

Informatica[®] PowerExchange for PostgreSQL 10.5

User Guide for PowerCenter

Informatica PowerExchange for PostgreSQL User Guide for PowerCenter 10.5 March 2021

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Preface

Use the *Informatica®* PowerExchange® for PostgreSQL User Guide to learn how to read from and write to PostgreSQL by using the PowerCenter Client. Learn to create a PostgreSQL connection, develop mappings, and run sessions in an Informatica domain.

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Product Availability Matrices (PAMs) indicate the versions of the operating systems, databases, and types of data sources and targets that a product release supports. You can browse the Informatica PAMs at https://network.informatica.com/community/informatica-network/product-availability-matrices.

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You can find Informatica Velocity resources at <u>http://velocity.informatica.com</u>. If you have questions, comments, or ideas about Informatica Velocity, contact Informatica Professional Services at <u>ips@informatica.com</u>.

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

https://www.informatica.com/services-and-training/customer-success-services/contact-us.html.

To find online support resources on the Informatica Network, visit <u>https://network.informatica.com</u> and select the eSupport option.

CHAPTER 1

Introduction to PowerExchange for PostgreSQL

This chapter includes the following topic:

• PowerExchange for PostgreSQL Overview, 7

PowerExchange for PostgreSQL Overview

You can use PowerExchange for PostgreSQL to securely read data from or write data to PostgreSQL.

You can import PostgreSQL objects as sources and targets to create mappings, and run a session to extract data from or load data to PostgreSQL. When you use PostgreSQL objects in mappings, you must configure properties specific to PostgreSQL.

When you run a PostgreSQL session, the PowerCenter Integration Service writes data to PostgreSQL based on the defined data logic and the configured PostgreSQL connection.

CHAPTER 2

PowerExchange for PostgreSQL Configuration

This chapter includes the following topics:

- Installation and Configuration Overview, 8
- Prerequisites, 8
- Registering the Plug-in, 9

Installation and Configuration Overview

PowerExchange for PostgreSQL installs with PowerCenter. After you install or upgrade Informatica Services, you must register the PowerExchange for PostgreSQL plug-in with the PowerCenter repository.

Prerequisites

Before you use PowerExchange for PostgreSQL, perform the following tasks:

- Install or upgrade 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\connectors\cci\plugins
 - <Informatica installation directory>\server\bin\Plugin
 - <Informatica installation directory>\connectors\thirdparty
- 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>

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.

Registering the Plug-in

After you complete the installation, register the PowerExchange for PostgreSQL plug-in with the repository.

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 PostgreSQL is postgres Plugin.xml.

Registering the 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 Plug-in from the Command Line Interface

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

- 1. Run the PowerCenter Repository Service in exclusive mode.
- Run the pmrep Connect command to connect to the Repository Service with a user account that has the 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 <adaptername>.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
\postgres_Plugin.xml -e</pre>
```

CHAPTER 3

PostgreSQL Sources and Targets

This chapter includes the following topics:

- PostgreSQL Sources and Targets Overview, 10
- Import PostgreSQL Source and Target Definitions, 10

PostgreSQL Sources and Targets Overview

You can create a mapping with a PostgreSQL source to extract data from PostgreSQL. You can create a mapping with any source and a PostgreSQL target to load data to PostgreSQL. You can use tables as PostgreSQL sources.

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 PostgreSQL Source and Target Definitions

Use the **Create PowerExchange For PostgreSQL Source** or **Create PowerExchange For PostgreSQL Target** wizard to import PostgreSQL source and target definitions into the PowerCenter repository.

You must import PostgreSQL source and target objects before you create a mapping.

- 1. Start PowerCenter Designer and connect to a PowerCenter repository configured with a PostgreSQL instance.
- 2. Open a source or target folder.

3. Select Source Analyzer or Target Designer.

• In the Source Analyzer, click **Sources** > **Create PowerExchange For PostgreSQL Source**. The following image shows the option to create a PostgreSQL source:



The PostgreSQL Connection Details dialog box appears.

• In the Target Analyzer, click Targets > Create PowerExchange For PostgreSQL Target. The following image shows the option to create a PostgreSQL target: Informatica PowerCenter Designer - [Target Designer - CERT_POSTGRESQL - [repo_cert_ODL_BOXSET_1000]] Repository Edit View Tools Layout Versioning Targets Window Help 🧐 🔍 🍂 🍘 CERT_POSTGRESQL - [repo_cert_OD 🗸 📗 B Import from Database... Import from File ... C 🖸 💟 Ѽ 🙀 📑 🛃 🕼 foo 🌱 ∑ 💭 123 Import XML Definition ... Import TIBCO ... lmport from WSDL (Consumer)... Web Service Provider Import from PowerExchange... Import From Salesforce Import From Tableau Import From AmazonRSCloudAdapter Import From SFDC Analytics Import From AmazonS3Plugin Import from Informatica Cloud... Create PowerExchange for BigQuery Target... Create PowerExchange For Snowflake Target... Create PowerExchange for Microsoft Dynamics 365 for Sales Target... Create PowerExchange for Google Cloud Spanner Target... Create PowerExchange for Google Analytics Target ... Create AzureDWv3 Target... Create PowerExchange for Google Cloud Storage Target... Create PowerExchange For PostgreSQL Targe Create PowerExchange for Kafka Target... Create SAPTableReader Target ... - Create ... & Edit... Compare... 50 Preview Data. 1 Create/Edit Dimension ... Create Cube...

The PostgreSQL Connection Details dialog box appears.

- 4. Configure the PostgreSQL connection parameters.
- 5. Click **Test** to test the connection.
- 6. Click **Finish** to add the connection.
- 7. Click Next.

The Select Objects from tab appears.

8. Select the database and schema in Package Explorer.

The following image shows the list of tables that appear:

ackage Explorer	Filter		Filter By Dis	play Name	~ App	ly .
earch Package			-			
 ✓		Display Name CUSTOMERS DISTINCT EMP Partioning PerfSrc PerfTgt	Native Name CUSTOMERS DISTINCT EMP Pationing PerfSrc PerfTgt	Access Type Read and Write Read and Write Read and Write Read and Write Read and Write Read and Write	Description	,
> \Rightarrow VIEW > \Rightarrow ALIAS > \Rightarrow schema > \Rightarrow space check		Postgres_01_AllDataTyp Postgres_02_AllDataTyp Postgres_05_CreateTarg SELECT Sample_CTR_new UNIQUE address address	Postgres_01_AllDataTyp Postgres_02_AllDataTyp Postgres_05_CreateTarg SELECT Sample_CTR_new UNIQUE address address	Read and Write Read and Write Read and Write Read and Write Read and Write Read and Write Read and Write		
	Show	address_In_src	address_torow	Read and Write		>

9. Select the table that you want to import, and then click Import.

To view the table metadata, select the table, and double-click the table name.

CHAPTER 4

PostgreSQL Mappings

This chapter includes the following topics:

- PostgreSQL Mappings Overview, 14
- PostgreSQL Mapping Example, 19

PostgreSQL Mappings Overview

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

You can extract data from one or more PostgreSQL sources, and load data to one or more PostgreSQL targets. You can join multiple PostgreSQL tables when you specify a join condition.

You can enter a filter condition to reduce the number of source rows the PowerCenter Integration Service returns from PostgreSQL sources. You can enter a single filter condition or a series of conditions.

Source Filter

You can enter a filter condition to reduce the number of source rows the PowerCenter Integration Service returns from PostgreSQL sources. You can enter a single filter condition or a series of conditions.

Use the source filter in the Application Source Qualifier to retrieve rows from an entity that meet a condition.

You can provide a source filter to improve the performance when you read from PostgreSQL.

Configuring a Source Filter

Configure a source filter from the Application Source Qualifier.

1. In the Mapping Designer, double-click the Application Source Qualifier.

The Edit Transformation tab appears as shown in the following image:

Mapping Designer	ALUE
Name NUM_INTG NUM_DECIMAL NUM_DECIMAL NUM_DECIMAL NUM_DECIMAL NUM_INTG	Edit Transformations × Transformation Ports Properties Sources Metadata Extensions Edit Conditions Filter Conditions would be used for Source while retriving the rows Edit Filter Conditions
	OK Cancel Apply Help

- 2. Click the Edit Conditions tab.
- 3. Click Edit Filter Conditions.

The Add Filter Condition dialog box appears.

4. Select the filter field and operator that you want to specify in the condition, enter a value for the condition, and click **Add Condition**.

The condition appears in the Filter Expression pane as shown in the following image:

				_ □ ×
S E	pecify filter conditions for COUNDARYVALUE	r the object :		
۲	Platform Expression	○ Native Expres	sion	
	Add Filter Condition			
	Select Field	✓ Select Operation ✓	Value	4
	Field	Operator	Value	Remove
	ID	<	45	×
	DATA_BOOLEAN	=	true	×
			Finish	Cancel

- 5. Click **Finish** to add the filter condition.
- 6. Click OK.

Source Join

You can enter a join condition to join multiple PostgreSQL source tables.

Configure the source join from the Application Source Qualifier of the parent table. When you configure the join in the Mapping Designer, retain the source qualifier only of the parent table and then link the fields from the child tables to the parent source qualifier.

Use the Platform Expression or Native Expression type to define the relationship of the tables that you want to join.

Configuring a Source Join

You can use the Application Source Qualifier of the parent table to join multiple tables.

- 1. In the **Mapping Designer**, retain the source qualifier only of the parent table and manually delete the source qualifiers for the child tables.
- 2. Link the fields from the child tables to the parent source qualifier.

The following image shows an example mapping that contains the linked child tables with the parent source qualifier:

3. Double-click the **Application Source Qualifier** of the parent table.

The Edit Transformation tab appears.

The following image shows the **Edit Conditions** tab in the Application Source Qualifier Transformation type:



4. Click the Edit Conditions tab.

	Edit Transformations	\times
department (PostgreSQL) Image: Contract of the second se	Transformation Ports Properties Sources Metadata Extensions Edit Conditions Filter Conditions would be used for Source while retriving the rows Edit Filter Conditions Join Conditions would be used for Source while retriving the rows	
employee_new (PostgreSQL) ? _ Source Definition	Edit Join Conditions	
emp_id INTEGER name CHARACTER_V dept_id INTEGER age INTEGER		
< >	OK Cancel Apply	Help

- 5. Click Edit Join Conditions.
- 6. To define a join condition for the tables using **Platform Expression**, perform the following tasks:
 - a. In the **Tables** section, select the child table, and then select the join type for the child table with the parent table.

b. In the ${\it Relationships}$ section, define the relationship for the join.

The Add button in the Relationships section enables only when you select the child table.

The following image shows the join types that you can configure and the relationship that you can define to join tables when you use the Infa expression:

Tables:					
Order	Table Name		Join Ty	pe	Move Up
2	employee_new department		Outer	~	Move Down
Relation	nships:		Left Right		
Left Fie	eld	Operator	Right Field	14	Add
cinpio	Jec_nemental	-	ucpontinentiacpi,		Remove

7. To define a join condition using **Native Expression**, select the fields and define a join query syntax:

Join \times Expression Type O Platform Expression Native Expression Search Fields employee_new.emp_id=department.dept_id Image: monospace in the second sec 🕮 emp_id 🛄 name 🖏 dept_id 🛄 age address 🛄 salary 🗸 🏢 department 🖏 dept_id 🛄 dept_name

The following image shows the fields that you add when you define the join query:

8. Click OK.

PostgreSQL Mapping Example

You work for an organization that stores purchase order details, such as customer ID, item codes, and item quantity in a Microsoft SQL Server. You need to analyze purchase order details and move data from the Microsoft SQL Server database to PostgreSQL.

OK

Create a mapping to read all the purchase records from Microsoft SQL Server, process the data, and write them to a PostgreSQL target.

Perform the following tasks to move data from Microsoft SQL Server to PostgreSQL:

- 1. Import the Microsoft SQL Server source.
- 2. Import a PostgreSQL target.
- 3. Create a mapping with a Microsoft SQL Server source and a PostgreSQL target.

Cancel



	<u> </u>		· ·			<u> </u>			
Mapping	Designer								
	CUSTOMER (Micro	soft S ? =			1	1-1		SCDW CUSTOME	R (Sn 👔
	Source Definition			Source Qualifier			- Registra 1997	Target Definition	
	K. Name	Datatype		Name	Datatype			K. Name	Datatype
	CUSTOMER_ID	varchar 🕨 🗕	•••••	CUSTOMER_ID	string	•		CUSTOMER_ID	VARCHA
	CUSTOMER_N	varchar •	•••••	CUSTOMER	string	•		CUSTOMER_N	VARCHA
	Y TIEM_PURCHA	Varchar /	•	ITEM_PURCH	string	•		ITEM_PURCHA	VARCHA
	FRICE	filoat -	•	PRICE	double	•		PRICE	DOUBLE
	•	•		•	•		-	(•
			440	*******		uni			

 Create a session and configure the session properties to load the data to the PostgreSQL target. The mapping contains the following objects: Source Definition

The mapping source definition is a relational database object. In the **Source Analyzer**, import the Microsoft SQL Server source. The PowerCenter Integration Service reads the customer transaction details from the Microsoft SQL Server source.

The following table describes the structure of the source definition called CUSTOMER:

Field	Data Type
CUSTOMER_ID	Varchar
CUSTOMER_NAME	Varchar
ITEM_PURCHASED	Varchar
PRICE	Float

Mapping Target

The mapping contains a PostgreSQL target definition.

In the Target Designer, import a PostgreSQL target definition.

The following table describes the structure of the target definition called SCDW_CUSTOMER:

Field	Data Type
CUSTOMER_ID	Varchar
CUSTOMER_NAME	Varchar
ITEM_PURCHASED	Varchar
PRICE	Double

CHAPTER 5

PostgreSQL Sessions

This chapter includes the following topics:

- PostgreSQL Sessions Overview, 21
- PowerExchange for PostgreSQL Connection Properties, 22
- Configure PostgreSQL Source Session Properties, 23
- <u>Configure PostgreSQL Target Session Properties, 25</u>
- Parameterization, 26
- Lookup, 26
- Update Strategy Transformation, 26
- Partitioning, 26

PostgreSQL Sessions Overview

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

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

PowerExchange for PostgreSQL Connection Properties

When you configure a PowerExchange for PostgreSQL connection, you define the connection attributes that the PowerCenter Integration Service uses to connect to the PostgreSQL database.

The following table describes the PostgreSQL connection properties:

Connection Property	Description
Host Name	Host name of the PostgreSQL server to which you want to connect.
Port	Port number for the PostgreSQL server to which you want to connect. Default is 5432.
Database	The PostgresSQL database name.
User Name	User name to access the PostgreSQL database.
Password	Password for the PostgreSQL database user name.
Encryption Method	 Determines whether the data exchanged between the PowerCenter Integration Service and the PostgreSQL database server is encrypted: Select one of the following encryption methods: noEncryption. Establishes a connection without using SSL. Data is not encrypted. SSL. Establishes a connection using SSL. Data is encrypted using SSL. If the PostgreSQL database server does not support SSL, the connection fails. requestSSL. Attempts to establish a connection using SSL. If the PostgreSQL database server does not support SSL, the PowerCenter Integration Service establishes an unencrypted connection. Default is noEncryption.
Validate Server Certificate	Applicable if you enable the encryption method to SSL or requestSSL. Select the Validate Server Certificate option so that the PowerCenter Integration Service validates the server certificate that is sent by the PostgreSQL database server. If you specify the Hostname In Certificate parameter, the PowerCenter Integration Service also validates the host name in the certificate.
TrustStore	Applicable if you select SSL or requestSSL as the encryption method and the Validate Server Certificate option. The path and name of the truststore file, which contains the list of the Certificate Authorities (CAs) that the PostgreSQL client trusts.
TrustStore Password	Applicable if you select SSL or requestSSL as the encryption method and the Validate Server Certificate option. The password to access the truststore file that contains the SSL certificate.
Host Name In Certificate	Optional when you select SSL or requestSSL as the encryption method and the Validate Server Certificate option. Specifying a host name ensures additional security and the PowerCenter Integration Service validates the host name included in the connection with the host name in the SSL certificate.

Connection Property	Description
KeyStore	Applicable if you select SSL as the encryption method and when client authentication is enabled on the PostgreSQL database server. The path and the file name of the key store. The keystore file contains the certificates that the PostgreSQL client sends to the PostgreSQL server in response to the server's certificate request.
KeyStore Password	Applicable if you select SSL as the encryption method and when client authentication is enabled on the PostgreSQL database server. The password for the keystore file required for secure communication.
Key Password	Applicable if you select SSL as the encryption method and when client authentication is enabled on the PostgreSQL database server. Required when individual keys in the keystore file have a different password than the keystore file.
Additional Connection Properties	Additional connection parameters that you want to use. You must provide the connection parameters as semicolon-separated key-value pairs. For example, ConnectionRetryCount=2; ConnectionRetryDelay=5
Crypto Protocol Versions	Required if you enable the encryption method to SSL or requestSSL. Specifies a cryptographic protocol or a list of cryptographic protocols when you use an encrypted connection. You can select from the following protocols: - SSLv3 - TLSv1 - TLSv1_1 - TLSv1_2

Configuring a PostgreSQL Connection

Configure a PostgreSQL connection in the Workflow Manager to define the connection attributes that the PowerCenter Integration Service uses to connect to the PostgreSQL database.

1. In the Workflow Manager, click Connections > Relational.

The Relational Connection Browser dialog box appears.

2. Click New.

The Relational Connection Editor dialog box appears.

- 3. Enter a name for the PostgreSQL connection.
- 4. Enter the PostgreSQL connection attributes.
- 5. Click OK to create a PostgreSQL connection.

Configure PostgreSQL Source Session Properties

You can configure the session properties for a PostgreSQL source on the **Workflow Manager** tab. Define the properties for the source instance in the session.

The following table describes the session properties that you can configure for a PostgreSQL source session:

Session Property	Description
Pre-SQL	The pre-SQL commands to run before the PowerCenter Integration Service reads data from the source.
Post-SQL	The post-SQL commands to run after the PowerCenter Integration Service reads data from source.
SQL Override	The SQL statement to override the default query generated from the specified source type to read data from the PostgreSQL source. Ensure that the list of selected columns, data types, and the order of the columns that appear in the query matches the columns, data types, and order in which they appear in the source object.
	Note: SQL override is not supported when you enable partitioning. If you specify an SQL override and configure partitioning, the mapping fails.
Filter Override Type	The type of filter expression that you want to override in the source qualifier. You can select Native or Platform filter expression type to override. Default is None.
Fetch Size	Determines the number of rows to read in one resultant set from PostgreSQL. Specifying a number limits the number of rows to fetch with each trip to the database and avoids unnecessary memory consumption. Default is 100000
Filter Override	The filter condition that overrides the filter condition you specify in the source qualifier. After you select Native or Platform Filter Override Type, specify the filter condition to override in the source qualifier. Note: When you configure a Platform filter override, you must specify the absolute qualified column name in the following format: tablename.columnname

Configure a Filter Override

When you read data from a PostgreSQL source, you can specify the filter override type and filter override condition in the PostgreSQL source session properties to override the filter condition you specify in the source qualifier.

You must select the corresponding Native or Platform expression as the **Filter Override Type** in the PostgreSQL source session properties based on the expression used in the source qualifier. Default is None.

After you select the filter expression, specify the filter condition in the **Filter Override** field. When you run the session, the PowerCenter overrides the filter condition you specify in the source qualifier and uses the condition you specified in the session properties to filter the PostgreSQL data.

The following image shows the filter override type and the filter override condition fields in the PostgreSQL source session properties:

are rears									×
Seneral Properties	Config Object	Mapping	Componer	nts Metada	ta Extensions				
elect task:	s_m_upda	te_Postgre	SQL						1
ask type:	Session			<u></u>					
Start Page			m_updat	e_Postgre	SQL.SQ_allda	tatypes_final_d	onotalt	ег	
Pushdown C	Optimization	r Reade	rs						
Connections Memory Pro	S	l.	nstance			Readers			
Files, Direct	ories and Com	so SQ_allda	statypes_fin	al_do Pos	gres Reader				
🖃 🛄 Sources									
S0 SQ_allda	atatypes_fina	- 6					_		
alldatat	vpes final do	Lonne T.	cuons	1	Mahar	-	C		
Transformat	tions	SQ all	pe datatypes	final don	value stalter - Posto	res	Con	nections	<u>.</u>
		Relational	, , , , , , , , , , , , , , , , , , ,	PostaresSQ	L Conn	at at a			
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		roper	ties			Show Session Lev	el Prope	erties	
						the second s			
			Attribute	8		Value			
	I	Post-SG	Attribute L	8		Value			
	j	Post-SQ SQL Ov	Attribute L enide	8		Value			
]	Post-SQ SQL Ov Filter Ov	Attribute L enide enide Type		None	Value			~
<	>	Post-SQ SQL Ov Filter Ov Fetch S	Attribute IL enide enide Type ze		None None	Value			~
<	► Partitions	Post-SQ SQL Ov Filter Ov Fetch S	Attribute		None None Platform	Value			~
<	> ► Partitions	Post-SQ SQL Ov Filter Ov Fetch S	Attribute	2	None None Platform Native	Value			~
< v Transfo	> Partitions	Post-SQ SQL Ov Filter Ov Fetch S	Attribute		None None Platform Native	Value			~

Configure PostgreSQL Target Session Properties

You can configure the session properties for a PostgreSQL target on the **Workflow Manager** tab. Define the properties for the target instance in the session.

The following table describes the session properties that you can configure for a PostgreSQL target session:

Session Property	Description
Update Mode	Specifies the mode to write data to PostgreSQL target. You can specify the following modes:- - Update As Update. Updates all rows flagged for update if the entries exist. - Update Else Insert. Updates all rows flagged for update if the entries exist in the target. If the entries do not exist, the PowerCenter Integration Service inserts the entries.
Pre-SQL	The pre-SQL commands to run before the PowerCenter Integration Service writes data to the target.
Post-SQL	The post-SQL commands to run after the PowerCenter Integration Service writes data to the target.
Truncate Target	The PowerCenter Integration Service truncates the target before writing the data.

Parameterization

You can parameterize the PostgreSQL connection and session properties.

You can create a configuration file with the connection and session properties that you want to override at run time.

Lookup

You can configure a cached connected Lookup transformation in a mapping. A connected Lookup transformation is connected to a PostgreSQL source or target in a mapping. When you create a cached lookup, the performance increases because the Integration Service caches a large lookup source or small lookup tables. When you cache the lookup source, the Integration Service queries the lookup cache instead of querying the lookup source for each input row.

When you run a mapping that contains a connected Lookup transformation, the Integration Service passes values from another transformation to input ports in the Lookup transformation. For each input row, the Integration Service queries the lookup source or cache based on the lookup ports and the lookup condition in the transformation. The Integration Service returns data from the query and passes it to the next transformation in the mapping.

Update Strategy Transformation

You can set the update strategy at the mapping or the session level:

- Within a session. When you configure a session, you can instruct the Integration Service to either treat all rows in the same way. You can flag all rows for insert, delete, or update, or you can select the data driven option, where the Integration Service follows instructions coded into Update Strategy transformations within the session mapping.
- Within a mapping. Within a mapping, you use the Update Strategy transformation to flag all rows for insert, delete, update, or reject. The Update Strategy transformation takes precedence over the update strategy you specify in the PostgreSQL session properties.

For more information, see the Update Strategy Transformation chapter in the *PowerCenter Transformation Guide*.

Partitioning

When you read from and write data to PostgreSQL, you can configure pass-through partitioning to optimize the session performance at run time.

When you specify pass-through partitioning for a PostgreSQL Source Qualifier transformation, you can specify filter conditions in the PostgreSQL session properties to override the filter condition you specify in the source qualifier. The Integration Service uses the filter condition you specify in the session properties when it filters data from the source.

To configure pass-through partitioning, select the Source Qualifier transformation, and add a partition point from the **Mapping** tab of the session properties. Add the number of partitions you require and select the partition type as pass through for each of the partitions.

Based on the number or partitions you add, the PowerCenter Integration Service adds those many number of partition fields for the **Filter Override** attribute in the session properties. Specify the filter override condition for each of the partitions. The PowerCenter Integration Service uses the filter conditions you specify to pass data through the appropriate partition.

Similarly, you can specify the fetch size for each of the partitions in the PostgreSQL source session properties.

Configuring Pass-Through Partitioning for a PostgreSQL Session

Configure pass-through partitioning for a session and the specify the filter override condition for each partition. When you configure a filter override in a pass-through partitioning, key range partitioning is enabled.

- 1. In the Workflow Manager, double-click the Session task to open the session properties, and click the **Mapping** tab.
- 2. In the **Partitions** tab, double-click the source qualifier and add the required number of partitions.
- 3. Select the **Partition Type** as **Pass Through**.



4. Click the **Transformations** tab, and navigate to the session properties.

5. In the Filter Override session property, specify the filter override condition for each partition.

ask type:	Session					
Start P	age	m_;	alldatatypes_Postgr	eSQL.SQ_alldata	atypes_final_do	notalter
 Pasido Connec Memory Files, D 	tions y Properties irrectories and Corr	Readers Instance SQ_alldatatypes_fi	e nal_donotalter Postgres	Reader	Readers	
APP SQ	alldatatypes_fina					
 Targets alld Transfo 	s atatypes_final_do ormations					
	AFF	Connections Type SQ all datatype	Backgroun	d colour : Green		Connections
		Relational	PostgresSQL_Cor	n	J Ø ^{Pos}	gres
	I	Properties			Show Session	Level Properties
		Attrib	ute		Value	
		Filter Override	alle	latatunes final don	otalter col smallint	<0
		Partition #2	allo	datatypes final don	otalter.col smallin	=0
		Partition #3	allo	latatypes_final_don	otalter.col_smallint	:>0
<	. Partitions	Reference Solution SQ_alldataty	ypes_final_donotalt	er - ERP Source	Qualifier	

6. Click OK.

CHAPTER 6

PostgreSQL Pushdown Optimization

This chapter includes the following topics:

- PostgreSQL Pushdown Optimization Overview, 29
- Pushdown Optimization Functions, Operators, and Variables, 29
- <u>Configuring PostgreSQL ODBC Connections for Pushdown Optimization, 32</u>
- Rules and Guidelines for Functions in Pushdown Optimization, 38

PostgreSQL Pushdown Optimization Overview

You can use pushdown optimization to push transformation logic to source or target databases. Use pushdown optimization when you use database resources to improve mapping performance.

When you run a mapping configured for pushdown optimization, the mapping converts the transformation logic to an SQL query. The mapping sends the query to the database, and the database executes the query.

PostgreSQL supports full pushdown optimization for mappings.

Pushdown Optimization Functions, Operators, and Variables

The following table summarizes the availability of pushdown functions in an PostgreSQL database. Columns marked with an X indicate that the function can be pushed to the PostgreSQL database by using full pushdown optimization. Columns marked with a dash (-) symbol indicate that the function cannot be pushed to the database.

Function	PostgreSQL	Function	PostgreSQL	Function	PostgreSQL
ABORT()	-	INITCAP()	Х	REG_MATCH()	-
ABS()	Х	INSTR()	-	REG_REPLACE	-

Function	PostgreSQL	Function	PostgreSQL	Function	PostgreSQL
ADD_TO_DATE()	X	IS_DATE()	-	REPLACECHR()	-
AES_DECRYPT()	-	IS_NUMBER()	-	REPLACESTR()	-
AES_ENCRYPT()	-	IS_SPACES()	-	REVERSE()	-
ASCII()	X	ISNULL()	Х	ROUND(DATE)	-
AVG()	X	LAST()	-	ROUND(NUMBER)	X
CEIL()	Х	LAST_DAY()	X	RPAD()	Х
CHOOSE()	-	LEAST()	-	RTRIM()	X
CHR()	x	LENGTH()	X	SET_DATE_PART()	-
CHRCODE()	-	LN()	Х	SIGN()	X
COMPRESS()	-	LOG()	Х	SIN()	X
CONCAT()	X	LOOKUP	X	SINH()	-
COS()	X	LOWER()	X	SOUNDEX()	-
COSH()	-	LPAD()	x	SQRT()	x
COUNT()	x	LTRIM()	X	STDDEV()	x
CRC32()	-	MAKE_DATE_TIME()	-	SUBSTR()	x
CUME()	-	MAX()	X	SUM()	x
DATE_COMPARE()	-	MD5()	-	SYSDATE()	x
DATE_DIFF()	X	MEDIAN()	-	SYSTIMESTAMP()	X
DECODE()	X	METAPHONE()	-	TAN()	X
DECODE_BASE64()	-	MIN()	Х	TANH()	-
DECOMPRESS()	-	MOD()	Х	TO_BIGINT	X
ENCODE_BASE64()	-	MOVINGAVG()	-	TO_CHAR(DATE)	Х
EXP()	Х	MOVINGSUM()	-	TO_CHAR(NUMBER)	Х
FIRST()	-	NPER()	-	TO_DATE()	Х
FLOOR()	Х	PERCENTILE()	-	TO_DECIMAL()	Х
FV()	-	PMT()	-	TO_FLOAT()	X
GET_DATE_PART()	-	POWER()	X	TO_INTEGER()	X

Function	PostgreSQL	Function	PostgreSQL	Function	PostgreSQL
GREATEST()	-	PV()	-	TRUNC(DATE)	-
IIF()	Х	RAND()	-	TRUNC(NUMBER)	Х
IN()	Х	RATE()	-	UPPER()	Х
INDEXOF()	-	REG_EXTRACT()	-	VARIANCE()	Х

The following table lists the pushdown operators that can be used in an PostgreSQL database. Columns marked with an X indicate that the operator can be pushed to the PostgreSQL database by using source-side, target-side, or full pushdown optimization. Columns marked with an S indicate that the operator can be pushed to the PostgreSQL database by using source-side pushdown optimization.

Operator	PostgreSQL
+-*/	X
%	X
	Х
= > < >= <= <>	Х
!=	Х
٨	X
not and or	X

The following table summarizes the availability of PowerCenter variables in relational databases. Columns marked with an X indicate that the variable can be pushed to the database by using source-side, target-side, or full pushdown optimization. Columns marked with a dash (-) symbol indicate that the variable cannot be pushed to the database.

Variable	PostgreSQL
SESSSTARTTIME	Х
SYSDATE	Х
WORKFLOWSTARTTIME	-

Configuring PostgreSQL ODBC Connections for Pushdown Optimization

You can set the pushdown optimization for the ODBC connection type that uses PostgreSQL ODBC drivers to enhances the mapping performance. To use an ODBC connection to connect to PostgreSQL, you must configure the ODBC connection.

After you configure the ODBC connection, select the value of the **Pushdown Optimization** property as **Full** accordingly in the session properties.

PostgreSQL supports ODBC PostgreSQL drivers on Windows and Linux systems. You must install the ODBC PostgreSQL 32-bit driver to import the source and target into the Designer. Use the 64-bit driver to run the session.

Configuring PostgreSQL ODBC Connection on Windows

Before you establish an ODBC connection to connect to PostgreSQL on Windows, you must configure the ODBC connection.

Perform the following steps to configure an ODBC connection on Windows:

1. Run the odbcad32.exe file.

The ODBC Data Sources Administrator dialog box appears.

2. Click System DSN.

The following image shows the System DSN tab on the ODBC Data Sources Administrator dialog box:

Name			Platform	Driver		^	Add
dsn_db2	2		64-bit	DataD	irect 7.1 DB2 Wire	Proto =	
DSN_D	b2Warehouse		32-bit	IBM D	B2 ODBC DRIVER	- IBN	Remove
DSN_G			32-bit	DataD	irect 7.1 Greenplum	Wire	
DSN_M	CRU_SQLSEF	(32-Dit	DataD	IPECT 8.0 New SQL	Servi	Configure
DSN N	SAUCESS MUCESS		32.b#	Neter	oit Access Driver (.dom.	
DSN P	OSTGRES 119		32-bit	DataD	irect 7 1 Postare SO	I Wi	
DSN P	ostareSQL	·	64-bit	DataD	irect 7.1 PostgreSQ	Wi	
DSN_Te	eradata		N/A	Terada	ata Database ODBC	Driv	
<		Ш				>	
	This is a 64-b Administrator.	t System D	SN. It can	only be re	emoved or configure	d with the (64-bit ODBC Data Source

3. Click Add.

 $4. \quad \mbox{On the Create New Data Source} \ \mbox{dialog box, select the PostgreSQL driver}.$

Create New Data Source	X
Select a driver for which you want to set up a data sour Name V DataDirect 7.1 New SQL Server Wire Protocol 7 DataDirect 7.1 Oracle Wire Protocol 7 DataDirect 7.1 PostgreSQL Wire Protocol 7 DataDirect 7.1 SQL Server Wire Protocol 7 DataDirect 7.1 Sybase Wire Protocol 7 DataDirect 8.0 New SQL Server Wire Protocol 8 DataDirect 8.0 Oracle Wire Protocol 8 Driver da Microsoft para arquivos texto (*.bt; *.csv) 6 < III	xe.
< Back Finish Cano	el

5. On the **ODBC PostgreSQL Wire Protocol Driver Setup** dialog box, specify the following connection properties:

Property	Description
Data Source Name	Name of the data source.
Description	Description of the data source.
Host Name	Name of the PostgreSQL server.
Port Number	Port number of the PostgreSQL server.
Database Name	Name of the PostgreSQL database.

ODBC Postgr	reSQL Wire Protocol Driver Setup
General Advanced	Security Failover Pooling About
Data Source Name:	Postgres_DSN Help
Description:	
Host Name:	hostname
Port Number:	5432
Database Name:	postgres
[Test Connect OK Cancel Apply

The following image shows the connection properties configured for the ODBC connection:

- 6. Click **Test Connect** to test the connection that you configured.
- 7. On the **Logon to PostgreSQL Wire Protocol** dialog box, specify the credentials of your PostgreSQL database.

Logon to PostgreSQL Wire Protocol		
Host Name:	hostname	ОК
Port Number:	5432	Cancel
Database Name:	postgres	Help
User Name:	user	
Password:	•••••	

8. Click OK.

The PostgreSQL ODBC connection is configured successfully on Windows.

After you configure the PostgreSQL ODBC connection, you must create an ODBC connection to connect to PostgreSQL.

Configuring PostgreSQL ODBC Connection on Linux

Before you establish an ODBC connection to connect to PostgreSQL on Linux, you must configure the ODBC connection.

Perform the following steps to configure an ODBC connection on Linux:

1. Download the PostgreSQL ODBC drivers from the PostgreSQL website.

You must download the 32-bit or 64-bit driver based on your Linux system.

- 2. Install the PostgreSQL ODBC drivers on the machine that hosts the PowerCenter Integration Service.
- 3. Configure the odbc.ini file properties in the following format, for example:

```
[PostgreSQL]
Driver=/export/home/pc100_64/PCQA100_DOMAIN/Informatica/10.0.0/ODBC7.1/lib/
DWpsql28.so
Setup=/usr/lib64/libodbcpsqlS.so
Servername=10.65.43.55
Port=5432
Database=postgres
user=postgres
password=root
```

4. Specify the following properties in the odbc.ini file:

Property	Description
ODBC Data Sources	Name of the data source.
Driver	Location of the PostgreSQL ODBC driver file.
Host	Location of the PostgreSQL host.
Port	Port number of the PostgreSQL server.
Database	Name of the PostgreSQL database.

Note: You must specify the Host, Port, and Database values from the JDBC URL.

5. Add the odbc.ini file path in your source file in the following format:

ODBCINI=/<odbc.ini file path>/odbc.ini

6. Restart the PowerCenter Server.

The PostgreSQL ODBC connection on Linux is configured successfully.

After you configure the PostgreSQL ODBC connection, you must create an ODBC connection to connect to PostgreSQL.

Creating a PostgreSQL ODBC Connection

You must create an ODBC connection to connect to PostgreSQL after you configure the ODBC connection.

Perform the following steps to create an PostgreSQL ODBC connection on the Connections page:

- 1. In the Workflow Manager, click Connections.
- 2. Select Relational from the list.

The **Relational Connection Browser** box appears. The following image shows the **Relational Connection Browser** box:

Relational Connection Brows	ser - PDO_1	
Select Type:		Close
ODBC	~	
Objects:		Help
ODBC_in23td1310_pdo96src ODBC_IRWADQ01_pdo96src ODBC_IRWADQ01_pdo96tgt ODBC_MONGO_SOURCE	^	Edit
ODBC_MONGO_TGT ODBC_pdo95tgt		Delete
ODBC_Postgres_SOURCE		New
ODBC_Postgres_TGT ODBC_RD_SOURCE ODBC_RD_TGT	*	Permissions
<	>	Copy As

- 3. Select **Type** as **ODBC**.
- 4. Click New.

The **Connection Object Definition** box appears. The following image shows the **Connection Object Definition** box:

Rela	tional Cor	nnection Editor	
Name:	ODBC	Postgres_SOURCE	OK
Type:	ODBC	\sim	Cancel
Lloor Namo	-		Help
user manie.	postgre	es	
Password:	Use l	Parameter in Password	
		,	
Connect String:	Postgre	SQL	
Code Page:	MS Windows Latin 1 (ANSI), supe ~		
Attributes:			
Attribut	е	Value	
Connection Envir	onment		
	ronment		
Transaction Envi		0	
Transaction Envi Connection Retry	Period		

5. Configure the following relational connection properties:

Relational Connection Property	Description
Name	Enter a name for the connection.
Туре	The connection type is set by default. You cannot edit this value.
User Name	Enter the user name to connect to the PostgreSQL database.
Password	Enter the password to connect to the PostgreSQL database.

Relational Connection Property	Description
Connect String	Enter the name of the ODBC data source that you created for the PostgreSQL database.
Code Page	Select the code page that the PowerCenter Integration Service must use to read or write data.
Attributes	Enter the ODBC Subtype attribute value as PostgeSQL .

The PostgreSQL ODBC connection is created successfully.

Rules and Guidelines for Functions in Pushdown Optimization

Use the following rules and guidelines when pushing functions to an PostgreSQL database:

- To push the TRUNC(DATE) function to the PostgreSQL database. you must define the date and format arguments.
- If you define only a string argument for the TO_DATE() and TO_CHAR() functions and omit the format argument, the PowerCenter Integration Service returns a string based on the default date format MM/DD/ YYYY HH24:MI:SS specified in the session property.
- When you push the SYSTIMESTAMP() function to a PostgreSQL database, do not specify the format argument. If you specify the format for SYSTIMESTAMP, the database ignores the format and returns the complete time stamp.
- When you push the TO_BIGINT and TO_INTEGER functions to the PostgreSQL database, the PowerCenter Integration Service ignores the flag arguments.
- When you push the IN() function to the PostgreSQL database, the PowerCenter Integration Service ignores the CaseFlag argument.
- When you use the NS format string to set the nanoseconds for the ADD_TO_DATE() function, the PowerCenter Integration Service does not push the ADD_TO_DATE() function to PostgreSQL.
- The PowerCenter Integration Service cannot push TO_CHAR() and TO_DATE() functions to PostgreSQL if you use the following formats:
 - NS JQW SSSSS RR

• You can use the following formats when you push the TRUNC(DATE) function to the PostgreSQL database:

D HH24 MI MM MS SS US

YYYY

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CHAPTER 7

PostgreSQL Data Type Reference

This chapter includes the following topics:

- Data Type Reference Overview, 40
- PostgreSQL and Transformation Data Types, 40

Data Type Reference Overview

PowerCenter uses the following data types in PostgreSQL mappings:

- PostgreSQL native data types. PostgreSQL data types appear in PostgreSQL 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.

PostgreSQL and Transformation Data Types

The following table lists the PostgreSQL data types that PowerCenter supports and the corresponding transformation data types:

PostgreSQL Data Type	Transformation Data Type	Description
Smallint/Int2	Integer	Precision 10, scale 0
Int/Int4	Integer	Precision 10, scale 0
Bigint/int8	Bigint	Precision 19, scale 0
Decimal	Decimal	Precision 1 to 28, scale 0 to 28
Numeric	Decimal	Precision 1 to 28, scale 0 to 28

PostgreSQL Data Type	Transformation Data Type	Description
Real/Float4	Double	Precision 15, scale 0
Double/Float8	Double	Precision 15, scale 0
Smallserial/Int2	Integer	Precision 10, scale 0
Serial	Integer	Precision 10, scale 0
Bigserial/Serial8	BigInt	Precision 19, scale 0
Char	String	Precision 1
Char(n)	String(n)	n<=10485760
Varchar	String	Precision 104857600
Varchar(n)	String(n)	n <=10485760
Text	String	Precision 104857600
Bytea	Binary	Precision 104857600
Date	Date/Time	Precision 29, scale 9
Time	Date/Time	Precision 29, scale 9
Timestamp	Date/Time	Precision 29, scale 9
Timestamp with time zone	Date/Time	Precision 29, scale 9
Timestamp without time zone	Date/Time	Precision 29, scale 9
Boolean	String	Precision 6
Citext ¹	Text	Precision 104857600

Citext data type is considered as case-sensitive text in the following scenarios:
 When you configure a cached lookup and you define the lookup condition for the column of the Citext data type.
 When you configure an Expression transformation for a column of the Citext data type.

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