



Informatica® PowerExchange for Tableau
9.6.1 HotFix 2

User Guide for PowerCenter

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Preface

The *Informatica PowerExchange for Tableau User Guide for PowerCenter* provides information about reading data from multiple sources and generating the Tableau data extract file. The guide is written for database administrators and developers who are responsible for developing mappings that read data from multiple sources, generate the extract file, and publish data to Tableau Server.

This guide assumes that you have knowledge of Tableau Desktop, Tableau Server, Tableau Online, and PowerCenter.

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CHAPTER 1

Introduction to PowerExchange for Tableau

This chapter includes the following topics:

- [PowerExchange for Tableau Overview, 9](#)
- [PowerExchange for Tableau Implementation, 9](#)
- [PowerExchange for Tableau Example, 10](#)

PowerExchange for Tableau Overview

You can use PowerExchange for Tableau to connect to Tableau from InformaticaPowerCenter. You can integrate and transform data from sources such as, flat files, databases, and applications to generate a Tableau data extract (TDE) file.

For faster turnaround, offline access, and sharing centralized data with multiple users, you can eliminate connecting to data sources directly from Tableau and use the portable TDE file instead. When you use a TDE file in Tableau, you do not have to rely on the speed of the underlying data sources. The generated TDE file is compatible with Tableau products. You can use the TDE file in Tableau Desktop to visualize the data and identify patterns and trends. You can use PowerExchange for Tableau to publish the TDE file directly to Tableau Server or Tableau Online.

PowerExchange for Tableau Implementation

To generate a TDE file from the source data, create a Tableau data object and include the data object as a target in mapping. You can run the mapping or add the mapping to a workflow to process the data, generate the TDE file, and publish the file to Tableau. To generate a TDE file from the source data, import the target definitions in the Designer. You can add a target definition to a session and run the session to generate and publish the TDE file to Tableau.

The Data Integration ServicePowerCenter Integration Service integrates with the Tableau data extract API to generate the TDE file. The extract file is a Tableau-specific file format with .tde extension, and contains individual memory-mapped files for each of the columns in the underlying data source.

The Data Integration ServicePowerCenter Integration Service uses the Tableau connection to write the TDE file to a directory on the machine where the Data Integration ServicePowerCenter Integration Service runs.

You can publish the TDE file to Tableau Server or Tableau Online. The Tableau command line utility, `tabcmd`, publishes the TDE file to a project in a site on Tableau Server or Tableau Online. You can also incrementally add data to an existing TDE file on Tableau Server or Tableau Online. When you publish the TDE file, the file is available for analysis to multiple users within an organization. You can interact with the data, create reports and dashboards from the data, and visually represent the data.

If you do not publish the data to Tableau Server or Tableau Online, you can manually import the TDE file to Tableau Desktop. You can later publish the data to Tableau Server or Tableau Online from Tableau Desktop.

PowerExchange for Tableau Example

You are a sales analyst in an enterprise who can access data warehouses or flat files from Tableau Desktop to analyze the data. You want to track the overall growth trend in sales, geographic distribution of sales, and top customers, and present a snapshot of the sales distribution to senior executives.

You can integrate data from multiple sources, filter the data, and make the data available as a TDE file for analysis in Tableau through PowerExchange for Tableau. You can import the TDE file in Tableau Desktop to create interactive, real-time dashboards. The visual representation helps you understand the profitability, with views presented by geography, product category, and customer segment. You can also publish the TDE file to Tableau Server to share a live and interactive dashboard with all the executives in the organization.

CHAPTER 2

Installation and Configuration

This chapter includes the following topics:

- [Installation and Configuration Overview, 11](#)
- [Prerequisites, 11](#)
- [Installing the Client Component, 12](#)
- [Installing the Server Component, 12](#)
- [PowerExchange for Tableau Plug-in Registration, 13](#)
- [Install the Tableau Command Line Utility, 14](#)

Installation and Configuration Overview

You can install PowerExchange for Tableau on Windows or UNIX.

To configure PowerExchange for Tableau, perform the following steps:

1. Perform the prerequisite tasks.
2. Install PowerExchange for Tableau. When you install PowerExchange for Tableau, you install the following components that allow PowerCenter to access Tableau:
 - Client component. Use the PowerCenter Client to import definitions, create mappings, and create connection objects.
 - Server component. Use the PowerCenter Repository Service to store and access the Tableau metadata in the repository and the PowerCenter Integration Service to run sessions.
3. Register the PowerExchange for Tableau plug-in with the PowerCenter repository.
4. Install the Tableau command line utility, `tabcmd`, if you want to publish the TDE file to Tableau Server or Tableau Online.

Prerequisites

Before you install PowerExchange for Tableau, perform the following tasks:

- Install PowerCenter.

- Verify that you have read and write permissions on the following directories on each machine that runs the PowerCenter Integration Service and PowerCenter Repository Service:

```
<Informatica Installation Directory>\server\bin
<Informatica Installation Directory>\server\bin\native
<Informatica Installation Directory>\server\bin\javali
```

The installer must be able to add and overwrite files in these directories.

- Verify that you have read and write permissions on the following directories of each PowerCenter Client machine:

```
<Informatica Installation Directory>\clients\PowerCenterClient\client\bin
<Informatica Installation Directory>\clients\PowerCenterClient\client\bin\Help
<Informatica Installation Directory>\clients\PowerCenterClient\client\bin\Help
\<language>
<Informatica Installation Directory>\clients\PowerCenterClient\client\bin\javali
```

Installing the Client Component

Install the Client component on each PowerCenter Client machine where you want to access Tableau metadata and create targets using the Tableau metadata.

1. Run `install.bat` from the installation package.
2. Click **Next**.
3. Select the Informatica installation directory.

By default, the client is installed in the following location:

```
<Informatica Installation Directory>\clients\PowerCenterClient\client\bin
```

4. Click **Next**.
5. Click **Install** to begin the installation.
6. Click **Done** when the installation is complete.

The client component is installed.

Installing the Server Component

If the PowerCenter Integration Service or PowerCenter Repository Service is configured to run on primary and backup nodes, install the PowerExchange for Tableau server component on each node configured to run the PowerCenter Integration Service or PowerCenter Repository Service.

If the PowerCenter Integration Service is configured to run on a grid, install the PowerExchange for Tableau server component on each node configured to run on the grid. If you cannot install the PowerExchange for Tableau server component on each node in the grid, create a resource in the domain and assign it to each node where you installed the PowerExchange for Tableau server component. When you create a session, configure the session to use the resource.

For example, create a custom resource called Tableau. When you create a session, assign the resource as a required resource. The Load Balancer dispatches the Session task to a node that has the resource.

Installing the Server Component on Windows

Install the PowerExchange for Tableau server component on Windows when the PowerCenter Integration Service or PowerCenter Repository Service runs on Windows.

1. Run `install.bat` from the installation package.
2. Click **Next**.
3. Select the Informatica installation directory.

By default, the server components are installed in the following location:

```
C:\Informatica\<version folder>
```

4. Click **Next**.
5. Click **Install** to begin the installation.
6. Click **Done** when the installation is complete.

The PowerCenter Integration Service and PowerCenter Repository Service components are installed.

Installing the Server Component on UNIX

Install the PowerExchange for Tableau server component on UNIX when the PowerCenter Integration Service or PowerCenter Repository Service runs on UNIX.

To install the PowerExchange for Tableau server component on the UNIX platforms that support graphical user interface, perform the same steps that you use to install the server components on Windows.

To install the PowerExchange for Tableau server component on the UNIX platforms that use the command line interface, perform the following steps:

1. Enter `sh install.sh` at the prompt.
2. Enter the path to the Informatica installation directory.

By default, the server components are installed in the following location:

```
<User Home Directory>/Informatica/<version folder>
```

The PowerCenter Integration Service and PowerCenter Repository Service components are installed.

PowerExchange for Tableau Plug-in Registration

To write data to a Tableau Server or Tableau Online, you must register the PowerExchange for Tableau plug-in with the PowerCenter repository.

A plug-in is an XML file that defines the functionality of PowerExchange for Tableau. The plug-in file for PowerExchange for Tableau is named `Tableau.xml`. When you install PowerCenter, the installer copies the `Tableau.xml` file to the following directory:

```
<Informatica Installation Directory>\server\bin\Plugin
```

To register the plug-in, the repository must be running in exclusive mode. Use the Administrator tool or the `pmrep RegisterPlugin` command to register the plug-in.

Note: If you do not have the Manage Services privilege to register the plug-in, contact the administrator who manages the PowerCenter Repository Service.

Install the Tableau Command Line Utility

Install the Tableau command line utility, tabcmd, on the same machine as the Data Integration Service.PowerCenter Integration Service. The tabcmd version must be compatible with Tableau Online.

The tabcmd utility publishes the generated TDE file to Tableau Server or Tableau Online. For more information about configuring the tabcmd utility, see the Tableau documentation at the following website: <http://kb.tableausoftware.com/articles/knowledgebase/installing-tabcmd>

For more information about installing the tabcmd utility, see the Tableau documentation at the following website: <http://kb.tableau.com/articles/knowledgebase/tabcmd-installer>

CHAPTER 3

Tableau Targets

This chapter includes the following topics:

- [Tableau Targets Overview, 15](#)
- [Importing Tableau Target Definitions, 15](#)

Tableau Targets Overview

Tableau target definitions represent metadata based on a Tableau resource.

Use the Target Designer to import Tableau target definitions into the PowerCenter repository. Before you import a Tableau target definition, you need a TDE file to import the metadata.

When you update a TDE file, you can either overwrite the file or append data to the existing file. When you append data to a TDE file, ensure that the column metadata in the TDE file and the Tableau data source are the same. Select the insert option when you edit the Tableau data session properties for Tableau targets so that PowerCenter Integration Service inserts all the rows into the target. You can publish the generated TDE file to Tableau Server or Tableau Online.

Importing Tableau Target Definitions

Import a Tableau target definition from Tableau.

1. In the Target Designer, click **Targets > Import from Tableau**.
The **Import from Tableau** dialog box appears.
2. Enter a valid metadata file directory where you want to import the TDE file.
Include the full path and the file name. For example, you can specify the following directory: `C:\Tableau_Files\TDE_Files\Extract.tde`
3. Click **Connect**, and then click **Next**.
4. From the list of Tableau data extracts, select the record **Extract** to view the fields inside the target.
5. Click **Finish**.
If you do not specify a file name, the target definition name remains the same as the TDE file name.

CHAPTER 4

Tableau Mappings

This chapter includes the following topics:

- [Tableau Mappings Overview, 16](#)
- [Tableau Mapping Example , 16](#)

Tableau Mappings Overview

After you import a Tableau target definition into the PowerCenter repository, create a mapping to write data to the Tableau target.

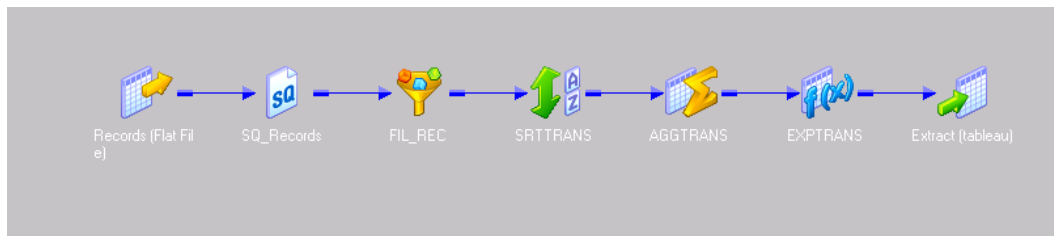
You can read data from multiple sources, write data to the Tableau data extract file, and then publish the file to Tableau Online or Tableau Server.

Tableau Mapping Example

You work in the retail industry, and business analysts in your enterprise need to analyze product sales trends based on region.

Sales record files contain information about products that are sold in multiple outlets and regions. Analysts use flat files to store the sales details. You can consolidate the data in the sales record files that you receive through the day. You can then perform transformations based on your requirements.

The following image shows the Tableau mapping example:



You can use the following objects in a Tableau mapping:

Sources

The mapping contains the Records flat file source that contains the product sales data, such as Region ID, Product ID, Quantity, and Cost.

Transformations

The FIL_REC Filter transformation filters the data in the sales record files based on the value you specify for the region ID. The PowerCenter Integration Service returns the rows that meet the filter condition.

The SRTTRANS Sorter transformation sorts the data in ascending order based on the region ID.

The AGGTRANS Aggregator transformation collects statistics about product sales for a particular region. Use the result of the Sorter transformation as an input to the Aggregator transformation. You can increase Aggregator transformation performance with the sorted input option.

The EXPTRANS Expression transformation formats the data before you generate the Tableau data extract file.

Target

The target extract named tableau is a Tableau data extract file. Select Publish to Server and specify the server details to publish the Tableau data extract file to Tableau Server in the session properties.

When you run the session, the PowerCenter Integration Service writes the sales information to a target TDE file and publishes the TDE file to Tableau Server. You can then visualize the sales data categorized by region in Tableau Server.

CHAPTER 5

Tableau Sessions

This chapter includes the following topics:

- [Tableau Session Overview, 18](#)
- [PowerExchange for Tableau Connections, 18](#)
- [Session Configuration for Tableau Targets, 20](#)

Tableau Session Overview

After you create mappings, you can create a session and use the session in a workflow to extract, transform, and load data. Create sessions and workflows in the Workflow Manager.

To configure the session, perform the following tasks:

- Define the sources from where you consolidate data.
- Configure an application connection for Tableau targets in the Workflow Manager to write data to a TDE file.
- Define properties in a session to determine how the PowerCenter Integration Service writes data to a Tableau target TDE file. You can configure the session properties for the Tableau target to publish the generated TDE file to Tableau Online or Tableau Server.

PowerExchange for Tableau Connections

Before the PowerCenter Integration Service can connect to Tableau, you must configure a Tableau application connection in the Workflow Manager.

When you configure a Tableau application connection, you specify connection attributes that the PowerCenter Integration Service uses to connect to Tableau Server or Tableau Online.

Tableau Connection Properties

The following table describes the properties for a Tableau connection:

Property	Description
Name	Not applicable.
Type	The connection type is set by default. You cannot edit this value.
User Name	Not applicable.
Password	Not applicable.
Connect String	Not applicable.
Code Page	Not applicable.
description	Description of the connection. The description cannot exceed 765 characters.
connectionType	Type of connection.
name	Enter a name for the connection.
connectionURL	URL of Tableau Online or Tableau Server to which you want to publish the TDE file. For Tableau Server, specify the URL in the following format: <code>http://<Host name>:<port number></code> For Tableau Online, specify the following URL: <code>https://online.tableausoftware.com</code> .
password	Password to connect to Tableau Server or Tableau Online.
site	Site on Tableau Server where you want to publish the data. The site includes all resources, such as workbooks, projects, data sources, and users. The site also contains the site-specific settings. The Tableau Server administrator can create a specific site on Tableau Server where you want to publish the data. To specify an existing site ID on Tableau Server where you want to publish the TDE file, contact the Tableau Server administrator. A site ID uniquely identifies a site on Tableau Server. The default site in Tableau Server is double quotation marks with no space in between them. For example, specify "" as the value if you want to publish the TDE file to the default site on Tableau Server.
tabcmdInstallLocation	The path to the tabcmd installation directory on the machine where the PowerCenter Integration Service runs.
username	User name with permissions to access Tableau Server or Tableau Online. The user must have write permissions on the directory where the TDE file resides.
MetadataFilePath	Path to the metadata file. Specify "default" as the value.

Configuring a Tableau Connection

Before you run a Tableau session, create a Tableau connection.

1. In the Workflow Manager, connect to a repository.

2. Click **Connections > Application**.
The **Application Connection Browser** dialog box appears.
3. Click **New**.
The **Select Subtype** dialog box appears.
4. To create a Tableau connection, select **Tableau** from the **Select Subtype** list.
5. Click **OK**.
The **Connection Object Definition** dialog box appears.
6. Enter the connection properties.
7. Click **OK**.
The Tableau connection appears in the **Connection Browser** list.

Session Configuration for Tableau Targets

You can configure the session properties for a Tableau target in the **Transformations** view on the **Mapping** tab. Define the properties for the target instance in the session.

The following table describes the session properties that you can configure for Tableau targets:

extractFilePath

Location of the TDE file. Default is `<INFA_HOME>/server/bin`. Ensure that the file location is on the machine where the PowerCenter Integration Service runs.

extractFileName

Name of the TDE file with the .tde extension. Default is `Extract.tde`.

overwriteOldFile

Overwrites or appends data to the TDE file. Select the option to overwrite existing TDE file. Default is Overwrite.

publishToServer

Publishes the generated TDE file in Tableau Server or Tableau Online.

project

Name of the project within a specific site on Tableau Server or Tableau Online where you want to publish the TDE file. By default, Tableau Connector publishes the TDE file to the default project on the site that you specify.

dataSource

Name of the data source that you want to publish the TDE file as to Tableau Server or Tableau Online. If you do not specify a data source name, the default TDE file name remains the source name.

fileOnServer

You can choose one of the following options such as Replace, Append, or Overwrite when you publish the TDE file to an existing file on Tableau Server or Tableau Online:

- If you choose replace, the PowerCenter Integration Service deletes the existing TDE file and replaces with the new TDE file.
- If you choose append, the PowerCenter Integration Service adds data to the existing TDE file.

- If you choose overwrite, the PowerCenter Integration Service replaces the existing data in the TDE file without deleting the file.

site

Site on Tableau Server or Tableau Online where you want to publish the TDE file. The site includes all resources, such as workbooks, projects, data sources, and users. The site also contains the site-specific settings.

The Tableau Server administrator can create a specific site on Tableau Server or Tableau Online where you want to publish the TDE file. A site ID uniquely identifies a site on Tableau Server or Tableau Online.

By default, the connector publishes the TDE file to the default site on Tableau Server or Tableau Online.

INSERT

Inserts all the rows to the target TDE file. You must select the INSERT option before you run a session.

DELETE

Reserved for future use.

UPDATE

Reserved for future use.

Success File Directory

Reserved for future use.

Error File Directory

Reserved for future use.

APPENDIX A

Data Type Reference

This appendix includes the following topics:

- [Data Type Reference Overview, 22](#)
- [Tableau and Transformation Data Types, 22](#)
- [Decimal Data Type, 24](#)
- [Duration Data Type, 24](#)

Data Type Reference Overview

Informatica DeveloperPowerCenter uses the following data types in Tableau mappings:

- Tableau native data types. Tableau data types appear in the physical data object column propertiesTableau definitions in a mapping.
- Transformation data types. Set of data types that appear in the transformations. They are internal data types based on ANSI SQL-92 generic data types, which the Data Integration ServicePowerCenter Integration Service uses to move data across platforms. Transformation data types appear in all transformations in a mapping.

When the PowerCenter Integration Service reads source data, it converts the native data types to the comparable transformation data types before transforming the data. When the PowerCenter Integration Service writes to a target, it converts the transformation data types to the comparable native data types.

Tableau and Transformation Data Types

The following table lists the Tableau data types that the Data Integration ServicePowerCenter Integration Service supports and the corresponding transformation data types:

Tableau Data Type	Transformation Data Type	Range and Description
Integer	Integer	-2,147,483,648 to 2,147,483,647 Precision 10, scale 0
Double	Double	Double-precision floating-point numeric value. Precision 15

Tableau Data Type	Transformation Data Type	Range and Description
Date	Date/Time	Jan 1, 0001 A.D. to Dec 31, 9999 A.D. Precision of 29, scale of 9 (precision to nanosecond)
DateTime	Date/Time	Jan 1, 0001 A.D. to Dec 31, 9999 A.D. Precision of 29, scale of 9 (precision to nanosecond)
unicode_string	String, Text, Bigint, or Decimal	The Data Integration ServicePowerCenter Integration Service performs an implicit conversion of String, Text, Bigint, or Decimal to unicode_string: String: - 1 to 104,857,600 characters - Fixed-length or varying-length string Text: - 1 to 104,857,600 characters - Fixed-length or varying-length string Bigint: - 9,223,372,036,854,775,808 to 9,223,372,036,854,775,807 - Precision of 19, scale of 0 - Integer value Decimal: - Precision 1 to 28 digits, scale 0 to 28 - Decimal value with declared precision and scale. Scale must be less than or equal to precision.
char_string	String, Text, Bigint, or Decimal	The Data Integration ServicePowerCenter Integration Service performs an implicit conversion of String, Text, Bigint, or Decimal to char_string: String: - 1 to 104,857,600 characters - Fixed-length or varying-length string Text: - 1 to 104,857,600 characters - Fixed-length or varying-length string Bigint: - 9,223,372,036,854,775,808 to 9,223,372,036,854,775,807 - Precision of 19, scale of 0 - Integer value Decimal: - Precision 1 to 28 digits, scale 0 to 28 - Decimal value with declared precision and scale. Scale must be less than or equal to precision.
boolean	String	1 to 104,857,600 characters. Fixed-length or varying-length string. Valid values are True and False.
duration	String	Valid values for hours are integer values between 0 and 23. Valid values for minutes and seconds are integer values between 0 and 59. If there is no value for any field, specify 0.

Decimal Data Type

When you read data as Decimal in the reader object, use String or Double instead of the Decimal data type for better performance. As Tableau does not support the Decimal data type, you must change the decimal data to string data type that Tableau supports. Change the decimal data type to string in the input wizard of the Tableau data object and char_string or unicode_string in the output wizard of the Tableau data object. To write the decimal data to double data type supported by Tableau, change the decimal data type to double in the input wizard of the Tableau data object. The Data Integration Service performs an implicit conversion of decimal to a comparable native data type, unicode or char_string, that Tableau supports. When you read data as Decimal in the source definition, use String or Double instead of the Decimal data type for better performance. As Tableau does not support the Decimal data type, you must set the decimal data to string data types that Tableau supports. Change the decimal data type to string in the source definition and char_string or unicode_string in the target definition. The PowerCenter Integration Service performs an implicit conversion of decimal to a comparable native data type, unicode or char_string, that Tableau supports.

Duration Data Type

Duration is specified in days, hours, minutes, seconds, and milliseconds. All the values must be integers. You must change the string data type that arrives from different source fields to a single string value and then map this string value to the duration data type in the target operation.

For example, the Data Integration Service reads data from five different source fields of string data type, such as, 5 days, 10 hours, 21 minutes, and 35 seconds. Use the Expression transformation to concatenate the input string values to a single string value of comma-separated values, such as 5,10,21,35,0. Map the string output received from the Expression transformation to duration data type. Use the single string value as the input value and duration as the output value in the target operation of the mapping.

Duration is specified in days, hours, minutes, seconds, and milliseconds. All the values must be integers. You must change the string data type that arrives from different source fields to a single string value and then map this string value to the duration data type in the target.

For example, the PowerCenter Integration Service reads data from five different source fields of string data type, such as, 5 days, 10 hours, 21 minutes, and 35 seconds. Use the Expression transformation to concatenate the input string values to a single string value of comma-separated values, such as 5,10,21,35,0. In the target definition, map the string output received from the Expression transformation to duration data type. Use the single string value as the input value and duration as the output value in the target.

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