Tableau Premier Support

Installation Guidance for Tableau Server 8.0

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Architecture Overview

Tableau Server 8: Architecture Overview

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Tableau Server 8: Data Server

Provides central management and storage for data extracts and database pass-through connections that you create and publish as part of a Tableau Server data source.

It includes the data extract itself, information for a live database connection, as well as custom calculations, groups, or sets.

Benefits:

- Central source of the truth
- Save server space and processing time - one data source extract can be used by many workbooks.
- Less network traffic - Extract refreshes can be scheduled per-extract instead of per-workbook, and when a workbook using a Tableau Server data source is downloaded, the data extract stays on the server.

To create a Tableau Server data source, all you have to do is connect to data in Tableau Desktop, configure the connection, add any customized fields, and then publish to Tableau Server.

For more information, http://downloads.tableausoftware.com/quickstart/feature-guides/data_server_admin.pdf

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Tableau Server 8: Five Configurable Processes

Process	Multi-threaded	Architecture	Performance Characteristics
Application Server	Yes	32-bit	Only consumes noticeable resources during infrequent operations like publishing a workbook with an extract or generating a static image for a view. Process load can be created by browser based interaction and by the command line tool "tabcmd."
Vizqlserver	Yes	32-bit	Consumes noticeable resources during view loading and interactive use from a web browser. Can be CPU bound, I/O bound, or network bound. Process load can only be created by browser based interaction. As a 32-bit process, vizqlserver can run out of process memory over a certain number of simultaneous user sessions.
Dataserver	Yes	32-bit	This process is only a proxy so it's normally bound by network, but can be bound by CPU with enough simultaneous user sessions. Will apply lighter load characteristics than Vizqlserver under most circumstances. Load can be created by browser and Tableau Desktop based interaction and refresh extracts jobs for workbooks with dataserver connections.
Backgrounder	No	32-bit	Can consume 100% of a single core on a machine, but work can also be I/O bound, or network bound. Overall load varies with number of background jobs scheduled. Load can be created by browser based interaction, via "Run Now" affordance in the server UI or "tabcmd," and by scheduled tasks. The Backgrounder, as a single-threaded process, will not normally run out of process memory.
Data Engine	Yes	64-bit	A single instance can consume all the CPU resources on a machine. Each thread can be CPU bound, I/O bound, or network bound. Only loaded during use by Vizqlserver processes. 64-bit binary used only on 64-bit operating systems.

For a more detailed description of each process type, how these relate to Improving Server Performance, see the Tableau Administrator Guide http://onlinehelp.tableausoftware.com/current/server/en-us/processes.htm

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Tableau Server 8: Hardware and Technical Specifications

Tableau Server is not a simple web server nor a single process. It is an entire collection of software processes that operates together in order to provide dynamic data rendering. It is important to remember that even for simple views potentially large amounts of data may be requested from your data sources and compiled into the visual models published in each view.

See Technical Specifications - Tableau Server at http://www.tableausoftware.com/products/server/specs to find out the minimum system requirements and notice the wide variance from 'Very small deployments' to 'Enterprise deployments.'

Server admins familiar with simple web servers may not immediately realize how much work is being done behind the scenes and it is important to understand exactly what happens when a view is requested and to place the Tableau Server on hardware in alignment with your expectations.

See Tableau Server Performance at http://onlinehelp.tableausoftware.com/current/server/en-us/perf.htm to get a feel for how Tableau Server should be expected to perform and scale.

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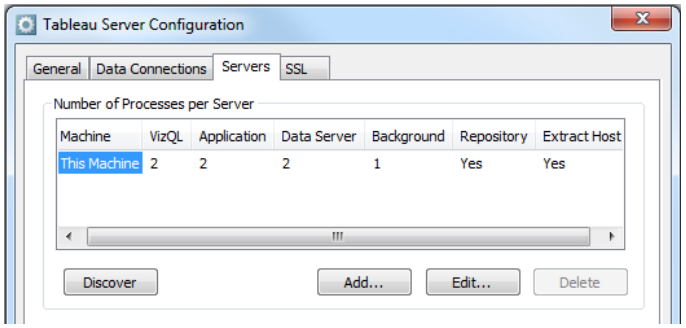
Tuning Tableau Server 8

Tuning Tableau Server 8: Determining the number of Processes

We generally recommend using Tableau's default of:



(Configuration utility on a 4 core machine)

2 VizQL, 2 Application, and 2 Data Server processes for any single machine deployment

If you find that your performance lags as you scale to more users, you may increase the number of VizQL, or Application processes up to the maximum limit of 8.

Note: As of Tableau Server 8.0, each VizQL, Application, and Data Server process is multithreaded. Specifically, each process can have up to 25 threads. Therefore, Tableau Server 8.0 requires less processes than prior versions of Tableau Server.

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Tuning Tableau Server 8: When to add Tableau Workers

Tableau Server has the ability to add clustered nodes called workers. Such environments are called distributed environments and are designed to provide scalability (not to improve performance). Workers should be added in order to scale the current performance of Tableau across multiple servers so that multiple requests coming into Tableau Server can be handled by multiple machines.

In our own tests of version 7 (version 8 test results coming soon), as seen in the figure, implementations of less than 100 concurrent users experienced optimal performance with a single server. Typically, only when concurrent users increase to over 100 users does it become advantageous to add Tableau Workers. This is partially due to the performance benefits of caching which is often more beneficial with increased quantities of concurrent users.

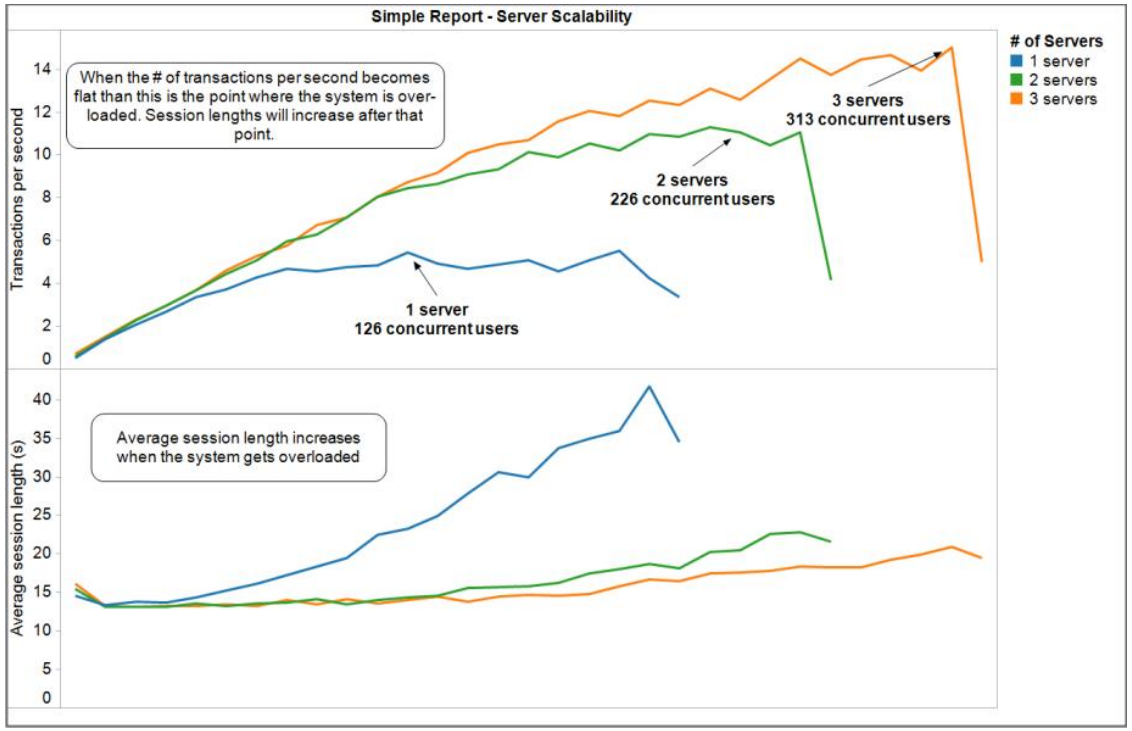

Tableau has published our own findings for Tableau Server scalability here: http://www.tableausoftware.com/learn/whitepapers/tableau-7-server-scalability (version 8 whitepaper coming soon!)

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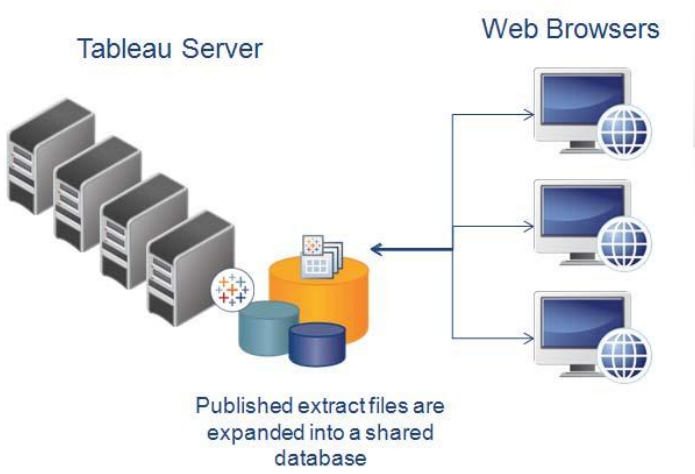
Tuning Tableau Server 8: When to Use Extracts



Extracts are locally stored data sets created by Tableau Server from your data sources. Using extracts can dramatically improve response times for end users when the database is the bottle neck.

There are several benefits of using extracts:

- Greatly improved response times compared to un-optimized data bases
- Extracts allow you to filter the amount of data users have access to. When users don't need all the detail in your database, this can significantly speed performance. For example, your database may have transactions recorded at the hour and minute, but if your Tableau users are concerned with transactions at the daily or weekly level, you can roll up the data to that level and eliminate unneeded detail.
- Users don't have to wait for your database to return queries and your database isn't taxed by every Tableau Server request. Tableau users interact with the extracted data only. This can be an issue if your database is heavily used or otherwise slow.
- If by taking load off your main database you begin to overtax your Tableau Server, you can configure Tableau Server to use an extract engine on a separate machine.

TIP: How to schedule a update/refresh to a published extract: http://www.tableausoftware.com/support/knowledge-base/schedule-extract-updates-60

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Installing Tableau Server 8

Installing Tableau Server 8

Installing Tableau Server for the first time can usually be done simply by following the steps outlined in the Tableau Server "Quick Start Guide" found on the 'Product Manuals' page.

http://www.tableausoftware.com/support/manuals

There is a more detailed reference section in the beginning of the Tableau Server "Administrator Guide."

http://www.tableausoftware.com/currentadmin

The **most important thing** to be aware of while installing Tableau Server is that once you choose your authentication method ('Use Active Directory' or 'Use Local Authentication'), you cannot change it without re-installing Tableau Server.

Once set the only way to alter the authentication method is by following the steps outlined in our knowledge base article "Modifying Tableau Server Authentication Method."

http://www.tableausoftware.com/support/knowledge-base/modifying-authentication-method

Additional Drivers for your data source connections may need to be installed on Tableau Server – drivers are installed on the server that Tableau Server is installed on. The drivers page on the Tableau Software home page contains links and information for obtaining the proper driver for your data source connection. http://www.tableausoftware.com/support/drivers

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Tips for Installing Tableau Server 8

TIP: Make sure that your system's clock is set to the correct time to ensure that when your product key is verified, the time stamp will be correct and allow you to continue with your registration.

TIP: The user installing Tableau Server will need to log in as an Administrator.

TIP: Use 'tabadmin stop' tabadmin start' or tools in Start->All Programs instead of manually starting and stopping the services manually.

TIP: Do not manually edit configuration files for Apache, PostgreSQL, etc.

TIP: How to Administer Users http://downloads.tableausoftware.com/quickstart/main-guides/server_getstarted7.0.pdf#page=6

TIP: Set-up email to enable Subscriptions http://downloads.tableausoftware.com/quickstart/feature-guides/subscriptions2.pdf

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Installing Tableau Server 8: Upgrading a Tableau Server Environment

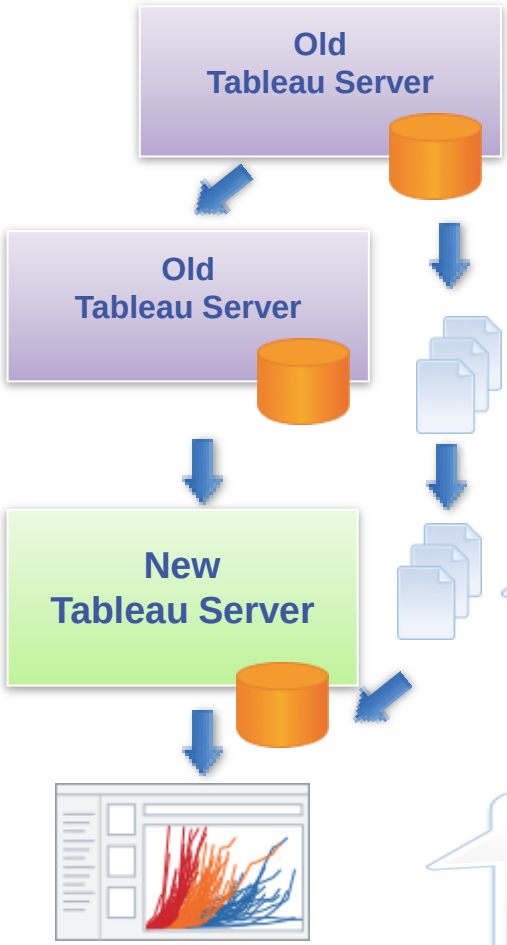
Upgrading from 7 to 8:

There is a knowledge base article available for reference during the upgrade:

http://kb.tableausoftware.com/articles/knowledgebase/upgrading-tableau-server

Note:

1. Process for upgrading in-place, see section labeled "Preserving Existing Content"
2. For recovery, the section in this same article labeled "Rolling Back to a Previous Installation."



Step 1: Backup Old Tableau Server Data

- Remove any Tableau Workers
- Cleanup Tableau Server
- Backup Tableau Data

Step 2: Uninstall Tableau

- Uninstall the existing Tableau Server (using the Windows Add/Remove Programs Control Panel).
- Reboot Tableau Server machine
- This step removes the software, but leaves all your existing content and settings on the machine

Step 3: Install Tableau Server

- Run the new installer.
- If installing on the same machine and to the same directory, it will detect the existing content/settings and automatically import it all as part of the install process.
- Add Workers back to Tableau Server if removed in Step 1.

Step 4: Verify Tableau Server Functionality

- Test various parts of Tableau server to ensure that everything is working properly.

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Installing Tableau Server 8: Migrating / Duplicating a Tableau Server Environment

Test Environments:

The standard End User License Agreement for Tableau Server (http://mkt.tableausoftware.com/files/eula.pdf) allows for one production environment and up to two, non-production environments (ie. Back-up, test)

Key events which receive great benefit from prior testing may include: upgrades, solution testing, and workflow analysis.

Test environments can also be set-up in one environment or instance, through the use of project folders.

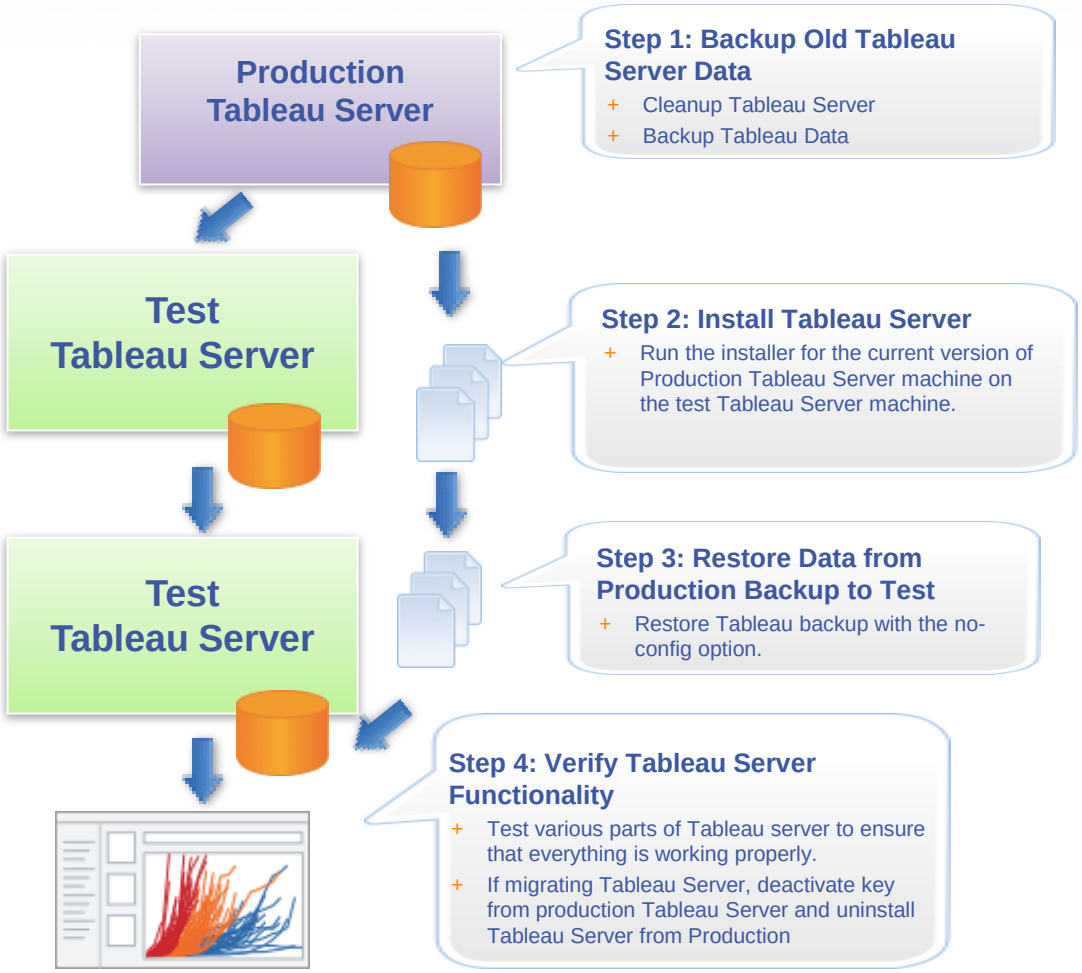

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Tableau Server 8 Enterprise Security: 4 Main Components

There are 4 main components to enterprise application security:

1. Authentication – Access Security: Active Directory, Local Authentication and Trusted Authentication
   http://onlinehelp.tableausoftware.com/current/server/en-us/security_auth.htm

2. Permissions – Object Security: What you can do with projects, workbooks, views and data sources http://onlinehelp.tableausoftware.com/current/server/en-us/permissions.htm

   Permissions are configured on Tableau Server - If a user does not have a permission explicitly set to Allow or Deny, the setting will be inherited from the groups the user belongs to.

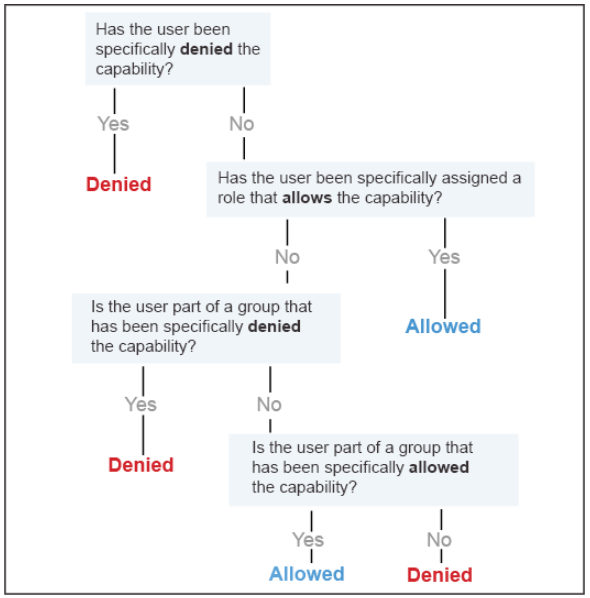

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Tableau Server 8 Enterprise Security: 4 Main Components (Ctd.)

3. Data – Data Security: Database login account, authentication mode, and user filters

http://onlinehelp.tableausoftware.com/current/server/en-us/security_data.htm

Database Connection Options		*Data Security Questions*		
Database login account uses...	Authentication mode	Is database security possible per Tableau Server user?	Are user filters the only way to restrict which data each user sees?	Are web caches shared among users?
Window NT Integrated Security(Windows Authentication)	*Server Run As account*	No	Yes	Yes
	Impersonate via server Run As account	Yes	No*	No
	Prompt user: Viewers are prompted for their database credentials when they click a view. Credentials can be saved.	Yes	No	No
Username and Password	*Embedded password*: The workbook or data source publisher can embed their database credentials.	No	Yes	Yes
	Impersonate via embedded password: Database credentials with impersonate permission are embedded.	Yes	No*	No

4. Network – Transmission Security: http://kb.tableausoftware.com/articles/knowledgebase/tableau-server-encryption-technologies

For more information on Tableau Server Security,
http://onlinehelp.tableausoftware.com/current/server/en-us/security_data.htm

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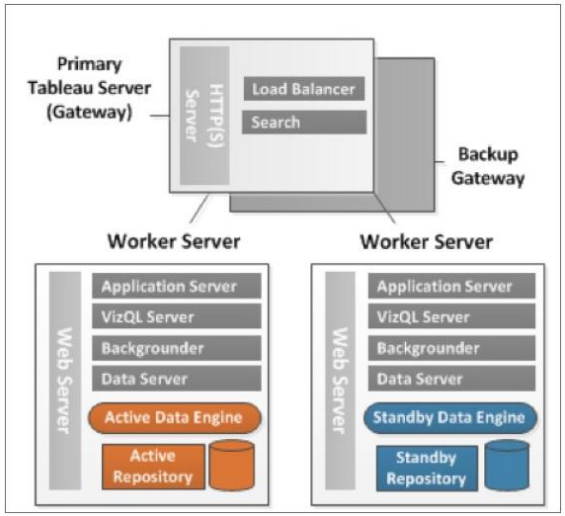
Recoverability for Tableau 8

Recoverability for Tableau 8: High Availability

Tableau has built-in support for High Availability. Tableau Server can be configured for automatic failover, with little or no impact to the users. Tableau Server can be easily configured to replicate the data engine and repository on a second node. Tableau Server can also automatically send an e-mail notification to the administrator in the case of an error.



The Gateway can be installed on a small, one-core server with four gigabytes of RAM.

Since only one Gateway is allowed per Tableau cluster, the Gateway should run on a dedicated server, running no other processes. This reduces the server load and reduces the risk of potential failures.

For more information, read our whitepaper http://www.tableausoftware.com/learn/whitepapers/ensuring-high-availability or product manual http://onlinehelp.tableausoftware.com/current/server/en-us/distrib_ha.htm#id7fbcc8c2-d18d-4776-9d70-0fa45cf45954

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Recoverability for Tableau 8: Virtualization Snapshots and NT Backups

During the installation of Tableau Server, the licensing service writes license information to the Trusted Storage area of the **hard disk**. Restoring Tableau Server from a backup "in place" or on the same machine on which it was originally installed, will work fine.

Considerations for Disaster recovery options when using:

1. virtualization snapshots and
2. file-level backups

Should the virtual machine snapshot or file-level backup ever be used to restore Tableau Server, the corresponding Trusted Storage information will not be re-written to the disk. License information will not be captured by file-level backups or virtual machine snapshots.

Restoring an image of Tableau Server to a new location or different machine, however, may not function properly due to the licensing. Typically, the license will simply need to be activated.

General Note on Back-ups: Run zip logs and back-up frequently via a scheduled script, then archive the resultant files. Align back-up/restore requirements with your definition of 'business critical.' In the event of a crash, no data is lost since it is created and published from Tableau Desktop, it is not created on Tableau Server; back-up and republish.

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Support for Tableau Server 8

Support for Tableau Server: Finding Answers

Tableau offers many resources to help you find the answers to your questions. This article will help you navigate these resources and choose the best option for you:

http://www.tableausoftware.com/support/knowledge-base/using-tableau-support-server

When questions arise, many people find Tableau's active user community as well as the knowledge base to be invaluable resources. In the case that you cannot find a solution to answer your question, feel free to e-mail Support@Tableausoftware.com, or log a support request using the following website: http://www.tableausoftware.com/support

When submitting a Support Request, we ask that you provide as much information as possible so we can assist you in the best possible manner. To ensure a quicker resolution to your support request, we ask that you provide the following:

1) Submit a screenshot of your error, as well as any other screenshots you deem necessary.
2) A detailed description of events that led up to the error (or the context that the error occurred in).
   Preferably: a step-by-step process of how to recreate the error.
3) Your Tableau Server Log Files, as described here:
   http://kb.tableausoftware.com/articles/knowledgebase/creating-tableau-server-log-files
4) Any other details that you deem relevant to the issue.

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Professional Services

To ensure that you are leveraging the full capabilities of your software purchase, Tableau offers Professional Consulting Services for both Tableau Desktop and Tableau Server.

Professional Consulting Services can work with you remotely or come onsite to assist you. They can share Tableau's best practices, examples, and advice that will help you deliver a high return on your investment, allowing you to fully leverage your investment in Tableau.

Consulting Services offers:

- Server Rapid Start - get Tableau Server installed, configured and optimized following Tableau best practices
- Server Review - will help fine-tune and enhance your deployment
- Server Health Check - best practice recommendations for improving your environment's performance

For more information regarding consulting services, please see:

http://www.tableausoftware.com/support/consulting

To schedule a consulting engagement, or to discuss what engagement would work best for your specific needs, please contact to your sales account manager, or email sales@tableausoftware.com

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Tableau 8 On Tour: March 5 – May 2

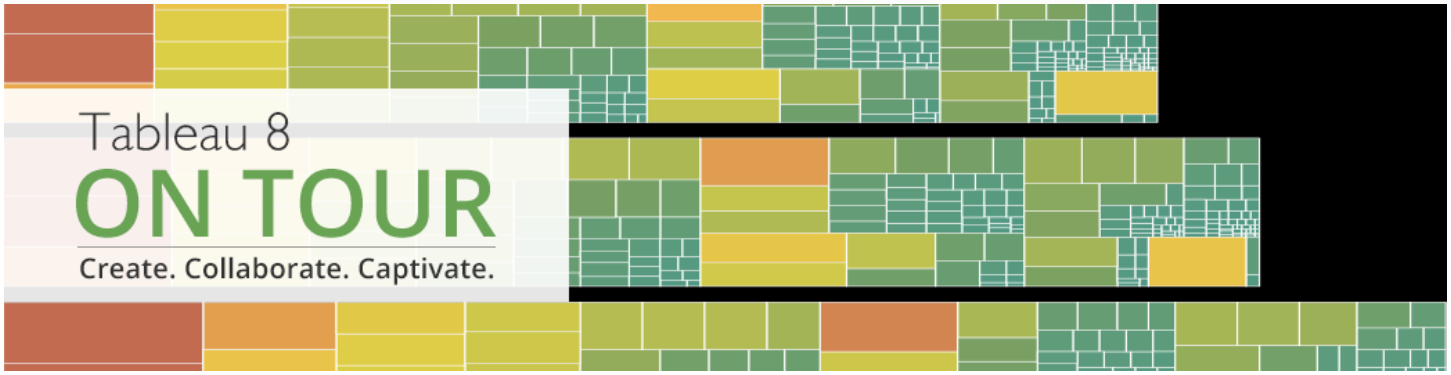

Tableau 8: Data Gets Its Day

Join the new age of data in a city near you. We're taking Tableau 8.0 on tour to introduce you to our newest release in person.

Each event is FREE to attend, so spread the word and bring a colleague or two.

- Find a tour in your area: http://www.tableausoftware.com/tableau8tour

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