



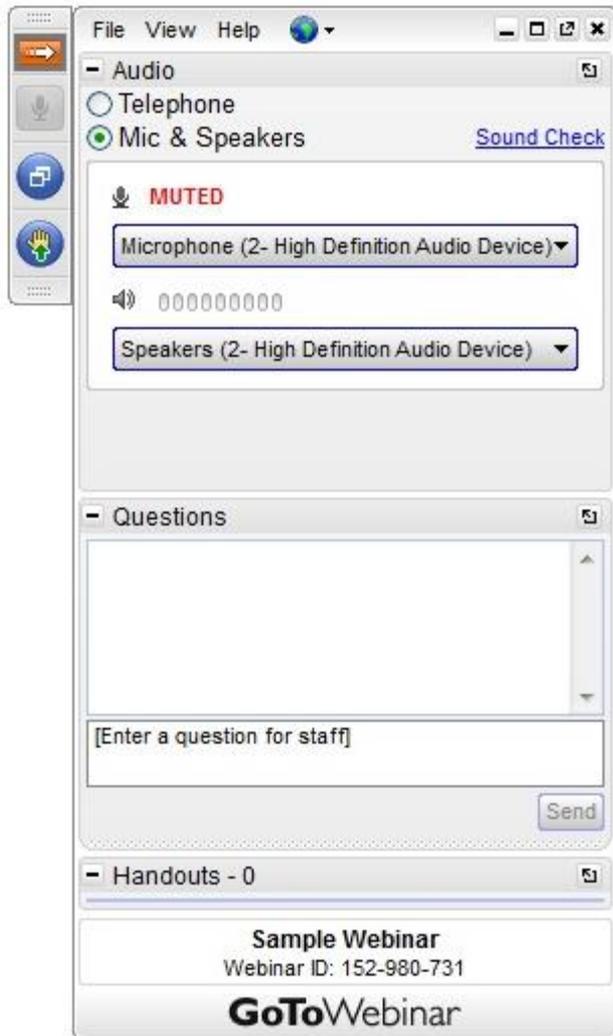
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# RESTRICTING ACCESS TO CONTENT BY USER IN TABLEAU

**Four Methods to Secure & Filter Data By User**



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# Today's Agenda

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- Introductions
- Security in Tableau - Overview
- Four Methods to Secure Data by User in Tableau
- Functionality Matrix and Key Takeaways
- Senturus Overview
- Additional Resources
- Q & A

# Introducing...Today's Presenters

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**Monica Van Loon**

Tableau Consultant and Trainer  
Senturus, Inc.



**Michael Weinhauer**

Practice Area Director /  
Solutions Architect  
Senturus, Inc.

# Poll

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How do you currently secure your Tableau data?

- In Tableau
- In the database
- A combination of in Tableau and the database
- Don't secure/don't know



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## **OVERVIEW**

**TYPES OF SECURITY IN TABLEAU**

# Overview - Types of Security in Tableau

## 1. Authentication - Do I have access to Tableau server?

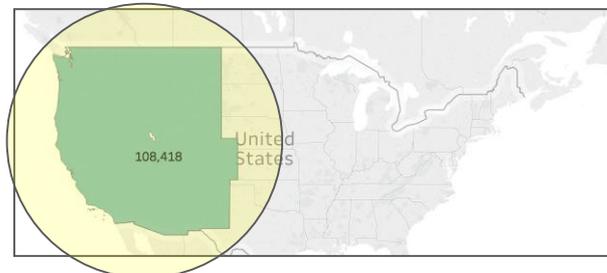


The image shows a Tableau Logon form. At the top left is the word "Logon" and at the top right is the Tableau logo. Below the logo is the instruction "Enter your Tableau Server username and password to log on." There are two input fields: "Username:" and "Password:". To the right of the Username field is a "Remember me" checkbox. Below the input fields is an orange "Logon" button.

## 2. Authorization and Permissions - What workbooks, worksheets and dashboards can I see?



## 3. Data Security - What data can I see?



# Security by User - Business Cases

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- You want managers to only see their own employees salaries or expense reports
- You want teachers, patients or students to only see their data
- You only want the finance department to see true revenue numbers
- You want product managers to only see data for their products
- You want one Tableau dashboard to serve multiple types of audiences and you want each person to only see what she/he is supposed to



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# **FOUR METHODS TO IMPLEMENT DATA SECURITY IN TABLEAU**

**OVERVIEW AND DEMOS**

# Four Methods to Implement Data Security in Tableau

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1. Tableau's built-in user filters
2. Tableau Server groups and a workbook filter
3. Join to a security table
4. Use database security

# Method 1: Tableau's Built-In User Filters

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## Pros

- Easy to implement, user-friendly
- Build in feature of Tableau Server
- No Tableau Server admin or DBA assistance required

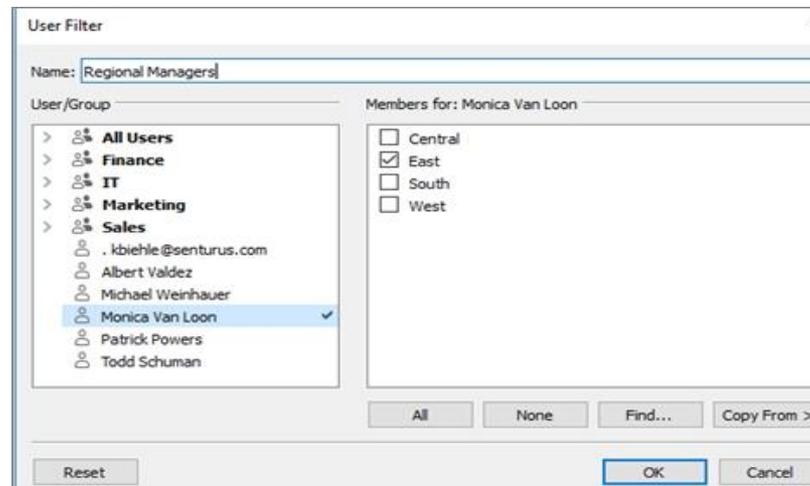
## Cons

- Must be done per workbook or data source
- High maintenance: if user base changes, you need to update the filter and republish
- Security can be tenuous: if users can download and edit workbook they can see ALL of the data
- Requires Tableau Server or Tableau Online

# Method 1: Tableau's Built-In User Filters

## Steps:

1. Navigate to the worksheet to which you want to apply a filter
2. **Server > Create User Filter**
3. Select the field you want to use for filtering (i.e. Region)
4. In the **User Filter** dialog box, type a name for the set of rules you are creating (i.e. *Regional Managers*)
5. In the list on the left, select **User/Group**
6. On the right, under **Members for:** select what you want the selected users to see
7. Do this for each Tableau Server/ Tableau Online user





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## **METHOD 1 - DEMO**

# Method 2: Tableau Server Groups and ISMEMBEROF

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## Pros

- Once Tableau Server groups are set up they can be used for multiple workbooks
- Built-in feature of Tableau Server
- No DBA assistance required

## Cons

- Must be implemented for each worksheet or data source
- Medium maintenance: groups must be maintained in Tableau Server as users are added deleted and move
- Security can be tenuous: if users can download and edit workbook they can potentially see ALL of the data
- New worksheets may show unfiltered data
- Requires Tableau Server or Tableau Online

*Note: Security is much better with data source filters (Method 2a)*

# Method 2: Tableau Server Groups and ISMEMBEROF

## Steps:

1. Create groups on Tableau Server (i.e. 'Central', 'East' etc..)
2. Connect to your data source
3. Create a calculated field

```

Check Region

ISMEMBEROF("Central") AND [Region] = "Central" OR
ISMEMBEROF("East") AND [Region] = "East" OR
ISMEMBEROF("West") AND [Region] = "West" OR
ISMEMBEROF("South") AND [Region] = "South"

The calculation is valid.
    
```

4. Publish the workbook to Tableau Server

User / Group	Permissions	View	Interact	Edit
		View Download Image/PDF Download Summary Data View Comments Add Comments Filter Download Full Data Share Customized	Web Edit Save Download Workbook/Save As Move Delete Set Permissions	
All Users (16)	None			
Central Furniture (1)	Custom	✓	✓	✓
Central Supplies (1)	Custom	✓	✓	✓
Central Team (1)	Custom	✓	✓	✓
Central Technology ...	Custom	✓	✓	✓

**No Web Edit  
No Download/Save As  
No Save**

*Note: when publishing to Tableau Server, ensure web-editing and download is set to 'no'*

# Method 2a: “ISMEMBEROF” as a Data Source Filter

## Steps (Method 1 with new steps in Blue):

1. Create groups on Tableau Server (i.e. ‘Central’, ‘East’ etc..)
2. Connect to your data source (Sample - Superstore.xls)
3. Create your calculated field



The screenshot shows a calculated field named "Check Region" with the following formula:

```
ISMEMBEROF("Central") AND [Region] = "Central" OR  
ISMEMBEROF("East") AND [Region] = "East" OR  
ISMEMBEROF("West") AND [Region] = "West" OR  
ISMEMBEROF("South") AND [Region] = "South"
```

At the bottom of the editor, it states "The calculation is valid."

4. Drag the Check Region filters off of the worksheets
5. In the Data Source tab: add a data source filter using the calculated field Check Region and select ‘true’
6. Publish the data source: publishers can connect to the published data source and create dashboards with built-in security

*Note: With data source filters you can allow “web edit”*



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## **METHOD 2 - DEMO**

# Method 3: Join to a Security Table

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## Pros

- Security table can be shared
- Security information can be extracted from other sources (i.e. HR systems like Workday)
- Updates to security tables can be automated
- Hierarchies can be implemented (i.e. VP - Regional Manager - Department Manager ...)

## Cons

- To use a database to store the security table, DBA assistance required
- If using a CSV or Excel file to map security may be compromised
- Medium maintenance: security table must be maintained either automatically or manually as new people join the company or users change departments
- Risk of row duplication, especially if using Tableau extracts

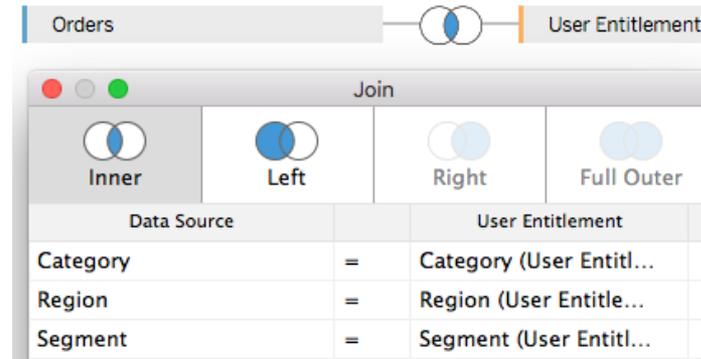
# Method 3: Join to a Security Table

## Steps:

1. Create a security table

	user	Region	Category	Segment
2	Eddie	South	Office Supplies	Consumer
3	Eddie	South	Technology	Consumer
4	Jim B (sales VP)	South	Technology	Consumer
5	Jim B (sales VP)	South	Office Supplies	Consumer
6	John Sales West	West	Office Supplies	Consumer
7	West Technology	West	Office Supplies	Consumer
8	Julie Supplies	Central	Office Supplies	Consumer
9	Julie Supplies	East	Office Supplies	Consumer
10	Keith	East	Furniture	Consumer

2. Join data source to security table



3. Create a calculated field as depicted below:



- USERNAME() returns the current Tableau server username
- USERNAME()=[User] can be added as a data source filter or a workbook filter

*Note: Check for duplicate rows*

# Notes: Method 3 Join to a Security Table

Tableau Server USERNAME() can't be passed to a live connection database. But, you can use Query Banding or Initial SQL to retrieve the Tableau Server User.

- Query Banding - TeraData
  - ProxyUser = <ProxyUser>
  - TableauMode=<TableauMode>
  - TableauApp=<TableauApp>
  - Tableau Version=<TableauVersion>
  - WorkbookName=Name of DataSource
- Initial SQL - Vertica, Oracle, SQL Server, Sybase ASE, Redshift, and Greenplum
  - [TableauServerUser]
  - [TableauServerUserFull]
  - [TableauApp]
  - [WorkbookName]

Oracle

Server:

Service:  Port:

Enter information to sign in to the server:

Integrated Authentication

Use a specific username and password:

Username:

Password:

Require SSL

Initial SQL...

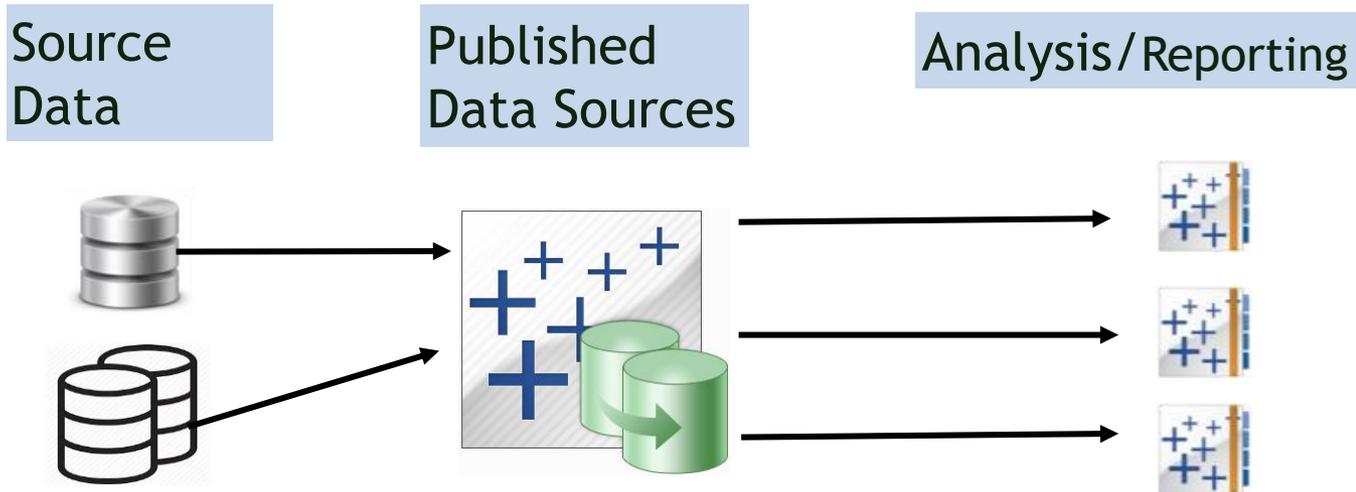
SQL statements to be executed at connect time:



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## **METHOD 3 - DEMO**

# Option: Create a Published Data Source



## Advantages of a Published Data Source

- Shared business-friendly semantic layer
- Reusable
- Single source of the “truth”
- Secure with data source filter

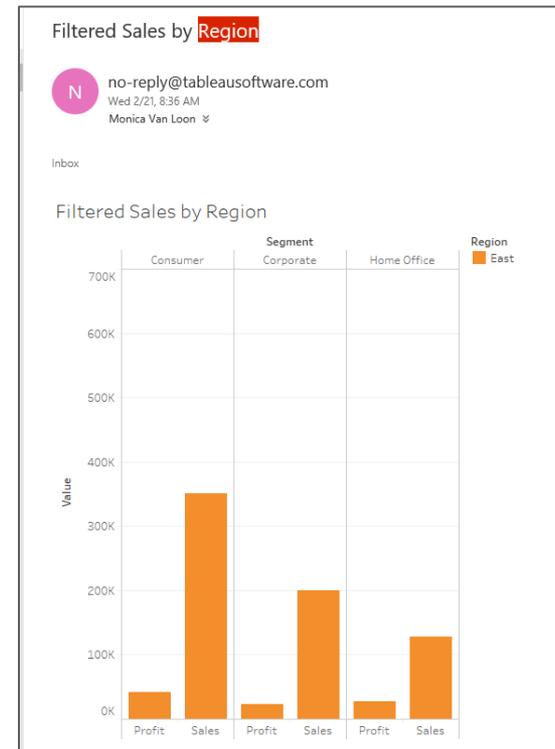
# Option: Use Subscriptions

Tableau Server  
Subscriptions are a great way to distribute content

Each subscribed user gets a user specific view with a thumbnail

The 'Subscribe' dialog box contains the following fields and options:

- Subscribe Users**: Add users
- Subscribe Users in Groups**: Add users in groups
- Include**: This View (dropdown menu)
- Frequency**: 5 days a week, at 00:00 (dropdown menu)
- Subject**: user filter
- Message**: Add a custom message (optional)
- Don't send if view is empty
- Subscribe me
- Manage** (link)
- Cancel** and **Subscribe** buttons



# Method 4: Use Database Security

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## Pros

- Security implemented in the database level can be shared by other reporting tools
- Security information can be extracted from other sources and built into a database view
- Does not require Tableau Server
- Very flexible and hierarchies can be implemented (i.e. VP - Regional Manager - Department Manager...)

## Cons

- Requires a database and DBA assistance
- Medium maintenance: DBA need to maintain database ID's that map to security
- Users need to log in to the database

# Method 4: Use Database Security

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Example: Security embedded in a database view:

```
Create or replace view My_Employee_Details as
select e.employee_id, e.first_name, e.last_name,
e.salary, m.Last_name manager_name
from HR.employees e, HR.employees m
      where e.manager_id = m.employee_id
      and upper(m.LAST_NAME) = user;
```

*Notes: This is one example, there are many ways to accomplish this*

*The syntax is database specific, for example: 'user' is Oracle specific; in Sql Server it would be current\_user or session\_user*



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## **METHOD 4 - DEMO**

# Database Security - Dependencies Table

[https://onlinehelp.tableau.com/current/server/en-us/security\\_data.htm](https://onlinehelp.tableau.com/current/server/en-us/security_data.htm)

<u>Database Connection Options</u>		<u>Data Security Questions</u>		
Database login account*	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?
<i>Window NT Integrated Security (Windows Authentication)</i>	<i>Server Run As account</i>	No	Yes	Yes
	<i>Impersonate via server Run As account</i>	Yes	No	No
	<i>Viewer Credentials</i>	Yes	No	No
<i>Username and Password</i>	<i>Prompt user: Viewers are prompted for their database credentials when they click a view</i>  <i>Credentials can be saved</i>	Yes	No	No
	<i>Embedded credentials: The workbook or data source publisher can embed their database credentials</i>	No	Yes	Yes
	<i>Impersonate via embedded password: Database credentials with impersonate permission are embedded</i>	Yes	No	No



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# **FUNCTIONALITY MATRIX & KEY TAKE-AWAYS**

# Secure Your Data - Functionality Matrix

Method	Requires Server?	Level of Difficulty	Maintenance	Limitations
1. User filters	Yes	Low	Self-service	Large # users can be difficult
2. Tableau groups & filters	Yes	Medium	Moderate	Requires Tableau Server admin
3. Join to a security table	Yes	Medium - High	Moderate	Potential duplicate data
4. Use database security	Not required	High	Medium- High	Requires SQL knowledge

# Good, Better and Best

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## Good

- Tableau Server with user filters

## Better

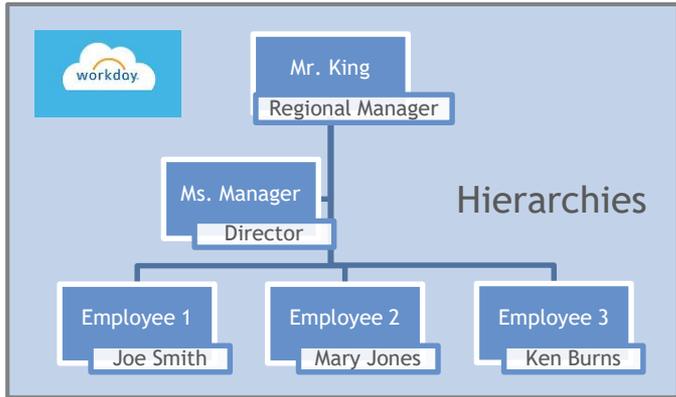
- Tableau Server groups or a database security table

## Best

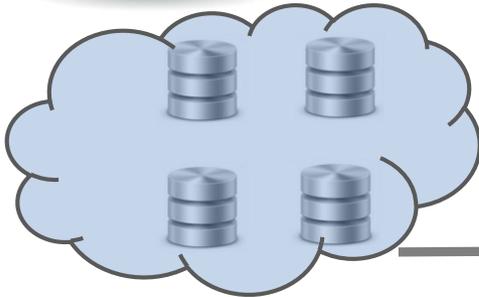
- An integrated, automatically updated data repository with a built-in security model

# The Vision

## Source Data



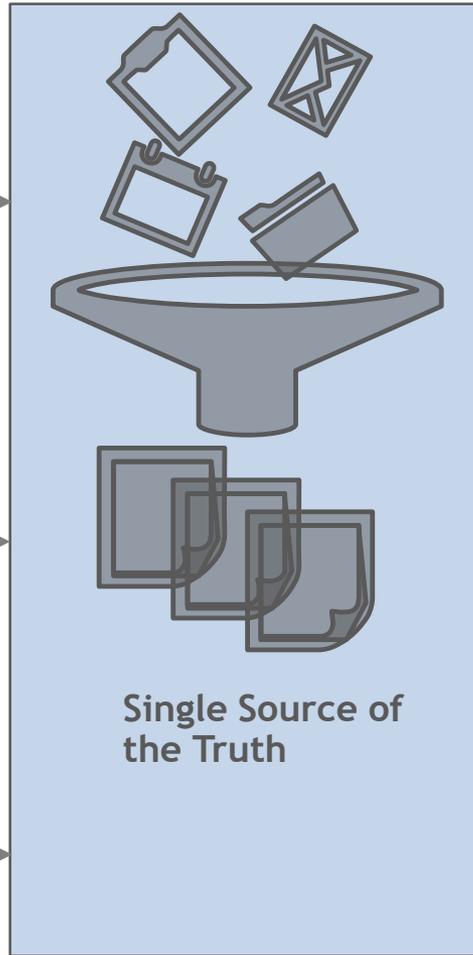
Business Rules



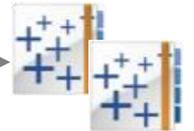
Cloud and Local  
Data Sources

Automated Scheduled ETL

## Data Repository



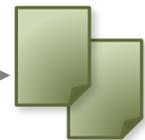
## Analysis/Reporting



Self-Service  
Reporting &  
Analysis



Dashboards/  
Scorecards



Standard  
Reports

# Key Takeaways

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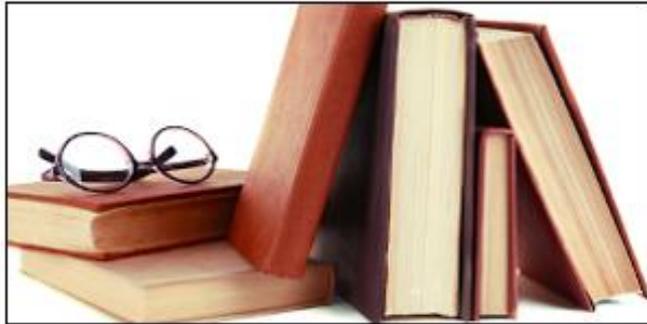
- Multiple ways to secure and restrict data shown in Tableau
- Requirements, restrictions and maintenance vary by method
- Many combinations and variations for each method

Contact Senturus if you need help!

We can help determine the best way to secure *your* data in *your* environment!

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## BLOG

A great place to find out what's top of mind at Senturus.

Check out these free resources

- [How to Secure Data in Tableau Whitepaper](#)
- [Rolling out Tableau to the Enterprise Webinar](#)
- [Write-up on Extracts and Row Duplication](#)

# Tableau Server Assistance

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- Free Tableau Server trial and free help installing it
- Tableau Server Optimization Assessment  
<https://www.senturus.com/tableau-server-optimization-assessment/>

Contact Us at [info@Senturus.com](mailto:info@Senturus.com)



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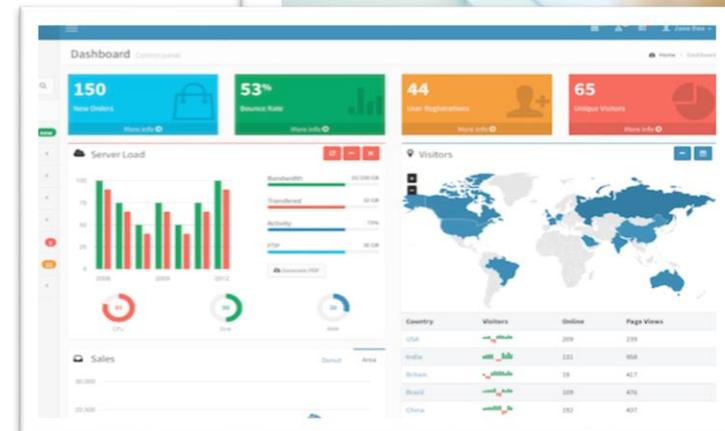
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Wednesday, May 2, 2018 - 8:30am - 12:30pm - 4 hours



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Thursday, May 3, 2018 - 8:30am - 12:30pm - 4 hours



## USING TABLEAU TO VISUALIZE SALESFORCE DATA

FREE, HANDS-ON WORKSHOP IN DOWNTOWN CINCINNATI, OH

Thursday, May 3, 2018 - 1 - 5pm - 4 hours



## USING TABLEAU TO VISUALIZE SALESFORCE DATA

FREE, HANDS-ON WORKSHOP IN CLEVELAND, OH

Wednesday, May 2, 2018 - 1 - 5pm - 4 hours

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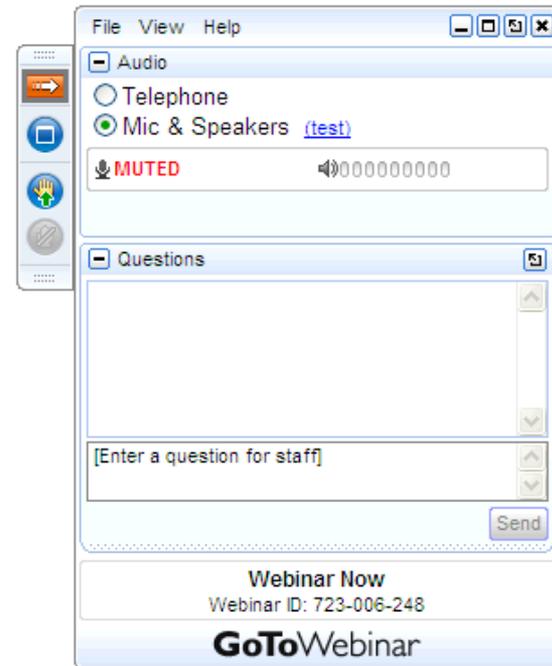
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# Q&A

If your question or issue is broader than what can be answered today, contact us at

[info@senturus.com](mailto:info@senturus.com)

and we will set up a free consultation.



# Thank You!

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