

Introduction

Common Approaches
and Challenges

Use Case #1: Identify
Complex Data

Use Case #2: Generate
Missing Data

Use Case #3: Protect
Confidential Data

Use Case #4:
Self-Provision Test Data

Use Case #5: Data-
Enable Virtual Services

Use Case #6: Build
More Accurate Tests

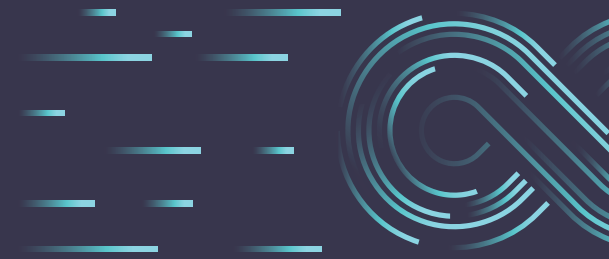
Use Case #7: Utilize
Mainframe Platforms

About CA

CA Test Data Manager: 7 Use Cases for Meeting Test Data Challenges



DevOps Demands Quality Test Data



With the application economy in full swing, more organizations are turning to Continuous Testing and DevOps development practices in order to quickly roll out applications that reflect the ever-changing needs of tech-savvy, experience-driven consumers. Rigorous and agile testing is critical to the delivery of quality software, which requires quality data to develop it.

During this process, project delays can occur because testers frequently lack access to the

data they need, in the right formats. This forces teams to postpone their testing until the next sprint. As a result, organizations like yours are increasingly looking for ways to overcome the challenges of poor quality data and slow, manual data provisioning. They are also concerned about compliance and data privacy when using sensitive information for testing. CA Test Data Manager can help you mitigate all these concerns, so you're positioned to achieve real cost savings.

COSTS AND BENEFITS¹

Here are the present value of **costs and benefits over three years** for the Composite Organization headquartered in the United States with 40,000 full-time employees who invested in CA Test Data Manager:



Software license and annual support costs:

\$796,749

Implementation and annual internal support costs:

\$1,626,468

TOTAL THREE-YEAR BENEFITS:

\$9,380,147

1. The Total Economic Impact of CA's Test Data Manager Solution, Forrester Research, 2016

Test Data Management: Approaches and Challenges



Use Case #1: Identify Complex Data

Use Case #2: Generate Missing Data

Use Case #3: Protect Confidential Data

Use Case #4: Self-Provision Test Data

Use Case #5: Data-Enable Virtual Services

Use Case #6: Build More Accurate Tests

Use Case #7: Utilize Mainframe Platforms

About CA

For many organizations, their Test Data Management approach starts and ends with masking production data—sometimes sub-setting it—and moving it to non-production environments for use in testing.

This approach can help reduce infrastructure costs and improve compliance, but it falls short if your organization is striving to achieve Continuous Testing or employ agile testing principles. Development and test teams will still see an unacceptable number of defects and fail to reach tight delivery deadlines. And there are other challenges that only a comprehensive Test Data Management solution can address:

Quality



High-volume, low-variety copies of production data incur high infrastructure costs and yet typically cover only 20% to 30%² of the tests needed to ensure quality. As a consequence, defects are not caught until late in the development cycle, where they require far more time and expense to fix. Ultimately, the user experience suffers.

Data Privacy



Sensitive production data is often found lurking, even in “masked” databases. This presents the risk of data breaches, reputational damage and fines for non-compliance that can reach into the millions of dollars. And related legislation is only becoming more stringent.

MORE

2. CA audits of customer test data and test cases

Test Data Management: Approaches and Challenges (cont'd)

Speed



Manually provisioning large copies of production data is tedious and error-prone. Testers are left waiting for their data and the wrong data is often delivered. In fact, within some supposedly agile organizations, data refreshes can take longer than the sprint itself.

What's more, testers typically require exact data sets for a particular test. So they waste more time searching through unwieldy copies of production data or creating missing data by hand. In addition, data that is unavailable in parallel with development becomes out of sync when one team makes a change. Organizations stand little chance of delivering quality software on time under these conditions.

Technical Debt



Testing is made more complex by poorly understood data models and limited understanding of what data exists and how it relates across components. Testers often miss sensitive and confidential information contained within uncontrolled spreadsheets, while finding data and maintaining referential integrity can be highly time-consuming.

Effective message testing utilizing service virtualization also requires an in-depth understanding of how live data flows through complex systems. However, many testers lack related subject-matter expertise and have minimal supporting documentation to help them.

The use cases that follow define and explain how CA Test Data Manager addresses your complex data requirements and data privacy needs under the most common circumstances.



Introduction

Common Approaches
and Challenges

**Use Case #1: Identify
Complex Data**

Use Case #2: Generate
Missing Data

Use Case #3: Protect
Confidential Data

Use Case #4:
Self-Provision Test Data

Use Case #5: Data-
Enable Virtual Services

Use Case #6: Build
More Accurate Tests

Use Case #7: Utilize
Mainframe Platforms

About CA

Use Case #1:

Identify Complex Data

Secure, effective and efficient Test Data Management first requires a full understanding of the interrelated data found across interdependent mainframe, legacy and distributed platforms.

CA Test Data Manager provides data profiling algorithms to expose even the most complex relationships within data. This creates a multi-dimensional picture of what data exists and how it relates across components. Meanwhile, coverage analysis identifies any missing data that needs to be added for complete, rigorous testing. Further, data visualization capabilities enable testers to dynamically query data and identify any missing or invalid data combinations at a glance.

Testers can also analyze message definitions or live traffic to understand how variables flow through a live system. Integration with CA Agile Requirements Designer (another CA Technologies product) provides rule-learning algorithms, which testers can apply to reverse-engineer relationships in complex data. Technical debt is thereby paid off, providing the understanding needed for effective service virtualization and thorough testing.



[See related video.](#)



understand data interrelationships and
dependencies across mainframe and enterprise

Introduction

Common Approaches
and Challenges

Use Case #1: Identify
Complex Data

**Use Case #2: Generate
Missing Data**

Use Case #3: Protect
Confidential Data

Use Case #4:
Self-Provision Test Data

Use Case #5: Data-
Enable Virtual Services

Use Case #6: Build
More Accurate Tests

Use Case #7: Utilize
Mainframe Platforms

About CA

Use Case #2:

Generate Missing Data



Based on the previous use case, CA Test Data Manager can mask data and retain the referential integrity needed for testing—all the while easily generating rich synthetic data from scratch to fill in the gaps.

Developers can use powerful CA Test Data Manager capabilities to model and create synthetic data that covers functional variations. And with access to a comprehensive set of combinable data-generation functions, seed tables and variables, test teams can create realistic data tailored to their specific testing and development needs. The ability to build scripts also enables them to create millions of rows of complex data as quickly as the infrastructure can handle it, providing test teams with as much data as they need.

The up-to-date, referentially intact data contains outliers, future scenarios and expected results that testers need to detect defects the first time round. Subsequently, teams can avoid the delays and wasted resources created by late rework and focus on what matters—delivering innovative software that reflects changing user needs.

 [See related video.](#)



synthetically generate all or some of the
test data needed

Introduction

Common Approaches
and Challenges

Use Case #1: Identify
Complex Data

Use Case #2: Generate
Missing Data

**Use Case #3: Ensure
Data Privacy**

Use Case #4:
Self-Provision Test Data

Use Case #5: Data-
Enable Virtual Services

Use Case #6: Build
More Accurate Tests

Use Case #7: Utilize
Mainframe Platforms

About CA

Use Case #3:

Protect Confidential Data



Testing using realistic synthetic data with no production data avoids exposing personally identifiable information (PII) to non-production environments. However, most organizations will find it optimal to use a combination of existing data and synthetically generated data as they transition completely to synthetic data.

CA Test Data Manager provides multiple high-performance, native masking engines that are capable of systematically securing millions of rows of existing data in minutes. Through automated data discovery and profiling, it discovers sensitive information stored across databases and environments, so that no sensitive information is inadvertently left behind.

This tactic avoids slow, error-prone manual data discovery and in-house masking. Meanwhile, the referential integrity needed for testing is retained—across both interdependent mainframe and distributed data sources. Once CA Test Data Manager stores data in the Test Data Warehouse, it enables data access on a project-by-project and user-by-user basis. This centralizes data requests and goes beyond role-based approaches to satisfy increasingly strict legislation regarding data use.



See related [video](#).



automatically discover and mask sensitive information

Introduction

Common Approaches
and Challenges

Use Case #1: Identify
Complex Data

Use Case #2: Generate
Missing Data

Use Case #3: Protect
Confidential Data

**Use Case #4:
Self-Provision Test Data**

Use Case #5: Data-
Enable Virtual Services

Use Case #6: Build
More Accurate Tests

Use Case #7: Utilize
Mainframe Platforms

About CA

Use Case #4:

Self-Provision Test Data



CA Test Data Manager stores previously generated and masked data as re-usable assets in a central Test Data Warehouse, alongside imported data and flat files.

It not only stores data with the associated queries needed to retrieve it, but also “matches” data to the tests it can run. This means that testers can request data and automatically receive it in minutes. What’s more, the self-serve Test Data on Demand portal provides testers with on-demand, parallel access to the exact data they need. And the ability to further share and re-use existing data maximizes the value of work done.

Data is “cloned” as it is provisioned, while powerful version control means that relevant data sets automatically reflect and replicate changes made to system requirements. Highly distributed teams therefore work with the most up-to-date data, avoiding the delays created by data constraints and unsynchronized data. Rare or interesting data is also preserved during a refresh, and cannot be used up by another team, reducing time wasted on frustrating data rework.

 [See related video.](#)



provide on-demand, parallel access to
test data

Introduction

Common Approaches
and Challenges

Use Case #1: Identify
Complex Data

Use Case #2: Generate
Missing Data

Use Case #3: Protect
Confidential Data

Use Case #4:
Self-Provision Test Data

**Use Case #5: Data-
Enable Virtual Services**

Use Case #6: Build
More Accurate Tests

Use Case #7: Utilize
Mainframe Platforms

About CA

Use Case #5:

Data-Enable Virtual Services



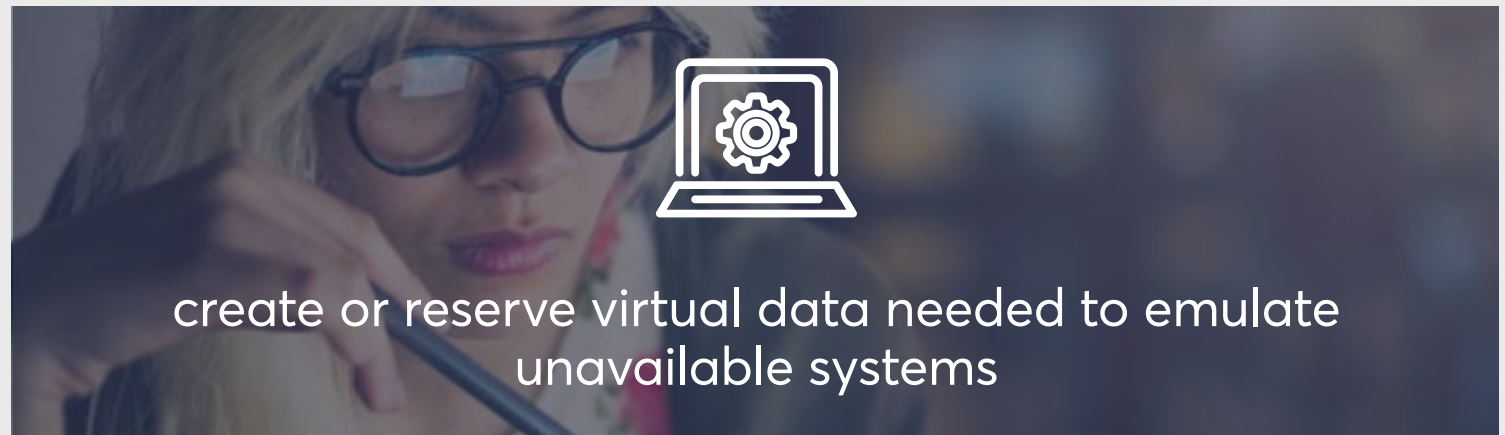
In addition to realistic test data, testers need constant access to environments in which to execute their tests. However, when testing composite applications, the inability to access missing, unavailable or unfinished components can cause delays.

CA Test Data Manager can address these issues by creating or reserving the virtual data needed when CA service virtualization emulates the unavailable components on demand. From a message definition, it can produce Request-Response pairs that mirror live traffic using standard rules or versatile data-generation functionality.

Where there are available systems or databases, CA Test Data Manager will automatically find and reserve the relevant data, at the same time creating any data needed to virtualize the unavailable components. It synchronizes virtual data across interdependent systems, and can feed it directly into deployed virtual services. This provides testers with continuous access to the consistent virtual data and environments they need to deliver quality applications on time and within budget.



[See related video.](#)



Introduction

Common Approaches
and Challenges

Use Case #1: Identify
Complex Data

Use Case #2: Generate
Missing Data

Use Case #3: Protect
Confidential Data

Use Case #4:
Self-Provision Test Data

Use Case #5: Data-
Enable Virtual Services

**Use Case #6: Build
More Accurate Tests**

Use Case #7: Utilize
Mainframe Platforms

About CA

Use Case #6:

Build More Accurate Tests

CA Test Data Manager helps testers build more realistic tests by permitting them to incorporate normal, expected data, as well as flawed, abnormal data that is intended to "break" applications before the user can.

From a model of live traffic, it can generate "covered" responses that span the full range of possible outcomes, so that testers have environments in which to execute every potential test. Using CA Test Data Manager, testers can create structured and unstructured messages, along with dummy data for future scenarios and prototypes. The result is a rich test bed that includes every distinct combination of variables needed for rigorous testing.

Whether it's a covered set of responses, or a Request-Response for an individual test, the test data is stored in the Test Data Warehouse, from which it is exposed to testers using the Test Data on Demand portal. This approach moves environment provisioning much closer to test teams. As a result, it avoids the delays created when testers must contact a central team to gain access to test data or wait for complex data sets to be manually created and provisioned.

 [See related video.](#)



Introduction

Common Approaches
and Challenges

Use Case #1: Identify
Complex Data

Use Case #2: Generate
Missing Data

Use Case #3: Protect
Confidential Data

Use Case #4:
Self-Provision Test Data

Use Case #5: Data-
Enable Virtual Services

Use Case #6: Build
More Accurate Tests

**Use Case #7: Utilize
Mainframe Platforms**

About CA

Use Case #7:

Utilize Mainframe Platforms



CA Test Data Manager is an enterprise solution, enabling testers to find, secure or create data across both mainframe and distributed platforms at once.

It allows testers to use the same warehouse and user interface to define Test Data Management tasks on mainframe and distributed platforms, which means their organizations can leverage the reliability of the mainframe. They can forego investments in multiple tools and execute these tasks on mainframe runtime environments using native batch operations. This approach avoids slow and complex extract and loads while promoting secure and effective Test Data Management on the mainframe.

In addition, data profiling capabilities enable testers to understand the complex data that exists across mainframe and legacy platforms—even when faced with minimal documentation. This includes referential information not otherwise available from mainframe sources, addressing the need to retain referential integrity during testing.

CA Test Data Manager can then mask the existing data using native engines and augment it with rich synthetic data. Afterwards, it can feed this data into multiple interdependent mainframe and distributed databases at once, providing testers with self-service access to all the data they need to fully test composite software earlier, and at less cost to the business.



[See related video.](#)



identify and create test data for
mainframe applications

Introduction

Common Approaches
and Challenges

Use Case #1: Identify
Complex Data

Use Case #2: Generate
Missing Data

Use Case #3: Protect
Confidential Data

Use Case #4:
Self-Provision Test Data

Use Case #5: Data-
Enable Virtual Services

Use Case #6: Build
More Accurate Tests

Use Case #7: Utilize
Mainframe Platforms

About CA

Learn more about CA Test Data Manager:

ca.com/us/products/ca-test-data-manager.html



Get real ROI results from customers in The Total Economic™ Study of CA Test Data Manager; commissioned by CA and conducted by Forrester Consulting: ca.com/study

CA Technologies (NASDAQ: CA) creates software that fuels transformation for companies and enables them to seize the opportunities of the application economy. Software is at the heart of every business, in every industry. From planning to development to management and security, CA is working with companies worldwide to change the way we live, transact and communicate – across mobile, private and public cloud, distributed and mainframe environments. Learn more at ca.com.

© Copyright CA 2018 All rights reserved. This document is for your informational purposes only and does not form any type of warranty. All trademarks, trade names, service marks and logos referenced herein belong to their respective companies. CA does not provide legal advice. Neither this document nor any CA software product referenced herein shall serve as a substitute for your compliance with any laws (including but not limited to any act, statute, regulation, rule, directive, policy, standard, guideline, measure, requirement, administrative order, executive order, etc. (collectively, "Laws")) referenced in this document. You should consult with competent legal counsel regarding any Laws referenced herein.

