



Informatica® PowerExchange for Google
Cloud Storage
10.2 HotFix 1

User Guide for PowerCenter

Informatica PowerExchange for Google Cloud Storage User Guide for PowerCenter
10.2 HotFix 1
August 2018

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Table of Contents

Preface	5
Informatica Resources.	5
Informatica Network.	5
Informatica Knowledge Base.	5
Informatica Documentation.	5
Informatica Product Availability Matrixes.	6
Informatica Velocity.	6
Informatica Marketplace.	6
Informatica Global Customer Support.	6
 Chapter 1: Introduction to PowerExchange for Google Cloud Storage.....	 7
PowerExchange for Google Cloud Storage Overview.	7
Google Cloud Storage File Formats.	7
Introduction to Google Cloud Storage.	8
 Chapter 2: PowerExchange for Google Cloud Storage Installation and Configuration.....	 11
PowerExchange for Google Cloud Storage Installation and Configuration Overview.	11
Installing and Configuring PowerExchange for Google Cloud Storage.	11
Prerequisites.	12
Installing PowerExchange for Google Cloud Storage.	12
Installing the Server Component.	13
Installing the Client Component.	14
Registering the PowerExchange for Google Cloud Storage Plug-in.	14
Registering the PowerExchange for Google Cloud Storage Plug-in from the Administrator Tool.	14
Registering the PowerExchange for Google Cloud Storage Plug-in from the Command Line Program.	15
Configuring Environment Variables.	15
 Chapter 3: Google Cloud Storage Sources and Targets.....	 17
Google Cloud Storage Sources and Targets Overview.	17
Import Google Cloud Storage Source and Target Definitions.	17
Rules and Guidelines for Google Cloud Storage Sources and Targets.	22
 Chapter 4: Google Cloud Storage Mappings.....	 23
Google Cloud Storage Mappings Overview.	23
Google Cloud Storage Mapping Example.	23
 Chapter 5: Google Cloud Storage Sessions.....	 25
Google Cloud Storage Sessions Overview.	25

Google Cloud Storage Connections.	25
Google Cloud Storage Connection Properties.	26
Configuring a Google Cloud Storage Connection.	26
Configure Google Cloud Storage Source Session Properties.	26
Configure Google Cloud Storage Target Session Properties.	27
Java Heap Memory Configuration.	27
Appendix A: Google Cloud Storage Data Type Reference.	29
Data Type Reference Overview.	29
CSV Google Cloud Storage File Data Types and Transformation Data Types.	29
Avro Google Cloud Storage File Data Types and Transformation Data Types.	30
JSON Google Cloud Storage File Data Types and Transformation Data Types.	31
Parquet Google Cloud Storage File Data Types and Transformation Data Types.	32
Index.	33

Preface

The *Informatica PowerExchange for Google Cloud Storage User Guide for PowerCenter* provides information about extracting data from and loading data to Google Cloud Storage. This guide is written for database administrators and developers who are responsible for developing mappings, sessions, and workflows that extract data from and load data to Google Cloud Storage. This guide assumes you have knowledge of Google Cloud Storage and PowerCenter.

Informatica Resources

Informatica Network

Informatica Network hosts Informatica Global Customer Support, the Informatica Knowledge Base, and other product resources. To access Informatica Network, visit <https://network.informatica.com>.

As a member, you can:

- Access all of your Informatica resources in one place.
- Search the Knowledge Base for product resources, including documentation, FAQs, and best practices.
- View product availability information.
- Review your support cases.
- Find your local Informatica User Group Network and collaborate with your peers.

Informatica Knowledge Base

Use the Informatica Knowledge Base to search Informatica Network for product resources such as documentation, how-to articles, best practices, and PAMs.

To access the Knowledge Base, visit <https://kb.informatica.com>. If you have questions, comments, or ideas about the Knowledge Base, contact the Informatica Knowledge Base team at KB_Feedback@informatica.com.

Informatica Documentation

To get the latest documentation for your product, browse the Informatica Knowledge Base at https://kb.informatica.com/_layouts/ProductDocumentation/Page/ProductDocumentSearch.aspx.

If you have questions, comments, or ideas about this documentation, contact the Informatica Documentation team through email at infa_documentation@informatica.com.

Informatica Product Availability Matrixes

Product Availability Matrixes (PAMs) indicate the versions of operating systems, databases, and other types of data sources and targets that a product release supports. If you are an Informatica Network member, you can access PAMs at

<https://network.informatica.com/community/informatica-network/product-availability-matrices>.

Informatica Velocity

Informatica Velocity is a collection of tips and best practices developed by Informatica Professional Services. Developed from the real-world experience of hundreds of data management projects, Informatica Velocity represents the collective knowledge of our consultants who have worked with organizations from around the world to plan, develop, deploy, and maintain successful data management solutions.

If you are an Informatica Network member, you can access Informatica Velocity resources at <http://velocity.informatica.com>.

If you have questions, comments, or ideas about Informatica Velocity, contact Informatica Professional Services at ips@informatica.com.

Informatica Marketplace

The Informatica Marketplace is a forum where you can find solutions that augment, extend, or enhance your Informatica implementations. By leveraging any of the hundreds of solutions from Informatica developers and partners, you can improve your productivity and speed up time to implementation on your projects. You can access Informatica Marketplace at <https://marketplace.informatica.com>.

Informatica Global Customer Support

You can contact a Global Support Center by telephone or through Online Support on Informatica Network.

To find your local Informatica Global Customer Support telephone number, visit the Informatica website at the following link:

<http://www.informatica.com/us/services-and-training/support-services/global-support-centers>.

If you are an Informatica Network member, you can use Online Support at <http://network.informatica.com>.

CHAPTER 1

Introduction to PowerExchange for Google Cloud Storage

This chapter includes the following topics:

- [PowerExchange for Google Cloud Storage Overview, 7](#)
- [Google Cloud Storage File Formats, 7](#)
- [Introduction to Google Cloud Storage, 8](#)

PowerExchange for Google Cloud Storage Overview

You can use PowerExchange for Google Cloud Storage for connectivity between PowerCenter and Google Cloud Storage.

You can use Google Cloud Storage objects as sources and targets in mappings. When you use Google Cloud Storage objects in mappings, you must configure properties specific to Google Cloud Storage.

Example

You run the IT department of a major bank and are responsible for storing huge volumes of transaction files in a relational database. You want to store the data in another database to avoid data loss if the relational database fails.

You can use PowerExchange for Google Cloud Storage to upload huge volumes of transaction files to Google Cloud storage from any location and at any time. You can back up data in Google Cloud Storage for disaster recovery purposes and retrieve the data later, if needed.

You can configure a mapping in PowerCenter to write data to Google Cloud Storage.

Google Cloud Storage File Formats

PowerExchange for Google Cloud Storage can read data from and write data to Google Cloud Storage in the following formats:

- Comma-separated values (CSV)
- JSON (newline-delimited)

- Avro files
- Parquet

When you import a Google Cloud Storage source or target CSV file, you can edit the schema to change the data type and precision.

When you import a Google Cloud Storage source or target file in Avro, Parquet, or JSON format, you can edit the schema

Introduction to Google Cloud Storage

Google Cloud Storage is a web service that allows global storage and retrieval of large volumes of data at any time.

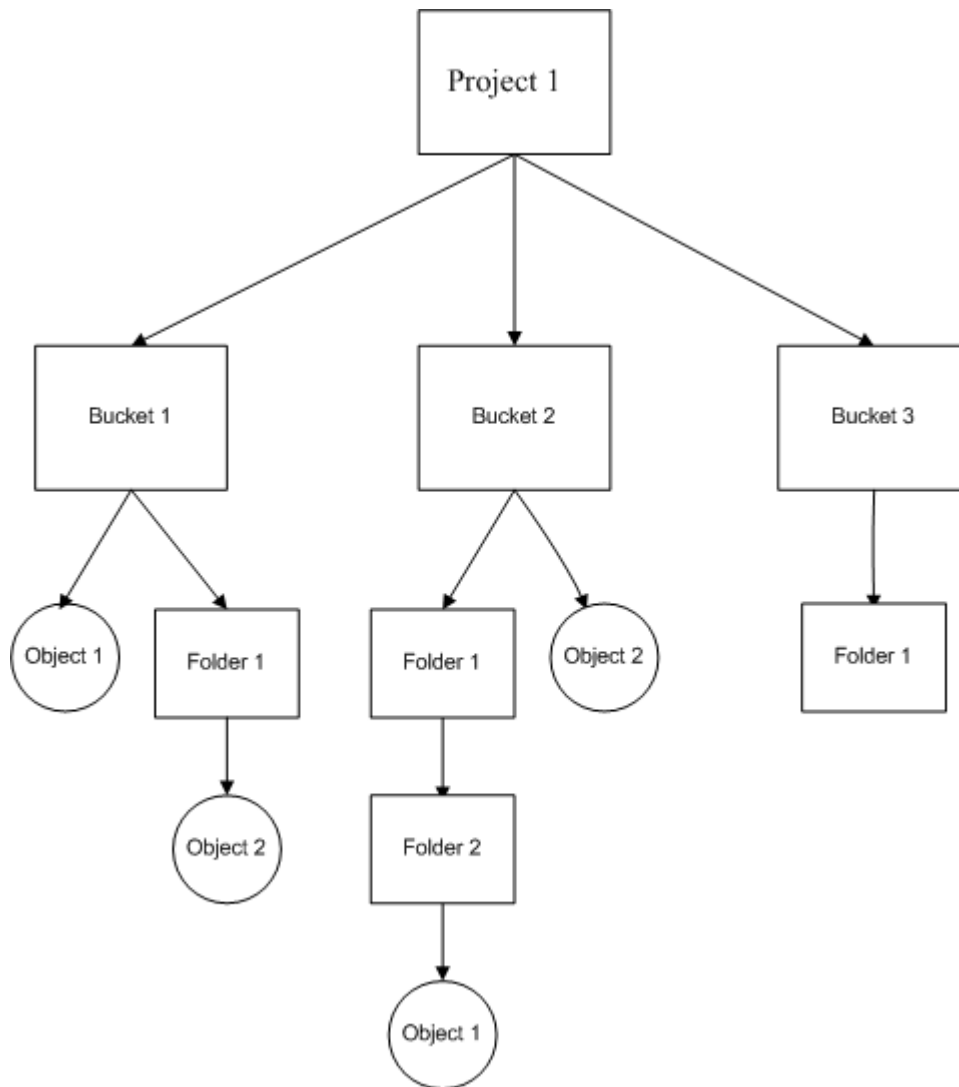
You can use Google Cloud Storage to stream multimedia, store custom data analytics pipelines, or distribute large data objects to users through direct download. You can write data to Google Cloud Storage for data backup. In the event of a database failure, you can read the data from Google Cloud Storage and restore it back to the database.

Google Cloud Storage offers different storage classes based on factors such as data availability, latency, and price.

Google Cloud Storage comprises the following components:

- Projects
- Buckets
- Objects

The following image shows how data can be organized in Google Cloud Storage:



You can use the following components to write to Google Cloud Storage:

Projects

In Google Cloud Storage, all resources are stored within a project. Project is a top-level container that stores billing details and user details. You can create multiple projects. A project has a unique project name, project ID, and project number.

Buckets

Each bucket acts like a container that stores data. You can use buckets to organize and access data. You can create more than one bucket but you cannot nest buckets.

You can create multiple folders within a bucket and you can also nest folders.

You can define access control lists to manage objects and buckets. An access control list consists of permission and scope entries. Permission defines the access to perform a read or write operation. Scope defines a user or a group who can perform the operation.

Objects

Objects comprise the data that you upload to Google Cloud Storage. You can create objects in a bucket. Objects consist of object data and object metadata components. The object data is a file that you store

in Google Cloud Storage. The object metadata is a collection of name-value pairs that describe object qualities.

CHAPTER 2

PowerExchange for Google Cloud Storage Installation and Configuration

This chapter includes the following topics:

- [PowerExchange for Google Cloud Storage Installation and Configuration Overview, 11](#)
- [Installing and Configuring PowerExchange for Google Cloud Storage, 11](#)
- [Prerequisites, 12](#)
- [Installing PowerExchange for Google Cloud Storage, 12](#)
- [Registering the PowerExchange for Google Cloud Storage Plug-in, 14](#)
- [Configuring Environment Variables, 15](#)

PowerExchange for Google Cloud Storage Installation and Configuration Overview

You can install PowerExchange for Google Cloud Storage on a Windows 64-bit or Red Hat Enterprise Linux 64-bit machine.

Installing and Configuring PowerExchange for Google Cloud Storage

To install and configure PowerExchange for Google Cloud Storage, complete the following steps:

1. Complete the prerequisite tasks.
2. Install the PowerExchange for Google Cloud Storage server and client components.
3. Register the PowerExchange for Google Cloud Storage plug-in.
4. Configure environment variables for the PowerCenter Integration Service.

Prerequisites

Before you install PowerExchange for Google Cloud Storage, complete the following tasks:

- Install or upgrade to Informatica Services 10.2 HotFix 1.
- Install and configure the Informatica Developer and PowerCenter. You can install the Informatica Developer and PowerCenter when you install or upgrade to Informatica Client 10.2 HotFix 1.
Note: You must install the Informatica Developer if you want to successfully run the mappings with Avro and Parquet files.
- 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\connectors\cci\plugins
 - <Informatica installation directory>\server\bin\Plugin
 - <Informatica installation directory>\connectors\thirdpartyThe installer must be able to add and overwrite files in these directories.
- Verify that you have read and write permissions on the following directories on each machine where you installed the PowerCenter Client:
 - <Informatica installation directory>\clients\PowerCenterClient
 - <Informatica installation directory>\clients\PowerCenterClient\bin\Help\<language>The installer must be able to add and overwrite files in these directories.
- Download the PowerExchange for Google Cloud Storage server component and client component from the TSFTP location to a directory on your machine.
- Download the Informatica EBF-12422 and EBF-11911 from the TSFTP location to a directory on your machine.
For more information, contact Informatica Global Customer Support.
- Ensure that you have a service account in your Google account to access Google Cloud Storage.
- Ensure that you have the client_email, project_id, and private_key values for the service account. You will need to enter these details when you create a Google Cloud Storage connection in PowerCenter.
- Ensure that you have enabled the Google Cloud Storage JSON API for your service account.
PowerExchange for Google Cloud Storage uses the Google API to integrate with Google Cloud Storage.
- Verify that you have read and write access to the Google Cloud Storage bucket that contains the source file and target file.

For more information about product requirements and supported platforms, see the Product Availability Matrix on Informatica Network:

<https://network.informatica.com/community/informatica-network/product-availability-matrices>.

Installing PowerExchange for Google Cloud Storage

When you install PowerExchange for Google Cloud Storage, you install the following components that allow PowerCenter to access the Google Cloud Storage database:

- Client component. Allows you to import definitions, create mappings, and create connection objects with the PowerCenter Client.

- Server component. Allows the PowerCenter Repository Service to store and access the Google Cloud Storage metadata in the repository and the PowerCenter Integration Service to run Google Cloud Storage sessions.

Installing the Server Component

The PowerExchange for Google Cloud Storage server component installs the PowerCenter Integration Service and PowerCenter Repository Service components.

When you install the PowerExchange for Google Cloud Storage server component, you enable the PowerCenter Integration Service to read data from or write data to Google Cloud Storage.

If the PowerCenter Integration Service or PowerCenter Repository Service is configured to run on primary and backup nodes, install the PowerExchange for Google Cloud Storage 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 Google Cloud Storage server component on each node configured to run on the grid. If you cannot install the PowerExchange for Google Cloud Storage 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 Google Cloud Storage server component. When you create a session, configure the session to use the resource.

For example, create a custom resource called Google Cloud Storage. When you create a session, you can configure the session to use the Google Cloud Storage resource. The Load Balancer dispatches the session to nodes that has the resource.

Installing the Server Component on Windows

Install the PowerExchange for Google Cloud Storage 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 directory:

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

4. Click **Next**.
5. Click **Install** to begin the installation.
6. Click **Done** when the installation is complete.
7. To successfully run mappings with JSON files, install the server component of the Informatica EBF-12422 and EBF-11911.

Installing the Server Component on UNIX

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

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

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

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

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

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

3. To successfully run mappings with JSON files, install the server component of the Informatica EBF-12422 and EBF-11911.

Installing the Client Component

Install the Client component on each PowerCenter Client machine where you want to create or access the Google Cloud Storage datasets.

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:

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

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

The client component is installed.

7. To successfully run mappings with JSON files, install the client component of the Informatica EBF-12422 and EBF-11911.

Registering the PowerExchange for Google Cloud Storage Plug-in

To register the plug-in, the repository must be running in exclusive mode. Use the Administrator tool or the `pmrep RegisterPlugin` command line program to register the plug-in. If you do not have the correct privileges to register the plug-in, contact the user who manages the PowerCenter Repository Service.

The plug-in file is an `.xml` file that defines the functionality of the adapter. When you install the server component, the installer copies the plug-in file to the following directory:

```
<Informatica installation directory>/server/bin/Plugin
```

The name of the plug-in file for PowerExchange for Google Cloud Storage is `googlestorage_Plugin.xml`.

Registering the PowerExchange for Google Cloud Storage Plug-in from the Administrator Tool

Register a repository plug-in to add its functionality to the repository.

1. Run the PowerCenter Repository Service in exclusive mode.

2. In the **Navigator**, select the PowerCenter Repository Service to which you want to add the plug-in.
3. In the **Contents** panel, click the **Plug-ins** view.
4. In the **Actions** menu of the **Domain** tab, select **Register Plug-in**.
5. On the **Register Plugin** page, click the **Browse** button to locate the plug-in file.
6. Enter your user name and password.
7. Click **OK**.

The PowerCenter Repository Service registers the plug-in with the repository. The results of the registration operation appear in the activity log.

8. Run the PowerCenter Repository Service in normal mode.

Registering the PowerExchange for Google Cloud Storage Plug-in from the Command Line Program

You can use the pmrep RegisterPlugin command to register the plug-in from the command line program.

1. Run the PowerCenter Repository Service in exclusive mode.
2. Run the `pmrep Connect` command to connect to the Repository Service using a user account with Administrator Repository privilege.

The RegisterPlugin command uses the following syntax:

```
pmrep connect -r <repository name> -d <domain_name> -n <domain user name> -x
<domain_password>
```

3. Find `googlestorage_Plugin.xml` in the following directory:
`<Informatica installation directory>\server\bin\Plugin`
4. Run the `pmrep RegisterPlugin` command to update the repository.

The RegisterPlugin command uses the following syntax:

```
pmrep registerplugin -i <Informatica installation directory>\server\bin\Plugin
\googlestorage_Plugin.xml -e -N
```

Configuring Environment Variables

After you install PowerExchange for Google Cloud Storage, configure environment variables.

To successfully preview data from the Avro and Parquet files or run a mapping in PowerCenter with the Avro or Parquet files, you must configure the `INFA_HADOOP_DIST_DIR` environment variable for the PowerCenter Integration Service in Informatica Administrator. Perform the following steps to configure the `INFA_HADOOP_DIST_DIR` property:

1. Log in to Informatica Administrator.
2. Click the PowerCenter Integration Service and then click the **Processes** tab on the right pane.
3. Click **Edit** in the **Environment Variables** section.
4. Click **New** to add an environment variable.
5. Enter the name of the environment variable as `INFA_HADOOP_DIST_DIR`.

6. Set the value of the environment variable to the following absolute path of the Hadoop distribution directory on the machine that runs the PowerCenter Integration Service:

<Informatica installation directory/Informatica/services/shared/hadoop/<Hadoop distribution name>_<version>

For example, enter the following absolute path:

C:/Informatica/services/shared/hadoop/cloudera_cdh5u10

CHAPTER 3

Google Cloud Storage Sources and Targets

This chapter includes the following topics:

- [Google Cloud Storage Sources and Targets Overview, 17](#)
- [Import Google Cloud Storage Source and Target Definitions, 17](#)
- [Rules and Guidelines for Google Cloud Storage Sources and Targets, 22](#)

Google Cloud Storage Sources and Targets Overview

You can create a mapping with a Google Cloud Storage source to extract data from Google Cloud Storage. You can create a mapping with any source and a Google Cloud Storage target to load data to Google Cloud Storage.

When the PowerCenter Integration Service extracts data from the source or loads data to the target, it converts the data based on the data types associated with the source or the target.

Import Google Cloud Storage Source and Target Definitions

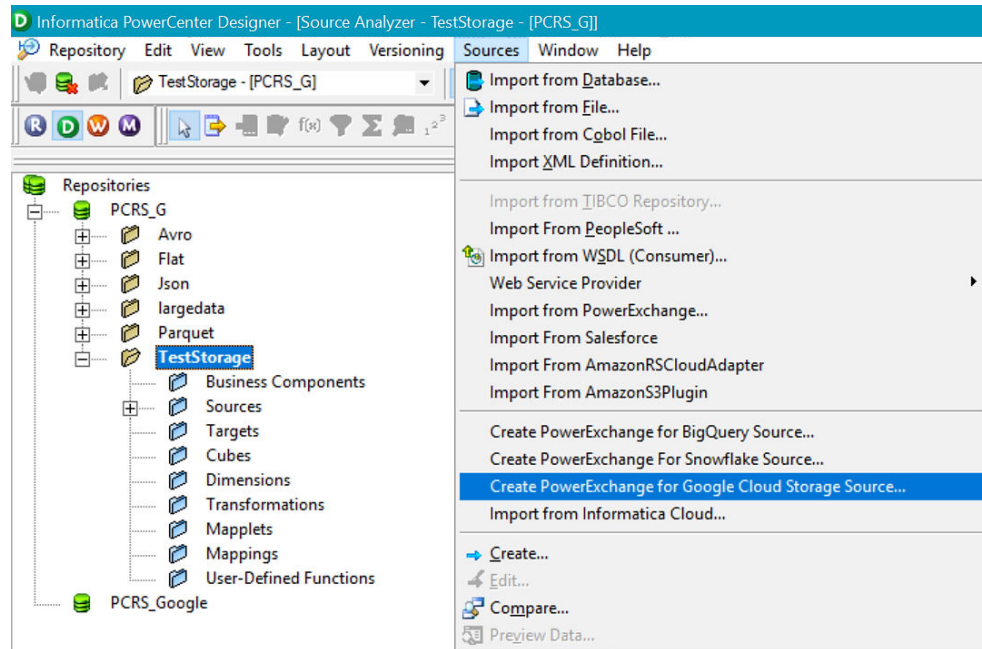
Use the **Create PowerExchange for Google Cloud Storage Source** or **Create PowerExchange for Google Cloud Storage Target** wizard to import Google Cloud Storage source or target definitions into the PowerCenter repository.

You must import Google Cloud Storage source and target objects before you create a mapping.

1. Start PowerCenter Designer, and connect to a PowerCenter repository configured with a Google Cloud Storage instance.
2. Open a source or target folder.

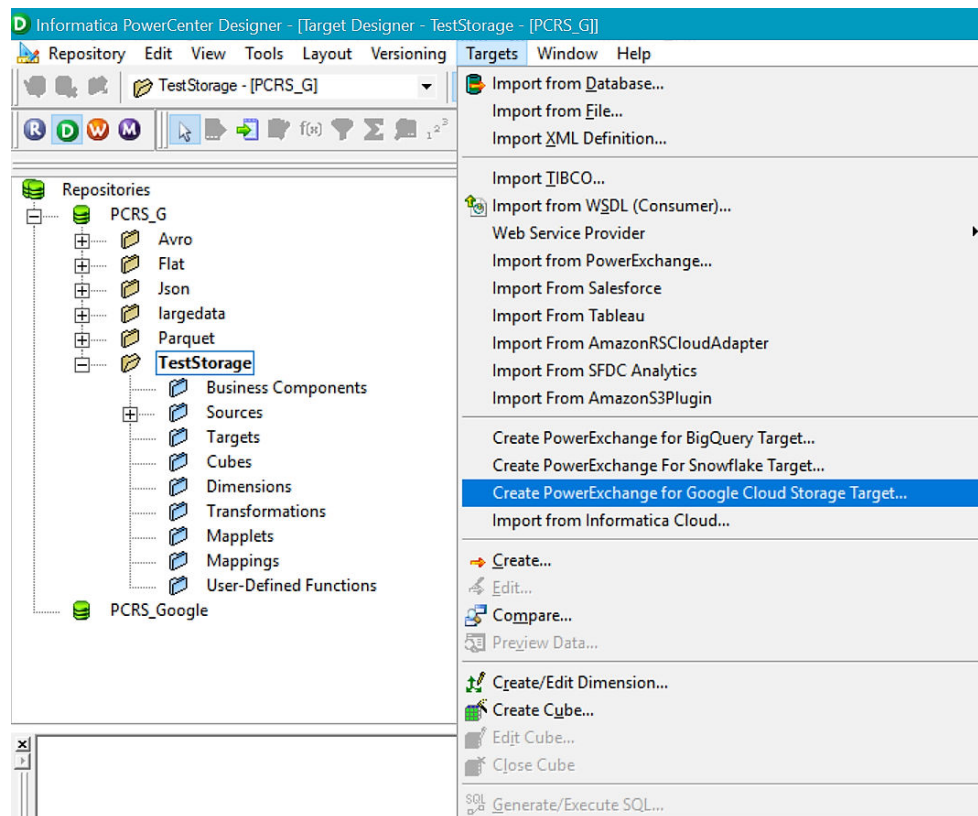
3. Select **Source Analyzer** or **Target Designer**.

- In the Source Analyzer, click **Sources > Create PowerExchange for Google Cloud Storage Source** as shown in the following image:



The **Google Cloud Storage Connection** wizard appears.

- In the Target Analyzer, click **Targets > Create PowerExchange for Cloud Storage Target** as shown in the following image:



The **Google Cloud Storage Connection** dialog box appears.

4. Configure the following connection parameters:

Connection Parameter	Description
Service Account ID	Specifies the client_email value present in the JSON file that you download after you create a service account.
Service Account Key	Specifies the private_key value present in the JSON file that you download after you create a service account.
Project ID	Specifies the project_id value present in the JSON file that you download after you create a service account. If you have created multiple projects with the same service account, enter the ID of the project that contains the dataset that you want to connect to.

5. Click **Test** to test the connection.
6. Click **Finish** to add the connection.

The **Select Objects from** dialog box appears.

7. Select the dataset in **Package Explorer**.

Select Objects from:

Package Explorer

Search Package

- PowerExchange for Google Cloud Storage
 - 000austofcyle
 - 000bus
 - 001test01
 - 000datafi
 - 010testact
 - 010ddatest0
 - 010ddatest001ddatest1
 - 010ddatest01
 - Override_Files
 - 010yrell
 - 000test
 - cloudline_bucket
 - 000miregional_bucket
 - 000zerofix_bucket
 - 000regionl_bucket
 - 122121312
 - 122abedf
 - 232243
 - abc_abc
 - cloudlight1
 - armay_yu_bucket
 - automation_bq
 - automation_bq_bucket
 - automation_bq_bucket_index
 - automation_bq_index
 - automation_gs_reader
 - automation_gs_reader_folder
 - automation_gs_writer
 - automation_gs_writer_folder
 - automation_gs_writer_folder_index
 - big_table01
 - big_downloaded
 - cdttest
 - cmd_automation_gs_writer
 - cmd_automation_gs_writer_folder
 - cmd_automation_gs_writer_folder_index
 - cmd_automation_gs_writer_index
 - colldine_1

Filter

	Display Name	Native Name	Access Type	Description
<input type="checkbox"/>	ALLDT_Icon	ALLDT_Icon	Read and ...	
<input type="checkbox"/>	Auto_CTR1_R30...	Auto_CTR1_R30...	Read and ...	
<input type="checkbox"/>	Auto_CTR1_R30	Auto_CTR1_R30	Read and ...	
<input type="checkbox"/>	Auto_Srcm_So...	Auto_Srcm_So...	Read and ...	
<input type="checkbox"/>	Auto_3d_250C...	Auto_3d_250C...	Read and ...	
<input type="checkbox"/>	Auto_3d_Tgt_Co...	Auto_3d_Tgt_Co...	Read and ...	
<input type="checkbox"/>	Auto_3d_Tgt_10...	Auto_3d_Tgt_10...	Read and ...	
<input type="checkbox"/>	Auto_3d_Tgt_50...	Auto_3d_Tgt_50...	Read and ...	
<input checked="" type="checkbox"/>	Customer_tgt...	Customer_tgt...	Read and ...	
<input type="checkbox"/>	FF_TD_250Cst...	FF_TD_250Cst...	Read and ...	
<input type="checkbox"/>	FF_TD_250Cst...	FF_TD_250Cst...	Read and ...	
<input type="checkbox"/>	HDR_ALLDT_EK...	HDR_ALLDT_EK...	Read and ...	
<input type="checkbox"/>	Icon_Army_Icon	Icon_Army_Icon	Read and ...	
<input type="checkbox"/>	Icon_Arc1_Sour...	Icon_Arc1_Sour...	Read and ...	
<input type="checkbox"/>	Icon_Obje1_Icon	Icon_Obje1_Icon	Read and ...	
<input type="checkbox"/>	Icon_TD1_Tgt_Icon	Icon_TD1_Tgt_Icon	Read and ...	
<input type="checkbox"/>	Icon_src1_Tgt_Icon	Icon_src1_Tgt_Icon	Read and ...	
<input type="checkbox"/>	Icon_Tgt_Icon	Icon_Tgt_Icon	Read and ...	
<input type="checkbox"/>	Null_Shmg_pac...	Null_Shmg_pac...	Read and ...	
<input type="checkbox"/>	Null_data_bt	Null_data_bt	Read and ...	
<input type="checkbox"/>	Null_data_wro...	Null_data_wro...	Read and ...	
<input type="checkbox"/>	OCCN_1346d...	OCCN_1346d...	Read and ...	
<input type="checkbox"/>	PC_3d_prg	PC_3d_prg	Read and ...	
<input type="checkbox"/>	Parquet_CTR_R30	Parquet_CTR_R30	Read and ...	
<input type="checkbox"/>	Parquet_Src_TD...	Parquet_Src_TD...	Read and ...	
<input type="checkbox"/>	Parquet_TD_10...	Parquet_TD_10...	Read and ...	
<input type="checkbox"/>	Parquet_TD_10...	Parquet_TD_10...	Read and ...	
<input type="checkbox"/>	Parquet_TD_50...	Parquet_TD_50...	Read and ...	
<input type="checkbox"/>	Primitive_Auto...	Primitive_Auto...	Read and ...	
<input type="checkbox"/>	Primitive_Auto...	Primitive_Auto...	Read and ...	
<input type="checkbox"/>	Primitive_Sour...	Primitive_Sour...	Read and ...	
<input type="checkbox"/>	Primitive_src...	Primitive_src...	Read and ...	

Show Object Details

Select the file that you want to import, and then click **Next**.

The following image shows the **Select Format Type for** dialog box:

[illegible]

- Flat. To read a flat resource.
- Avro. To read an Avro resource.
- Json. To read a JSON resource.
- Parquet. To read a Parquet resource.

10. If you select **Flat** as the **Format Type**, you must configure the following format properties:

Property	Description
Schema Source	Specifies the mode to import schema for the Google Cloud Storage file. You can select one of the following options: <ul style="list-style-type: none">- Import Schema from File. Import schema from a schema definition file in your local machine.- Read from Data File. PowerExchange for Google Cloud Storage imports the schema from the file in Google Cloud Storage.
Schema	If you selected the Import Schema from File option in the Schema Source drop-down list, you must choose a schema definition file on your local machine. If you selected the Read from Data File option in the Schema Source drop-down list, you can view or edit the schema of the Google Cloud Storage file.
Delimiters	Character used to separate columns of data. If you enter a delimiter that is the same as the escape character or the text qualifier, you might receive unexpected results. Google Cloud Storage reader and writer support Delimiters.
Text Qualifier	Quote character that defines the boundaries of text strings. If you select a quote character, the PowerCenter Integration Service ignores delimiters within pairs of quotes. Google Cloud Storage reader supports Text Qualifier.
Import Column Names From First Line	If selected, the PowerCenter Integration Service uses data in the first row for column names. Select this option if column names appear in the first row. The PowerCenter Integration Service prefixes "FIELD_" to field names that are not valid. Google Cloud Storage reader and writer support Import Column Names From First Line.
Generate Header	If selected, the PowerCenter Integration Service generates a header row in the flat file.
Max Rows to Preview	Specify the maximum number of rows that you want to display in the data preview.
Row Delimiter	Specify a line break character. Select from the list or enter a character. Preface an octal code with a backslash (\). To use a single character, enter the character. The PowerCenter Integration Service uses only the first character when the entry is not preceded by a backslash. The character must be a single-byte character, and no other character in the code page can contain that byte. Default is line-feed, \012 LF (\n).
Escape Character	Character immediately preceding a column delimiter character embedded in an unquoted string, or immediately preceding the quote character in a quoted string. When you specify an escape character, the PowerCenter Integration Service reads the delimiter character as a regular character.

11. If you select **Json**, **Avro**, or **Parquet** as the **Format Type**, you must configure the following format properties:

Property	Description
Schema Source	Specifies the mode to import schema for the Google Cloud Storage file. You can select one of the following options: <ul style="list-style-type: none">- Import Schema from File. Import schema from a schema definition file in your local machine.- Read from Data File. PowerExchange for Google Cloud Storage imports the schema from the file in Google Cloud Storage.
Schema	If you selected the Import Schema from File option in the Schema Source drop-down list, you must choose a schema definition file on your local machine. If you selected the Read from Data File option in the Schema Source drop-down list, you can view or edit the schema of the Google Cloud Storage file.

12. Click **Import**.

Note: If you click **Import** in the **Select Objects from** dialog box, PowerExchange for Google Cloud Storage imports the data from the Google Cloud Storage file in binary format.

To view the object details or preview data, expand the **Object Details/Data Preview** option.

Rules and Guidelines for Google Cloud Storage Sources and Targets

Use the following rules and guidelines when you import a Google Cloud Storage source or target:

- When you import a Google Cloud Storage source or target definition and select **Json** as the **Format Type**, you cannot import the JSON schema using the **Import Schema from File** option.
- When you import a Google Cloud Storage source or target definition and the file contains Unicode characters, the metadata import fails.
- When you import a Google Cloud Storage source or target definition, you can select only one bucket at a time in the **Package Explorer**.

CHAPTER 4

Google Cloud Storage Mappings

This chapter includes the following topics:

- [Google Cloud Storage Mappings Overview, 23](#)
- [Google Cloud Storage Mapping Example, 23](#)

Google Cloud Storage Mappings Overview

After you import a Google Cloud Storage source or target definition into the PowerCenter repository, you can create a mapping to extract data from a Google Cloud Storage source or load data to a Google Cloud Storage target.

Note: You cannot preview data of a Google Cloud Storage source or target definition.

Google Cloud Storage Mapping Example

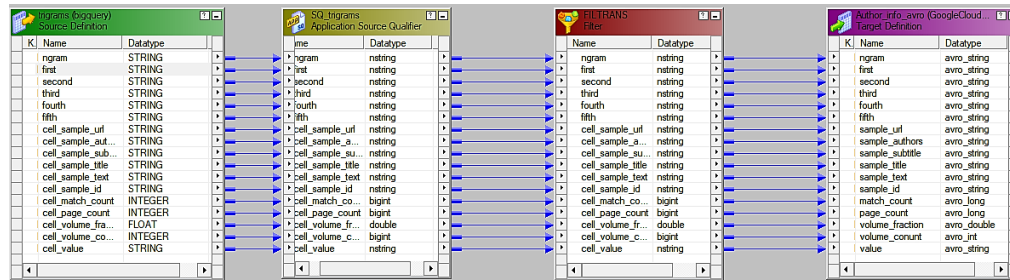
You run the IT department of a library and use Google BigQuery to store information about books in the library. You want to use the Google Cloud Storage to store information for particular authors.

You can extract author and book details from a Google BigQuery source and use PowerExchange for Google Cloud Storage to load the data to a target Avro file in Google Cloud Storage.

The following procedure shows how to move data from Google BigQuery to Google Cloud Storage:

1. Import the Google BigQuery source table.
2. Import the Google Cloud Storage target file.
3. Create a mapping with the Google BigQuery source and the Google Cloud Storage target.
4. Use a **Filter Transformation** to filter details for a particular author.

The following image shows the example mapping:



5. Create a session and configure it to load the data to the Google Cloud Storage target.

The mapping contains the following objects:

Google BigQuery Source Definition

The mapping source definition is a Google BigQuery source table. In the **Source Analyzer**, import the Google BigQuery `trigrams` source table. The PowerCenter Integration Service reads the author and book details from the Google BigQuery source.

Transformations

The `FILTRANS` filter transformation filters the details for a particular author.

Google Cloud Storage Target Definition

The mapping contains a Google Cloud Storage target definition.

In the **Target Designer**, import a Google Cloud Storage target definition.

CHAPTER 5

Google Cloud Storage Sessions

This chapter includes the following topics:

- [Google Cloud Storage Sessions Overview, 25](#)
- [Google Cloud Storage Connections, 25](#)
- [Configure Google Cloud Storage Source Session Properties, 26](#)
- [Configure Google Cloud Storage Target Session Properties, 27](#)
- [Java Heap Memory Configuration, 27](#)

Google Cloud Storage Sessions Overview

After you create mappings, you can create a session to extract and load data.

You must configure a Google Cloud Storage connection in the **Workflow Manager** to extract data from or load data to a Google Cloud Storage object. You can define properties in a session to determine how the PowerCenter Integration Service must extract data from a Google Cloud Storage source or load data to a Google Cloud Storage target.

Google Cloud Storage Connections

Create a Google Cloud Storage connection to read data from a Google Cloud Storage source and write data to a Google Cloud Storage target. You can use Google Cloud Storage connections in mappings. When you create a Google Cloud Storage connection, you can configure a connection mode based on how you want to read and write the data.

Google Cloud Storage Connection Properties

When you configure a Google Cloud Storage connection, you define the connection attributes that the PowerCenter Integration Service uses to connect to the Google Cloud Storage database.

The following table describes the Google Cloud Storage connection properties:

Property	Description
Service Account ID	Specifies the client_email value present in the JSON file that you download after you create a service account.
Service Account Key	Specifies the private_key value present in the JSON file that you download after you create a service account.
Project ID	Specifies the project_id value present in the JSON file that you download after you create a service account. If you have created multiple projects with the same service account, enter the ID of the project that contains the dataset that you want to connect to.

Configuring a Google Cloud Storage Connection

Configure a Google Cloud Storage connection in the **Workflow Manager** to define the connection attributes that the PowerCenter Integration Service uses to connect to the Google Cloud Storage database.

1. In the Workflow Manager, click **Connections > Application**.
The **Application Connection Browser** dialog box appears.
2. Click **New**.
The **Select Subtype** dialog box appears.
3. Select **Google Cloud Storage** and click **OK**.
The **Application Connection Editor** dialog box appears.
4. Enter a name for the Google Cloud Storage connection.
5. Enter the Google Cloud Storage connection attributes.
6. Click **OK** to create a Google Cloud Storage connection.

Configure Google Cloud Storage Source Session Properties

You can configure the session properties for a Google Cloud Storage source on the **Mapping** tab. Define the properties for the source instance in the session.

The following table describes the session properties that you can configure for a Google Cloud Storage source session:

Property	Description
Tracing Level	Amount of detail displayed in the session log for the transformation. You can choose Normal, Verbose Initialization, or Verbose Data. Default is Normal.
Output is Deterministic	Indicates whether the transformation generates consistent output data between session runs.

Configure Google Cloud Storage Target Session Properties

You can configure the session properties for a Google Cloud Storage target 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 a Google Cloud Storage target session:

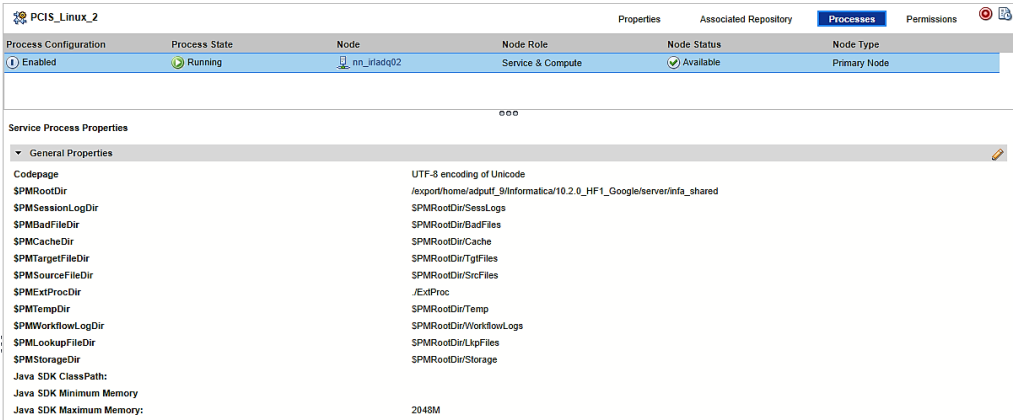
Property	Description
Google Cloud Storage Path	Overrides the Google Cloud Storage path to the file that you selected in the Google Cloud Storage target definition. This property is required when the source is not a flat file. Use the following format: <code>gs://<bucket name></code> or <code>gs://<bucket name>/<folder name></code>
Target File Name	Optional. Overrides the Google Cloud Storage target file name.

Java Heap Memory Configuration

When the Google Cloud Storage source or target contains large amount of data, configure the memory for the Java heap size in the node that runs the PowerCenter Integration Service for the Google Cloud Storage session to run successfully.

1. In the Administrator tool, navigate to the PowerCenter Integration Service for which you want to change the Java heap size.
2. Click the **Processes** tab.
3. Edit the **General Properties** section.
4. Specify the maximum heap size in **Java SDK Maximum Memory** limit based on the amount data you want to process.

The following image shows the **Processes** tab where you can configure the **Java SDK Maximum Memory** for the PowerCenter Integration Service:



- 5. Click **Ok**.
- 6. Restart the PowerCenter Integration Service.

APPENDIX A

Google Cloud Storage Data Type Reference

This appendix includes the following topics:

- [Data Type Reference Overview, 29](#)
- [CSV Google Cloud Storage File Data Types and Transformation Data Types, 29](#)
- [Avro Google Cloud Storage File Data Types and Transformation Data Types, 30](#)
- [JSON Google Cloud Storage File Data Types and Transformation Data Types, 31](#)
- [Parquet Google Cloud Storage File Data Types and Transformation Data Types, 32](#)

Data Type Reference Overview

PowerCenter uses the following data types in Google Cloud Storage mappings:

- Google Cloud Storage native data types. Google Cloud Storage data types appear in Google Cloud Storage 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 PowerCenter Integration Service uses to move data across platforms. They 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.

CSV Google Cloud Storage File Data Types and Transformation Data Types

CSV Google Cloud Storage file data types map to transformation data types that the PowerCenter Integration Service uses to move data across platforms.

The following table lists the Google Cloud Storage data types that the PowerCenter Integration Service supports and the corresponding transformation data types:

Google Cloud Storage Data Type	Transformation Data Type	Description
BIGINT	Bigint	Precision of 19 digits, scale of 0
DATETIME	Date/Time	Jan 1, 0001 A.D. to Dec 31, 9999 A.D. Precision of 29, scale of 9 (precision to the nanosecond) Combined date/time value.
NSTRING	String	1 to 104,857,600 characters
NUMBER	Decimal	For transformations that support precision up to 28 digits, the precision is 1 to 28 digits, and the scale is 0 to 28. If you specify the precision greater than the maximum number of digits, the PowerCenter Integration Service converts decimal values to double in high precision mode.
STRING	String	1 to 104,857,600 characters
Timestamp with Time Zone	timestampWithTZ	Precision of 36, scale of 9

Avro Google Cloud Storage File Data Types and Transformation Data Types

Avro Google Cloud Storage file data types map to transformation data types that the PowerCenter Integration Service uses to move data across platforms.

The following table lists the Avro Google Cloud Storage file data types that the PowerCenter Integration Service supports and the corresponding transformation data types:

Avro Google Cloud Storage File Data Type	Transformation Data Type	Range and Description
BOOLEAN	Integer	TRUE (1) or FALSE (0)
BYTES	Binary	Precision 4000
DOUBLE	Double	Precision 15
FIXED	Binary	1 to 104,857,600 bytes
FLOAT	Double	Precision 15
INT	Integer	-2,147,483,648 to 2,147,483,647 Precision 10, scale 0

Avro Google Cloud Storage File Data Type	Transformation Data Type	Range and Description
LONG	Bigint	-9,223,372,036,854,775,808 to 9,223,372,036,854,775,807 Precision 19, scale 0
NULL	Integer	-2,147,483,648 to 2,147,483,647 Precision 10, scale 0
STRING	String	1 to 104,857,600 characters

JSON Google Cloud Storage File Data Types and Transformation Data Types

JSON Google Cloud Storage file data types map to transformation data types that the PowerCenter Integration Service uses to move data across platforms.

The following table lists the JSON Google Cloud Storage file data types that the PowerCenter Integration Service supports and the corresponding transformation data types:

JSON Google Cloud Storage File Data Type	Transformation Data Type	Range and Description
BIGINT	Bigint	Precision of 19 digits, scale of 0
BOOLEAN	Integer	TRUE (1) or FALSE (0)
DOUBLE	Double	Precision 15
INTEGER	Integer	-2,147,483,648 to 2,147,483,647 Precision of 10, scale of 0
STRING	String	1 to 104,857,600 characters

Note: PowerExchange for Google Cloud Storage does not support the following JSON data types:

- Object
- Array
- Date/Timestamp
- Enum
- Union

Parquet Google Cloud Storage File Data Types and Transformation Data Types

Google Cloud Storage file data types map to transformation data types that the PowerCenter Integration Service uses to move data across platforms.

The following table lists the Google Cloud Storage file data types that the PowerCenter Integration Service supports and the corresponding transformation data types:

Parquet Google Cloud Storage File Data Type	Transformation	Description
BINARY (UTF8)	String	1 to 104,857,600 characters
BOOLEAN	Integer	TRUE (1) or FALSE (0)
DOUBLE	Double	Precision of 15 digits
Int32	Integer	-2,147,483,648 to 2,147,483,647 Precision of 10, scale of 0
Int64	Bigint	-9,223,372,036,854,775,808 to 9,223,372,036,854,775,807 Precision of 19, scale of 0

The Parquet schema that you specify to read or write a Parquet file must be in smaller case. Parquet does not support case-sensitive schema.

INDEX

A

Avro Google Cloud Storage file data types
transformation data types [30](#)

C

client component installation [14](#)
configuration
overview [11](#)

F

filter [23](#)

G

Google Cloud Storage
access control lists [8](#)
components [8](#)
connections [25](#)
features [8](#)
introduction [8](#)
mappings [23](#)
source [17](#)
target [17](#)
Google Cloud Storage components
buckets [8](#)
objects [8](#)
projects [8](#)
Google Cloud Storage connections
properties [26](#)
connection configuration [26](#)
Google Cloud Storage files
data format [7](#)

I

Import
connection properties [17](#)
source definition [17](#)
target definition [17](#)
installation and configuration
client component [14](#)

installation and configuration (*continued*)
EBF [12](#)
prerequisites [12](#)
product availability matrix [12](#)
server component [13](#)

J

java heap size [27](#)
JSON Google Cloud Storage file data types
transformation data types [31](#)

M

mapping
example [23](#)
filter [23](#)
source [23](#)
target [23](#)

P

Parquet Google Cloud Storage file data types
transformation data types [32](#)
plug-in registration
administrator tool [14](#)
PowerExchange for Google Cloud Storage
configuration [11](#)
EBF [7](#)
example [7](#)
overview [7](#)
plug-in registration [14](#)

S

server component installation
on UNIX [13](#)
on Windows [13](#)
session
overview [25](#)
source properties [26](#)
target properties [27](#)