiple vendors with competitively differentiated products. Tableau's Live Query Engine enables customers to choose the appropriate technology for their business.

Tableau focuses on ensuring its software is compatible with popular database platforms and that the Live Query technology works with the most recent releases of those platforms. The Live Query Engine within Tableau Online is currently compatible with MySQL, Amazon Redshift, Microsoft SQL Server, Google BigQuery, Snowflake, and SAP HANA, among many others. In cases where data sources published to Tableau Online site connect to underlying data that Tableau Online cannot reach directly, Tableau's new offering, Tableau Bridge, can be used to keep those data sources up-to-date. Some of the data sources that Tableau Bridge supports are Oracle, Splunk, etc.

IN-MEMORY DATA ENGINE

Tableau has also developed a fast In-Memory Data Engine that allows customers to analyze large amounts of data independently of database systems. This option is valuable to customers as it enables them to overcome the following challenges:

- **Lack of databases**—Customer data may not be stored in databases. For instance, data is commonly stored in text files, spreadsheets, logs, or other formats.
- **Limited performance**—Customer data may be stored in databases that are too slow for interactive analysis or reporting.

For these situations, Tableau has developed an In-Memory Data Engine, with the following unique combination of attributes that enable fast calculations:

- **Column-based storage**—Tableau's In-Memory Data Engine is based on a column-oriented format which is able to reduce input/output on analytical workloads. It employs a simple disk-based representation of data that leverages the operating systems' management of virtual memory.
- **Compressed data representation**—Tableau's technology utilizes compression aimed to keep the memory footprint as small as possible.



- **Optimization for in-memory analytics**—Tableau's In-Memory Data Engine is optimized for analyzing data in random access memory, or RAM. For example, leveraging RAM-based indices Tableau's technology is more efficient than those using disk-based indices.
- **Architecture aware algorithms**—Tableau's technology is designed to achieve high-throughput on modern processors. Key algorithms, such as grouping and aggregation, are designed to be cache and multi-core aware and adaptive to different hardware characteristics.

By importing data into Tableau's In-Memory Data Engine, customers can get many of the benefits of a fast database without the complication, cost, and delay of a new investment in databases systems. Tableau's In-Memory Data Engine is designed to be used on commodity hardware such as personal computers, laptops, and servers that are common in companies today.

HYBRID DATA ARCHITECTURE

Tableau has designed the Live Query Engine and In-Memory Data Engine to work in harmony. This hybrid approach gives customers flexibility and power. For instance, customers can use the In-Memory Data Engine to import a sample of data from a large database, and then after designing an initial visualization that answers a question, run the visualization against the entire database using the live query option. As another example of the hybrid approach, customers can integrate live data with in-memory data in a single visualization or dashboard. Both of these examples can be achieved by business users without any programming or scripting.

4. PEOPLE

COMPANY CODE OF BUSINESS CONDUCT AND ETHICS

Tableau Software is committed to maintaining the highest standards of business conduct and ethics. "We Are Honest" is among the company's core values. Honesty is not simply a Board of Directors issue or a management issue; it is an everyone issue. The Code of Business Conduct and Ethics is an outgrowth of Tableau's commitment to honesty, and reflects the business practices and principles of behavior that support this commitment. It is the responsibility of every employee, officer and director of Tableau to read, understand and comply with the spirit, as well as the letter, of the Code. Anyone who violates this Code may be subject to disciplinary action, up to and including termination of employment, and in appropriate cases, civil action or referral for criminal prosecution.

BOARD OF DIRECTORS AND AUDIT COMMITTEE PARTICIPATION

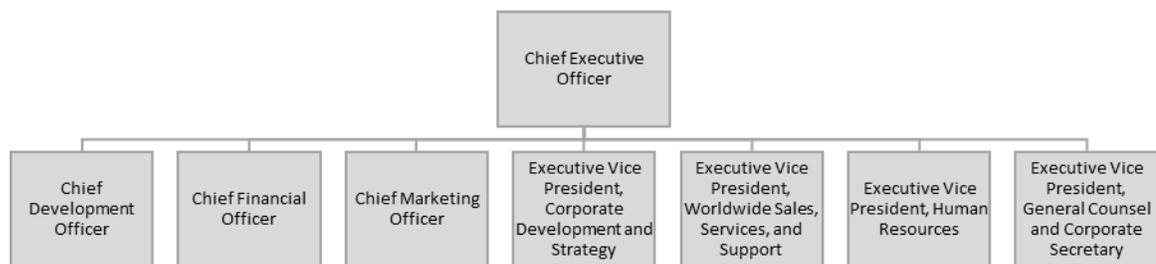
Tableau Software has an active Board of Directors that meets at least quarterly. The Board of Directors has three standard committees that assist in oversight of key decisions, controls, and processes: the Audit Committee, the Compensation Committee, and the Nominating and Corporate Governance Committee. The Board of Directors provides oversight of, and strategic guidance to, senior management.



Tableau's commitment to an effective system of internal controls starts with the company's Audit Committee. The Audit Committee is responsible for the appointment, compensation, retention, and oversight of the work of any registered public accounting firm employed by Tableau to assist the Board of Directors' oversight of (1) the accounting and financial reporting process of Tableau, which includes certain financial information supplied by Tableau in connection with the audit of the financial statements of Tableau, (2) the qualifications and independence of Tableau's independent auditor, and (3) the performance of Tableau's internal audit functions and independent auditors specific to Tableau operations. The Audit Committee, which is made up of independent directors, meets at least once per quarter.

ORGANIZATIONAL STRUCTURE

Tableau's top-level organizational structure is depicted in the figure below:



The executive-level organizational structure is departmentalized and under each department head, various groups within Tableau provide organizational support for Tableau Online services. The executive level organization is made up of the following key departments:

SALES

Led by the Executive Vice President of Worldwide Sales, Services, and Support, the Sales personnel are responsible for the sales of Tableau's software and services. The sales organization includes professional services and training teams that work with customers of all sizes to support implementations. These efforts include in person and phone-based engagements, webinars, in-person training, and free on-demand training.

The sales organization also has a dedicated Technical Support team. This team interfaces directly with customers to provide technical support and assist with questions and issues.

MARKETING

Led by the Chief Marketing Officer, Tableau's marketing organization focuses on establishing company brand, generating awareness, creating leads, and cultivating the Tableau community. The marketing team consists primarily of product marketing, programs, field events, channel marketing, corporate communications, and website teams. The marketing team leverages both online and offline marketing channels such as events and trade shows, seminars and webinars, third-party analyst reports, whitepapers, case studies, blogs, search engines, and email marketing.

The marketing team is responsible for the logistics of hosting various events, including the company's annual customer conferences and regional events, as well as providing web-based community tools and supporting customer-driven user groups.



DEVELOPMENT

Led by the Chief Development Officer, Tableau's research and development organization, with employees located in Seattle, Washington, Kirkland, Washington, Menlo Park, California, Austin, Texas, Vancouver, British Columbia, and Munich, Germany is primarily responsible for design, development, testing, and certification of Tableau products and core technologies. The Online Operations team within the research and development organization also runs and manages the Tableau Online Service. The company invests substantial resources in research and development to drive core technology innovation and to bring new products to market.

Tableau delivers multiple new versions of the software with significant new capabilities over the course of each year. In addition, there are monthly maintenance releases to address product defects and security issues in accordance with the support policy. For Tableau Online, major releases are deployed multiple times per year and in addition, weekly or even more frequent releases (as needed) are shipped to address product defects, security issues, service optimizations, and also incremental functionality. The release cycles enable Tableau to be responsive to customers by delivering new functionality on a frequent basis. Priorities are established for the development organization by collaborating closely with Tableau customers, community, and employees.

ONLINE OPERATIONS

The Online Operations team provides support for the external customer-facing IT infrastructure. This includes deployment, monitoring and ongoing administration of networking, server, storage, and security infrastructure. This team supports the infrastructure that hosts the Tableau Online service and performs all code deployments.

GENERAL & ADMINISTRATIVE AND TECHNICAL OPERATIONS

Led by the Chief Financial Officer, Tableau's General and Administrative (G&A) and Technical Operations groups support the Sales, Marketing, Development, Human Resources (HR), Legal, and Marketing groups. The G&A group is comprised of the Finance, Tax, Internal Audit, Customer Operations, and Office Facilities departments. Responsibilities of these departments include, but are not limited to: corporate governance and compliance, accounting, commissions, payroll, equity administration, tax, travel, and corporate events.

CUSTOMER OPERATIONS

The Customer Operations team provides support to the sales organization. The team provides support for order processing, licensing, pricing, renewals, Request for Proposal (RFP) responses, and several other pre- and post-sales operational functions.

TECHNICAL OPERATIONS

Technical Operations is responsible for delivering efficient and effective on-demand services to Tableau business units and customers in a manner that is consistent with quality expectations through technology, refined processes, and collaboration with business partners and customers. The Technical Operations group is comprised of the following departments: Information Technology, Enterprise Applications, and Information Security. Responsibilities of these departments include, but are not limited to: help desk, incident and change management, management of networking, office build-outs, support of internal systems, customer order processing, internal training, and security.



INFORMATION TECHNOLOGY

The Information Technology team provides support for the internal IT infrastructure that supports the business. This includes deployment, monitoring, and ongoing administration of networking, server, workstation, and security infrastructure. In addition, the team also plans and deploys infrastructure required for expansion into new and within existing office locations. This team is also responsible for the change management function and operates the Systems Operation Center that provides enterprise monitoring and triage.

ENTERPRISE APPLICATIONS

The Enterprise Applications team provides development and technical support for the applications used to run the business. The team also developed and maintains the authentication code used by Tableau Online, which provides single sign-on into the customer support portal.

INFORMATION SECURITY

The Tableau Information Security team provides direction and oversight for all Information Security-related matters across the organization. The team is responsible for developing and maintaining security policies and standards that apply across the enterprise. This includes policies and standards that apply to the operation of the Tableau Online service. The security team also provides support for the company's risk and compliance programs and reviews systems and processes for compliance with company policies, standards, and procedures. In addition, the security team provides support for security testing, incident response, security awareness, and other security functions.

HUMAN RESOURCES

The HR organization is primarily responsible for recruiting and retaining talent for the organization. Specific duties include hiring, training and development, performance appraisals, advancement, and termination.

HR is also responsible for new hire training on company policies and procedures. Employees are required to sign the company Non-Disclosure Agreement and other policy and employment related documents prior to being provided access to company resources. HR also facilitates an annual performance appraisal process for all employees.

LEGAL

Legal supports the company broadly, including negotiation of customer and vendor contracts, development and implementation of compliance programs, including privacy, protection and management of intellectual property assets, advise on human resources and recruiting functions, support of international and domestic corporate filings and litigation and dispute management.



5. DATA

Customers can leverage Tableau Online to analyze and visualize a wide variety of data from multiple data sources. Data from connected data sources (Live Query) may be processed, but is not stored within the Tableau Online infrastructure. Customers may choose to upload data extracts to Tableau Online for analysis. It should be noted that data uploaded to Tableau Online is not encrypted at rest. Because of this, customers should not upload data such as credit card data or protected health information that has legal or regulatory requirements for encryption. Customers are responsible for determining the data that will be exposed through the service and for managing the permissions that determine which users have access to their data.

MEDIA HANDLING

Media that is no longer needed is stored securely in an SOC 2 audited data center until it is either picked up by a licensed recycler that provides a certificate of destruction for each item received or wiped using a utility that overwrites media to current Department of Defense standards. Media may also be physically destroyed.

6. PROCESSES AND PROCEDURES

CONTROL ENVIRONMENT

SECURITY

Tableau understands that data is among one of the most strategic and important assets an organization has. With this in mind, ensuring Tableau Online is secure is a top priority.

Tableau Online is a multi-tenant solution and does not provide dedicated environments for each customer. Each customer is provisioned with one or more sites within the service, and the application enforces segregation of data and security between sites. All data uploaded or connected to the service is programmatically linked to a site.

All transactions are performed over TLS, which protects sensitive data in-transit, including user credentials, data extracts uploaded to the service, and data source connection information. User passwords are salted and hashed and data source connection credentials are strongly encrypted. Encryption keys are securely stored and access is appropriately restricted.

Tableau Online provides authentication and authorization options that allow customers to establish controls specific to their organization's requirements.

ACCESS CONTROL

Role-based access control is supported by Tableau Online to assign permissions to content. Permissions can be configured per user or group in a manner that restricts access to only the functions needed for any particular role. Roles are assigned a set of permissions and associated with content to manage how users and groups can interact with objects such as projects and published content.



Access to published content such as data sources, workbooks, and views can be managed via roles that include permissions such as view, create, modify, and delete. Permissions can be assigned to projects which control the default permissions for all workbooks and views published to the project. Administrators can create groups into which users are placed to make permission management easier.

Roles provide a default permission structure to differentiate users. For example, a user may be assigned the role of interactor for a particular view, but not for all content. And, a user with a viewer role can see a particular view but does not have the ability to change the view. There are over 20 parameterized customizations available to help manage object security. These role-based permissions do not control what data will appear inside of a view.

USER ACCOUNTS

Tableau Online establishes one or more unique sites for each customer. A unique username is assigned to each user and the username in combination with a user-selected password is used to authenticate to the service. A user account may be associated with one or more sites. Customers may also choose to federate authentication to their own identity provider allowing them additional controls over the accounts with access to their site.

The customer is responsible for all user account administration within the service. The customer designates one or more administrators that are responsible for carrying out administrative functions such as administration of users, groups, and permissions, as well as configuration of data sources, reporting, and other site-wide configuration options.

Tableau user-selected passwords must meet complexity requirements, currently eight characters in length and mix of letters and numbers. Authentication routines mask all passwords and provide no feedback for failed attempts. Accounts lock after a maximum of twenty failed attempts and lock out until a password reset is completed. If the customer has federated their authentication, these settings are controlled by the customer's identity provider.

For non-federated accounts, newly provisioned users receive an email with a link that allows them to set a password and setup their account. Users can initiate a password reset if they forget their password, but must have access to the email account assigned to the account. Customer-designated administrators can reset passwords for users within their site.

AUDIT LOGS

Tableau Online logs all user authentication activity and makes this information available to customer-designated administrators. User activity within the service is also logged and available for review.



HUMAN RESOURCES PROCESSES

HIRING PROCESS

Written job descriptions that outline primary responsibilities, competencies, and qualifications are drafted for each position within the company. These descriptions are reviewed periodically and updated as necessary by department managers. Tableau's hiring practices screen individuals for competency and trustworthiness, and individuals are hired and retained to develop and deliver Tableau's solutions at the highest level of quality. Corporate hiring and sensitive contract practices may require acceptable character references, validation of curriculum vitae or resume, confirmation of academic and professional qualifications, verification of identity, and satisfactory results of criminal and credit history checks.

NEW EMPLOYEE TRAINING

All employees are required to participate in the new hire orientation (Tableau University). This program structures activity around Tableau's general operating practices, policies, and procedures, and assists employees in becoming acclimated to Tableau's business philosophy. These activities include understanding the overall Tableau mission and core values, departmental operation practices, and individual performance objectives. HR also requires employees to sign a Non-Disclosure Agreement and acknowledge the company's security guidelines prior to gaining access to sensitive information within the secured corporate environment.

PERFORMANCE REVIEWS

HR requires that performance reviews are completed annually to monitor that employees' knowledge remains current and they are aware of both new and updated policies and procedures.

STAFF DEVELOPMENT

Staff are expected to remain current in their field of expertise through a combination of self-study and formal training opportunities.

TERMINATIONS

Tableau has a written policy that addresses voluntary and involuntary employee terminations. Exit interviews are conducted and company property is collected. Procedures are in place to collect company materials, deactivate card keys, and revoke physical and logical access.

TECHNOLOGY MANAGEMENT

POLICIES AND PROCEDURES

Administrative and operational controls for each major functional area are documented in policies, standards, and procedures. These documents are updated periodically and distributed to appropriate personnel. These manuals include, but are not limited to:



SECURITY POLICIES

Tableau maintains a comprehensive set of Information Security policies that closely align with industry-accepted security best practices. The Information Security Policy is reviewed at least annually. Procedures are updated as systems are changed/updated. Policies are maintained on the company's intranet, which is accessible to all company employees. Additionally, employees with responsibilities to for development or support of the Tableau Online service are required to review and acknowledge the company's security guidelines which summarize and link to the Information Security policies.

SYSTEM GUIDES

The Tableau Online system guides describe the functional aspects of the application and modules. These guides include the following information:

- Application Functionality
- Technical References
- Applications Data Dictionary
- System Reports

The system guides are intended for internal users and support personnel.

STANDARD OPERATION PROCEDURES

The Standard Operating Procedures provide documentation on functional operating procedures and standards for various functions including:

- Implementation
- Operations
- Architecture
- Research and Development

Operating manuals are intended to provide end users instruction for the day-to-day operations of the Tableau Online application. Activities such as how to implement and service customers and how to manage application development and deployment are covered in these guides.

SYSTEM DOCUMENTATION

The system documentation includes general information and procedures about the hosting of the Tableau Online service. It helps enable technical support staff in all areas to manage and operate the various components of the infrastructure in an efficient manner. The documentation includes information about the system's architecture, operation, monitoring, support, and maintenance.



RISK MANAGEMENT

An annual risk assessment of Tableau, including Tableau's Technical Operations organization, is performed. The process considers both internal and external risk factors and items identified in this process are ranked based on inherent risk and other situational factors. The results of the assessment are reviewed with the Board of Directors, Technology Operations leadership team, and senior leadership from other teams as appropriate. Internal control testing is planned based on the results.

MONITORING

PERFORMANCE AND CAPACITY

All infrastructure and services are monitored for performance and availability. Internal tools are deployed that monitor infrastructure health and performance. External monitoring is also performed using third-party solutions that simulate customer transactions and measure user experience. Both internal and external monitoring solutions track service health, and performance over time and are configured to generate alerts when defined thresholds are exceeded. Alerts are sent to the Service Operations Center for triage. The Service Operations Center either remediates or engages the appropriate operations team to resolve. Performance and health data is regularly reviewed for capacity planning purposes.

SECURITY

A third-party security service is used to continually scan the Tableau Online service for network and application vulnerabilities. Alerts are generated if issues are detected. Issues are triaged to verify legitimacy (rule out false positives) and determine risk. Issues are prioritized for remediation based on risk.

AUDITING

Management performs routine checks via process verification and reporting to ensure that policies and procedures are being followed. Management also reviews operational statistics and status reports on a weekly basis. Issues are reviewed weekly as a part of the problem management process. Additionally, managers are expected to work closely with their staff to ensure that processes and procedures are continually improved.

INFORMATION AND COMMUNICATION

CUSTOMER COMMUNICATIONS

Tableau leverages several communication channels to communicate with customers. Email is often used to communicate time-sensitive information. Customers may subscribe to automatically receive operational information such as release information and service maintenance notifications. Customer-designated site administrators automatically receive notifications about system maintenance and other service-impacting events. Tableau also maintains a website (<https://trust.tableau.com>) that is used to communicate service status and other important information to customers.

Customers are provided access to an online portal that can be used to submit requests/issues and track to resolution. Internally, Tableau uses a bug-tracking tool to track feature requests/issues that require code changes.



INTERNAL COMMUNICATIONS

Tableau employs various methods of communication to help employees understand their roles and responsibilities and to communicate significant events. The methods of communication include email, content posted to the company intranet, department phone trees, etc. Various management teams also hold regular staff meetings to share information, track project status, and receive updates.

PHYSICAL SECURITY

PHYSICAL SECURITY CORPORATE OFFICES

Tableau maintains building access control that restrict access at all entry points at all office locations with Development or IT Operations staff. Access is only provided to company employees and third parties with company approval. These facilities have a reception area that is staffed during business hours. Guests are required to sign-in and out with reception and records of visitors are maintained for review.

PHYSICAL SECURITY DATA CENTER FACILITIES

All systems that process or store production data are hosted in colocation facilities that have SOC 2 Type 2 audit reports and have strict policies regarding physical access. The servers at the colocation facilities are located in locked areas that are accessible only by a limited number of authorized users. All facilities have mantraps, maintain video surveillance, have vehicle barriers, and require all equipment transported in or out of the facilities to be inspected. Additionally, these facilities have alarm systems and security staff that patrol and monitor the environment 24x7. Facilities have card key systems and/or biometric controls that restrict access at all entry points. All guests must be pre-authorized and accompanied by an authorized individual at all times.

PHYSICAL SECURITY ACCESS PROCEDURES

Tableau maintains processes for granting and revoking physical access to office locations and production data centers. Access to production data centers is tightly controlled and must be approved by the Tableau management assigned responsibility for the facility. Data center personnel require verification of identity before granting access. Access is reviewed on a quarterly basis. Access is revoked in a timely fashion when individuals change roles or exit the company.

PHYSICAL SECURITY DEVICES

Building access control systems are in place and restrict access to company locations with Development or IT Operations staff and at all data center facilities. These systems record all physical access and logs are retained for a minimum of one year. Video surveillance systems are deployed in production data centers and are placed at all ingress and egress points.

ENVIRONMENTAL SAFEGUARDS

REDUNDANCY

Tableau Online services are hosted in enterprise-class data centers that have redundancy built-in into all critical services. Data center providers have contracts with suppliers to ensure they can maintain operations in the event of a sustained power outage.



POWER

Production data centers have utility power connected to Automatic Transfer Switches (ATS), which are also attached to redundant stand-by diesel generators. Uninterruptable Power Supply (UPS) systems are installed, which condition power-to-power distribution units and are capable of carrying the load of all data center infrastructure, including environmental equipment, in the event of a temporary power loss. Power Distribution Units (PDUs) are also installed and provide a physically integrated and electrically redundant system for source selection, isolation, distribution, monitoring, and control of power to systems in production data centers. In the event power is lost, loads are carried by the UPS system until generators engage and pick up the load. Generators and UPS units are regularly inspected and tested to ensure they are fully operational.

CLIMATE AND TEMPERATURE

Multiple Heating Ventilation and Air Conditioning (HVAC) units are installed to ensure acceptable operating temperatures are maintained. HVAC units and temperatures are monitored and generate alerts to data center staff if not operating within acceptable limits. HVAC units are connected to both normal and backup electrical systems for redundancy.

FIRE DETECTION AND SUPPRESSION

Sprinkler systems in production data centers are implemented with double interlock pre-action and detection systems. Dry chemical or clean agent fire extinguishers are also located throughout the data center. The fire suppression system is monitored 24x7 by an external alarm monitoring company, which will dispatch the local fire department in the event of an alarm.

MAINTENANCE

Routine maintenance is performed on all infrastructure with maintenance requirements. This includes, but is not limited to, UPS systems, HVAC units, fire suppression and detection systems, and generators.

APPLICATION SECURITY

Tableau's Secure Software by Design Policy requires that application controls are in place to ensure the security of the resulting product. Checkpoints have been added to the development process to ensure security requirements are gathered, and code is peer-reviewed and undergoes a series of manual and automated security testing prior to release. For web components, design must ensure the OWASP top ten issues are addressed.

A Product Security team performs security reviews, runs security tests against product builds, triages product vulnerabilities, and champions security best practices within the Development organization. There is a dedicated Security Program Manager role responsible for prioritizing delivery of all security fixes.



Several other security practices are employed within the development organization including:

- Development and test environments are physically and logically separate from the production environment. Production data is not used in development environments and is not permitted outside the production data center.
- System build activities are logged as are all changes to source code. Logs are centrally collected for analysis, reporting, and alerting.
- Support of production systems is performed by a dedicated team of Engineers that is separate from the Development group. Code deployments are performed through automation after approvals.
- Strong session keys are used to prevent session hijacking. Replay attacks are prevented through a combination of encryption rotating session keys which expire.
- Standard libraries are used to sanitize all user input to prevent SQL injection attacks and other issues associated with unsanitized input.
- Security is enforced at the application level. Authentication is required for all access to the service and accounts are assigned roles that define their access privileges.

AUDITING

A control framework has been established for operational and security elements of Tableau Online to ensure they are operating in compliance with the company's policies and procedures. The framework also supports the achievement of the SOC 2 objectives. Reviews are conducted regularly by the Information Security team. Reviews of all administrative access to the production environment are conducted quarterly, and management reviews and approves. Any deficiencies identified are reviewed with relevant management and prioritized for remediation. Failures in account management practices result in immediate corrective action.

APPLICATION RELEASES

Four functional teams (Product Management, Development, QA, and Online Operations) work closely together following a formal Systems Development Life Cycle (SDLC) to maintain and enhance the features of the Tableau Online application. The SDLC governs the general systems development and maintenance release process for the Tableau Online application. Major releases are deployed multiple times per year, and in addition weekly or even more frequent releases (as needed) are shipped to address product defects, security issues, service optimizations, and also incremental functionality. The Tableau application SDLC consists of the following phases:

- **Requirements Definition:** Includes selecting and prioritizing features, bug fixes, and strategic technical issues which will be candidates for inclusion in the next release and providing a supporting business case.
- **Requirements Analysis:** Defines the details of the proposed requirements, develops alternative proposals for addressing these requirements, and develops estimates for each alternative. Management agrees to an achievable set of requirements for the release and schedule.



- **System Design:** Includes creating the system architecture and feature design artifacts necessary to support the implementation of the release requirements. The design needs to be of a sufficient level of detail such that developers can create a physical implementation of the design without having to perform additional design/design-like activities. Management revises estimates and adjusts the feature list and/or schedule if necessary.
- **System Implementation:** Includes creating the physical implementation of the solution in code and testing the newly developed or changed code at the unit level. Engineering develops all supporting artifacts such as automated testing, database migration scripts, test plans, and software documentation. QA executes basic validation tests in an integrated environment.
- **System Test:** Determines that the solution meets all of the functional and performance requirements. Testing consists of functional testing, regression testing, and performance testing. Training performs internal training on the new features.
- **Deployment:** Includes planning the software installation, testing, and executing the installation of the production and all other applicable environments such as sales and training.
- **Operate:** Includes supporting the operation of the solution in the production environment and receiving and responding to customer issues. Production Operations monitors and measures system performance and issues. Engineering Management carries out lessons learned activities and the feedback is applied to future releases.

Change requests and bug reports are logged in the ticketing system. If the change is approved or the bug is validated, the issue is sent to Development and QA. These groups will analyze the problem and determine whether a patch is appropriate based on issue priority and the impact to the system. Code reviews are performed if it is determined that critical pieces of the code base need to be modified.

CHANGE MANAGEMENT

Tableau has a formal change management process that is required for all changes to production systems and applications. Changes are captured in the change management system, and each change requires notification, testing, and roll-back procedures to be documented. Changes getting deployed to the Tableau Online production environment are reviewed and approved in a meeting that occurs daily. Approved changes are rolled into a package that typically deployed weekly, or in some cases, immediately after approval. There are three classes of changes:

- **Standard**—Follow all processes and require approval in advance of implementation.
- **Recurring**—Follow all processes, but have pre-approval for implementation outside of change freeze windows.
- **Retroactive**—Apply to changes that are made in order to remedy a service impacting issue. Are reviewed and approved post implementation at the next change control meeting.



PROBLEM MANAGEMENT

Tableau has a formal problem management process. All service impacting issues are documented and reviewed by management on a weekly basis. Root cause is documented and any corrective actions required to remediate and prevent recurrence are tracked to completion. Items are not removed from the review process until all related corrective actions are completed.

INCIDENT RESPONSE

Tableau has a documented Incident Response Plan. The plan covers all types of incidents that require triage and notification, including security incidents. The Incident Response Plan includes the following information:

- Goals
- Makeup of the incident response team
- Roles and responsibilities for incident response team
- Incident declaration criteria
- Incident severity assignment
- Incident response process
- Communications plan

When an incident is suspected, the incident response lead is called upon to make a determination on whether to declare a formal incident. Once an incident has been formally declared, the issue is evaluated and a severity is assigned. Based on the severity, the appropriate actions are taken and the appropriate communication plan is put into action.

As a part of the incident response process an investigation may be initiated. Investigation activities are led by the Information Security Manager and other teams are engaged as necessary. Efforts are made to document chain of custody and preserve evidence in a manner that is admissible in court.

Service impacting issues are reported on the company website at <https://trust.tableau.com>. Additional communication to affected customers is done as appropriate.

BACKUP AND RECOVERY

The Tableau Online service, including databases, storage and other infrastructure, is backed up to disk no less than daily. A secondary copy of the backup is securely transported over the network to a backup data center. This allows the service (including customer sites, configuration, and data extracts uploaded to the service) to be brought back online in the secondary data center in the event the primary data center becomes unavailable.

Backup job status is monitored, and if failures are detected operations staff is notified for follow-up and resolution.



B. PRINCIPAL SERVICE COMMITMENTS AND SYSTEM REQUIREMENTS

Tableau designs processes and procedures for Tableau Online that meet customer, legal, regulatory, and organizational objectives. Objectives are based on service commitments to customers, laws, and regulations that govern the operation of the service, and the financial, operational, and compliance requirements established for the service.

Tableau maintains a comprehensive set of IT controls which are regularly audited by independent firms to ensure the company is meeting its compliance obligations. Tableau is in compliance with Sarbanes Oxley (SOX) and has worked with a certified public accounting firm to perform an in-depth audit of the control objectives and activities for Tableau Online. The control procedures for the Tableau Online service have been verified in a SOC 2 Type 2 report covering controls at a service organization relevant to security and availability and the International Standard on Assurance Engagements (ISAE) No. 3000 (Revised). Tableau Software, Inc., has certified with the Department of Commerce to participate in the EU-U.S. Privacy Shield Framework (the Privacy Shield).

Security commitments to user entities are documented and communicated in the Tableau Online Support Policy and other customer agreements, as well as in the description of the service offering available online. Security commitments are standardized and include, but are not limited to, the following:

- Industry-standard physical and logical security controls designed to prevent unauthorized access to the infrastructure and services that support Tableau Online
- Robust role-based security model to secure access to data and visualizations hosted within the Tableau Online service
- Routine backup (not less frequently than once per day) of all customer data
- All storage, backup and archival media containing customer data is:
 - Physically located in a secured facility
 - Logically separated from any other customers' data

Tableau establishes operational practices that support conformance with security commitments, relevant laws and regulations, and other system requirements. Practices are documented in Tableau's system policies and procedures, system design documentation, and contracts with customers. Information security policies define organization-wide requirements for protecting systems and data. Policies include coverage for how the service is designed and developed, how the system is operated, how the internal business systems and networks are managed, and how employees are hired and trained. In addition to these policies, standard operating procedures have been documented that define how to carry out specific manual and automated processes required in the development and operation of Tableau Online.



C. COMPLEMENTARY USER ENTITY CONTROLS

Tableau Software's Tableau Online System was designed under the assumption that certain controls would be implemented by the user entities for whom it provides its Tableau Online System. In these situations, the application of specific controls at these customer organizations is necessary to achieve certain control objectives included in this report.

This section describes additional controls that should be in operation at the customer organizations to complement the controls at Tableau Software. User auditors should consider whether the following controls have been placed in operation by the customers.

Each customer must evaluate its own internal control structure to determine if the identified customer controls are in place. Users are responsible for:

Complementary User Entity Controls	
General	
1	Reading and adhering to the terms and conditions outlined in their service agreement and must abide by the Tableau Online Terms of Service.
2	Ensuring the accuracy of the data provided to Tableau Online.
3	Ensuring the accuracy of any reports, visualizations, or other representations of their data created within Tableau Online.
4	Ensuring the proper configuration, patching, and security settings applied to systems and browsers used to access Tableau Online.
5	Configuring the controls available within Tableau Online to meet their compliance requirements such as SOX, ISO 27001, FISMA, etc.
6	Reviewing service level and incident reports provided by Tableau Software, as applicable, and initiating any clarification or follow-up based on requirements in the service agreement.
7	Notifying Tableau of any security breach that may impact Tableau's services.
Account Management	
8	Using strong passwords and for ensuring credentials used to access the service are protected and not shared.
9	Ensuring users that are assigned roles with administrative access are properly authorized.
10	Ensuring that access granted to sites, data sources, workbooks, dashboards, etc. is properly authorized and assigned in accordance with their policies/procedures.
11	Ensuring users are not assigned permissions that violate any segregation of duties obligations they may have.
12	Performing all account administration activities, including adding and removing users with access to their site.
13	Revoking access promptly for users that have exited their organization and should periodically review access granted to all individuals to ensure it is still appropriate.



Complementary User Entity Controls	
Data Management/Security/Classification/Retention	
14	Ensuring that data exposed through Tableau Online is done so in accordance with regulatory, legislative, and any other obligation they have to protect the data.
15	Configuring their site and securing access to their data sources and underlying data per their security requirements.
16	Maintaining and retaining underlying data that is connected to and accessed by Tableau Online.
17	Ensuring that connected data sources secure data in-transit per their requirements.
18	Ensuring no data that requires encryption at rest is uploaded to Tableau Online.
19	Performing any changes made to data stored within Tableau Online.
20	Determining the classification and security requirements for data connected or uploaded to Tableau Online. They are also responsible for ensuring any data connected or uploaded to Tableau Online is secured in compliance with their data classification/security policies.
21	Removing or periodically exporting data to meet their data retention requirements.

