

Generating Credit Card Numbers in Test Data Management

[©] Copyright Informatica LLC 2003, 2021. Informatica and the Informatica logo are trademarks or registered trademarks of Informatica LLC in the United States and many jurisdictions throughout the world. A current list of Informatica trademarks is available on the web at https://www.informatica.com/trademarks.html

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

/erview	. 2
zenario	3
erequisites	3
ep 1. Create a Set of Values Generation Rule	3
ep 2. Create Credit Card Generation Rules	4
ep 3. Add the Generation Rules to a Project	5
ep 4. Assign the Rules to Target Columns	6
ep 5. Generate and Run the Ad Hoc Plan	8
ample 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)

Value		Distribution %
Master		40 😫 🛟
Visa		30 辽 🔂
Discover		30 🖸 🛟
Exception Test Data		
Null Values	Default	0 %
Invalid Values 🕣	Default	✓ 0 %

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.
- 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:

ew Generation Rule: Step 2	2 of 2 Step(s)				
Generates string data from a	credit card.				
*Issuing Network		Tesuer Identification Number		Distribution %	
					~ ~
Master	~		52	100	U 🕁
Generate Formatted Valu	ies				
Generate Unique Values					
Exception Test Data					
Null Values	Default	\checkmark	0 %		
Invalid Values 🕣	Default		0 %		

- 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:

Ad	ld Additio	onal Rules		×
	Celect add	litional rules to assign for this n	roject. These will not be part of any policy	٦
1		ntional rules to assign for this p	reject. These will not be part of any policy.	
	Rules			
	credit		∑ §	
		Name	Description	
	🗄 🗌 Ma	sking Rules (1)		
	🗆 🗌 Ger	neration Rules (13)		
ľ		AMEX Credit Card Dictionar	Rule to generate AMEX Credit card numbers by using dictionary	
		Dinners Club Credit Card Di	Rule to generate Dinners Club Credit card numbers by using dictionary	
		Discover Credit Card Diction	Rule to generate Discover Credit card numbers by using dictionary	
		JCB Credit Card Dictionary	Rule to generate JCB Credit card numbers by using dictionary	
		MasterCard Credit Card Dict	Rule to generate MasterCard Credit card numbers by using dictionary	
		VISA Credit Card Dictionary	Rule to generate VISA Credit card numbers by using dictionary	
		Credit Card Pattern Rule	Rule to generation Credit card numbers from pattern	
		BMP_CreditCard_Sanity	BENZ	
	V	Credit_Visa	•	
	V	Credit_Discover	-	
		STRING_CREDIT		
		DEMO_STR_CREDIT		
	V	Credit_Master	•	
L				
_				
2)		OK Cancel)
				٢,

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:

Oven	view Discover	Defir	e Execute	e Monitor Permiss	ions									Ac	tions 🕶
Data Si	ubset Data Maski	ng (Data Genera	tion									1	18 🏉	3
nan							~	~	~		~			v 7	787
	Table		Owner	Columns	Data Ty	Data Do	Sensitive	Constrai	Inferred	Is Null		Generation Rule	Ov	erride	
	MANLOG_ELEC_ME	IEK	TDG_QA	C_METEK_10	varcriar2		NO	unique key	-	INO					
	MANLOG_ELEC_ME	TER	TDG_QA	FROM_DATE	date		No		-	Yes					~
	MANLOG_ELEC_ME	TER	TDG_QA	PREV_UNITS	number		No		-	Yes					
	MANLOG_ELEC_ME	TER	TDG_QA	TO_DATE	date		No		-	Yes					
	MANLOG_ELEC_ME	TER	TDG_QA	UNITS_CONSUMED	number		No		÷	Yes					
	MANLOG_FINANCI	AL_IN	TDG_QA	CREDITCARD_NUM	varchar2		No		-	Yes					
	MANLOG_FINANCI	AL_IN	TDG_QA	CREDITCARD_TYPE	varchar2		No		- C	Yes		Network_SOV	~ (🖉 Ӿ (I
	MANLOG_FINANCI	AL_IN	TDG_QA	CREDIT_SCORE	varchar2		No		-	Yes					
	MANLOG_FINANCI	AL_IN	TDG_QA	CUSTOMER_ID	number		No	Foreign Key	-	Yes					
	MANLOG_FINANCI	AL_IN	TDG_QA	SSN	varchar2		No		-	Yes					
	MANLOG_GAS_BIL	L	TDG_QA	ADDRESS_ID	number		No	Foreign Key	-	No					
	MANLOG_GAS_BIL	L	TDG_QA	AMOUNT	number		No		-	Yes					
	MANLOG_GAS_BIL	L	TDG_QA	CUSTOMER_ID	number		No	Foreign Key	-	No					\sim
	MANLOG GAS BIL		TDG OA	INVOICE NUMBER	number		No	Primary Key	-	No					
REDIT	CARD_TYPE - Prop eneral umn Name le Name	erties	CREDITCARD_	TYPE INCIAL_INFO											
Own	ner	1.1	TDG OA	-											
Data	a Source		AutoTarget												
Data	а Туре	-	varchar2												
Gen	eration Rule														4
Mari	E-1 O-			1.40.04											

- 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:

Ne	w Generation Rule - CREDITC	ARD_NUM			×
s	Select generation technique for "S	tring" dataty ric	pe and specify the properties.		^
	Generation Technique	Conditional		×	
	Conditional - Generation Para	meters			
	Generates string data with a cond	dition			
	Condition		Generation Rule		٠.
	CREDITCARD_TYPE = 'Master'	Ø	Credit_Master	✓ 3	•
	CREDITCARD_TYPE = 'Visa'	Ø	Credit_Visa	✓ (2)	•
	CREDITCARD_TYPE = 'Discove	r' 🦉	Credit_Discover	✓ Ø	Ð
					~
3					OK Cancel

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:

Generate and Execute Plan		×
Specify plan details to execute.		~
- General		
* Name	Plan_Cust_Credit_5321	
Integration Service	LNX107_PC_IS	
* Number of Records to Generate	20	
Connections		
* Target Connection	Flat File	
Target		
✓ Truncate Tables		
Disable Indexes		
Disable Constraints		
Test Tool Integration		
Attach To Test Tool		
* Project	Select	
▼ Data Generation		
Default Numeric Generation Rule	Default Random Unique Numeric Rule	
Default String Generation Rule	Default Random Unique String Rule	
Default Date Generation Rule	Default Sequence Date Rule	
Default Binary Generation Rule	Y	~
0	OK	

- 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:

informat	• tica Test Data Manag				🔍 Administra	ator Log Ou	t Quick Link	cs ▼	User Preferences	Help	Ŧ		
1 00	Cust_Credit ×												
Overview	Discover Define	Execute Monitor Permissions									Ac	tions 🛪	•
Jobs											÷ 🕘 😼	30 🕏	
						-[-	۰,		76	3
Job ID	Name	Description	Status		Start Date / Ti	ime		End Date /	Time		User		
∃ 1058	Execute Workflow	Plan: Plan_Cust_Credit_5321, Workflow:	Succeeded		1/13/2017 10:	:08:	29 AM	1/13/2017	10:08:51 AM		Native/Administrat	or	
32964	w_Plan_Cust_Credit_532	-	Succeeded		1/13/2017 10:	:08:	39 AM	1/13/2017	10:08:46 AM		Native/Administrat	or	1
1057	Generate Workflow	Plan: Plan_Cust_Credit_5321	Succeeded		1/13/2017 10:	:07:	43 AM	1/13/2017	10:08:13 AM		Native/Administrat	or	Y
	e		<u> </u>		* /* * /* * * *								
Properties	Logs											2	à
6													
	31												
Job ID		: 1058		Start Time	8		1/13/2017 10	:08:29 AM					
Name		: Execute Workflow		End Time			1/13/2017 10	:08:51 AM					
Descriptio	n	: Plan: Plan_Cust_Credit_5321, Workflo	w:	Elapsed Ti	ime		00:00:21						
Project		: Cust_Credit		Status			Succeeded						
				User			Native/Admin	istrator					

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:

HANLOG_FINANCIAL_INFO.out

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.