IBM InfoSphere Optim Test Data Management

Optimizes and automates the test data management process for agile development and testing

Highlights

- Shorten iterative testing cycles and accelerate time to market
- Extend test coverage and improve quality
- Manage, access and refresh test data easily through services on demand
- Enable continuous testing by creating referentially intact, right-sized test databases or data warehouses
- Identify hidden errors and correct defects before deployment with automated test result comparisons
- Protect sensitive data used in testing, training and development
- Establish and enforce enterprise test data management policies and rules

Your organization depends on critical software applications and analytic platforms to help drive business results. But it can be challenging to stay within tight development budgets while striving to speed the delivery of new functions, upgrades and enhancements.

The adoption of agile methodologies is an accelerating trend as organizations are seeking team collaboration and customer-centric approaches in software development. Agile software development can help improve project success, increased software quality, reduced costs and speed time to market. An agile development approach requires continuous access to realistic and relevant test data. Agile sprints can't afford delays waiting for, finding, creating or refreshing test data environments. Quickly creating production-like development, testing and training environments is critical to continuously delivering high-quality software solutions.

While a common method of provisioning test data environments is simply cloning production databases to lower development and testing environments, this practice most likely extends your project timelines, increases delivery costs and reduces testing effectiveness. In addition, cloned data may not support the specific error and boundary conditions required for effective testing. While you may have a lot of test data, you may not have the right test data to fully exercise test cases. And cloning production systems means manually validating test results, which are often time-consuming and error-prone. With so much test data to manage, time and costs can quickly spiral, and maintenance burdens may increase with the rolling out of new features. What's more, software quality may suffer as more undetected defects make their way to production where they are more expensive to fix and might negatively impact business.

Let's face it. Your goal is to deliver reliable software functions to support operational processes, improve competitiveness and maximize business outcomes. So how can you support more rapid, agile delivery of new software functions while reducing costs and improving quality?

Optimize and automate the test data management process

IBM® InfoSphere® Optim™ Test Data Management (TDM) offers easy-to-use technology to optimize and automate the test data management process, complete with workflows and services on demand. Development and testing teams can use realistic, built-for-purpose, test databases, made up of one or more business objects, for targeted test scenarios based on enterprise-wide data governance policies. Optim TDM helps protect sensitive data privacy by applying masking routines to de-identify data, which facilitates testing while keeping sensitive data secure. Sensitive data may include Personally Identifiable Information (PII), Protected Health Information (PHI) and information that falls under the Payment Card Industry Data Security Standard (PCI DSS). It can also compare the data from before-and-after testing with speed and accuracy to help testers and developers pinpoint errors or defects.

Optim TDM provides a test data management workflow, improving predictability and repeatability of testing efforts. Testers and developers can access and refresh test data on demand that has been masked and provisioned by database administrators (DBAs), and reuse test data artifacts through the test data knowledge base. With Optim TDM, developers and testers can request services, access test data and refresh test data through a web interface. For DBAs, Optim TDM offers an intuitive user experience to get projects started more quickly and empowers novice users to contribute immediately to their projects.

Finally, Optim TDM promotes data governance by providing organizations with a standard way to define test data management policies and standards throughout the data lifecycle. It can create and execute policies, validate compliance with internal and external standards and report on test data management practices.

Create production-like environments for testing

Test data management is the process of creating smaller, targeted, built-for-purpose test environments instead of cloning entire production environments or manually creating data from scratch. Resulting development and test environments are more agile and better aligned to test cases. This process results in faster testing cycles, improved software quality, reduced cost and better time to value.

In contrast to cloning large production databases or data warehouses, a more effective alternative is to implement test data management capabilities that minimize storage requirements while expanding test coverage. It's much faster to test with smaller, realistic subsets of data that accurately reflects the production environment.

The first step is to understand your complex heterogeneous data landscape. Without this understanding, it's impossible to create the realistic test data. Some challenges include knowing what data is needed for test cases, being aware of where the data is located and how the data is related, and understanding the locations and types of confidential data elements.

Successful projects, therefore, begin with an accurate understanding and representation of the data to be subset. A business object represents a conceptual unit of work, such as customers, orders or invoices. From a technical perspective, business objects comprise a group of related columns and database tables.

By managing data at the business-object level, Optim TDM preserves both the relational integrity of the data and its original business context. Business objects can be pulled from a single database or several related applications and databases across different platforms. This "federated" data extraction capability makes it easy to create production-like test data environments that accurately reflect end-to-end test cases.

"By speeding up our software development processes, the solution makes it easier for us to respond swiftly to customer requirements, and meet regulatory deadlines for implementing changes in healthcare policy."

— Han van der Vinden,Test Manager, CZ

Gain data insight and accelerate implementation with discovery capabilities

Optim TDM provides a full range of data analysis capabilities to capture hidden correlations and bring them clearly into view. These capabilities include single-source and cross-source data overlap analysis, advanced matching, key discovery and transformation logic discovery. The relationships identified during the discovery process are aggregated to create the baseline business object for database subsetting. Moreover, all instances of confidential data are identified by examining data values across multiple sources to determine the complex rules and transformations that may hide sensitive content. It can locate confidential data items that are contained within larger fields or separated across multiple columns. Results of the discovery process can be stored and leveraged for future projects.

The definition of the business object is one part of subsetting. Additional subsetting is done by determining the volume of data and it's relationship with the type of testing required. Once your selection criteria are defined, the Optim TDM processing capabilities identify and extract the precise subsets of data and document needed by your extraction policy for future use.

For example, it's easy to populate a test environment with referentially intact customer and order information for a specific business unit or fiscal year. To quickly refresh the test environment, you can reload baseline data on demand. Alternatively, you can extract new records from production to expand test coverage or obtain data for a unique test case.

Test data management capabilities delivered through Optim TDM help control the size of development and testing environments. By eliminating excess data volume, you can reduce storage requirements, trim costs and improve testing efficiency. You can also create any number of purpose-built development, test and training databases to satisfy specific requirements, improving both coverage and accuracy. Streamlined test databases are also easier to manage and maintain, so you can speed iterative testing cycles and shorten the time necessary to deploy new software functions. See Figure 1.

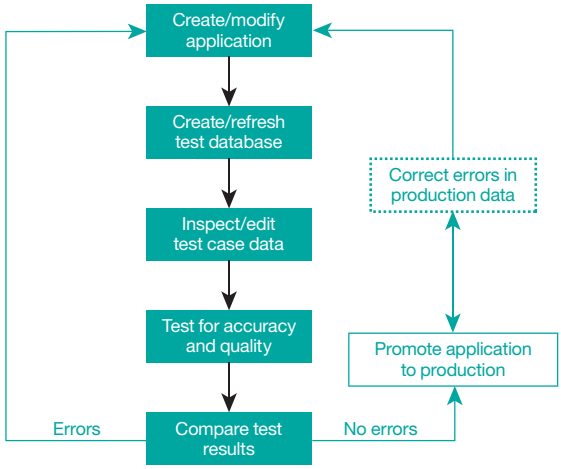

Figure 1. InfoSphere Optim Test Data Management helps improve every stage of the application testing process by providing the data you need.

Protect privacy in development, testing and training environments

Optim TDM offers various methods for masking test data to protect privacy and support regulatory compliance initiatives. Organizations can leverage context-aware data masking routines to anonymize key data elements across the enterprise. Optim TDM captures and accurately processes data elements so that the masked data doesn't violate application logic and produces valid results.

Optim TDM provides comprehensive data masking techniques, including built-in lookup tables and prepackaged routines that support transforming complex data elements, such as credit card numbers and email addresses. You can also incorporate custom transformation routines based on site-specific requirements.

Create test scenarios

Another way to optimize your testing environment is to create targeted test scenarios. Optim TDM includes comprehensive relational editing capabilities that make it easy to compose this special data. It also provides capabilities for browsing and editing data in its relational context across multiple tables, which offers a better way to envision the data relationships. A powerful undo capability helps you reverse an unlimited number of editing changes, and a sophisticated audit facility tracks changes and saves details for review by authorized users.

Automate data comparisons and analyze results

The ability to analyze and validate test results is critical for ensuring application quality. Database size and complexity significantly increase the effort involved in examining test results. After a test run, Optim TDM analyzes the before-and-after images of the data, automatically detecting any differences and presenting the results in a concise report, saving countless hours of manual inspection.

Optim TDM enhances virtually all phases of application testing. An intuitive, online interface and full-function browse utility help eliminate time-consuming, error-prone, table-by-table comparisons. Optim TDM not only identifies the expected database changes, but also uncovers differences that might otherwise go undetected. Application defects that are hidden or difficult to trace can be identified quickly and resolved in a fraction of the time.

Streamline test data delivery

As organizations work to shorten iterative test cycles and accelerate time-to-market, testers and developers need access to on-demand test data. Organizations are embracing agile development, which relies on agile testing. Agile testing requires continuous access to test data to run tests and builds, and the ability to run them continuously until the test requirements are satisfied.

InfoSphere Optim supports this requirement by enabling testers and developers to access and refresh test data that has already been masked and provisioned by DBAs. On-demand test data access and refresh improve operational efficiency while providing more time to test. You can implement a customized test data management process that meets project or enterprise testing goals through a flexible test data management workflow. Optim TDM provides role-based access for testers, developers, DBAs and project managers. It also provides insight into the status of workflow requests to help determine when data should be refreshed. The result is better governance of test data. Thus, Optim TDM provides a reusable test data knowledge base with test data artifacts.

"Our developers always have realistic, up-to-date data to test their code against. This would be impossible without a tool like InfoSphere Optim."

— Gijs Logman, Database Administrator, BinckBank

Establish and enforce enterprise test data management policies and rules

Sound data governance practices is a priority for leading organizations. Optim TDM provides a standard way to govern the test data management process and validate that, policies and standards are accepted throughout the lifecycle. Optim TDM enables people, processes and technology to come together to create more value.

Support your enterprise environments

Optim TDM provides a central data management solution that scales to meet enterprise needs. In addition to supporting your custom and packaged applications, Optim TDM provides a consistent data lifecycle management approach across leading enterprise resource planning (ERP) and customer relationship management (CRM) applications, including:

- Oracle E-Business Suite
- PeopleSoft Enterprise
- JD Edwards EnterpriseOne
- Siebel CRM

Plus, it supports major enterprise databases, data warehouses and operating systems, including:

- IBM Db2® and IBM Informix® database servers
- Oracle
- Sybase
- Microsoft SQL Server
- IBM IMS™ database management system (DBMS)
- IBM Virtual Storage Access Method (VSAM)
- Teradata
- Netezza®
- Microsoft Windows, UNIX, Linux and IBM z/OS® operating systems
- And many others

For more information

To learn more about IBM Optim products, contact your IBM sales representative or visit: **ibm.com**/analytics/optim.

To learn more about the IBM InfoSphere Optim Test Data Management solution, please contact your IBM sales representative or visit: **ibm.com**/us-en/marketplace/infosphere-optim-test-data-management.

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New Orchard Road
Armonk, NY 10504

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