



Informatica® Data Integration - Free & PayGo

Google Cloud Spanner Connector

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Preface

Use *Google Cloud Spanner Connector* to learn how to read from Google Cloud Spanner by using Data Integration. Learn to create a Google Cloud Spanner connection, develop and run mappings and mapping tasks in Data Integration.

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CHAPTER 1

Introduction to Google Cloud Spanner Connector

You can use Google Cloud Spanner Connector to connect to Google Cloud Spanner from Data Integration. Use Google Cloud Spanner Connector to read data from Google Cloud Spanner. You can use a Google Cloud Spanner object as a source in mapping tasks.

You can create a Google Cloud Spanner connection and use the connection in mappings or mapping tasks.

When you run a mapping task, the Secure Agent uses the JAVA client libraries of the Google Cloud Spanner APIs to integrate with Google Cloud Spanner.

Introduction to Google Cloud Spanner

Google Cloud Spanner is a fully managed relational database service that the Google Cloud Platform provides. Google Cloud Spanner is ideal for relational, structured, and semi-structured data that requires high availability, strong consistency, and transactional read and write operations. You can use Google Cloud Spanner for general purpose transactions using SQL (ANSI 2011 with extensions).

Google Cloud Spanner Connector assets

Create assets in Data Integration to integrate data using Google Cloud Spanner Connector.

When you use Google Cloud Spanner Connector, you can include the following Data Integration assets:

- Mapping
- Mapping task

For more information about configuring assets and transformations, see *Mappings, Transformations, and Tasks* in the Data Integration documentation.

Administration of Google Cloud Spanner Connector

Before you use Google Cloud Spanner Connector, you must complete the following prerequisite tasks:

- Create a Google account to access Google Cloud Spanner.
- 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 Spanner connection in Data Integration.
- Enable billing for the project that you created.
- Ensure that you have enabled the Cloud Spanner API for your service account. Google Cloud Spanner Connector uses the Google Cloud Spanner API to integrate with Google Cloud Spanner.
- Ensure that you have selected the regional or multi-region configuration and specified the number of nodes that you want to use for the Google Cloud Spanner instance.

Note: When you increase the number of nodes for your Google Cloud Spanner nodes, the cost charged for a billing account increases. Before you specify the number of nodes, see the Google Cloud Spanner documentation to estimate the cost of using Google Cloud Spanner.

- Ensure that you have the database name and table name in the Google Cloud Spanner instance. You will need to enter these details when you run a mapping in Data Integration.
For more information about creating a Google Cloud Spanner instance, database, and table, see the Google Cloud Spanner documentation.
- When you read data from a Google Cloud Spanner table in a mapping, you must have the required permissions to access Google Cloud Spanner tables and run the mapping successfully.

CHAPTER 2

Google Cloud Spanner connections

Create a Google Cloud Spanner connection to read data from Google Cloud Spanner. You must create a connection for each Cloud Spanner instance that you want to connect to. You can use Google Cloud Spanner connections in mapping tasks.

Google Cloud Spanner connection properties

When you create a Google Cloud Spanner connection, configure the connection properties.

The following table describes the Google Cloud Spanner connection properties:

Property	Description
Connection Name	Name of the connection. Each connection name must be unique within the organization. Connection names can contain alphanumeric characters, spaces, and the following special characters: <code>_ . + -</code> . Maximum length is 255 characters.
Description	Description of the connection. Maximum length is 4000 characters.
Type	The Google Cloud Spanner connection type.
Runtime Environment	Name of the runtime environment where you want to run the tasks. Specify a Secure Agent or a Hosted Agent.
Project ID	The <code>project_ID</code> value 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 Cloud Spanner instance that you want to connect to.
Instance ID	Name of the instance that you created in Google Cloud Spanner.
Service Account ID	The <code>client_email</code> value in the JSON file that you download after you create a service account.
Service Account Key	The <code>private_key</code> value in the JSON file that you download after you create a service account.

Configuring the proxy settings on Windows

To configure the proxy server settings for the Secure Agent on a Windows machine, you must configure the proxy server settings through the Secure Agent Manager and the JVM options of the Secure Agent.

Contact your network administrator for the correct proxy settings.

1. Click **Start > All Programs > Informatica Cloud Secure Agent > Informatica Cloud Secure Agent** to launch the Secure Agent Manager.

The Secure Agent Manager displays the Secure Agent status.

2. Click **Proxy** in the Secure Agent Manager page.
3. Click **Use a Proxy Server** to enter proxy server settings.
4. Configure the following proxy server details:

Field	Description
Proxy Host	Host name of the outgoing proxy server that the Secure Agent uses.
Proxy Port	Port number of the outgoing proxy server.
User Name	User name to connect to the outgoing proxy server.
Password	Password to connect to the outgoing proxy server.

5. Click **OK**.
6. Log in to Informatica Intelligent Cloud Services.
7. Open Administrator and select **Runtime Environments**.
8. Select the Secure Agent for which you want to configure a proxy server.
9. On the upper-right corner of the page, click **Edit**.
10. In the **System Configuration Details** section, select the **Type** as **DTM** for the Data Integration Service.
11. To use a proxy server, add the following parameters in any **JVMOption** field and specify appropriate values for each parameter:

Parameter	Description
-Dproxy.host=	Host name of the outgoing HTTPS proxy server.
-Dproxy.port=	Port number of the outgoing HTTPS proxy server.
-Dproxy.user=	User name for the HTTPS proxy server.
-Dproxy.password=	Password for the HTTPS proxy server.

Note: You must specify the parameter and the value for the parameter enclosed in single quotation marks.

For example,

```
JVMOption1='-Dproxy.host=INPQ8583WI29'
```

```
JVMOption2='-Dproxy.port=8081'
```

```
JVMOption3='-Dproxy.user=adminuser'
JVMOption4='-Dproxy.password=password'
```

Note: You can configure only five **JVMOption** fields in the **System Configuration Details** section. To configure the remaining parameters, you must add the **JVMOption** fields in the **Custom Configuration Details** section. In the **Custom Configuration Details** section, select the **Type** as **DTM** for the Data Integration Service, add the **JVMOption** fields, and specify the remaining parameters and appropriate values for each parameter.

12. Click **Save**.

The Secure Agent restarts to apply the settings.

Note: The session log does not log the proxy server details even if you have configured a proxy server.

Configuring the proxy settings on Linux

You can update the proxy server settings defined for the Secure Agent from the command line. To configure the proxy server settings for the Secure Agent on a Linux machine, you must update the `proxy.ini` file and configure the JVM options of the Secure Agent.

Contact your network administrator for the correct proxy settings.

1. Navigate to the following directory:

```
<Secure Agent installation directory>/apps/agentcore/conf
```

2. To update the `proxy.ini` file, add the following parameters and specify appropriate values for each parameter:

```
InfaAgent.ProxyHost=<proxy_server_hostname>
InfaAgent.ProxyPort=<proxy_server_port>
InfaAgent.ProxyUser=<user_name>
InfaAgent.ProxyPassword=<password>
InfaAgent.ProxyPasswordEncrypted=false
```

For example,

```
InfaAgent.ProxyHost=INW2PF0MT01V
InfaAgent.ProxyPort=808
InfaAgent.ProxyUser=user06
InfaAgent.ProxyPassword=user06
InfaAgent.ProxyPasswordEncrypted=false
```

3. Log in to Informatica Intelligent Cloud Services.
4. Open Administrator and select **Runtime Environments**.
5. Select the Secure Agent for which you want to configure a proxy server.
6. On the upper-right corner of the page, click **Edit**.
7. In the **System Configuration Details** section, select the **Type** as **DTM** for the Data Integration Service.

8. To use a proxy server, add the following parameters in any **JVMOption** field and specify appropriate values for each parameter:

Parameter	Description
-Dproxy.host=	Host name of the outgoing HTTPS proxy server.
-Dproxy.port=	Port number of the outgoing HTTPS proxy server.
-Dproxy.user=	User name for the HTTPS proxy server.
-Dproxy.password=	Password for the HTTPS proxy server.

Note: You must specify the parameter and the value for the parameter enclosed in single quotation marks.

For example,

```
JVMOption1='-Dproxy.host=INPQ8583WI29'
```

```
JVMOption2='-Dproxy.port=8081'
```

```
JVMOption3='-Dproxy.user=adminuser'
```

```
JVMOption4='-Dproxy.password=password'
```

Note: You can configure only five **JVMOption** fields in the **System Configuration Details** section. To configure the remaining parameters, you must add the **JVMOption** fields in the **Custom Configuration Details** section. In the **Custom Configuration Details** section, select the **Type** as **DTM** for the Data Integration Service, add the **JVMOption** fields, and specify the remaining parameters and appropriate values for each parameter.

9. Click **Save**.

The Secure Agent restarts to apply the settings.

Note: The session log does not log the proxy server details even if you have configured a proxy server.

CHAPTER 3

Mappings for Google Cloud Spanner

You can configure a mapping to read from Google Cloud Spanner.

When you create a mapping, you can configure a Source transformation to represent a Google Cloud Spanner object.

Use the Mapping Designer in Data Integration to define and configure a mapping for Google Cloud Spanner sources. Add the Source transformation in the mapping canvas and configure the Google Cloud Spanner source properties.

Create a mapping task to process data based on the data flow logic defined in a mapping or integration template.

Google Cloud Spanner sources in mappings

To read data from Google Cloud Spanner, configure a Google Cloud Spanner object as the Source transformation in a mapping.

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

Property	Description
Connection	Name of the active Google Cloud Spanner source connection.
Source Type	Type of the Google Cloud Spanner source objects available. You can read data from a single Google Cloud Spanner source object. You cannot read data from multiple objects or parameterize the object.
Object	Name of the Google Cloud Spanner source object based on the source type selected.

The following table describes the query options that you can configure in a Source transformation:

Property	Description
Filter	<p>Filter value in a read operation. Click Configure to add conditions to filter records and reduce the number of rows that the Secure Agent reads from the source.</p> <p>You can specify the following filter conditions:</p> <ul style="list-style-type: none">- Not parameterized. Use a basic filter to specify the object, field, operator, and value to select specific records.- Completely parameterized. Use a parameter to represent the field mapping.- Advanced. Use an advanced filter to define a more complex filter condition on an object. <p>You can configure filter conditions for columns of the following data types:</p> <ul style="list-style-type: none">- Date- Float- Integer- String- Timestamp
Sort	Not applicable for Google Cloud Spanner Connector.

The following table describes the Google Cloud Spanner source advanced properties:

Property	Description
Source Database	Optional. Overrides the Google Cloud Spanner database name that contains the Google Cloud Spanner source table that you specified in the Source transformation.
Source Table	Optional. Overrides the Google Cloud Spanner source table name that you specified in the Source transformation.
Batch Size	Minimum number of rows that the Secure Agent reads in a batch. Enter a number greater than 0. Default is 0.
Enable Bulk Read	Select this property to read data from large Google Cloud Spanner tables.
IndexDirective	<p>The index name to query a table in an SQL statement.</p> <p>To specify an index directive, use the following syntax:</p> <pre>FROM TableName@{FORCE_INDEX=TableIndex}</pre> <p>For more information about index directives, go to the following website:</p> <p>https://cloud.google.com/spanner/docs/secondary-indexes</p>

You can set the tracing level in the advanced session properties to determine the amount of details that the logs contain.

The following table describes the tracing levels that you can configure:

Property	Description
Terse	The Secure Agent logs initialization information, error messages, and notification of rejected data.
Normal	The Secure Agent logs initialization and status information, errors encountered, and skipped rows due to transformation row errors. Summarizes session results, but not at the level of individual rows.

Property	Description
Verbose Initialization	In addition to normal tracing, the Secure Agent logs additional initialization details, names of index and data files used, and detailed transformation statistics.
Verbose Data	In addition to verbose initialization tracing, the Secure Agent logs each row that passes into the mapping. Also notes where the Secure Agent truncates string data to fit the precision of a column and provides detailed transformation statistics.

Troubleshooting a mapping task

"ERROR java.lang.OutOfMemoryError: GC overhead limit exceeded." occurs when you read large number of records and the mapping task runs for a long period.

To resolve this issue, perform the following tasks to configure the **JVM** options in the Secure Agent to increase the memory for the Java heap size:

1. In Administrator, select **Runtime Environments**.
2. Select the Secure Agent for which you want to increase memory from the list of available Secure Agents.
3. On the upper-right corner of the page, click **Edit**.
4. In the **System Configuration Details** section, select the **Type** as **DTM** for the Data Integration Server.
5. Edit the **JVMOption3** as **-Xms1024m** and **JVMOption4** as **-Xmx4096m**.
6. Restart the Secure Agent.

Note: If you run the mapping task and the same issue occurs, you must specify a lower batch size and increase the memory for the Java heap size.

APPENDIX A

Data type reference

Data Integration uses the following data types in mapping tasks with Google Cloud Spanner:

Google Cloud Spanner native data types

Google Cloud Spanner data types appear in the **Fields** tab for Source transformations when you choose to edit metadata for the fields.

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 Secure Agent uses to move data across platforms. Transformation data types appear in all transformations in a mapping.

When Data Integration reads source data, it converts the native data types to the comparable transformation data types before transforming the data.

Google Cloud Spanner and transformation data types

The following table lists the Google Cloud Spanner data types that Data Integration supports and the corresponding transformation data types:

Google Cloud Spanner Data Type	Transformation Data Type	Range and Description for the Transformation Data Type
BOOLEAN	String	1 to 104,857,600 characters
BYTE	Byte	1 to 104,857,600 bytes
DATE	Date/Time	Jan 1, 0001 A.D. to Dec 31, 9999 A.D. (precision to the nanosecond)
FLOAT64	Double	Precision 15
INT64	BigInt	-9,223,372,036,854,775,808 to 9,223,372,036,854,775,807 Precision 19, scale 0
STRING	String	1 to 104,857,600 characters
TIMESTAMP	Date/Time	Jan 1, 0001 A.D. to Dec 31, 9999 A.D. (precision to the nanosecond)

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