



Informatica® PowerExchange for Kudu
10.5

User Guide

Informatica PowerExchange for Kudu User Guide
10.5
March 2021

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Publication Date: 2021-09-22

Table of Contents

Preface	5
Informatica Resources.	5
Informatica Network.	5
Informatica Knowledge Base.	5
Informatica Documentation.	5
Informatica Product Availability Matrices.	6
Informatica Velocity.	6
Informatica Marketplace.	6
Informatica Global Customer Support.	6
Chapter 1: Introduction to PowerExchange for Kudu	7
PowerExchange for Kudu Overview.	7
Introduction to Kudu.	7
Chapter 2: PowerExchange for Kudu Configuration	8
PowerExchange for Kudu Configuration Overview.	8
Prerequisites.	8
Java Heap Memory Configuration (Optional).	9
Chapter 3: PowerExchange for Kudu Connections	10
PowerExchange for Kudu Connection Overview.	10
Kudu Connection Properties.	10
Chapter 4: PowerExchange for Kudu Data Objects	12
PowerExchange for Kudu Data Object Overview.	12
PowerExchange for Kudu Data Object Write Operation.	12
PowerExchange for Kudu Data Object Write Operation Properties.	13
Creating a PowerExchange for Kudu Data Object Operation.	13
Creating a PowerExchange for Kudu Target.	14
Rules and Guidelines for PowerExchange for Kudu Data Objects.	17
Chapter 5: PowerExchange for Kudu Mappings	18
PowerExchange for Kudu Mappings Overview.	18
Mapping Validation and Run-time Environments.	18
PowerExchange for Kudu Mapping Example.	19
Chapter 6: PowerExchange for Kudu Data Type Reference	20
Data Type Reference Overview.	20
PowerExchange for Kudu and Transformation Data Types.	20

Index..... 22

Preface

Use the *Informatica® PowerExchange® for Kudu User Guide* to learn how to write to Kudu by using the Developer tool. Learn to create a connection, develop and run mappings on the Spark engine in the Hadoop environment.

Informatica Resources

Informatica provides you with a range of product resources through the Informatica Network and other online portals. Use the resources to get the most from your Informatica products and solutions and to learn from other Informatica users and subject matter experts.

Informatica Network

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As an Informatica Network member, you have the following options:

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- View product availability information.
- Create and review your support cases.
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Informatica Product Availability Matrices

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>.

Informatica Velocity

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

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

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 <https://network.informatica.com> and select the eSupport option.

CHAPTER 1

Introduction to PowerExchange for Kudu

This chapter includes the following topics:

- [PowerExchange for Kudu Overview, 7](#)
- [Introduction to Kudu, 7](#)

PowerExchange for Kudu Overview

You can use PowerExchange for Kudu to connect to Kudu from Informatica.

Use PowerExchange for Kudu to write data to Kudu. You can use Kudu objects as targets in mappings. You can validate and run mappings on the Spark engine in the Hadoop environment.

Introduction to Kudu

Kudu is a columnar storage manager developed for the Apache Hadoop platform. You can use Kudu to store data in tables. Kudu has a simple data model, where the Kudu table has a primary key made up of one or more columns, each with a defined type. Kudu tables have a columnar structure which helps to vectorize and compress data easily.

Use Kudu to perform real-time analytics on fast data. You can use Kudu for fast data search, updates and inserts.

CHAPTER 2

PowerExchange for Kudu Configuration

This chapter includes the following topics:

- [PowerExchange for Kudu Configuration Overview, 8](#)
- [Prerequisites, 8](#)
- [Java Heap Memory Configuration \(Optional\), 9](#)

PowerExchange for Kudu Configuration Overview

PowerExchange for Kudu installs with the Informatica services and clients.

To configure PowerExchange for Kudu, complete the prerequisites.

Prerequisites

Before you use PowerExchange for Kudu, you must complete the following prerequisites:

- Install and configure the Informatica services.
- Verify that a Metadata Access Service is created in the domain.
- Install and configure the Developer tool. You can install the Developer tool when you install Informatica clients.
- Create a Data Integration Service and a Model Repository Service in the Informatica domain.
- Verify that the Hadoop distribution version used is 3.x or later.
- Verify that the user used to configure the Informatica domain is added to the cluster and the user has `sudo` privileges to use non-kerberised Cloudera CDH 6.3 Hadoop distribution.

Java Heap Memory Configuration (Optional)

Configure the memory for the Java heap size in the node that runs the Data Integration Service.

1. In the Administrator tool, navigate to the Data Integration Service for which you want to change the Java heap size.
2. Edit the Custom Properties section in the Data Integration Service Properties.
3. To increase the heap memory size for a large dataset, define the following properties:

```
ExecutionContextOptions.JVMMaxMemory = <size> MB  
ExecutionContextOptions.JVMMinMemory = <size> MB
```

Where <size> is a valid heap size, such as 2048 MB.

4. Click **OK**.
5. Restart the Data Integration Service.

CHAPTER 3

PowerExchange for Kudu Connections

This chapter includes the following topics:

- [PowerExchange for Kudu Connection Overview, 10](#)
- [Kudu Connection Properties , 10](#)

PowerExchange for Kudu Connection Overview

You can use PowerExchange for Kudu connection to write data to Kudu.

You can use a PowerExchange for Kudu connection to create data objects and run mappings. The Developer tool uses the connection when you create a data object. The Data Integration Service uses the connection when you run mappings.

You can create a PowerExchange for Kudu connection from the Developer tool or the Administrator tool. Create and manage connections in the Informatica Preferences window or the Connection Explorer view.

Kudu Connection Properties

Use a Kudu connection to access Kudu.

Note: The order of the connection properties might vary depending on the tool where you view them.

You can create and manage a Kudu connection in the Administrator tool or the Developer tool. The following table describes the Kudu connection properties:

Property	Description
Name	The name of the connection. The name is not case sensitive and must be unique within the domain. You can change this property after you create the connection. The name cannot exceed 128 characters, contain spaces, or contain the following special characters: ~ ` ! \$ % ^ & * () - + = { }] \ : ; " ' < , > . ? /
ID	String that the Data Integration Service uses to identify the connection. The ID is not case sensitive. It must be 255 characters or less and must be unique in the domain. You cannot change this property after you create the connection. Default value is the connection name.
Description	The description of the connection. The description cannot exceed 4,000 characters.
Location	The domain where you want to create the connection.
Type	The connection type. Select Kudu.

The following table describes the properties for metadata access:

Property	Description
Kudu Master URLs	The URLs of the Kudu master tables.
Kudu Library Version	The version number of the Kudu library.
Cluster Configuration	The Hadoop cluster that you use for the connection.

CHAPTER 4

PowerExchange for Kudu Data Objects

This chapter includes the following topics:

- [PowerExchange for Kudu Data Object Overview, 12](#)
- [PowerExchange for Kudu Data Object Write Operation, 12](#)
- [PowerExchange for Kudu Data Object Write Operation Properties, 13](#)
- [Creating a PowerExchange for Kudu Data Object Operation, 13](#)
- [Creating a PowerExchange for Kudu Target, 14](#)
- [Rules and Guidelines for PowerExchange for Kudu Data Objects, 17](#)

PowerExchange for Kudu Data Object Overview

A Kudu data object is a physical data object that represents a Kudu table as a target. A Kudu data object is the representation of data that is based on a Kudu object. You can configure the data object write operation properties that determine how data can be loaded to Kudu.

To write data to the Kudu, create a data object write operation based on the Kudu data object. Configure the write operation properties to determine how the Data Integration Service must write data to the Kudu. Add the write operation as a Write transformation in a mapping.

PowerExchange for Kudu Data Object Write Operation

Create a mapping to write data to Kudu. Use the Kudu connection, and define the write operation properties to write data to Kudu.

PowerExchange for Kudu Data Object Write Operation Properties

The Kudu data object write operation properties include run-time properties that apply to the Kudu data object.

The Developer tool displays advanced properties for the Kudu data object operation in the Advanced view.

The following table describes the Advanced properties for a Kudu data object write operation:

Property	Description
Number of Replica	Sets the number of replicas that each table has. You must set the replication factor to an odd number. Default is 1.
Table Name	Name of the target table.
Table Partitioning Strategy	Type of partition applicable to the table. You can select from the following options: <ul style="list-style-type: none">- HASH: In hash user keys partitioning, the Integration Service uses a hash function to group rows of data among partitions based on a user-defined partition key.- RANGE: With range partitioning, the Integration Service distributes rows of data based on a port or set of ports that you define as the partition key. Partitioning is applicable to only the primary key fields. For create target Hash default is 3 bucket partition and Range default is 1 range partition and you cannot specify the range conditions for the columns of your choice. Default is HASH.
Upsert	Upserts data into a Kudu target. To perform an upsert operation, you must add an Update Strategy transformation to a mapping before the data object write operation and flag the records for upsert in an update strategy expression. Otherwise, the Data Integration Service performs an insert operation on the Kudu target.
Target Schema Strategy	Target schema strategy for the Kudu target table. You can select one of the following target schema strategies: <ul style="list-style-type: none">- RETAIN - Retain existing target schema.- CREATE - Create or replace table at run time When you select the CREATE option, you must provide the value of the Schema Name property to run the mapping successfully.- Assign Parameter.

Creating a PowerExchange for Kudu Data Object Operation

You can create a data object write operation for Kudu data objects and add the Kudu data object operation to a mapping.

1. Select the data object in the **Object Explorer** view.

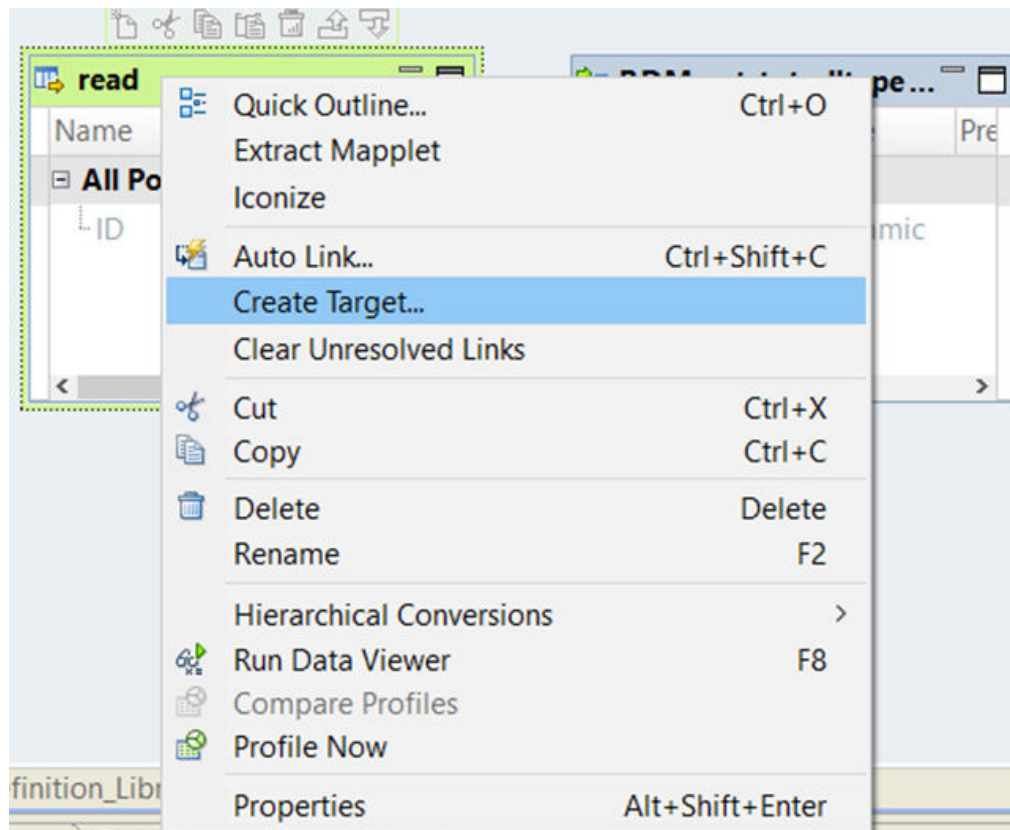
2. Right-click and select **New > Data Object Operation**.
The **Data Object Operation** dialog box appears.
 3. Enter a name for the data object operation.
 4. Select the type of data object operation. You can choose to create a write operation.
 5. Click **Add**.
The **Select Resources** dialog box appears.
 6. Select the Kudu data object for which you want to create the data object operation and click **OK**.
 7. Click **Finish**.
- The Developer tool creates the data object operation for the selected data object.

Creating a PowerExchange for Kudu Target

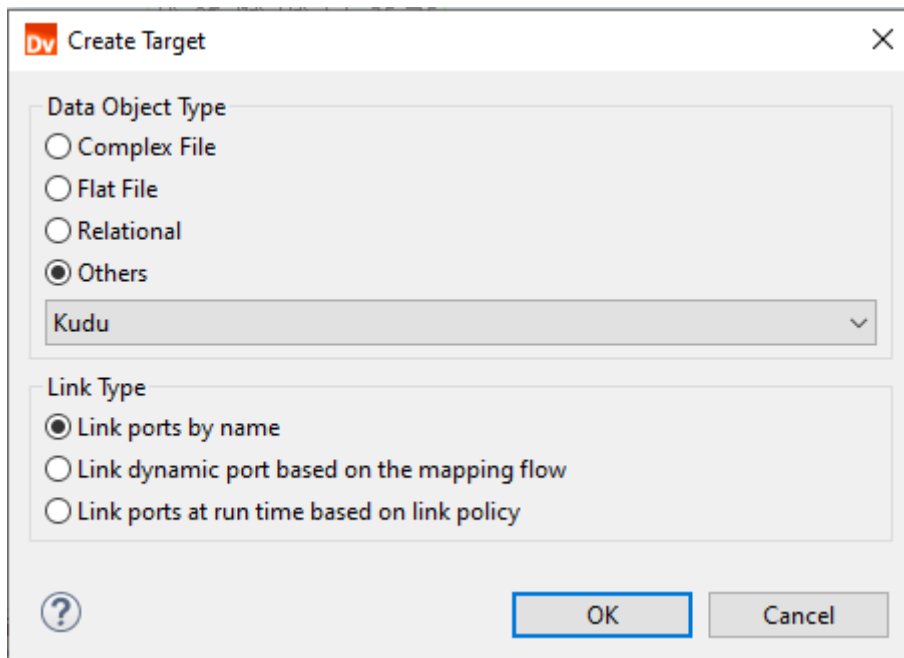
You can create a Kudu target using the **Create Target** option.

1. Select a project or folder in the **Object Explorer** view.
2. Select a source or a transformation in the mapping.
3. Right-click the Source transformation and select **Create Target**.
The **Create Target** dialog box appears.

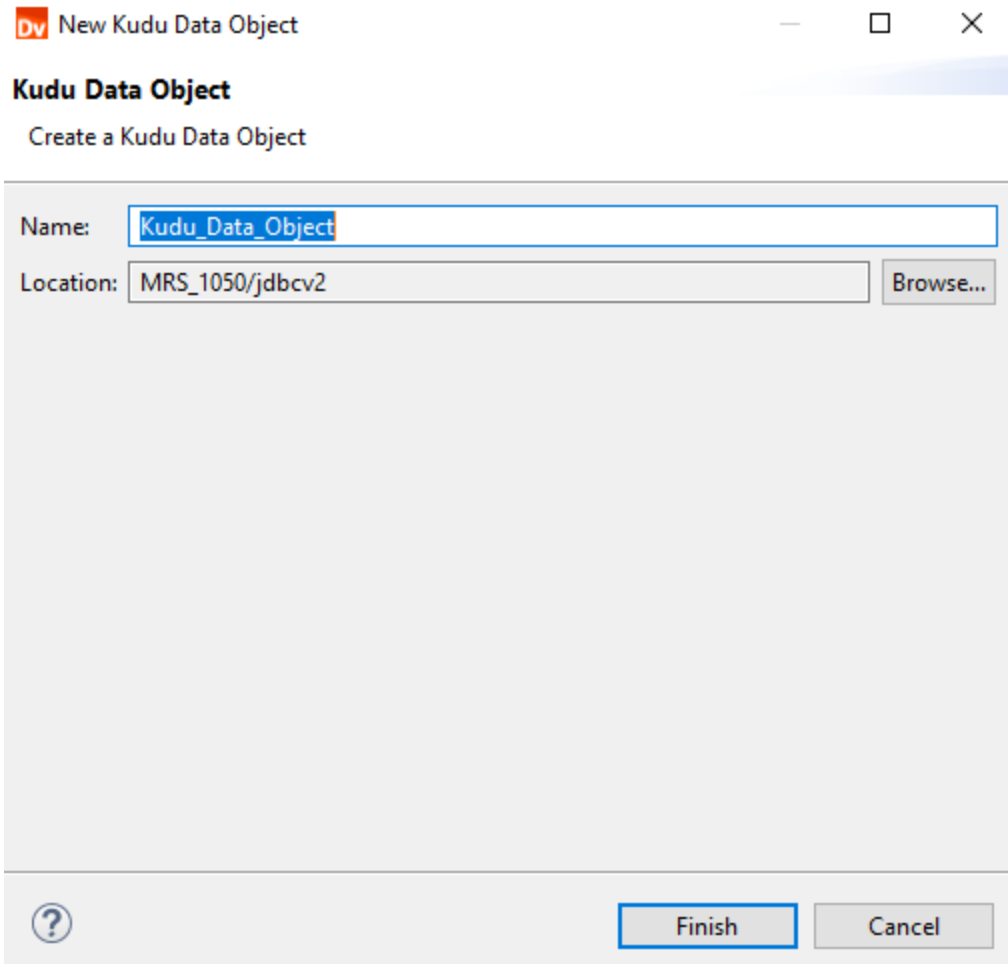
The following image shows the **Create Target** option:



4. Select **Others** and then select **Kudu** data object from the list in the **Data Object Type** section. The following image shows the **Data Object Type** section:

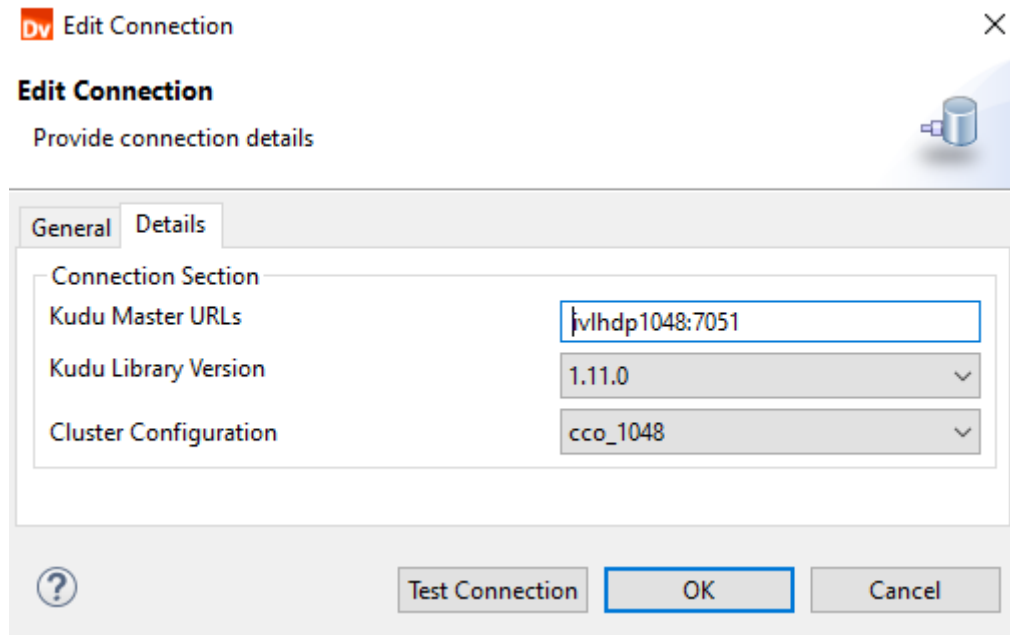


5. Click **OK**.
The **New Kudu Data Object** dialog box appears.
The following image shows the **New Kudu Data Object** dialog box:

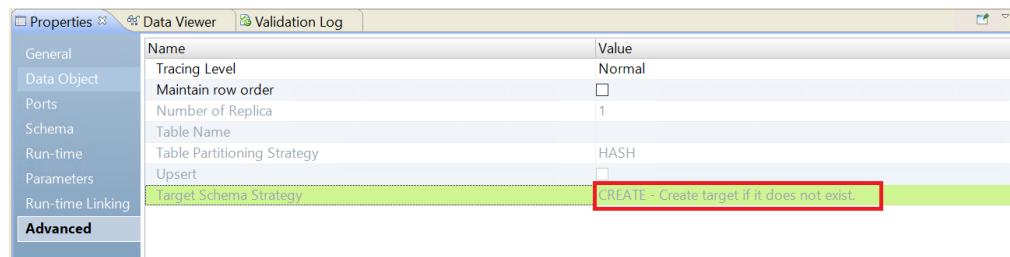


6. Enter a name for the data object.
7. Click **Finish**.
The new target appears under the **Physical Data Objects** category in the project or folder in the **Object Explorer** view.
8. In the Kudu connection **Details** tab, specify the connection details to create the target type.

The following image shows the connection properties:



9. In the Kudu advanced target properties, select the target schema strategy. The following image shows the configured the target schema strategy as **Create - Create target if it does not exist** in advanced properties:



Rules and Guidelines for PowerExchange for Kudu Data Objects

Use the following rules and guidelines when you create a mapping:

- You must define a primary key in the target table.
- You cannot parameterize the number of replicas for a Kudu target object.
- You cannot parameterize the connection when you use create target in a Kudu object.

CHAPTER 5

PowerExchange for Kudu Mappings

This chapter includes the following topics:

- [PowerExchange for Kudu Mappings Overview, 18](#)
- [Mapping Validation and Run-time Environments, 18](#)
- [PowerExchange for Kudu Mapping Example, 19](#)

PowerExchange for Kudu Mappings Overview

After you create a Kudu data object write operation, you can create a mapping to load data to a Kudu target.

You can define properties in an operation to determine how the Data Integration Service must load data to a Kudu target. You can load data to one or more Kudu targets. When the Data Integration Service loads data to the target, it converts the data based on the data types associated with the target.

Mapping Validation and Run-time Environments

You can validate and run mappings on the Spark engine in the Hadoop environment.

The Data Integration Service validates whether the mapping can run in the selected environment. You must validate the mapping for an environment before you run the mapping in that environment.

Spark Engine

When you select the Hadoop environment, the Data Integration Service pushes the mapping to a compute cluster and processes the mapping on a Spark engine. The Data Integration Service generates an execution plan to run mappings on the Spark engine.

PowerExchange for Kudu Mapping Example

Your organization has a large amount of customer data from across regions stored in flat files. Your organization needs to analyze data in the APAC region. Create a mapping that reads all the customer records from the flat file and write those records to a Kudu table.

You can use the following objects in a Kudu mapping:

Flat file input

The input file is a flat file that contains customer names and their details.

Create a flat file data object. Configure the flat file connection and specify the flat file that contains the customer data as a resource for the data object. Use the data object in a mapping as a read data object.

Kudu output

Create a Kudu data object write operation. Configure the Kudu connection and specify the Kudu object as a target for the data object. Use the data object in a mapping as a target data object.

When you run the mapping, the Data Integration Server reads customer records from the flat file and writes to the Kudu table.

CHAPTER 6

PowerExchange for Kudu Data Type Reference

This chapter includes the following topics:

- [Data Type Reference Overview, 20](#)
- [PowerExchange for Kudu and Transformation Data Types, 20](#)

Data Type Reference Overview

Developer Tool uses the following data types in Kudu mappings:

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

PowerExchange for Kudu and Transformation Data Types

The following table lists the Kudu data types that the Developer Tool supports and the corresponding transformation data types:

Kudu Data Type	Transformation Data Type	Range and Description
Binary	Binary	Maximum value: 8,388,60 Default value is 8,388,60.
Boolean	String	A Boolean attribute.
String	String	1 to 104,857,600 characters. Default precision for String is 65536.

Kudu Data Type	Transformation Data Type	Range and Description
INT8	Int8	8-byte integer between -9,223,372,036,854,775,808 and +9,223,372,036,854,775,807. The length is set at 19 positions.
INT16	Integer	-2,147,483,648 to 2,147,483,647, Precision 10, scale 0.
INT32	Integer	-2,147,483,648 to 2,147,483,647, Precision 10, scale 0.
INT64	Integer	-9,223,372,036,854,775,808 to 9,223,372,036,854,775,807 Precision 19, scale 0.
Unixtime_Micros	Datetime	Date and time values.
Date	Datetime	Date and time values.
Float	Double	Floating point numbers with double-precision (64 bit). Maximum value: 1.7976931348623158e+307 Minimum value: -1.79769313486231E+307
Double	Double	
Decimal	Decimal	Decimal value with declared precision and scale. Scale must be less than or equal to precision.

INDEX

C

create
 data object operation
 create [13](#)
create target
 Kudu [14](#)

D

data object write operation
 properties [13](#)
data types [20](#)

H

Hadoop environment
 mappings [18](#)

J

java heap size [9](#)

K

Kudu
 data object write operation [12](#)
 introduction [7](#)
Kudu connection
 overview [10](#)
 properties [10](#)
Kudu data object
 overview [12](#)

Kudu data types [20](#)

M

mapping
 example [19](#)

O

overview
 Kudu connection [10](#)

P

PowerExchange for Kudu configuration
 overview [8](#)
 prerequisites [8](#)
PowerExchange for Kudu mappings
 overview [18](#)
properties
 data object write operation [13](#)

S

Spark engine
 mappings [18](#)

T

transformation data types [20](#)