



ENTERPRISE TEST DATA AUTOMATION

Understanding the Full Value of Enterprise-Class Test Data

Test data comes in many degrees of complexity, from basic data for unit testing to comprehensive data for testing the business logic found in end-to-end workflows. There are just as many ways to provision test data, including manually created data, masked production data and real-time synthetic test data generation. Increasingly, QA organizations are taking action to shift left, testing earlier in the development cycle and reducing the resolution of defects in a production release.

Achieving this at the enterprise level requires a test data provisioning strategy that allows testers and developers to generate exactly the data they need, in any volume, and whenever they need it. The larger the scale of operations, the greater the need for adaptability to solve diverse test data challenges. There is also a growing need for automation to accelerate the test data provisioning process.

GenRocket developed Test Data Automation technology to meet the needs of any size organization, from a start-up company to the quality assurance organization of a large enterprise. We designed an extensible, component-based architecture that achieves the following critically important success factors for Enterprise Test Data Automation:

1. **Data Quality Control**
2. **Self-Service Provisioning**
3. **Scalable Test Data Platform**



Here is a brief explanation of how GenRocket addresses these critical success factors.

DATA QUALITY CONTROL



Enterprise-class data quality means having control over the combinations, permutations and patterns of data provisioned to fully exercise code. It means data accuracy that can only be accomplished by querying production data and blending it with synthetic data when needed. It means maintaining referential integrity between key fields in data tables used for testing. And it means absolute data privacy by replacing sensitive customer data with synthetic data. Data quality means total control over the volume, variety and veracity of data required by any given test case.

This expression captures our core philosophy:
If you can imagine it, you can provision it!

SELF-SERVICE PROVISIONING



In many enterprise environments, test data provisioning is evolving from a centralized model to distributed self-service eliminating wait states and accelerating the testing process. That means any tester can provision test data on-demand for use with test operations integrated into the release pipeline. To be effective, self-service provisioning must be also easy and intuitive, supported by wizard-based operations that streamline the configuration of test data. And it must be capable of seamless integration with test automation tools and frameworks for any kind of testing procedure.

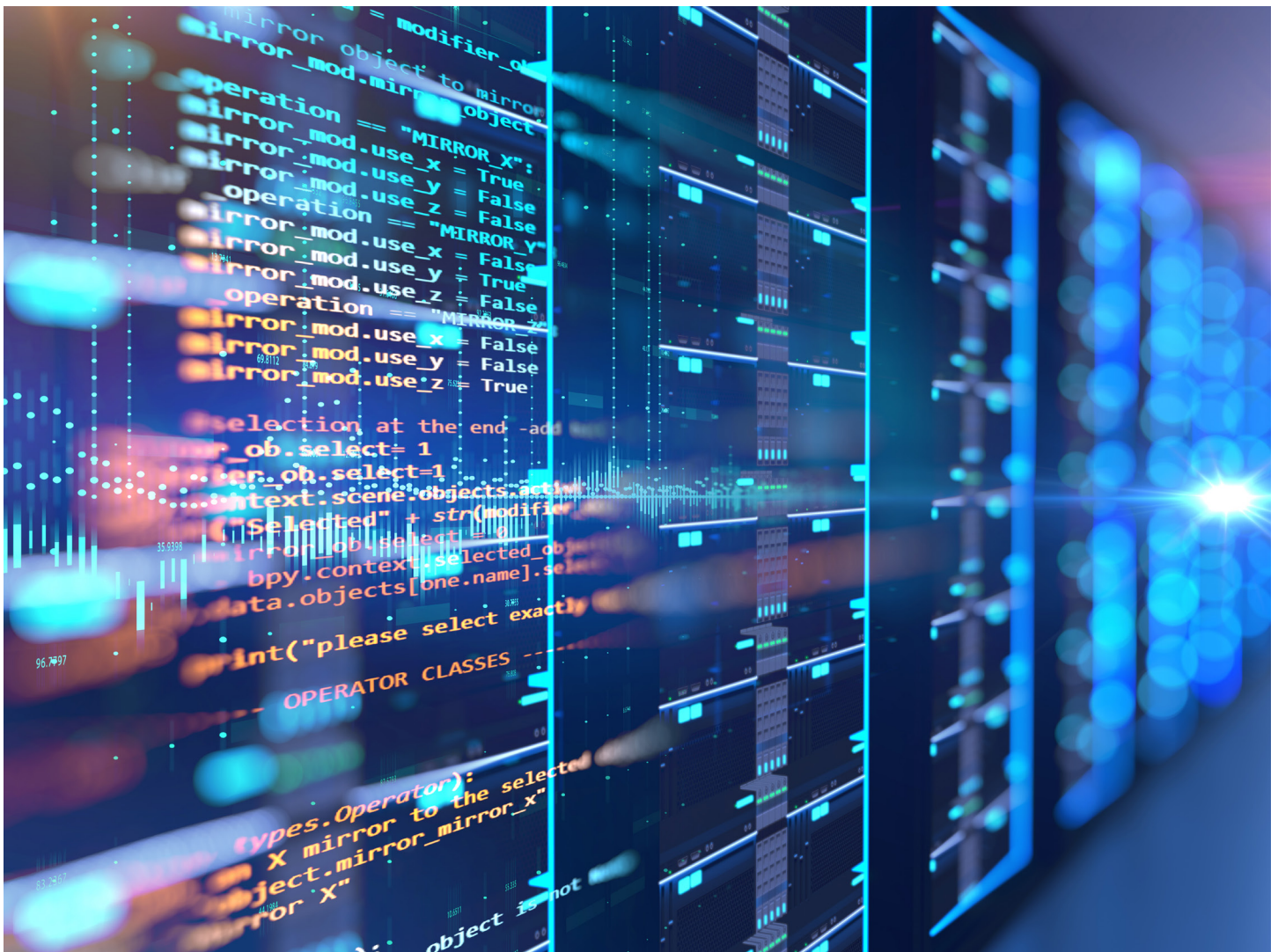
At GenRocket, we believe *continuous integration and testing requires continuous test data.*

SCALABLE TEST DATA PLATFORM



Traditional test data management relies on the use of complex, costly and monolithic TDM platforms that copy, mask, subset and refresh production data subsets to make them ready for testing. These systems are beginning to offer synthetic Test Data Generation (TDG) to address the need for data privacy. However, a truly scalable TDG platform is built from the ground up to optimize performance, efficiency, cost, extensibility and ease of use. GenRocket has replaced the traditional *copy, mask, subset* and *refresh* approach with a more streamlined *Define, Test, and Manage* approach that also extends first-generation TDG tools into a more scalable and manageable *Test Data Automation* platform.

GenRocket reimagines TDM and extends first-generation TDG as ***Test Data Automation***.



SOLUTION ARCHITECTURE

CLOUD



Management

- Test Data Projects
- Security / Permissions
- Reporting / Analytics

Data Model Setup

- Extract Table Schema
- DDL
- X12 EDI XSD
- Setup Wizards

Self Service Test Data Design

- Test Data Scenarios
- Test Data Cases
- Test Data Rules
- Test Data Queries
- Test Data Stories

ON PREMISE

GenRocket Runtime



- Execute Scenarios
- Manage Scenarios and Test Data Cases
- Runs on Linux, Mac and Windows



258 Generators

- Permutations
- Edge Case
- Percentages
- SSN, Credit cards, Tax ID
- Dates
- Name, address, phone, email
- Query from database or file

Test Automation Integration



- Any testing tool / framework
- Any type of test
- Jenkins, Selenium, Cucumber
- JMeter, Sauce Labs, pCloudy
- Functionize, SmartBear, UFT, etc.

Multi-User Server



- Manages high volume of test data requests
- API dynamically creates and delivers test data
- Record, playback, messaging and logging



61 Receivers

- Any SQL DB - e.g. Oracle, DB2
- Any NoSQL DB - e.g. MongoDB
- XML, JSON (and nested)
- CSV, Excel, VSAM
- JDBC, SOAP, REST
- NACHA, Nexio, Parquet, Avro
- Complex data feeds
- Salesforce
- X12 EDI 837, 835, 274, etc.
- HL7

API & Data Engines



- API for dynamic data
- REST & Socket Engines
- Partition Engine
- Data Migration Engine
- Refactoring Engine

Many customers have asked for a summary of the many enterprise-class capabilities found in the GenRocket Test Data Automation platform. In the table below, each GenRocket feature or function is grouped according to one of the critical success factors for Enterprise Test Data Automation: **Data Quality Control**, **Self-Service Provisioning** and **Scalable Test Data Platform**.

| DATA QUALITY CONTROL | |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------|
| The features listed in this section of the comparison table are critical factors for controlling the quality of test data configured by the platform and used for meeting diverse requirements to support any category of testing. | |
| GenRocket Enterprise Test Data Automation Features | |
| Referential Integrity | |
| | U.S. patent # 9,552,266 B2 |
| | Ref integrity regardless of complexity |
| Production Data | |
| | Data Masking (Synthetic Data Replacement) |
| | Data Migration |
| | Production Data Queries |
| | Ability to look at production data values and make dynamic decisions |
| Data Generation | |
| | 258 data generators |
| | Linked generators: create own data |
| | Many parameters to control data gen |
| | Stateful data across test runs |
| | Permutation Generators |
| | Edge Case Generators |
| | Images, PDF's |

GenRocket Enterprise Test Data Automation Features

| Data Generation | |
|----------------------|--------------------------------------------------|
| | Dynamic data for workflows |
| | Data storing & mapping in sequence |
| Data formats | |
| | 61 Receivers that support the following and more |
| | XML, JSON (Flat or Nested) |
| | SQL: Oracle, DB2, SQL, etc. |
| | NoSQL: MongoDB, Cassandra, etc. |
| | CSV, Excel, VSAM... |
| | JDBC, REST, SOAP... |
| | NACHA, BA12, SWIFT |
| | Custom payment data feeds |
| | Parquet, Avro |
| | Blockchain Nexo |
| | Kafka |
| | PDF |
| | Salesforce |
| Vertical Market data | |
| Healthcare | X12 EDI 837, 834, 835, 274 etc. |
| Healthcare/Hospitals | HL7 |
| Banking | NACHA, BAI2 and SWIFT |
| Payments | Proprietary data feeds |
| Logistics | EDI 850 |

SELF SERVICE PROVISIONING

Self-service provisioning is essential for keeping pace with the speed of continuous testing. These features are important to ensure data provisioning is fast, intuitive, automated and ready for integration with test automation tools and frameworks.

GenRocket Enterprise Test Data Automation Features

| Self Service Test Data | |
|------------------------|------------------------------|
| | Test Data Cases |
| | Test Data Rules |
| | Test Data Queries |
| | Test Data Stories |
| API / Data Engines | |
| | API for dynamic data |
| | REST & Socket Engines |
| | Partition Engine |
| | Data Migration Engine |
| | Refactoring Engine |
| Integrations | |
| | Any testing framework |
| | Any CI/CD pipeline & Jenkins |
| | Any commercial testing tool |
| | Salesforce |

SCALABLE TEST DATA PLATFORM

To be scalable, test data provisioning must be capable of delivering high volume data, on demand and at a high level of performance. It must also enable efficient team collaboration, platform management and reporting.

GenRocket Enterprise Test Data Automation Features

| Project Setup | |
|-----------------------|-------------------------------------|
| | 9 ways to set up new Projects |
| | Intelligent Data Warehouse |
| | Wizards to speed Relationship Setup |
| | Project Version Copy |
| | Many system-wide setup features |
| Project Lifecycle Mgt | |
| | Automatic refactoring of Projects |
| | Automatic updating of all Scenarios |
| Enterprise Security | |
| | On Premise data generation |
| | Team Permissions to 4 levels |
| | Encryption & security throughout |
| | Single Sign On |

GenRocket Enterprise Test Data Automation Features

| Data Generation Speed | |
|-----------------------|-------------------------------------|
| | ~100 milliseconds typical test case |
| | 10,000 rows per second |
| | 100 million rows 20 mins - 1 PC |
| | 1 billion rows 20 mins - multi PC |
| Project Team Sharing | |
| | Data Projects shared across teams |
| | Build once... share across the team |
| Reporting & Analytics | |
| | User reporting |
| | Usage reporting |
| | Compliance reporting |