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Test Data Manager for the Mainframe

Features

- **Data Profiling:** Helps understand complex relationships in existing data, building an accurate model based on metadata in mainframe catalogs or by parsing copybooks. This includes finding referential information to maintain integrity.
- **Data Masking:** Native masking engines can locate sensitive records enterprise-wide and mask millions of rows of data in minutes to maintain compliance.
- **Data Subsetting:** Enables the extraction of small, referentially intact data subsets, avoiding prohibitive infrastructure costs.
- **Synthetic Data Generation:** Creates the smallest set of data for comprehensive coverage, including outliers, unexpected results, and future scenarios, minimizing data volume.

Benefits

- **Mainframe Native Operation:** Uses native batch operations and engines for secure and reliable test data engineering at scale directly on the mainframe, ensuring data never leaves the mainframe.
- **High Performance:** Provides a high-performance alternative to traditional ETL technologies by implementing TDM directly on the mainframe, optimizing for minimal MIPS consumption.
- **Enterprise-Wide Solution:** Ensures consistent data sanitization across distributed, cloud, and mainframe environments, enabling data provisioning for complex, cross-data source testing scenarios.
- **Self-Service and Reusability:** Empowers engineers via a web portal to independently retrieve sanitized data on demand using centrally stored, reusable data models and rules to eliminate redundant effort.

At a Glance

Broadcom's Test Data Manager (TDM) is a robust, mainframe-native solution that overcomes complex test data provisioning challenges by using native engines to profile, mask, subset, and generate secure, right-sized data in minutes, enabling self-service and maximizing productivity.

Introduction

In order for engineering teams to deliver quality and performant software continuously, they must have a lower environment that mirrors production without exposing private data. Ironically although organizations have used Mainframe systems for decades, they still struggle with automated provisioning of lower environments that have the required data scenarios that mirror production. Broadcom's Test Data Manager (TDM) is a robust, mainframe-native solution that overcomes this challenge.

TDM uses native engines to profile, mask, subset, and generate synthetic data, provisioning it in minutes from a central repository. This approach provides a high-performance alternative to traditional ETL, drastically reducing infrastructure overhead and MIPS consumption by transitioning from production clones to "fit-for-purpose" data. The solution ensures enterprise-wide data sanitization for complex, cross-data source testing, maintains strict compliance through automated PII masking, and drives productivity gains of up to 95% time savings in data provisioning.

Business Challenges

Mainframe test data challenges arise because provisioning full-sized production copies is too slow, expensive, and risks exposing sensitive data.

The key business challenges are:

- **Slow, Risky In-House Methods:** Homegrown scripts are complex, slow provisioning, and increase the risk of data breaches by requiring data to be copied to other environments first.
- **Misunderstood Data:** Poorly documented, complex data structures make it difficult to find the necessary test data and maintain referential integrity during subsetting and masking.
- **High Risk of Non-Compliance:** Sensitive data location is hard to track across mainframe systems, inadvertently exposing it to non-production environments and risking major fines.
- **Significant Testing Bottlenecks:** Data consumers spend up to 50% of their time manually searching for data, waiting for central teams to provision it, or creating it by hand.
- **Poor Data Quality and Coverage:** Production data only covers about 20% of possible tests and lacks the outliers, negative results, and future scenarios required for rigorous testing.

Solution Overview

Test Data Manager (TDM) is a comprehensive solution that enables your mainframe engineering practice to deliver fully tested software on time and within budget by providing on-demand, secure access to right-sized data.

Core Data Engineering Capabilities.

TDM provides a robust, flexible framework for managing test data ensuring data consistency and referential integrity across mainframe and distributed platforms. Data remains secure on the mainframe, executing tasks using native batch operations and engines for secure and effective test data management.

- **Data Profiling:** Helps understand complex data relationships, building an accurate model based on metadata in mainframe catalogs or by parsing copybooks. This is key to maintaining referential integrity even with minimal documentation.
- **Masking and Subsetting:** Accurate data profiling will locate sensitive records enterprise-wide, with native masking engines capable of processing millions of rows in minutes. Small, referentially intact data subsets can then be extracted, maintaining compliance while avoiding prohibitive infrastructure costs.
- **Synthetic Data Generation:** Creates the smallest set of data needed for comprehensive coverage, including outliers, unexpected results, and future scenarios, ensuring data consumers have all the data engineering needed for rigorous testing.

Access, Support, and Integration

TDM empowers engineers through its delivery model, optimized mainframe performance, and powerful security integrations.

- **Self-Service Portal:** From the TDM web-based portal, engineers gain self-service capabilities, eliminating reliance on centralized teams. Data can be sanitized to remove PII information, synthesized to generate wider coverage, or mined and reserved to accelerate development. Previously defined rules and data models are also stored centrally as reusable assets, avoiding repeated effort and maximizing the value of work done.
- **Robust Mainframe Support:** Broadcom provides robust support for mainframe data sources, including DB2, IMS, and IDMS, as well as sequential and VSAM file formats. All test data engineering tasks are optimized for minimal MIPS consumption.
- **RC/Extract Integration:** TDM integrates with RC/Extract, elevating mainframe data security by masking sensitive DB2 information “in motion” during the extraction process. This synergy ensures that all relational integrity and complex primary-to-foreign key structures are preserved automatically, allowing organizations to safely populate environments while strictly adhering to global privacy regulations.

Critical Differentiators

- **Enterprise-Wide Solution:** Test Data Management is driven to ensure the data needed in your lower environments is at your fingertips. Desensitized, production-like referentially intact data can be fed into numerous mainframes and distributed systems at scale.
- **Mainframe Native Test Data Management:** The use of native batch operations enables secure and reliable test data engineering at scale on the mainframe, ensuring that data never leaves the mainframe.
- **Sophisticated Coverage Analysis:** Data coverage can be accurately measured, allowing for the easy identification of any gaps required for rigorous testing.
- **Covered Subsets:** The ability to create rich subsets which retain all the test attributes of the original data, removing the need to create and store a full production copy.
- **Parallel Testing and Development:** Cloning fully versioned, re-usable data sets from the Test Data Warehouse allows teams to work on multiple versions and releases in parallel.
- **Versatile Data Generation:** A comprehensive list of combinable SQL functions, seed tables, default and system variables means that synthetic data can be tailored to suit test cases and requirements.
- **Brightside/Zowe Integration:** Enables the automation of mainframe masking jobs within modern DevOps toolchains, allowing engineering teams to control and script complex z/OS data tasks with the same agility and efficiency as cloud-native platforms.
- **Built for Reusability:** Data is stored centrally as reusable assets, along with previously defined rules and data models, for the reusability of test data engineering tasks.

Related Products/Solutions

Service Virtualization. Captures and simulates the behavior of unavailable or constrained systems—including cloud, third-party services, and mainframe systems—to enable parallel testing, accelerate delivery, and ensure higher application reliability.

Agile Requirements Designer. Leverages AI and LLMs to transform raw requirements into precise behavioral models, enabling the generation of optimized test cases, automation scripts, and using aligned TDM test data and ensuring full traceability and consistency while reducing time and costs.

Summary

Mainframe test data challenges, driven by the need for production-like, secure data, are currently causing significant bottlenecks, high costs, and compliance risks due to reliance on slow, risky in-house methods or cumbersome full production copies. Data consumers face long waiting times, and poor data quality limits testing coverage. Broadcom's Test Data Manager (TDM) is a robust, mainframe-native solution that directly addresses these issues by using native batch operations and engines to profile, mask, subset, and generate synthetic data. This approach ensures that secure, referentially intact, and right-sized data is created at scale and remains on the mainframe, providing a high-performance alternative to traditional ETL.

TDM empowers engineering teams with self-service capabilities via a web portal, enabling them to independently retrieve sanitized data on demand, thereby eliminating reliance

on centralized teams and driving significant time savings in data provisioning. By providing an enterprise-wide solution, TDM ensures consistent data sanitization across distributed, cloud, and mainframe environments while adhering to strict compliance requirements through automated PII masking. TDM also integrates seamlessly with modern DevOps toolchains like Brightside/Zowe and enhances security through integration with RC/Extract, ensuring full relational integrity is preserved while maximizing the reusability of test data engineering assets.

Our customers are reducing the time it takes to get data for testing, minimizing infrastructure overhead during data migration, and efficiently handling massive volumes of data for compliance. For instance, organizations have successfully reduced data creation time from 20 hours to just over 2 hours per transaction, while others have demonstrated TDM's power by successfully masking over 750 million rows of complex data in less than eight minutes.



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