

Generating Credit Card Numbers in Test Data Management

Abstract

In Test Data Management (TDM), you can generate credit card numbers based on the type of the card. You can choose from multiple credit card number formats. This article describes how to create and use the data generation rules to generate test credit card numbers based on the network types.

Supported Versions

- Test Data Management 10.1.0

Table of Contents

| | |
|---|----|
| Overview. | 2 |
| Scenario. | 3 |
| Prerequisites. | 3 |
| Step 1. Create a Set of Values Generation Rule. | 3 |
| Step 2. Create Credit Card Generation Rules. | 4 |
| Step 3. Add the Generation Rules to a Project. | 5 |
| Step 4. Assign the Rules to Target Columns. | 6 |
| Step 5. Generate and Run the Ad Hoc Plan. | 8 |
| Sample Output. | 10 |

Overview

Create and use global and ad hoc data generation rules to create realistic test data for test environments.

Create and use a set of values generation rule to generate credit card network types. Create and use a credit card generation rule to generate test credit card numbers. Use the rules in a conditional generation rule to generate credit card numbers based on the network type.

You can use the following data generation rules:

Set of Values

A set of values generation rule is a global or ad hoc rule that writes a small data set to the target table. You can list the data values that you want to write to the table when you create a set of values generation rule. You can use the string, numeric, and date data types in a set of values generation rule.

Conditional

A conditional generation rule is an ad hoc rule in which you can specify a conditional expression and a generation rule to generate test data. You can use the string, numeric, and date data types in a conditional generation rule.

Credit Card

You can generate credit card numbers based on the type of the card. Select the credit card issuer type and enter the issuer identification number and the distribution percentage. Use a credit card generation rule to generate data with string data type. You can generate test data for the following credit card types: American Express, Discover, JCB, Mastercard, and Visa.

The following table shows the valid issuer identification numbers for different issuing networks:

| Issuing Network | Issuer Identification Number |
|------------------|--|
| American Express | 34 and 37 |
| Discover | 6011, 622126 to 622925, 644-649, and 65 |
| JCB | 3528-3589 |
| Mastercard | 51-55 |
| Visa | 4 |

When you run a data generation plan, TDM applies the conditions and generates test data.

Scenario

You need to test a banking application that maintains customer details such as credit card type and credit card numbers. You need to generate test data to test the application. Create data generation rules and assign the rules to target columns to generate test credit card numbers based on the network type.

To generate test data, perform the following tasks:

1. Create a set of values generation rule.
2. Create credit card generation rules.
3. Add the generation rules to a project.
4. Assign the rules to target columns.
5. Generate and run the ad hoc plan.

Prerequisites

Perform the following prerequisites tasks:

1. Create an Oracle database connection in Test Data Manager.
2. Create a project and import target metadata from the Oracle database connection.

Step 1. Create a Set of Values Generation Rule

Before you generate credit card numbers, you need to generate test data in the credit card network types column. Create a set of values generation rule to generate the following network types: Mastercard, Visa, and Discover.

1. Click **Policies**.
2. Click **Actions > New > Generation Rule**.
The **New Generation Rule** dialog box appears.
3. Enter a name and an optional description for the rule.

4. Select the string data type.
5. From the list of standard generation rules, select **Set of Values**.
6. To enable users to override generation parameters for a rule, select **Override Allowed**.
7. Click **Next**.
8. Enter the following set of values: Master, Visa, and Discover. Enter the distribution percentages.

The following image shows the sample values and the distribution percentages for the credit card types:

New Generation Rule: Step 2 of 2 Step(s)

Generates string data from a set of values.

| Value | Distribution % |
|----------|--|
| Master | 40 ✖ + |
| Visa | 30 ✖ + |
| Discover | 30 ✖ + |

Exception Test Data

Null Values: Default ▼ 0 %

Invalid Values ?: Default ▼ 0 %

Back Next Finish Cancel

9. Click **Finish**.

Step 2. Create Credit Card Generation Rules

To generate test credit card numbers for Visa, Mastercard, and Discover network types, you need to create credit card generation rules. Create a credit card generation rule for each issuing network type. For each issuing network type, you must enter a valid issuer identification number as the starting digits of a credit card number.

1. In the **Policies** view, click **Actions > New > Generation Rule**.
The **New Generation Rule** dialog box appears.
2. Enter a name and an optional description for the rule.
3. Select the string data type.
4. From the list of standard generation rules, select **Credit Card**.
5. To enable users to override generation parameters for a rule, select **Override Allowed**.
6. Click **Next**.
7. Select Mastercard as the issuing network. Enter the issuer identification number as 52 and the distribution percentage as 100.

The following image shows the credit card generation parameters:

New Generation Rule: Step 2 of 2 Step(s)

Generates string data from a credit card.

| *Issuing Network | Issuer Identification Number | Distribution % |
|------------------|------------------------------|----------------|
| Master | 52 | 100 |

Generate Formatted Values
 Generate Unique Values

Exception Test Data

| | | |
|----------------|---------|-----|
| Null Values | Default | 0 % |
| Invalid Values | Default | 0 % |

Back Next Finish Cancel

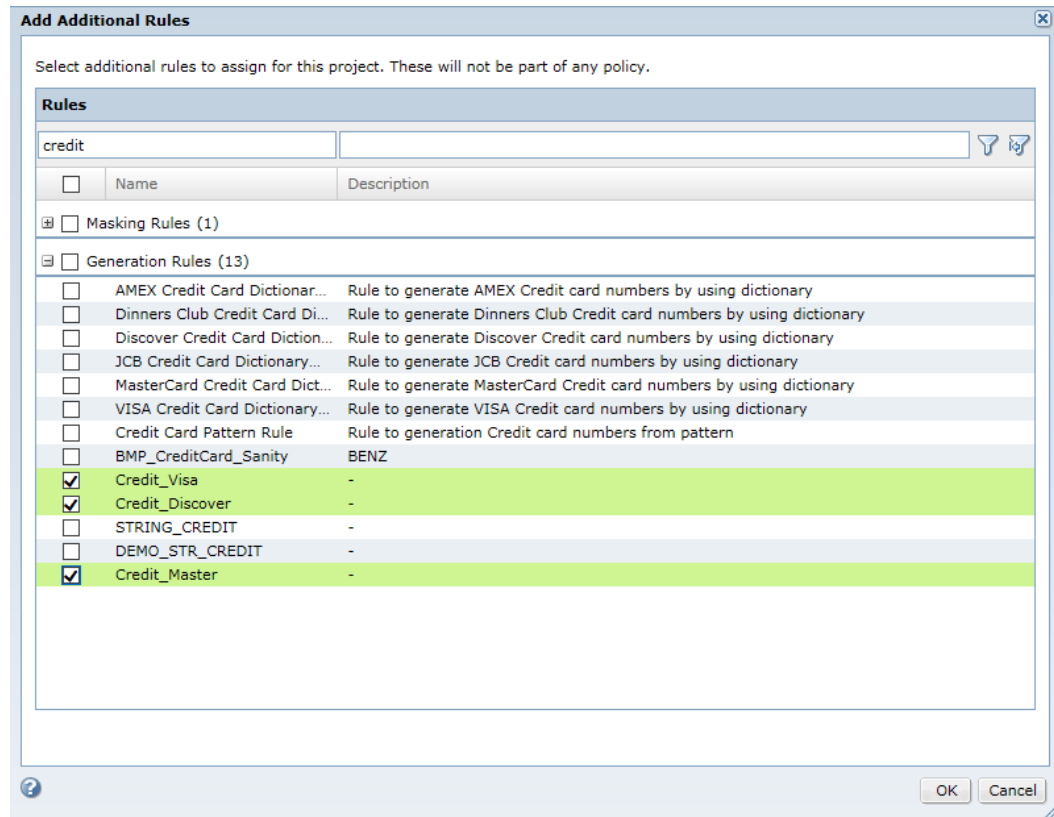
8. To generate formatted values for each credit card type, select **Generate Formatted Values**.
9. To generate unique data values, select **Generate Unique Values**.
10. Click **Finish**.
11. Create a credit card generation rule with the issuing network as Visa. Enter the issuer identification number as 4 and the distribution percentage as 100.
12. Create a credit card generation rule with the issuing network as Discover. Enter the issuer identification number as 6011 and the distribution percentage as 100.

Step 3. Add the Generation Rules to a Project

You need a project with target columns to assign the generation rules. To use a generation rule in a project, you must add the rule to the project.

1. Click **Projects**.
You can see a list of projects.
2. Open the project in which you want to use the generation rules.
The project window opens in another tab.
3. Click **Overview > Policies**.
4. Click **Actions > Add Additional Rules**.
The **Add Additional Rules** dialog box appears.
5. Select the set of values and credit card generation rules that you created.

The following image shows the available list of rules that you can add to the project:



6. Click **OK**.

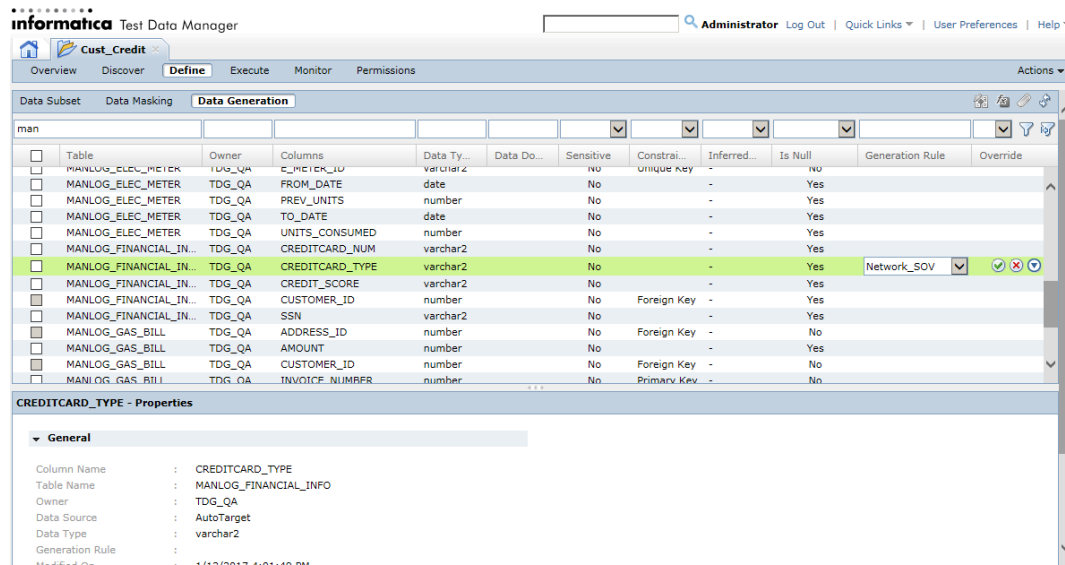
The generation rules appear under the **Additional Rules** list.

Step 4. Assign the Rules to Target Columns

To generate network types and the corresponding credit card numbers, you must assign the generation rules to target columns.

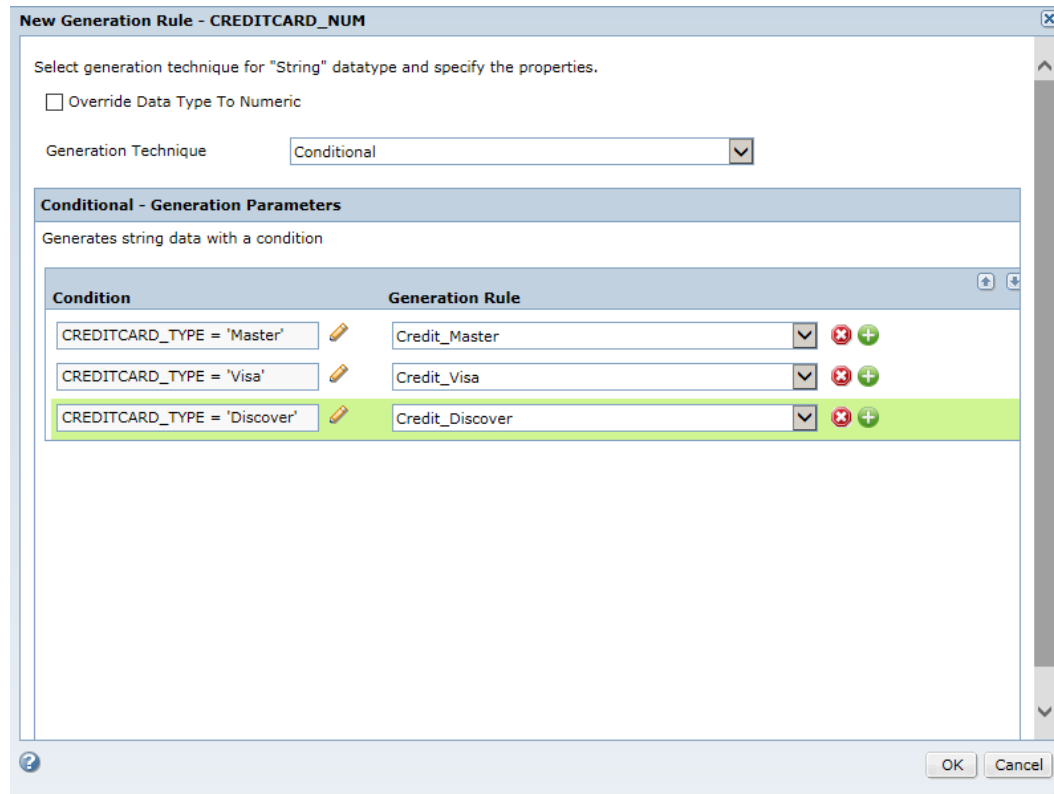
1. In a project, click **Define > Data Generation**.
2. Select the credit card type column.
3. To view the list of rules available for the data type of the column, click inside the **Generation Rule** column.
4. Select the set of values generation rule that you created.
5. Click **Save**.

The following image shows the set of values generation rule assignment to a target column:



6. Select the credit card number column.
 7. Click inside the **Generation Rule** column.
 8. Click **New Generation Rule**.
- The **New Generation Rule** dialog box appears.
9. Select the **Conditional** generation technique from the list.
 10. Enter the conditions and corresponding generation rules to generate the following type of credit cards: Master, Visa, and Discover.

The following image shows the conditional generation rule parameters:



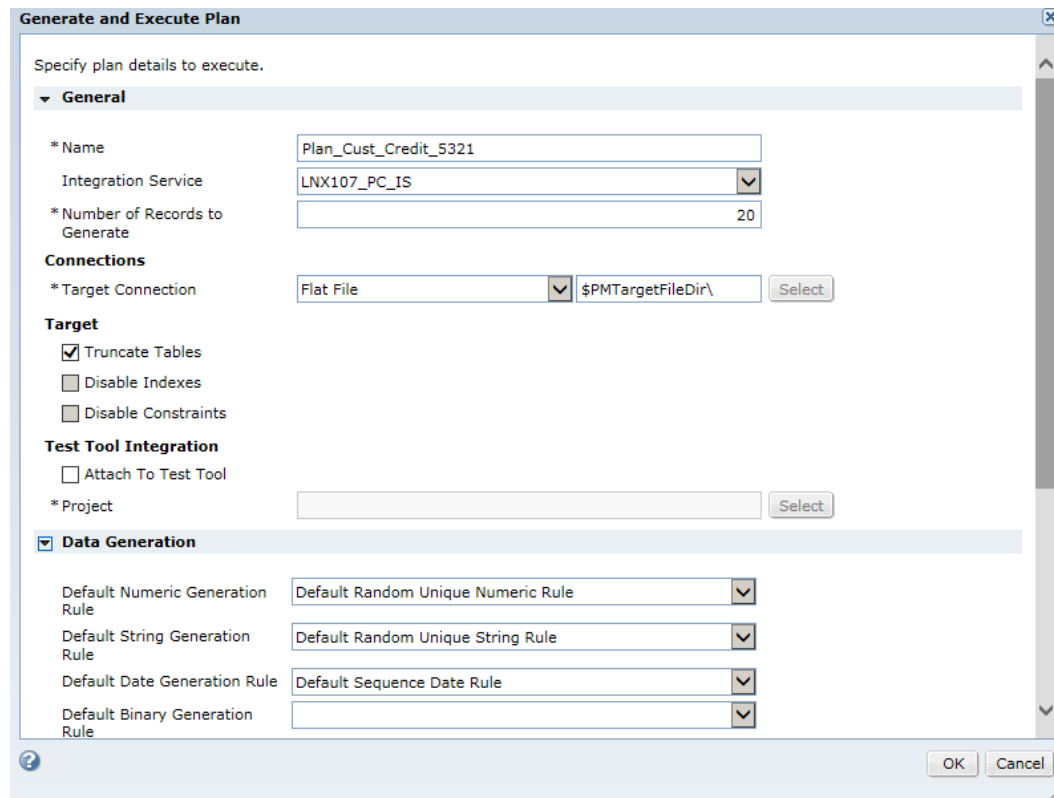
11. Click **OK**.

Step 5. Generate and Run the Ad Hoc Plan

To generate the network types and credit card numbers, you must create a plan and run the workflow. Select the target columns together and create an ad hoc generation plan. Configure the plan properties and run the plan to generate the required test data.

1. Click **Define > Data Generation**.
2. From the target table, select the credit card type and credit card number columns that contain generation rule assignment.
3. Click **Actions > Generate and Execute**.
The **Generate and Execute Plan** dialog box appears.
4. Enter a name for the plan or keep the default plan name that appears on the screen.
5. Select the PowerCenter Integration Service.
6. Enter 20 as the number of records that you want to generate.
7. Select a flat file target connection.

The following image shows the ad hoc plan properties that you can configure:



8. Select the default generation rules for the columns that do not contain any rule assignment.

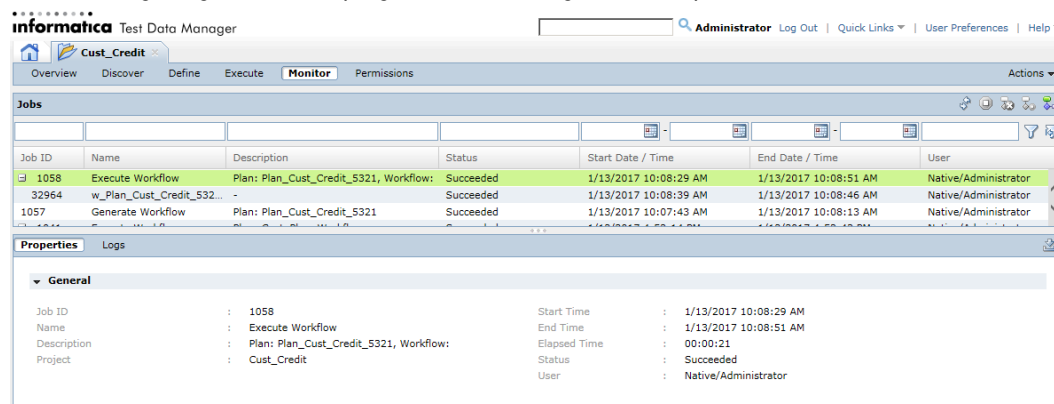
9. Click **OK**.

The **Create and Execute** dialog box appears.

10. To run the plan, click **Yes**.

11. To view the progress, click **Monitor**.

The following image shows the progress of the data generation operation:

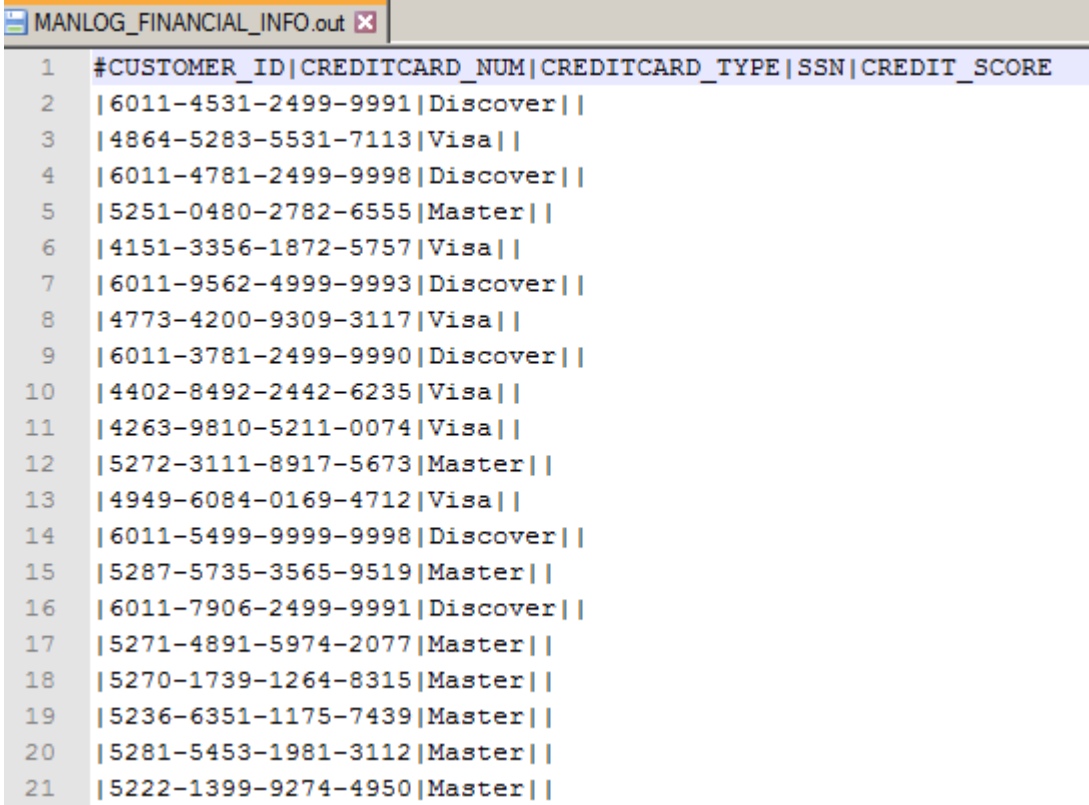


Sample Output

After the data generation plan succeeds, you can view the generated test data in the following target columns: CREDITCARD_NUM and CREDITCARD_TYPE. You can see that the output file contains 20 records with the following output:

- 40 percent of test data contains Mastercard numbers starting with the number 52.
- 30 percent of test data contains Visa card numbers starting with the number 4.
- 30 percent of test data contains Discover card numbers starting with the number 6011.

The following images show a sample target file with generated test credit card numbers based on the network types:



```
MANLOG_FINANCIAL_INFO.out x
1 #CUSTOMER_ID|CREDITCARD_NUM|CREDITCARD_TYPE|SSN|CREDIT_SCORE
2 |6011-4531-2499-9991|Discover||
3 |4864-5283-5531-7113|Visa||
4 |6011-4781-2499-9998|Discover||
5 |5251-0480-2782-6555|Master||
6 |4151-3356-1872-5757|Visa||
7 |6011-9562-4999-9993|Discover||
8 |4773-4200-9309-3117|Visa||
9 |6011-3781-2499-9990|Discover||
10 |4402-8492-2442-6235|Visa||
11 |4263-9810-5211-0074|Visa||
12 |5272-3111-8917-5673|Master||
13 |4949-6084-0169-4712|Visa||
14 |6011-5499-9999-9998|Discover||
15 |5287-5735-3565-9519|Master||
16 |6011-7906-2499-9991|Discover||
17 |5271-4891-5974-2077|Master||
18 |5270-1739-1264-8315|Master||
19 |5236-6351-1175-7439|Master||
20 |5281-5453-1981-3112|Master||
21 |5222-1399-9274-4950|Master||
```

Author

Vinita Arun Kumar

Acknowledgements

The author would like to acknowledge Development and QA team members for their technical assistance.