

SYNTHETIC TEST DATA AUTOMATION SOLUTION OVERVIEW

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1. Synthetic Test Data Automation

TDM - Production Data Limits Test Coverage



A New Paradigm - Test Data Automation (TDA)



Test Data Automation

2. Terminology

5 KEY COMPONENTS

| GE | NROCKET | TERM | THINK OF IT LIKE | EXAMPLES |
|-----|---------|-----------|---|--|
| [| | Domain | A person, place or thing - Often equivalent to a database table | A User Domain |
| | | Attribute | The characteristics of the Domain - the columns in the database | Name, Phone, SSN, DOB, Customer# |
| 737 | | Generator | Generates data or queries production data for the Attribute | NameGen, PhoneNumberGen, SSNGen, DateGen, QueryGen Generators |
| 104 | | Receiver | Receives the data from the Generator and morphs it into a usable format | XML, JSON, SQL, DB2, VSAM, CSV, REST API, SWIFT, etc. |
| | Y Y Y | Scenario | Instruction set that tells the GenRocket engine how much data to generate | Generates data into a typical test case in about 100 milliseconds |

5 TEST DATA CASE MANAGEMENT COMPONENTS

| GENR | OCKET TERM | THINK OF IT LIKE | EXAMPLES |
|------|-------------------|--|--|
| | Test Data Case | How you specify the exact test data needed for a test case | 100 customers (unit), 5 Branches with 10 Accounts with 1,000 Customers (Integration) |
| × | Test Data Rule | How to apply rules against your Test Data Case to only get the data you want | Platinum customer starting bank balance: \$10,000, Gold customer starting balance: \$5,000 - \$9,999 |
| | Test Data Query | Ability to query specific production data values from a file or database | Query Platinum and Gold customer Account #'s to blend with synthetically generated data |
| | Test Data Stories | Stories combine a group of Test Data Cases | Combine Type Tables Test Data Cases with Account Table Test Data Cases |
| | Test Data Epics | Epics combine a group of Test Data Stories | Combine Integration Test #1 with Integration Test #2 |

3. Methodology

- MODEL
- DESIGN
- DEPLOY
- MANAGE

A Distributed Self Service Platform



4. Part 1 - Model



4a. Modeling a Test Data Project - 14 Methods

Test Data Projects usually relate to all or part of a database / application. In general, modeling a Test Data Project entails the following steps:

- 1. Create a Test Data Project
- 2. mport or Create the Data Model
- 3. Establish Referential Integrity within the Test Data Project
- 4. For multiple Test Data Projects establish referential integrity across Test Data Projects

There are currently 14 methods to model Domains in a Test Data Project in GenRocket:



- XTS (Extract Table Schema) The most commonly used method to create a test data project using the meta data (not the data). For more information about XTS setup go here.
- Import from JSON Schema ability to setup a test data project by connecting to Metadata management tools such as Ab.Initio and Alation
- Scratchpad a useful tool to quickly build GenRocket Domains. To watch a 3 minute video go here.
- X12 EDI Store + Accelerator This is an optional Test Data Project setup method for healthcare customers using X12 EDI transaction sets such as 837 Claims, 835 Payments and 834 Benefit Enrollment. The Accelerator takes an EDI test data setup process that might take months and automates 90% of the setup process

4b. Data Model Changes - G-Delta

Data Models change over time with the addition or subtraction of Tables and Columns. G-Delta helps automate the maintenance of this "life cycle" task.

- 1. **G-Delta** is an automated platform, which allows scheduled monitoring of a database's schema changes so that a given Project Version stays in sync with its database.
- 2. G-Delta prepares an Audit Report of any changes it finds in the database schema against the state of the Project Version. The user who created the G-Delta can review the Audit Report and execute the refactoring process, which will put the Project Version in sync with the database.
- 3. G-Delta and G-Repository work together to check and detect changes within the base Database Schema. By default, G-Delta checks for changes every 24 hours. This time interval can be changed to a minimum of 12 hours.

| | | | | | | | G-Delta | Man | agen | nent | 0 | | | | | | |
|----------------|---------|----------------|-------------|-----------------|---------------------------------------|--------|------------------|-----------|-----------|---------|-------|----------------|------------|--------------|----------|---------|-----------|
| | | | | | | | | G- | Delta | | | | | | | Filter | |
| Project Versio | n Sche | duled Interval | Resour | rce Path | | Reso | ource SubDir Co | onfig Fil | e Name | Create | ed By | Latest Delta | a (UTC) | G-Repositor | y Server | Name | Actions 🚯 |
| Version 1.0 | Every | 24 hours | #{resou | rce.jdbc.direct | tory} | config | g co | nfig.prop | perties | April H | atton | Nov 18, 202 | 1 13:10:00 | AprilTesting | | | 0/01 |
| Version 1.1 | Every | 24 hours | #{resou | rce.jdbc.direct | tory} | config | g co | nfig.prop | perties | April H | atton | Nov 18, 202 | 1 13:10:02 | AprilTesting | | | ◐◈◴◾ |
| | | | | | | | Cre | ate New | G-Delta | | | | | | | | |
| | | | | | | | G-Delt | a Auc | lit Sum | nmary | for | Test | | | | Filter | |
| Date Created | UTC) | Date Audited | (UTC) | Audited By | Statu | is 🚺 | Audits Found | Audi | its Accep | ted 🚺 | Aud | its Modified 🤅 | Audits | s Rejected 🚺 | % Accu | uracy 🤅 | Actions 🕄 |
| Nov 18, 2021 1 | 3:10:00 | Nov 18, 2021 1 | 3:10:00 | April Hatton | Worki | ng | 3 | 1 | | | 1 | | 1 | | 33 % | | 00 |
| Nov 18, 2021 0 | 0:09:00 | Nov 18, 2021 0 | 00:09:00 | April Hatton | Accep | oted | 1 | 1 | | | 0 | | 0 | | 100 % | | 00 |
| | | | | | | | | Request A | udit | | | | | | | | |
| | | | | | | | G-Del | ta Au | dit Sur | nmary | / De | tail | | | | Filter | |
| Domain | Attrib | ute De | elta Reco | mmendation | i i i i i i i i i i i i i i i i i i i | | Action T | o Take | | | | Audited By | , | Actions () | | | |
| Address | N/A | Ad | d Domain | n | | | Accepted | 1 | | | | April Hatton | | 100 | | | |
| User | age | De | lete Attrit | oute | | | Change A | Attribute | Name | | | April Hatton | | 800 | | | |
| User | N/A | Ad | d Attribut | te | | | Rejected | | | | | April Hatton | | 100 | | | |
| | | | | | | Hove | er on any row to | see it's | s values | to be c | hang | ed | | | | | |

5. Part 2 - Design



5a. Data Generators

Generators are used to generate data for different Attributes such as names, addresses and credit cards. GenRocket currently offers 730+ different data Generators. Each Generator has parameters that allow user defined control over the data that is generated such as random, patterned, sequential, null, %, etc.

- Generators are intelligent and be able to maintain contextual relationships. For example, a city that matches a valid state and postal code.
- Generators can remember where they stopped generating data and start again at a later time while preserving state this is called stateful data generation.
- <u>List Generators</u> are able to store or add re-usable assets into a Generator (e.g. a list of car types: sedan, convertible, hatchback)
- Permutation Generators are able to generate all valid permutations & combinations of data
- <u>Linked Generators</u> offers the ability to combine multiple generators to increase the versatility of the data that is generated
- Generators can be configured so that data is generated in exact length and types
- New Generators can usually be added to the platform in one Sprint cycle, at no cost.

5b. Test Data Case Management

GenRocket **Test Data Case Management** allows a small, central team of Test Data Engineers to design the data needed by developers, testers and data scientists. Test Data Case Management features make it easy for Test Data Engineers to quickly design test data that is rule-based, dynamic, and stateful.

| GENR | OCKET TERM | THINK OF IT LIKE | EXAMPLES |
|--------------------|-------------------|--|--|
| | Test Data Case | How you specify the exact test data needed for a test case | 100 customers (unit), 5 Branches with 10 Accounts with 1,000 Customers (Integration) |
| × | Test Data Rule | How to apply rules against your Test Data Case to only get the data you want | Platinum customer starting bank balance: \$10,000, Gold customer starting balance: \$5,000 - \$9,999 |
| ? ? ? | Test Data Query | Ability to query specific production data values from a file or database | Query Platinum and Gold customer Account #'s to blend with synthetically generated data |
| | Test Data Stories | Stories combine a group of Test Data Cases | Combine Type Tables Test Data Cases with Account Table Test Data Cases |
| | Test Data Epics | Epics combine a group of Test Data Stories | Combine Integration Test #1 with Integration Test #2 |

Test Data Cases (G-Cases)

Test Data Cases are a key part of GenRocket's Self Service Test Data Module. We organize all the Test Data Case functionality into a part of the GenRocket platform we call "**G-Cases**". Test Data Cases are used any time you want to define test data for a test case.

- To watch a solutions video (5 minutes) for Test Data Cases go here
- For more information about Test Data Cases go here

Test Data Rules (G-Rules)

Test Data Rules are a key part of GenRocket's Self Service Test Data Module. We organize all the Test Data Rule functionality into a part of the GenRocket platform we call "G-Rules". Test Data Rules are used any time you want to apply business logic to test data that will be generated.

- To watch a solutions video (3 minutes) for Test Data Rules go here
- For more information about Test Data Rules go <u>here</u>

Test Data Queries (G-Queries)

With GenRocket, you can generate any type of synthetic test data needed to solve your test data challenges. However, synthetic test data does not always meet data requirements for some test cases where real data is needed such as:

- Real account #
- Real customer #

When you want to use real data values in your test case or a combination of real and synthetic data values that is where Test Data Queries comes in using one of our 18 different Query Generators.

- Query real data values from SQL databases
- Query real data values from a MongoDB database
- Query real data values from a CSV file

Queried data can be blended with synthetic data. Additionally, the real data value can be evaluated by one Generator and determine what data another Generator will generate. For example, if a bank account has \$10,000 in it, then data can be generated for a "gold" level customer.

- To watch a solutions video (3 minutes) for Test Data Queries go here
- For more information about Test Data Queries go here

Test Data Stories (G-Stories)

G-Stories can be used to create one or multiple suites of Test Data Stories with their own Chapters. Each Chapter can have a Test Data Case and a Scenario, ScenarioChain, or a ScenarioChainSet.

Test Data Stories can be used to package multiple Test Data Cases with defined Scenarios, Scenario Chains, and/or Scenario Chain Sets. Test data generation can then be *orchestrated* for a series of Test Data Story Suites with a single command.

For more information about Test Data Stories go here

Test Data Epics (G-Epics)

G-Epics can be used to organize and orchestrate the running of many Test Data Stories in a sequence. A Test Data Epic can look at a particular Test Data Story within a suite to generate test data.

Individual Test Data Stories can be combined to generate more complex test data. For example, Test Data Stories can be combined to populate an entire database based on defined test data cases using a single command.

Simple Workflow Example for Test Data Epics

Here is a sample tree view showing a simple workflow example for Test Data Epics:

- Test Data Epic
 - Test Data Story 1
 - Test Data Story 2
 - Test Data Story 3

For more information about Test Data Epics go here

5c. Test Data Families (G-Families)

G-Families discovers related Domains ("Families") within an imported Database Schema based on relationships that have been set **among imported Domains.** Once families have been discovered, permitted users can view visual diagrams for families and create G-Cases from them.

G-Families provides a visual grouping of related Domains to help Test Data Engineers understand the data model and accelerate building of test data cases. With a few clicks, tesusers can automatically create a Suite of G-Cases from a discovered G-Family.

| XTS Wiz | ards / G-Families for Project B | 3ankDemo - 1.0 | | | |
|---------|--|----------------------|-------------------------------|------------------------------------|--------------------------|
| | By Family N | Name V Search | View in GenRocket Domain Mode | O View in Entity Relationship Mode | |
| Fami | ilies | Actions | | | |
| Cardi | Product | 0/B | | | |
| Trans | action | 0/1 | | | |
| Find | New Families 2 Families Created, No I | Family with G-Cases. | | Branch | AccountType |
| | Family Member | Visibility | | | |
| | CardProduct | Hide All | | | Account Customer |
| | CustomerAccount | Hide All | | | |
| | Account | Hide All | | | |
| | Branch | Hide All | | | |
| | CardType | Hide All | | | Z Z |
| | Customer | Hide All | | | CustomerAccount CardType |
| | AccountLevel | Hide All | | | |
| | AccountType | Hide All | | | |
| | | | | | CardProduct |

With a few clicks, Test Data Engineers can **quickly create** a Suite of Test Data Cases (G-Cases) for a Test Data Family.

| Template View | w w | | | | | | Filter |
|--|-----------------|--|--|--|--------------------------|-----------------------------|---|
| Name | Created By | Created On | Last Modified By | Modifie | ed On | Family | Actions |
| Family1 | April Hatton | Apr 27, 2022 | April Hatton | Apr 27, | 2022 | Family1 | 2 ℃ ℃ № 2 ℃ ℃ № 2 ℃ ℃ № 2 ℃ ℃ № |
| | | | Add G-Ca | e Suite | | | |
| | | | G-Case Suit | e: Family1 | | | |
| | | Filter | O account | | | | |
| G-Case Categ | ory Name | Actions | accountLevel | | | | |
| Init | | Q18 | accountType | | | | |
| | Add G-Case Cate | gory Filter | C Corre Editor | C Outring | | | |
| G-Case | Add G-Case Cate | gory Filter Actions | G-Case Editor G-Rule Set | G-Queries G-Case Ca | tegory: Unit, G- | Case: account | |
| G-Case account | Add G-Case Cate | Filter Actions | G-Case Editor G-Rule Set | G-Queries G-Case Ca | <u>tegory: Unit, G</u> - | Case: account | Filter |
| G-Case account accountLevel accountType | Add G-Case Cate | pory Filter Actions Of R | G-Case Editor G-Rule Set | G-Queries G-Case Ca | tegory: Unit, G- | Case: account | Filter |
| G-Case account accountLevel accountType branch | Add G-Case Cate | pery Filter Actions Actions C R C R C R C R C R C R C R C R C R C R | G-Case Editor G-Rule Set | G-Queries G-Case Ca | bomain Name Account | Case: account Loop Count | Filter Actions |
| G-Case account accountLevel accountType oranch | Add G-Case Cate | gery Filter Actions Actions OB | G-Case Editor G-Rule Set | G-Queries G-Case Ca Actions 00 0 00 0 | Domain Name Account | Case: account Loop Count | Filter Actions ☆ ∞ ⋧ ⋵ ∎ İ |
| G-Case account accountLevel accountType branch | Add G-Case Cate | gory Filter Actions Actions OB | G-Case Editor G-Rule Set Filte Domain Name AccountLevel AccountType Branch | G-Queries G-Case Ca Actions Actions 00 0 00 0 | Domain Name Account | Case: account Loop Count | Filter Actions ♀ ∞ ✔ ▷ ● 1 |
| G-Case account accountLevel accountType oranch | Add G-Case Cate | gory Filter Actions OB | G-Case Editor G-Rule Set | G-Queries G-Case Ca r Actions ∞ O ∞ O ∞ O ∞ O | Domain Name Account | Case: account Loop Count | Filter Actions ≭ ∞ ⋧ t3 © 1 |
| G-Case account accountLevel accountType branch | Add G-Case Cate | gory Filter Actions Comparison C | G-Case Editor G-Rule Set | G-Queries G-Case Ca r Actions 00 0 00 00 00 0 00 0 0 | Domain Name Account | Case: account Loop Count | Filter Actions ≭ ∞ ✔ ☐ ● 1 |
| G-Case account accountLevel accountType branch | Add G-Case Cate | gory Filter Actions Constraints Actions Constraints Actions Constraints Actions Constraints Actions Constraints Actions A | G-Case Editor G-Rule Set | G-Queries G-Case Ca r Actions 00 0 00 00 00 0 00 0 0 | Domain Name Account | Case: account Loop Count | Filter Actions ≭ ∞ ✔ ☐ ● 1 |

5d. Data Subsets with Synthetic Data Masking (G-Migration+)

The G-Migration+ module intelligently queries a subset of data from a source database, replaces sensitive data values ("Synthetic Data Masking") with synthetically generated data values, and inserts the data subset into an identical destination database using the same format and data model.



Data Subset with Synthetic Data Masking

Import the Database Data Model

| Table Schellia | Tab | le | Sch | nen | na |
|----------------|-----|----|-----|-----|----|
|----------------|-----|----|-----|-----|----|

| able Schema | | Columns of custor | ner | | | | | |
|------------------|--------|-------------------|---------|------------|------------------------------|--------------------|----------|-----|
| | Filter | Name | Туре | Size | Foreign Key Table | Foreign Key Column | Nullable | 1 |
| Table | | id a _e | BIGINT | 19 | | | Not Null | |
| account | | version | BIGINT | 19 | | | Not Null | - 1 |
| account_level | | email_address | VARCHAR | 50 | | | Not Null | |
| account_type | | first_name | VARCHAR | 25 | | | Not Null | |
| branch | | last_name | VARCHAR | 25 | | | Not Null | |
| card_product | | Relationship | | | | | | |
| card_type | | | | | | | | |
| customer | | | | | | | | |
| customer_account | | | | | customer | | | |
| transaction | | | | | | | | |
| transaction_type | | | | X • | ustomer_account | z transaction | | |

Select the Subset. Configure the Migration

| 1 | 1 | | Description | 0 | Â | | *Name |
|---------|----------------------------------|-------------|-------------|-----|----------|----------------------------|---------------------|
| n | Speed Optimization Configuration | Migration S | | | | ary Scenario Configuration | Prin |
| 0 | 1 | read Count | *T | 0 | × × | resource.output.directory | *Scenario Directory |
| 0 | 10000 | Batch Size | | 0 | ٣ | Select Default Scenario | Default Scenario |
| | & Test Data Case Configuration | Receiver | | | tion | mp File Location Configura | Data-Du |
| . 0 | Select Test Data Case • | Data Case | Те | 0 | x v | resource.output.directory | ata-Dump Directory |
| • 0 | Select Receiver Type | n Receiver | *Partit | 0 | | | *Data-Dump SubDir |
| uration | base & JDBC Connection Configura | nation Data | Des | ion | figurati | se & JDBC Connection Con | Source Databa |
| 0 | | ema Name | *DB / S | 0 | | | 'DB / Schema Name |
| , 0 | resource.jdbc.directory * * | C Directory | *JDI | 0 | × v | resource.jdbc.directory | *JDBC Directory |
| 0 | | bDirectory | JDBC S | 0 | | | JDBC SubDirectory |
| 0 | | onfig Name | *JDBC (| 0 | | | JDBC Config Name |

6. Part 3 - Deploy

| | DEPLOY | |
|--|--------|--|
| | | |
| | | |

Once test data DESIGN is finished, the Test Data Engineer has test data ready to be DEPLOYED. Test Data Scenarios and Test Data Cases defined during the DESIGN phase contain the instructions for volume and data variety that will be generated by the GenRocket Runtime Engine.

Receivers determine the test data output format for generated test data during deployment. Test data generated by GenRocket can be morphed into just about any format that is required. This data can be deployed in more than 100 different formats including:

- Test Automation Frameworks & Tools (e.g. GitLab, Azure DevOps, etc.)
- Databases (MS SQL, MySQL, MongoDB, Oracle, IBM DB2, etc.)
- Formats (XML, JSON, CSV, VSAM, PDF, JPEG)
- The Cloud (AWS, Azure, GCP, etc.)

6a. Receivers / Output Data Formats

GenRocket Receivers morph the raw test data generated by Generators into a desired output data format.

- 101 Receivers are currently available in GenRocket.
- To see all of the current supported output formats go here
- Non-proprietary Receivers can be added to the platform for our customers upon request, at no cost.

6b. Test Data Portal (G-Portal)

G-Portal is a central test data portal that allows developers and testers to find and request the test data they need for their test cases and allows Test Data Engineers to receive and respond to test data requests from large, distributed groups of test data users. The view below is for a Test Data Engineer.

| | | | | | | G-Portal for Organi | zation Administrator | s anu lest Data Engineers | | | |
|---|---------------|-----------------------------------|-------------|---------------|------------------------------------|-----------------------|----------------------|--|----------|---------------------|-----------------------------|
| Requesters | | Filter | | | | | | New Requests | | | Filter |
| Name | | New | Active | ID | Time Created | Last Updated | Requester | Title | | Assigned To | Status |
| IDR Prabhat Kashyap | | 1 | 0 | 1003 | Nov 15, 2022 12:59:10 | Nov 30, 2022 08:31:54 | TDR Prabhat Kashyap | Prabhat | | TDE Prabhat Kashyap | Assigned |
| 1 | Clear Filter | | | 1 | | | There are curre | ntly 1 New Requests - 1 out of 1 requests are | Assigned | | |
| | | | | Project S | earch New Request | | | | | | |
| | | | | | | | | | | | |
| DEngineers | | Filter | | | | | | Active Requests | | | Fitter |
| "DEngineers ame DE Prabhat Kashyap | | Filter Assigned 1 | Active 0 | ID No data | Time Created available in table | Last Updated | Requester | Active Requests Title | | Assigned To | Filter Status |
| TDEngineers Name TDE Prabhat Kashyap | | Filter Assigned 1 | Active 0 | ID No data | Time Created available in table | Last Updated | Requester | Active Requests Title | | Assigned To | Filter Status |
| TDEngineers Name DDE Prabhat Kashyap | Cilear Filter | Filter Assigned 1 | Active 0 | ID No data | Time Created available in table | Last Updated | Requester | Active Requests Title There are currently 0 Active Requests | | Assigned To | Filer Status |
| TDEngineers Name DDE Prabhat Kashyap | Clear Filter | Filter Assigned 1 Filter | Active 0 | ID No data | Time Created available in table | Last Updated | Requester | Active Requests Title There are currently 0 Active Requests Completed Requests | | Assigned To | Filter Status Filter |
| TDEngineers Name TDE Prabhat Kashyap Select Component Type V Name | Clear Filter | Filter Assigned 1 Filter | Active 0 | ID No data | Time Created available in table | Last Updated | Requester | Active Requests Title There are currently 0 Active Requests Completed Requests Title | | Assigned To | Filter Filter Status Status |

6c. Auto Sync of Test Data Project Components (G-Repository)

G-Repository automatically manages the downloading, updating and deleting of GenRocket Scenarios, G-Stories, G-Epics, and other Configuration files (G-Cases) between the GenRocket Cloud and the customer's secure On Premise and Private Cloud environments.



6d. Integration with Test Automation Frameworks

GenRocket was designed to directly integrate with just about any Test Automation Framework. A GenRocket Scenario + Test Data Case can be launched by:

- At the command line
- Batch file
- Shell scripts
- Jenkins (video <u>here</u>)

- Scripting language
- Compiled language
- REST API

Azure DevOps examples:



Test Case Integration Example with Test Script:

| 1 | pack | age com.genRocket |
|-----|-------------|---|
| 2 | impo | ant com conPocket opping EngineAPT |
| 5 | impo | to an generate engine. Engine Ari |
| 4 | Timbo | to migenkocket.engine.engine.engine.engine.engine.engine.engine.engine.engine.engine.engine.engine.engine.engin |
| 5 | = 1mpc | rt graits.test.spock.integrationspec |
| 6 | | |
| 7 🄛 | clas | s UserDomainServiceIntegrationSpec extends IntegrationSpec { |
| 8 | | |
| 9 | D VC | id "Test insert 10000 users"() { |
| 10 | | final EngineAPI api = new EngineManual() |
| 11 | | |
| 12 | | User.withTransaction { |
| 13 | | given: |
| 14 | | |
| 15 | | api.clientRepoSet('BankDemo') |
| 16 | | api.clientRepoEpicRun('RootTableEpic') |
| 17 | | api.clientRepoRun() |
| 18 | | |
| 19 | | final Integer countReforeInsert = User.count() |
| 20 | | |
| 21 | | when. |
| 22 | | men. |
| 22 | | ani aliantBanaBun(Lanana BankBana ana HaanSaanania tda HaanSaanSuita Laad laad100001) |
| 20 | | apricitentkepokon(-grego bankbemo -grs oserscenario -tuc osercasesorie.coau.coautoood) |
| 24 | | |
| 25 | | <u>then</u> : |
| 26 | | |
| 27 | | assert User.count() == countBeforeInsert + 10000 |
| 28 | Θ | } |
| 29 | <pre></pre> | |
| 30 | } | |
| 31 | | |

Integration Videos (Examples of Test Case Script Integration):

- Selenium: go here
- Tricentis Tosca: go <u>here</u>
- Ui Path: go <u>here</u>
- Cucumber Feature File: go here

GenRocket Multi User Server:

The GMUS is a versatile component that can communicate with customer's test automation frameworks via REST API or a Socket. The GMUS and G-Repository Server can be deployed as a package in a Container.



To learn more about GMUS integration go here

6e. Dynamic Data with the GenRocket API

The GenRocket runtime application interface (API) allows programmers to access the GenRocket runtime to directly modify and create scenarios from their own programs. Programmers will have the following control over a Scenario:

- Modify Domains, Attributes, Generators and Receivers
- Add Domains, Attributes, Generators and Receivers to an existing Scenario
- More information about the Runtime API here



6f. Self Service Test Data Changes (G-Questionnaire)

G-Questionnaire is designed for a developer or tester to modify test data cases (G-Cases) via "self-service" without having to be a GenRocket expert (Test Data Engineer).

- 1. Create volume and variety of test data quickly, with minimal effort.
- 2. Modify test data cases without changing the original test data case.
- 3. A simplified approach for users who are not as familiar with GenRocket.

| G-Self-Serve + | | | | Project GQ | G-Questionna uestionnaireDemo F | ire roject Version: 1.0 | | | | | | |
|-----------------|------------------------------|--------------------------------|------------------------|----------------|------------------------------------|----------------------------|----------------|--------------|------------------------|-------------------|---------|--|
| | | | | | | | | | | Filter | | |
| Name | | Description | | Category | Created By | Created On | Last Modified | Mo | dified On | Action | ins | |
| SampleGQuestion | naireSuite | A Sample G Ques | tionnaire Suite | Load | April Hatton | Oct 06, 2022 | April Hatton | Oct 06, 2022 | | 1300 | ୵≣⊘⊡≎₽≋ | |
| | | | | Add G-Qu | estionnaire Suite 🚺 | | | | | | | |
| B | | Rules Queries | | | Domain and A | ttribute Receiver | | | | | | |
| Case | 0. | 1 | | Filter | | | Ciltore | | Preview - Loop Coun | it 10 | | |
| Template | | G.Rule Set | | Actio | Domain | Tran view | Loop Count Act | ion | | | | |
| tester1case | ₽ 29 ₽ 11 | | | ACCO D | | manization | Loop Count Act | | MasterCard Incorp | brated | | |
| tester2case | (4)(민약 4 , 8 미 | O Uservues | | | | id | | 0 | Wells Fargo | | | |
| | | | | | | name | 0 | 0 | Liberty Mutual Hale | dina Company Inc. | | |
| | | | | | | address | 0 | 0 | Citigroup | ing company inc. | | |
| | | | Add G-Rule Delete | 3-Rules | | city | 0 | 0 | Aetna Inc. | | | |
| | | | | | | state | 0 | 0 | McGraw Hill Finan | cial. Inc. | | |
| | | 1 | | Filter | | zip | 0 | 0 | Owens-Illinois, Inc. | | | |
| | | Domain. | Loop Count | | | phoneNumber | 0 | • | | Desugar | 2 Mout | |
| | | O Domain | Loop Count | 2 545 O 10 0 1 | | Donortmont | 4 | | | Trevious 1 | 2 Ivexi | |
| | | Organization | 1 | A STORE T | Generators | Preview | | | | | | |
| | | Department | 1 | P og Q H UI | Name | gen1 | | | Linked Genera | ators | | |
| | | User | 1 | Ø an ∎ t | | Conservation and the | 140 | | annou conore | Filter | | |
| | | Address | 1 | Ø % Q ₩ ¤ I 🖕 | Generator | F500Name2014G | en 😗 | | | | | |
| | | | Add Domain to Loop Del | ete Domains | autoReference | true | ~ 0 | | Name Alias C | enerator | | |
| | | | | | | | | | gen1 / F | 500Name2014 | 8=1 | |
| | | Modify Attribute | Toggle Domain | | caseType * | noCase | ~ 0 | | Add Generator Co | py Generators | | |
| | | 2.0 | | Filter | sortOrder * | random | ~ 0 | | Start typing to s | elect Gene | Add | |
| | | Domain | Attribute | | | | 0 | | a thirt of paring to o | | | |
| | | Organization | name | 1800 | seed | | | | | | | |
| | | Department | name | / 13 @ A | waitAmount * | 1 | 0 | | | | | |

MODEL DESIGN DEPLOY MANAGE

GenRocket makes it easy to securely manage Projects and User Permissions across your Organization. Each user can be assigned a User Role, which determines what features they are able to access within GenRocket.

7a. User Roles

Here are the different GenRocket user roles:.

7. Part 4 - Manage

- Org Admin Add / Remove users, deploy G-Repository, Analytics and Reporting
- **Test Data Engineer** The "Power User" in the GenRocket ecosystem. Uses G-Families to build G-Cases, Apply G-Rules and share these instruction sets via G-Portal to Testers & Developers. Receive test data requests via G-Portal from testers and developers
- **Tester** User of Scenarios and G-Cases to generate data for their testing requirements. Use G-Questionnaire to quickly modify G-Cases to meet their test case requirements. Searches for test data G-Cases in G-Portal and makes request for new test data requirements via G-Portal.
- **Developer** User of Scenarios a G-Cases to generate data for their testing requirements. Use G-Questionnaire to quickly modify G-Cases to meet their test case requirements. Searches for test data G-Cases in G-Portal and makes request for new test data requirements via G-Portal.

7b. User Authentication & Team Permissions

All GenRocket users are authenticated with username and passwords. GenRocket has an approach where the usernames and company email addresses can be obfuscated, if required.

- SSO (Single Sign On) is available as an additional layer of security
- MFA (Multi Factor Authentication) is available as an additional layer of security

GenRocket <u>Team Permissions</u> provides an additional layer of security for managing Projects across your Organization. Access and permissions can be managed with a Team, which has its own Projects and Team Members. This feature prevents unwanted changes such as deleted Projects, Domains, and Scenarios in GenRocket.

7c. G-Analytics

Reporting Dashboard for project and user activity. To learn more, go here.

| OrganizationSetup | Activity | Tacina Color | | | GenRocket | | | | | Currently Pul |
|-------------------|-----------|--------------|-------------------------------|----------------|-------------------|---------------------|---------------------|------------------------|---------------------|---------------------|
| Organization Ov | erview | Q.4 W | Organization Created Activity | Q.4.9 | Organization Crea | ted Projects | 0.44 | Organization Updated I | Projecta | Q.4 9 |
| | 12 Months | v Search | Duration: 12 Months | Search | Total: 407 | Duration: 12 Months | Search | Total: 407 | Duration: 12 Months | Seerch |
| Name | | Info | Namo | Number Created | Name | Date Created | Last Modified | Name | | Last Modified |
| Org Name | | GenRocket | Project | 407 | NewtedJSON | 2020-12-29 | 2022-02-07 05:43:10 | NestedJ60N | | 2022-02-07 07:14:01 |
| License Type | | Enterprise | Project Version | 453 | BankingDemo | 2021-01-04 | 2021-09-14 14:29:42 | AB_PeC | | 2022-03-24 09:10:30 |
| License End Date | | Dec 31, 2025 | Domain | 4653 | GreyboxDemo | 2021-01-15 | 2022-01-07 11:58:44 | BankingDemo | | 2021-12-08 22:36:41 |
| Total Teams | | 0 | Scenario | 4426 | GMigrationDemo | 2021-01-25 | 2021-12-03 12:56:41 | EDI-837-P-005010-X222 | | 2022-02-23 16:10:14 |
| | | | | | | | | | | |

| ProjectSetupActivity | *) | New Cape | | | | | GenRocket | | • | | | Currently P |
|-------------------------------|--------------|---------------------|-------------|---------------------|---------------------|-----|----------------|---------------------|---------------------|-------------------------|---------------------|----------------------------|
| Organization Created Projects | | 0.49 | Created Pro | ject Versiona | | 948 | Project Versio | n Created Domains | Q.4 | 🔮 🔘 Project Version Cre | ated Scenarios | Q.4 |
| Name | Date Greated | Last Modified | Total: 1 | Duration: 12 Months | Search | | Total: 1 | Duration: 12 Months | Search | Total: 1 | Duration: 12 Months | Search |
| NestodJSON | 2020-12-29 | 2022-02-07 05:43:10 | Name | Date Created | Last Modified | | Name | Date Created | Last Modified | Name | Date Created | Last Modified |
| BankingDarro | 2021-01-04 | 2021-00-14 14:29:42 | 1.0 | 2021-01-25 | 2021-12-08 12:58:41 | | Address | 2521-12-03 | 2021-12-03 12:56:40 | AddressScenario | 2021-12-03 | 2021-12-03 12:58:41 |
| GreyboxDemo | 2021-01-15 | 2022-01-07 11:58:44 | 0.000 | | | _ | | 10010-000 | | | | 277 N. 200 A. 200 A. 215 A |
| GMigrationDemo | 2021-01-25 | 2021-12-03 12:56:41 | | | | | | | | | | |
| TestDataCasesDemo | 2021-03-06 | 2022-06-28 11:31:39 | | | | | | | | | | |
| MTB40Switt | 2021-03-06 | 2022-07-11 16:03:41 | | | | | | | | | | |

| UserSetupActivity | | • New Case | | | | | GenRocket | | | | | Cum | antly P |
|--------------------|----------|--------------|--------------------|--------------------|---------------------|------|-------------------------|--------------------|---------------------|----------------|--------------------|---------------------|---------|
| Organization Overv | rique | ۹. | Organization Users | | | 0.44 | User Created Projects | | 0.49 | O User Creater | d Project Versions | | 9.4 |
| | 3 Months | v Search | Total: 11 | Duration: 3 Months | Search | | Total: 37 | Duration: 3 Months | Search | Total: 2 | Duration: 3 Months | Search | |
| Name | | Info | Namo | | Last Active | | Name | Date Created | Last Modified | Name | Date Created | Last Modified | |
| Org Name | | GenRocket | Prabhat Kashyap | | 2022-06-29 12:15:22 | | TestDataCasesDemo | 2021-03-06 | 2022-06-28 11:31:39 | 1.0 | 2022-05-28 | 2022-07-06 17:25:52 | |
| License Type | | Enterprise | Divya Setia | | 2022-07-11 18:11:49 | | MT940Ewitt | 2021-03-06 | 2022-05-17 16:03:41 | 1.1 | 2022-06-09 | 2022-06-18 12:31:30 | |
| License End Date | | Dec 31, 2025 | Prasen Jeet Gupta | | 2022-06-18 12:08:01 | | ExternalAPiDemo | 2021-03-11 | 2022-05-17 07:31:11 | | | | |
| Total Teams | | 0 | Jitin Dominic | | 2022-06-23 13:05:35 | | PartitionEngineTextData | 2021-03-20 | 2022-00-16 16:09:50 | | | | |
| | | | | | | | | | | | | | |

| -Analytics Dashboa | ird | | | | | | | |
|----------------------|--------------------|--------------|------------------------------------|----------|---------------------------------------|---------------------|----------------------------|-----------------|
| DataBunActivity | | • Now Copy | | | GenRocket | • | | Currently Publi |
| Organization Overvie | ew | Q 🛎 😭 | Organization Runtime Activity | Q.4 W | O Organization Runtime Projects | Q # # | O Project Runtime Activity | Q.4.1 |
| | 3 Months v | Search | Duration: 3 Months | Search | Total: 7 Duration: 3 Months | Search | Duration: 3 Months | Search |
| Name | | Info | Name | Activity | Name | Last Run | Name | Activity |
| Org Name | | GenRocket | Scienario | 157 | TextDataCasesDemo | 2022-06-16 12:13:44 | Scenario | 8 |
| License Type | | Enterprise | Scenario Chain | 8 | StoriesDemo | 2022-06-11 17:22:31 | Scenario Chain | 2 |
| License End Date | | Dec 31, 2025 | Scenario Chain Set | 0 | BankDemo | 2022-05-28 19:13:06 | Scenario Chain Set | 0 |
| Total Teams | | 0 | Test Data Case | 96 | CheckImageDemo | 2022-07-11.22.21:16 | Test Data Case | 0 |
| | | 17 | | | 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 | | | |
| Project Buntime Proj | ject Versions | Q.4.1 | O Project Version Runtime Activity | Q.4.4 | | | | |
| Total: 1 | Duration: 3 Months | Search | Duration: 3 Months | Search | | | | |
| Name | Last | Run | Name | Activity | | | | |
| 1.0 | 2022-06-10 | 5 12 13:44 | Scenario | 8 | | | | |
| | | | Scenario Chain | 2 | | | | |
| | | | Scenario Chain Set | 0 | | | | |
| | | | Test Data Case | 0 | | | | |

7d. Training - Flight School



Available Flight School Classes

| Class Title | Description | Class Title | Certification |
|---|---|---|--|
| GCE 1/Test Data Engineer Curriculum | Detailed understanding of GenRocket with Examples | Test Data Engineers (TDEs) Value Stream Managers Quality Engineers GenRocket Power Users | GenRocket Certified Engineer - Level 1 (after passing the optional exam) |
| GenRocket Organization Admin | Learn how to administer GenRocket platform | Platform AdministratorsManagers | N/A |
| GenRocket POC Training (Non-Healthcare EDI) | High level overview of the GenRocket functionality (except EDI) | Organizations undertaking a POC | N/A |
| GenRocket POC Training (Healthcare EDI) | High level overview of the GenRocket healthcare <i>EDI</i> Functionality | Organizations undertaking a POC to evaluate EDI functionality | N/A |
| GenRocket Sales Enablement | Understand the value of using Synthetic test data and synthetic test data marketplace | GenRocket channel partnersExecutives and managers | N/A |
| GCE Level 1 (Healthcare EDI) | Detailed training with examples on how to use GenRocket for Healthcare EDI | Test Data Engineers (TDEs) Value Stream Managers Quality Engineers GenRocket Power Users | N/A |